

Beyond Construction

USE BY ALL

A collection of case studies from sanitation and
hygiene promotion practitioners in South Asia





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Foreword

Nowhere in the world are there larger numbers of people in need of adequate sanitation and hygiene services than in Asia. In South Asia alone, almost 1 billion people do not have access to safe, improved sanitation. Political awareness of the enormity of the problem is growing, as is the recognition of the direct links between sanitation and hygiene on the one hand, and development and poverty reduction on the other. As a result of this, the amount of funds invested in the sector is slowly rising, new sanitation policies are being developed, and large-scale programmes devised and implemented. South Asia is at the forefront of this, with a number of approaches being pioneered that show great promise for replication, notably the Community Led Total Sanitation approach.

But sanitation is a difficult thing to get right, and this rise in commitment, especially when coupled with a rise in delivery speed, could easily lead to more failure, more unused or unsafe latrines and unsustainable services. The practice of monitoring progress, sharing and learning, and continuously seeking to improve programmes based on lessons learnt, is crucial to ensuring success. Of special importance in this, are the practitioners who stand firmly with their feet on the ground, talk from personal experience, and have a direct stake in improving their programmes.

These practitioners were the participants of this workshop. As can be read in this report, many of the issues they raised have far-reaching policy and strategy implications, and will require not only more research but also concerted advocacy efforts to raise their profile. The speed of urbanisation coupled with the scale of the urban slums accounts for an ever growing amount of faeces let loose in the urban environment. While a lot of work is ongoing to find the most effective and efficient way of collecting the faeces, not enough emphasis is placed on the rest of the sanitation chain, i.e. storage, disposal, treatment, etc. In rural areas, the current success of demand-driven approaches requires a stable supply chain and sufficient service providers, but needs a strong system of quality control. These are just some of the issues that require more research and more experience.

The Water Supply and Sanitation Collaborative Council has long provided space and opportunity to practitioners and other stakeholders to come together to discuss, debate, share and learn. It actively supports the notion of networking, be it through thematic working groups, through national WASH coalitions, or through Communities of Practice. WSSCC has been proud to contribute to this workshop and the ensuing book, and intends to continue its support to these and similar initiatives. I would like to thank IRC, WaterAid and BRAC for taking the lead in organizing this event, and congratulate them on organising it so well.



Jon Lane

Executive Director

Water Supply and Sanitation Collaborative Council

Contents

Overview of the workshop

1. Beyond construction: Use by all - An overview of a South Asian sanitation and hygiene practitioners' workshop 1

Urban sanitation

2. Functionality and sustainability of community latrines under the Advancing Sustainable Environmental Health urban programme 13
3. Development of community-based sanitation infrastructure in Hasanpura, Faisalabad 27
4. Subsidy and sustainability in urban sanitation: The case of Quetta Katchi Abadis Environment Management Programme 1997-2003 45
5. Ecological sanitation latrines: The experience of Nepal 60
6. Sanitation, water and hygiene programme in Faridpur 78
7. Decentralised wastewater management using constructed wetlands 86
8. Mapping as a basis for sanitation implementation in Pakistan: The case of the Orangi Pilot Project 95

Rural sanitation

9. School Led Total Sanitation: A successful model to promote school and community sanitation and hygiene in Nepal 113
10. India's national sanitation and hygiene programme: From experience to policy West Bengal and Maharashtra models provide keys to success 126
11. Community Led Total Sanitation Approach: Some personal field experiences from Bangladesh 148
12. BRAC WASH programme 157
13. Sustainable Community Owned Total Sanitation 169
14. School led sanitation promotion: Helping achieve total sanitation outcomes in Azad Jammu and Kashmir 181
15. Community Led Total Sanitation in Pakistan 190
16. Promoting sanitation through decentralised governance: A case study of Rajukhedi Panchayat in India 201
17. Preventing corruption, encouraging transparency and accountability in the water and sanitation sector: A case study from Kerala, India 212
18. "Money down the pan?" Community level models for financing sanitation in rural Nepal 231
19. The reuse of human excreta in Bangladesh 247
20. Moving up the sanitation ladder: A participatory study of the drivers of sustainability and progress in Community Led Total Sanitation 263

Hygiene promotion

21. Menstrual hygiene: Breaking the silence 283
22. Journey towards changing behaviour: Evolution of hygiene education in Bangladesh 288
23. Assessment of hygiene communication plan in the aftermath of the 2005 earthquake in Pakistan 321
24. Creating user-friendly water and sanitation services for the disabled: The experience of WaterAid Nepal and its partners 343

General

25. Sanitation and hygiene in South Asia: Progress and challenges 358

Abbreviations and Acronyms

ABR	Anaerobic Baffle Reactor	CCDU	Communication & Capacity Development Unit
ADB	Asian Development Bank	CCL	Community Cluster Latrines
ADP	Annual Development Programme	CDD-Wat-San	Control of Diarrhoeal Diseases-Water Sanitation Project
AFC	Agriculture Finance Corporation	CDG	City District Government
AJK	Azad Jammu and Kashmir	CDGQ	City District Government Quetta
ANM	Auxiliary Nurse Midwife	CDGK	City District Government of Karachi
APL	Above Poverty Line	CDN	Community Development Network
ARBAN	Association for Realisation of Basic Needs	CEO	Chief Executive Officer
ARI	Acute Respiratory Infection	CEP	Community Empowerment Plan
ASA	Association for Social Advancement	CFPR	Challenging the Frontiers of Poverty
ASB	Anjuman Samaji Behbood	CHP	Community Hygiene Promoters
ASC	Annual Stakeholders Conventions	CIUD	Centre for Integrated Urban Development
ASD	Assistance for Slum Dwellers	CLBSA	Community Led Basic Sanitation for All
ASEH	Advancing Sustainable Environmental Health	CLTS	Community Led Total Sanitation
ASM	Arthik Samata Mandal	CM	Corner Meeting
AWP	Annual Work Plan	CMC	Community Management Committee
BAU	Bangladesh Agricultural University	CPA	Community Participation Agreements
BC	Beneficiary Committee	CRSP	Central Rural Sanitation Programme
BCSIR	Bangladesh Council for Science and Industrial Research	CSA	Community Situation Analysis
BG	Beneficiary Group	CSB	Community Sanitation Block
BHU	Basic Health Unit	CSO	Civil Society Organisation
BPL	Below Poverty Line	CSRSP	Centrally Sponsored Rural Sanitation Programme
BSP	Basic Sanitation Package	CTC	Child to Child
B-WASA	Balochistan Water and Sanitation Agency	CW	Constructed Wetlands
CAP	Community Action Plan	CWSAC	Community Water Sanitation Action Committee
CBN	Cost of Basic Needs	DACAW	Decentralised Action for Children and Women
CBO	Community Based Organisation	DAM	Dhaka Ahsania Mission
CBWSSP	Community-Based Water Supply and Sanitation Programme	DCI	Direct Calorie Intake
CCDB	Christian Commission for Development in Bangladesh	DDC	District Development Committee
		DDSC	District Disabled Support Committee
		DFID	Department For International Development

