Lessons Learned from Bangladesh, India, and Pakistan

Scaling-Up Rural Sanitation in South Asia

This regional study draws up policy recommendations for large-scale rural sanitation programs in South Asia where more than 900 million people (66 percent of the total population) remain without access to adequate sanitation.

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The Water and Sanitation Program is an international partnership for improving water and sanitation sector policies, practices, and capacities to serve poor people

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Report

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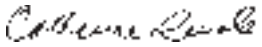
Foreword

Despite significant investments over the last 20 years, South Asia faces the most daunting sanitation challenge in any region in the world. More than 900 million South Asians (66 percent of the total population) remain without access to adequate sanitation. The vast majority of this unserved population are rural inhabitants but, at present, rural sanitation programs in the region are barely keeping pace with population growth. One of the Millennium Development Goals is to halve the population without access to hygienic sanitation facilities by 2015. While governments in South Asia have pledged to meet this goal, its achievement will entail the provision of sustainable sanitation services to more than 450 million people over the next 10 years.

This urgent challenge gives rise to a classic development dilemma: how to develop rural sanitation programs capable of rapid and large-scale provision of cost-efficient sanitation services, without cutting back on program elements critical to sustainability and long-term welfare improvements. Put another way: is it possible to take successful approaches from small-scale, participatory sanitation programs and adapt them for effective use in large-scale rural sanitation programs?

Based on lessons learned from eight case studies of innovative rural sanitation programs in Bangladesh, India, and Pakistan, this report summarizes the findings of a regional study on scaling-up rural sanitation conducted by the Water and Sanitation Program-South Asia (WSP-SA). Detailed analysis of program performance and context is used to draw out 'factors of success' and common constraints, and to suggest potential strategies for scaling-up program approaches.

While there are few truly successful large-scale sanitation programs on which to base firm recommendations, the report lays out policy implications for large-scale rural sanitation programs. It calls for new approaches to sanitation development, and for a new emphasis on measuring success by long-term improvements in public health and well-being, rather than on the number of toilets built.



Catherine Revels
Regional Team Leader
Water and Sanitation Program-South Asia

Despite significant investments over the last 20 years, South Asia faces the most daunting sanitation challenge of any region in the world.

Abbreviations

ADP	Annual Development Program
BDO	Block Development Officer
BPL	Below poverty line
BRAC	Bangladesh Rural Advancement Committee
CCCD	Child-centered Community Development
CRSP	Central Rural Sanitation Programme
DPHE	Department of Public Health Engineering
DRDA	District Rural Development Agency
FFW	Food For Work
GNI	Gross National Income
GO	Government Order
GoI	Government of India
GoM	Government of Maharashtra
GP	Gram Panchayat
IEC	Information, Education & Communication
ISL	Individual Sanitary Latrines
JSDF	Japan Social Development Fund
KfW	KfW Bank Group
LCS	Low Cost Sanitation
LGRDD	Local Government and Rural Development Department
LPP	Lodhran Pilot Project
MDG(s)	Millennium Development Goal(s)
MPDO	Mandal Parishad Development Officer
NGO	Non-governmental Organization
NRSP	National Rural Support Program
O&M	Operations and Maintenance
OPP	Orangi Pilot Project
PIHS	Pakistan Integrated Household Survey
PMU	Project monitoring unit
PRD	Panchayats and Rural Development
PRED	Panchayati Raj Engineering Department
PRI	Panchayati Raj Institution
RGNDWM	Rajiv Gandhi National Drinking Water Mission
RKM	Rama Krishna Mission
RSM	Rural Sanitary Mart
RWS	Rural Water Supply
SACOSAN	South Asian Conference on Sanitation
SGBC	Sant Gadge Baba Campaign
SHG	Self-help group
SIPRD	State Institute of Panchayats and Rural Development
SRP	Sector Reform Program
SWSM	State Water and Sanitation Mission
TMA	Tehsil Municipal Administration
TNWDC	Tamil Nadu Women Development Corporation
TSC	Total Sanitation Campaign
UNICEF	United Nations Children's Fund
UNO	Upazila Nirbahi Officer
VERC	Village Education Reseach Centre
VSC	Village Sanitation Committee
WSP	Water and Sanitation Program
WSP-SA	Water and Sanitation Program-South Asia

Large-scale sanitation programs should combine government and NGO (or local organization) resources.

Executive Summary

In South Asia, more than 900 million people (66 percent of the total population) remain without access to adequate sanitation. Despite significant investments, rural sanitation coverage in the region is barely keeping pace with population growth. Clearly, current approaches to the development and provision of rural sanitation services in the region are either not effective, or are not at sufficient scale to make an impact on the enormous population that lacks adequate sanitation.

This regional study was commissioned by the Water and Sanitation Program-South Asia (WSP-SA) to address some of these issues. The main objectives of the study were:

- To develop case studies of innovative approaches to rural sanitation in South Asia;
- To analyze the factors of success (and constraints) found in these case studies;
- To assess potential strategies (and constraints) to scaling-up the approaches used in case studies; and
- To draw up policy recommendations for large-scale rural sanitation programs in the region.

Seven of the eight case study programs use a 'total sanitation' approach to promote behavior change, including low-cost toilets in India and Bangladesh. The eighth case study program implements simplified rural sewerage schemes in Pakistan using a 'component-sharing' approach. The sanitation programs studied range in size from a small-scale NGO program covering 12 villages in one district to a large-scale government program that provided more than 1.5 million toilets in Andhra Pradesh last year.[1]

Based on the case study findings, 10 performance indicators were used to rate the overall performance of each case study program. A detailed analysis was then carried out, which identified the following key 'factors of success':

- **Focus on stopping open defecation** (rather than building sanitation facilities);
- **Investment in hygiene promotion and social intermediation** (at household level); and
- **Provision of affordable sanitation options to the poor.**

The more successful programs provided high access to sanitation, and ensured high toilet usage through a combination of participatory processes, hygiene promotion, and institutional incentives (financial rewards for achieving universal toilet coverage, community bans on open defecation, fines for open defecation, and so on).

The case study analysis also identified a number of 'common constraints':

- Widespread failure to monitor local outcomes (for example, open defecation, toilet usage, handwashing);
- High hardware subsidies (including the provision of free toilets);
- Ineffective social intermediation (notably by government bodies); and
- Unsustainable supply chains.

Only two of the case studies examined large-scale sanitation programs. Therefore, the assessment of strategies for scaling-up rural sanitation was largely theoretical, based on the case study analysis and some more general thinking on likely constraints to scaling-up rural sanitation. Five potential strategies for scaling-up rural sanitation emerged:

- Incremental program development;
- Partnering between local governments and NGOs;
- Need for cost-effective implementation;
- Formation of community self-help groups; and
- Macro-monitoring of sanitation programs.

Large-scale sanitation programs need to be hybrids that combine use of government resources and monitoring networks with the employment of NGOs (or other local organizations) that have social development skills and community rapport. The case studies also highlight the importance of not going to scale too quickly; of regular macro monitoring and reporting; and of encouraging cost-effective implementation by advocating low hardware subsidies and careful targeting of IEC and hygiene promotion activities.

[1] Full case studies are included in the Annexes to this report.

One of the Millennium Development Goals is to halve the population without access to hygienic sanitation facilities by 2015.

The closing sections of this report examine the policy implications resulting from this regional study and make recommendations for further research. Unsurprisingly, the study concludes that there is some merit to the 'total sanitation' concept. In cases where the total sanitation approach had been used, program managers and local government officials were aware that their main objective was to stop open defecation, and that this required community-wide action, universal toilet use, and hygiene behavior change. Opinion was divided as to how these changes should be effected, but there was little argument about the approach. In this respect, the 'total sanitation' concept is a major step forward, as this level of shared understanding and purpose was sadly lacking in many earlier sanitation programs.

However, the variable case study performances confirm that the total sanitation approach is no 'magic bullet' for rural sanitation. The total sanitation concept focuses attention on stopping open defecation and on the importance of community-wide action, but large-scale sanitation programs also need carefully thought out and locally appropriate policies on matters such as social intermediation, hygiene promotion, sanitation marketing, financial incentives, accountability to users, and program finance.

South Asia contains more poor people without access to sanitation than any other region on earth, which puts its national governments under extreme pressure to make the most of the limited available resources for the development of sanitation services. In the past, this meant pouring money into building heavily subsidized toilets, but there is increasing evidence that this approach tends to result in low toilet usage and wasted investments.

New approaches are needed to make a substantial and sustainable impact on public health. This study suggests that the focus of large-scale sanitation programs should be on stopping open defecation and on improving hygiene behavior on a community-by-community basis, with success measured not by the number of toilets built, but by long-term improvements in public health and well-being.

1 Introduction

In South Asia, more than 900 million people (66 percent of the total population) remain without access to adequate sanitation. The vast majority of this unserved population are poor and live in rural areas, making the provision of affordable rural sanitation services of vital importance to both public health and poverty alleviation in South Asia.

In recognition of the magnitude and severity of this challenge, governments, external support agencies, and NGOs in the region have made huge rural sanitation investments over the last few decades. However, despite these investments and efforts, rural sanitation coverage in the region is barely keeping pace with population growth.

Clearly, current approaches to the development and provision of rural sanitation services in the region are either not effective, or are not at sufficient scale to make an impact on the enormous population that lacks adequate sanitation. One of the key challenges facing the rural sanitation sector in South Asia is to develop large-scale national programs that produce sustainable and affordable rural sanitation services.

This process is essential if governments within the region are to achieve their Millennium Development Goals (MDGs), which include halving the number of people without access to hygienic facilities by 2015, and providing universal access to sanitation by 2025.

The recent South Asian Conference on Sanitation (SACOSAN), held in Dhaka during October 2003, was an important step forward. Key stakeholders from South Asia[2] recognized the need for new approaches and for the scaling-up of the provision of rural sanitation services if any genuine attempt is to be made at reaching the MDGs.

Those present at SACOSAN pledged to accelerate progress by working in partnership with key sector stakeholders to design and implement improved national sanitation policies and programs.

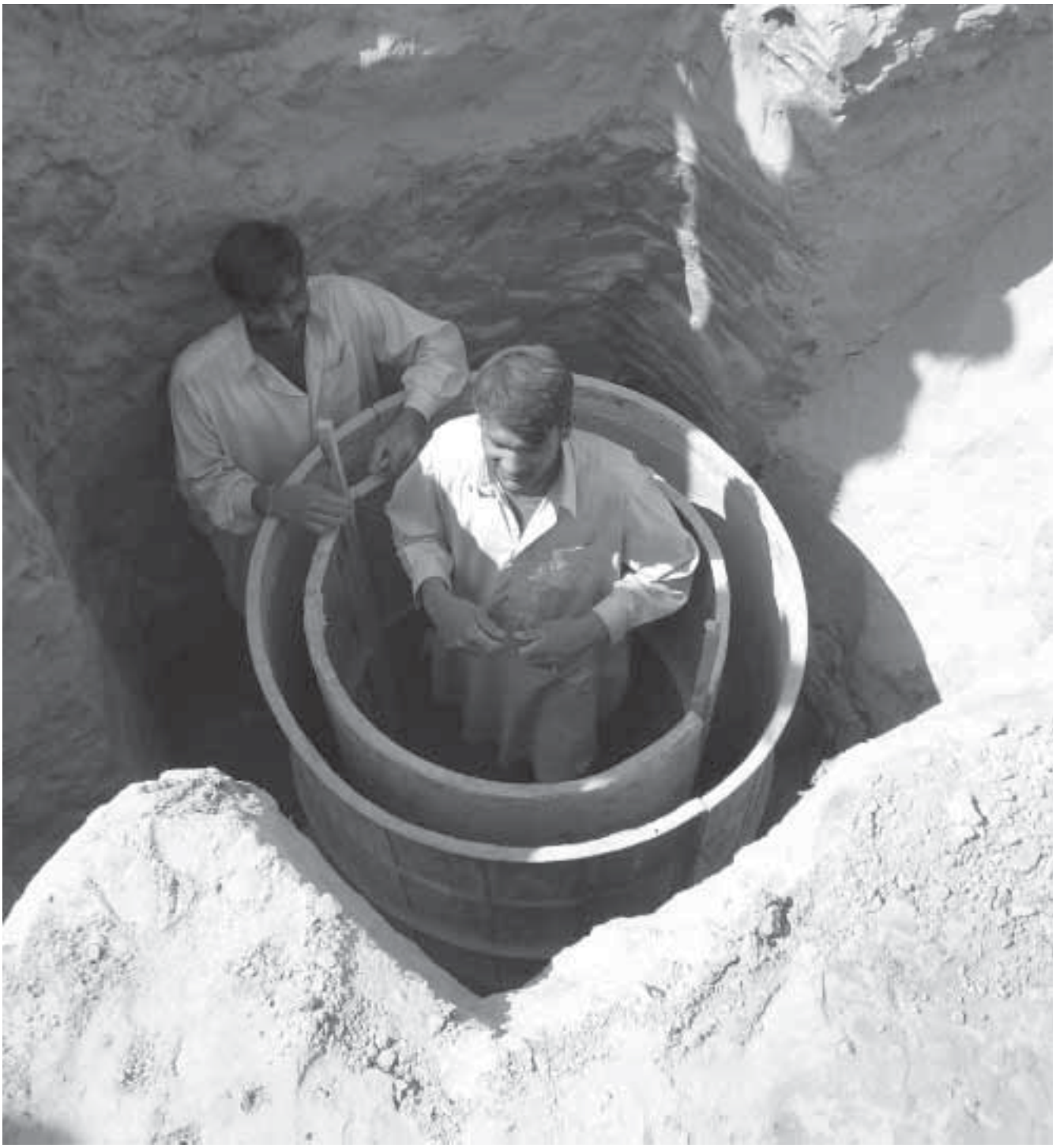
As a result, the Water and Sanitation Program-South Asia (WSP-SA) commissioned a regional study with the following objectives:

- To develop case studies of innovative approaches to rural sanitation in South Asia;
- To analyze the factors of success (and constraints) found in these case studies;
- To assess potential strategies (and constraints) to scaling-up the approaches used in case studies; and
- To draw up policy recommendations for large-scale rural sanitation programs in the region.

Following the completion of eight case studies in 2004 (see Annexes), this report is the main output from the regional study. It presents an analysis of the case study findings and draws out the factors of success in these case studies. The report also examines whether the successful approaches from the case studies can be scaled-up into larger programs, and outlines the policy implications arising from the study findings and analysis.

[2] Including government ministers, senior civil servants, NGO representatives, and donor agency representatives from Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, and Sri Lanka.

One of the key challenges facing the rural sanitation sector in South Asia is to develop large-scale national programs that produce sustainable and affordable rural sanitation services.



2 Methodology

The terms of reference proposed that the cases studied should be examples of new and innovative approaches to rural sanitation that represent the different countries, contexts, and challenges within the region.

Given the limited duration of the study (three months) and the logistical requirements, the fieldwork was limited to eight case studies chosen by the respective WSP country offices. In each case, the rapid appraisals conducted for the study involved:

- Collation of background material by WSP and sanitation program staff;
- Interviews with key informants on rural sanitation policies and issues;
- Interviews with local government officials;
- Interviews with the managers and staff of the sanitation program;
- Visits to villages involved in the sanitation program (including transect walks, group discussions, and interviews with individual household members); and
- Visits to nearby villages not involved in the sanitation program.

Each of the case studies was based around the following framework:

- Context (national and local issues that may influence outcomes);
- Approach (main principles and activities of the sanitation program);
- Institutional model (main institutions involved in the sanitation program);
- Sanitation promotion (social intermediation, hygiene promotion, local demand);
- Sustainability (technical, social, institutional, financial, environmental); and
- Scaling-up (is the approach likely to be successful at scale?).

List of Case Studies

Country	Project
Bangladesh	Total Sanitation Approach (Local Government Rajarhat)
	Total Sanitation Approach (NGO Forum)
	Total Sanitation Approach (Plan Bangladesh)
India	West Bengal TSC (Local Government + local NGOs)
	Maharashtra TSC (Local Government Ahmednagar + local NGOs)
	Andhra Pradesh TSC (Local Government + Engineering Department)
	Tamil Nadu TSC (Gramalaya NGO + WaterAid + Local Government)
Pakistan	Lodhran Pilot Project, Punjab (Local NGO supported by national NGOs)

TSC = Total Sanitation Campaign (Government of India national sanitation program)

Note: Exchange rate – US$ 1: Bangladeshi Taka 59; US$ 1: Indian Rs 46.33; US$ 1: Pakistani Rs 57 (based on 2004 rates)

Good hygiene behavior denotes practices that keep people and their surroundings clean and free from illness and infection, for example, washing hands with soap after defecation.

Definitions

For the purposes of this report, the following definitions apply:

Sanitation
Safe management and disposal of human excreta, for example, through the use of toilets and good hygiene behavior.
Note: 'Environmental Sanitation' is a broader term, encompassing interventions that maintain public health by providing a clean environment and reducing exposure to disease, for example, behaviors and facilities that work together to safely manage and dispose of human and animal excreta, refuse, and wastewater; to control disease vectors; and to improve personal and domestic hygiene.

Rural
The rural space is that which is not urban.
Note: This classification varies according to the criteria used in each area or country. In general, the rural population comprises those communities living outside cities and towns, but it may also include rural towns below a certain size (for example, 5,000 inhabitants).

Sanitation hardware
Sanitation facilities, for example, toilets, septic tanks, soakaways, sewerage systems, handwashing facilities, and so on.

Sanitation software
Program activities that support and promote the provision of sanitation services and facilities, for example, community development, training, media campaigns, hygiene promotion, and so on.

Hygiene behavior
Good hygiene behavior denotes practices that keep people and their surroundings clean and free from illness and infection, for example, washing hands with soap after defecation.

Total sanitation approach
A community-wide approach whose main aim is universal toilet use (total sanitation) in each community covered by the program. The total sanitation approach focuses on stopping open defecation on a community-by-community basis by highlighting the problems caused to all by open defecation within and around the community, and by ensuring that every household either builds and uses their own low-cost toilet, or has access to a shared toilet.

Scaling-up rural sanitation
Increasing the scale, the rate of provision, and the sustainability of rural sanitation services, such that universal sanitation coverage can be reached and maintained within a reasonable time frame. This implies:

- Inclusion (the vast majority of the target population is provided with improved and sustainable services within a reasonable time frame); and
- Institutionalization (a system of actors and institutions is in place with the necessary capacity and resources to deliver sustainable sanitation services indefinitely).

After Davis & Iyer (2003), and Lockwood (2004)

In a period when decision-makers are recognizing the importance of adequate sanitation for public health and poverty alleviation, South Asia contains more poor people without sanitation than any other region.

3 Background

Rural sanitation is a critical issue for South Asia. In a period when decision-makers are recognizing the importance of adequate sanitation for public health and poverty alleviation, South Asia contains more poor people without sanitation than any other region on earth. The vast majority of this unserved population live in rural areas.

The figures presented at SACOSAN confirm that, among the three South Asian countries covered by this study, India has by far the lowest sanitation coverage. More than 750 million people in India are without access to adequate sanitation, which represents about 80 percent of the unserved population in South Asia and perhaps 30 percent of those unserved globally. It should be noted that, despite significant efforts to improve data collection, national sanitation coverage figures from most countries in South Asia remain inaccurate. In part, this reflects genuine difficulties associated with making household-by-household assessments on a national scale.

All too often, sanitation coverage figures are overestimates based on the number of toilets built by previous sanitation programs, without allowances for incomplete projects, or for collapsed and abandoned toilets.

Comparative Regional Data

Name	Population		Pop. Density (nr/km^2)	Literacy	GNI (per capita)
	Total	Rural			
Bangladesh	136 million	87%	944	41%	US$ 360
India	1,048 million	72%	353	56%	US$ 480
Pakistan	145 million	66%	188	45%	US$ 410
South Asia	1,401 million	72%	293	56%	US$ 460

Source: WDR 2004 (data from 2002); GoI Census 2001; Baseline survey 2003; www.banglapedia.search.com

Access to Improved Sanitation in South Asia

Country	Rural Sanitation	Urban Sanitation	Total Sanitation	Unserved Population
Bangladesh	41%	61%	48%	71 million
India	18%	56%	28%	755 million
Pakistan	41%	94%	62%	55 million
South Asia	24%	66%	34%	925 million

Source: SACOSAN Country Papers; World Development Report 2004; PIHS 2002; JMP 2004

The main advantage of the total sanitation approach over conventional policies is that it is a community-wide approach, which requires that every household in the community stops open defecation and uses a sanitary toilet.

4 Findings

The case studies are based on a series of rapid appraisals conducted during January-March 2004, and on the data available at the time of the appraisals.

This report is based on the case studies, and is intended to be a preliminary piece of work that:
- Pulls together current sanitation success stories and innovations in South Asia;
- Highlights the key issues that emerge from these case studies; and
- Identifies policies and approaches that appear worthy of more rigorous study.

As mentioned in the introduction, one of the key challenges in expanding access to sanitation and improving public health is to scale-up successful small-scale approaches into large-scale national programs. Therefore, this analysis has a particular focus on the scale at which the case study programs operate, and on the relevance and replicability of the case study approaches at large scale.

The findings and analysis are presented in the following four steps:
- Comparison of case study approaches;
- Comparison of case study outcomes;
- Identification of factors of success and common constraints; and
- Assessment of potential performance at scale.

4.1 Case studies

Full case studies are included in the Annexes to this report:
- Annex 2: Case Studies from Bangladesh (three);
- Annex 3: Case Studies from India (four); and
- Annex 4: Case Study from Pakistan.

4.1.1 Institutional arrangements

The case studies fall into two categories:
- Four public cases (financed by the government and implemented by the local government); and
- Four NGO cases (financed by non-governmental donors and implemented by NGOs).

The first three public cases (Andhra Pradesh TSC, West Bengal TSC, Ahmednagar TSC) are similar, in that all three are part of the Government of India's Total Sanitation Campaign (see Annex 3 for details) and follow its guidelines. However, the Andhra Pradesh TSC and West Bengal TSC cases examine State-wide sanitation programs, whereas the

Case Studies

Case	Country	Program Approach	Sanitation Technology
Ahmednagar, Maharashtra TSC	India	Total sanitation	Low-cost toilets
Andhra Pradesh TSC		Total sanitation	Toilets and bathrooms
Gramalaya, Tamil Nadu TSC		Total sanitation	Low-cost toilets
West Bengal TSC		Total sanitation	Low-cost toilets
Rajarhat Local Government	Bangladesh	Total sanitation	Low-cost toilets
NGO Forum		Total sanitation	Low-cost toilets
Plan Bangladesh		Total sanitation	Low-cost toilets
LPP	Pakistan	Component-sharing	Settled sewerage

This analysis has a particular focus on the scale at which the case study programs operate, and on the relevance and replicability of the case study approaches at large scale.

Ahmednagar case study examines a pilot program being implemented in only two districts (Ahmednagar and Nanded) in Maharashtra.

The fourth public case (Rajarhat, Bangladesh) is a one-off local government intervention, a small sanitation program initiated by the chief administrator of the sub-district (Upazila) and financed by the sub-district government independently of any central or local government programs.

The four NGO cases involve sanitation programs implemented by non-governmental organizations and financed by non-government donors. NGO Forum and Plan Bangladesh are well-established and well-supported NGOs, which operate across Bangladesh. In contrast, the Lodhran Pilot Project (LPP) in Pakistan is a small, local NGO formed relatively recently in direct response to local sanitation problems.

The Gramalaya case study is something of a hybrid: Gramalaya is one of WaterAid India's partner NGOs in southern India, but is now implementing part of the government TSC program in Tamil Nadu. Local government manages the district TSC project, but it has contracted 14 NGOs (including Gramalaya) to implement the project.

Public Cases

Case	Policy	Institutions		Start Date	Annual Program Coverage	
		Implementation	Finance		Villages	Households
Andhra Pradesh	TSC	District govt.	Govt. (TSC)	2003	(16,700)	1,670,000
West Bengal	TSC	District govt.	Govt. (TSC)	1999	(8,500)	850,000
Ahmednagar	TSC	District govt.	Govt. (TSC)	2003	300	(30,000)
Rajarhat	Local govt.	Sub-district govt.	Local govt.	2001	(180)	18,000[3]

Estimate based on 100 households per village

NGO Cases

Case	Policy	Institutions		Start Date	Annual Program Coverage	
		Implementation	Finance		Villages	Households
NGO Forum	NGO	National NGO	Donors	2001	600	(60,000)
Plan Bangladesh	NGO	International NGO	Donors	2002	100	(10,000)
Gramalaya	TSC/NGO	Local NGO	Donors & govt.	2003	30	(3,000)
LPP	NGO	Local NGO	Donors	2001	12	(1,200)

Estimate based on 100 households per village

[3] Annual coverage of Rajarhat sanitation program (36,000 household toilets were built in two years).

Gramalaya is well-respected locally, and most of its operational costs are financed by external donors, thus the district government allows Gramalaya to implement its two sub-district TSC programs relatively independently.

4.1.2 Program approaches

Seven of the eight case study programs use a 'total sanitation approach'. This approach derives from the 'community-led total sanitation' approach developed by NGOs (WaterAid and VERC) in Bangladesh (see Annex 1).

The Lodhran Pilot Project (LPP) in Pakistan is the sole exception. It utilizes a 'component-sharing' approach modelled on that of the Orangi Pilot Program (OPP), a well-known urban sanitation success story from the region. The challenge of providing sanitation infrastructure is divided into 'internal' components (sanitary toilet, sewer connection, and lane sewer) and 'external' components (main sewers and disposal works).

Rather than sharing the costs of each component, the responsibility for providing the components is shared: construction of the internal components is financed and managed entirely by the community; provision of the external components, technical assistance, hygiene promotion, social guidance are the responsibility of LPP.

There are four critical elements to the total sanitation approach:

- Catalyzing collective action to stop open defecation;
- Supporting the development of community-wide sanitation facilities;
- Promoting toilet usage and improved hygiene behavior; and

Total Sanitation Approach

The total sanitation approach recognizes that sanitation is both a public and a private good, and that individual hygiene behavior can affect the whole community – if your neighbors defecate in the open, then your children risk excreta-related disease even when the members of your own household use a sanitary toilet, wash their hands, and practice good hygiene. In this sense, 'total sanitation' refers to a community-wide ban on open defecation, and requires that everyone in the community either owns or has access to a sanitary toilet.

The main advantage of the total sanitation approach over conventional policies is that it is a community-wide approach, which requires that every household in the community stops open defecation and uses a sanitary toilet.

Therefore, this approach involves even the poorest and most vulnerable households in the community, and ensures that both the community and the local government focus on assisting these households to gain access to adequate sanitation facilities.

Agencies Used in Public Cases

Case	Community Development	Sanitation Promotion	Hygiene Promotion	Supply Chains
West Bengal TSC	Local govt.	Partner NGO*	Partner NGO*	Partner NGO
Ahmednagar TSC	Local govt. Contract NGO	Contract NGO	Contract NGO	NGO/govt.
Rajarhat	Local govt.	Local govt.	Local govt.	Local govt.
Andhra Pradesh TSC	Govt.	Government	Govt.	Govt.

* NGO 'motivator' working on commission

The use of local NGOs for social intermediation has several advantages: it bridges the gap between rural communities and distant or powerful program staff; and it provides large sanitation programs with important local knowledge and credibility.

- Institutionalizing monitoring, support, and supply chain mechanisms.

In each of the seven case studies using a total sanitation approach, these elements have been implemented in a different manner, using different institutional and financing models. As a result, despite being based on similar concepts, the case study programs vary widely and have very different outcomes.

4.1.3 Social intermediation

The relationship between sanitation promoters and rural households or communities is a key aspect of sanitation programs. In six of the cases studied, the social intermediation role is performed largely by local NGOs with experience in community development. The use of local NGOs for social intermediation has several advantages: it bridges the gap between rural communities and distant or powerful program staff; and it provides large sanitation programs with important local knowledge and credibility. LPP and Gramalaya are local NGOs that employ local staff, thus conduct their own social intermediation activities within their relatively small programs. In three of the other cases (West Bengal TSC, NGO Forum, and Plan Bangladesh), long-term partnerships have been formed with local NGOs, who are then trained and supported to undertake social intermediation activities. In the Ahmednagar case, the district government has signed short-term contracts with 20 local NGOs, and these contracts are regularly reviewed and renewed (or cancelled), based on pre-agreed performance indicators. Only two of the eight cases (Andhra Pradesh and Rajarhat) do not use NGOs for social intermediation. All activities in the Rajarhat program, including social intermediation, are carried out by local government officers. In Andhra Pradesh, the state engineering department has resisted the involvement of NGOs in the Total Sanitation Campaign, preferring to employ private individuals, known as resource officers, to undertake sanitation promotion. These resource officers are answerable to local government engineers, and generally have little training or experience in community development or the use of participatory approaches.

4.1.4 Sanitation promotion

Each of the case study programs involves at least one of the following sanitation promoting activities:

- Mass media sanitation promotion (for example, regional campaigns conducted through newspaper and radio advertisements, wall paintings, printed leaflets, sanitation conventions);
- Participatory sanitation promotion activities (for example, community activities such as social mapping, defecation and contamination mapping, transect walks, group discussions[4]);

Agencies Used in NGO Cases

Case	Community Development	Sanitation Promotion	Hygiene Promotion	Supply Chains
Plan Bangladesh	Partner NGO	Partner NGO	Partner NGO	NGO/private
Gramalaya in Trichy	NGO	NGO	NGO	NGO/private
NGO Forum in Bangladesh	Partner NGO	Partner NGO	Partner NGO	Partner NGO
LPP in Pakistan	NGO	NGO	NGO	NGO/private

[4] For more details of typical participatory activities, see Annex 1 'Community-led Total Sanitation'.

Sanitation Promotion in Public Cases

Case	Mass Media	Participatory Activities	Institutional Incentives	Targeted Messages
West Bengal TSC	Yes	–	Yes	Yes
Ahmednagar TSC	Yes	Yes	Yes	–
Rajarhat	–	–	Yes	–
Andhra Pradesh TSC	Yes	–	Yes	–

- Institutional incentives (for example, financial awards for stopping open defecation; bans on open defecation; social marketing of low-cost sanitation components); and
- Targeted hygiene messages (for example, household delivery of locally appropriate messages on basic hygiene practices such as handwashing, food and water hygiene).

Broadly speaking, the government-funded sanitation programs (that is, the four cases involving the Government of India's Total Sanitation Campaign) are the only programs with the resources to carry out mass media sanitation campaigns.

The government programs also use institutional incentives, such as bans on open defecation, with local government enforcement. In contrast, the smaller NGO programs tend to favor participatory processes and targeted hygiene promotion.

Given the difficulties in assessing the impact of software activities, the rapid appraisals conducted for this study did not include a detailed examination of individual sanitation and hygiene promotion activities. Therefore, more lengthy and rigorous hygiene-specific research is required to determine the effectiveness and efficiency of these different approaches to sanitation and hygiene promotion.

4.1.5 Sanitation technology

For rural households, the policies that affect them most are often those relating to the cost and model of the technology promoted by the sanitation program. Most of the programs studied claim to offer several different sanitation technologies, with the exception of the LPP case (only settled sewerage) and the West Bengal TSC (standard low-cost toilet).

Both the Andhra Pradesh TSC and the Gramalaya program in Trichy promote expensive sanitation facilities with separate cubicles provided for the toilet and bathroom. The other cases promote single-cubicle toilets, allowing the users to decide whether to use this facility for bathing, or whether to construct their own bathing facility.

Demand for bathing facilities was evident in the Andhra Pradesh TSC program. Many of the toilet pans in single-cubicle toilets had been blocked or covered so that the toilet enclosure could be more easily used as a bathroom and laundry facility.

In most cases, the sanitation technologies were well constructed and working as intended, but technical problems were observed in the Rajarhat (see Annex 2) and Andhra Pradesh TSC (see Annex 3) cases, and there were questions over the sustainability of the LPP sewerage systems (see Annex 4).

In Andhra Pradesh, many of the toilets have been built with overflow pipes that discharge pathogenic effluent into the area surrounding the home, or with open vent pipes that could create fecal contamination routes. In Rajarhat, the problems relate to the durability of the toilet components, many of which appear to be broken,

The NGO programs focus on their ongoing projects, with little post-construction monitoring of communities in which sanitation projects have been completed, and little capacity to monitor sanitation coverage or public health impact outside their project areas.

Sanitation Promotion in NGO Cases

Case	Mass Media	Participatory Activities	Institutional Incentives	Targeted Messages
Plan Bangladesh	–	Yes	–	Yes
Gramalaya TSC	Yes	Yes	–	Yes
NGO Forum	–	Yes	–	Yes
LPP	–	Yes	Yes	–

damaged or abandoned after only short periods of usage. The LPP sewerage systems are well-designed and constructed, but there has been inadequate provision for the regular maintenance tasks and long-term repairs required by this type of scheme.

4.1.6 Supply chains

Three types of supply chains were observed:

- Rural Sanitary Marts (RSMs);
- Community projects; and
- Local markets.

The RSM model is used in the West Bengal TSC and in Rajarhat. It involves the establishment of a network of local production centers that manufacture and supply standard sanitary wares (toilet platforms, toilet pans, pipework, concrete rings, cover slabs for leach pits), according to program specifications. Prices are usually fixed across the sanitation program, independent of local costs or conditions.

In both the NGO Forum and LPP cases, sanitary wares are manufactured and supplied by temporary production centers established within the communities. These 'community projects' focus on meeting the short-term demand generated by intensive sanitation promotion, and are normally shut down once universal sanitation coverage is reached. Community projects aim to produce sanitation wares more cheaply than local markets, using NGO finance and assistance to buy materials in bulk and reduce transport costs. The remaining four cases (Andhra Pradesh, Ahmednagar, Gramalaya in Trichy, and Plan in Bangladesh) depend on local markets to supply the necessary sanitary wares (or the raw materials for construction of home-made toilets). In some of these cases, the sanitation programs have encouraged local suppliers to manufacture (or source) suitable sanitary wares, and have assisted rural households and communities in obtaining these wares. But the private suppliers are very different from the RSMs and community projects: most of them are not dependent on sanitation programs for business (as they sell a range of other products); they compete against other local

A Bathroom or a Toilet?

The provision of bathing facilities is an important policy issue. Most rural women would appreciate a private bathing facility close to their home, as there are otherwise few suitable spots where they can wash properly. Some sanitation specialists argue that a combined toilet and bathroom facility has more utility to rural households than a simple toilet, thus is more likely to be well used and maintained.

However, the additional utility must be balanced against the additional cost, particularly if a second cubicle is added to the design, as this policy decision will affect affordability by the poor, and may limit the number of people that the sanitation program can serve.

suppliers for the sanitation trade; and they price their sanitary wares according to production costs and local conditions.

4.1.7 Program monitoring and coordination

The West Bengal TSC is the only sanitation program with a dedicated unit that monitors and coordinates macro-level progress in the sanitation sub-sector. The sanitation cell of the West Bengal State Institute of Panchayats and Rural Development (SIPRD) is responsible for monitoring sanitation coverage, conducting reviews and evaluations, identifying gaps and weaknesses in the program, and providing support and training to the district TSC projects.

The TSC programs in Maharashtra, Andhra Pradesh, and Tamil Nadu are monitored by the respective State Governments, usually through combined water and sanitation units within the State departments responsible for rural development. This institutional arrangement ensures that sanitation programs are well-coordinated and integrated with other rural development programs, but tends to reduce the time and attention paid to the sanitation sub-sector.

The NGO programs focus on their ongoing projects, with little post-construction monitoring of communities in which sanitation projects have been completed, and little capacity to monitor sanitation coverage or public health impact outside their project areas. The NGOs in Bangladesh (NGO Forum and Plan) are making greater efforts to coordinate their efforts with local government, but their sanitation programs and monitoring mechanisms remain independent of wider data collection processes.

4.2 Case study outcomes

Program outcomes are difficult to determine accurately on the basis of a handful of rapid appraisals. Assessing the cause of program outcomes is harder still, and usually requires rigorous research over a long period.

Therefore, the discussions below highlight the common findings and issues emerging from the fieldwork conducted to date, but are not intended as a definitive assessment of case study outcomes.

Key program outcomes examined by the study include:

- Technology choice;
- Toilet access and usage;
- Open defecation;
- Hygiene behavior; and
- Program costs.

4.2.1 Technology choice

Most of the case study programs claim to promote a range of sanitation technologies, but there was very little evidence of this choice in the villages visited. Only two of the sanitation programs revealed any real technology choice:

- Gramalaya (US$ 13 low-cost toilet and US$ 32 two-cubicle toilet and bathroom model); and
- Plan Bangladesh (range of very low-cost home-made toilets).

Despite the variable willingness and ability to pay found in most rural communities, only one sanitation technology was found in the following cases:

- LPP (connection to settled sewerage system);
- Ahmednagar (toilet with ceramic pour flush pan);
- West Bengal (RSM-manufactured toilet platform with cement mosaic pan);
- Rajarhat (RSM-manufactured toilet platform with cement pan and concrete ring);
- NGO Forum (toilet platform with plastic pan and concrete ring); and
- Andhra Pradesh (two-cubicle toilet and bathroom model).

None of the case study programs offer low water use sanitation technologies for use in drought-prone areas, or low-cost toilets for use in areas with high water tables.

4.2.2 Toilet access and usage

Conventional sanitation programs tend to focus on the construction of sanitation facilities, and are often deemed successful simply because they reach their coverage targets.

However, it is far more important to examine whether these facilities are actually in use, as a significant number

Another interesting indicator of performance is access to sanitation among poor households. Only two of the programs (West Bengal TSC and Ahmednagar TSC) had high sanitation coverage among poor households.

Outcomes in Public Cases

Case	Technology Choice	Toilet Usage	Hygiene Behavior	Program Costs
West Bengal TSC	Poor	**Good**	Average	Average
Ahmednagar TSC	Average	**Good**	Average	Average
Rajarhat	Poor	Poor	Poor	**Low**
Andhra Pradesh TSC	Poor	Poor	Poor	High

Outcomes in NGO Cases

Case	Technology Choice	Toilet Usage	Hygiene Behavior	Program Costs
Plan Bangladesh	**Good**	**Good**	Average	**Low**
Gramalaya	Average	**Good**	**Good**	High
NGO Forum	Poor	Average	Average	Average
LPP	Poor	Poor	Poor	High

of toilets are either never used or are abandoned some time after completion.

Access to sanitation was high in all of the case study programs using a 'total sanitation approach'. The exception was the LPP program, which focused on building sewerage systems with little emphasis on toilet access or usage. It thus had much lower total sanitation coverage.

Another interesting indicator of performance is access to sanitation among poor households. Only two of the programs (West Bengal TSC and Ahmednagar TSC) had high sanitation coverage among poor households. Both are government programs, and both involved some form of local government enforcement of the ban on open defecation, and some local government assistance in financing toilets for very poor households. This illustrates a fundamental difference between the programs implemented by local government and those implemented by NGOs. While the better performing programs all have high sanitation coverage and toilet usage, even the more effective NGO programs struggled to persuade the poorest households in each community to build and use toilets.