DISHARI	Decentralised Total Sanitation Project	IFH	International Science Federation for Home Hygiene
DNet	Development Network	IFI	International Financing Institution
DPEP	District Primary Education Project	ILE	International Learning Exchange
DPHE	Department of Public Health Engineering	IMC	Infrastructure Management Committee
DPMU	District Programme Management Unit	IMR	Infant Mortality Rate
DRS	Demand Responsive Sanitation	INGO	International Non Governmental Organisation
DSK	Dushtha Shasthya Kendra	IP	Implementing Partners
DSSC	District Sanitation Steering Committee	IPEA	Integrated Participatory Empowering Approaches
DVUD	Double Vault Urine Diversion	ISP	Intensive Sanitation Project
DWSS	Department of Water Supply and Sewerage	IUD	Integrated Urban Development
ECOSAN	Ecological Sanitation	JRCC	Junior Red Cross Circle
ENPHO	Environmental Public Health Organisation	KAP	Knowledge Attitude Practice
ESA	External Support Agencies	KMC	Karachi Metropolitan Corporation
FGD	Focus Group Discussion	KRWSA	Kerala Rual Water Supply and Sanitation Agency
FM	Fund Manager	KWSB	Karachi Water and Sewerage Board
GDP	Gross Domestic Product	LCG	Local Consultative Group
GIS	Geographical Information System	LGB	Local Government Body
GO	Government Organisation	LGED	Local Government Engineering Department
GoB	Government of Bangladesh	LGI	Local Government Institution
GoI	Government of India	LGRDD	Local Government and Rural Development Department
GoP	Government of Pakistan	LHV	Lady Health Volunteer
GP	Gram Panchayat	LHW	Lady Health Worker
GWS	Ghurkha Welfare Scheme	LO	Lane Organisation
GYC	Gaja Youth Club	LSHTM	London School of Hygiene and Tropical Medicine
FYP	Five Year Plan	MCA	Multi Criteria Analysis
HAPIC	Hygiene Awareness and Product Information Campaign	MDG	Millennium Development Goal
HEC	Health Education Corners	MDT	Millennium Development Target
HF	Horizontal Flow	MLD	Million Litres per Day
HIES	Household Income and Expenditure Survey	MLD	Ministry of Local Development
ICDS	Integrated Child Development Services		
ID	Institutional Development		
IDP	Internally Displaced Persons		
IEC	Information Education Communication		

MLGRDC	Ministry of Local Government Rural Development and Cooperatives	PPP	Public Private Partnership
MoE	Ministry of Environment	PRA	Participatory Reflection and Action
MoH	Ministry of Health	PRA	Participatory Rural Appraisal
MPPW	Ministry of Physical Planning and Works	PRI	Panchayati Raj Institution
NAIDE	Novel Approach to Imprecise Assessment and Decision Environments	PSC	Policy Steering Committee
NEWAH	Nepal Water for Health	PSTC	Population Services and Training Centre
NGO	Non Governmental Organisation	QPA	Qualitative Participatory Assessment
NGOF	NGO Forum for Drinking Water Supply and Sanitation	QKAEMP	Quetta <i>Katchi Abadis</i> Environment Management Programme
NRCS	Nepal Red Cross Society	QWSEIP	Quetta Water Supply and Environmental Improvement Programme
NSAW	National Sanitation Action Week	RBTS	Reed Bed Treatment System
NSCSA	National Steering Committee for Sanitation Action	RCL	Renovated Community Latrines
NVM	National Volunteer Movement	RKMLP	Ramakrishna Mission Lokasiksha Parishad
NWFP	North West Frontier Province	RNE	Royal Netherlands Embassy
O&M	Operation and Maintenance	RRN	Rural Reconstruction Nepal
OBS	Output Budgeting System	RSSC	Regional Sanitation Steering Committee
ODF	Open Defecation Free	RSM	Rural Sanitary Marts
OPP-RTI	Orangi Pilot Project – Research and Training Institute	RWSS	Rural Water Supply and Sanitation
OS	Organisational Strengthening	RWSSFDBP	Rural Water Supply and Sanitation Fund Development Board Programme
OVI	Objectively Verifiable Indicator	SA	Service Agency
PA	Programme Assistant	SACOSAN	South Asian Conference on Sanitation
PBSA	Pakistan Boy Scouts Association	SAD	Sanitation Access to Disabled
PC	Production Center	SAFE	Sanitation and Family Education
PHAST	Participatory Hygiene and Sanitation Transformation	SAFER	Sanitation and Family Education Resource
PHC	Primary Health Centre	SARAR	Self Esteem, Associative Strength, Resourcefulness, Action Planning Responsibility
PHED	Public Health and Engineering Department	SCOTS	Sustainable Community Owned Total Sanitation
PMC	Project Management Committee	SEC	School Environment Committee
POs	Partner Organisation	SEUF	Socio-Economic Unit Foundation
PPMEL	Participatory Planning Monitoring Evaluation and Learning	SHEWA-B	Sanitation Hygiene Education and Water Supply Programme in Bangladesh

SHG	Self-Help Group	URC	Urban Resource Centre
SKAA	Sindh Katchi Abadi Authority	USEPA	United States Environmental Protection Agency
SL	Sanitation Ladder		
SLTS	School Led Total Sanitation	USTF	Union Sanitation Task Forces
SMC	School Management Committee	VDC	Village Development Committee
SO	Support Organisation	VERC	Village Education Resource Centre
SO	Social Organiser	VF	Vertical Flow
SOCMOB	Social Mobilisation for Sanitation	VIP	Ventilated Improved Pit
SSA	Sarva Shiksha Abhiyan	VO	Voluntary Organisation
SSD	Society for Sustainable Development	VWSC	Village Water and Sanitation Committee
SSG	Sectoral Stakeholder Group	WAB	WaterAid Bangladesh
SSHE	School Sanitation and Hygiene Education	WAN	WaterAid Nepal
SSS	Sulabh Saushalaya Sansthan	WASH	Water Sanitation and Hygiene
SUP	Society for Urban Poor	WATSAN	Water Supply and Sanitation
SVMCT	Single Vault Moveable Container Type	WES	Water and Environmental Sanitation
TA	Technical Advisor	WHS	Water Hygiene and Sanitation
TMA	Tehsil Municipal Administration	WHO	World Health Organisation
TNA	Training Needs Analysis	WLO	Women Lane Organisation
TSC	Total Sanitation Campaign	WSP	Water and Sanitation Programme
TVSM	Two Vault Solar Model	WSSCC	Water Supply and Sanitation Collaborative Council
UBS	Urban Basic Services		
UC	Union Council	WSTF	Ward Sanitation Task Force
UDPF	Urine Diversion Pour Flush	YTP	Youth Training Programme
UP	Union Parishad		

1 Beyond construction: Use by all - An overview of a South Asian sanitation and hygiene practitioners' workshop

James Wicken
WaterAid

BOX 1

I had gone a-begging from door to door in the village path, when thy golden chariot appeared in the distance like a gorgeous dream and I wondered who was this King of all kings!

My hopes rose high and me thought my evil days were at an end, and I stood waiting for alms to be given unasked and for wealth scattered on all sides in the dust.

The chariot stopped where I stood. Thy glance fell on me and thou camest down with a smile. I felt that the luck of my life had come at last. Then of a sudden thou didst hold out thy right hand and say, "What hast thou to give to me?"

Ah, what a kingly jest was it to open thy palm to a beggar to beg! I was confused and stood undecided, and then from my wallet I slowly took out the least little grain of corn and gave it to thee.

But how great my surprise when at the day's end I emptied my bag on the floor to find a least little grain of gold among the poor heap! I bitterly wept and wished that I had had the heart to give thee my all.

Rabindranath Tagore, Gitanjali

The participants of the workshop all noted the experience of the beggar in this poem, and maximised their learning through being generous with their knowledge.

A group of 53 sanitation and hygiene promotion practitioners met in BRAC's Centre for Development Management in Rajendrapur, Bangladesh from 29 to 31 January 2008. The meeting marked the start of the International Year of Sanitation (IYS) and practitioners came together to share and learn from their peers.

Representatives from each organisation that attended wrote a case study about their work. They shared their experiences, reflecting on the challenges in the region and identifying ways to work together.

This paper summarises the main areas of discussion, the messages that emerged and plans for further joint working.

The workshop was organised so that each organisation could present their case study, of which there were 28, to the group (see the end of this document for a list of the case studies). Time was allowed for structured and open discussion.

Breakout sessions were organised so participants had a chance to learn and share from one another. One session, named *South Asian Daba* (also known as *World Café*), allowed people to contribute to open discussions on specific themes before moving on to a different table to discuss another. A second

session, called a *Peer Advisory Service* (also called *InterVision*), included an exercise in which participants worked in small groups to listen to problems faced by their peers. They asked questions to better understand the problem and then offered their advice.

Papers and discussions in the workshop were structured under the following themes:

1. Urban sanitation (nine papers)
2. Rural sanitation (11 papers)
3. Hygiene promotion (five papers)
4. Finance (two papers)
5. Looking ahead: where next? (one paper; discussions)

Urban sanitation

The largest number of people without access to sanitation are in rural areas. However the population living in urban areas in the region is growing fast and so is the proportion of people living in informal settlements in these cities and towns. In almost all urban areas there is a very real sanitation crisis and the poor are living in deplorable conditions. A number of very promising approaches to rural sanitation have emerged in South Asia over the last few years. But the search continues for more models of sustainable excreta management systems in low-income urban settlements.

This is why the first section of the workshop focussed on the urban sanitation challenge. A number of papers were presented on various community-managed urban sanitation programmes across the region. Other papers dealt with specific issues such as:

- the use of mapping for urban sanitation programming and advocacy
- sustainability of community-managed toilets

- ecological sanitation in peri-urban areas
- sludge management
- decentralised wastewater management using constructed wetlands.

In discussions, workshop participants identified the following key challenges in urban areas and revealed some promising ways of tackling them:

Covering the entire urban sanitation chain

Experiences suggest that many programmes in the region continue to focus on step one (confinement of excreta) in the chain of sustainable excreta management. The other three main steps of removal, transportation and making sludge safe need further attention. Doing this will require innovative partnerships between communities, local government, civil society and the private sector.

“Shortening the chain” by making excreta safe on-site is effective where space permits, but this is less likely to be an option in densely populated urban areas. Papers presented in the workshop addressed partnerships in which NGOs have:

- helped poor urban communities to build and manage primary shallow sewerage and municipalities have done the secondary sewerage and lane paving (Qutub et al., Haider, Welle and Wicken, Mitra)
- community-managed sanitation blocks with shared toilets, showers and laundry provisions (Ahsan)
- community-managed sanitation blocks with mechanical toilet pit emptying and sludge disposal (Rashid)
- community-managed sanitation with treatment and reuse through dry toilets and community reedbeds (Rajbahandari, Tuladhar et al).

Manual scavenging

On-site sanitation is the norm in the region and nearly every pit and every septic tank needs to be emptied. In the region, emptying of the septic tank is done by hand by women, often harijans. These are casteless people rendered untouchable by others, working and living in very poor physical and social conditions. In India over 1.5 million people have to do this degrading practise (Box 1).

In the workshop, the following question was asked: Are we, as practitioners, somehow adding to the disgrace and health risks of manual scavengers by building more pits, without thinking how they will be emptied?

Appropriate technology and financing

Costly sewerage-based systems are unlikely to be cost effective solutions in most urban areas. Instead, decentralised excreta management systems are required. While many technological solutions exist, awareness and knowledge of them is limited to a small group of experts and needs to be broadened. Similarly, the technical knowledge of decision-makers needs to be increased.

In some situations, such as for slums above water, appropriate technological solutions are yet to be found and more innovation is needed. Also, comparisons of primary and secondary costs and further investigation of what does and does not work, in the case of community-developed and managed facilities, would be helpful. One example is Qutub et al. on cost-effectiveness of community-managed sewerage and related development four years after completion. Another is Haider on the primary costs of community-managed sewers without direct household subsidies but with an interest-free revolving fund for the poor.

BOX 2 Manual scavenging - the invisible curse

"In the rainy season, water mixes with the faeces that we carry in baskets on our heads; it drips onto our clothes, our faces...When I return home, I find it difficult to eat food. The smell never leaves my clothes, my hair. But in summer there is often no water to wash your hands before eating. It is difficult to say which [season] is worse."

"When we are working, people ask us not to come near them. At tea canteens, they have separate tumblers and they make us clean them ourselves...We cannot enter temples...We have to go one kilometre away to get water."

The manual emptying of what is called human "nightsoil", from buckets and latrines, is one of the most dirty and degrading jobs in the world. In India, it continues to exist in at least 21 states. The government estimates that there are 60,000 scavengers; NGOs give an estimate of 1.5 million.

Ninety to 95% of them are women, earning sometimes as little as 1 Indian Rupee (Rs) per household per day plus some food. People who empty the pits may earn as little as 30 to 50 Rs (equivalent to 80 dollar cents to US\$ 1.26) per pit.

There are tremendous health hazards to the work. These include, premature deliveries for pregnant women, abortions, skin diseases, water borne diseases and tuberculosis. The women are often subjected to sexual exploitation. They are doomed to live with the smell of faeces, indignity and being untouchable. Their children follow them into the work. Even education doesn't help them out of this hell.

Actions that are needed

- Become aware of the situation in your country.
- Form links with the groups already involved.
- Make the issue one of basic human rights and dignity.
- Put pressure on the government to ensure adoption of sanitation is free from manual scavenging.
- Pilot and promote technologies and approaches that provide safe alternatives to this way of getting rid of faeces.
- Take responsibility to ensure our programmes do not result in degrading or un-safe practices.

(From a presentation to the workshop by Therese Mahon, WaterAid).

Community mobilisation

Understanding relatively complex and diverse urban communities is a prerequisite to sustainable and equitable programme development and implementation. It's a difficult task in fast changing informal settlements where in and out migration can be high and community coherence often limited. Experiences of community-based mapping (Haider, Welle and Wicken) and monitoring and water and sanitation registers have proven useful both for planning and generating accountability.

Above all, programme designers must be flexible and generate solutions which reflect local circumstances, working alongside those they are designed to serve.

Land tenure and evictions

Building on the theme of flexibility mentioned above, a number of approaches have been taken to deal with the threat of eviction. Some practitioners advocate de-linking land tenure from the right to sanitation and water. Others have focussed on mapping informal settlements and lobbying for the official status of slums to be changed to allow service provision. Memoranda of Understanding (MoUs) between communities and utilities and local government have also worked (see papers by Haider, Welle and Wicken, Mitra).

Creating political will and developing policies

Experiences from across the region suggest that multi-stakeholder platforms are a promising way of tackling this.

Rural sanitation

The Community Led Total Sanitation (CLTS) approach has reinvigorated the sanitation sector in South Asia. Some see it as the answer to scaling up coverage and have adopted it. Others have taken some core principles and designed new approaches and others have fundamental concerns with its sustainability.

Perhaps its biggest contribution to the sector in the region is the positive focus it has given to achieving **outcomes**, like Open Defecation Free (ODF) communities, rather than **outputs** (numbers of toilets built or used).

Now that ODF communities are becoming a new accepted standard for all programmes, the healthy debate amongst practitioners about which approaches work best to achieve this, especially in the poorest communities, is flourishing.

Against this backdrop, a number of papers (Kumar and Kumar, Ganguly, Huda, Kalimuthu, Khisro et al., Shrestha, Khan (1) et al.) were presented on national government-led, local government-led and community and school led sanitation programmes.

Other papers discussed:

- movement of households up the sanitation ladder (Shayamal et al.)
- re-use of human excreta (Quazi)
- how programmes can be designed to reach the poorest, most vulnerable and disabled (Ahmed (2), Pradhan et al.)
- financing for rural sanitation (Pretus and Jones)
- measures to prevent corruption (Mathew et al.).

Three common issues were also discussed:

a) What are the actual costs of sanitation programmes?

This discussion revealed that all sanitation programmes are subsidised somewhere (even so called “no subsidy approaches”) and current costing of programmes greatly under-estimates the total costs. This is because most cost data given by programmes is limited to hardware costs. However, it was estimated that software costs may comprise as much as 90% of total costs (Sijbesma).

Very few programmes include the costs of programme overheads and design and the cost to communities, often because of the difficulties associated with attribution of such elements as overheads and costs borne at a distance from the programme location. One important role the group of practitioners could play would be to contribute to the debate on costs by preparing some candid and complete estimates of the sanitation programmes they are involved in.

Multiple approaches to financing sanitation are causing real confusion at sector and community levels and is hampering progress.

For example, having programmes which are adjacent to others which include and exclude direct subsidy to households clearly creates difficulties for all concerned.

b) How can these programmes be made sustainable?

This remains a key question and was central to the theme of the workshop – “use by all”. The question was discussed initially with an agreement that sustainability is multi-faceted and comprises environmental, financial, behavioural, institutional, social and technical aspects and is therefore complex.

The key to sustainability lies in addressing all these complexities and not forcing the issue on communities to manage. Other strategies which were suggested include:

- enhanced interaction with other programmes in the community
- links with loans and revolving funds
- effective engagement with local government
- targeted capacity building
- community-based monitoring on durability, hygiene, gender and poverty impacts of different models and processes of upgrading over time.

c) How can these programmes ensure services to the poor?