This reflects the NGOs' reliance on successful collective action, and their inability and reluctance to sanction households unwilling to invest in a toilet or change their hygiene behavior.

The longest-running sanitation program studied, the West Bengal TSC, was the only case in which reliable evidence of full leach pits was found. In the West Bengal communities, most of the toilets were in regular use, and about half the toilet users stated that their original leach pits had filled and that toilets had been relocated above new pits.

Toilet usage was observed to be high (>70 percent) in three of the Indian cases (Ahmednagar TSC, West Bengal TSC, and Gramalaya TSC) and in the Plan Bangladesh case, but was average (30-70 percent) or low in the four other cases (Andhra Pradesh TSC, Rajarhat, NGO Forum, and the LPP) with clear evidence of disuse (blocked toilets, broken toilets, and goods stored in toilets) common in both the Andhra Pradesh TSC and Rajarhat cases.

4.2.3 Open defecation

The seven case study programs using the total sanitation approach (that is, all except the LPP) state that stopping open defecation is one of their primary objectives. The prevalence of open defecation is, therefore, an important measure of program outcomes. It indicates the size of the population without access to a toilet, and confirms whether those that have toilets are using them (particularly in cases where 100 percent toilet coverage is claimed).

In general, two different approaches were taken to catalyzing the collective action needed to stop open defecation. The NGO programs used intensive participatory processes to raise awareness of the communal hazards associated with open defecation (see Annex 2), then carried out hygiene promotion activities and assisted communities in the rapid construction of

Access to Sanitation in Public Cases

Case	Access to Sanitation*			
	Total	**Poor Households**	**Toilet Usage**	**Open Defecation**
West Bengal TSC	**High**	**High**	**High**	Average
Ahmednagar TSC	**High**	**High**	**High**	Average
Rajarhat	**High**	Low	Average	Widespread
Andhra Pradesh TSC	**High**	Low	Low	Widespread

* In villages visited

Access to Sanitation in NGO Cases

Case	Access to Sanitation*			
	Total	**Poor Households**	**Toilet Usage**	**Open Defecation**
Plan Bangladesh	**High**	Average	**High**	Average
Gramalaya	**High**	Average	**High**	Average
NGO Forum	**High**	Average	Average	Widespread
LPP	Average	Low	Average	Widespread

* In villages visited

The case study findings suggest that NGOs have reasonable results among those that decide to build toilets, but that they struggle to reach other sections of the community.

low-cost and home-made toilets. In contrast, the government programs relied more on financial incentives (hardware subsidies, payments on stopping open defecation) and sanctions (government-enforced bans on open defecation; denial of welfare benefits to those without toilets).

No detailed surveys were conducted for this study, but a series of transect walks and household visits revealed visible evidence of continuing open defecation in four of the cases: Andhra Pradesh TSC, Rajarhat, NGO Forum, and the LPP. There was little evidence of regular or systematic monitoring of open defecation in any of the case study programs, despite some claims that defecation sites were visited to monitor and police the practice.

However, some of the more successful case study programs employed other innovative approaches to stopping open defecation:

Toilet Usage

One of the best indicators of regular toilet usage is a full leach pit, or (in single-pit systems) a toilet that has been relocated above a new leach pit. Unfortunately, this indicator is less useful in sanitation programs that have been operating for less than a year, as the leach pits are unlikely to be full even if the toilets have been in regular use.

But questioning whether leach pits are full is a useful exercise in itself, as it draws the attention of both program staff and toilet users to the need to implement reliable and hygienic procedures for detecting full pits, for bringing into service unused pits, and for emptying or replacing single leach pits.

In the absence of full leach pits, toilet usage can be assessed by observation: Is the toilet wet from recent usage? Is the toilet clean? Is water available for anal cleansing and toilet flushing? Is there evidence of disuse (such as dust accumulation, blockages, toilets in need of repair, or goods stored in the toilet enclosure)? Are handwashing facilities available?

- Signs prohibiting open defecation (West Bengal TSC, NGO Forum, Plan Bangladesh);
- Fines for people caught defecating in the open (Ahmednagar TSC, West Bengal TSC);
- Rewards for reporting people defecating in the open (Ahmednagar TSC); and
- Removal of bushes (defecation sites) in the vicinity of the village (Ahmednagar TSC).

4.2.4 Hygiene behavior

Improvements in hygiene behavior were examined by checking the availability of handwashing facilities (soap or ash, water container) in the vicinity of toilets, by examining the cleanliness of the household and its surroundings, and by discussing the benefits of toilet use and improved sanitation with individual households and with community leaders.

Gramalaya, an NGO that gives special emphasis to hygiene promotion, made the largest impact on hygiene behavior. Handwashing facilities were available in almost every toilet, and knowledge of sanitation issues was widespread in its project communities.

Improved hygiene behavior was also apparent in both the NGO Forum and Plan Bangladesh programs, but these improvements were less widespread and less sustained than in the Gramalaya case. All three of these NGOs (Gramalaya, NGO Forum, and Plan Bangladesh) focus on hygiene promotion.

The case study findings suggest that they have reasonable results among those that decide to build toilets, but that they struggle to reach other sections of the community. It seems that these NGOs lack the mandate or authority to persuade reluctant or resistant households to install toilets or to improve their hygiene behavior.

In some cases, these problems reflect political and social divisions within communities, with several instances where households refused to follow advice or adopt practices recommended by community hygiene promoters from another political or social group.

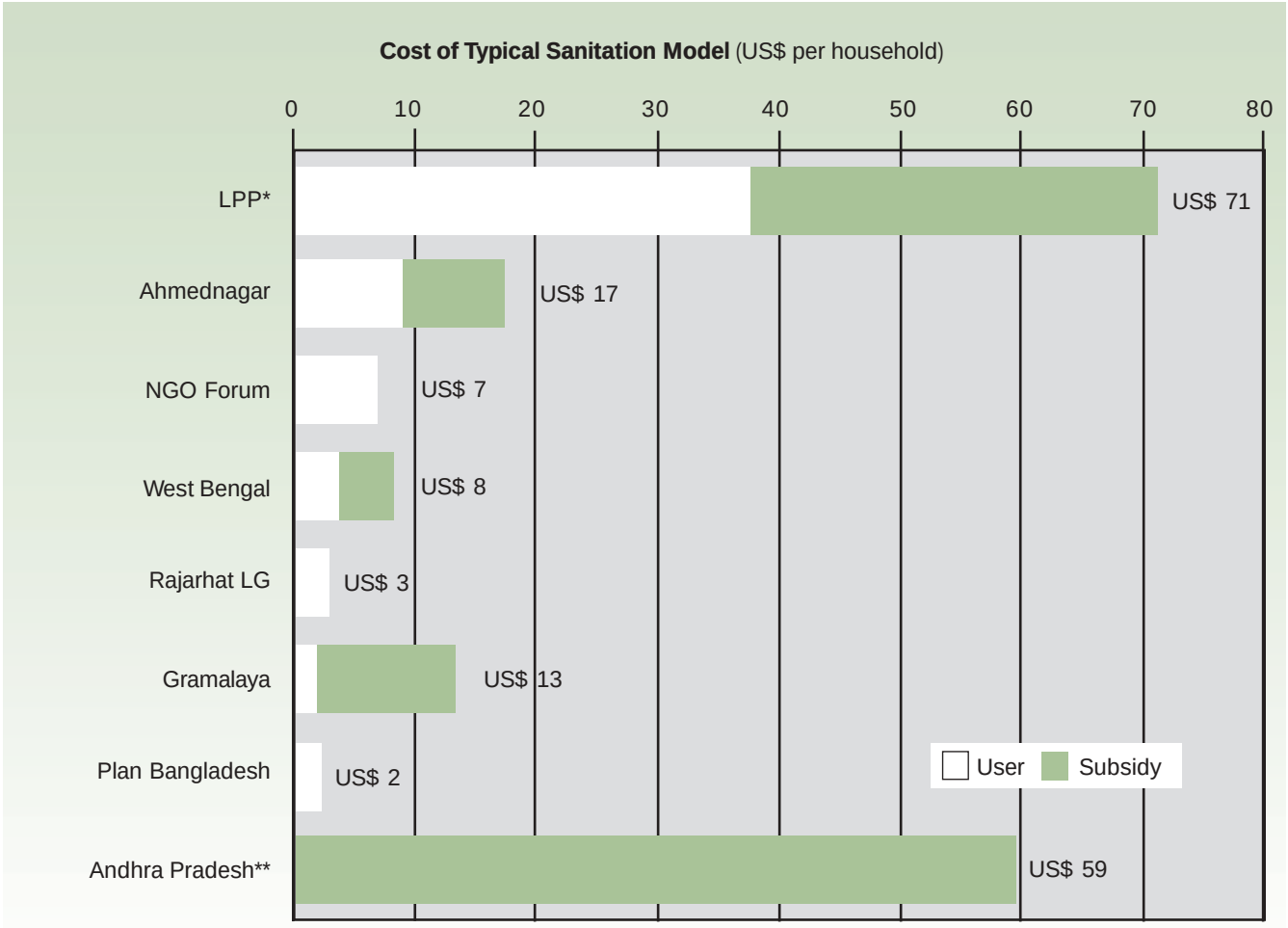
Hygiene behavior was above average in both the Ahmednagar TSC and West Bengal TSC cases,

although there was little evidence of effective hygiene-specific interventions.

In Ahmednagar, the Sant Gadge Baba Campaign (see Annex 3: Case Study 5) has greatly increased people's awareness of wider sanitation issues, and the TSC has focused on stopping open defecation, but neither of these campaigns has had much impact on handwashing or on general hygiene. In West Bengal, local government bodies have invested in hygiene promotion activities and the government's partner NGOs have developed locally appropriate hygiene promotion materials. Despite these efforts, hygiene behavior was found to be very variable between communities.

This may relate to the mode of social intermediation, which is conducted largely by village-level motivators who receive a commission from the partner NGO for each toilet sold.

In some areas, these motivators carry out their hygiene promotion duties well, but in others the commission



* LPP user contribution includes cost of internal sewer and house connection

** Effective cost (based on estimated value of rice and cash subsidy)

Expenditures on software activities and program management have a significant influence on performance, replicability, and potential for scaling-up.

system appears to encourage them to sell toilet components rather than focus on improving hygiene and public health.

4.2.5 Technology costs

The cost of the sanitation technologies, and the extent to which construction is subsidized, varies hugely. The chart below compares the relative cost of the typical sanitation model in each case, sorted according to the amount paid by the user. Interestingly, the hardware cost of the rural sewerage schemes implemented by the LPP (US$ 71 per household connection) is only 20 percent higher than the cost of the toilet and bathroom facilities built under the Andhra Pradesh TSC (US$ 59 per toilet).

Moreover, the LPP sewerage schemes manage to leverage user contributions equal to about 50 percent of the development costs, thus reducing the hardware subsidy to US$ 34 per household. In contrast, the Andhra Pradesh TSC provides its users with 100 percent hardware subsidy.The three Bangladesh cases (Rajarhat, NGO Forum, and Plan Bangladesh) offer no hardware subsidy and promote low-cost toilets, whereas the Indian programs promote more expensive toilets with subsidies of 50 percent or higher:

- Average toilet cost in Indian cases (excluding AP) = US$ 12.80 (68 percent subsidy); and
- Average toilet cost in Bangladesh cases = US$ 4.00 (0 percent subsidy).

The four Indian cases are part of the Total Sanitation Campaign, thus should offer a standard US$ 11 toilet subsidy to below poverty line (BPL) households. However, in three of these cases the hardware subsidy has been altered by local policy:

- US$ 59 hardware subsidy provided in Andhra Pradesh TSC (additional resources from food-for-work program or from State Government funds);
- US$ 8 hardware subsidy provided in Ahmednagar TSC (US$ 3 State contribution spent on other program costs); and

Estimated Program Costs in Public Cases

Case	Program Costs (US$ per household)[5]				Software Share	Program Subsidy
	Software[6]	Hardware[7]	User	Total		
West Bengal	US$ 17[8]	US$ 4	US$ 4	**US$ 25**	68%	84%
Ahmednagar	US$ 25	US$ 11	US$ 9	**US$ 45**	56%	80%
Rajarhat	US$ 2	US$ 0	US$ 3	**US$ 5**	40%	40%
Andhra Pradesh	US$ 13	US$ 59[9]	US$ 0	**US$ 73**	19%	100%

User = User contributions to hardware costs Software share = Percentage of total costs spent on software and overheads

[5] Software costs in TSC programs based on TSC financial progress reports, thus do not reflect the way in which the States have decided to spend their budgets (for example, intensive one-year IEC campaign in Andhra Pradesh).

[6] Software costs include estimated program overheads and small allowances for external agency support.

[7] Hardware costs based on lowest cost sanitation facilities offered to below poverty line households.

[8] Additional State Government funds and support were provided in East and West Medinipur districts.

[9] US$ 48 of the hardware subsidy in AP is the value of the food-for-work rice provided.

- US$ 4 hardware subsidy provided in West Bengal (US$ 7 balance spent on other program costs).

Subsidy policy is more complex in the Ahmednagar TSC, where conditional financial incentives are used instead of upfront hardware subsidies. Households do not receive a payment until after construction of their toilet and, even then, payment is delayed until the entire community has access to a sanitary toilet and the village is declared 'open defecation free'. Further, the TSC subsidy is shared between the BPL household and the lowest level of local government (Gram Panchayat), with 75 percent (US$ 8) going to the household, and the remaining 25 percent providing an incentive for the local government to assist in reaching universal toilet coverage.

Similar financial incentives are now being offered to the different tiers of local government under the TSC's Nirmal Gram Puraskar scheme (see Annex 3). However, no awards had been made at the time that the case studies were carried out, thus it is unlikely that this policy has had any substantial impact on program outcomes.

4.2.6 Program costs

Expenditures on software activities and program management have a significant influence on performance, replicability, and potential for scaling-up. Unfortunately, information on total program costs proved difficult to obtain during the rapid appraisals. Hardware subsidies and expenditures are well-known and easy to check, but few of the sanitation programs compile reliable information about their spending on software activities (community development, training, IEC, sanitation and hygiene promotion) or on program overheads (management, monitoring, reporting, logistics).

The tables give an indication of relative program costs based on the limited financial data available at the time of the study or, where reliable data were unavailable, on estimates based on the information collected during the rapid case study appraisals.

Given the paucity of the data on software and overhead costs, it is likely that non-hardware costs have been underestimated in most cases (particularly in the smaller NGO cases). Despite this, total hardware costs (hardware subsidy plus user contribution) are estimated to be lower than total software costs (software costs plus overheads) in all cases except three (Rajarhat, the LPP, and Andhra Pradesh). Two of these cases (the LPP and Andhra Pradesh) involve expensive sanitation technologies, thus have unusually high hardware costs, while the third (Rajarhat) reports no software expenditures, as all program activities were undertaken by local government officers who were temporarily diverted from their normal duties.

The LPP sanitation program promotes a more expensive technology (simplified sewerage) than the other cases, and operates on a very small scale (only 12 communities), thus has the highest average program costs. However, severe drainage problems in the program area help the LPP to leverage unusually high user contributions (US$ 37 per household), which significantly reduces the share of program costs subsidized by the LPP.

After the LPP, the next most expensive sanitation programs (according to average cost per household) are the four TSC programs from India. This reflects the amount of money being invested in rural sanitation by the Government of India. However, the broad range of average program costs (US$ 25-73 per household) and software allocations (19-77 percent) illustrate the widely differing interpretations of the central TSC guidelines adopted by State and district authorities across India.

The cost comparison also highlights above-average software expenditures by the Gramalaya TSC program. External donors (notably WaterAid UK) finance more than half of this software expenditure, with the remainder coming from the standard TSC software budget. However, the district TSC budget is managed and allocated by local government, thus much of the government software funding is spent on mass media activities at district level, rather than on community or household-level activities.

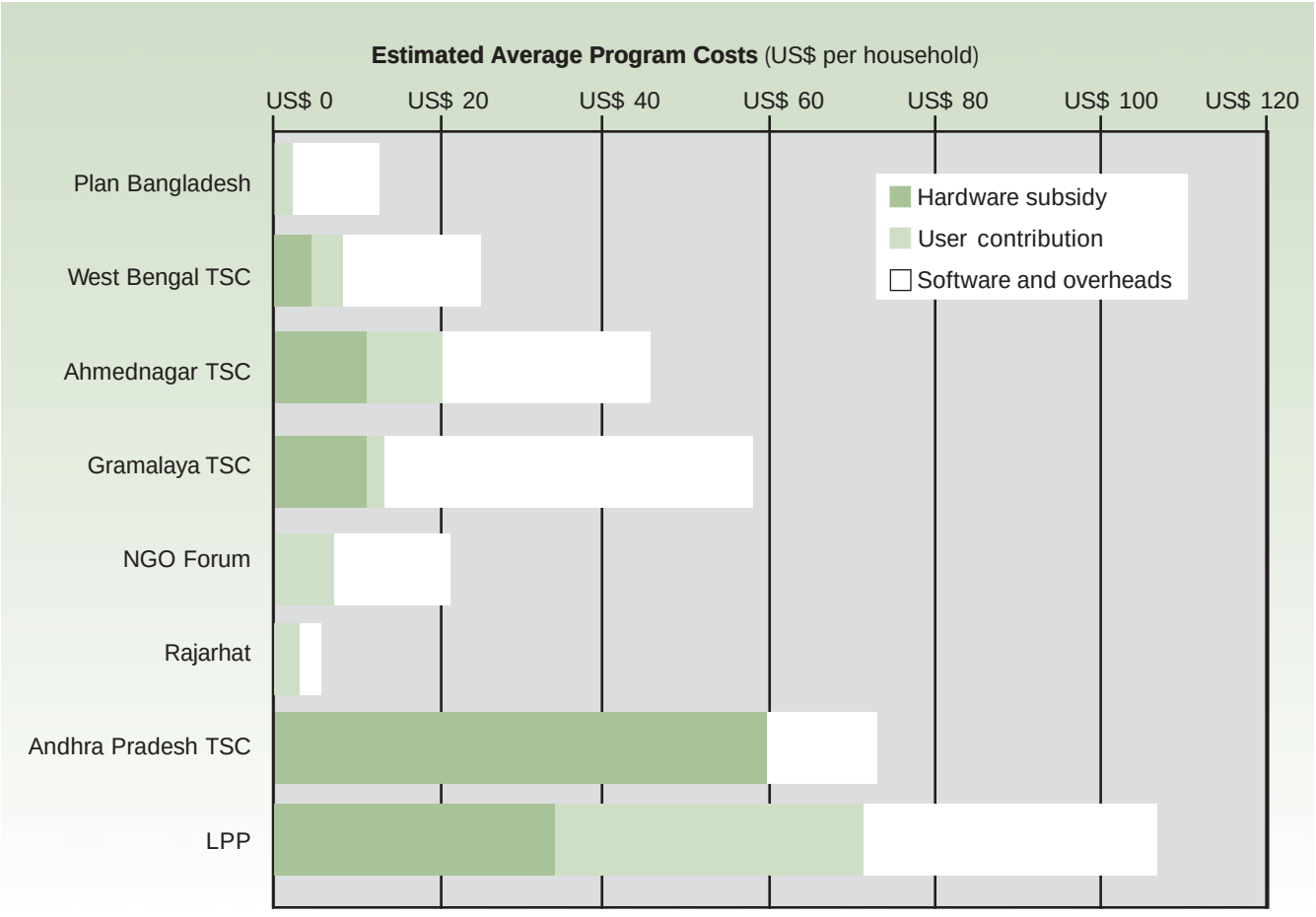
The Rajarhat case is estimated to have the lowest program costs, at around US$ 5 per household. This low cost was made possible by temporarily diverting local government staff from their normal duties during the intensive sanitation program, which makes this approach difficult to

Most of the case study programs receive either technical or financial assistance from external support agencies.

Estimated Program Costs in NGO Cases

Case	Program Costs (US$ per household)				Software Share	Program Subsidy
	Software	Hardware	User	Total		
Plan Bangladesh	US$ 10	US$ 0	US$ 2	**US$ 12**	83%	83%
Gramalaya	US$ 45	US$ 11	US$ 2	**US$ 57**	77%	96%
NGO Forum	US$ 14	US$ 0	US$ 7	**US$ 21**	67%	67%
LPP	US$ 35	US$ 34	US$ 37	**US$ 106**	33%	65%

User = User contributions to hardware costs Software share = Percentage of total costs spent on software and overheads



Note: Case studies are sorted by performance (see Section 5.1: Overall performance)

External Support in Public Cases

Case	Technical Support	Donor Finance	Type of Support Provided
West Bengal TSC	UNICEF	<5%	RSM concept; funding of SIPRD
Ahmednagar TSC	WSP	<10%	Policy; training; exposure visits
Rajarhat	UNICEF	<5%	RSM funding
Andhra Pradesh TSC	–	–	

External Support in NGO Cases

Case	Technical Support	Donor Finance	Type of Support Provided
Plan Bangladesh	WSP	>80%	Program design; training; finance
Gramalaya	WaterAid UK	>30%	Training; policy; finance
NGO Forum	–	>60%	Finance
LPP	NRSP	>60%	Training; management; finance

replicate at scale, and difficult to sustain over a longer period. The only direct expenditures reported in the Rajarhat case were for the establishment of rural sanitary marts using funds and support provided by UNICEF.

4.2.7 External support

Most of the case study programs receive either technical or financial assistance from external support agencies. In the public cases, this support is relatively minor, involving technical assistance such as training, policy support, and indirect financial assistance, for example, UNICEF's funding of State-level sanitation coordination bodies in India. In the NGO cases, external support agencies play a more significant role, providing substantial technical assistance in important areas such as program and policy design, and financing the majority of NGO program costs.

The challenge of stopping open defecation on a community-by-community basis focused attention on the provision of sanitation services to the poorest and most disinterested households.

5 Analysis

5.1 Overall performance

One of the main objectives of this regional rural sanitation study was to assess 'what works and what doesn't'. This section attempts to draw out common factors of success, and common constraints, from the preceding case study findings.

Before doing this, it is necessary to state how this study defines success, as it is a very subjective term. For the purposes of this study, a successful sanitation program is defined as one that:

- Improves the sanitary conditions of the poor (majority of poor households);
- Makes a sustained change in community behavior (majority of households);
- Has positive impacts on public health, well-being and local environments;
- Is as cost-effective and self-financing as possible;
- Develops local markets for appropriate and affordable sanitation facilities;
- Creates sustainable support mechanisms for rural sanitation services; and
- Operates at scale (or is replicable at scale).

Given this definition, and the available information, the following performance indicators have been used to rate the relative success of the case studies:

1. Prevalence of open defecation (widespread – average – none)
2. Hygiene behavior (poor – average – good)
3. Access to sanitation by the poor (low – average – high)
4. Environmental sanitation improvements (none – average – high)
5. Extent of self-financing (0% – 50% – 100%)
6. Program cost per household (high – average – low)
7. Range of toilet components and designs utilized (poor – average – good)
8. Local availability of sanitation wares and services (poor – average – good)
9. Regular support and monitoring (rare – average – frequent)
10. Implementation at scale (small – average – large)

Despite the coarse and subjective scoring system, the overall performance ratings (see chart) give some idea of the relative success of the case studies. None of the case studies score highly in all 10 areas, but four of the case studies (Plan Bangladesh, West Bengal TSC, Ahmednagar TSC, and Gramalaya TSC) are rated as having above average overall performances, and thus are classed as successful.

It is apparent that neither the government nor the NGO case studies have any clear advantage in overall performance, as the top ranked cases include two government models (West Bengal and Ahmednagar) and two NGO models (Plan and Gramalaya).

Similarly, despite the success of the three other Indian TSC case study programs, the Andhra Pradesh TSC fared badly, suggesting that success is dictated by more than country context. And the two highest-spending sanitation programs (the LPP and Andhra Pradesh) were the lowest ranked, demonstrating that the amount spent is less important than the way in which it is spent. All of which confirms the importance of the approach used by the sanitation programs, and justifies more detailed analysis of the underlying factors of success.

5.2 Factors of success

The four most successful sanitation programs use markedly different financial and technical approaches to achieve similar overall performance ratings. However, despite these differences, there are three areas in which the more successful case studies have adopted similar approaches:

- **Focus on stopping open defecation** (rather than building sanitation facilities);
- **Investment in hygiene promotion and social intermediation** (at household level); and
- **Provision of affordable sanitation options to the poor.**

The challenge of stopping open defecation on a community-by-community basis focused attention on the provision of sanitation services to the poorest and most disinterested households, as these are often the ones most reluctant to change their hygiene behavior and stop open defecation. In turn, this new focus highlighted the need to provide carefully targeted household-level sanitation and hygiene promotion, and offer low-cost sanitation technologies appropriate to the needs and

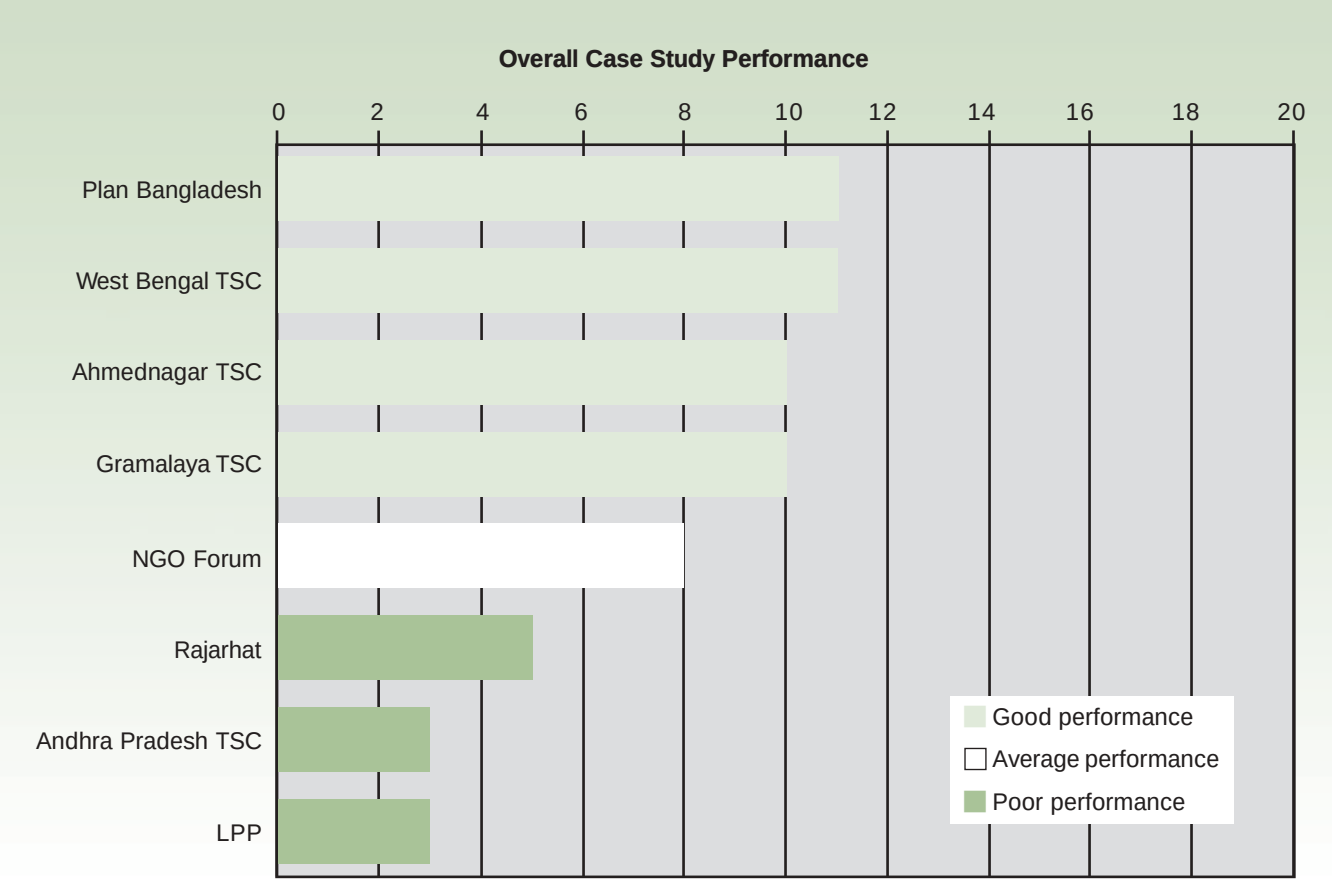
The more successful programs provided high access to sanitation, and ensured high toilet usage, through a combination of participatory processes, hygiene promotion, and institutional incentives.

demands of these poor or reluctant households. The more successful programs provided high access to sanitation, and ensured high toilet usage, through a combination of participatory processes, hygiene promotion, and institutional incentives (financial rewards for achieving universal toilet coverage, community bans on open defecation, fines for open defecation, and so on). In addition, the successful programs promoted low-cost sanitation technologies with zero (or low) hardware subsidies, which freed up a greater proportion of program funds for social intermediation and hygiene promotion activities.

At the other end of the scale, the three cases with the worst performance ratings (the LPP, Andhra Pradesh TSC, and Rajarhat) have each neglected at least one of these three 'factors of success'.

There are other factors that influence their poor performance, notably subsidy policies that favor the non-poor, and standardized technical solutions that fail to allow for variation in user preference and willingness to pay.

But it is apparent that all the unsuccessful programs are supply-driven, concentrating on building standard toilet designs (or sewerage systems) rather than focusing on program outcomes such as stopping open defecation or improving hygiene behavior. The successful case studies suggest a number of lesser ingredients of success.



Note: Performance ratings scored using 10 indicators (maximum score = 20)

Factors of Success

Case Studies	Context	Institutional	Financial	Social	Technical
India	Huge TSC program Incremental policy changes	District govt. projects Use of pilots	Nirmal Gram Puraskar		
West Bengal TSC	Medinipur sanitation program Socialist government High population density	Ram Krishna Mission NGO 322 RSMs and motivators SIPRD (State sanitation unit) Women's self-help groups	UNICEF assistance Low subsidy (US$ 4 cf. normal US$ 11 TSC subsidy) Block and GP incentives	Good IEC and hygiene promotion Ban on open defecation (fines)	Mass production of low-cost platform (US$ 8)
Ahmednagar TSC	Rich State Sant Gadge Baba Campaign Previous failed sanitation program	Pilot program in two districts Driven by local govt. Model village in each block Donor support Exposure visits	GP and community incentives (on reaching 100 percent coverage) GP providing free toilets to some households	Local NGOs conducting social intermediation Participatory ignition Ban on open defecation (fines)	
Andhra Pradesh TSC	Progressive govt. outlook Investment in infrastructure	GP sanctions toilets Good monitoring of financial and physical progress	Food for Work Program		
Gramalaya TSC	Long-term support from WaterAid TSC has different approach in each district (14 NGOs in Trichy)	Very small-scale program High quality of NGO staff Regular WaterAid monitoring WSP influence to stop open defecation approach Women's self-help groups (federations at block level) State Rural Sanitation Society	90 percent NGO-funding from external donors SHG loan funds	Focus on stopping open defecation Participatory ignition Good hygiene promotion Child-centered approaches	2 toilet models (US$ 13 and US$ 32) Supporting private sanitation marts Emphasis on wider sanitation and environment

All of the unsuccessful programs are supply-driven, concentrating on building standard toilet designs (or sewerage systems) rather than focusing on program outcomes such as stopping open defecation or improving hygiene behavior.

Case Studies	Context	Institutional	Financial	Social	Technical
Bangladesh	High population density SACOSAN 2003	Vibrant NGO sector	20 percent ADP for sanitation		
Rajarhat		Driven by chief administrator Involvement of religious leaders and local leaders	No hardware subsidy Low-cost program UNICEF-funding for RSMs	Savings schemes 99 percent sanitation coverage achieved in sub-district	Low-cost toilets (US$ 3)
NGO Forum	Apex body for 635 NGOs	900 production centers WaterAid/VERC training	Zero hardware subsidy	Introducing participatory ignition	Low-cost toilets with plastic pans (US$ 7)
Plan Bangladesh	In process of scaling-up program to five sub-districts	Small-scale program (focus on small communities) Partners with local NGOs	Zero hardware subsidy	Participatory and child-centered approaches Ban on open defecation	Low-cost toilets (US$ 1) Innovative home-made toilet designs
Pakistan				Importance of privacy for women	
LPP	Support from powerful local champion Densely clustered housing	Support from OPP and NRSP Community contracting Well-trained staff Exposure visits	Component-sharing (50 percent development costs paid by community)		Low cost settled sewerage systems (US$ 71 per household) Well-designed systems

These stem from innovative approaches or policies that appear successful in one (or more) of the case studies, but which have not yet been widely tested or validated.

Institutional factors

- Sanitation and hygiene promotion by local NGOs and self-help groups;
- Monitoring and regulation of open defecation (community inspections, rules, and fines);
- Involvement of local government, local NGOs, civil society organizations and federations of self-help groups in monitoring, facilitation, and evaluation;
- Incremental improvements in program approach and institutional arrangements (use of

Constraints

Case Studies	Context	Institutional	Financial	Social	Technical
India	History of toilet subsidies	Large govt. programs	US$ 11 subsidy to BPL households		Minimum technical standards (pour-flush toilet)
West Bengal TSC	Tribal population Landless	Large-scale (850,000 households) No alternative suppliers Community selection (linked to SGBC)		Coercive approach (fines, ration controls, government patrols)	Cement mortar pans
Ahmednagar TSC	Drought-affected areas	No State sanitation body	Relatively expensive toilet design (US$ 20) Poorest given free toilets		No pit emptying strategy Need designs for water scarce areas
Andhra Pradesh TSC	Populist policies (action plan) Drought-affected districts Focus on rural WS 50 percent scheduled or OB castes	Large scale (1.67 million households) Eng. Dept. implementing Temporary resource officers for social work No monitoring of usage	Expensive toilet design (US$ 59) High State subsidy (rice and cash = US$ 59)	Lack of hygiene promotion	Minimum design = solid walls, offset pits, ceramic pan (US$ 59) Design faults Inadequate training of masons and engineers
Gramalaya TSC	Low rural sanitation coverage (14-17 percent across State)	Shortage of suitable local NGOs Local govt. not involved	High software costs (US$ 17 and per household)	Problems reaching reluctant and resistant households	
Bangladesh	High incidence of poverty Frequent flooding	Govt. policy undermining NGO policy (zero subsidy)	ADP-funding to be used for toilet subsidies	High proportion of landless households	
Rajarhat Local Govt.	55 percent landless households	Lack of community involvement RSMs run by DPHE		Coercive approach Limited hygiene promotion	Standard toilet design RSMs no longer operating Inadequate follow-up
NGO Forum	18 percent rural sanitation coverage	One village per NGO per year Shortage of suitable NGOs Local govt. not involved	Dependent on donor-funding		Standard toilet design Pit emptying problems

The case studies highlight that rural households revert to their old habits very quickly if new toilets become blocked, broken or smelly, and if nobody is on hand to provide timely advice or encouragement.

Case studies	Context	Institutional	Financial	Social	Technical
Plan Bangladesh	18 percent rural sanitation coverage	Limited monitoring	High software costs Dependent on donor-funding	Problems reaching reluctant and resistant households	
Pakistan	Widespread drainage problems in Southern Punjab	Ongoing devolution to TMA (political resistance and low capacity)	Negligible govt. investment	Limited participation by women	No low-cost toilet designs
LPP	Political resistance to NGO schemes	Small-scale program Local govt. cannot fund	Dependent on donor-funding Affordability to poor (household contribution = US$ 38 without toilet cost)	Social exclusion (seasonal workers and tenants) No hygiene promotion	No O&M cost recovery No O&M planning Disposal of untreated effluent and settled sludge

pilots, testing of innovations, and regular capacity building);

- Sub-national sanitation units to monitor, support, and coordinate local programs;
- Exposure visits to successful projects (for resistant communities and local officials);
- Independent sanitation reviews prior to payment of incentives or awards; and
- Public ceremonies to present sanitation subsidies, incentives, and awards.

Social factors

- Child-centerd approaches (children's involvement in monitoring open defecation, promoting hygiene, and encouraging behavior change).

Financial factors

- Financial incentives to stop open defecation (at community and local government level.

Technical factors

- Promotion of a range of technology options (including home-made toilets).

5.3 Constraints

5.3.1 Lack of local monitoring and support

The case studies illustrate the importance of regular monitoring and post-construction support by external agencies. This proved to be inadequate (or absent) in every single case.

Community after community noted that interest and motivation had been high while the NGO or program officers were working in the village, but that toilet usage dropped off once the sanitation project was finished.

Behavior change takes time to set in. The case studies highlight that rural households revert to their old habits very quickly if new toilets become blocked, broken or smelly, and if nobody is on hand to provide timely advice or encouragement.

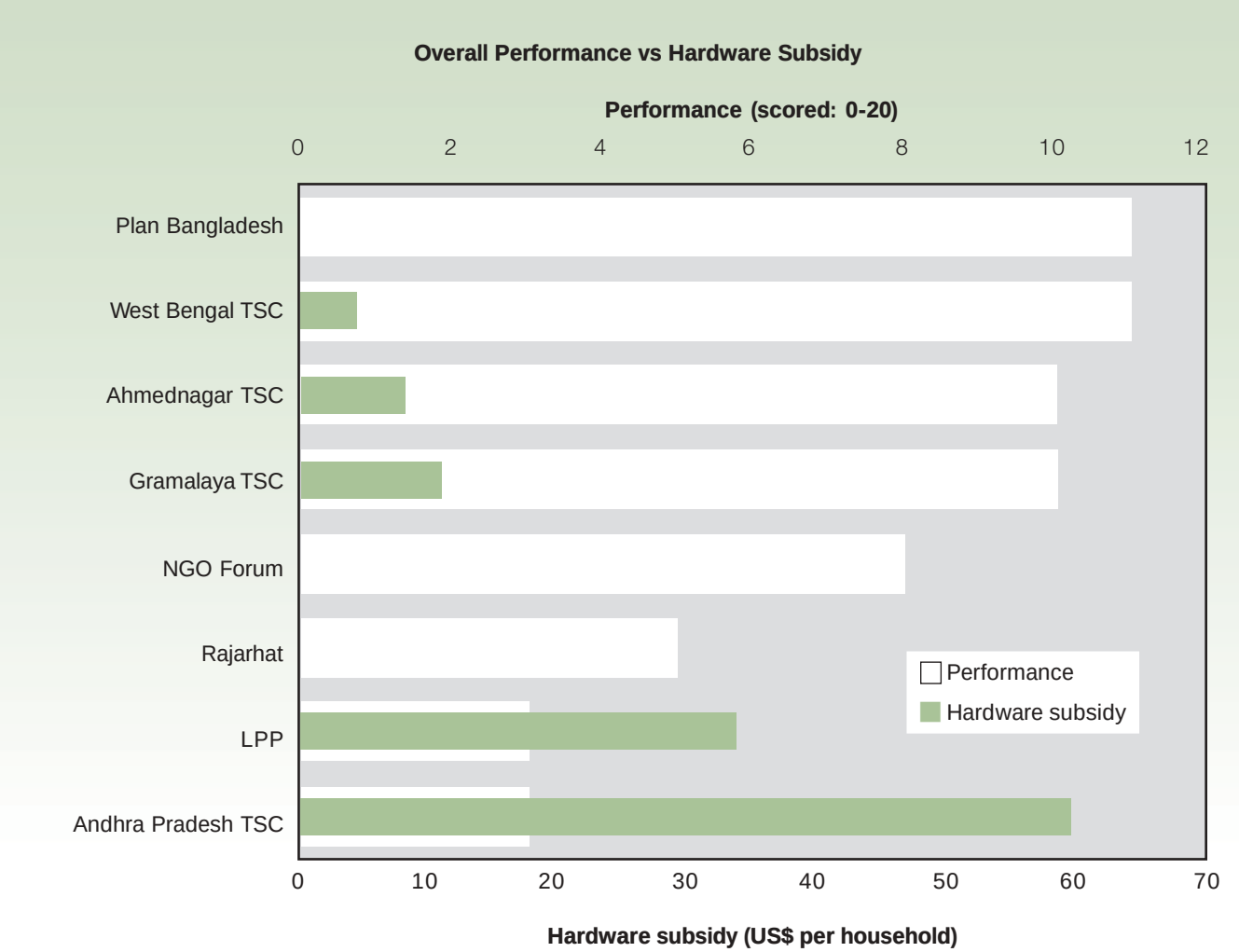
Few of the case study programs have any long-term mechanisms to support communities after the initial phase. As a result, rural households are expected to empty their leach pits, replace their toilets and

police open defecation in their community with little external assistance.