This question, again, is of central importance to the theme of the workshop. “Use by all” and reaching ODF mean catering to the needs of the poor, vulnerable and disabled.

Some in the workshop were convinced that direct subsidy was the way to ensure that the poor would gain access to safe sanitation. Others argued that this would act in the *opposite* direction.

Practitioners who suggested a subsidy approach recommended a targeted subsidy and subsidy in kind, not cash, as well as community-managed acquisition and construction in bulk for lower costs and more control. They said this should use analysis by the community to identify recipients of subsidy with transparency and accountability (for example, through local wealth ranking and social maps).

Workshop participants argued that disability was created by society – people are only disabled because society does not cater to their needs. Experience shows that accessibility audits can be

used and, at limited additional costs, technical options can be adapted to meet the needs of the disabled. Partnerships can ensure the participation of disabled people.

Hygiene promotion

Sanitation is often referred to as the “poor cousin” of water, or the “Cinderella” service. Where does this leave hygiene promotion? The workshop aimed to have an equal number of papers on sanitation and hygiene promotion. In the end, however, the papers focussed more on sanitation. This reflects the fact that there is limited documentation and research on hygiene promotion despite the fact that most practitioners accept that the sustainability of behaviour change is key to reaping the full benefits of sanitation and water programmes.

Papers were presented on:

- assessment of a hygiene communications plan in the aftermath of an earthquake (Khan (2) et al.)
- the evolution of hygiene promotion programmes (Ahmed (1))
- approaches to address menstrual hygiene management (Ahmed and Yesmin)
- an evaluation of the sustainability of hygiene behaviour change (Zacharia, as previously published by Zacharia and Shordt and summarised in Sijbesma).

The latter showed that with quality inter-personal promotion methods, change of behaviour was sustained after periods of one to nine years. There is a need, though, to target men and women through different channels, as also demonstrated by Ahmed (1).

Practitioners used the *Peer Advisory Service* format (see above) to help each other solve problems

they were facing relating to hygiene promotion. The problems analysed and advised upon included:

- Whether and how to use the religious community in Bhutan to promote hygiene behaviour change?
- How to ensure the poor can participate in hygiene promotion programmes?
- How to monitor hygiene behaviour change?
- How to manage the tension between our pre-conceived hygiene messages and communities’ acceptability of these?
- How to do hygiene promotion in an urban community with frequent in and out migration?
- How to change the hygiene behaviour of men?

Looking ahead – where next?

Joint action research

After reviewing the case studies, it was revealed that there was a lack of robust evidence to support arguments and conclusions. A strong evidence base is necessary to bring the experience of practitioners to bear on sector debate. With this in mind, the group began planning out some joint action research on:

- **Developing indicators to measure outcomes and impacts** – Which indicators would provide sound evidence for the development of impacts of sanitation and hygiene programmes on health, education, livelihoods, empowerment etc?
- **Cost-effectiveness of hygiene promotion** – What is the duration of an effective hygiene promotion programme and what are the costs? How cost-effective are different approaches in different contexts?
- **Citizens’ voices and accountability** – This would address the important issues of raising and meeting demands with transparency and accountability. Topics would include:

- different abilities of citizens to access information
- the roles and responsibilities of different stakeholders to provide information on choices, their implications and their response to citizens' demands
- the degree and effects of transparency of funds in promoting sanitation and hygiene.
- **Other research themes** – These focused on:
 - the management of the sanitation chain, from sustained excreta containment to safe end-disposal
 - the time and cost of moving up the sanitation ladder
 - linking economic benefits of ecological sanitation with cost of construction (cost benefit analysis)
 - faecal sludge management and biogas options
 - NGO/CBO partnerships for motorised pit emptying
 - development of safety guidelines for low-tech manual pit emptying and modification of septic tanks to make them “self treating”.

Advocacy

The International Year of Sanitation (IYS) and the third South Asia Conference on Sanitation (SACOSAN) in 2008 provide opportunities for the group to raise issues and push for change. From the workshop discussions the following messages were prioritised:

- Sanitation and hygiene programmes must reach the poor and this is what should guide partnerships.
- More policy focus and funds needed for urban sanitation for the poor.
- Need for capacity building of local government and communities to sustain sanitation services.
- Needs of people with different abilities must be incorporated to achieve sanitation for all.
- The issue of manual scavenging must be recognised and addressed.

The group will work together to use what they learned in the workshop to focus sector debate. They'll do this in various publications to be published in IYS 2008, during World Health Day on April 7 2008 and through creating a platform for community and civil society perspectives at SACOSAN 2008 from November 16 to 21 2008 in New Delhi, India.

Community of Practise

The practitioners discussed establishing a 'Community of Practise' (CoP).

There are many regional and national networks already and the additional value of yet another network was questioned. Experience has shown that many network initiatives die a quiet and quick death soon after they have been initiated.

It was decided that a cautious approach was necessary. So over the next three months, workshop participants' energy and interest in actually contributing to the CoP on advocacy and/or the initiation of field studies and action research would be gauged.

Workshop papers

Urban sanitation

Author	Organisation	Country	Case
Ahsan T, edited by P Ryan and S Islam	WaterAid Bangladesh	Bangladesh	Assessment of functionality and sustainability of community latrines under the Advancing Sustainable Environmental Health (ASEH) programme
Haider I	Anjuman Samaji Behbood (ASB)	Pakistan	Development of community-based sanitation infrastructure in Hasanpura, Faisalabad
Mitra S	Gujarat Mahila Housing SEWA Trust	India	Slum Networking Project Ahmedabad ¹
Qutub S A, N Salam, K Shah, and D Anjum	Pakistan Institute for Environment - Development Action Research (PEIDAR)	Pakistan	Subsidy and sustainability in urban sanitation; Quetta Katchi Abadies Environmental Management Programme (QKAEMP) 1997-2003
Rajbahandari K	WaterAid Nepal	Nepal	Ecological sanitation latrines and the experience of Nepal
Rashid H U, Edited by P Ryan	Dushtha Shasthya Kendra (DSK)	Bangladesh	Sludge emptying, transport, treatment: can Vacutug (the machine that sucks the human waste from latrine pits) solve the downstream sanitation problems of Dhaka? ²
Saha U K, M Ali, L Stevens and I Karim	Practical Action	Bangladesh	Sanitation, water and hygiene programme in Faridpur
Tuladhar B, P Shrestha and R Shrestha	Environment and Public Health Organization (ENPHO)	Nepal	Decentralised Wastewater Management using constructed wetlands
Welle K, Edited by J Wicken	Orangi Pilot Project- Research and Training Institute (OPP-RTI), ODI, WaterAid	Pakistan	Mapping as basis for sanitation implementation in Pakistan; the case of the Orangi Pilot Project

¹ This case study has not been included in this compilation.

² This case study has not been included in this compilation.

Rural sanitation

Author	Organisation	Country	Case
Adhikari S & N L Shrestha	UNICEF	Nepal	School Led Total Sanitation (SLTS) - a successful model to promote school and community sanitation and hygiene in Nepal
Ganguly S	Independent	India	India's national sanitation and hygiene programme: focusing on West Bengal and Maharashtra models as key to success
Huda E	PRA Promoters' Society - Bangladesh /IDS	Bangladesh	Community Led Decentralised Total Sanitation: Field experience from Bangladesh
Kabir B, T A Huq, R Karim and M Rahman	BRAC	Bangladesh	BRAC WASH Programme
Kalimuthu A	Plan India	India	Sustainable Community-Owned Total Sanitation (SCOTS) ³
Khan (1) F, R T Syed, M Riaz, D Casella and V Kinyanjui	North West Development Associates (NWDA), Society for Social Development (SSD), IRC, UNICEF -Pakistan	Pakistan	School led Sanitation Programme - Helping achieve total sanitation outcomes
Khisro S N, M Ahmad, M N Tahir and M Khan	Integrated Regional Support Programme (IRSP) Mardan	Pakistan	Community Led Total Sanitation in Pakistan
Kumar S and Y Kumar	Samarthan- Centre for Development Support	India	Promoting sanitation through decentralised governance systems: a case study of Rajukhedi Panchayat in India
Mathew K, S Zachariah and R Joseph	Socio Economic Units Foundation (SEUF)	India	Preventing corruption, encouraging transparency and accountability in the water and sanitation sectors - a case study from Kerala, India
Quazi A R	NGO Forum	Bangladesh	Reuse of human excreta
Shayamal S, M A Kashem, S M Rafi, Edited by P Ryan	Village Education Resource Center (VERC)	Bangladesh	Moving up the sanitation ladder - a participatory study of the drivers of sustainability and progress in CLTS

³ The author was unable to participate at the workshop to present his paper.

Hygiene promotion

Author	Organisation	Country	Case
Ahmed R and K Yesmin	WaterAid Bangladesh	Bangladesh	Menstrual hygiene: breaking the silence
Ahmed (1) R	WaterAid Bangladesh	Bangladesh	Changing practice: evolution of hygiene education
Khan (2) F, R T Syed, D Casella and R Verkerk	NWDA and IRC	Pakistan	Assessment of hygiene communication plan in the aftermath of the 2005 earthquake in Pakistan
Pradhan A and O Jones	WaterAid Nepal	Nepal	Creating user-friendly water and sanitation services for the disabled - the experience of WaterAid Nepal and its partners
Zacharia S and K Shordt	Socio Economic Unit Foundation (SEUF) and IRC	India	How to change and sustain hygiene behaviours: research in India ⁴

Finance

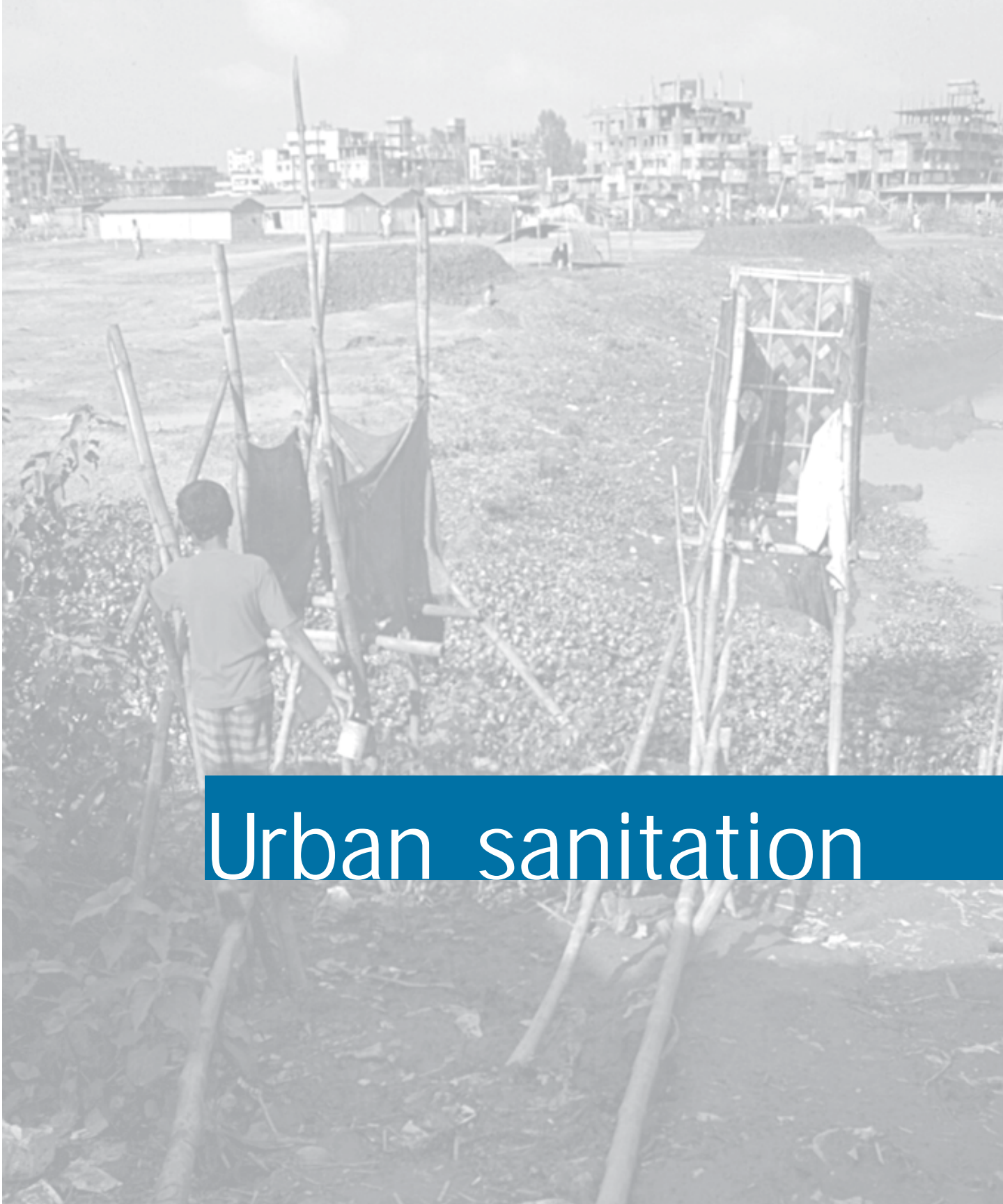
Author	Organisation	Country	Case
Ahmed (2) R	Population Services and Training Centre (PSTC), WaterAid Bangladesh	Bangladesh	Reaching the poorest and vulnerable ⁵
Pretus L D and O Jones	WaterAid Nepal	Nepal	Money down the pan?: community level models for financing sanitation

General

Author	Organisation	Country	Case
Sijbesma C	IRC	South Asia	Sanitation and hygiene in South Asia: progress and challenges

⁴ This case study has not been included in this compilation.

⁵ This case study has not been included in this compilation.



Urban sanitation

Urban sanitation

2. Functionality and sustainability of community latrines under the Advancing Sustainable Environmental Health urban programme

— T AHSAN, EDITED BY P RYAN AND S ISLAM

3. Development of community-based sanitation infrastructure in Hasanpura, Faisalabad

— I HAIDER

4. Subsidy and sustainability in urban sanitation: The case of Quetta Katchi Abadis Environmental Management Programme 1997-2003

— S A QUTUB, N SALAM, K SHAH, AND D ANJUM

5. Ecological sanitation latrines: The experience of Nepal

— K RAJBAHANDARI

6. Sanitation, water and hygiene programme in Faridpur

— U K SAHA, M ALI, L STEVENS AND I KARIM

7. Decentralised wastewater management using constructed wetlands

— B TULADHAR, P SHRESTHA, R SHRESTHA

8. Mapping as a basis for sanitation implementation in Pakistan: The case of the Orangi Pilot Project

— K WELLE, EDITED BY J WICKEN

2 Functionality and sustainability of community latrines under the Advancing Sustainable Environmental Health urban programme

Tanveer Ahsan, Shahidul Islam and Peter Ryan

Based on a report by Tanveer Ahsan et al of DevConsultant in May 2007, abridged and edited by Shahidul Islam, WaterAid Bangladesh and Peter Ryan

Abstract

Under WaterAid Bangladesh's Advancing Sustainable Environmental Health (ASEH) programme new methods of providing sanitation in densely populated urban slums have had to be implemented. Community latrines are the principle development. At the mid point of ASEH, the consultants were contracted to show what could be learned about community latrines from a usage, technical and programmatic/institutional standpoint. All aspects were considered largely successful and key recommendations made on some design aspects, on better hygiene and behavioural integration, and on helping CBOs to develop.

Introduction

ASEH urban programme and community latrines

Under WaterAid's ASEH Urban Programme, WAB is working with NGO partners in the slums of Dhaka, Chittagong, Khulna and Narayanganj cities, to implement a range of technological options for urban sanitation programmes. About halfway through the ASEH project, DevConsultants began a review of pit and community latrine implementation and produced its report in May 2007. This case study is based on that report and is concerned solely with community latrines.