The total sanitation approach used by most case study programs is meant to focus on outcomes rather than inputs, with programs aiming to stop open defecation in each community, rather than build a fixed number of toilets. This approach allows flexibility in the implementation of local projects and recognizes that an abandoned or unused toilet has no impact on hygiene behavior or public health. It should also make sanitation programs easier to monitor, as success is evidenced by a prolonged absence of open defecation, which can be more readily checked (by inspecting common sites of open defecation) than a gradual increase in sanitation coverage across several hundred villages.

In practice, the focus on open defecation proves to be a largely theoretical advantage as none of the case study programs have developed a reliable or sustainable method of monitoring open defecation.

Despite assertions about stopping open defecation, the case study program managers still measure progress by



The case study findings confirm that government officials rarely have the experience, capacity, inclination or patience to undertake the lengthy and participatory processes involved in most rural sanitation programs.

the amount of funds dispersed, the number of toilets constructed, and the number of villages covered.

5.3.2 Unchanged hygiene behavior among men

In many cases, members of rural households that had installed new toilets stated that recent sanitation and hygiene promotion activities had resulted in the women and children improving their hygiene behavior and using toilets, then admitted that male household members continue to defecate in the open despite the presence of a private sanitary toilet close to the home.

Interviews with male members of poor households revealed that they are often away from home for long periods, thus have little choice but to defecate in the fields. It was clear that this habit was hard to break, with many of these men admitting that they did not like to use their household toilets even when at home. Several NGOs noted that working males from poor rural households often feel that sanitation is more important for women and children, and have little time or inclination to attend participatory hygiene promotion sessions.

5.3.3 High hardware subsidies

The case study findings suggest an association between high hardware subsidies and poor performance (see chart), but otherwise fail to show any definitive link between subsidy policy and performance.

There is an ongoing debate among sanitation practitioners as to whether it is more effective to promote low-cost toilets for the poor, or to promote expensive models with both bathroom and toilet (financed by micro-credit loans or subsidies). Those favoring the more expensive models suggest that there is greater demand for a private bathing space than for a toilet, and that rural households are more likely to use and maintain attractive designs than basic low-cost toilets. It is also argued that users upgrade basic models within a very short period, thus showing demand for more expensive designs.

The case study findings contradict these views. The sanitation programs that promoted expensive toilet and bathroom models were less successful than the other cases, despite the provision of generous hardware subsidies. In many villages, fancy new two-cubicle toilets were found empty and abandoned, while home-made toilets with earthen floors were clean swept and well-maintained. This does not suggest that sanitation programs should only promote low-cost toilet designs, or that one approach is inherently better than the other, but it does confirm that the matter is more complex than supposed by some sanitation practitioners, and that local demand needs to be carefully examined.

Six of the case studies provide hardware subsidies of US$ 11 or less (per household), whereas the two worst performing cases (Andhra Pradesh and the LPP) provide hardware subsidies of US$ 59 and US$ 34, respectively. On a large scale, this represents a huge difference in program costs, whatever the software expenditures.

In these two cases, the high hardware subsidies also create other problems: political wrangling by government organizations that want to retain control of lucrative infrastructure projects; interest from local elites that want to capture high profile benefits for their constituencies; and a reduced sense of ownership by those that receive the heavily subsidized facilities. The high hardware subsidies tend to shift the balance of these programs towards serving the non-poor, with few of the poor benefiting from the high hardware subsidies, or stopping open defecation.

Under the Andhra Pradesh TSC, most households have built some form of toilet either to obtain the substantial subsidy offered (US$ 16 cash and 100 kg rice coupons) or because they have been coerced by local government officials. As a result, a large proportion of these new toilets are now either abandoned or being used for other purposes (for example, to house livestock and store household goods).

In the LPP sewerage schemes, rural households are meant to match the high hardware subsidy with their own contributions, and to be heavily involved in scheme planning, design, and implementation. This should result in system users feeling a high level of ownership of their facilities, and ensure community commitment to the sustainability of the schemes. However, the LPP case

study (see Annex 4) reveals that poorer households feel little ownership for their facilities. Many of them were pressured into providing free labor in lieu of cash contributions, and have not built either the connection chambers or the toilets that are needed to take advantage of the expensive new sewerage systems. As a result, the richer residents reap the benefits of the heavily subsidized schemes, while the poorest remain without sanitation.

However, the elimination of hardware subsidies is no guarantee of success. Both the NGO Forum and Rajarhat sanitation programs have 'zero hardware subsidy' policies but their performances were rated as average or below-average. In addition, 'zero subsidy' sanitation programs suffer when subsidy policy is inconsistent across the program area.

In Bangladesh, local government officials are planning to utilize the 20 percent ADP funding allocated to rural sanitation to provide free toilets to the poorest section of the rural population.

Likewise BRAC, one of the largest and most influential NGOs in Bangladesh, proposes to offer large hardware subsidies to those deemed 'hard to reach' (generally the 10-15 percent of the rural population that are slow to adopt sanitation facilities). Clearly, hardware subsidies offered by these programs are likely to have an adverse effect upon any sanitation programs promoting 'zero subsidy' policies.

5.3.4 Provision of free toilets

The financial incentives paid to local government in the Ahmednagar TSC were a factor in its above-average performance, but also created some perverse incentives. Upon achieving universal coverage within their jurisdiction, the TSC project pays Gram Panchayats (GPs) US$ 2.70 per BPL household. This financial incentive is intended to encourage GPs to assist and persuade reluctant households to install and to use toilets.

Unfortunately, some GPs decided to accelerate the process by building free toilets for those that they deemed unable to afford the new facilities. While this approach ensures high sanitation coverage, many of those that received a free toilet had little idea why the toilet had been built, and had little intention of using the facility imposed on them.

Similar problems were observed in both the Andhra Pradesh TSC and NGO Forum programs, where local government or NGO officials had given free toilet components to poor households in the hope of achieving universal coverage, only to find (during the rapid appraisals) that these households had never bothered to install the toilets.

5.3.5 Social intermediation by government bodies

Another problem area is the use of public sector agencies to conduct social intermediation and hygiene promotion activities. Social development in rural areas requires a sensitive and participatory approach, with the effectiveness of social intermediation or hygiene promotion dependent on the quality and application of the facilitators undertaking the community and household-level activities.

The case study findings confirm that government officials rarely have the experience, capacity, inclination or patience to undertake the lengthy and participatory processes involved in most rural sanitation programs.
Local health officials are likely to have more of the requisite skills and application, but there was little evidence of any involvement by health officials in the sanitation programs studied.

The more successful cases utilize NGOs to conduct social intermediation and hygiene promotion activities. But the case studies also suggest that NGO sanitation programs without local government involvement find it difficult to persuade reluctant or resistant households to change their behavior. Local NGOs have often earned the trust and respect of the communities in which they work, but rarely have the mandate or authority to enforce their policies or negotiate with those that oppose NGO approaches or projects.

Three of the TSC government programs either contract or partner with local NGOs in order to carry out community-level activities. This is the strongest institutional

Despite resistance from politicians and line departments that wish to retain control of such infrastructure programs, rural sanitation is increasingly considered the responsibility of local government.

arrangement examined: it allows local government to facilitate the process, to monitor performance and enforce local policy; and it allows government resources to be used to mobilize the social development skills and specialist knowledge held within local NGOs.

Several of the case study programs complained of a shortage of NGOs with the right blend of skills and local experience, and found that their existing NGO partners are often unwilling or unable to expand beyond their local base. Both Gramalaya and NGO Forum actively recruit and train small NGOs thought to have potential, but there is a limit to the number of suitable NGOs and facilitators available within each area. There is also a risk that the financial incentives offered to NGOs by government programs will attract profit-seeking individuals rather than cost-effective organizations committed to local development. Several of the case study programs now pay NGOs (or individual promoters) by commission, with payments linked to the number of households that build toilets.

This approach may help to get toilets built, as in Andhra Pradesh, but these incentives need to be linked to hygiene behavior, toilet usage, and open defecation, if any sustainable public health benefits are to be realized.

5.3.6 Sustainability of rural sanitary marts

Several of the cases (West Bengal TSC, Rajarhat, and NGO Forum) utilize RSMs to supply toilet components to their sanitation programs. These production centers are generally established using program funds, and are dedicated to supplying the particular sanitary wares promoted by the sanitation program. The advantage of the RSM model is that, as in the West Bengal TSC case, it can be used to produce standard components at large scale, thus benefiting from economies of scale and from shared knowledge of cost-efficient production techniques.

However, this form of supply chain appears to be a constraint when the community project is completed, or when universal coverage is achieved in the locality, as the RSM then has little or no demand for its products. These RSMs are generally dependent on monopoly supply of subsidized program technologies, and often struggle when sanitation programs end and they have to operate in a free and competitive market.

Another supply chain constraint is the transportation of heavy components (for example, toilet slabs, ceramic toilet pans) from the supplier to remote rural communities. When distances are large, it is often uneconomic for each household to pay for separate transportation. In the Ahmednagar, Gramalaya, and LPP cases, either the partner NGO or the local government arranged for bulk purchase of components from a local supplier (often on credit) and for mass transportation of these components to the village.

Group purchases result in lower prices, but it is also important that the individual households are given an adequate choice of technologies, and are involved in the process of selecting suppliers and ordering components. All too often, poor households have little idea where their sanitation components originate from, and are unaware whether there is any alternative to the technology promoted by the NGO or community that managed the process. As a result, these households are completely dependent on the NGO or community leaders for any repairs or replacements.

6 Scaling-Up Rural Sanitation

One of the objectives of the regional study on rural sanitation in South Asia was to assess whether the approaches used in the case studies were suitable for scaling-up. In particular, the aim was to examine whether successful approaches and policies utilized by small-scale participatory programs are suitable for use in large-scale sanitation programs.

Little substantive research has been carried out on scaling-up rural sanitation services, so this study has examined the applicability of a rural water supply framework developed in a recent discussion paper titled 'Taking sustainable rural water supply services to scale'.[10] This paper identifies four common constraints to scaling up rural water supply:

- Insufficient resources (funding, human and institutional capital, supply chains);
- Lack of knowledge or shared understanding (principles and roles not fully understood);
- Resistance (key stakeholders unwilling to support program); and
- Untested implementation conditions (different social, technical, policy, user contexts).

These constraints appear sufficiently generic to apply to both rural water supply and rural sanitation services, but there are several important differences between the two sub-sectors, as discussed below. Rural sanitation programs should be easier to scale-up, as the challenge of safe disposal of human excreta from the household remains similar across a region or country, and over time.

There are a few technical variations, such as drought-affected areas (where flush toilets are less popular) or water-logged areas (where leach pits drain less effectively), but nothing like the greater complexity and cost associated with scaling-up rural water supply (due to the ever-increasing difficulty in finding and developing adequate water resources as coverage, population, and water consumption rise).

Differences between rural water supply and rural sanitation are unlikely to change the fundamental constraints to scaling-up listed above, but will alter the relative importance of these constraints. Rural sanitation programs require different resources to RWS programs, with more emphasis on the facilitation of the household-level activities that are so critical to demand generation and sustainability. Similarly, sanitation supply chains need to be responsive to individual household demand rather than aggregate community demand, resulting in higher sales and more regular trade of a range of sanitary wares.

Rural sanitation is also more institutionally complex, often falling between the government departments responsible for water supply, rural development, health, and environment. All too often, sanitation is linked with water supply, but rural sanitation programs do not face the same technical challenges, thus require skills other than engineering expertise found in rural water supply departments.

Despite resistance from politicians and line departments that wish to retain control of such infrastructure programs, rural sanitation is increasingly considered the responsibility of local government. But small local authorities rarely have the capacity or resources to create separate sanitation units or to implement effective sanitation programs. In addition, competition for resources is becoming fierce in increasingly autonomous local governments, and sanitation expenditures usually have less political support than water supply or other local priorities.

6.1 Potential performance at scale

Two of the case study programs are already operating 'at scale': the Andhra Pradesh TSC and the West Bengal TSC are huge sanitation programs covering entire Indian States, each of which holds more than 60 million people. Between them, these two programs provided rural sanitation to more than two million households in 2003-04. The other six case study programs are much smaller in scale, covering from 12-600 rural communities annually. Four of these cases (Ahmednagar TSC, Gramalaya TSC, Plan Bangladesh and the LPP) are in the

[10] Davis & Iyer (2002): Taking sustainable rural water supply services to scale: A discussion paper.

Each of the four NGO programs involved small rural communities with favorable starting conditions, and was reliant on a small cadre of well-trained and well-supported facilitators.

process of scaling-up their programs, but none of them can yet be considered large-scale programs.

6.1.1 Andhra Pradesh TSC at scale

The Andhra Pradesh program has very similar problems to those found in an earlier large-scale sanitation program in Maharashtra (see Case Study 5). A huge amount of resources were invested in the intensive program in Andhra Pradesh, but implementation was too rapid; social intermediation and hygiene promotion were weak; and the program has been too rigid and technical in its approach.

Some US$ 100 million has already been spent; much of it borrowed from the Food-For-Work program (see Case Study 6 in Annex 3), but sanitation coverage in Andhra Pradesh remains below 40 percent. Thousands of new toilets have been constructed, but many are either technically flawed, or no longer in use. The Government of Andhra Pradesh's decision to promote an expensive toilet design (typical cost US$ 61) and to provide a 100 percent hardware subsidy to below poverty line households has rapidly exhausted program funds, with the result that the government has had to borrow additional funds in order to meet its promise to provide sanitation to all BPL households. Those involved in the sanitation program are now aware of its shortcomings, but it will be both difficult and expensive to make the changes and improvements needed to ensure that this huge program generates sustainable benefits to public health.

6.1.2 West Bengal TSC at scale

The West Bengal TSC program is a very different case. It is the product of more than 10 years of continuous program development; it has had significant technical assistance from UNICEF; it is cost-effective; and it is well adapted to local conditions and institutional arrangements. However, despite recent successes in expanding and accelerating the program, the intensive approach is dependent on good local governance, and has not proved successful in districts with weak or disinterested administrations. Furthermore, the RSM approach, which is based around standardized production of a very low-cost toilet platform, has not adapted well to either technical challenges (for example, water-logged areas) or the diverse demands of rural households.

6.1.3 Ahmednagar TSC at scale

The Ahmednagar TSC has perhaps the most replicable and scaleable approach of the six small to medium-scale programs. Its conditional financial incentives have been widely praised and are now incorporated into the national guidelines of the Total Sanitation Campaign, and its institutional model (local government contracting out

Government Case Studies

Case	Institutions		Annual Program Coverage	
	Implementation	Finance	Villages	Household
Andhra Pradesh	District govt.	Govt. (TSC)	(16,700)	1,670,000
West Bengal	District govt.	Govt. (TSC)	(8,500)	850,000
Ahmednagar	District govt.	Govt. (TSC)	300	(30,000)
Rajarhat	Sub-district govt.	Local govt.	(180)	18,000[11]

Estimate based on 100 households per village

[11] Annual coverage of Rajarhat sanitation program (36,000 household toilets were built in two years).

social intermediation to local NGOs) appears the most suitable for large-scale implementation. However, despite external support from the Water and Sanitation Program-South Asia, and vigorous leadership by the Ahmednagar district government, the TSC program is struggling to find reliable local NGOs that are experienced enough to conduct social intermediation and hygiene promotion activities. It has also struggled to overcome the social and technical difficulties associated with promoting pour-flush toilets in drought-prone areas.

6.1.4 Rajarhat program at scale

The Rajarhat case illustrates the potential strength of local government at scale. This program raised sanitation coverage in an entire sub-district (36,000 households) from 16 percent to 99 percent in only two years, with minimal external funding or support. However, this sanitation program was driven by the remarkable enthusiasm, energy, and commitment of the sub-district's chief administrator, and involved the suspension of many local government duties while the program was ongoing, making it difficult to replicate. This case also illustrates the problems associated with non-specialist government officials undertaking social intermediation and sanitation promotion activities in addition to their other roles and responsibilities. The approach was coercive rather than participatory, and hygiene promotion was inadequate. Both toilet usage and hygiene behavior have been in rapid decline since the local authorities finished the sanitation program and, therefore, the sustainability of the sanitation improvements in Rajarhat is questionable, as is the use of this type of model at scale.

Despite good overall performances, the approaches used in the four NGO cases (NGO Forum, Plan Bangladesh, the LPP, and Gramalaya TSC) appear to have less potential at scale.

Each of the four NGO programs involved small rural communities with favorable starting conditions, and was reliant on a small cadre of well-trained and well-supported facilitators. The NGO sanitation programs are also dependent on donor-funding, which makes it more difficult for them to take part in government programs that involve radically different policies or approaches, and raises questions about their sustainability.

The number of communities that an NGO can work in at any time is determined by its program finance. Most adopt a rolling approach, whereby a new block of communities are tackled every year depending on the funds available. But this approach is based around service development, and rarely allows for long-term follow-up and monitoring in the ever-growing number of communities covered by these programs.

6.1.5 Gramalaya program at scale

Gramalaya is the only one of the four NGO cases that is implementing a government sanitation program. Gramalaya made some compromises in order to take part in the TSC in

NGO Case Studies

Case	Institutions		Annual Program Coverage	
	Implementation	Finance	Villages	Household
NGO Forum	National NGO	Donors	600	(60,000)
Plan Bangladesh	International NGO	Donors	100	(10,000)
LPP	Local NGO	Donors	12	(1,200)
Gramalaya	Local NGO	Donors and govt.	30	(3,000)

Estimate based on 100 households per village

Durable sanitation facilities can be expensive, thus most conventional sanitation programs provide hardware subsidies to make their sanitation facilities affordable to the poor.

Tamil Nadu, but the district administration defer to Gramalaya on most implementation issues, secure in the knowledge that the local government program is benefiting from the extensive donor resources that Gramalaya has at its disposal.

However, the Gramalaya case is neither a typical NGO program, nor easily replicable at scale. Gramalaya is a small local NGO, built around a tight-knit group of unusually well-trained and experienced staff. Its successes owe much to good leadership, but even more to the long-term technical and financial assistance provided by WaterAid and several other international donors. Its relatively small program and reliable financial support allow Gramalaya to spend more on software activities than any of the other programs studied, while the quality of its management and staff ensure that this money is spent effectively.

One of the key scale issues is the role of local government in this program. NGOs such as Gramalaya prefer to take the lead implementation role in their block and report directly to the district authorities. This tends to exclude lower-tier local (Block and Gram Panchayat) authorities from the process, and may be at the root of Gramalaya's complaints about the slow provision of TSC subsidies. Gramalaya also lacks the authority necessary to enforce compliance with community rules (for example, bans on open defecation), or the means to encourage and assist reluctant or severely constrained households (landless, tenants, widows, and so on) to take part in any collective action to stop open defecation.

Despite a reluctance to over-stretch itself, Gramalaya is planning to expand its sanitation program by taking on staff from a failed NGO in a nearby district. This expansion will involve starting work in another 100 villages in this new district, and is likely to prove difficult unless Gramalaya can make its approach less dependent on its exceptional staff and high software expenditures.

6.1.6 NGO Forum program at scale

NGO Forum has the largest sanitation program of the four NGO cases, covering more than 600 villages annually through its 635 partner NGOs. But its institutional model is based on each partner NGO working in only one new village per year, making it difficult to expand the program now that it is struggling to find additional partner NGOs.

Theoretically, the NGO Forum program is easier to scale-up than the Gramalaya program, through the addition of more partner NGOs, but there is a loss of quality due to the limited capacity and experience of many of its newer partners. NGO Forum attempts to ensure the quality of its programs through constant capacity building and monitoring, but this appears difficult and costly in such a large network.

NGO Forum manages to reduce its program contributions by encouraging partner NGOs to raise funds locally to pay for their activities. Unfortunately, little data is available on the expenditures made by partner NGOs, making it difficult to ascertain the size and significance of these local contributions.

The NGO Forum program has few links with local government. As in the Gramalaya program, this reduces its ability to use institutional incentives or enforce sanctions, which makes it difficult to persuade reluctant or resistant households and individuals to improve their hygiene behavior and stop open defecation. This disconnect also limits the follow-up and local monitoring carried out by the NGO Forum program.

6.1.7 Plan Bangladesh program at scale

Plan Bangladesh has reduced its average program costs by promoting very low-cost home-made toilets that are entirely self-financed by user households.

Few details were available of Plan's software costs and program overheads, but the approach adopted is intensive and highly participatory, and Plan has a network of well-staffed and well-equipped offices around the country.

As a result, the program costs estimated by this study are likely to be under-estimates, and it is unlikely that this facilitator-dependent approach is either affordable or sustainable at large scale. Despite strengthening links with local government, Plan's sanitation program is entirely dependent on donor-funding, and Plan has been unable to influence local government plans to provide free toilets to

poor and vulnerable households. Plan Bangladesh is in the process of scaling-up its sanitation program with the assistance of the Water and Sanitation Program-South Asia. It is investing US$ 760,000 in a new program that aims to achieve full sanitation coverage in five sub-districts by mid-2007. This increase in scale is already proving challenging, with evidence that key stakeholders in the program area have not reached consensus on policy and practice. NGOs such as Plan can retain their unique approaches while working in small, well-defined geographical areas, but differences in understanding and approach become problematic when these programs are scaled-up.

6.1.8 Lodhran Pilot Project at scale

The LPP is the smallest sanitation program examined and has the highest program costs (per household). The LPP is a technical success, in that it has developed a viable and low-cost approach to the provision of rural sewerage schemes, which encourages user investment and delivers the long-term sanitation solution that most rural communities desire.

However, the benefits of the subsidized LPP sewerage schemes accrue largely to the non-poor, with no alternative or lower cost options offered to the poor. The program pays little attention to stopping open defecation or improving hygiene behavior, and there are questions over the sustainability and environmental impact of these relatively complex schemes. Finally, due to its high costs, the approach appears unlikely to work at scale.

The LPP is an unusual case, in that it has received unprecedented financial support and technical assistance from its powerful local champion, from the sanitation specialists of OPP, from the NRSP, and from other international donors. These powerful connections have also enabled it to bypass political resistance to its schemes. The LPP is planning to scale-up its activities through a large donor grant, but it has been unable to attract any government finance for its approach, which looks difficult and expensive to replicate.

6.2 Constraints to scaling-up rural sanitation

The case study findings highlight a number of common constraints to scaling-up rural sanitation. These are discussed below, under the headings suggested by Davis & Iyer (2002) in their discussion paper on scaling-up rural water supply, as discussed earlier.

6.2.1 Insufficient resources

Durable sanitation facilities can be expensive, thus most conventional sanitation programs provide hardware subsidies to make their sanitation facilities affordable to the poor. But the cost of these hardware subsidies often limits program coverage. As a result, many sanitation practitioners now advocate zero (or low) hardware subsidies, and encourage sanitation programs to promote low-cost technologies and focus on software activities such as social intermediation, capacity building, and hygiene promotion. However, increased attention to the resource requirements of software activities and program management reveals that these previously hidden costs are a serious constraint to scaling-up the provision of rural sanitation services.

The case studies reveal important differences between the smaller scale NGO programs and the larger scale government programs. In general, the NGO sanitation programs involve intensive participatory processes whose success is reliant on highly trained facilitators and carefully targeted activities. This approach is relatively expensive and human resource dependent, thus tends to be more successful in small-scale sanitation programs. In contrast, the government programs tend to spend less on software activities, instead relying on institutional incentives to trigger behavior change. This approach is less costly and more easily replicable, but often lacks the social intermediation element that is so important to effective community development.

6.2.2 Lack of knowledge or shared understanding

The case studies reveal several constraints related to a lack of knowledge or shared understanding. The first is the problem of low awareness of the importance of adequate sanitation to public health.

In the case studies, mass media campaigns and political support played an important role in raising awareness and persuading local governments to invest their time and

Large-scale sanitation programs need to use pilot projects to test new policies and approaches against the full range of local conditions and contexts. At this stage, it is important to think about 'scalability'.

scarce resources in sanitation programs. In India, the TSC program also introduced financial incentives and high profile awards to convince local governments to take an interest in stopping open defecation within their jurisdiction.

Awareness is also important at the household level. However, the case study findings suggest that mass media campaigns are less effective in raising awareness among poor rural households than some alternative methods, such as community-level or house-to-house sanitation and hygiene promotion activities. A key constraint is limited knowledge of the availability and functioning of low-cost sanitation technologies. In many areas, poor households are unaware how to construct affordable low-cost toilets, or where to find sanitation components. In addition, many lose interest in toilet construction or usage after seeing badly designed, improperly installed, or inadequately maintained toilets.

6.2.3 Resistance

Two key areas of resistance were encountered. In all three countries studied (Bangladesh, India, and Pakistan) there was political resistance to lowering (or removing) hardware subsidies, and institutional resistance to the involvement of NGOs in large-scale government sanitation programs.

As discussed earlier, it has been traditional to provide hardware subsidies in rural sanitation programs in South Asia. The Government of India's Central Rural Sanitation Programme (CRSP), the predecessor to the TSC, offered hardware subsidies as high as US$ 54 per household. These rationed subsidies rarely reached the poor, but provided considerable political (and financial) capital to local administrations. Many politicians and administrators in the region remain unconvinced that it is possible to provide adequate sanitation to the poor without large hardware subsidies.

A more difficult problem is resistance to the involvement of NGOs (or private sector organizations) in large-scale government-funded sanitation programs. This resistance usually comes from vested interest groups, such as the line departments that traditionally control implementation of rural sanitation projects, or the politicians that allocate schemes. Efforts to decentralize the provision of sanitation services face similar resistance, but progressive local governments, such as the Ahmednagar District Government, are piloting programs that contract out social intermediation and hygiene promotion activities to NGOs, while retaining management and control of local services.

6.2.4 Untested implementation conditions

Large-scale sanitation programs need to be flexible enough to deliver services appropriate to the different social, technical, policy, and user contexts found in their large and diverse program areas and target populations. Most of the case study sanitation programs have adopted standardized approaches, based around the provision of a single sanitation technology, and sanitation promotion among active, cooperative communities. This approach proves reasonably successful in small programs, where responsive communities can be selected ahead of more difficult cases, but is not effective in large-scale programs aiming to provide universal sanitation coverage.

Challenging Political Resistance

Politicians within the region tend to resist any lowering of hardware subsidies, fearing that any move in this direction will be interpreted as an anti-poor strategy.

The Government of Maharashtra (with assistance from the Water and Sanitation Program-South Asia) tackled this resistance by taking local politicians on exposure visits to successful sanitation programs that use low or no subsidy approaches.

After visiting rural communities that had managed to stop open defecation and had achieved universal sanitation coverage without hardware subsidies, and after reflecting on the failure of their own heavily-subsidized sanitation programs, these politicians returned to Maharashtra determined to adapt the low subsidy approaches to the local context.

For example, none of the case study programs have developed viable solutions to the provision of low-cost sanitation in water-logged or drought-prone areas. This reflects the failure of the case study programs to pilot their approaches in more challenging circumstances, or build in the flexibility and choice needed to respond to non-standard situations.

6.3 Strategies for scaling-up rural sanitation

There is no standard solution for the large-scale provision of rural sanitation services. Nevertheless, there are some useful lessons and insights to be drawn from the study findings and analysis, and these have been used to assemble the following strategies for scaling-up rural sanitation:

Strategy 1: Incremental program development

The case studies highlight the benefits of incremental program development, and of testing policies and institutional arrangements before going to scale. In both the Andhra Pradesh and Rajarhat cases, rapid and intensive sanitation programs raised awareness and achieved impressive increases in coverage levels, but failed to make sustainable changes to hygiene behavior or public health, and realized too late that policies and approaches could have been improved.

Large sanitation programs may succeed in building substantial numbers of toilets, but very few manage to provide well-used and sustainable sanitation services. This confirms how difficult it is to generate genuine demand for sanitation facilities and change long-established patterns of hygiene behavior when faced with the enormous variations in social norms and preferences across communities, districts, and regions.

Large-scale sanitation programs need to use pilot projects to test new policies and approaches against the full range of local conditions and contexts. At this stage, it is important to think about 'scalability'. It has been suggested[12] that the first set of districts or communities selected should be representative of the entire target population with respect to technical challenges, social and cultural preferences, demand for services, and institutional capacity. Program designers often prefer to begin pilot activities in areas in which the likelihood of success is high, but this approach can conceal challenges and result in institutional models and guidelines that are inappropriate when scaled-up to cover a wider area and larger target population.

Local implementation capacity is another important consideration. Large-scale sanitation programs may be beyond the current managerial, technical, and financial capacity of local institutions, and need to be phased in incrementally to match gradual improvements in local experience and capacity. Large-scale sanitation programs should also be flexible enough to learn from experience, to incorporate local materials and technologies, and to encourage innovation, rather than insisting on standardized technologies and one-size-fits-all solutions.

Strategy 2: Partnering between local government and NGOs

The study findings suggest that the institutional model most likely to be effective at scale involves partnering between local governments and local NGOs. Several of the case studies highlight the benefits of local government involvement in large-scale sanitation programs, while the importance of effective social intermediation and hygiene promotion argues for NGO involvement.

The case studies suggest that NGO-only programs find it hard to provide universal sanitation access, particularly among less compliant or active households and communities. Local government programs tend to be more institutionally-based, using financial incentives and government rules to galvanize collective and individual action.

This approach lacks the emphasis on community empowerment and hygiene promotion provided by the NGO-only programs, but appears more effective in reaching the poor and the excluded. Crucially, the institutions involved in the local government approach are also easier to scale-up and to adapt to local conditions.

[12] Davis & Iyer (2002).

Self-help groups provide a potential mechanism for the regular monitoring of environmental and public health in rural communities.

Local governments are also ideally placed to undertake (or facilitate) the long-term monitoring and support of rural sanitation services. Most NGOs do not have the manpower or authority to monitor and enforce bans on open defecation, or ensure safe disposal of sewage sludge and leach pit contents. At present, local government priorities are to increase access to safe sanitation, but their role will become more regulatory and public health focused as sanitation coverage rises and sanitation services become more reliable.

The main weakness of government sanitation programs appears to be in the provision of social intermediation and hygiene promotion. Other institutions are capable of performing these roles, but local NGOs are often among the few locally-embedded institutions with the requisite skills and experience. Where available, committed local NGOs provide a ready source of facilitators and of expertise in community development.

This study suggests that local governments that lack social development capacity are likely to improve the effectiveness and sustainability of their rural sanitation programs by delegating (or contracting out) social intermediation and hygiene promotion activities to partner NGOs, and that this institutional model is also likely to be the most effective at large scale.

Strategy 3: Need for cost-effective implementation
Unlike small well-supported programs, most large-scale programs cannot afford to have high average (per household) costs. In order to make any real impact on national sanitation coverage, the limited funds available to large-scale programs need to be used as efficiently and effectively as possible.

Based on the case study findings, the most cost-effective and successful sanitation programs seem to be those that have reduced hardware subsidies to a minimum (or to zero) and have invested the majority of their funding in social intermediation and hygiene promotion at the household level. Lowering hardware subsidies and promoting low-cost facilities enable sanitation programs to reach more poor households, and allow them to spend more on essential activities such as hygiene promotion. However, software activities need to be carefully planned, monitored, and evaluated. Several of the case study programs reported significant expenditures on IEC and social intermediation, but had little impact on toilet usage or hygiene behavior because the funds were not well used.

A key issue is the level at which software activities are conducted. The less successful programs appear to have spent large amounts at the macro level: on conducting expensive poster and leaflet campaigns; on holding workshops and local rallies; and on advertisements in local media (newspapers, radio). In contrast, the more successful programs invested in activities at the community and household level, focusing on door-to-door campaigns, social marketing of sanitation products, and hygiene promotion among poor and vulnerable groups.

Strategy 4: Formation of community self-help groups
Self-help groups (SHGs) may be an effective way of scaling-up sanitation promotion and provision, particularly when there is a shortage of suitable NGOs in the area. Several of the case study sanitation programs establish a couple of women's self-help groups in each program community. The SHGs normally comprise 10-20 women who are given some basic training and encouraged to undertake activities such as management of rolling loan funds (providing loans to purchase and install toilets) and the formation of small enterprises selling handicrafts. Even the least active SHG provides a forum for the discussion of community development activities, as well as a rich source of committed local sanitation and hygiene promoters.

Self-help groups also provide a potential mechanism for the regular monitoring of environmental and public health in rural communities. SHGs can monitor open defecation and indicators of safe hygiene and sanitation (handwashing, toilet use, toilet repairs, the number of leach pits that fill annually, and methods of disposal), and they can also collect data on community health (prevalence of diarrheal incidents, number of disease-related hospitalizations and deaths, seasonal variations).

The Tamil Nadu Women Development Corporation (TNWDC) has been instrumental in encouraging the formation of more than 120,000 women's self-help groups in the State, and these are now the prime movers in the Tamil Nadu TSC. The self-help groups have become so successful and involved in local development that they have formed federations, with each group of 20-25 SHGs represented by a Panchayat Level Federation leader who attends block development meetings and coordination committees.

There are now 30,000 women's self-help groups in the West Medinipur district of West Bengal, all of which have been started in the last three years. Each of the 300,000 members contributes a few rupees a day into a revolving savings and loan fund, and can obtain small loans from this fund as and when needed. In 2003, the district administration recognized the value and potential of this huge network, and introduced a scheme that trained more than 500 SHG members as voluntary health workers.

One of the first duties undertaken by these voluntary health workers was the completion of a health status survey in their village, providing information on recent ailments, approximate expenditure on medical treatment, immunization status, sanitation facilities, and general hygiene practices. The government does not pay the voluntary health workers, making the sustainability of the scheme dependent on community contributions and goodwill, as well as long-term support from primary health centers. But the scheme has already proved promising enough for the Government of West Bengal to decide to introduce voluntary health workers in every village in the State.

Strategy 5: Macro monitoring of large-scale sanitation programs

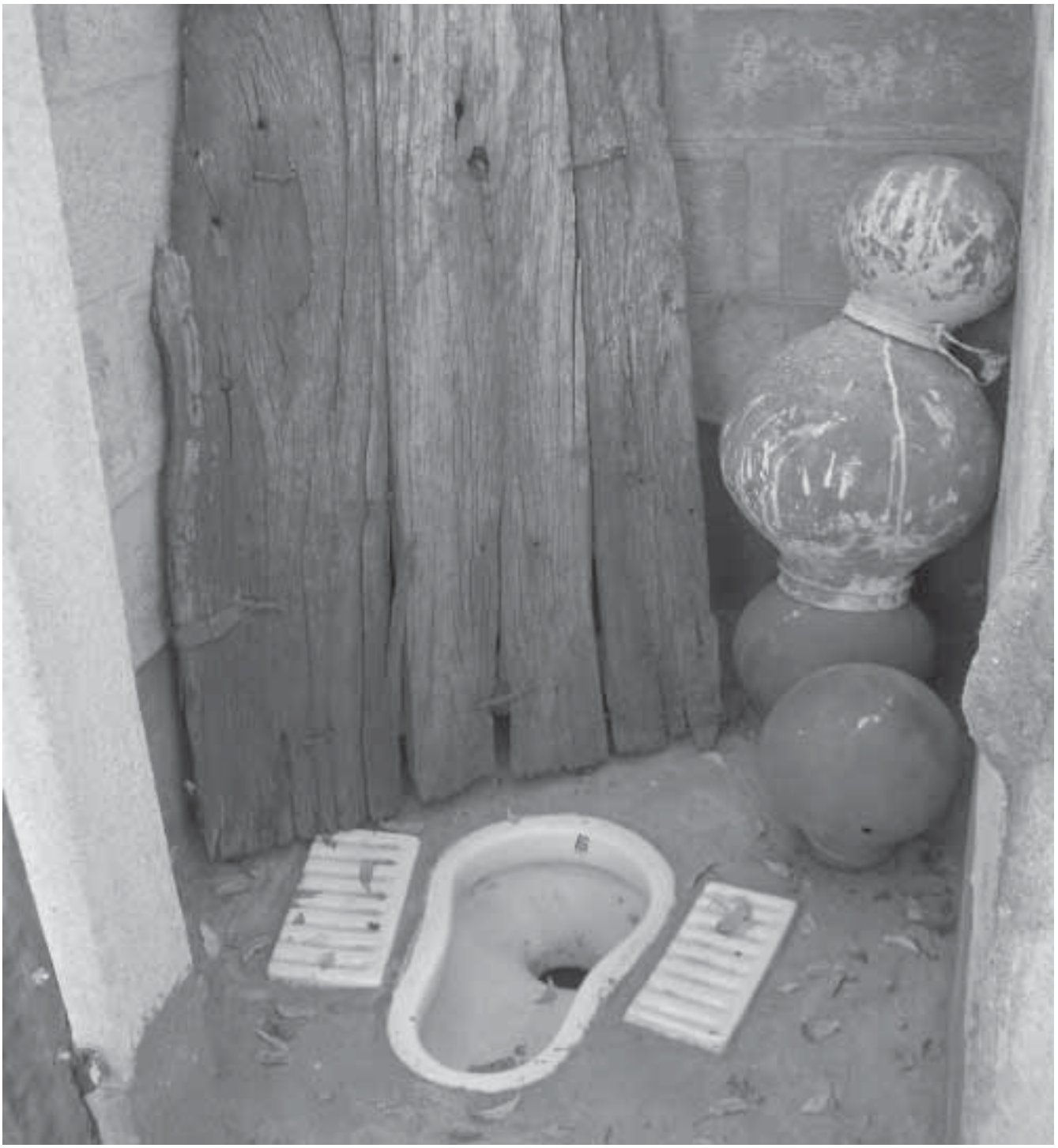
Large-scale sanitation programs require regular monitoring at the macro level. The case study programs are all supposed to be monitored, but this study confirms that reliable data and information are rarely available, even in the smaller NGO programs. This lack of information makes it difficult to identify weaknesses or evaluate the effectiveness and efficiency of program policies, approaches, and expenditures.