The urban slums in the major cities are characterised by a high density of population and habitation with severe water and sanitation problems. The population density in Dhaka slums is about 220,000 people per km², compared to about 30,000 people per km² in the rest of Dhaka city (Centre for Urban Studies, 2005). The slum population density in Chittagong and Khulna is about 255,000 and 133,000 people per km² against the rest of those cities' density of 24,000 and 20,000 people per

km², respectively. The lack of good hygiene practice and poor conditions are endemic in the slums. The cities lack adequate water supply, sewer networks or other services, and the slum dwellers are the most deprived of these services.

An important issue is the insecurity in tenure and recent slum eviction drive, which has shaken the basis of sustainable investments in slums – both in terms of financial and social investments. This issue needs to be addressed at a higher level.

Since space is one of the major problems, latrines for individual households are not always possible to install, indeed there are many reasons why they are not necessarily the desirable option in such contexts, instead, community latrines are appropriate as they require less space (chambers over the septic tanks) and allow as many as ten households to use one latrine chamber.

Experience in other locations has shown that community latrines can provide a solution to the problem of generating sufficient latrine facilities for large numbers of people, avoiding the many failings associated with public latrines. This study provides the basis for equivalent learning about community facilities in a Bangladesh urban context, to build on the WaterAid experience in Trichy, southern India.

The method adopted to characterise community latrines was as follows:

a) Cluster latrine: A house containing a number of latrine chambers, normally ranging for three to seven chambers. There is a separation between enclosures for women and men, and children's latrines are based in the women's enclosure. There is a menstrual

hygiene management facility in the women's enclosure, either created by constructing a separate chamber or, as in the later design, by constructing a larger latrine chamber. There is no water source inside the house, but it is intended that there is a water source nearby the community latrine.

b) Sanitation block: Similar to community latrines, except there is water source within the house and space for separate male and female bathing.

c) Renovated latrines: Community latrines constructed by other parties that were previously damaged or abandoned. The ASEH project is renovating these for community use.

For better operation and maintenance, and to create a sense of ownership of the installed facilities, WAB and its partner NGOs mobilized people in the community. The partners conducted a Community Situation Analysis (CSA), developed the community action plan, formed community-based organisations and different committees, imparted hygiene education and provided caretaker training. The users themselves chose the technological options based on their context, particularly the number of households and availability of space, etc. Among the users group, a purchase committee was formed where the respective facilitators of partner NGOs are included. The purchase committee are fully responsible for construction works of latrine, including procurement of materials, selection of masons and labourers, and supervision and maintenance of accounts. A management committee comprising user representatives is fully responsible for proper operation and maintenance. Necessary support is provided by the assisting NGOs to develop their capacity for proper operation and maintenance.

Objectives and method of the study

The overall objective of this assignment was to study the effectiveness of community latrines for functionality and sustainability. The specific objectives of the study were:

- To assess whether there is any social or economical changes (change in incidences rate of waterborne diseases, hygiene practice, etc) as a result of implemented community-managed latrines.

Technology aspects

- To identify appropriateness of existing and different latrine designs considering the geographical contexts, number of people served, cost-effectiveness, functionality and sustainability, and to suggest necessary modifications
- To assess the functionality and O&M status of different latrine options
- To identify the existing practice of sludge disposal and determine sustainable sludge management practices.

Social aspects

- To assess accessibility and suitability of the direct beneficiaries with respect to social context of the sites/slums
- To assess acceptability and convenience of the users including male, female, elderly, children and differently-able people
- To determine the pattern of use by different age and sex groups among community-managed latrines
- To assess how issues such as menstrual hygiene management, comfort of pregnant women, children, elderly and differently-able people are addressed
- To determine appropriateness of management and maintenance mechanisms, including gender aspects

Institutional aspects

- To review the institutional aspects for overall sustainability of sanitation interventions at urban slums

To meet the objectives of the study, the TOR suggested adopting the following methodologies:

- Review relevant programme documents (eg ASEH guiding principles, cluster latrine implementation strategy, design and drawing of cluster latrine/sanitation blocks, O&M guidelines, caretaker manual, cost-sharing policy, WAB's quality testing protocol, baseline reports, etc)
- Discussion with relevant staff of WaterAid Bangladesh and partner NGOs
- Discussion with direct users, members of management committees, caretakers, etc
- Interviews with key informants, relevant stakeholders, etc
- Physical verification of community-managed and individual household latrines
- Presentation and discussion of the review findings and recommendations.

Findings - use and technical

The findings are summarised here and in the next section. They have been grouped into use and technical issues (in this chapter), and programmatic and institutional issues (in the next).

Use

A total of 49 community latrines of different types were surveyed of which 25 were community cluster latrines (CCL), nine were community sanitation block (CSB) and the remaining 14 were renovated community latrines (RCL) located in four cities.

In total, the evidence shows that just short of 3,000 households with a population of some 14,000 are served by these community latrines. It indicates that the community latrines are used by all type of users: male, female, children and differently-able people. During the study, no evidence was found that any particular section of the community is discouraged to use the community latrines, meaning that their use is socially well accepted by all categories of users.

The design number of users per chamber is 50. If the number of assumed users is accurate (calculated by dividing the estimated population by the number of installed seats), then the number of users is with one exception within the design value.

A set of 12 parameters was used in the assessment of **physical appearance** of the latrines and the facilities provided within. The field surveyors observed the physical condition of the latrines by visiting them and talking to their users when necessary. The table below shows the appearance of the physical parameters of cluster latrines, sanitation blocks and renovated latrines, respectively.

As seen from the table, the building's structural conditions (space, ventilation, light, door locks, etc) are satisfactory. However, the operations and maintenance conditions (of floor, pan and surroundings) need improvement. Menstrual facilities are available in less than half of the latrines, mainly because the earlier designs did not include such facilities.

However, it is important to note that, other than Narayanganj, no evidence was found of soap or ash use after defecation. Therefore, extensive hygiene promotion is suggested for those areas.

TABLE 1 Appearance of community latrines

	Cluster Latrines				Sanitation Block		Renovated Latrines		TOTAL
	Dhaka	N'Ganj	Chittagong	Khulna	Dhaka	N'Ganj	Dhaka	Chittagong	
Total Number of Latrines	16	2	5	2	7	3	10	4	49
Parameters									
Floor	50	50	60	100	29	0	40	0	41
Pan	75	100	80	100	43	67	20	25	57
Surrounding	100	100	80	100	43	67	40	25	69
Door with lock	94	100	100	100	100	100	90	75	94
Space	88	50	80	100	57	100	90	75	82
Ventilation	94	100	100	100	100	100	90	50	92
Inside light	44	50	60	0	57	100	70	50	55
Hand & feet washing	38	0	40	0	29	67	10	0	27
Bathing	56	0	40	100	71	67	0	0	41
Menstrual facilities	38	50	60	100	86	100	0	0	43
Water available nearby	44	100	80	100	100	100	40	100	67
Availability of soap or ash	0	50	0	0	0	0	0	0	2

The DevConsultant's team assessed further factors, as presented in Table 2.

Only 29% of cases were satisfactory in keeping a safe distance between the community latrines and the nearest drinking water sources. This reflects the high population density and habitation patterns in the slums. The level of satisfaction for waste/used water management is very high (94%), some 73% of latrines are odour-free and 90% were found to be without leakage in the pipe networks or in the pits/septic tanks.

The findings relating to **hygiene behaviour practices** are presented in Table 3. The consultants indicate that they show that 71% of users used soap or ash after defecation, some 95% of them used sandals in the latrine. They also showed that 84% of children used the latrine, but that, infant excreta was safely disposed of in only 37% of cases.

It is worth noting that while 71% used ash or soap, the table shows that only two out of 49 latrines had such materials available. This is explained by the following factors because, in most cases, people brought soap with them. They did so because either the soap was lost, they wash their hands at the

water source elsewhere, people don't enjoy using soap already used by other people to wash their hands after defecation, etc.

The consultants presented some figures showing the incidence of waterborne diseases among the community served by the community latrines, as shown in Table 4.

In relation to specific issues of **use by women and girls**, most women feel much safer and enjoy the convenience of using community latrines during pregnancy. Privacy is highly protected, latrine facilities have increased, water is available nearby and there is no bad odour in the latrine vicinity. Privacy ratings for women were high at 90% satisfaction, although (as shown below) overall satisfaction was actually lower for women than for men.

The project introduced menstrual hygiene management facilities in their community latrine design. This is highly commendable. There are two types of design. In the initial latrine design a separate chamber was constructed for this purpose. Subsequently, the project changed its design and instead of a separate chamber the size of the latrine chambers were increased.

TABLE 2 Environmental parameters

	Cluster Latrines				Sanitation Block		Renovated Latrines		Total	% satisfactory
	Dhaka	N'Ganj	Chittagong	Khulna	Dhaka	N'Ganj	Dhaka	Chittagong		
Total Latrine number	16	2	5	2	7	3	10	4	49	
Distance from drinking water source	5	0	2	1	0	0	6	0	14	29
Used water spilled inside	16	2	5	2	7	1	9	4	46	94
Odor	13	2	5	2	4	3	4	3	36	73
Pit or slab leaking	13	2	5	2	7	3	9	3	44	90

TABLE 3 Hygiene behaviour practices amongst users

	Percentage of latrines					
	None	< 25%	25 - 50%	50 - 75%	75 - 99%	100%
Use soap or ash after defecation			4.1	24.5	30.6	40.8
Sandal use in the latrine			2.0	2.0	28.6	67.3
Children use latrines		4.1		12.2	16.3	67.3
Infant excreta disposed into latrine	26.5	4.1	8.2	24.5	4.1	32.7
Hanging or open latrine stopped				2.0	12.2	85.7

When asked by the surveyors about their preferences of each design of the menstrual hygiene management facilities, adult females overwhelmingly preferred the larger latrine chamber design. They were happy with the facilities that were provided and most of their problems are now solved by the community latrines. There were a few suggestions for further improvements. These included making water available inside the latrine chambers; further enlarging the space inside each latrine chamber; arranging for washing and drying menstrual cloths in air, preferably in a separate place; creating awareness among men and women for necessary social support and recognition of this female problem, etc.

Generally speaking, adolescent girls had a different opinion and supported the ideas of the separate chamber design for menstrual hygiene management. They recommended that the chambers be large enough to enable a peer to be present when they

need to change. After further discussion, the consultant's view on this subject is that this perception of the adolescent girls is more of a social, knowledge and philological problem. Thus, there is a need for proper education and targeting the menstrual hygiene management topic to adolescent girls under the project's hygiene promotion component.

About 84% of respondents perceived that contamination of drinking water sources by the latrines has reduced and 78% considered that the bad smell had reduced – these had created visible positive impact in their environmental situation.

The study addressed five parameters of **cultural sensitivity and users' convenience**, finding that the distance from their house was satisfactory in 78% of cases; the direction of the pans universally did not contravene religious sensitivities. The approach way was found satisfactory in 61% of cases; the reason given for this relatively low satisfaction level is because of the very dense habitation pattern. The height of latrine platform was acceptable in 73% of cases.

Overall, the community latrine users were highly satisfied with the latrine technology, comfort in use and social dignity. It is notable though, that the satisfaction level of female users was lower than their male counterparts on all parameters except social dignity. This comparatively low level

TABLE 4 Incidence of waterborne diseases among community latrine users

Diseases	No. of incidence	Prevalence (%)	
		Among 42 incidence	Among total 14,045 pop
Diarrhoea	15	35.7	0.1
Jaundice	14	33.3	0.1
Dysentery	6	14.3	0.04
Typhoid	5	11.9	0.03
Scabies	2	4.8	0.01
Total	42	100.0	0.3

of satisfaction among females is because comfort, when using community latrines, matters most to females.

Technological issues

The consultants looked in detail at a range of technological issues that are not considered in this report because they were less relevant to the content of the workshop. Please refer to the consultant's final report for such details; while the relevant comments they made are retained here in summary form:

- The sludge management of community latrines is more convenient than pit latrines, because, instead of withdrawing sludge from a number of household latrine pits, the sludge can be withdrawn and disposed from a single point, ie the septic tank.
- The community latrines were of very good quality: the civil works appeared to be nicely done; the doors were of good quality materials and the pipes were well laid. The painting and the CI roofs were also well made.
- Some recommendations were made about detailed design issues. This included issues relating to construction in low-lying areas.
- They also indicated that the separation between male and female chambers was felt to be adequate.

The consultants indicated that ready availability of water is the single most important factor for sustained functioning of community latrines. The sanitation blocks have provision of water inside the latrine enclosure whereas cluster latrines and pit latrines have not. WAB design suggests that

TABLE 5 Male user satisfaction (91 respondents)

Parameters	Fully satisfied	Moderately satisfied	Unsatisfied
Technical Option	92	8	0
Capital cost	87	13	0
Ease O&M	89	10	1
Comfort in use	92	8	0
Social dignity	95	5	0

TABLE 6 Female user satisfaction (179 respondents)

Parameters	Fully satisfied	Moderately satisfied	Unsatisfied
Technical Option	79	20	1
Capital cost	65	31	4
Ease O&M	70	25	5
Comfort in use	85	13	1
Social dignity	97	3	0

there should be a water source nearby the community latrines. During their field visit, the consultants found that when water sources (piped water or handpump tubewell) are not in the immediate vicinity of the community latrines (say within 10 meters) the latrines are not cleaned properly (eg in Ambagan railway colony, Chittagong). Experience elsewhere in Bangladesh has also shown that in the absence of water provision, the latrine pans are gradually blocked and eventually abandoned.

A management committee has been formed for each community latrine to maintain cleanliness and necessary orientation on operation and maintenance is being provided to them. In most cases, the management committee members take turns to clean the latrine. Users do not usually employ a separate cleaner because the wage would increase their financial burden.

Providing a water source in the immediate vicinity of a community latrine should be given high priority and a deciding factor for constructing any cluster latrine. The consultants are aware of the fact that providing a water source in many places is not economically feasible because the cost to be shared among community members would be too high. They suggest that in exceptional cases the project may provide required subsidy for installation of a water source.

Total sanitation

The community latrines (and pit latrines) have definitely improved the surrounding environment of latrine points. However, this improvement alone is not enough to create a substantial health impact; the environmental sanitation situation of the whole locality (slums in this case) has to be improved. The demand for a “total sanitation approach” needs to be adopted for entire areas. Under the ASEH Urban Programme, the partner NGOs plan to cover the whole slum through its latrine coverage programme. Other planned programmes are community development, hygiene education and limited amount of solid waste management and drainage. These activities need to be ensured, coordinated and strengthened to ensure that the area becomes open defecation free.

Cleaning

Of the total of 49 community latrines surveyed, 15 were cleaned once a day and another 15 once a week. It was found that 41% of the latrine floors inspected were clean, as were only 57% of the latrine pans (see Table 1 above). So there is a problem with cleanliness. Experience (from Pune

and elsewhere) shows that this is a vital issue for the ongoing sustainability of such facilities.

Findings – programmatic and institutional

Planning, design and installation

Involving urban communities in the urban programme process, ie involving them in planning, design and implementation stages is a key programme strategy. A wide variety of participatory tools and methodologies were used at the community level. Communities were encouraged to actively participate in the need assessment, planning, formation of user level committees, cost-sharing, procurements, construction supervision, operations and maintenance, and leadership and management development activities.

Building on the social capital

Different training and orientation activities are being conducted by the partner NGOs for CBOs and others. Caretakers for the community latrines are given orientation on the O&M, hygiene promotion and other aspects. Community volunteers are selected from the local communities and trained on hygiene promotion and CBO strengthening activities. Training is being conducted on organisational development, gender and hygiene promotion for the CBO leaders at various levels. Programme staff train community volunteers to conduct courtyard sessions on various sanitation and hygiene messages. It was found that women head most CBOs, and the majority of their members are female. Thus, the social foundation created can be used to build other social and economic developments.

Discussions with the community volunteers and CBO members found that most are capable of explaining hygiene- and sanitation-related issues. Development of this knowledge base and dissemination skills among community people can be a prime mover for social and economic development activities at the local level.