The best macro-monitoring model from the case studies is the dedicated sanitation unit established to monitor the West Bengal TSC. The State sanitation unit is located within the SIPRD but is currently funded by UNICEF. The sanitation unit monitors and benchmarks district performances in order to expose weaknesses, and then provides support and builds capacity wherever needed. It also assembles independent teams to review claims of universal sanitation coverage, and compares West Bengal's performance and policies with those from around the region.

This type of provincial or national sanitation body is essential to collect and disseminate knowledge and learning, both of common constraints and of useful innovations from within the program area, and of regional and global best practice.

Sanitation units are also effective coordination mechanisms, providing a forum for sanitation stakeholders and encouraging convergence on sanitation policies and approaches.

Large-scale sanitation programs should develop sustainable supply chains based around local retail suppliers, thus encouraging price competition and accountability to consumers.



7 Policy Implications

Need for better baseline information

One of the broader issues to emerge from this regional study is the need for better baseline information within the sanitation sector. For example, the Government of Bangladesh commissioned a rapid baseline survey in 2003, which resulted in a 13 percent downward revision in the official national sanitation coverage (from 45 percent to 32 percent).

The new baseline survey in Bangladesh was conducted using government, NGO, and donor resources, which enabled the whole country to be covered in only three months. This unified approach made the process more transparent, and created unusual consensus on the revised sanitation coverage figures.

Total sanitation approach requires careful application

There is some merit to the total sanitation concept, as revealed by the rapid appraisals conducted for this study. In almost every case, sanitation program managers and local government officials were aware that their main objective was to stop open defecation, and that this required community-wide action, universal toilet use, and hygiene behavior change. Opinion was divided as to how these changes should be effected, but there was little argument about the fundamentals. In this respect, the total sanitation concept is a major step forward, as this sort of shared understanding has been sadly lacking in many earlier sanitation programs.

However, the variable case study performances confirm that the total sanitation approach is no 'magic bullet' for rural sanitation. The total sanitation concept focuses attention on stopping open defecation and on the importance of community-wide action, but large-scale sanitation programs also need carefully thought out and locally appropriate policies on matters such as social intermediation, sanitation marketing, hygiene promotion, hardware subsidies, financing, and accountability.

Importance of effective social intermediation

Stopping open defecation within a community involves significant changes in hygiene behavior and universal toilet usage, which requires both collective and individual action. Few rural communities manage this transformation themselves, with most reliant on some form of external intervention to catalyze the process.

Local governments are best placed to manage rural sanitation programs and to enforce program rules (for example, bans on open defecation), but some form of social intermediation is needed between local governments and rural communities. In most parts of South Asia, local NGOs are currently the most likely agents of the social intermediation process, with additional long-term support and monitoring to be provided through the formation of self-help groups in each community.

Promotion of low-cost sanitation facilities

The promotion of very low-cost sanitation technologies was an important factor of success among the case studies. Large-scale sanitation programs should ensure that rural households understand the minimum requirements of a sanitary toilet (that is, that it provides safe disposal of human excreta without risk of local contamination) and encourage the construction of cheap, local toilet designs that meet these requirements.

Few rural sanitary marts are sustainable without program support, which suggests that private retail markets are the long-term solution for cost-effective and large-scale supply of sanitary wares. Rural sanitary marts provide a useful interim supply mechanism where local suppliers are reluctant to enter the market, or where new technologies (for example, plastic toilet pans in Bangladesh) need to be introduced. However, wherever possible, large-scale sanitation programs should develop sustainable supply chains based around local retail suppliers, thus encouraging price competition and accountability to consumers.

Effective hygiene promotion

Hygiene promotion remains crucial to the long-term success of rural sanitation programs, yet few programs evaluate the effectiveness of their hygiene promotion activities or assess their impact on hygiene behavior and public health. Given the calls for more spending on social intermediation and hygiene promotion, it is essential that the cost, effectiveness, and sustainability of large-scale

High hardware subsidies usually result in sanitation programs being able to reach fewer people, and prove tempting for non-poor households.

hygiene promotion activities are carefully tested, planned, implemented, and monitored.

Further, sanitation and hygiene monitoring needs to be built into long-term public health monitoring systems, with monitoring results fed back into the planning and assessment of sanitation programs. These linkages will require greater integration between large-scale rural sanitation programs and government health administrations.

Consistent subsidy policy

Hardware subsidies can have a significant effect on demand for sanitation. High hardware subsidies usually result in sanitation programs being able to reach fewer people, and prove tempting for non-poor households. In addition, households that build toilets under heavily-subsidized programs often feel less ownership for their facilities and may be less inclined to make any lasting improvements to their hygiene behavior.

Where several sanitation programs are operating within the same area, it is essential that sanitation stakeholders agree and formalize a consistent subsidy policy. The case study findings suggest that large-scale sanitation programs should offer minimal hardware subsidies wherever possible, with funds used instead to extend program coverage and improve the effectiveness of software activities.

Improve accountability to poor households

Large sanitation programs tend to be overly centralized and government-controlled, with policy and implementation decisions taking little account of the variable preferences and constraints of poor households. Government and NGO programs persuade rural households to invest large sums in sanitation facilities, but rarely feel accountable to these same households for the long-term performance of their sanitation services.

In most of the case studies, poor households are asked to pay in advance for materials and for the installation of their sanitation facilities. After paying relatively large sums, these households have to wait until the implementation team is available to install their facility, and then have little control over what is installed or the quality of the installation. All too often, the program is being managed at the district level, and poor households are left with few channels to voice their concerns once universal coverage is proclaimed and the NGO (or other implementing agency) has moved on to another community.

The case studies reveal two methods to improve accountability to poor households. The first is to devolve program implementation to the lowest level of local government; and the second is to contract out implementation to providers such as local NGOs.

Devolving responsibility to the lowest level of local government eliminates long delays (while information and decisions are passed back and forth along the chain of command), improves targeting (due to better local knowledge), and increases local accountability (due to the higher accessibility and visibility of local leaders). Clearly, there is a risk that local elites will attempt to divert resources, capture benefits, and falsify records, but this can be countered by regular monitoring, by benchmarking, and by independent performance reviews.

The second approach is to involve local service providers in government sanitation programs. In most rural areas, this will mean local NGOs, as there are very few private providers with the necessary social development skills and experience. NGOs can improve accountability by creating separation between local decision-makers and rural households. This institutional arrangement allows local government to monitor and facilitate the performance of NGOs acting as frontline service providers, while providing rural households with several ways to express demand, voice complaints, and inform program managers of problems: either directly to the NGO, or through their elected representatives and local government officials. The benefits of institutional separation add further weight to earlier arguments for partnering between local government and local NGOs.

Sustainable financing of cost-effective programs

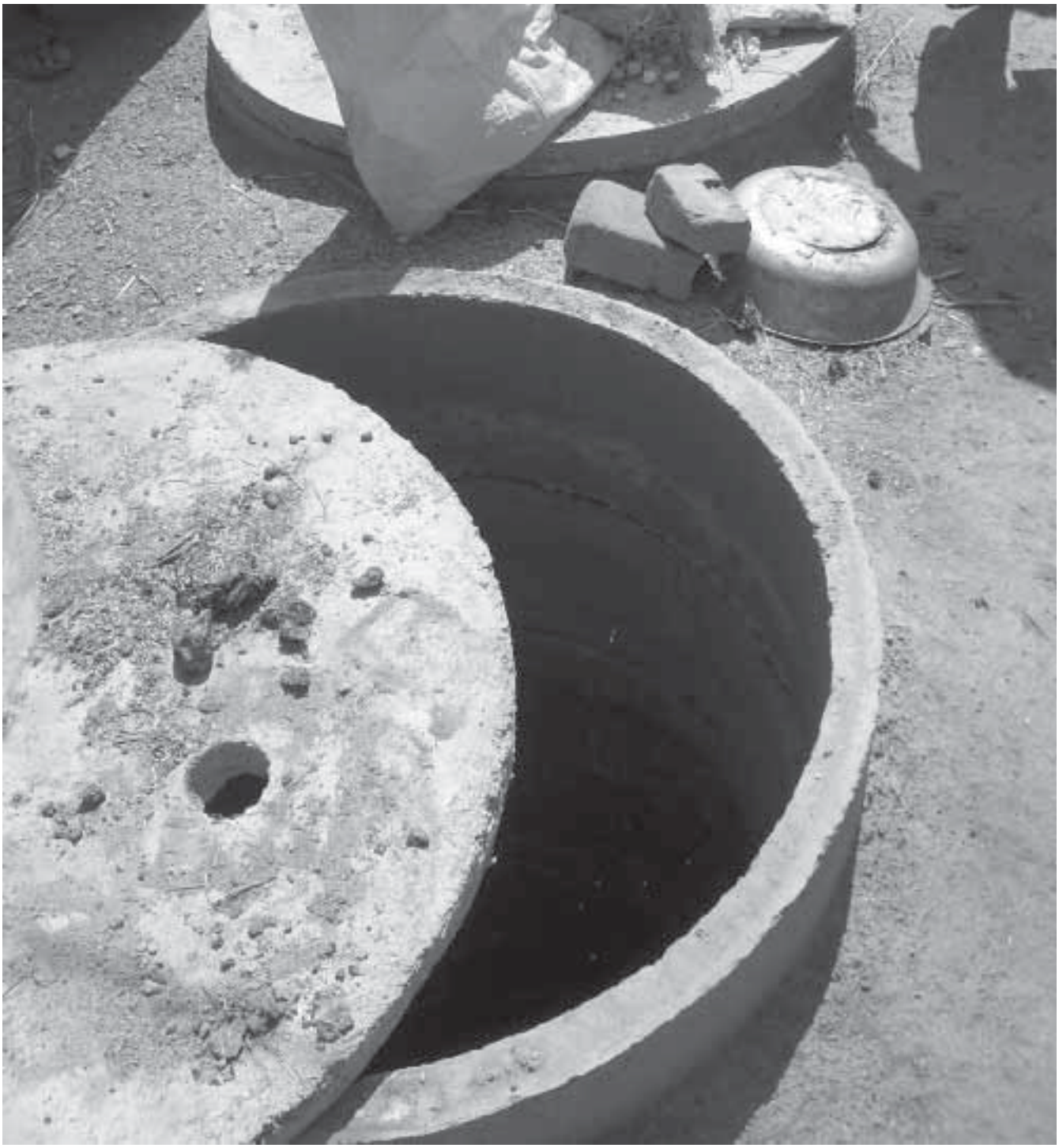
Large-scale rural sanitation programs require sustainable finance, cost-effective implementation, and a consistent policy environment. In the past, donor resources have

been allocated to specific projects or programs, which resulted in a fragmented sector containing a few 'islands of success'. Budget support by donors will improve planning and coordination; produce a more homogeneous policy environment; and encourage the adoption of more cost-effective and pro-poor approaches in national sanitation programs.

South Asia contains more poor people without access to sanitation than any other region on earth, which puts its national governments under extreme pressure to make the most of the limited resources available for the development of sanitation services. In the past, this meant pouring money into building subsidized toilets, but there is increasing evidence that this approach results in theoretical increases in sanitation coverage with little impact on public health.

This study suggests that the focus of large-scale sanitation programs should be on stopping open defecation and improving hygiene behavior on a community-by-community basis, and that success should be measured not by the number of toilets built, but by long-term improvements in public health and well-being.

Regular follow-up by outsiders encourages rural households and community groups to continue with new hygiene practices and monitoring roles, and makes it more likely that toilets will remain clean and in use when leach pits fill.



8 Recommendations For Further Research

Collection action to solve sanitation problems
Despite the best efforts of the case study programs, it remains a challenge to develop genuine demand for sanitation among the poorest households in rural communities.

A local ban on open defecation is one way to pressure reluctant households into improving their hygiene behavior, but the case study findings suggest that both communities and local governments find it hard to enforce and sustain these bans.

Another approach (as used in the Ahmednagar TSC) is the provision of financial incentives to achieve collective action. These financial incentives are payable to the local government and to all below poverty line households once an independent review declares the area 'free from open defecation'. The idea is sound, but in Ahmednagar the financial incentives paid to BPL households are relatively small (US$ 8) compared to the typical cost of a toilet (US$ 20). In several of the villages visited, this has resulted in the provision of free toilets to the poorest households so that local governments can declare their jurisdiction 'free from open defecation' and claim their payment.

Further research is required to examine effective approaches and incentives for the provision of sustainable sanitation services to the poorest, and for the collective action needed to stop open defecation and achieve universal toilet usage in rural communities.

Information on program costs
It proved difficult to assess total or average costs in the case study programs. In a few cases, this was due to the reluctance of successful program managers to admit the real costs of their software activities and program overheads, but in others it reflected a widespread failure to record and evaluate non-hardware costs. Further research is required:

- To examine sanitation program expenditures in more detail;
- To look at the sustainability of the sources and channels of program finance;
- To develop sustainable financial information and monitoring systems; and
- To assess the cost-effectiveness of the different approaches and policies.

More effective software investments
The significance of non-hardware expenditures in the case study programs reinforces the need for better data collection, reporting, and evaluation of software expenditures in sanitation programs. Effective and cost-efficient software activities will be vital to the success of large-scale sanitation programs, but little is known about the real costs and relative effectiveness of the many different approaches to sanitation and hygiene promotion, capacity building, social intermediation, and so on.

Local monitoring and institutional support
The one area in which all of the case study programs were weak was the monitoring and assessment of their own performance. Despite a recognition that the ultimate aim of every sanitation program is to improve public health and well-being, program performance is almost always measured by physical or financial progress. In other words, government ministers and program managers are interested in how many toilets have been built for their money, rather than the program's long-term impact on the incidence of diarrheal disease or on infant mortality.

Despite a common interest in following-up on sanitation activities; in ensuring the sustainability of sanitation services; and in monitoring toilet usage and open defecation; none of the case study programs managed to establish an effective institutional support mechanism or develop reliable local monitoring systems.

At the local level, regular monitoring is essential for the success of decentralized implementation, and provides important feedback on the sustainability of rural sanitation services. Regular follow-up by outsiders encourages rural households and community groups to continue with new hygiene practices and monitoring roles, and makes it more likely that toilets will remain clean and in use when leach pits fill.

This type of monitoring and follow-up helps rural households to cope with minor technical problems and supply issues, which might otherwise lead to toilets

Further research is required to determine effective approaches and sustainable institutional models for long-term local monitoring and institutional support.

being abandoned, and reinforces the authority and interest of those trying to stop open defecation within the community.

Women's self-help groups are a promising development for the long-term monitoring of rural sanitation services and hygiene behavior, but are unable to provide the institutional support needed to cover issues such as technical advice (for example, on emptying or replacing leach pits), access to local supply chains, and so on.

Further research is required to determine effective approaches and sustainable institutional models for long-term local monitoring and institutional support.

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Annex 1
Community-led Total Sanitation

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Sanitation investments are normally targeted at individual households, on the basis that both construction and use of toilets depend on private decisions and household-level hygiene behavior. Most traditional sanitation programs provide some form of subsidy to reduce the cost of building a toilet, and back this financial incentive with sanitation promotion and hygiene education that highlight the benefits of toilet use and good hygiene behavior.

This approach normally results in an incremental change in sanitation coverage, with improvements within a community becoming steadily more difficult once early adopters and non-poor households have installed sanitation facilities. It is also costly, as many conventional sanitation programs promote durable, well-built, and expensive toilets, and thus tend to offer significant hardware subsidies in order to persuade households to pay their share of the considerable costs of toilet construction.

Few large-scale sanitation programs of this type have been successful. High hardware subsidies usually result in sanitation programs being able to reach fewer people, and prove tempting for non-poor households. In addition, households who build toilets under heavily-subsidized programs often feel less ownership for their facilities and may be less inclined to make any lasting improvements to their hygiene behavior.

Over the last few years, non-governmental organizations (NGOs) in Bangladesh[1] have been pioneering a new approach to sanitation development. It is known as Community-led Total Sanitation[2] and has several fundamental differences from conventional approaches, including:

- Focus on stopping open defecation (rather than building toilets);
- Need for collective action (to stop open defecation within the community);
- No toilet subsidy (households must finance their own toilets); and
- Promotion of low-cost homemade toilets constructed using local materials (rather than standard toilet designs imposed by outsiders).

This approach recognizes that sanitation is both a public and a private good, and that individual hygiene behavior can affect the whole community – if your neighbors defecate in the open, then your children risk excreta-related disease even when the members of your own household use a sanitary toilet, wash their hands, and practice good hygiene. In this sense, 'total sanitation' refers to a total stop on open defecation, which requires that everyone in the community either owns or has access to a sanitary toilet.

The main advantage of the total sanitation approach over conventional policies is that it is a community-wide approach, which requires that every household in the community stops open defecation and uses a sanitary toilet. This approach involves even the poorest and most vulnerable households in the community, and ensures that the community and local government focus on helping these households gain access to a sanitary toilet with a safe excreta disposal system. This process is the reverse of most conventional sanitation programs, which tend to favor those that can afford toilets, those that have land available to build toilets, and those that are first on the list for subsidized facilities. All too often, conventional programs leave coverage of the poor and the marginalized, that is, those most affected by inadequate sanitation, until long after everyone else has been served.

NGOs in Bangladesh state that they have used the total sanitation approach to support more than 1,000 rural communities in stopping open defecation, using participatory techniques to raise awareness of local sanitation issues and assist communities to solve their own problems (see box on 'Ignition'). The combination of internal community pressure and external NGO support is reported to have enabled hundreds of rural communities in

[1] Notably WaterAid Bangladesh and VERC.

[2] Kar (2003).

The total sanitation approach encourages rural households to use their initiative and funds to build basic sanitary toilets, without imposing standard external designs.

Ignition – one way to stop open defecation?

Open defecation is a practice that is centuries old in most rural areas. To many villagers, it appears to cost nothing and to do little harm. Given this situation, something dramatic is required to change people's thinking and behavior, as the dire record of most rural sanitation programs attests. In Bangladesh, NGOs (notably VERC and WaterAid) developed a participatory 'ignition process' to begin this change, including the following components:

- Social mapping of the village;
- Defecation map with defecation mobility (including 'crisis' defecation);
- **Walk of shame (transect walk to open defecation areas and water points);**
- Changes and trend of village water and sanitation situation;
- Livelihood analysis and well-being grouping;
- Possession of toilets by different groups;
- **Excreta calculation (amount of excreta added to village by open defecation);**
- Contamination mapping (pollution caused by excreta and fecal-oral contamination links); and
- Group discussions on diseases due to open defecation, emergencies, medical costs.

Many of these steps will be familiar, but two of the elements, the walk of shame and the excreta calculation, are highly innovative and effective motivational tools. During transect walks to sites of open defecation, it is common for members of the community to be embarrassed to visit these dirty spots with outsiders, and attempt to move away quickly. But the facilitators like to stop and ask questions: which families use this spot for defecation? what happens during emergency defecation at night, or during diarrheal incidents?…these questions are often answered by people covering their noses with their hands. Normally, when outsiders are taken around a village, the community likes to focus on its positive aspects and achievements, and feel a sense of pride. These 'walks of shame' reveal a different reality. Although everyone sees the filth and dirt every day, they seem only to awaken to the problem when visiting these sites with groups of outsiders that analyze the situation in detail.

A collective calculation of the amount of excreta that open defecation adds to the local environment is an interesting and participatory method of helping communities to realize the magnitude and extent of their sanitation problem. Participants make their own estimates of the amount of feces contributed by one person in one day, then keep multiplying to calculate contribution per family, per week, per year and so forth. In Mosmoil village (Rajshahi district, Bangladesh) the community calculated that 50,000 tons of human excreta were being added to their village environment every year. The communities are usually horrified by these figures, and immediately begin to wonder about the various routes of fecal contamination. Flow diagrams are then drawn to trace contamination routes to ponds, household utensils, domestic articles and, most important, to food through hands, flies, chickens, household pets, and so on.

After these intensive participatory exercises, a positive force to deal with the situation tends to emerge, with people voicing their eagerness to stop open defecation and to construct toilets. In this way, the 'ignition process' triggers change and fires enthusiasm for sanitation development!

After Kamal Kar (2003)

Bangladesh to reach 100 percent sanitation coverage within less than a year, without any hardware subsidies.

The total sanitation approach encourages rural households to use their initiative and funds to build basic sanitary toilets, without imposing standard external designs. This allows very low-cost toilets to be built using freely available local materials, thus making toilets more affordable and accessible to the rural poor. It also permits more program funds to be spent on important software activities such as sanitation and hygiene promotion.

However, it must be remembered that the total sanitation approach is a relatively new concept, which is now being employed by many different actors in many different ways. The theory looks good, but careful evaluation of the practice is required before the sustainability and effectiveness of this new approach can be verified.

Annex 2
Case Studies from Bangladesh

Annex 2
Case Studies from Bangladesh

Bangladesh is the smallest, poorest, and most rural of the countries studied. It is regularly inundated by catastrophic floods and typhoons, and has one of the highest population densities in the world, creating fierce competition for the limited land that is suitable for habitation and cultivation. In its favor, Bangladesh has a thriving non-government sector, with non-governmental organizations (NGOs) reaching about 75 percent of rural settlements, and devising innovative and widely-copied approaches to development.

Bangladesh has been at the forefront of recent sanitation developments in South Asia. As discussed in the main report, the Government of Bangladesh recently hosted the first South Asian Conference on Sanitation (SACOSAN), with international recognition of the new approaches to sanitation provision developed by NGOs in Bangladesh.

In the run-up to SACOSAN, the government realized that it needed more accurate and detailed sanitation data in order to develop a realistic strategy and implementation plan. A rapid baseline survey was commissioned, using sector and government resources to cover the whole country in just three months.

More than 45 percent of the total population were thought to have access to adequate sanitation, but the results of this baseline survey confirm that only 29 percent of rural households have access to a safe toilet, while 47 percent of rural households have no toilet facilities at all. SACOSAN was very important for developing consensus among stakeholders and support for the sanitation sector. The widely-disseminated baseline survey provides a common and undisputed database for all to work from, and the new approaches discussed at the conference are now spreading and gaining legitimacy. Following general consensus on the effectiveness and speed of the community-led total sanitation approach, most of the major NGOs in Bangladesh have now decided to adopt the approach, and have incorporated it into their national sanitation programs.

At the end of SACOSAN, the Minister for Local Government & Rural Development announced that Bangladesh would aim to achieve 100 percent sanitation coverage by the year 2010, some 15 years ahead of the MDGs (which include halving the number of people without access to hygienic facilities by 2015, and providing sanitation to all by 2025).

Reaching this ambitious target will involve increasing sanitation coverage by 68 percent in less than six years, covering at least 2.4 million households every year.[3] This is an enormous challenge, but the government has signalled its commitment by issuing new guidelines on rural sanitation and by earmarking 20 percent of the budget

2003 Bangladesh Baseline Sanitation Survey

	Population	Toilet		No Toilet
		Sanitary	Unsanitary	
Rural	18.32 m hhds (87%)	29%	24%	47%
Urban	2.75 m hhds (13%)	56%	29%	14%
Total	**21.07 m hhds**	**32%**	**25%**	**43%**

* m hhds = million households (average size = 6.5 members)

[3] 21.05 million hhds x 0.68 = 14.31 million hhds/6 years = 2.39 million hhds per year (without allowing for population growth of 1.7 percent per year).

According to the latest figures, the remainder of Kurigram district (another 284,000 households) is more typical of northern Bangladesh, with an average sanitation coverage of just 23 percent.

of the Annual Development Program (ADP) for sanitation activities.[4]

Unfortunately, it seems likely that this ADP funding will be used to provide toilet subsidies to poor households, thus undermining the zero subsidy approach promoted by the three Bangladesh case studies summarized below:
Case study 1: Local Government (Rajarhat Upazila)
Case study 2: NGO Forum (Dinajpur program)
Case study 3: Plan Bangladesh (Chirirbandar program)

These case studies examine three different approaches to total sanitation in Bangladesh. The three cases were studied in similar contexts in northern Bangladesh, but each has very different institutional arrangements. The first is a government-led project with no NGO involvement; the second is an NGO-led project with significant community involvement; and the third is a community-led project with significant NGO involvement. As in all the cases, the approaches are evolving and these case studies represent snapshots of the programs taken in the period January-March 2004.

Case study context

The case studies focus on three sanitation projects in Kurigram and Dinajpur districts, which lie close to each other in the north of Bangladesh. These northern districts are famine-prone, and are poorer than much of the rest of the country. Rajshahi division, in which both districts fall, also has the lowest rural sanitation coverage in the country. It is difficult to attract senior government officials and program staff to posts in this remote and disadvantaged region, which makes the development challenges that much harder.

Population density in the northern districts is about 600-700 people per square kilometer. This is a high population density (more than double than that found in India), but remains some 30 percent below the national average. In these areas, the villages often consist of a number of separate *paras* (hamlets), clustered around a larger hamlet/village and linked by networks of footpaths.

The 2003 baseline survey shows that sanitation coverage in Kurigram district (31 percent) is significantly higher than that in nearby Dinajpur district (18 percent). The higher figure in Kurigram is largely due to the high coverage in one sub-district (Rajarhat Upazila – see Case Study 1), which has increased sanitation coverage in its 36,000 households to 99 percent over the last two years. According to the latest figures, the remainder of Kurigram district (another 284,000 households) is more typical of northern Bangladesh, with an average sanitation coverage of just 23 percent.

Case Study Data

Unit	Name	Population		Literacy	Sanitation Coverage
		Total	Rural		
District 1	Kurigram	1.8 million	–	22%	31%
District 2	Dinajpur	2.6 million	–	27%	18%
Country	Bangladesh	136 million	87%	41%	32%
Region	South Asia	1,401 million	72%	56%	34%

Source: WDR 2004; GoI Census 2001; Baseline survey 2003; www.banglapedia.search.com

[4] 1996-97 ADP allocation to rural and urban water supply was only 2.4 percent (DANIDA, 1999).

Case study 1: Local government (Rajarhat Upazila)

This is an independent sanitation project, enacted by the Upazila (sub-district) government with assistance and support from the Department of Public Health Engineering (DPHE) and UNICEF. The sanitation project was modelled on a well-known pilot project conducted by the local government in nearby Patgram Upazila (Lalmonirhat district). In Rajarhat Upazila, the project was initiated by a highly motivated and energetic local government official, the Upazila Nirbahi Officer (UNO), who is the chief administrator of the sub-district.

Key features

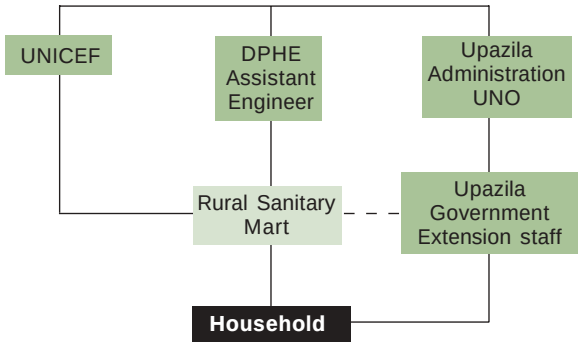
- Ninety-nine percent toilet coverage in entire Upazila (sub-district of 36,000-plus households);
- Local government implementation (with UNICEF support);
- Rural Sanitary Mart production of low-cost toilet platforms; and
- Limited usage of toilets.

Approach

Local government officials and DPHE engineers promote a low-cost 'direct' toilet model. This design is based around a standard toilet platform (all-in-one cement toilet slab and gooseneck pan) mounted directly onto a concrete ring at the top of a single bamboo-lined pit. The toilet enclosure is home-made, usually from bamboo, palm fronds or old jute sacks. The toilet components are sold by RSMs at US$ 2.90 for the standard package (toilet platform and one ring). DPHE had already established an RSM in the Upazila, but the project led to several new RSMs being developed by DPHE, using funding from UNICEF.

The sanitation project involved considerable awareness raising, IEC, and social mobilization, but all of this work was conducted by government staff under the control of the UNO, including local administrators, Union Parishad[5] members, extension officers, school teachers, and anganwadi (nursery) workers. In addition, the UNO enlisted local Imams (religious leaders) to spread sanitation messages and convince their followers to install toilets. In the initial stages, the UNO realized that the approach was not effective for very poor households. Therefore, savings schemes were introduced, in which Union Parishad members collect US$ 0.17 monthly contributions from groups of 10 households. Every two months, one of the 10 households receives the US$ 3.38 savings that have accumulated, which allows them to pay for their toilet components.

Institutional model



[5] Union Parishad = lowest active tier of local government (until Gram Sokha Parishad become functional). Typically, each Union covers about nine villages (or *paras*).

In many cases, the local government has coerced the rural population into building toilets, whether people want them or not.

Performance

The Upazila authorities report that, in a little over two years (September 2001-December 2003), the RSMs in the sub-district have sold more than 32,000 toilets, resulting in a spectacular increase in sanitation coverage from 16 percent to 99 percent. The 2003 national baseline survey confirms 99 percent sanitation coverage, with 35,565 of the 36,077 households in the Upazila reported to be using sanitary toilets.

However, the rapid appraisal conducted for this study questions this unusually high usage figure, and suggests that both toilet usage and sanitation coverage are declining fast now that the intensive sanitation project is considered complete. In the villages visited, a significant proportion of the new toilets are already damaged, inoperable or no longer providing safe excreta disposal. Toilet pans have broken while being cleaned; toilets have been altered to discharge directly into nearby ditches; some toilets were never installed; and there is visible evidence of continuing open defecation.

Sanitation promotion and demand

The UNO reports that US$ 6,800 were collected through the savings schemes, funding toilets for about 2,000 low-income households. This approach helped to cover the last five percent of the Upazila population, but there are suggestions that many of these poor households were forced to become involved in the savings schemes. In Baruapara, several poor women commented that “we had to buy the toilet, otherwise the police would come”. Some of these women are now using their toilets, and are happy to list the perceived benefits (privacy, less disease, fewer flies), but more than 50 percent of the households in this village are not using their toilets, and do not appear to have improved their hygiene behavior.

There were also reports that everyone in a neighboring community bought toilet components (under pressure from the local government) but that none of them were installed and, as a result, open defecation is still prevalent.

These findings represent outcomes in only two of the many *paras* in the Upazila, but they do bring into question the sustainability of the approach. The failure of households to repair or replace broken toilet pans, the installation of unsanitary toilets, and the declining toilet usage, all suggest that these communities are not committed to stopping open defecation, and have not made any major changes in their hygiene behavior.

There is clearly a lack of community involvement and an absence of hygiene promotion in the process. In many cases, the local government has coerced the rural population into building toilets, whether people want them or not. As a result, many of the households feel little ownership for their toilets, have little interest in using or maintaining them, and are unaware of the impact of their current hygiene practices on public health.

Typical Toilet Components and Cost

Item	Description	Cost
Platform	Cement slab and pan (RSM)	US$ 2
Pit lining	1 x concrete ring (RSM)	US$ 0.8
	Bamboo casing	US$ 0
Enclosure	Home-made (thatch, jute)	US$ 0
	Total cost	**US$ 2.8**

Technical sustainability
The toilet model promoted is a low-cost (US$ 2.90) and appropriate technology that is simple to install and easy to relocate once the (single) pit is full. Most households manage to install the toilet themselves and report few technical problems, thus removing the need for trained masons or for technical assistance.

Despite the fairly standard pit size adopted (minimum five feet deep), there were reports of pits filling in only six to 12 months. However, this did not appear to be a problem, with several households stating that they had already dug new pits and relocated their toilets several times in the two years since the original construction.

Evidence of easily broken cement toilet pans suggests that some of the RSM components are badly designed, or not manufactured to a high enough quality. Initially, there was little alternative to the toilet components supplied by the government-controlled RSMs, but there are now several private production centers operating, which should provide purchasers with more choice and more accountability.

Social sustainability
A recent government survey classed 55 percent of households in Rajarhat Upazila as landless (that is, do not own any agricultural land). Many of these households own only the land that their houses are built on, and sub-division of this land between children often leaves these plots cramped and inadequate. When combined with an above average population density, as in Rajarhat (population density = 1,169 per sq km), this leaves little space in which the poor and the landless can construct their toilets.

Local government officials address this problem by trying to persuade the larger landowners to donate suitable plots to the poor, but this process is difficult and can take considerable hard work and mediation skills.

Institutional sustainability
This sanitation project has been driven by the enthusiasm and commitment of the UNO. It has made great strides using only the resources already available within the Upazila: community and religious leaders were organized to apply pressure to resistant households; school teachers, Union councillors, and Upazila officials conducted weekly monitoring; and the UNO and his DPHE engineers made regular visits to sites of open defecation and to problem villages. The unusually high intensity and effectiveness of this resource use would not have been possible without the high priority and constant monitoring afforded to the project by the UNO.

Financial sustainability
The project has been very cost-effective, in that it used no additional government funds and provided no toilet subsidy. However, there can be no doubt that this sort of intensive campaign cannot be run on a continuous basis without detracting from the other duties and responsibilities of local government. The project was also lucky to attract significant UNICEF support, including US$ 6,000 to establish four mobile production centers and operate them for two years. The cessation of this funding has resulted in the closure of these production centers. As a result, the Upazila government has encouraged private producers and an NGO to meet any future demands.

Environmental sustainability
When properly used and maintained, the toilets installed under this project should create few environmental problems. However, there is evidence that some of the users are not aware of the difference between safe and unsafe excreta disposal, and that others are abandoning their toilets and returning to open defecation. Regular follow-up and monitoring is required to ensure sustainable improvements to environmental health.

Scaling-up
The Rajarhat sanitation project is completely independent, with no special funding or support from government. No regular monitoring of the sanitation project takes place at the district level, and none of the other Upazilas in the district are implementing similar projects, despite the positive demonstration effect. This suggests that the approach is entirely dependent on the UNO, and would not be replicable in his absence.

The Rajarhat sanitation project managed to achieve almost universal toilet coverage for 36,000 households in only two years.

Conclusion

The Rajarhat sanitation project managed to achieve almost universal toilet coverage for 36,000 households in only two years. This is a commendable achievement, not least because, by implementing toilets in every household of an entire sub-district without any hardware subsidy, it has demonstrated that even the poorest of the poor can afford low-cost toilets. However, the findings of this brief appraisal suggest that toilet usage is already declining rapidly, and that the apparent success of near universal sanitation coverage will not be sustained and will not bring the expected public health benefits.

More detailed evaluation is required, but it seems likely that the high coverage has been achieved by an overly coercive approach, which is strongly dependent on the direct involvement and commitment of the UNO. Sadly, it looks as if this project, which was originally based on the Patgram pilot project, will end up in a similar state – with half the toilets abandoned and widespread open defecation.[6]

Case Study 2: NGO Forum (Dinajpur program)

This is an NGO model, designed and supervised by the NGO Forum for Drinking Water Supply & Sanitation. NGO Forum is a national NGO, which implements water and sanitation programs through its network of 635 partner NGOs. Sanitation is a high priority for NGO Forum, and its hygiene promotion and sanitation programs now consume more than 50 percent of its US$ 2.5 million annual budget.

NGO Forum is an apex body, run through 14 regional offices around the country. The Dinajpur office covers four districts and works with 20 active partner NGOs,[7] each of which starts a two-year sanitation project in one village every year. This case study is based on the work of one of those partner NGOs (Uddog) in two Upazilas (Chirirbandar and Sadar) of Dinajpur district.

Key features

- Implemented by a network of 635 partner NGOs;
- Sanitation projects completed in 1,200 villages;
- 900 toilet production centers;
- Supply-driven approach (little technology choice); and
- Limited local government involvement.

Approach

Since 1999, NGO Forum has been promoting an integrated WATSAN approach, with the objective of achieving 100 percent water supply and sanitation coverage in a particular village over a two-year period. This approach combines provision of both hardware (tubewells, rainwater harvesting structures, arsenic-iron removal plants, sanitary toilets) and software (training, IEC materials, promotional activities). NGO Forum found this approach effective, but it results in a relatively slow increase in sanitation coverage, and often struggles to reach the last 10-20 percent of the community.

Following general consensus on the effectiveness and speed of the community-led total sanitation approach developed by the NGO VERC and WaterAid Bangladesh, which demonstrated that villages can achieve universal access to sanitation without external subsidies, NGO Forum decided to change its approach. Most of the partner NGOs have now been trained in the 'ignition process' (see Annex 1) and are using the zero-subsidy approach in their sanitation projects.

The target communities are selected by the partner NGO, with a focus on underserved and unserved villages. Numerous IEC and hygiene promotion activities (courtyard meetings, processions, training) are conducted, using community leaders, Imams (religious leaders), and members of the village development committee to spread the messages and reach reluctant households.

The NGO then establishes a mobile production center in the village, which manufactures concrete toilet platforms

[6] The 2003 baseline survey shows that previously universal sanitation coverage in Patgram Upazila has now declined to 51 percent coverage; see also Dasgupta (2001).

[7] The Dinajpur office has another 20 partner NGOs that help to monitor progress.

and rings. Previously, cement pans were installed on the toilet platforms, but NGO Forum now promotes plastic toilet pans, p-bends, and pipework, all of which are supplied to the village by the partner NGO.

The village development committee undertakes community monitoring of the sanitation project, with quarterly follow-up visits from NGO Forum regional staff during the first year after completion. NGO Forum also has a central monitoring cell in Dhaka, which collates information on the progress and performance of the sanitation program.

Local government involvement is limited, apart from attendance at district coordination meetings and informal discussions with Upazila Nirbahi Officers to resolve any problems with local government officials. However, the NGO Forum regional office reports that it is planning to increase links between partner NGOs and Union Parishads.

Performance

Nationally, NGO Forum report 1,260 villages (spread over eight districts) fully sanitized using the total sanitation approach. NGO Forum has also established 900 production centers[8] around the country, and its 635 partner NGOs begin work in another 635 villages each year.

Since 1999, the Dinajpur regional office and its 20 partner NGOs have completed sanitation projects in more than 80 villages. Sanitation coverage in these villages is generally high, but toilet usage and sustainability appear less good, particularly in those villages completed under the old approach.

Sanitation promotion and demand

Kornai village (Sadar Upazila) was declared fully sanitized two years ago, but a brief survey suggests that only 50 percent of the households are currently using sanitary toilets. The remainder have either abandoned their toilets, or have failed to maintain them in a sanitary condition (toilet pans were blocked or broken).

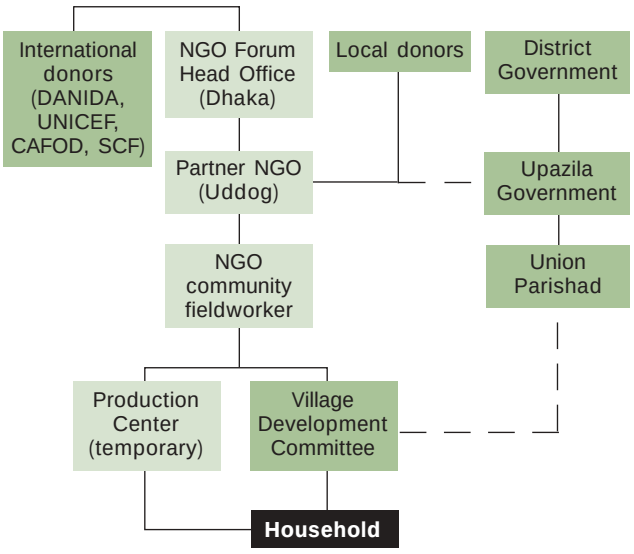
In Kismotboypara (Chirirbandar Upazila), the sanitation project is ongoing. Lots of new toilets with plastic pans are evident, but several households have not bothered to install toilet components donated by the village development committee, and others are reluctant to use the new toilets despite recent behavior changes by others in the village.

Reaching the poorest remains a challenge. Several approaches have been tried: households are encouraged to share toilets with their poorer neighbors; the partner NGO provides loans; and some of the poorest households have had their toilets donated by the village development committee or the Union Parishad. But toilet usage remains low among these groups, and among male household members.

Technical sustainability

The mobile production center approach, whereby a mason manufactures toilet platforms and concrete rings in the village and the partner NGO supplies the plastic pans and pipework, provides few technical options to the households building the toilets. The main deviation

Institutional model



[8] 540 production centers run by partner NGOs and 360 run by private producers.

Many of the men from poor households leave for the fields early every morning, and do not return until late at night. As a result, they were unable to attend most of the hygiene promotion and IEC activities.

from the typical low-cost toilet model is the use of a number of concrete rings to line the single leach pit.

The older toilet models used cement pans, which appear to break easily, and were rarely repaired or replaced. One recent immigrant in Kornai village had bought a new toilet from another local NGO, but several other households had no toilet, or a toilet with a broken pan, were unsure how to go about repairing their toilets.

Social sustainability

One of the partner NGOs highlighted the difficulties associated with providing hygiene education to the men of the village. Many of the men from poor households leave for the fields early every morning, and do not return until late at night. As a result, they were unable to attend most of the hygiene promotion and IEC activities. The NGO resolved the problem by visiting the village very early, before the men left for the fields. However, it is clear that reaching this group, which is the most resistant to changing its hygiene behavior, remains a difficult task.

Institutional sustainability

Support from NGO Forum, including training and limited financial assistance, raises the profile of these partner NGOs and allows them have some say in local development forums. But there are few linkages to local government, or to other development processes. This allows the partner NGO little authority to enforce bans on open defecation, or persuade reluctant households to improve their hygiene behavior or invest in sanitation facilities.

Each village sanitation project has a two-year cycle, after which the partner NGO moves on to work in a new village. The limited staff and resources of these small NGOs make it very difficult for them to monitor toilet usage or carry out

Typical Toilet Components and Cost

Item	Description	Cost
Pan and trap	Plastic (NGO)	US$ 0.8
Floor slab	Concrete (RSM)	US$ 2.5
Connection	Pipework (offset)	US$ 0.8
Pit lining	Concrete ring (RSM)	US$ 3.3
Mason	Installation and transport	US$ 0
Enclosure	Home-made (thatch, jute)	US$ 0
	Total cost	**US$ 7.4**

follow-up visits to villages in which the two-year project cycle has been completed.

Financial sustainability

The NGO Forum model relies on donor funding, from international donors for its own operations, and from local donors for its partner NGOs. The strength of the model is the resource leverage achieved by NGO Forum, which uses its relatively small budget to access much larger aggregate funds from its 635 partner NGOs. In return for technical support and political access, these partners utilize their local donor funds to implement NGO Forum designed sanitation programs. But it is not clear exactly how large these local funds are, or how much is spent on sanitation promotion by NGO Forum and its partners.

NGO-Forum report average software costs of only US$ 0.30 per household toilet, but this seems very low considering the lengthy process involved. Assuming that 635 villages per year are covered, this software cost equates to an annual expenditure of less than US$ 16,949.15,[9] compared to an actual sanitation budget of US$ 1,406,779.6 per year.

Given that this is a zero subsidy sanitation program, software and program costs will consume the majority of the funds available. An earlier case study (WSP, 2003a) suggests that a Union-level NGO Forum program may spend US$ 5.10 per household, of which about 30 percent is spent on software (IEC materials, follow-up meetings, training, and exposure visits) and the remaining 70 percent pays for basic program costs (salaries and logistics over the two-year project period). However, even these costs exclude the inevitably high management costs and overheads associated with running 14 program offices and monitoring the activities of such a large national network.

Environmental sustainability

The vast majority of the toilets installed under NGO Forum sanitation projects have a single offset leach pit, which is often lined with concrete rings. The relatively high cost of the concrete rings, and the perception that the rings are necessary for structural reasons, means that most households are unwilling to construct a second pit. As a result, the partner NGOs recommend that local sweepers (sanitary workers) should be paid to empty the leach pits when they become full. This process involves digging another pit nearby, then re-filling it with the pathogenic solids from the leach pit, before sealing it with soil (at least a foot deep) into which a tree is planted.

Scaling-up

Despite its huge NGO network, the NGO Forum has managed to cover only 1,200 villages in the last three years. This is a remarkable achievement, involving the construction of sanitation facilities by many thousands of households, but it still represents less than a one percent increase in national sanitation coverage.

The NGO Forum network has been growing steadily, but now includes most of the rural NGOs with suitable water supply or sanitation experience, making further increases in the size and scope of the network difficult. In addition, few of these partner NGOs have the capacity to implement more than one village sanitation project annually, despite the training and support that they receive from NGO Forum.

Conclusion

The NGO Forum total sanitation approach has achieved rapid increases in toilet coverage, but has yet to prove that its projects achieve regular toilet usage or sustainable public health benefits. The approach remains supply-driven, with little room for low-income communities to develop their own toilet models or to choose alternative designs.

Evidence of declining usage, and an inability to reach the last five percent of households, suggests that the approach needs modification. NGO Forum admits that it has been slow to adopt new approaches, and is now in the process of making its programs more participatory and demand-responsive, with assistance from VERC and WaterAid Bangladesh. But there are also other more structural problems. The current institutional model does

[9] US$ 0.27 x 635 villages x 75 households = US$ 12,858.75.

The Plan approach does not impose any particular toilet design on the community, although it does encourage the use of local materials and the construction of very low-cost designs.

not provide for a sustained relationship with communities after the sanitation project is finished. There is little monitoring of long-term performance and inadequate identification of weaknesses in the approach, with few follow-up visits to support the village development committee and scant effort to promote improved hygiene behavior.

The NGO Forum is a national body, and thus must address national-level development challenges, but it is currently constrained by the limited size and capacity of its network of partner NGOs, and by its failure to utilize the resources of government to expand and institutionalize its sanitation program.

Case study 3: Plan Bangladesh (Chirirbandar program)

The Plan Bangladesh sanitation program is relatively small, but uses a highly effective approach, and is in the process of scaling up into a much larger program. At present, the Plan sanitation program operates in more than 100 villages spread over five Upazilas (sub-districts), four of which are located in the northern districts.

Plan has been working in Chirirbandar and Khansama Upazilas (Dinajpur district) since 1994, but has only been using a total sanitation approach for the last two years. Like NGO Forum, the Plan field offices work closely with local partner NGOs, but Plan also employs its own facilitators to implement its sanitation program.

Key features

- Use of participatory 'ignition process';
- Very low-cost toilet designs (less than US$ 1);
- Child-centered community development;
- Focus on small, progressive communities;
- Good links with local government; and
- Approach unproven at scale.

Approach

Until 1998, Plan Bangladesh provided free toilets through its community development programs. Each of these toilets cost US$ 50, but program evaluations revealed that less than 20 percent of them were being properly used. Plan decided to revise its programs, adopting a lower subsidy, and a participatory approach it calls 'Child-centered Community Development' (CCCD). However, even with these changes, toilet usage remained low and hygiene behavior change was elusive.

In 2002, Plan turned to VERC for assistance and guidance. This collaboration led to a more software-oriented approach, which has a focus on stopping open defecation, using the zero subsidy 'ignition process' developed by VERC and WaterAid (see box in NGO Forum case study), while embracing Plan's own woman and child-centered approach. Pilot projects proved successful, with every community achieving 100 percent sanitation coverage within a year, and the total sanitation approach is now being used in all of Plan's sanitation programs.

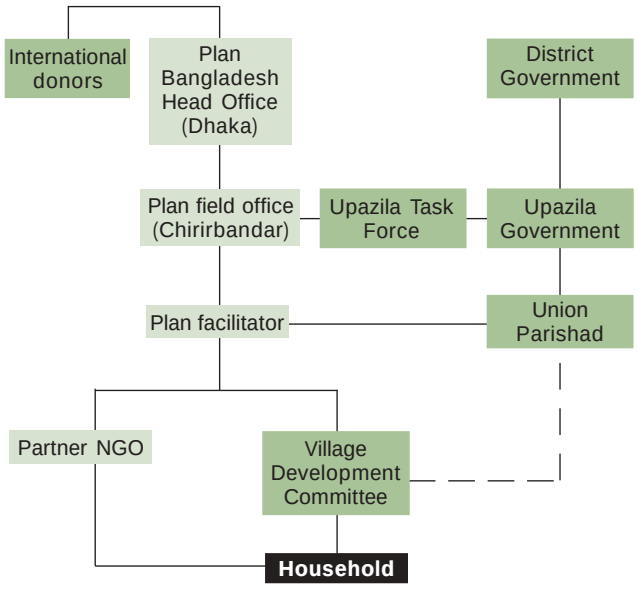
The Plan approach does not impose any particular toilet design on the community, although it does encourage the use of local materials and the construction of very low-cost designs. Plan has begun promoting plastic toilet pans, but a range of other designs, from home-made sheet metal pans to shop-bought ceramic pans, can be found in most program villages.

Social intermediation and IEC are carried out by Plan's field staff and by its partner NGOs. The participatory ignition process is reinforced with exposure visits to fully sanitized local villages, which also provides the participants with practical models for their toilet designs.

During the process, the community establishes a monitoring committee, whose members check defecation sites on a regular basis. The children of the village are also involved, as they often prove to be active and unembarrassed identifiers of those who continue with open defecation.

Plan coordinates its sanitation programs with the Upazila government, and has supported workshops in 18 districts to develop a common understanding of approaches and objectives. The Upazila Task Force brings together key stakeholders from government and NGOs on a monthly basis, and is the main forum for planning and coordinating sanitation programs.

Institutional model



Performance

Very few villages have been completed under the new approach, with only three fully sanitized villages achieved so far in Chirirbandar and Khansama Upazilas. Further, most of these villages (*paras*) are very small, often containing less than 50 households.

However, the results in these few villages are encouraging. Signs of open defecation are much less common than in surrounding villages, toilet usage is relatively high, and there is evidence of improved hygiene behavior (for example, basic handwashing facilities).

It is also clear that Plan has developed a good relationship with the local government. The chief administrators (UNOs) of the Chirirbandar and Khansama Upazilas are keen to link government efforts with the Plan programs. Plan also assisted the local government to complete new baseline surveys in the 18 Union Parishads in which it is currently working, helping to lower official coverage figures from 42 percent to a more realistic 25 percent.

Sanitation promotion and demand

Toilet coverage and usage are generally high, with the new total sanitation approach clearly more effective than previous approaches. However, toilet usage is already declining in villages declared fully sanitized only 18 months ago, confirming the importance of constant monitoring and regular follow-up visits.

It was also apparent that some groups within the village are harder to reach than others. In several cases, one section of a village proved reluctant (or disinterested) in the sanitation program and, despite the best efforts of the village sanitation committee, quickly abandoned their toilets and returned to open defecation once full coverage was proclaimed and the attention of NGOs and local authorities moved elsewhere.

One of the key factors in the success of the Plan program has been the willingness to allow rural communities to utilize innovative local sanitation technologies that engineers normally frown upon.

Most toilets were sanitary and contained some handwashing facilities, although usually no more than a coconut shell full of ash. But many of the owners of these apparently home-made toilets had little idea how their toilet worked, or of the importance of keeping the excreta sealed and isolated. In one village, every toilet ventilation pipe had been screened using scraps of the same pink cloth (to prevent insects from entering the pit and spreading fecal contamination). It transpired that these home-made insect screens had been added recently by the partner NGO, without the knowledge of many of the toilet owners, who proceeded to remove the cloths when asked about their purpose.

Technical sustainability

One of the key factors in the success of the Plan program has been the willingness to allow rural communities to utilize innovative local sanitation technologies that engineers normally frown upon. In particular, many of the toilets installed do not have a water-seal toilet pan, which is usually considered essential among societies that use water for anal cleansing.

A typical toilet design has a home-made sheet metal pan, with bricks for footrests and a mud floor. It flushes through a self-closing seal (made from plastic sheets) into a wicker-lined leach pit, and uses a bamboo ventilation pipe (with a cloth insect screen) to reduce fly and odor problems. Toilet enclosures are almost always home-made, using bamboo poles and thatch or matting. The cheapest of these toilets range in cost from US$ 0 (when only locally available materials are used) to US$ 0.93 (to purchase a plastic pan and pipe). The durability of these very low-cost toilets is uncertain.

Credit: WaterAid Bangladesh

Some engineers argue that, while the use of more durable materials may make the toilet three times as expensive, it will function better and last at least three times as long. In Chirirbandar, where the toilets are in demand and have been constructed from freely available local materials, such as bamboo and mud, it appears that basic repairs are easily and regularly made, in much the same way that many poor rural households make seasonal repairs and improvements to their houses. However, there was little evidence of spontaneous upgrading or rebuilding, with several households found to abandon their toilets as soon as any serious blockage or damage occurred.

Social sustainability

Three of the households in Isamoti village (Chirirbandar

Typical Toilet Components and Cost

Item	Description	Cost
Pan and pipe	Plastic (NGO)	US$ 0.93
Floor slab	Home-made (mud/bamboo)	US$ 0
Pit lining	Bamboo wicker frame	US$ 0
Enclosure	Home-made (thatch, jute)	US$ 0
	Total cost	**US$ 0.93**

Upazila) had not built toilets, but were reported to be using nearby toilets owned by the family's relatives.

The ban on open defecation in the village, and its enforcement by the monitoring committee, has forced these households to change their hygiene behavior, even though they are not yet ready to construct their own toilets. This approach appears to work well in small cohesive communities, but may not prove viable in larger communities with weaker social networks.

Institutional sustainability

Despite strengthening links with local government, Plan's sanitation program is currently separate and dependent on its donor-funding, with no indication that local government is prepared to involve Plan directly in any government programs. Plan is attempting to use its influence to improve the sanitation policy and practice of local government, but the Department of Public Health Engineering (DPHE) is resistant to the involvement of NGOs in implementation, and continues to promote its government-run production centers.

There is little systematic monitoring of performance or progress by either Plan or the local government. Financial expenditure is monitored by Plan's head office in Dhaka, but the current institutional model does not provide for long-term monitoring of sanitation coverage, open defecation (or its proxy – toilet usage) or hygiene behavior.

Financial sustainability

The Plan total sanitation approach is intensive and highly participatory, requiring well-trained facilitators and multiple village visits. Software costs are high. An earlier case study suggests software costs of US$ 5.40 per household[10] without taking into account the program costs and overheads at the regional and national levels. Plan can sustain the sanitation program at its current level, but does not have the resources to fund this sort of program across all 64 districts.

The 20 percent of ADP budget allocated to sanitation could be used to reinforce and expand the new approaches and programs promoted by NGOs such as Plan, but it seems likely that most of it will be used to fund toilet subsidies for poor and vulnerable households, thus disrupting and threatening the sustainability of zero subsidy total sanitation programs.

Environmental sustainability

Most toilets installed under the Plan sanitation program have a single offset leach pit. Little attention has been given to what will happen when these single leach pits fill. Toilet users in Chirirbandar Upazila intend to pay local sweepers (sanitary workers) to empty their leach pits. This process involves digging another pit nearby, then transferring the solids from the leach pit, before sealing the pathogenic contents with a soil layer (at least a foot deep) into which a tree is planted.

Scaling-up

Plan is in the process of scaling-up its sanitation program. It is investing US$ 760,000 in a new program that will involve 60 Union-level facilitators and five Upazila coordinators, with additional financial and policy support from the Water and Sanitation Program (WSP). The objective of this program is to achieve full sanitation coverage in five Upazilas by mid-2007, as requested by the Government of Bangladesh as part of its drive to reach universal sanitation coverage by 2010.

This increase in scale is already proving challenging, with evidence that key stakeholders have not reached consensus on policy and practice. Despite the convergence in thinking achieved at SACOSAN, many government officials (and some NGOs) remain convinced that toilet subsidies are the only way to provide sanitation coverage to landless or extremely poor households. NGOs such as Plan can retain their unique approaches while working in small, well-defined geographical areas, but this difference in understanding and approach becomes problematic when programs are scaled-up.

There is also concern about the limited spread effect from fully sanitized villages. The Plan approach assumes that communities will solve their own

[10] WSP (2003b).

The initial outcomes of Plan's new sanitation program are encouraging. The approach uses current best practice, and appears to produce high sanitation coverage and toilet usage. But the starting conditions have been favorable.

sanitation problems once confronted with them and made aware of affordable and appropriate solutions. But there is little sign of this effect in the villages that surround Plan's success stories, despite efforts to encourage community-to-community learning.

Plan would like to invest in capacity building within the Upazila Parishad (sub-district government), so that the local government can assume a larger role in the facilitation and monitoring of its sanitation programs. But this investment seems of limited value until the national government rationalizes its sanitation policy and provides some direction and coordination to existing sanitation programs.

Conclusion

The initial outcomes of Plan's new sanitation program are encouraging. The approach uses current best practice, and appears to produce high sanitation coverage and toilet usage. Plan has also made efforts to involve the local government in its program, and to coordinate the planning of its scaled-up program with national and regional bodies. But the starting conditions have been favorable. To date, Plan has implemented its sanitation program in very small and cohesive villages, many of which are progressive communities with above average literacy, and a long history of community development and cooperation with NGOs.

However, even under these conditions, there is evidence of declining toilet usage, and of failures to monitor or follow-up effectively after achieving full coverage.

Stopping open defecation in larger areas (Upazilas or districts) will stretch Plan's resources and force it to tackle more reluctant communities and more difficult physical conditions. The current approach may work, but it seems likely that it will require better facilitation, more sustainable monitoring and follow-up mechanisms, and far greater cooperation and coordination with local government.

Annex 3
Case Studies from India

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Case Studies from India

In 1999, the Government of India introduced the Total Sanitation Campaign (TSC) alongside the long-running Central Rural Sanitation Program (CRSP). The TSC was to be more demand-responsive, using IEC (Information, Education & Communication) to stimulate demand, while also promoting low-cost technologies and alternative delivery mechanisms. The supply-driven CRSP was completely phased out by March 2002, leaving the TSC as the main government program for rural sanitation.

The most remarkable thing about the Total Sanitation Campaign is the amount of money involved. The total planned outlay of the TSC is US$ 810 million, including as much as US$ 4 million per district in the more populous states. However, the TSC is not entirely publicly financed, as 19 percent of the planned expenditure will be from self-provision by the rural households that build toilets as a result of the TSC.

In part, this enormous investment reflects the huge rural population in India without access to sanitation. But the TSC budget is some 20 times larger than the equivalent national program in Bangladesh, whereas the unserved population in India (755 million) remains only 10 times higher than that in Bangladesh (71 million) or Pakistan (55 million). The size of the TSC reflects both the buoyant economy in India and a continuing preference for large-scale government interventions.

The huge resources allocated to the TSC allow it to dominate the Indian sanitation sector, both in terms of policy and implementation. The appeal of this large and lavishly-funded program is so great that some NGOs have even dropped donor-funded sanitation programs in order to take part in local TSC projects.

The TSC is implemented through four-year-long district projects, based on proposals prepared by district governments in accordance with strict central guidelines. TSC project funding is split between six main components:[11]

- Five percent on start-up activities (baseline survey, project preparation, awareness raising);
- Fifteen percent on IEC activities (demand creation);
- Five percent on rural sanitary marts and production centers (supply of toilet components);
- Sixty percent on subsidies for individual household toilets and community sanitary complexes;
- Ten percent on school and anganwadi (nursery) sanitation facilities and hygiene education; and
- Five percent on project administrative charges (training, overheads, monitoring, and evaluation).

The TSC provides a subsidy of US$ 11 for the construction of individual household toilets,[12] but only to those officially recognized as below poverty line (BPL) households. This subsidy is considerably lower than the US$ 32-54 that used to be offered under the CRSP, thus is expected to cover only the cost of the essential below-ground components of the toilet (leach pit, cover slab, toilet pan) with the user household responsible for providing a suitable toilet enclosure (superstructure).

The revised TSC guidelines (issued in January 2004) include several additions that directly reflect the approaches adopted in Maharashtra (see Case Study 5 below). The old guidelines noted that 'subsidy for individual household latrines has been reduced' whereas the new guidelines state that 'subsidy for individual household latrine units has been replaced by incentive to the poorest of the poor households' and adds:

> 'The construction of household latrines should be undertaken by the BPL household itself and on completion and use of the latrine by the BPL household, the cash incentive can be given to the BPL household in recognition of its achievement.' p.8 GoI (2004)

The new guidelines also formalize the Nirmal Gram Puraskar (see box), a community-level financial incentive intended to

[11] Some components have funding ceilings: US$ 43,500 for start-up activities; US$ 76,000 for rural sanitary marts; and US$ 87,000 for administrative charges.

[12] US$ 8.15 fixed contribution from the Government of India; US$ 2.70 minimum contribution from the State Government.

The ban on dry toilets will limit options in drought-affected areas, where pour flush toilets are often abandoned because of their water requirements, and may also limit the promotion of the lower cost technologies that are likely to be attractive to poor households.

Nirmal Gram Puraskar

In October 2003, the Government of India announced the Nirmal Gram Puraskar, an award for administrative units (Gram Panchayats, blocks, and districts) that achieve 100 percent sanitation coverage, which has been defined as:

- 100 percent toilet coverage of individual households;
- 100 percent school toilet coverage; and
- Free from open defecation.

The Nirmal Gram Puraskar will be awarded to Gram Panchayats, blocks, districts, and any individuals or organizations that have been the driving force for effecting full sanitation coverage in the respective geographical areas. The Nirmal Gram Puraskar will be a minimum of:

- US$ 225 for individuals;
- US$ 450 for organizations;
- US$ 4,500 for Gram Panchayats;
- US$ 22,250 for blocks; and
- US$ 67,750 for districts.

These awards should be used for improving and maintaining sanitation facilities, with a focus on solid and liquid waste disposal, drainage facilities, and maintenance of the sanitation standard in the relevant area.

The State Government will identify and select Gram Panchayats, blocks, and districts that are fully covered and conform to the eligibility criteria. The Government of India will then engage independent evaluator(s) to confirm full sanitation coverage. Annually, a National Committee on Nirmal Gram Puraskar will draw up a list of those awarded the Puraskar.

Adapted from GoI, 2004

reward the achievement of 'fully sanitized and open defecation free Gram Panchayats, blocks, and districts'.

The new TSC guidelines include regulation against 'dry' toilets,[13] stating that:

> 'Construction of dry latrines is not permitted in the rural areas. The existing dry latrines, if any, should be converted to pour flush latrines.' p.8 ibid.

This new policy is controversial. The ban on dry toilets will limit options in drought-affected areas, where pour flush toilets are often abandoned because of their water requirements, and may also limit the promotion of the lower cost technologies that are likely to be attractive to poor households.

While the TSC is a national program, largely funded by the Government of India, the uptake rate and approach adopted varies considerably both between and within States. Some State Governments disagree with the lower subsidy advocated by the TSC, thus have decided to provide larger hardware subsidies from their own funds. And some districts have been slow to prepare project proposals and begin implementation.

The following case studies examine four different approaches to the Total Sanitation Campaign in India:
Case study 4: West Bengal TSC
Case study 5: Ahmednagar Pilot, Maharashtra TSC
Case study 6: Andhra Pradesh TSC
Case study 7: Gramalaya sanitation program, Tamil Nadu TSC

Case study 4: West Bengal (India) Total Sanitation Campaign

This case study examines the unique approach to the Total Sanitation Campaign (TSC) adopted by the Government of West Bengal. Rural sanitation has long

[13] Non-flush toilets (that is, toilets without water seal pans) such as simple or ventilated pit latrines.

been a priority of the Government of West Bengal. When the Intensive Sanitation Program was launched in 1990, sanitation coverage in Medinipur District was barely five percent. Today, in what was the largest district in India (now split into two districts: East Medinipur and West Medinipur), the provision of more than 900,000 toilets has raised sanitation coverage to 60 percent. In 2001, Medinipur had the distinction of being the first district in the country to achieve 100 percent sanitation coverage in an entire block: namely, Nandigram II (population 104,600). These successes have led to global recognition of the Medinipur approach, thus it is no surprise that it has become the model for all subsequent sanitation activities in the State.

Key features

- Built on the success of the Medinipur Intensive Sanitation Program;
- Implemented by local government through 322 NGO-run RSMs;
- Active State sanitation cell (UNICEF-funded);
- US$ 8.30 low-cost toilet design;
- US$ 4.40 discount for BPL families;
- Toilet enclosure built by users (home-made);
- 850,000 toilets constructed in 2002/03; and
- 41 percent sanitation coverage in West Bengal.

General context

West Bengal has a long history of socialist government,

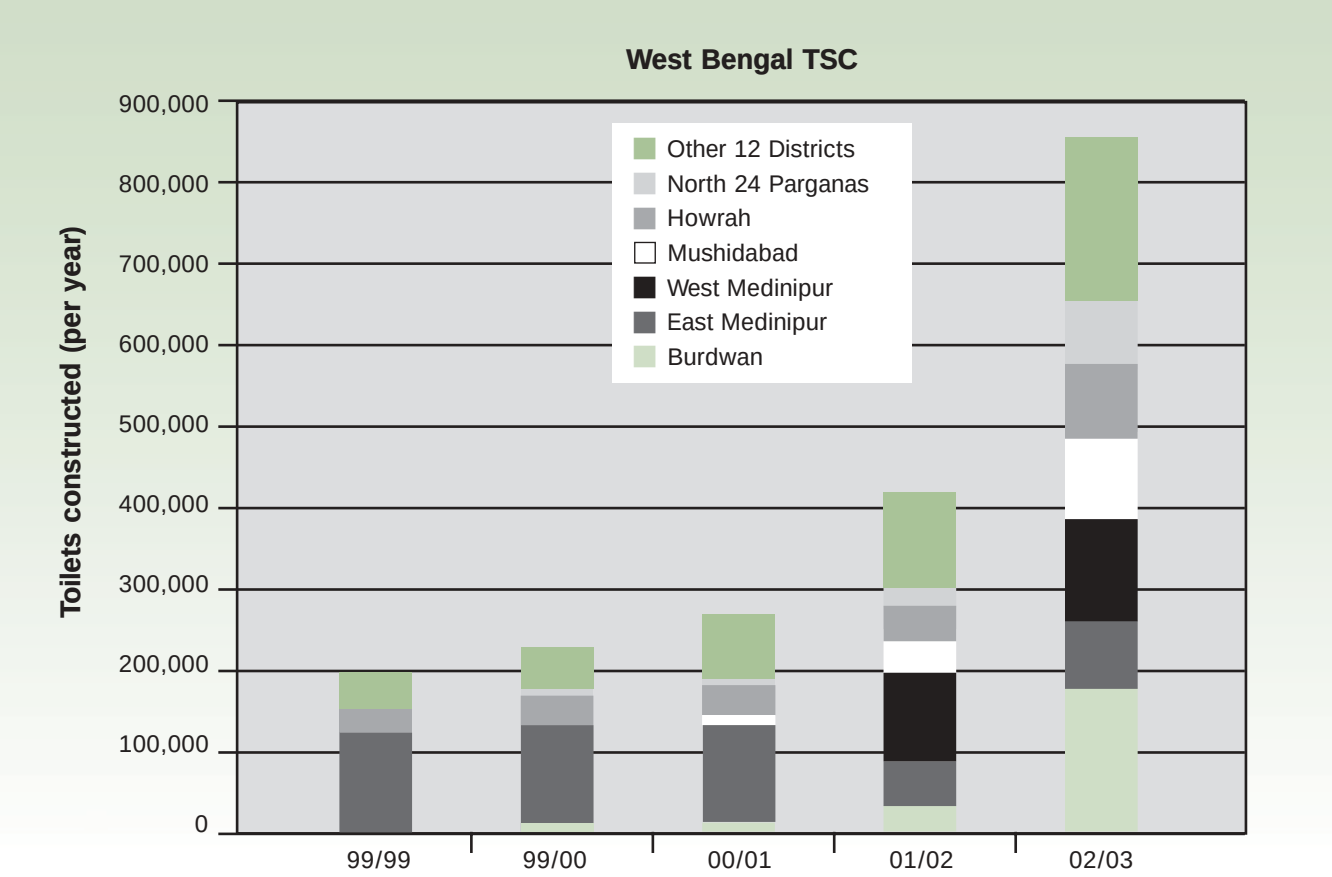
reflected in strong local government institutions and their commitment to provide basic services to the poor. This has allowed the sanitation campaign to involve people from all walks of life, and cut through political divides. The government has also forged long-term partnerships with UNICEF, and with an influential local NGO, the Ram Krishna Mission Lok Shikshya Parishad (RKM), both of whom deserve considerable credit for the sanitation successes in Medinipur district. These enabling factors

Case Study Data

Unit	Name	Population		Literacy	Sanitation Coverage
		Total	Rural		
District 1	Medinipur East	4.5 million	–	69%	87%
District 2	Medinipur West	5.3 million	–	–	39%
State	West Bengal	68.1 million	72%	58%	41%
Country	India	1,048 million	72%	56%	28%

Source: WDR 2004; SIPRD 2003; Census of India 1991

Rural sanitation coverage in West Bengal is now significantly higher than in the rest of India, but the sanitation facilities remain concentrated in a handful of the 18 districts.



Source: SIPRD 2003

have combined to raise the profile of sanitation in West Bengal, and to create unusually high political support and priority for investments in rural sanitation.

West Bengal has a high population density (765 people per sq km) and a reducing number of sites for open defecation. It also has above average literacy rates, and a good record of community organization. These factors may contribute to above average: demand for sanitation; awareness of health risks; and response to sanitation interventions.

Sanitation coverage

Sanitation coverage is increasing rapidly in West Bengal. Two million toilets have been constructed in the last five years, bringing State sanitation coverage up to 41 percent (from 12 percent in 1991). Fourteen blocks now claim 100 percent sanitation coverage,[14] and progress is beginning to be made in several previously non-performing districts.

Monitoring of sanitation coverage is becoming more effective, with weekly progress updates being made by the districts and reviewed at State level.

This process is allowing State institutions to identify and target weaknesses (such as non-performing districts).

[14] Verified in four blocks (Haldia, Nandigram II, Raina I and II) and claimed in a further 10 blocks (Ausgram I, Bally-Jagachha, Barrackpore II, Dantan II, Hasnabad, Mahisadal, Mohanpur, Nandakumar, Sankrail, and Sutahata).

Case study context

This case study is based on: documentation collected by WSP; interviews with key informants in Kolkata, and at the State Institute of Panchayats and Rural Development (SIPRD) in Kalyani; and visits to five villages in two districts (East Medinipur and West Medinipur).

Rural sanitation coverage in West Bengal is now significantly higher than in the rest of India, but the sanitation facilities remain concentrated in a handful of the 18 districts. Before 2001, the only districts making progress were Medinipur (East and West) and Howrah. However, since the Total Sanitation Campaign (TSC) started, three other districts (Burdwan, Murshidabad, North 24 Parganas) have rapidly accelerated their sanitation programs.

Approach

Local government officials and NGOs promote a standard low-cost latrine slab (including a cement mosaic pan and a pour-flush water trap). In most cases, a single, unlined pit is covered with a latrine slab, around which the users build an appropriate enclosure.

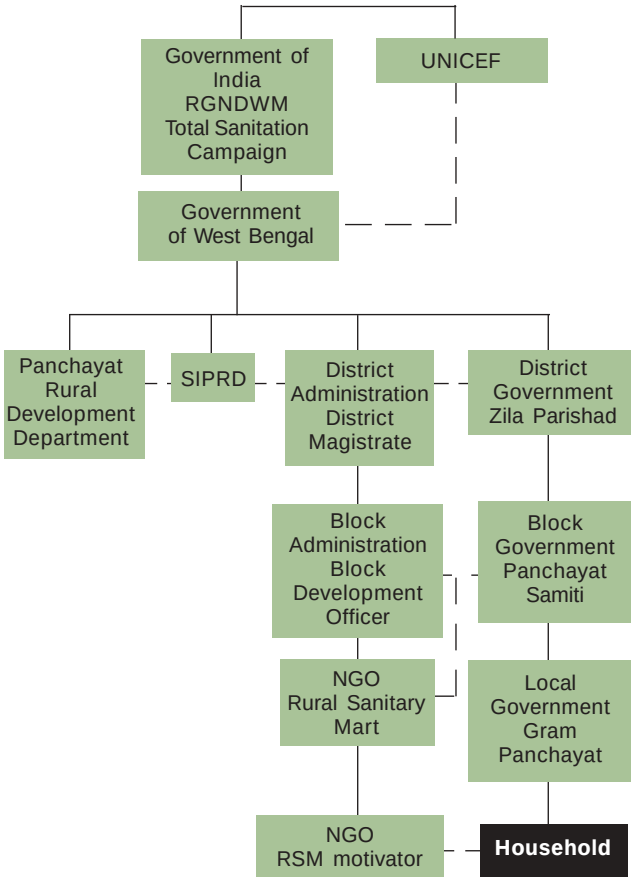
A network of Rural Sanitary Marts (RSM) manufactures the latrine slabs, and employs village-level motivators (on commission of US$ 0.43 per toilet) to promote toilet usage and collect up-front payments for RSM-supplied toilets. After receiving full payment (US$ 3.77 from BPL families; US$ 8.09 from others), the RSM sends a mason to deliver the materials and install the latrine slab.

The RSM then gets the Gram Panchayat to certify the number of discounted toilets installed by BPL families, and uses this certification to claim back the government subsidy (US$ 4.31 per BPL family) from the block-level authorities (Block Development Officer and Panchayat Samiti).

District authorities (District Magistrate and Zila Parishad) manage the local programs – providing funds to establish RSMs; involving government officials within the district in sanitation and hygiene promotion activities; disbursing subsidies; and monitoring progress (financial and physical).

The State Sanitation Cell (housed in the State Institute of Panchayats and Rural Development) provides coordination, reporting, and technical advice. This allows the Department of Panchayats and Rural Development (PRD) to focus on policy, funding allocations, and overall monitoring.

Institutional model



Toilet usage

The rapid appraisal conducted for this study suggests that usage is high in villages that have reached 100 percent coverage. Most of the toilets appear to be in regular use, with soap and water available within the toilet enclosure. In half of the cases, the users state that their latrine pits have already filled, and that they have relocated their toilets by digging new pits and moving their

Landless households, and households living in congested villages, have great difficulty in finding a suitable location for their toilets.

Sign at ration shop: Rs 200 fine for open defecation

latrine slabs. In some of the areas visited, enthusiastic government officials organize patrols of well-known defecation sites to enforce toilet usage. However, this practice is occasional, usually linked to intensive efforts to achieve full coverage, and there is little evidence of any formal usage monitoring once 100 percent coverage is attained.

In 2002, a detailed assessment of sanitation coverage[15] in Nandigram II block (East Medinipur) confirmed that sanitation coverage was 100 percent, but found that usage was only 85 percent. The majority of the 15 percent still practicing open defecation were reported to be working men.

Demand for sanitation

In the successful districts, there is a good awareness of the benefits of sanitation, and of the political desire to increase sanitation coverage.

Among government and NGO officials, awareness has been raised by TSC 'start-up' activities: conducting baseline surveys; training of resource groups; setting of block sanitation targets; and monthly review meetings.

Substantial investments have been made in IEC campaigns through different media at both macro (State) and micro (household-to-household) levels. As a result, government and NGO officials display good understanding of the importance of stopping open defecation; encouraging behavior change; focusing on toilet usage (rather than construction); and on wider environmental sanitation issues (drainage, solid waste disposal, and so on).

However, it is less clear whether these messages have reached those without sanitation, or whether these messages are effective in stimulating demand for sanitation. Anecdotal evidence from the study suggests that toilet users from BPL households are aware of fecal-oral disease transmission, and of the benefits of handwashing, but that health and hygiene benefits are not strong factors in the decision to build a toilet.

The main factors driving increases in sanitation coverage in West Bengal appear to be effective toilet promotion by NGO motivators; and pressure from government officials to construct toilets. As sanitation coverage increases, so does the challenge of motivating disinterested villages and households to build toilets. In some cases, this had led those implementing the TSC to adopt innovative (sometimes coercive) approaches, including:

- US$ 4.31 fine for open defecation;
- Signs prohibiting open defecation in villages;
- 'Open defecation' patrols by local authorities and police; and
- 'Toilet certificate' (from Gram Panchayat) required to obtain rations, birth/death certificates, and to apply for bank loans.

Recent efforts to scale-up the provision of sanitation in West Bengal have led to a more supply-driven program. Enthusiastic officials are striving to meet ambitious coverage targets, such as the achievement of 100 percent coverage within their jurisdiction, and this is reflected in the more forceful approaches being adopted. NGO motivators, local leaders, and government officials now talk about collecting (advance) payments for toilets, rather than convincing households to invest in toilets. In some villages, BPL householders stated that a toilet was not a priority, and that they were forced to make a standard

[15] Compiled by the Government of India review team (RGNDWM, 2002).

US$ 3.77 toilet payment in order to receive government rations or placate a local leader. Toilets are being built, but many of the new owners are unaware of the TSC, unsure of what they have paid for, and have little choice in the process.

In areas where sanitation coverage has recently increased rapidly, it is not yet clear whether the users are genuinely convinced of the benefits of sanitation, or whether the poorer households will continue to use their toilets once the attention of local officialdom shifts to other villages.

Technical sustainability

There appear to be few technical problems with the simple toilet design adopted in West Bengal. Most villages in West Bengal contain ponds, which provide ready sources of water for toilet flushing. In many areas, favorable soil conditions allow the use of hand-dug leach pits with no lining. However, coastal and water-logged areas often require more expensive lined pits (to avoid collapsing) and more complex designs (to allow leaching), which has led to reduced sanitation uptake in these areas. The standard pour-flush latrine slab contains a direct (gooseneck) water trap, which requires no pipework and can be easily installed above a single pit. In most cases, the users then surround the latrine slab with a toilet enclosure made from local materials (sticks, woven palm fronds, jute sacking, and plastic sheets). The low-cost design has significant advantages when the pit becomes full. Another pit is dug nearby, and the latrine slab and enclosure are simply reinstalled above this new pit. Normally, this process does not require any additional materials, and most households find that they can avoid paying the local mason for this task by moving the latrine slab themselves.

Some public health engineers have suggested that the promotion of toilets without solid-walled enclosures is likely to undermine the sustainability (and appeal) of sanitation facilities. However, an impact assessment of rural sanitation in West Bengal[16] found that as few as 20 percent households live in pucca (brick or solid-walled) houses. Many families live in thatched or adobe houses, and undertake frequent repairs using locally available housing materials. In West Bengal, the majority of toilet users have built kutcha (home-made) toilet enclosures, and appear satisfied with their simple toilets even after several years of use. However, this may be related to the toilet design adopted, which encourages the user to relocate the toilet once the pit is full (thus discouraging investment in expensive toilet enclosures that will be difficult to move).

Typical Toilet Components and Cost

Item	Description	Cost
Pan and trap	Mosaic cement (RSM)	US$ 1.51
Slab	Reinforced concrete (RSM)	US$ 4.74
Connection	Direct (no pipework)	–
Pit lining	None	–
Mason	Installation and transport	US$ 1.40
Motivator	Fee	US$ 0.43
	Total cost	**US$ 8.08**

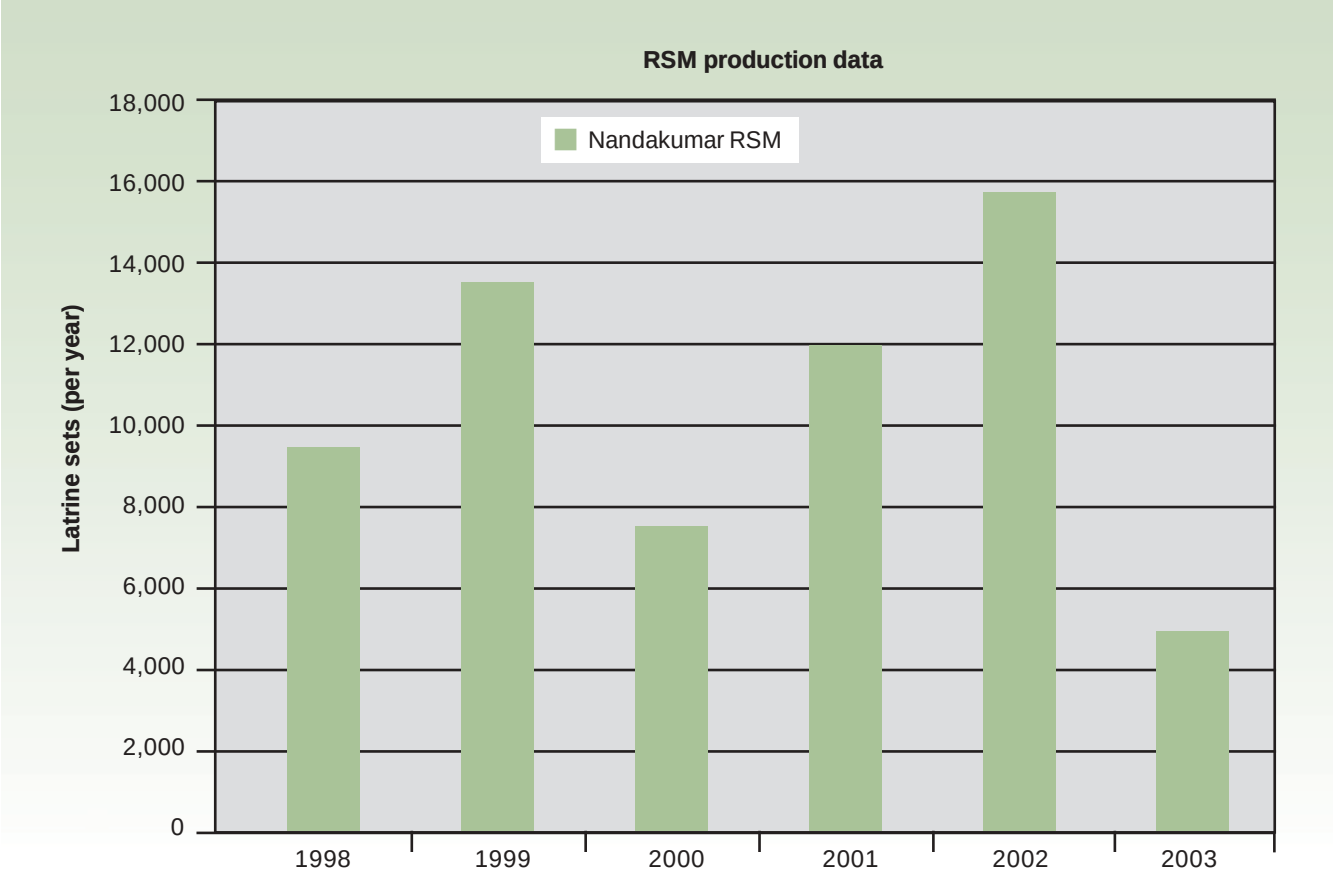
[16] ORG, 2000.

As sanitation coverage increases, policy makers and local government officials can shift their attention to developing mechanisms and incentives for monitoring sustainability and effective use.

No innovative or non-standard toilet designs were found in West Bengal. In theory, the RSMs promote several toilet designs, but in practice almost all of the toilets installed have the same below-ground components. The 322 RSMs in West Bengal manufacture cement mosaic latrine pans based on a standard UNICEF design. These cement mosaic pans are cheaper than conventional ceramic pans, but are not available in local markets, and are more difficult to keep clean than ceramic pans. There are few private suppliers in most areas, thus users are dependent on the motivator from their local RSM for access to toilet components, and for technical assistance.

Social sustainability

Landless households, and households living in congested villages, have great difficulty in finding a suitable location for their toilets. In congested villages in West Bengal, clusters of individual toilets are often built on the outskirts of the village. Landless households usually have to rely on the benevolence of a local landowner, or seek permission to use communal land. Sanitation coverage is generally lower among tribal communities in West Bengal, and it has been reported that tribal households are often reluctant to install or use toilets. Sanitation coverage in West Medinipur district, which has a high tribal population,[17] is 48 percent lower than in neighboring East Medinipur



Note: RSM production was lower in 2000 because it was an election year

[17] Sankrail Block, West Medinipur: 27 percent Scheduled Tribes; 20 percent Scheduled Castes; 50 percent Other Backward Castes.

District. This difference in coverage reflects more general development problems, such as the poorer, more remote, and arid situation in West Medinipur, but also derives from the decision of earlier sanitation programs to focus on the 'easier-to-cover' East Medinipur population. Interestingly, recent intensive sanitation promotion among tribal groups in West Medinipur has led to surprisingly quick uptake, and several tribal communities now have 100 percent sanitation coverage (notably Sankrail Block).

Institutional sustainability

The institutional model for the TSC in West Bengal is dependent on two key elements: local government and RSMs.

RSMs are situated at the block level (322 RSMs serve 341 blocks), which makes the Block Development Officer (BDO) a key player in the TSC. In the districts visited, active BDOs have mobilized all the resources at their disposal (extension officers, PRI officials, teachers, government vehicles) in intensive sanitation campaigns, and have used their influence to motivate and assist the NGOs operating their local RSM.

Weekly monitoring of the TSC by the District Administration allows benchmarking across the different blocks, which provides recognition and incentive for the active and successful BDOs. These same BDOs are using the Nirmal Gram Puraskar to motivate the Panchayat Samiti and Gram Panchayats within their jurisdiction.

Pockets of inactivity remain, but improvements in monitoring are beginning to expose these areas of weakness, and financial incentives to increase sanitation coverage are providing motivation for previously disinterested government officials.

Unfortunately, both the monitoring and reward systems focus largely on physical progress (construction of toilets), with little emphasis on what happens after 100 percent coverage is reached. However, unlike many NGOs and project implementation units, local government has a long-term mandate and responsibility for community sanitation services. Therefore, as sanitation coverage increases, policy-makers and local government officials can shift their attention to developing mechanisms and incentives for monitoring sustainability and effective use (including indicators such as open defecation, toilet usage, filling of leach pits, handwashing, and improved health and hygiene behavior).

Rising sanitation coverage is also calling into question the sustainability of some rural sanitary marts. Most RSMs received substantial seed money (currently about US$ 5,396.07) and training, either from UNICEF (pre-TSC) or from the government. This assistance allowed them to invest in the facilities needed to produce the standard TSC toilet components. However, most RSMs offer few alternative products, and are starting to find that their income declines as local sanitation coverage approaches 100 percent.

During 1998-2002, the Nandakumar RSM (East Medinipur) produced and sold, on average, more than 11,500 latrine sets per year. Operated by a local NGO (Tamralipta Guchha Samity), the RSM achieved these high sales by supplying latrine sets to intensive sanitation programs in five surrounding blocks, through a network of more than 2,000 motivators and 130 masons.

The success of these programs has helped to increase average sanitation coverage in the five blocks to 87 percent, with Nandakumar block recently achieving universal sanitation coverage. As a result, demand is now easing. In 2003, sales dropped by more than 50 percent, to about 5,000 sets per year.

The RSM staff estimate that the five blocks in their service area now contain only 23,000 households without toilets. Clearly, the long-term viability of RSMs in this position is uncertain.

Financial sustainability

The low-cost and low subsidy approach results in few funding or affordability problems. The provision of a subsidy lower than that advocated by the TSC frees up the central subsidy funds for use in other areas, such as additional IEC, sanitation promotion, and capacity building activities. Meanwhile, the low-cost design means that most households can afford toilets, despite the provision of a below-average subsidy.

Further efforts are required to tackle the special technical and social problems associated with sanitation facilities in water-logged and water-scarce areas.

Initially, the Medinipur Intensive Sanitation Program provided no hardware subsidy, and allowed toilet purchasers to pay the RSM in instalments. But these approaches were dropped within a few years, as it proved difficult for the RSM to recover the instalments, and there was local resistance to making poor households pay the full cost of their toilets (when subsidized government sanitation programs were running in other areas).

However, some recent increases in sanitation coverage reflect additional (non-TSC) funding. In West Medinipur, the district administrator used discretionary (non-TSC) funds to make US$ 2,250 incentive payments to Gram Panchayats that achieved 100 percent sanitation coverage (similar concept to the Nirmal Gram Puraskar). In addition, UNICEF funds the running costs of the State sanitation cell, which has been instrumental in improving monitoring and identifying weaknesses.

Environmental sustainability

There appear to be few environmental problems associated with the toilets installed in West Bengal under the TSC. Most toilets have single pits, which are backfilled once full. There was no evidence that the pit contents are being emptied or re-used. There was some awareness of wider environmental sanitation issues, such as wastewater and solid waste disposal, but these activities generally receive little priority.

Scaling-up

Three broad scenarios are found in West Bengal: mature sanitation programs in the two Medinipur districts; recently scaled-up sanitation programs in four or five newly active districts; and relatively static sanitation programs in the remainder of the districts. These differences generally reflect the interest and priority given to rural sanitation by the respective district authorities. Tighter and more regular monitoring of TSC performance is now increasing the pressure on less active district administrators, but the challenge of energizing sanitation programs in weak districts remains a major obstacle to scaling-up.

But performance also varies inside districts, with a number of blocks lagging behind even in more successful districts. As discussed earlier, part of the block performance reflects the application and enthusiasm of the BDO. However, SIPRD note that below-average block coverage can also be the result of a badly-performing RSM. In most areas, the Rama Krishna Mission (RKM) is able to locate a suitable partner NGO to run the rural sanitary mart, but sometimes the local NGOs selected are ineffective. In this case, it can be difficult to resolve the problem, especially if local interest groups are reluctant to relinquish their monopoly of the supply of toilets to low-income households. At present, there is very little private sector involvement in the manufacture and distribution of low-cost toilets, and thus little competition for the 322 established RSMs.

Another constraint to scaling-up is the provision of toilets to groups living under unfavorable conditions, such as landless households, extremely poor households, and those in water-logged or water-scarce areas. In West Bengal, the rising number of blocks with universal coverage suggests that communities are finding ways to resolve the provision of toilets to the landless and extreme poor (usually through cross-subsidy by the community, or subsidy by the Gram Panchayat). Exposure visits to low-income villages with 100 percent sanitation coverage are effective in overcoming persistent claims that these landless and extremely poor groups should be provided with free toilets. However, further efforts are required to tackle the special technical and social problems associated with sanitation facilities in water-logged and water-scarce areas.

In the last four years, more than 30,000 women's self-help groups have been formed in West Medinipur. The 300,000 women involved in these savings and micro-credit groups have good local knowledge and are proving useful as voluntary health workers, and as a source of committed sanitation promoters. Some of the self-help groups have been lending money to their members for the purchase of toilets, and have become involved in monitoring open defecation, toilet usage, and hygiene behavior. This model may provide a useful alternative approach to sanitation promotion by RSMs, particularly in areas without experienced NGOs, or where RSMs are proving unsustainable.

Conclusions

The Total Sanitation Campaign in West Bengal is rightly celebrated as a success story. There has been a long history of innovative and holistic sanitation development, although concentrated in a few districts. However, the program is now scaling-up across the State, with some 850,000 toilets (covering eight percent of the population) built last year alone.

Part of this success derives from the favorable conditions and political context. But much credit must go to the approach adopted: the low-cost toilet design has proven simple to install, durable and easy to reuse; the low subsidy ensures affordability and frees up government funds for motivation and awareness raising; and, finally, the institutional model has encouraged cooperation between local government and NGOs, and laid the foundation for long-term support and monitoring.

As sanitation coverage in West Bengal rises and spreads, new challenges and questions emerge. The highly standardized approach may prove too rigid to meet the demands of universal coverage in all situations, and may struggle to absorb the lessons from sanitation successes in other areas. And while monopoly supply by rural sanitary marts has probably helped to simplify implementation, it may have suppressed the development of more competitive and sustainable local services.

It remains to be seen whether the rapid sanitation developments of recent months will prove as sustainable and beneficial as the much-vaunted, but more slowly developed, Medinipur toilets.

Case study 5: Ahmednagar (India) Total Sanitation Campaign

This case study examines the innovative approaches to sanitation development being implemented through the TSC of the Government of Maharashtra. The TSC works through district-based projects, with a number of different approaches utilized in Maharashtra alone.

This case study focuses on the new approach to the TSC being piloted in the Ahmednagar district.

Key features

- US$ 100 million budget for TSC in Maharashtra (US$ 3 million per district);
- Financial incentives paid to BPL households after community stops open defecation;
- Awards to Gram Panchayats that stop open defecation (achieve 100 percent toilet coverage);
- NGOs used for social intermediation ('ignition' approach);
- Use of exposure visits and stakeholder consultation to achieve reforms; and
- Sant Gadge Baba Campaign (SGBC).

General context

Maharashtra is a high-income State with high levels of developmental expenditure, but there are significant differentials between the more industrial districts close to Mumbai and the remoter and more water-scarce eastern districts.

Sanitation

The Government of Maharashtra (GoM) has made significant investments in rural sanitation in recent years. Since 1997, the number of rural families that have access to toilet facilities has more than tripled. But Maharashtra started its program from a position of very low sanitation coverage, thus more than 70 percent of households remain without sanitary toilets.

Stopping open defecation requires collective action, which suggests that the financial incentives would be more effective if used to encourage the attainment of community, rather than individual, goals.

More important, the GoM has realized that heavy investment in the provision of toilet facilities does not guarantee improvements in public health. Between 1997-2000, US$ 150 million was spent on the sanitation programme in Maharashtra, with 70 percent of the money going on large subsidies (US$ 55-80 per household) to encourage the rural population to build toilets. It worked in one respect: more than 1.6 million toilets were constructed in only three years, and the program was hailed as a success. However, subsequent surveys revealed that only 43 percent of these toilets were being used properly, with the majority being used for purposes other than defecation, or not used at all.

Sant Gadge Baba Campaign

Faced with the evidence that more than half of this massive investment had been wasted, the GoM decided to pilot new approaches. In 2000, it introduced the SGBC, an annual contest in which villages compete against each other for prizes and prestige. The focus is on community-wide sanitation and cleanliness, with points awarded based on numerous criteria (sanitary household toilets, wastewater disposal, solid waste disposal, water source protection, morbidity and mortality data, school sanitation, IEC efforts, and so on). The top three villages from each block are awarded a cash prize, and become eligible for the sub-district, district, and State competitions.

The SGBC has proved popular. Every year the GoM spends US$ 1.5 million on prize money, which the winning communities have to use for community development. But it appears that the prestige and recognition attached to the awards are worth much more, as the campaign has led rural communities across Maharashtra to spend considerable amounts on improving the infrastructure in their villages.

Case study context

The TSC was slow to take off in Maharashtra. Four of the 33 districts in the State were already included in the Sector Reform Project[18] (Amravati, Dhule, Nanded, and Raigad districts), and had their TSC projects sanctioned some four years ago. The remainder took time to prepare project proposals, and the final 13 district projects were only sanctioned within the last year.

The total budget for the TSC district projects in Maharashtra is about US$ 100 million, with each project costing from US$ 2.2-4.3 million.

In June 2003, a government progress report noted that implementation of the TSC was slow in most of the Maharashtra projects, and that physical performance was very poor in the four sector reform districts where projects were more than three years old. Another district has exhausted its IEC funds, but made little progress otherwise. Since then, the State Government has given higher priority to the TSC, and invested considerable time and effort into the development of an effective strategy for scaling-up the provision of rural sanitation in the State.

Following a series of consultations, workshops, and study tours, including visits to examine successful sanitation programs in Bangladesh, West Bengal (India), and Tamil Nadu (India),[19] the Government of Maharashtra decided to pilot a new approach in two districts (Nanded and Ahmednagar).

Ahmednagar district contains two very different landscapes: the northern area, which falls within the Narmada irrigation command and is relatively rich; and the southern area, which is severely drought-affected and largely poor.

Approach

There are three key differences between the standard TSC approach and that adopted in the pilot project in Ahmednagar:

- Use of participatory approaches to trigger behavior change;

[18] Pilot project aiming to institutionalize community participation and demand-responsive approaches in rural water supply development, now covering 67 districts in 26 States.

[19] Faciliated by the Water and Sanitation Program-South Asia (WSP-SA).

- Focus on stopping open defecation (300 villages selected in first phase); and
- Payments are not made until the village achieves 100 percent coverage (community incentives).

The new approach is built on lessons from Bangladesh[20] (see Annex 2), where it has been shown that villages can achieve universal access to sanitation without external subsidies, using participatory approaches to trigger awareness and empower the community to solve its own sanitation problems.

This type of participatory process requires good facilitation, local knowledge, and long-term support. In Ahmednagar, the Zila Parishad (district government) trained 20 local NGOs in the 'trigger approach', and contracted them to carry out the required social intermediation and community development activities. Each NGO covers 8-10 Gram Panchayats and has an open-ended performance contract that allows expansion (or termination) of their work, subject to output-based progress reviews every 15 days.

The new approach assumes that a village that achieves 100 percent toilet coverage and stops open defecation completely will reap larger health benefits than two villages (of similar size) that reach 50 percent toilet coverage, because half the households in the two villages (more if toilet usage is low) continue to defecate in the open. Phase I of the pilot project aims to stop open defecation and achieve universal toilet access in 300 villages. This approach is in stark contrast to conventional sanitation programs, which spread their resources thinly across a large number of villages, but rarely reach 100 percent toilet coverage (or usage) in any of them.

Conditional financial incentives

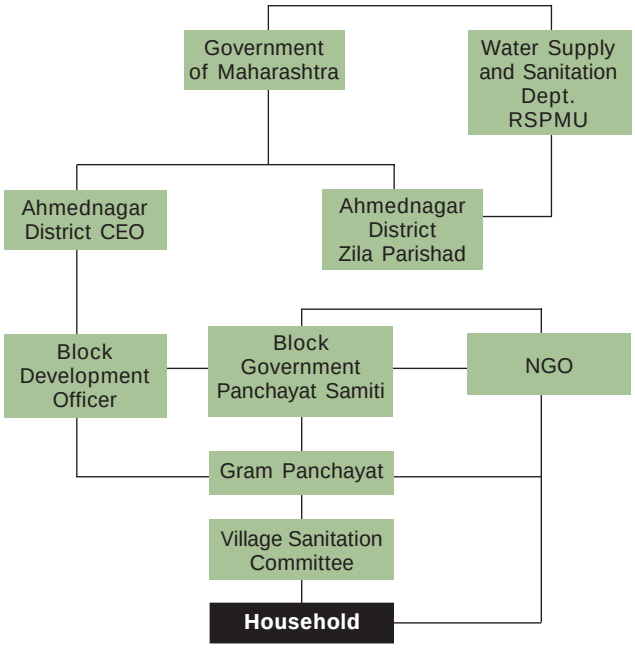
The major innovation in the Ahmednagar pilot project is in its use of conditional financial incentives. Most sanitation programs treat sanitation as a purely private good, with up-front individual household subsidies used to assist private toilet construction. Yet stopping open defecation requires collective action, which suggests that the financial incentives would be more effective if used to encourage the attainment of community, rather than individual, goals.

In Ahmednagar, every household has to fund its own toilet. However, the BPL households do so on the understanding that they will be paid US$ 8.10 if everyone builds a toilet and the community is declared 'open defecation free'. The remainder of the TSC subsidy (US$ 2.69 per BPL household), paid to the GP on achieving universal access, thus acts as an incentive for the GP to assist in stopping open defecation, including the promotion and facilitation of the construction of toilets by the landless, the very poor, and those unwilling to invest.

A similar financial incentive is provided to the NGO working in the village. It is paid US$ 1.07 commission for every household that builds a toilet (from the IEC funds), but does not receive any of this money until the village is declared 'open defecation free'.

Institutional model

TSC in Ahmednagar district, Maharashtra



[20] Kar, 2003.

Incentives to encourage collective action for the rapid development of sanitation facilities are having a remarkable effect on toilet coverage in Maharashtra.

Performance

There has been significant awareness raising and capacity building in the district. Elected representatives, local government officials, extension workers, and NGO staff have been involved in sanitation promotion through workshops, training, and exposure visits to other successful programs. After only six months, the Ahmednagar pilot project has made significant progress. The new approach has been introduced into at least three Gram Panchayats in every block, so that 50 GPs across the district are now involved. Five villages have already been declared free of open defecation, and another 25 villages are reported to be approaching universal toilet coverage.

The technology and implementation appear sound. In the villages studied, toilet usage was high and there was no evidence of fly or odor problems. Efforts were also being made to monitor and control open defecation. Some communities have removed bushes in the vicinity of the village to reduce the number of open defecation sites, and are imposing a US$ 5.39 fine on anyone caught defecating in the open (with a US$ 2.15 reward to the person that reports them). There have been some difficulties with the pilot project. Three of the 20 NGOs involved have already withdrawn or had their contracts terminated for non-performance, and there is now a shortage of suitable NGOs with relevant experience. But perhaps the most important indicator of performance is the national recognition afforded to the policies and practice used in the pilot projects in Ahmednagar and Nanded. The revised TSC guidelines (January 2004) include several additions that directly reflect the approaches adopted in Maharashtra, including a move towards post-construction financial incentives and the Nirmal Gram Puraskar (see earlier), a community-level financial incentive intended to reward the achievement of 'fully sanitized and open defecation free Gram Panchayats, blocks, and districts'.

Demand for sanitation

The Ahmednagar pilot project has not been very demand-responsive in village selection. Of the 300 GPs selected, 225 were chosen on the basis of their performance in the Sant Gadge Baba Campaign, and another 84 were nominated by their primary health centers.

While good performance in the SGBC indicates above-average sanitation and village cleanliness, it may also

Incentives to Reuse Abandoned Toilets

In Wadgaon Amli village (Ahmednagar block), one household was recently persuaded to rehabilitate their old toilet. It was an expensive brick-built model that cost about US$ 80 three years ago, when it was provided free under a previous government scheme. Sadly, it was never used, except as a private place for the women to wash themselves, because the family continued to defecate in the open even after the toilet was built.

But then the community decided to stop open defecation in the village. As a result, the women of the household report that, "it has become difficult to go out; all the bushes have been removed and there is no shelter; now we have to use a toilet." This family decided to invest US$ 11 in deepening the existing leach pit and installing a new ceramic pan, and have all started using the rehabilitated toilet. The women say that everyone has a toilet now, and that they won't go back to open defecation…even if the bushes grow back!

Abandoned demonstration toilet, Watephal

Typical Toilet Components and Cost

Item	Description	Cost
Pan and trap	Ceramic (market)	US$ 3.23
Floor slab	Reinforced concrete (RSM)	US$ 3.23
Connection	Pipework (offset)	US$ 0.64
Pit lining	Honeycomb brickwork	US$ 4.31
Mason	Installation and transport	US$ 4.31
Enclosure	Walls, door, and roof	US$ 3.23
	Total cost	**US$ 18.95**

reflect favoritism by local government officials. Some villages, often those with links to senior government officials or elected representatives, receive more than their fair share of assistance and development expenditure, thus routinely out-perform their less favored rivals in the annual SGBC awards.

Following recognition that the SGBC has little impact on toilet coverage, its scoring system has been changed to double the weighting given to toilet coverage (to 30 percent). However, while villages that have received SGBC awards are likely to have higher toilet coverage than their neighbors, it does not follow that demand for sanitation is higher, or that needs are any greater.

In 2003, Watephal (Ahmednagar block) was placed third in the SGBC at sub-block level. As a result, it was selected for the pilot project and an NGO began work in the village. The 'ignition process' was carried out and materials for 10 toilets were provided, but the community showed little interest. Only a handful of toilets were built, and the NGO withdrew from the pilot project.

There are a number of reasons for the problems in Watephal village. Among them, the failure of the NGO to follow-up on the initial participatory activities; political in-fighting between two factions in the village; and a relatively large, well-educated, and well-connected population (more than 80 teachers reside in the village) that is still hoping to receive government subsidies and assistance. Despite its previous SGBC performance, the village is no longer clean, and there is little willingness-to-pay for sanitation.

Technical sustainability

Despite seeing the success of the very low-cost toilet models promoted in Bangladesh and West Bengal, the GoM officials felt that these technologies were not well-suited to the different culture, physical conditions, and economic standing found in Maharashtra.

As a result, a typical toilet in Ahmednagar costs US$ 17-22. There is no fixed model, but most toilets have a ceramic pour-flush pan and some form of honeycomb brick lining in the leach pit. The materials can generally be found in local markets, but most households rely on assistance from the NGO to make their purchases.

Concerns about water scarcity and affordability have led the authorities to promote single-pit toilets with direct (gooseneck) pans, and to examine the import of low-flush pans. This prescriptive approach to the problems may adversely affect sustainability, and there is little evidence that it will reduce water consumption.

The one area of real concern is the shortage of suitable NGOs working in the sanitation sub-sector. The participatory process is central to the new approach, and its success is dependent on good facilitation and social intermediation.

Low-flush pans are often harder to clean than conventional ceramic pans, and are not readily available in Ahmednagar. Their supply may be a gap in the market, which can be plugged by encouraging their manufacture or import, and including them in the range of options available to rural communities. Similarly, the promotion of single-pit toilets with gooseneck pans will reduce costs, but may discourage further user investment and reduce sustainability, as it is necessary to remove the toilet enclosure and slab when the leach pit fills (in order to relocate them above a new pit, or empty the old pit).

Water scarcity is a serious problem in some areas of Ahmednagar, with many villages reliant on government-funded water tankers for several months of the year. Further research is required to find local technologies that households are willing to use during times of severe drought.

Social sustainability

Incentives to encourage collective action for the rapid development of sanitation facilities are having a remarkable effect on toilet coverage in Maharashtra. New incentives are being developed all the time: spiritual leaders are being used to encourage communities to stop open defecation; and public ceremonies are being used to ensure transparent and effective presentation of financial awards. As a result, the number of fully sanitized villages is growing rapidly, and local government is playing an active and positive role in the process.

However, it is less clear how well this approach has convinced those households previously reluctant to invest in sanitation facilities. In some areas, Panchayati Raj Institutions (PRIs) and NGOs have resorted to supply-driven approaches to achieve their targets, with most Gram Panchayats providing free toilets to at least a small proportion of their constituents. It is argued that these households cannot afford to build their own toilets. This may be true, but there is already evidence from 'fully sanitized villages' that usage is declining among those who were pressured, or assisted, to construct their toilets.

Therefore, it is vitally important that PRIs and NGOs do not stop hygiene promotion after achieving full coverage, and that regular follow-up and monitoring of toilet usage and open defecation are carried out, with particular focus on 'reluctant households'.

Institutional sustainability

The approach used in the pilot project scores highly on institutional sustainability. While much of the funding is from the central government, the institutions involved in mobilization, implementation, and monitoring are local and will be around in the long-term. The TSC has been given political support at both State and district levels. District Water and Sanitation Committees and Sanitation Cells have been established in most areas, but there remains a bias towards water supply at State level, with little capacity to monitor or influence the district TSC projects.
The State Government is now planning to establish a State Sanitation Cell (modelled on West Bengal), with provisional support from UNICEF.

The one area of real concern is the shortage of suitable NGOs working in the sanitation sub-sector. The participatory process is central to the new approach, and its success is dependent on good facilitation and social intermediation.

Financial sustainability

The Ahmednagar program is well-financed through both the Government of India TSC and contributions from the Government of Maharashtra. It has received additional support from external support agencies (for example, Water and Sanitation Program-South Asia) during the pilot phase, but program costs are relatively low compared to the other government programs (with the exception of the West Bengal TSC).

The decision of the Government of Maharashtra to promote a more expensive (US$ 20) toilet design reduces the program's appeal to poor households, but it has kept hardware subsidies relatively low (US$ 8 to BPL households), thus increasing the number of households that the program can cover.

Environmental sustainability

Rural households have limited knowledge of how long it will take for their leach pits to fill, or what to do when they

become full. This is a critical area, as it will affect both sustainability and public health. In most of the pilot villages, none of the pits have filled yet, and the villagers appear to believe that it will be many years before this problem arises. However, case studies from other Indian States suggest that pits can fill in as little as six months. More attention needs to be given to this area, both in the design of toilets to reduce the cost and difficulty of the transition, and in ensuring the safe disposal of the pathogenic pit contents if the pit has to be emptied and reused.

Several communities have removed scrub and low-lying bushes from their villages in order to reduce the possible sites for open defecation. The removal of this vegetation may have an adverse environmental impact, and this practice should be investigated before being promoted further.

Scaling-up

The second phase of the Ahmednagar pilot aims to fully sanitize 600 villages. Given the current shortage of competent NGOs, this expansion will stretch district resources. In addition, having picked the SGBC winning villages in the first phase, the challenge of triggering change in the less active and developed villages involved in the second phase is likely to be far greater.

If successful, the first phase should provide at least one fully sanitized village in every block. It is hoped that these model villages will help to convince local leaders of the effectiveness of the new approach, and provide good examples for exposure visits. These villages may also produce community resource people: community catalysts, facilitators, and sanitation engineers with first-hand experience of the process, who can be trained further and used to strengthen the pool of social intermediators.

The Ahmednagar pilot has been led by a group of particularly energetic and competent government officials, who have been well-supported in the development of the innovative approaches used to implement and expand the project. In addition, a number of external specialists, including the Water and Sanitation Program-South Asia, WaterAid India, KfW, and UNICEF, have provided funding and assistance in formulating policy and building capacity in the district.

Neither the exceptional management nor the external resources will be available in other districts. The key elements of the pilot program appear simple, but the contracting out of services to NGOs is still resisted by some local governments, and there is a risk that rent-seeking officials will attempt to capture the large financial incentives. Several districts have not performed well in the TSC to date, thus it is clear that scaling-up this new approach will require careful monitoring and enforcement by State institutions.

Conclusions

The Ahmednagar pilot shows great promise. The fundamental premise of the approach is that communities need to stop open defecation, which has led to the development of innovative mechanisms to fully sanitize villages. The number of villages declared free from open defecation is rising, and the approach is being refined as it evolves and scales-up.

Many State Governments have now recognized this approach as best practice, and the financial incentives used are being incorporated in national sanitation policy.

However, the Ahmednagar pilot confirms that ‘self-ignition’ rarely occurs. Even where there is good awareness and understanding of sanitation problems, most communities are not capable of solving them without some form of assistance and support. Ignition can come from within, generated by the leadership of an energetic local champion, or from without, through outsiders such as the Ahmednagar NGOs. But real change takes time, and sustained support and follow-up is essential for the long-term behavior change that the TSC hopes to achieve.

This approach utilizes local government, NGOs, private sector workers, and communities, providing each of them with incentives to work together to stop open defecation and to introduce low-cost toilets. As such, the pilot project is developing sustainable institutions and making the most of limited local resources.

The Gram Panchayat is responsible for collecting applications from eligible households and for sanctioning the construction of individual toilets.

Considerable sums have been poured into previous sanitation programs in Maharashtra, with little long-term impact on health or well-being. This case study suggests that this new approach is more promising, and may provide a useful model for other sanitation programs in South Asia.

Fieldwork

Findings based on documentation collected by WSP-SA, and rapid appraisal during February 4-9, 2004, including: interviews with government officials, project staff, and UNICEF officials in Mumbai; with government and NGO officials in Mangaon; with Gram Panchayat officials in Dhatav; with government, Zila Parishad and NGO officials in Ahmednagar; and with household members in five villages in Raigad and Ahmednagar districts:

1. Maluk, Tala Block, Raigad (245 households; 20 percent have toilets).
2. Hadmalie, Mangaon Block, Raigad (51 households; 100 percent have toilets).
3. Dhatav, Roha Block, Raigad (1,316 households; 50 percent have toilets plus 183 community toilets).
4. Wadgaon Amli, Ahmednagar Block, Ahmednagar (169 households; 100 percent have toilets).
5. Watephal, Ahmednagar Block, Ahmednagar (200 households; eight percent have toilets).

Case study 6: Andhra Pradesh (India) Total Sanitation Campaign

This case study examines the huge investment in rural sanitation being made by the Government of Andhra Pradesh through the Total Sanitation Campaign (TSC).

Key features

- 1.67 million household toilets built in eight months (May 2003-January 2004);
- Typical design has toilet and bathroom and costs US$ 61;
- Full subsidy provided (250 kg food-for-work rice and US$ 16.18 cash);
- Supply-driven approach with limited hygiene promotion (no NGO involvement);
- Significant technical problems (bad toilet designs; unsafe excreta disposal); and

- Low toilet usage (less than 50 percent of new toilets in use in some villages).

General context

Historically, Andhra Pradesh (AP) has been a middle-income State with middling levels of developmental expenditure. However, under its former Chief Minister, Chandrababu Naidu, it made great strides.

It is now among India's forerunners in deploying information technology, with Hyderabad's advanced infrastructure making it one of the most sought-after bases for software developers, business process outsourcers, and biotech companies. This progressive outlook has also affected the rural areas. The State's independent negotiation of loans with the World Bank has resulted in heavy investment in rural infrastructure (notably roads and water supply). But many of the districts are drought-affected, and some 50 percent of the rural population are classed as 'backward castes'.

Sanitation

In June 2003, former CM Chandrababu Naidu announced an action plan to benefit 10 million people in Andhra Pradesh (13 percent of the State population) within one

year. Started just a year before the general election, this welfare package offered:

- New ration cards for one million households;
- 'Pucca' houses for 0.5 million families;
- Plots of land for one million families;
- Subsidized gas connections for one million families;
- **Toilets for 3.5 million households;** and
- Other economic benefits to two million beneficiaries.

The ambitious sanitation target was formalized by Government Order No. 178 (June 2003), which confirmed that the State rural sanitation program would be extended to all people living below poverty line.

The Velugu survey (participatory identification of the poor) was to be used as the BPL baseline, with Gram Panchayats certifying eligibility where the Velugu survey is incomplete. In addition, ration card holders that do not have sanitary latrines are automatically eligible for toilets under the new program. The GO further states:

> 'The Gram Panchayat will sanction individual sanitary latrines [ISL] to the eligible families in the Grama Sabha and sanction proceedings will be issued by the Panchayat Secretary concerned. No other administrative or technical approval will be necessary. The sanction list shall be displayed on the notice board of the Gram Panchayat.
>
> 'The unit cost of each ISL will be US$ 59.35. Of this the food component will be 2.5 quintals [250 kg] of rice and cash component US$ 16.18. Since higher allocation for each ISL unit in terms of money and rice has been made now compared to the unit cost allowed in the past, construction of bathroom may be encouraged along with ISL.' GO No. 178

This new program takes advantage of two central government-funded schemes: the Total Sanitation Campaign (TSC), and the Food For Work (FFW) program. Under the TSC, every BPL household without a toilet is eligible for US$ 8.09 central subsidy, so the State only has to add US$ 8.09 to complete the promised US$ 16.18 cash subsidy.

The FFW program provides rice from central government stores to drought-affected districts. Normally, this rice is used as payment for daily labor on government projects, providing an important source of food and employment for the poor during periods of drought. However, the FFW projects rarely produce much of value to the government, as the unpaved roads constructed (or similar) often wash away in the first rains. Therefore, the Government of Andhra Pradesh proposes to use the rice as an incentive for something that may have a more lasting benefit, to both the government and the rural poor: the construction of sanitary toilets.

Case study context

Seven of the 22 districts in Andhra Pradesh were included in the Sector Reform Project[21] (among them Nalgonda district), and all districts are now covered by SRP's successor, Swajaldhara. By 2003, every district had its TSC project sanctioned, with average project budgets of US$ 3.5 million.

All three projects (SRP, Swajaldhara, and TSC) are overseen by a project monitoring unit (PMU) established in the State Water and Sanitation Mission of the Panchayat Raj and Rural Development Department. The TSC was launched in AP about four years ago, but because of the political impact of the problems caused by the recurrent droughts, the focus of the State Government and the PMU has been largely on rural water supply and progress has been slow. However, the recent sanitation drive has greatly accelerated implementation, and given more attention to the sanitation campaign.

Approach

Local government officials and engineers from the PRED-RWS[22] department promote combined toilet and bathroom models (usually two cubicles) with

[21] Pilot project aiming to institutionalize community participation and demand-responsive approaches in rural water supply development, covering 67 districts in 26 States.

[22] Panchayat Raj Engineering Department-Rural Water Supply Sector (PRED-RWS).

There have been few house-to-house activities, and insufficient attention paid to issues such as hygiene promotion, stopping open defecation, and toilet usage.

Case Study Data

Unit	Name	Population		Literacy	Sanitation Coverage
		Total	Rural		
District 1	Kurnool	3.6 million	75%	–	33%
District 2	Karimnagar	3.5 million	80%	–	38%
District 3	Nalgonda	–	–	–	–
State	Andhra Pradesh	75.7 million	73%	61%	37%
Country	India	1,048 million	72%	56%	28%
Region	South Asia	1,401 million	72%	56%	34%

Source: WDR 2004; GoI Census 2001; NCAER 1999; SWSM-PMU data

offset pits. Because of the high subsidy available to BPL households, the officials verify and pay for the work in stages:

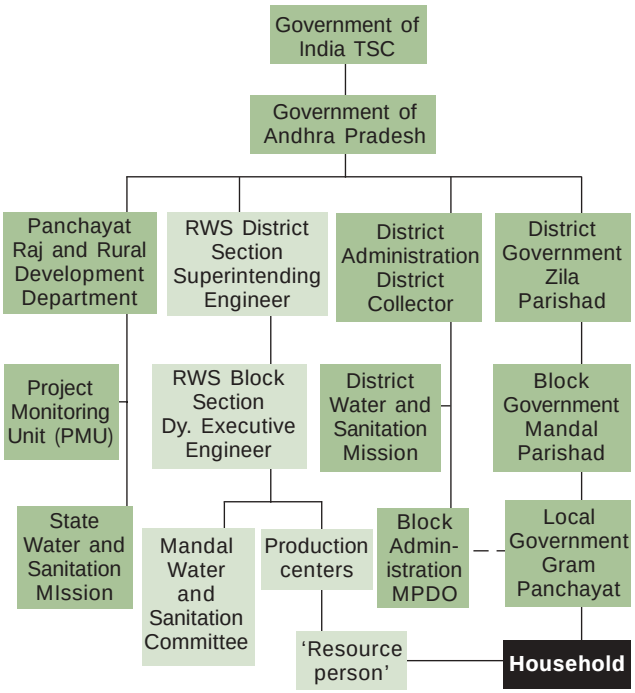
- US$ 8.09 cash plus 100 kg rice coupons[23] on excavation of pit and procurement of materials;
- US$ 8.09 cash plus 50 kg rice coupons on completion of basic structure with platform; and
- 100 kg rice coupons on construction of pucca (solid-walled) toilet enclosure.

The minimum standard required to obtain payment varies from district to district, but the end result is fairly uniform – most toilets have offset pits lined with concrete rings, ceramic toilet pans, and plastered block or brickwork toilet enclosures.

Some districts have contracted block-level 'resource officers' to work on community mobilization, but these officers are generally very young and inexperienced, and most of the local decision-making and financial management is made by the block development officer (known as the Mandal Parishad Development Officer, MDPO) and the deputy executive engineer (head of the block-level water and

Institutional model

Total Sanitation Campaign, Andhra Pradesh



[23] Rice coupons have to be presented at fair price shops (as per drought relief works).

sanitation committee). The Gram Panchayat is responsible for collecting applications from eligible households and for sanctioning the construction of individual toilets.

Construction monitoring is very high-tech. In most districts, the block governments have digital cameras, which are used to take photographs of each completed toilet (also capturing the house and owner, to avoid the reuse of photographs) and to store the images for online access. In Kurnool district, a digital video tour of each completed toilet is being recorded, with 125,000 such virtual tours already available through the district government's computer network.

This high-tech approach also extends to State-level monitoring of implementation. Every Monday, the district heads (known as collectors) take part in a video conference with the State Government, in which district performances are discussed, benchmarking takes place, and constraints are highlighted.

Performance

The massive rural sanitation program in Andhra Pradesh echoes a similar program in Maharashtra during 1997-2000 (see case study on the Maharashtra TSC). Vast sums of money have been spent; enormous efforts have been made by the officials involved; and huge numbers of toilets have been built in a very short time. But the program has been highly supply-driven, using large subsidies and government pressure to persuade poor households to construct toilets. Initial reviews suggest that the results mirror those found in the Maharashtra program: low levels of toilet usage; significant technical problems; many new toilets already abandoned; evidence of continuing open defecation; and little change in the hygiene behavior of most poor households.

TSC progress reports indicate that 1.67 million household toilets were built in the eight months following the launch of the rural sanitation program (May 2003-January 2004). If all of these new toilets were now being used, rural sanitation coverage would have risen to 37 percent (from 22 percent in 2002). Sadly, the findings of this case study suggest that actual sanitation coverage is likely to be much lower, as is the impact on public health. The State Water and Sanitation Mission (SWSM) reports that 30-40 Gram Panchayats are nearing 100 percent toilet coverage, and are to be recommended for the Nirmal Gram Puraskar. However, there has been little attention to stopping open defecation in these areas (one of the main criteria of the Nirmal Gram Puraskar), and proper verification of these claims will await independent review by the GoI evaluators.

There have been significant efforts to raise awareness about the rural sanitation program at both State and district levels. New baseline surveys, incorporating the results of the Velugu poverty surveys where available, have improved local information databases and targeting. Further, the systems introduced to monitor physical and financial progress have proved effective in increasing transparency, revealing weaknesses, and ensuring that the allocated funds are being used to build toilets.

Sanitation promotion and demand

The program has been less successful at the household and community level, where social intermediation and sanitation promotion are clearly lacking. Despite the high subsidy being offered, some Gram Panchayats have failed to collect enough household applications to match the limited number of toilets sanctioned. There is little accountability between service providers and poor households. In many cases, the GP arranges the

Local government is heavily involved in the implementation of the rural sanitation program, with the lowest tier of government, the Gram Panchayat, largely responsible for identifying the poor, sanctioning toilet construction, and distributing subsidies.

construction of the toilets (obtaining credit from suppliers, assisting with group purchase and transport of materials, selecting the mason, instructing on the design) with scant involvement or decision-making by the household.

At State level, much is made of the massive IEC campaign conducted for this rural sanitation program. There have been conventions, competitions, newspaper advertisements, and use of both folk and electronic media. Schools have been targeted, thousands of mobile exhibitions have been held at GP level, 800,000 village posters have been displayed, and about two million pamphlets have been distributed.

But there have been few house-to-house activities, and insufficient attention paid to issues such as hygiene promotion, stopping open defecation, and toilet usage. Consequently, many poor households know little of the sanitation program, and have built toilets for reasons other than safe excreta disposal. Some build for the free rice,[24] some build to gain a convenient washroom, and some build because the GP is paying.

Toilet usage among poor households was found to be very low in eight of the nine villages visited for this case study. The vast majority of the poorest members of these communities were either not using their new toilets, or were using them only as washrooms. Brand new toilets were found abandoned or used to store chickens, goats, and other household goods. No water or soap was found in the toilets, and there was little other evidence of handwashing. Where toilets were in use, it was often only by the women and elder children, as most of the men continue to defecate in the open.

There was some evidence of demand for bathrooms. Many of the single-cubicle toilets have been converted to bathrooms, with their toilet pans covered, blocked, installed in an unusable position, left unconnected, or removed completely. In combined bathroom and toilet constructions there was often evidence that the bathroom cubicle was in use, even if the toilet cubicle had been abandoned.

Technical sustainability

No low-cost toilet models are allowed under the Andhra Pradesh TSC. The RWS engineers require that toilets built under the TSC look as if they cost at least US$ 43.16, with minimum requirements including ceramic pans, masonry toilet enclosures, and lined pits.

The absence of low-cost models makes universal toilet coverage difficult to achieve. BPL households receive only US$ 16.18 in cash (in instalments) but are expected to find more cash to buy materials and pay for the construction of the expensive standard toilet model, as the remainder of the subsidy is in the form of rice coupons. In most cases, the GP has to assist at least a few of the poorer households to finance and construct their toilets.

Despite the amount spent on the toilets in AP, the speed of implementation has prevented those involved in the program from developing the necessary technical know-how and has limited their chances to learn from early mistakes. Construction quality is generally good, but neither the RWS engineers, nor the GP, nor the mason, nor the household, have much understanding of the sanitation technologies involved.

[24] Rice prices rose to US$ 0.20/kg in early 2004, making 250 kg rice worth about US$ 54.

Typical Toilet Components and Cost

Item	Description	Cost
Pan and trap	Ceramic (market)	US$ 5.39
Floor slab	Concrete (RSM)	US$ 2.15
Connection	Pipework (offset)	US$ 5.39
Pit lining	Honeycomb brickwork	US$ 7.55
Vent pipe	PVC pipe	US$ 2.15
Mason	Installation and transport	US$ 3.23
Enclosure	Brick walls, GI door, and roof	US$ 33.45
	Total cost	**US$ 59.31**

Technical faults are common in many areas, with typical problems including:

- Leach pits with solid linings (stops liquid from leaching into soil);
- Leach pits with overflow pipes (pathogenic liquid overflows near house);
- Leach pits with connecting pipe (pits cannot be dried out for safe emptying);
- Leach pits situated 30 feet from toilet (more water required to flush; more expensive);
- Second leach pit not connected to toilet (or able to be connected);
- Vent pipes on pour-flush toilets (additional and unnecessary cost); and
- Vent pipes without insect screen (allows insect entry and exit from pit).

Rangarao Palli, Karimnagar District

This drought-prone village recently reported achieving 100 percent toilet coverage, and is heralded as one of the success stories in the district. However, further investigation revealed that only 200 of the 225 households have working toilets, and that fewer still are using their toilets.

The Gram Panchayat in this village has tried hard to achieve full sanitation coverage, even providing US$ 539.6 to help 25 of the poorer households to build their toilets. But the Gram Panchayat leader (Sarpanch) admits that some households still prefer to defecate in the open, in part because this avoids having to use their limited water supply to flush the toilet.

A rapid survey of the village confirmed that less than 50 percent of the poorest households were using their toilets, and suggested that many of these households have not changed their hygiene behavior, and feel little ownership for their toilets.

The technical faults in Andhra Pradesh range from minor flaws with little impact, to serious problems that give rise to public health hazards and threaten the sustainability of the toilets constructed. The wide range and extent of the technical problems suggest that the RWS engineers, masons, and local government staff involved in the program should be made aware of the risks associated with current practices.

In particular, attention needs to be drawn to two critical bad practices: the provision of overflow pipes on leach pits, which release pathogenic material into the area around the home; and the installation of unnecessary vent

The proposed 100 percent cash subsidy may increase the affordability of toilets, but it will not improve toilet usage or health benefits under the current supply-driven approach.

Technical Issues – Toilets are Not as Simple as They Seem?

Sanitary toilets must be carefully designed to remove human excreta from the domestic environment and ensure its safe disposal, either on or off the household plot:

- On-site disposal (excreta stored in a sealed and isolated pit until safely degraded); and
- Off-site disposal (excreta transferred to a central treatment works, for example, sewerage system).

In most rural communities, a household toilet and leach pit provide the most appropriate and effective method of safe excreta disposal. The technology is simple – a leach pit is merely a hole in the ground, but the pit must be covered and sealed, as its primary function is to isolate the contents of the pit from the outside world. Leach pits dug in stable soils are normally unlined, but deeper pits, and those dug in unstable soils, often have a supportive lining (honeycomb brick or stonework; or perforated concrete rings). The toilet pan can be sited either directly above the pit, or offset in an enclosure beside the pit (with a connecting pipe). Either way, the toilet wastes are dumped or flushed into the leach pit, which is designed to retain the solid wastes while allowing both liquid and gaseous wastes to soak into the soil surrounding the pit.

Solids begin to accumulate in the bottom of the leach pit, greatly reducing infiltration through the clogged soil pores in the base of the pit. For this reason, **leach pits should always have permeable sides** (except for the uppermost 30 cm, which is normally solid lined to retain loose topsoil and provide structural strength). Leach pits with solid-lined sides (for example, concrete rings with cemented joints) will prevent liquids and gases from being absorbed by the soil, leaving the pit contents smelly, wet, and difficult to empty.

In more affluent rural areas in India, local masons tend to be more familiar with urban sanitation systems, and frequently make the mistake of trying to convert toilets with twin leach pits into septic systems. The usual practice is to provide a solid lining to the offset leach pits, then link the pits with a connecting pipe, and provide an overflow pipe on the second pit. In this way, the liquid wastes pass through both pits before being discharged from the overflow pipe.

Badly designed 'septic pit' systems allow floating 'scum' and suspended solids to pass directly through the pits and discharge to the open. And even if these 'septic pits' are well-designed and operating as intended, the effluent is likely to be highly pathogenic (disease carrying) and may contain viable hookworm and roundworm eggs.[25] Septic systems require baffle walls or t-pipes between pits (or chambers), and the septic effluent must be safely disposed into a large soakpit or into a sewerage system. **Septic pit systems that discharge pathogenic effluent in the vicinity of rural homes are not providing safe excreta disposal, and should not be considered as sanitary toilets.** In addition, septic systems accumulate deep layers of pathogenic sludge, which require periodic removal and safe disposal. The most effective method of desludging is by vacuum pump and tanker, but this technology is expensive and rarely available in rural areas.

Septic systems also require ventilation, as the anaerobic processes that take place produce gases that need release. Sufficient ventilation is often provided by the inlet and outlet pipework, but an additional ventilation pipe may be required in some cases. However, **water-sealed leach pit systems do not require vent pipes,**[26] as their permeable sides allow any gases in the pit to percolate into the surrounding soil. When a vent pipe is necessary, it is essential that its outlet be covered with insect screen, as insects are attracted by the odorous gases emanating from the vent pipe. Without the screen, insects can enter the pit, lay eggs inside it, and fly directly from excreta to food. **Unscreened vent pipes leave excreta exposed to the open air and lower the barriers to fecal contamination**.

[25] Tests on septic tanks in rural India found that 90 percent of effluent samples contain viable hookworm and *Ascaris* eggs (Franceys et al, 1992).

[26] The water seal prevents smelly gases from re-entering the toilet enclosure (note: vent pipes are required in pit latrines that do not have water seals, for example, VIP latrines).

pipes on leach pits, as these provide an additional route for fecal contamination (and raise the cost of the toilet).

Social sustainability

Toilets with very similar (but unusual) flaws were observed in several of the villages visited for this case study. In each case, the toilet enclosure was placed in one corner of the household plot, the leach pits were situated in front of the toilet (rather than at the back, as is more common) and, most surprising of all, the two leach pits were dug some 15-30 feet away from the toilet enclosure. This arrangement increases the cost of the toilet, as a longer pipeline is needed. The pipeline must also maintain a minimum gradient, so the extra length will either reduce the working depth of the leach pits, or mean that the toilet platform has to be raised. It will also increase the chance of maintenance problems, as there is more chance of solids getting stuck in the longer pipeline, and it will be harder to find and clear blockages.

Further investigation revealed that these practices derive from 'Vastu Shastra', the ancient Vedic science of building (related to Feng Shui). The local Vastu practitioner had advised these households where to site their sanitation facilities based on astrological locations and traditional rules on how buildings should be aligned. In particular, the Vastu recommended that water (toilet wastes in this case) should always drain to the north-east, and that leach pits must not be sited in line with the door to the house.

The absence of effective social intermediation in this rural sanitation program means that important issues like this are rarely exposed or discussed, and there is no mechanism for addressing them even when they do come to light.

Institutional sustainability

Local government is heavily involved in the implementation of the rural sanitation program, with the lowest tier of government, the Gram Panchayat, largely responsible for identifying the poor, sanctioning toilet construction, and distributing subsidies.

Nevertheless, it remains a top-down program. The district collector (chief administrator) manages the district TSC project, but is accountable to the Chief Minister, who directs the program and makes the major policy decisions. Close monitoring by the State Government, through weekly video conferences and online reporting, allows them to benchmark performance and apply pressure to the weaker districts.

Within the districts, the Panchayati Raj Engineering Department (PRED), the nodal agency for rural water supply in the State, has managed to retain control of the TSC. This institutional arrangement contrasts with other States, where the ongoing decentralization process has combined with a focus on low-cost technologies and hygiene promotion to encourage a more central role for local government and NGOs.

Despite the technical bias of the PRED, the training of the masons that build the toilets has been inadequate. The PMU report that 50,000 masons have been trained in low-cost sanitation, but this training turns out to be little more than a one-day course run by the local PRED engineers. Few of the masons interviewed in the field had attended a training course, and neither the engineers giving the training, nor the masons, recognized the major technical problems listed earlier.

Apparently, the Chief Engineer of the PRED in Andhra Pradesh strongly resisted the involvement of NGOs in the implementation of the TSC. Instead, the PRED decided to recruit temporary 'resource officers' to act as social mobilizers in each block. The short tenure offered to these temporary staff gives no job security, making it hard to recruit experienced or locally respected personnel.

As a result, these resource officers are generally young and ineffective, with none of the qualities offered by an experienced and committed local organization. The majority have no professional support, no community development experience, minimal training, and little mandate or incentive to serve the target communities. The current institutional arrangements provide no mechanism or incentive for follow-up after toilet construction, for monitoring of toilet usage and open defecation, or for assessment of the health and hygiene impacts. It appears that the program is designed to construct toilets as rapidly

The Andhra Pradesh rural sanitation program is already operating at scale, with more than 200,000 toilets per month being constructed during each of the last eight months.

as possible, with little concern for their long-term sustainability or effective use.

Financial sustainability

Most of the district sanitation targets were based on rice availability, as the provision of the high toilet subsidy is dependent on the continuing supply of food-for-work rice by the central government. These rice supplies are now almost exhausted, forcing the Government of Andhra Pradesh to take out a US$ 2.3 million HUDCO[27] loan that will allow it to provide an additional 50,000 households with US$ 45 cash in place of the promised 250 kg rice component of the toilet subsidy.

Given that the high subsidy was originally justified as a productive use of food-for-work rice, this forced change in approach brings into question both the State Government's rural sanitation policy and the sustainability of its current rural sanitation program. It also increases the risk of the subsidy being captured by the non-poor, as the government is now offering a significant amount of cash (US$ 59.35) in its toilet subsidy.

The proposed 100 percent cash subsidy may increase the affordability of toilets, but it will not improve toilet usage or health benefits under the current supply-driven approach. Despite the present financial contribution, households have negligible influence over design or construction and appear to feel little sense of ownership for their completed toilets. In addition, the Government of Andhra Pradesh cannot afford to sustain the higher cash subsidy, making it extremely unlikely that those most in need will ever see the benefits.

Environmental sustainability

The TSC in Andhra Pradesh may give rise to environmental problems. No attention has been given to safe disposal of the solids from leach pits or the sludge from septic systems, and some of the recently built systems discharge pathogenic effluent into the domestic environment. When a toilet has two leach pits, as in most cases in Andhra Pradesh, they should be kept separate and used alternately. While one leach pit is filling (which can take anything from six months to three years, depending on family size, diet, climate, and so on), the other full pit should be kept sealed and dry, so that the contents can safely decompose. In this way, by the time the operational pit is full, the solid contents of the other pit have become dry, odorless, and harmless, and can be safely dug out by hand and used as fertilizer. When the leach pits are inter-connected, it is not possible to isolate either of the pits, or to allow their contents to dry out and decompose. As a result, both pits remain wet, and the resting pit is likely to be contaminated by the live pathogens in the operational pit.

In AP, the leach pits have often been constructed in line with the toilet, so that the first pit lies between the toilet and the second pit. This arrangement means that the second pit cannot be connected directly to the toilet, thus cannot be used independently of the other pit. This design is effectively a single pit toilet, as the two chambers cannot be used separately, which means that little benefit is gained from constructing the second pit. Emptying the contents of these connected pits will also be problematic, as the sludge will contain fresh excreta and be wet, smelly, and pathogenic. In these cases, provision needs to be made for safe desludging and disposal of the septic sludge, or for re-design of the toilet layout so that the pits can be operated independently.

Little attention is paid to wider sanitation issues, such as hygiene behavior, open defecation, drainage and wastewater disposal, and solid waste disposal.

Scaling-up

The Andhra Pradesh rural sanitation program is already operating at scale, with more than 200,000 toilets per month being constructed during each of the last eight months. This massive achievement is testament to a genuine political commitment to the sanitation program, and to the effectiveness of the decentralized implementation.

The high priority and impressive intensity of the sanitation program have generated huge awareness among officials

[27] Housing and Urban Development Corporation Ltd. (HUDCO).

and community leaders. Unfortunately, little of this interest and activity has trickled down to the villages. Senior officials are aware of national initiatives such as the Nirmal Gram Puraskar, but there is limited knowledge of these incentives at or below the Gram Panchayat level.

Previous programs required district-level approval for all decisions and project sanctions. This led to lengthy delays (and loss of momentum) while information was passed up through the three-tier Panchayat Raj system and, eventually, approval was passed back down. Under the current rural sanitation program, the Gram Panchayat (lowest of the three tiers) vets applications, sanctions toilet construction, and pays out subsidies. This greatly improves targeting and speeds up the process, while frequent monitoring from above keeps the GP honest.

Despite these achievements, there is evidence that the program has been scaled-up too quickly. Central government-funding has not been able to keep up with the implementation rate, forcing State and district governments to borrow and juggle funds from other sources. More critically, there has been little time to learn from mistakes or make incremental improvements to policy or to implementation guidelines. Government officials are starting to recognize that toilet usage is low, and that more resources need to be directed towards hygiene promotion and social intermediation, but most of the money has already been spent.

There has also been strong resistance to new delivery mechanisms and to low-cost technologies. In particular, the Panchayat Raj Engineering Department (PRED) has resisted the involvement of NGOs and insisted on an expensive toilet design. These problems can be linked in part to a culture of patronage in the State, embodied by an almost universal reluctance to lower toilet subsidies, despite awareness of the success of other rural sanitation programmes in the region with a zero subsidy approach.

Conclusions

The rural sanitation program in Andhra Pradesh is full of contrasts. On the one hand, more than 1.5 million toilets have been built, with great political commitment, massive IEC campaigns, and innovations such as online monitoring. On the other hand, the rice supplies are running out, many of the new toilets are not being used, and there is increasing evidence of technical problems that question the sustainability and environmental impact of the program.

Progress has been driven by the high political priority and massive funding attached to the program. However, the close interest and involvement of the Chief Minister have also created a reluctance to report or address problems. At the heart of the matter is the top-down, supply-driven approach adopted for the rural sanitation program.

No effort has been made to find out what sort of toilet the rural poor are willing to pay for, and nobody has tried to understand why so many poor households are not using their highly subsidized toilets. There has been no effective hygiene promotion, no attempt to stop open defecation, and no focus on wider sanitation issues. This is an old-fashioned toilet-building campaign in which: technocrats decide the type of toilet the program should implement; bureaucrats arrange the finance and implementation; and the rural poor have scant involvement, and little interest in the outcome.

Fieldwork

Findings based on documentation (collected by WSP-South Asia, and by the Project Monitoring Unit of the State Water and Sanitation Mission) and rapid appraisal during February 24-27, 2004, including: interviews with government officials and project staff in Hyderabad; with government, PRED, and Zila Parishad officials in Kurnool; with government and PRED officials in Karimnagar; with government and PRED officials in Nalgonda; and with village leaders and household members in nine villages in Kurnool, Karimnagar and Nalgonda districts:

Kodumur, Kodumur block, Kurnool (5,000 households; 60 percent have toilets);

Pyalakurthy, Kodumur block, Kurnool (1,500 households; 33 percent have toilets);

K Markapuram, Kallur block, Kurnool (282 households; 100 percent have toilets);

Bejjanki, Bejjanki block, Karimnagar (1,650 households; 30 percent have toilets);

Sanitation coverage is very low in Tamil Nadu. No exact figures are available, but it seems likely that rural sanitation coverage is in the range of 14-17 percent, compared to about 28 percent coverage nationally.

Veerapur, Bejjanki block, Karimnagar (202 households; 15 percent have toilets);
Ramkrishna Colony, Karimnagar (690 households; 12 percent have toilets);
Rangarao Palli, Karimnagar (225 households; 100 percent have toilets);
Yellareddyguda, Nalgonda (553 households; 50 percent have toilets); and
Gaddikondaram, Thipparthy block, Nalgonda (201 households; 90 percent have toilets).

Case study 7: Gramalaya (Tamil Nadu, India) Total Sanitation Campaign

This case study examines the pioneering approach to sanitation promotion developed by a local NGO, Gramalaya, and its subsequent adoption by the TSC in Tiruchirappalli district, Tamil Nadu.

Key features

- NGO implementation (Gramalaya);
- Significant support from WaterAid;
- Large investment in hygiene promotion and IEC;
- High coverage and high toilet usage; and
- Limited involvement of local government (below district level).

General context

In general, Tamil Nadu has been successful in its efforts to address poverty. Within the last 10 years, the proportion of those living below the poverty line has fallen from above 30 percent to about 20 percent. Yet poverty remains pervasive. Tamil Nadu is eighth poorest among the 14 major India States, and has the highest rate of inequality among those 14 States. This uneven improvement in the quality of life within the State has left a large section of the population consistently unable to benefit from the economic and social development that the State has achieved. This is particularly pronounced in rural areas, and among scheduled castes and tribes, minorities, and women.

Recognizing this, a good proportion of Tamil Nadu's planned budget is allocated to programs seeking to assist vulnerable people. Yet these have tended to be inadequately targeted and inefficiently managed. This is a result of a number of factors, including limited incentives for government staff to address the needs of the poor, with limited accountability to these clients, and resistance to civil servants changing from service providers to facilitators.

Sanitation

Sanitation coverage is very low in Tamil Nadu. No exact figures are available, but it seems likely that rural sanitation coverage is in the range of 14-17 percent, compared to about 28 percent coverage nationally. The reasons for this unusually low coverage are not clear, but the majority of State resources remain directed towards rural water supply, for example, through the Sector Reform Project,[28] which operates in six of the 28 districts in Tamil Nadu, and its successor, the Swajaldhara program, which covers the other 22 districts.

Case study context

This case study focuses on the work of the Gramalaya NGO in Tiruchirappalli district in Tamil Nadu. This district is well known to water and sanitation practitioners in India, as it used to be the base for WaterAid India, one of the

[28] Pilot project aiming to institutionalize community participation and demand-responsive approaches in rural water supply development, covering 67 districts in 26 States.

most effective and innovative of the international NGOs operating in South Asia. WaterAid India recently shifted its head office from Tiruchirappalli to New Delhi, but it leaves behind a network of well-trained and locally renowned partner NGOs such as Gramalaya and SCOPE.

Since 1987, Gramalaya has worked on rural development projects (initially health and social forestry) in two blocks (Thottiam and Thathaiengarpet) of Tiruchirappalli district. By 1989, it had branched into the sanitation field, working on the Low Cost Sanitation program (LCS) in urban slums, and two years later WaterAid India began supporting its rural sanitation projects. Today, funding comes from three sources: 60 percent from WaterAid (largely for sanitation projects); 30 percent from Water Partners International (an American NGO); and 10 percent from the District Rural Development Agency (the local government body implementing the TSC in Tamil Nadu).

Gramalaya has been implementing three-year integrated health and sanitation programs using a comprehensive hygiene promotion approach. A key element of this approach is the formation and training of women's self-help groups (SHGs), which use rolling funds to provide toilet construction loans to their members. Four years ago, Gramalaya began working with poor women in 26 villages to develop handpumps, household toilets, and school toilets. Today, Gramalaya employs 75 staff, of which about 35 work on its rural projects, and has expanded its sanitation program to 200 villages spread among 55 Gram Panchayats.

By 2002, Gramalaya's sanitation expertise was nationally recognized, and the Water and Sanitation Program (WSP) invited its Executive Director (S. Damodaran) to join a team conducting a sanitation needs assessment study in Maharashtra. This team was led by Kamal Kar, Indian social and participatory development consultant who developed the groundbreaking 'community-led total sanitation' approach in Bangladesh (see Annex 1).

This approach is radical in India, as the history of heavily subsidized government sanitation programs has

Tiruchi Village Cracks the Whip on Open-air Defecation

Thandavampatti hamlet (population 276; 69 houses) at Araichi village Panchayat in Tiruchi district, Tamil Nadu, was officially declared the first rural habitation in India to totally prevent open defecation on January 26, 2003. Two months earlier, Tiruchi NGO Gramalaya staff went to the village to conduct a meeting for the local women's self-help group. The women reluctantly outlined their problem while the men who were quizzed about it stated that they faced a crisis, as they were unable to use either the nearby road or fields to defecate.

The Namakkal-Thuraiyur single-lane road is used by men and children to relieve themselves during the day, and by women at night. As a result, the villagers face a torrent of abuse from heavy vehicle drivers that come close to hitting those squatting by the road; and local farmers resent stepping on the feces in their fields, and complain that the tether ropes of their animals become coated with feces when the animals graze. But what really changed the villagers' minds was when they were taken in a procession through areas they previously used for answering calls of nature and saw for themselves the shocking situation.

Offered a choice, the villagers opted for their own toilets. A sanitation 'ladder' was drawn up for the villagers, showing various toilet types from zero budget varieties to pour-flush toilets costing around US$ 64.75. The favored option was the water-saving dry pit latrine, based on a Bangladesh model. Work began on January 16 when 13 houses dug the necessary three-foot deep pits and covered them with a cement slab with a drop hole and wooden cover. Thatch, old mats, and used jute bags served as a superstructure, with an old cloth covering the doorway. The Panchayat president lauded the hamlet for its outstanding example, and said she would encourage residents of Araichi, the main village, and the remaining hamlets to follow their example shortly.

Adapted from New Indian Express, January 25, 2003, at www.irc.nl/content/view/full/2574

Gramalaya has also been innovative in other fields, using a child-centered approach to implement its health and sanitation programs, and developing child-friendly school and anganwadi toilets.

Case Study Data

Unit	Name	Population		Poverty	Literacy	Sanitation Coverage
		Total	Rural			
District	Tiruchirappalli	2.2 million	60%	27%	60%	25%
State	Tamil Nadu	62.1 million	56%	21%	73%	17%
Country	India	1,048 million	72%	35%	56%	28%
Region	South Asia	1,401 million	72%	–	56%	34%

Source: WDR 2004; GoI Census 2001

conditioned rural populations and program officials to think that low-cost toilets are not viable, and that the more expensive 'viable' models cannot be built without subsidies.The Gramalaya Executive Director admits that the exposure to these new ideas, and the experience in Maharashtra, changed his perceptions. He returned to Tiruchirappalli determined to adapt the 'open defecation free' approach and the low-cost toilet models for use in Tamil Nadu.

This process led to Gramalaya's involvement with the first open defecation free village in India, Thandavampatti. However, rising awareness and promotion of the TSC, and of the US$ 10.79 toilet subsidy available under this program, prevented the spread of the zero-subsidy approach. Even in Thandavampatti, where the community was proud of having solved the sanitation problem themselves, many of the households have since used the government subsidy to upgrade their toilets. Gramalaya is now one of the NGOs contracted by the district government to implement the TSC in Tiruchirappalli district, and has adapted its approach to fit the TSC guidelines.

The TSC project intended to use a more accurate baseline survey conducted last year, but the results of this State-wide poverty survey are controversial. The survey was carried out by local anganwadi (nursery school) staff using a proxy scoring system to determine relative poverty levels, and has led to considerable debate on the level at which to set the poverty line. Clearly, this decision is crucial as it will determine how many households fall below the poverty line, and thus how many are eligible for the significant benefits (including TSC subsidy) provided to BPL households.

The survey results have not been released pending a court ruling on the poverty line score, but it is understood that the survey suggests that the number of BPL households in Tiruchi district should be revised down from 130,000 to 90,000 households (27 percent).

Approach

In Tamil Nadu, the districts have been given autonomy to implement their TSC projects as they see fit. There is little State interference and ultimate authority for the project lies with the district collector. As a result, there are a range of approaches and management models in use, depending on the views of the collector and the resources available.

The district government in Tiruchirappalli has contracted 14 NGOs to implement the TSC in its 14 blocks, although Gramalaya covers two blocks as two of the smaller NGOs work together in a single block. Gramalaya works in 30 villages at a time, using a three-year program and exit strategy:

- Year 1 – community mobilization and motivation;
- Year 2 – handpump and toilet construction; and
- Year 3 – development of community-based organization and handover.

Gramalaya promotes several different toilet models, but many of the poorer households now opt for a US$ 12.95 direct toilet (single pit covered with a 'gooseneck' toilet platform). The TSC subsidy (US$ 10.79) covers most of the costs of the toilet, leaving the household to pay only US$ 2.20. Those who prefer a more expensive toilet often take a loan from their self-help group, with the usual amount being US$ 32 repaid with an up-front US$ 6.47 payment then 12 US$ 2.15 monthly instalments.

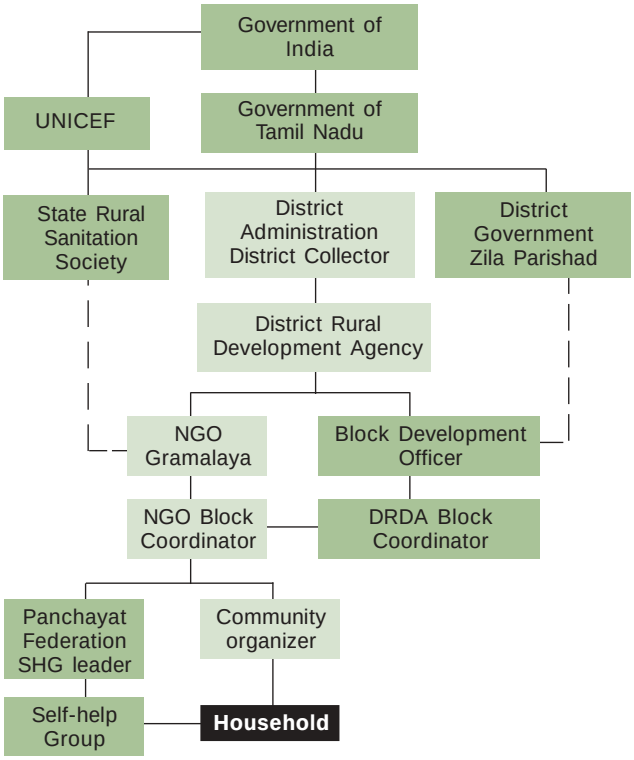
Gramalaya has provided moulds to a couple of private production centers to enable them to produce pre-cast concrete toilet platforms, cover slabs, and concrete rings. The NGO community organizers then inform the communities and self-help groups of the availability of toilet components from these producers, and often assist them in organizing group purchase and transportation of the components. Local masons, often from within the community, receive training in the construction and installation of sanitary toilets.

The Tamil Nadu Women Development Corporation (TNWDC) supervises the formation and management of the SHGs. There are now 120,000 SHGs in Tamil Nadu (each with 20 members = 2.4 million women), with Panchayat Federation leaders representing clusters of 20-25 SHGs at block level.

The District Rural Development Agency (DRDA) is responsible for managing the TSC and monitoring the performance of the NGOs, but local government is not otherwise involved in the program. The DRDA organizes monthly block coordination committee meetings led by its TSC block coordinators who report to the Block Development Officer (BDO) and attended by all of the Panchayat SHG Federation leaders and the NGO's representatives.

At the State-level, the State Rural Sanitation Society meets monthly to monitor progress and discuss success stories and new approaches. This body comprises State Government representatives, leading NGOs (Gramalaya, SCOPE) and key donor agencies (UNICEF, DANIDA).

Institutional model



Performance

The performance of the TSC in Tamil Nadu is reported to vary widely between the districts. In some, NGOs are not used, with the BDOs and union engineers responsible for all implementation. In others the Gram Panchayats are given the money to construct the toilets using local contractors. Little IEC or social intermediation takes place in most of these cases, resulting in low toilet usage and limited impact on hygiene behavior.

About 50 percent of the districts in Tamil Nadu are using NGOs to implement their TSC projects. However, it is reported that there is a shortage of NGOs with suitable experience, and that many have a tendency to spend heavily on IEC but have neither the health qualifications nor the technical background needed to effect hygiene behavior change and develop sustainable toilets. Gramalaya has performed well in Tiruchirappalli district.

Success seems to be strongly associated with the performance of the self-help groups (SHGs), with active SHGs able to construct toilets for all their members.

Drawing on its accumulated sanitation experience, and the new approaches that it has been using for the last six months, it has managed to achieve both high coverage and high toilet usage in its TSC communities. However, Gramalaya only works in 30 new villages every year, so despite its years of hard work, toilet coverage remains at only 23 percent within its working area (compared to 25 percent coverage across the district). Gramalaya has also been innovative in other fields, using a child-centered approach to implement its health and sanitation programs, and developing child-friendly school and anganwadi toilets. Children's self-help groups have been introduced. These take care of handpumps and manage small kitchen gardens, generating unusually high awareness of health and hygiene issues among the children in these villages.

The Tiruchi DRDA has been active in monitoring and managing its TSC project, with some of the NGOs having been removed for non-performance, and several government officials suspended for failing to implement the TSC.

Sanitation promotion and demand

There was evidence of good hygiene behavior in the villages covered by Gramalaya, with soap and water kept in almost every toilet, and excellent knowledge of the public health risks associated with poor sanitation. However, open defecation was still prevalent among a small proportion of each community (10-15 percent households).

Both Gramalaya and the community leaders admit that it is hard work persuading reluctant households to build toilets and stop open defecation. There always seem to be a few household heads that are against toilets (some people feel that defecating so close to the house is unclean and improper), and others that oppose local leaders for political

Typical Toilet Components and Cost

Item	Description	Cost
Pan and trap	Ceramic (market)	US$ 4.31
Floor slab	Concrete (RSM)	US$ 3.23
Connection	P-trap	US$ 1.07
Pit lining	Stonework	US$ 2.69
Mason	Installation and construction	US$ 1.61
Enclosure	Home-made (thatch, jute)	US$ 0
	Total cost	**US$ 12.91**

or personal reasons, thus refuse to take part in any scheme promoted by these leaders.

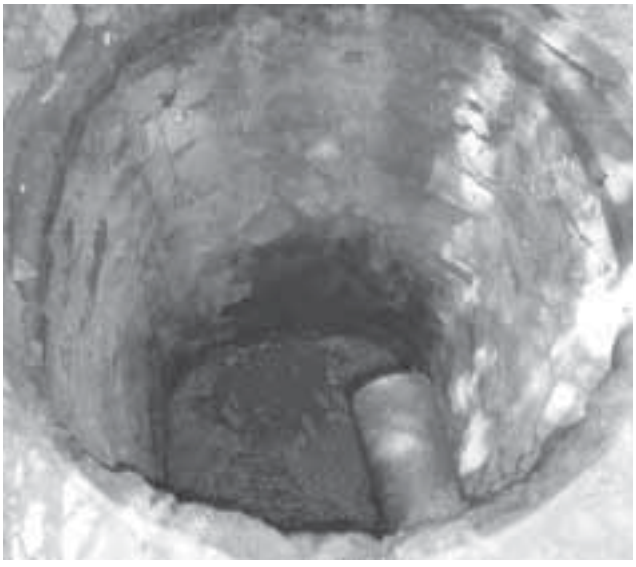
Technical sustainability

The most common toilet design under the Gramalaya programs is a two-cubicle toilet and bathroom model with a single leach pit and a blockwork toilet enclosure. The concrete blocks are manufactured by private production centers using moulds provided by Gramalaya, and were introduced to reduce the cost of a 'pucca' toilet enclosure.

Perhaps 15 percent of households opt for the cheaper (US$ 12.95) 'direct' toilet, in which the gooseneck toilet pan and platform are mounted directly above a single leach pit.

In this model, the toilet enclosure is usually home-made from thatched matting, which allows the toilet platform and enclosure to be easily relocated above a new pit when the existing leach pit is full. In one village, the local mason built solid-lined leach pits using the freely available local stone.

The owner of one such pit disputed that infiltration would be reduced because of the solid walls, stating that the mason had installed a two-foot deep layer of sand underneath the pit to improve drainage. Upon removing the pit cover slab, the owner (and mason) were shocked to discover three feet of septic liquid and excreta in the bottom of the pit.



Solid-lined pit and undrained liquid

This proved to be a graphic demonstration that leach pit bases can become sealed as the sludge layer accumulates and the soil pores clog, and convinced the villagers and NGO staff present that leach pits must have permeable sides. In water-logged areas, SCOPE (another WaterAid-supported NGO working on the TSC in Tiruchirappalli district) has been promoting above-ground composting toilets that cost US$ 90, but there has not yet been an independent review of the performance and sustainability of these toilets.

Social sustainability

Success seems to be strongly associated with the performance of the SHGs, with active SHGs able to construct toilets for all their members. However, problems remain in areas that contain no SHG members, or in which the women oppose the views of the SHG leaders or their families. In several communities, one section of the village had been fully sanitized (100 percent toilet coverage and no open defecation) but, for a variety of reasons, little progress had been made in another adjacent section of the village.

In these cases, it was clear that the NGO and self-help groups were unable to achieve collective action at the community level, despite their best efforts. This suggests that some additional external pressure may be necessary to enforce bans on open defecation and persuade reluctant individuals and households to invest in toilets.

It was also noted that, in the enthusiasm of the moment, many of the better-off households in these villages decide to build grand and expensive toilets, often with tiled brickwork enclosures and large septic tanks. Sadly, most of these toilets languish unused and half-complete, as the owners always appear to run out of money and lose interest before the project is finished. This problem reflects both the inability of the community to stop open defecation and the need for sustained follow-up, even in villages that have apparently achieved 100 percent toilet coverage.

The Gramalaya approach to sanitation development received national recognition after the Tamil Nadu NGO helped Thandamavampatti to become the first village in India to be declared free from open defecation.

Institutional sustainability

Gramalaya's success is built on the quality and commitment of its staff, whose strength and capacity owe much to WaterAid's nurturing and support. The external funding from WaterAid (and others) allows Gramalaya to pay above-average salaries on a timely and reliable basis. This funding also covers Gramalaya's running costs, including its up-to-date computer facilities and its vehicles, as well as investments in other local resources, such as Gramalaya's new technology center in Kolakkudipatti, which showcases a wide range of toilet designs and technology options.

WaterAid monitors its partner NGOs closely: requiring quarterly progress reports; conducting twice-yearly evaluations; and providing direction through three-year policy frameworks. WaterAid has also introduced partner-to-partner assessments in India, whereby its partner NGOs conduct independent assessments of each other's programs. In addition, WaterAid has helped to establish WaterNet, a network of NGOs working in the water and sanitation field in Tamil Nadu. Last year, WaterAid's partner NGOs provided training to 50 new water and sanitation NGOs through WaterNet, and another 100 NGOs should be trained in 2004.

Gramalaya has become professional and well-respected through its involvement with WaterAid and, although it is now attracting funding from other sources, its success is still largely dependent on WaterAid's support. However, there are elements of the Gramalaya approach that require neither external funding nor external assistance.

Gramalaya has been active in developing federations of women's self-help groups and involving these groups in sanitation promotion and financing. A Panchayat-level federation has been established in each of the 55 GPs, and these apex organizations are now being recognized by local government and involved in the planning and implementation of block-level development activities.

Financial sustainability

The participatory and people-centered approach advocated by Gramalaya is effective but expensive. No exact figures are available, but Gramalaya estimates a total expenditure of about US$ 21,600 in promoting 1,200 toilets, which is more than US$ 17 per toilet. This figure is likely to include significant expenditure on activities other than implementation (advocacy, staff training, networking, reporting), but it indicates the level of software subsidy utilized by well-funded NGOs.

The State and district government are planning to introduce a commission payment for NGOs, whereby the NGOs receive US$ 1.07 per household that builds a toilet. Comparing this figure with the amount spent by Gramalaya gives some idea of the gulf between what effective NGOs spend on community development and the amount that the government is prepared to spend.

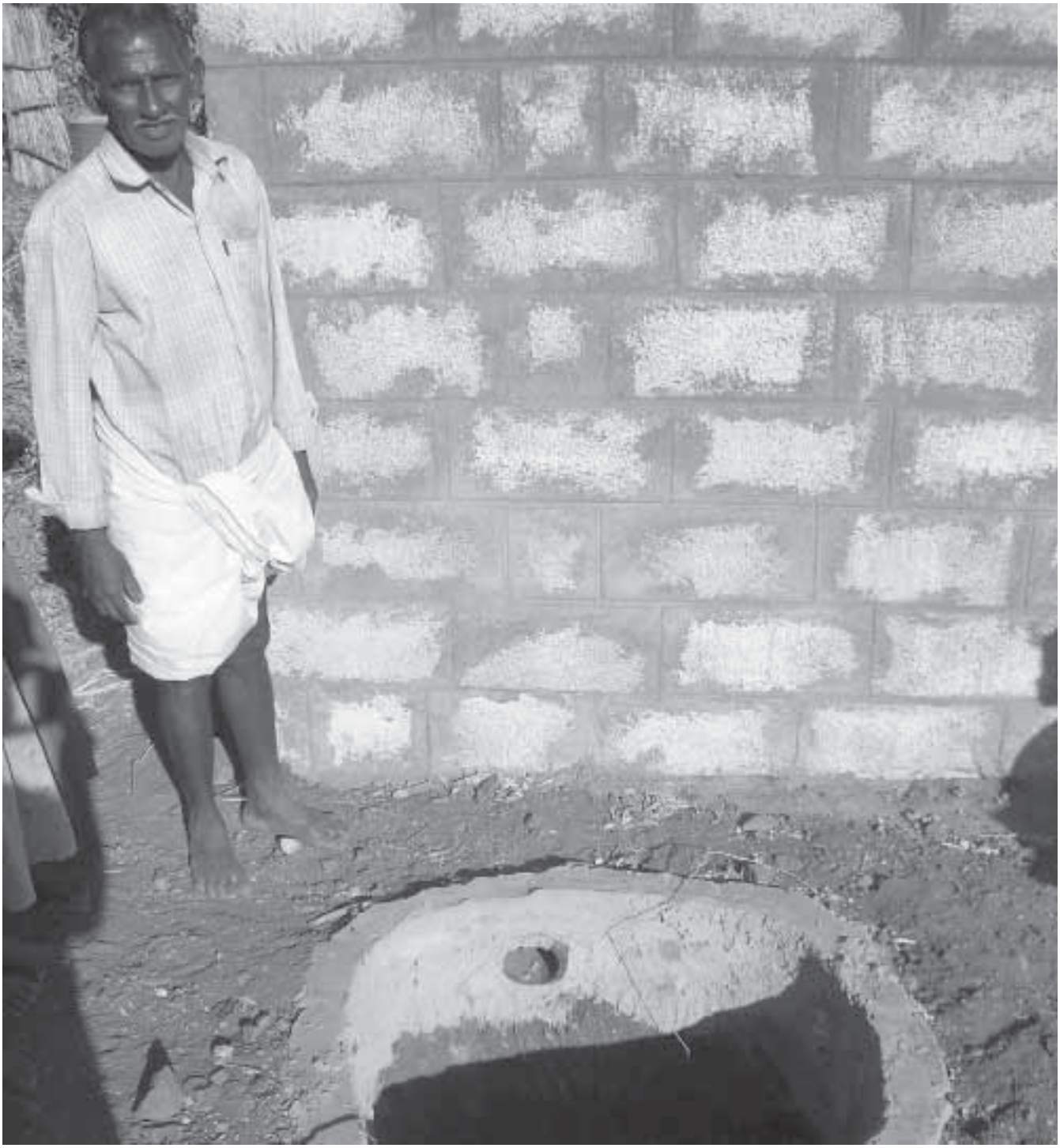
Gramalaya has been providing women's self-help groups with US$ 540 to start their rolling funds. It is not clear how much of this start-up funding is being recovered, or whether any of the SHGs have managed to establish themselves without external funding and assistance.

Environmental sustainability

The Gramalaya villages showed generally good environmental sustainability. Attention was paid to wider sanitation and environmental health issues, with soak pits and kitchen gardens promoted for wastewater disposal. The one area of concern was the emptying and disposal of leach pit contents. Most households appear to have constructed single pit toilets, but few of them were aware what to do when their pits become full.

Scaling-up

Gramalaya has been reluctant to scale-up its operations, despite repeated entreaties from State and district authorities facing a shortage of suitable NGOs. However, Gramalaya is now planning to take over staff from a failed NGO in a nearby district, and to start work in 100 more villages in that district. Gramalaya admits that this expansion will be a challenge, but recognizes that larger scale approaches are needed to reach the huge unserved rural population in Tamil Nadu.



It is increasingly obvious that if NGOs such as Gramalaya are to have a major impact on public health, they need to work more closely and cooperatively with local government.

One of the key scale issues is the role of local government. At present, NGOs such as Gramalaya often take the lead sanitation role in their block and report directly to the district authorities. This tends to exclude the block and GP authorities from the process, and may be at the root of Gramalaya's complaints about the slow provision of TSC subsidies by local bodies. The study also found that Gramalaya lacked the authority necessary to enforce compliance with community rules, or the means to encourage and assist reluctant households and severely constrained households (landless, tenants, widows, and so on) in joining the collective action to stop open defecation.

There is also a question over the long-term sustainability of the NGO-only approach. Gramalaya, and its current approach, is dependent on its funding, which determines the number of communities that it can work in at any time. This rolling approach, whereby a new block of communities are tackled every year, does not allow for long-term follow-up in an ever-growing number of communities.

Conclusions

The Gramalaya approach to sanitation development received national recognition after the Tamil Nadu NGO helped Thandamavampatti to become the first village in India to be declared free from open defecation. Since then, its approach has proved effective in the Total Sanitation Campaign, achieving consistently high levels of sanitation coverage and toilet usage.

There is much that can be learned from the Gramalaya approach, but it is not a typical NGO. Some 90 percent of its funding comes from international donors, and this external funding has allowed it to recruit and retain exceptional staff, and to invest well above the norm (per household) in its sanitation development activities.

Like many NGOs, another factor in its success has been its size. It works in just two blocks, covering only 200 villages to date and, despite current plans to expand into another 100 villages, has yet to prove that it can work at a larger scale.

The Gramalaya approach also neglects local government. As an NGO, Gramalaya has neither the guaranteed long-term presence, nor the funding and authority of local government. This makes it difficult for Gramalaya to tackle hard cases (reluctant households), or to monitor an ever-enlarging portfolio of communities. Yet local government, for all its embeddedness and power, lacks the social intermediation and sanitation promotion skills found in NGOs such as Gramalaya. It is not unusual for NGOs to value their independence from government and the advantages that this status confers when working with rural communities. But it is increasingly obvious that if NGOs such as Gramalaya are to have a major impact on public health, they need to work more closely and cooperatively with local government.

Fieldwork

Findings based on documentation (collected by WSP-SA) and rapid appraisal during February 29-March 1, 2004, including: interviews with district officials and NGO staff (Gramalaya and SCOPE) in Tiruchirappalli; a visit to the Gramalaya technology center in Kolakkudipatti; and interviews with village leaders and household members in three villages in Tiruchirappalli district:

Keelakarthigaipatti, Thathaeingarpat block, Tiruchirappalli (116 households; 87 percent have toilets);

Mettupalli, Thathaeingarpat block, Tiruchirappalli (72 households; 44 percent have toilets);

Cholampatti, Thathaeingarpat block, Tiruchirappalli (108 households; 42 percent have toilets).

Annex 4
Case Study from Pakistan

Annex 4
Case Study from Pakistan

Official figures suggest that Pakistan has considerably higher total sanitation coverage (62 percent) than either India or Bangladesh, but these figures conceal large variations between the provinces, and between urban and rural sanitation coverage. Further, recent government planning estimates are based on dramatically lower figures: the 2002 Pakistan Water Sector Strategy assumes that rural sanitation coverage is currently 27 percent nationally.[29]

In the sanitation sector, Pakistan is probably the least active of the three countries covered by this study. Despite the explicit inclusion of sanitation in both its 2001-11 Ten Year Perspective Development Plan and its 2003 Poverty Reduction Strategy Paper, Pakistan currently has very few active sanitation programs of national or provincial scale. Water supply and sanitation programs receive just 0.2 percent of current water sector finance, with the vast majority of investments going towards irrigation, drainage, and flood control programs.

At present, the funds that are directed towards water supply and sanitation programs tend to be spent on urban sanitation projects, or on provincial rural water supply and sanitation projects that allocate most of their expenditure to water supply schemes.

To its credit, the Government of Pakistan has recognized that it has fallen behind in sanitation development, and is now making efforts to redress the situation. The Medium Term Investment Plan developed by the Ministry of Water and Power aims to allocate 40 percent of new water sector investments to water and sanitation programs, and at the end of the first South Asia Conference on Sanitation (SACOSAN) held in Dhaka last year, the Minister of Health from Pakistan offered to host the next SACOSAN in 2005. As a result, the government has since held several sanitation forums and stakeholder consultations, and is starting to develop new sanitation policies, approaches, and programs.

Case study 8: Lodhran Pilot Project, Pakistan

This case study examines the low-cost sewerage schemes implemented by the Lodhran Pilot Project (LPP) in southern Punjab, Pakistan. Initially, the LPP worked only on urban sewerage schemes, following the Orangi Pilot Project (OPP) model, but its success in improving the sewerage system in Lodhran City led to demand for similar schemes in nearby villages. Concerns about the applicability of the LPP sewerage schemes in the rural context appear unfounded: the LPP is now working on

2002 Pakistan Integrated Household Survey

Province	Sanitation Coverage		
	Rural	Urban	Total
Punjab	33%	93%	50%
Sindh	51%	98%	70%
North West Frontier Province	64%	96%	69%
Balochistan	44%	93%	52%
Pakistan	**41%**	**94%**	**57%**

Source: PIHS, 2002

[29] Government of Pakistan (2002): *Pakistan Water Sector Strategy: Medium Term Investment Plan.*

The negligible financial allocations made to the rural sanitation sub-sector have been exacerbated by recent changes in institutional arrangements.

12 village sewerage schemes (eight completed, four ongoing); another 20 villages have applied for schemes; and 100 more village schemes will be funded under a recently approved US$ 1.1 million grant from the World Bank's Japan Social Development Fund (JSDF).

Key features

- The LPP is an NGO (in process of registration);
- People-centered process (community contracting and management);
- Community pay 'internal costs' (50 percent total);
- The LPP pay 'external costs' (50 percent total);
- Low-cost settled sewerage systems (average per household cost = US$ 70); and
- Untreated effluent used for irrigation.

General context

Mirroring trends at the national level, poverty in Punjab has increased in recent years (from 25 percent to 33 percent during 1991-99). There is also a marked poverty gradient across the province, with Southern Punjab being considerably poorer than Northern Punjab. In Pakistan, cultural and religious beliefs play an important role in determining behavior, particularly in the domestic sphere. Many women in rural Pakistan observe some form of 'purdah', which makes it difficult for women to have any meaningful participation in community decision-making or in community management of water and sanitation services.

Sanitation

Accurate coverage figures for sanitation remain hard to come by. In 2002, the Pakistan Integrated Household Survey (PIHS) found that only 41 percent of the rural households surveyed had toilets (compared to 95 percent coverage among urban households).

Punjab is the richest and most populous province, yet has the lowest rural sanitation coverage (32 percent) of the four provinces. There are no obvious reasons for this weakness – poverty and literacy levels are at or above the national average, and the rural population ratio mirrors the national ratio.

The negligible financial allocations made to the rural sanitation sub-sector have been exacerbated by recent changes in institutional arrangements. Provincial Public Health Engineering Departments used to be responsible for implementation of most public or donor-funded sanitation programs. In 2001, a Local Governance Ordinance created autonomous Tehsil Municipal Administrations (TMAs) and made them exclusively responsible for municipal services in both the rural and urban areas within their jurisdiction. This transition is incomplete, and many of the TMAs do not yet have the capacity or resources to fulfil their new roles and responsibilities.

Removing the 'rural-urban divide' through this radical new institutional arrangement is complex: it involves the

Case Study Data

Unit	Name	Population		Poverty	Literacy	Sanitation Coverage
		Total	Rural			
Tehsil	Lohdran	–	–	–	–	–
Province	Punjab	78 million	66%	33%	47%	50%
Country	Pakistan	145 million	66%	33%	45%	57%
Region	South Asia	1,401 million	72%	–	56%	34%

Source: WDR 2004; PIHS 2002; World Bank Pakistan-at-a-glance 2004

centralization of urban services from urban local councils to the Tehsil (sub-district) level, and the decentralization of rural services from provincial line departments to the TMA. Another key difference is that the head of this new local government body is an elected official (Tehsil Nazim) rather than a bureaucrat. Unsurprisingly, most TMAs are still finding their feet, and many of the reforms have not yet been put into practice.

Case study context

In assessing the importance of local context on the case study, two factors stand out: the relatively urban nature of the southern Punjab villages in which the LPP works; and the unusual level and quality of the support available to the LPP.

The villages studied range in size from 50-400 households, but almost all comprise tightly packed settlements (several were planned villages with regular street layouts) within which each household (or group of households) lives in a brick-built house in a walled compound. Most of the villages have brick-paved roads with cement-lined open drainage systems, and approximately 60 percent of households have toilets, usually of the pour-flush variety with brick-built enclosures. Very few households have any form of septic tank or latrine pit, and most households flush their untreated toilet wastes (sewage) and wastewater directly into the nearby open drains.

When these open drains block, which they frequently do, the streets are flooded with highly pathogenic sewage and wastewater. As a result, there is strong demand for improved sanitation. However, the relatively well-developed nature of the villages means that there is little demand for simple on-site sanitation solutions, such as pit latrines. In these villages, people generally want a higher level of service, such as the low-cost sewerage schemes offered by the LPP.

Approach

The LPP uses a ‘component-sharing’ approach modelled on that of the OPP. The challenge of providing sanitation infrastructure is divided into ‘internal’ components (sanitary toilet, sewer connection, and lane sewer) and ‘external’ components (main sewers and disposal works).

Rather than sharing the costs of each component, the responsibility for providing the components is shared: construction of the internal components is financed and managed entirely by the community; provision of the external components, technical assistance, and social guidance are the responsibility of the LPP (and its donors).

The technology is simple: each household toilet flushes into a small interceptor chamber (known as a t-haudi); when this interceptor chamber fills, the liquid overflows into a concrete sewer pipe; from there, a network of sewer pipes and manholes drains the settled effluent to a screening chamber connected to a large collection tank (usually sited on the outskirts of the village); finally, the untreated effluent is pumped from the collection tank to an irrigation channel feeding nearby fields.

The LPP employs ‘social engineers’, which it trains in social mobilization, mapping, scheme design, and construction supervision. Once a community (or individual) has applied to the LPP for a sanitation scheme, the LPP officials visit the locality and check the technical and social feasibility. When a sanitation scheme is found feasible, an LPP social engineer surveys the village and prepares a preliminary design, which forms the basis of an initial costing. The technical design is important, as it determines what is ‘internal’ or ‘external’. The LPP has a simple rule – any sections that require 12-inch diameter sewer pipes (or above) are considered external works, up to and including the disposal works. The rest (the smaller

Since 2001, the Lodhran Pilot Project has succeeded in developing a number of low-cost sewerage schemes in small communities in southern Punjab. Several are now in operation, greatly reducing the environmental and public health hazards that were previously common in these villages.

diameter sewer pipes and manholes) is considered part of the internal works.[30]

Since the communities implement the sewerage schemes themselves, local market rates are used in the cost estimates, which detail actual material quantities (volumes of sand and gravel; number of bags of cement; number of bricks required) rather than engineering quantities (cubic feet of concrete, or square feet of brickwork). This enables the Village Sanitation Committees (VSCs) to understand the cost estimates better, and helps them to price and source materials more confidently.

The cost estimate for the internal components (including the purchase of any land required for the scheme) is used to calculate the required contribution per household. If everyone agrees that they are willing to pay this amount, then the VSC starts collecting the household contributions and the LPP begins the necessary technical training.

As soon as the titles to the land for the disposal works are transferred, and the full amount for the internal works is deposited into a joint bank account, work begins on the external development (main sewers and disposal works). Once the scheme is complete, the community is responsible for all aspects of O&M (for both internal and external components). The main task at the outset is disposal of the untreated effluent. The LPP has developed a novel solution to this problem.

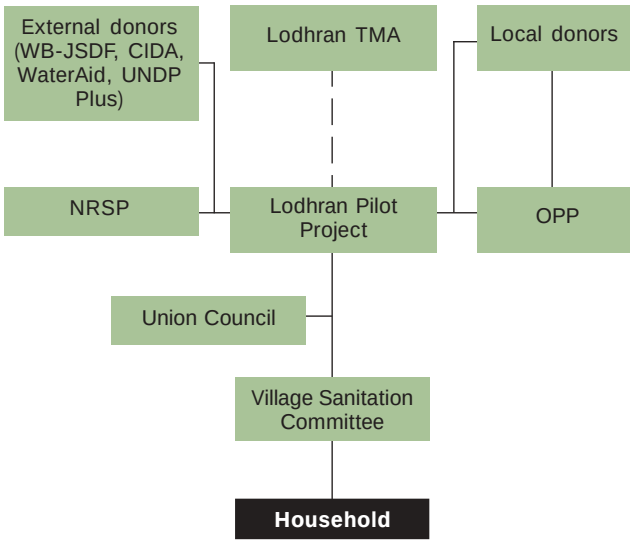
Water is a precious commodity in these small villages, as most agricultural livelihoods are dependent on irrigation. The effluent water from the sewerage scheme is rich in nutrients and flows all year, thus it is valuable. In most cases, an individual from the village (normally from one of the richer families) is persuaded to donate land for the disposal works, and to agree to operate the diesel pump. In return, this individual has the right to use the effluent water to irrigate his fields (which are normally situated near the disposal works). The wastewater flow is relatively low for most of the year and the LPP provides a large collection tank, so pumping is only required every few days. Thus most of the villages have had little problem in finding someone willing to run the disposal pump (including paying for the diesel) in exchange for the use of the effluent water.

Institutional model

At present, the LPP operates like many small, successful NGOs. Its donors allow it to employ a small but committed cadre of staff, who are well-trained and well-looked after. One difference is that the LPP official in charge of day-to-day operations is also a local government employee of the Lodhran TMA (Assistant Tehsil Officer, Infrastructure and Services Department). This unusual and informal arrangement derives from the early phase of the project, when the LPP's work was exclusively in Lodhran City. Today, most of the LPP's work is elsewhere, which strains the TMA's tolerance of the voluntary work done by their employee (who receives a monthly honorarium from the LPP).

The LPP has received significant support from the National Rural Support Program (NRSP), a national NGO that has been working in Lodhran since 1998. NRSP

Lodhran Pilot Project – Institutional model



[30] The size of the sewer pipe is determined by the theoretical sewage flow (calculation based on the number of people connected to the sewer, and rules of thumb concerning typical household water use and wastewater/sewage flows).

started the process of registering the LPP, and has helped the LPP to access external donors (CIDA, WaterAid, UNDP Plus). NRSP has also been instrumental in the preparation of the JSDF proposal, and in advising the LPP how it can scale-up its activities to cover the 100 village schemes to be funded under the JSDF grant.

Performance

Since 2001, the LPP has succeeded in developing a number of low-cost sewerage schemes in small communities in southern Punjab. Several are now in operation, greatly reducing the environmental and public health hazards that were previously common in these villages.

The LPP reports that the community pay 30-35 percent of the total cost of the schemes, but a more detailed look at the data suggests that the community contribution is actually much higher (see table). The LPP normally ignores the cost of the t-chamber (interceptor chamber and sewer connection) when calculating the community share of the cost (as households are left to construct these chambers themselves, based on the standard LPP design).

Incorporating the cost of the t-chamber and the cost of the land for the disposal works into the total reveals that the average community share of the costs is over 50 percent, equivalent to US$ 38 per household. Even when someone in the community donates the land, the household contribution averages US$ 28 (39 percent total).

One of the strengths of the LPP approach is that it leverages such high user contributions, despite operating among rural households in the poorest part of Punjab. However, further investigation reveals that, although the schemes are intended to provide 100 percent sanitation coverage, very few of the poorer members of the LPP communities use the improved sanitation services.

Most of the villages have a ‘katchi abadi’ area on their outskirts, where tenant or seasonal farm workers and their families are housed. These households are landless, poor, and without services. They are normally considered to be outside the community, thus are often excluded from community development activities. These excluded households often make up 10-15 percent of the population of the village, yet none of them can be served by the LPP sewerage schemes, as no sewer pipes have been laid in their streets.

Among those households with access to the sewerage system, there are many who are not yet benefiting,

Average Scheme Costs

Component	US$	%
Toilet	–	–
T-chamber	7	10%
Internal works	21	29%
Land	10	14%
Internal sub-total	*38*	*53%*
External works	34	47%
Total	**72**	**100%**

Source: Author, based on LPP data

Among those households with access to the sewerage system, there are many who are not yet benefiting, because they do not have toilets or sewer connections.

because they do not have toilets or sewer connections. In part, this is because of the heavy household expenditure required to obtain the scheme. In order that the scheme could proceed quickly, some poor households were given the option of providing labor in place of their contribution to the internal costs, but many of them have since been unwilling or unable to construct the expensive t-chambers and toilets used by their better-off neighbors.

Hygiene promotion

While the LPP approach encourages collective action and community development, it is a largely technical process. The focus is on financing and constructing low-cost sewerage schemes, rather than ensuring public health benefits. The LPP's field staff carry out social mobilization activities, but do not examine hygiene behavior or undertake hygiene promotion.

Awareness of good hygiene behavior is low in the LPP communities and, as remarked earlier, many of the poorer households do not own (or use) sanitary toilets.

Demand for sanitation

NRSP found that rural communities in Punjab identify sanitation as a major problem in their villages, naming the following specific issues relating to stagnant wastewater:

- Environmental pollution;
- Incidence of disease among women and children (and related medical bills);
- Groundwater degradation;
- Damage to buildings from water-logging; and
- Social degradation.

These issues reflect the widespread drainage problems found in Punjab, many of which stem from a failure to maintain traditional open channel drainage systems. Typically, these open drains become choked with solid waste and excreta dumped or flushed into the drains by the communities themselves.

Yet there is little recognition that many of the sanitation problems are linked to unhygienic practices, such as flushing toilets directly into open drains, or to the fact that the drains are rarely cleaned.

Basti Barati Wala

The sewerage scheme in Basti Barati Wala was completed in late 2003, following collection of US$ 1,030 from its 50 households. Forty-five of the 50 households have since built t-chambers and connected to the sewer network, but only 70 percent of these households own sanitary toilets. The remaining five households live alongside the sewer network, but have not built toilets or taken sewer connections.

A transect walk revealed another two households living on the outskirts of the village. These families were not mentioned among the 50 households in the community, and were not included in the sewerage scheme. It transpires that they are seasonal laborers, and are not considered part of the community. Neither of these two households owns a toilet, and they remain excluded from both the sewerage scheme and other community development activities.

There is strong demand for wastewater drainage systems, based on the understanding that these technical fixes will solve most rural sanitation problems, but there is limited interest in building toilets, in safe excreta disposal, or in stopping open defecation. Even in those villages where there is a demand for sanitary toilets, the lack of low-cost toilet options is a significant constraint. The LPP estimates the cost of a typical toilet (ceramic pan, brick walls, precast concrete roof) at about US$ 90. Clearly, cheaper alternatives could be built, but they are rarely promoted. As a result, many poor households feel that a toilet is beyond their means.

Technical sustainability

Despite the low average cost (US$ 71 per household), the LPP sewerage schemes appear durable and well-designed. Much credit must go to the LPP engineers, and to the management and training process that produced them. However, as more LPP schemes are developed and completed, some technical concerns are coming to light.

The first is a shortage of concrete sewer pipes of reasonable price and quality, particularly in the more remote villages. The LPP has addressed this supply chain

issue by encouraging Village Sanitation Committees to find local contractors willing to set up temporary pipe manufacturing facilities in their village. Several VSCs report favorably on this approach: not only are the pipes cheaper, the VSC also has more control over their quality and availability.

The second is the sustainability of the sewerage schemes. In settled sewerage systems, the t-chambers must be regularly desludged to prevent the sludge from entering (and blocking) the sewer network.

It is also important that savings are put by for major repairs and replacements, as critical items such as the pump and its diesel motor need rapid attention when a problem develops. Unfortunately, the VSCs interviewed for this study had little comprehension of the O&M tasks associated with their sewerage schemes, and had made no plans to collect sewerage charges or to institute regular cleaning and maintenance activities.

Social sustainability

In its rural program, the LPP deliberately focused on small villages (eight of the 12 LPP schemes have less than 100 households) because it found that social mobilization is simpler in these cases, and external costs (per village) are lower. However, several larger village schemes (up to 250 households) have now been completed, using a phased approach to break the scheme development down into smaller more manageable parts.

In most communities, the poorest households are reluctant, or unable, to pay the required scheme contributions. Many of these households are also unable to provide labor as an in-kind contribution, thus most VSCs have exempted several such households from payment (or provided the funds from elsewhere). This ensures that these poor households have access to the sewer network, but does little to improve public health as they often remain without a sewer connection or toilet, even after the scheme is completed.

Institutional sustainability

Institutional sustainability appears to be the biggest challenge faced by the LPP: the village sanitation committees currently have no role once the schemes are completed; LPP itself is not officially registered; and the LPP is dependent on uncertain funding from its donors, as the local TMAs cannot yet fund schemes that do not comply with the current government procurement rules (which require that the official schedule of rates is used).

In its favor, the LPP is well-embedded locally. It has a central office in Lodhran City, and four field units. Its staff all originate from the area, and it is well-respected in local circles.

The LPP was fortunate to have help from both the OPP and the NRSP in its early stages. The high quality of their guidance and support allowed the LPP to develop an effective approach and a reliable team. These links also led to interest in the LPP's activities from external donors and government, culminating in the approval of the JSDF grant to provide 100 village sewerage schemes over the next three years.

Financial sustainability

The LPP's operational budget (salaries, vehicles, overheads) is currently about US$ 40,000 per year. Over the next three years, the LPP will be funded by the JSDF grant, but it will have to source alternative funding beyond that time. There are also indicators that the financial sustainability of the village sewerage schemes could be a problem in the future. In several cases, the transparent division of responsibility and increased ownership conferred by 'component-sharing' appeared to be missing. And, as mentioned earlier, there was little sense that any of the communities expected to have to fund major repairs or replacements in the future.

In Gahi Mummar (Tehsil Kehror Pacca), the village sanitation committee complained that two or three lanes in the village had no sewers, despite all the households having paid their contributions. It transpired that the scheme had been delayed (by rains and shortages of skilled labor) and that market rates had risen in the interim. As a result, the money collected by the community for the internal works (based on the original cost estimate) was insufficient. However, despite the community agreeing to

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responsibility for funding and implementing all internal works, the community now felt that the LPP (or some other donor) should fund the shortfall.

It appears that the low level of technical and financial know-how in these rural areas results in a pragmatic approach by the LPP: it does most of the work in planning and design, while the largely passive community waits to hear how much it will have to contribute towards the scheme. Inevitably, the community becomes more involved during the construction phase, but it remains to be seen whether these communities are genuinely committed to managing and maintaining the schemes themselves.

Environmental sustainability

Two issues stand out: the safe disposal of settled sludge; and the use of untreated effluent to irrigate crops.
At present, none of the communities have realistic plans to inspect or desludge their sewerage systems. However, when it does become necessary to desludge the t-chambers (or manholes, or collection tank), it is important that the highly pathogenic sewage sludge is safely disposed, rather than being dumped in the open somewhere in the village.

The untreated effluent from the sewerage schemes is currently being used for 'unrestricted irrigation' (see box on wastewater reuse). It is important that the VSC understand the potential hazards associated with using untreated wastewater for irrigation, and that careful instruction is given on suitable crop types, safe application methods, and control of human exposure (particularly when wastewater is being used to irrigate fields close to habitations).

Scaling-up

The LPP is planning to scale-up its activities through the JSDF grant, and is already using its high-level contacts to persuade local TMAs and provincial government bodies to commit to funding schemes through this model in the long-term. But can the Government of Pakistan, or the Government of Punjab, afford to provide settled sewerage schemes in every village? Many of the settlements in the Lodhran district are more like small towns than rural villages, and will involve far more complex and more expensive schemes than those provided to date. And there is significant political resistance to NGOs such as the LPP. Unfortunately, the LPP is caught up in the ongoing and controversial decentralization struggle. This process has greatly reduced the allocation of development funds to both politicians (Members of National Assembly and Members of Provincial Assembly) and line departments (such as LGRDD), creating considerable resistance and antipathy towards alternative models, particularly when they are competing for the limited funds that remain

Wastewater Reuse

If managed properly, wastewater reuse can have significant environmental and economic benefits. Treated wastewater can be a better water source for agriculture than fresh water sources. The flow is relatively constant, and the nitrogen and phosphorus in the wastewater can provide higher yields than freshwater irrigation.

The main health risks are from helminthic (worm) and microbial diseases contained in the wastewater, and from the contamination of shallow groundwater aquifers. The worst case is when untreated wastewater is used to irrigate vegetable or salad crops that are normally eaten raw, a practice that resulted in the 1981 cholera outbreak in Amman, Jordan.

The 1989 WHO 'Guidelines for the safe use of wastewater and excreta in agriculture and aquaculture' identify the treatment levels necessary, which depend on whether irrigation will be restricted (used only on cereal, industrial, fodder crops or pastures and trees) or unrestricted (irrigation of crops likely to be eaten uncooked, irrigation of sports fields and public parks).

The WHO guidelines also outline methods to protect public health through safe waste application and control of human exposure. In most cases, sprinkler irrigation is discouraged, and where fruit trees are irrigated with wastewater, irrigation should cease two weeks before fruit is picked, and no fruit should be picked off the ground.

After Faruqui (2000)

available to vested political and government interests. The LPP plans to expand its staff substantially. The project management team will be strengthened and another 150 social engineers will be trained over the next three years, the best of whom will be recruited by the LPP to help with the 30-40 sewerage schemes per year that it will soon be implementing. This rapid expansion in staff and activities will be challenging.

So far, the LPP has been able to train and recruit good local talent, and the management have personally monitored and supported their work. This may not be possible in the next phase, with more staff, more schemes, and greatly increased reporting requirements. The LPP recognizes that replication of its participatory approach has been slow in other localities, perhaps due to limited dissemination and promotion of the model. Therefore, it proposes to develop an IEC package that will document and disseminate the lessons from the LPP. It also plans a program of exposure visits, in which 400 elected councillors and local officials from nearby districts will visit the LPP schemes and discuss the approach with local communities and officials.

Technically, the LPP approach is well suited to the densely-packed villages, impermeable soils, and associated drainage problems found in southern Punjab. But the LPP offers only one option: settled sewerage. This option is relatively expensive, so may not be affordable in all cases. And it is unlikely to be a viable model in less urban scenarios, where households are more scattered. The basis of any demand-responsive and participatory approach should be that it offers a range of options. These should include low-cost models suitable for the poorest, or for those not yet ready to invest heavily in sanitation infrastructure, and alternatives to cater for wide variations in local conditions.

Conclusions

The Lodhran Pilot Project is an undoubted success. It has developed a viable and low-cost approach to implementing rural sewerage schemes in southern Punjab. This approach encourages user investment and ownership in their services, and delivers the long-term sanitation solution that most communities aspire to.

But there are drawbacks. The benefits of the LPP sewerage schemes, which are 50 percent funded by local or external donors, accrue largely to better-off rural households. Those who already have toilets and septic tanks can connect easily to the new sewerage system, and are more likely to afford the expensive scheme contributions. In contrast, the poorest households are either excluded from the sewer network (in the case of the seasonal workers), or unable to utilize it until they construct a costly toilet and t-chamber (assuming they are willing and able to pay their scheme contribution). There are no alternative options, and little attention to whether the schemes are stopping open defecation, improving hygiene behavior, and generating health benefits.

The sustainability of the schemes is also in question. Rural communities often require long-term monitoring and support before they develop the capacity and experience required to manage and maintain complex sanitation systems. Component-sharing is a good idea, but it looks a lot like cost-sharing in practice, and is no guarantee of sustainability. More emphasis needs to given to the long-term requirements of the LPP schemes, otherwise they are likely to go the way of the abandoned government sewerage schemes found in several of the surrounding villages.

There are also environmental issues. The communities are happy that the sewage and wastewater has been removed from their villages, and that its disposal serves a useful purpose. But the LPP needs to look carefully at the long-term environmental impacts of using heavily contaminated effluent for irrigation, and at practical methods of safely disposing of the septic sludge that will accumulate in the sewer networks. Finally, it is not clear whether the approach is replicable. The approach appears simple, but as the authoritative UNDP case study[31] puts it, 'this project happened because some of the finest individuals in

[31] Haider & Husain (2002).

Many questions remain: Will the Lodhran Pilot Project model be effective when scaled-up? Is it an affordable model for use on a national scale?

Pakistan got together to work on it'. Many questions remain: Will the LPP model be effective when scaled-up? Is it an affordable model for use on a national scale?

Fieldwork

Findings based on documentation collected by WSP Pakistan, and rapid appraisal during February 13-17, 2004, including: interviews with LPP management and staff in Lodhran, with the Tehsil Nazim and TMA staff in Dunyapur, with LGRDD officials in Lahore, with NRSP management in Islamabad, and with the household members in six villages in southern Punjab:

1. Chak 358 wb, Tehsil Dunyapur, District Lodhran (no scheme, but cash collected).
2. Basti Barati Wala, Tehsil Lodhran, District Lodhran (completed scheme in operation).
3. Gahi Mummar, Tehsil Kehror Pacca, District Lodhran (scheme 80 percent complete).
4. Chak 205 wb, Tehsil Malsi, District Vahari (scheme 40 percent complete).
5. Kot Malikpur, Tehsil Malsi, District Vahari (first phase complete).
6. Chak 97 m, Ghariabad, Tehsil Lodhran, District Lodhran (rehabilitation ongoing).

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