Extending the outreach of hygiene promotion messages

WAB has an informal guideline for hygiene promotion that is followed by partner NGOs. WAB attached due importance to the issue of behavioural change. The guideline outlines the strategies for implementing the hygiene education activities among specific target groups such as female, adolescent girls and boys, children, etc.

But a gap was identified in reaching these messages to the target groups because the present hygiene education programme covers only a small section of the community, leaving the majority target group out of the reach of the project efforts. It may be mentioned that, for this reason, the majority of males are not participating in the CBO structure and in its activities. So it is strongly recommended to extend the outreach of the hygiene education activities, particularly among the working and school going population.

Affordability and repayment

Cost recovery from community members depends on the following two factors:

1. Composition of the group – the higher the number of poor, the lower the amount to be recovered from the group;

BOX 1 Example of cost recovery

A cluster latrine with three chambers is usually used by around 30 households. The cost of the latrines is around Tk 110,000. The average capital cost per household is therefore Tk 3,367.

As per cost-sharing strategy:

- well-off hh pay Tk 3,367 (100%),
- poor, but relatively better off – Tk 1,833 – Tk 2,693;
- moderate poor hh Tk 673 – 1,364;
- hardcore poor hh – Tk 168 – Tk 367.

If households decide to pay in 18 monthly instalments, then the respective amounts per month are: Tk 187; Tk 100-150; Tk 37-75; Tk 9-20.

2. Poverty category of the beneficiary households – it is felt that those who have the ability to pay will be motivated to contribute more; the poorer the member the less they have to contribute. It is noted that the community people themselves decide the category of each households based on criteria chosen by themselves.

To calculate the average shared/recovered amount applicable to each household, the full cost of the hardware is divided by the number of beneficiary households. Depending on the poverty category of the beneficiary household, (eg better off – 100%; poor but relatively better off – 50-80%; moderate poor – 20-40% and hardcore poor - 5-10%) different percentage will be applied to this average shared amount to determine the actual amount to be borne by the beneficiary household.

If any person from the hardcore category is identified as not being able to afford even the above-mentioned percentage, the community can

further reduce the percentage to ensure his/her inclusion. The balance of the shared/recovered amount will be borne by the ASEH programme. The capital costs can be contributed upfront or in instalments. In the urban situation, the community usually pays the amount in instalments. The beneficiary group decide the number of instalments and months. Since the poverty category may be different from community to community, the collected amount at community level will vary for the same hardware component.

Initially, the capital cost was collected by assisting NGOs as custodian, now the CBOs open a bank account in their name and having collected the cost-sharing amount, deposit the sum themselves. The money will be used for development of new watsan facilities within the community or for major repairs. In addition to this, the community collects separate money from the users for regular operation and maintenance.

An assessment was made on the status of repayments by the users at the community levels and verified at the partner NGO level. In almost all cases, users are found to be very regular in their repayments. Out of a total 82 respondents, 31 (38%) perceived the cost as a burden; only 5% said the amount of the total “payback money” was a burden, while the remainder replied that the amount was acceptable, though the monthly instalment was a bit high. With this in mind, a suggestion was put forward to increase the number of repayment instalments to reduce the monthly instalment amount.

Appointment of latrine caretakers and gender equity

The functional status of the 48 community latrines (one latrine was not handed over during time of

TABLE 7 Functional status of community latrines (48 number)

Parameters	Positive	Negative	Remarks
Caretaker Appointment	38	10	
Clean Superstructure	33	15	
Clean Approach Way	35	13	
Regular small repair	6	3	40 no repair required yet
Male responsible for cleaning	16	14	18 by both male and female

the field survey) is presented in Table 7. It was found that the caretakers were already appointed in 38 (76%) community latrines. Superstructures of 33 (67%) community latrines were found clean and the approach way of 35 (71%) latrines were clean and smooth. Regarding cleaning of community latrines, males were found responsible in 16 latrines (33%), females were responsible in 14 (29%) while male and female are jointly responsible in 18 (37%) latrines.

The partner NGOs reported that appointments of the remaining caretakers were in progress. The indicators of physical operation and maintenance (clean superstructure, approach way and petty repair) showed that the operation and maintenance of the community latrines needed improvements.

The gender equity was reasonable, which demonstrated positive results of community mobilisation.

Status of CBOs

A well-run CBO is an essential element for sustained operations of the latrines and other facilities (water supply, drainage, etc) and also maintaining good hygiene practice. The status of CBO formation and their capacity building were assessed and showed

that only 53% of cluster-based committees and 69% of infrastructure management committees (IMC) are established. Comprehensive actions are already taken for orienting CBOs, IMCs and latrine caretakers. In the discussion sessions with the senior staff of WAB and partner NGOs, it was found that all cluster-based committees and IMCs are formed and activated. The efforts for formation of CBOs are ongoing. The difference of information given by the community people and that of the partner NGOs demonstrates that not all community people are clearly aware of the functions of the partner NGOs and CBOs, which justifies the need for improvement of the community development process. There is a need for concerted effort for further organisational development of the CBOs.

As yet, there is no standard guideline for the structure of CBOs or its 'constitution'. In practice, the partner NGOs prepared working procedures for CBO formation and development and the consultant reviewed some of these working procedures. With the partner NGOs well experienced with community development activities, the working procedures had some similarity in content. However, the working procedures are not yet formalised or uniform and would benefit from more elements. Thus, it is strongly suggested that the project should prepare a guideline for organisational development of CBOs including a CBO constitution.

The existence and performance of CBOs are recognised by the partner NGOs, but they are not yet recognised by other external stakeholders, including the Ward Commissioner's office. No steps have yet been taken for formalisation of the CBOs, eg through registration. Establishing the function of the Ward Sanitation Task Force (WSTF) and its

link with the CBOs is fundamental for effectiveness and sustainability. During the study, only half of the established WSTF had received orientation from the project.

Role of users and committee members in O&M and in decision making

The survey findings revealed that no specific caretakers were appointed or selected for the maintenance of pit latrines. Usually the housewives maintain the latrines. In the case of community latrines, the IMC or the CBOs engage the community latrine caretakers and their roles are either informally or formally defined. In most cases, the caretakers were selected from among the users too.

About 80% of users played an active role in site selection for the construction of latrines, 78% had participated in selection of technological options, and 67% in the selection of CBO members. These figures indicate a high degree of users' participation in the programme cycle.

Fund mobilisation for sustainable O&M

The programme has developed guidelines for the operation and maintenance of the latrines. It was also found that different CBOs under different partner NGOs are practicing or planning to prepare separate mechanisms for operations and maintenance activities including money collection. Some of them are:

- IMCs or cluster committees fix and collect user subscriptions, which vary among user categories. The cleaning materials are procured and lump sum remuneration is given to the caretakers. This is done informally, on an ad hoc basis.

- IMCs and CBOs fix category wise members' subscription for O&M and make plan for its collection. It is the responsibility of caretaker to collect user subscriptions and keep the latrine clean. Caretaker procures cleaning materials at his or her discretion and maintains latrines on an irregular basis.

This again suggests the need for an organisational development guideline for the CBOs.

Conclusions and recommendations

Conclusions of the study were drawn from the field investigations, observations and experiences of the consultant, and importantly from the various discussions with users and other stakeholders. External factors such as national policies, country and programme contexts and lessons from other countries were also considered. The study recommendations focused on the requirements of the ASEH Urban Programme, especially from the functionality and sustainability points of view. As such, these can be reflected in the remaining implementation period of the ASEH Urban programme.

The recommendations are categorised into four aspects: programme approach, social, technical and institutional aspects of the different types of latrines.

Programme approach

- The programme approach of integrating the latrine installation with hygiene promotion and water supply is judged to be highly appropriate.
- Sustainable behavioural change is the key for long-term sustainability of the latrines installed. As behavioural changes are a long-

term process, the social mobilisation should continue even after the latrines are installed. It is strongly advised that after the implementation of the latrines, social mobilisation should continue with more attention to their proper use and maintenance.

Extending the outreach and impact of hygiene promotion messages

- The present hygiene education programme, being conducted in the slums during daytime, covers only a small section of the community, leaving the majority target groups out of the reach of the programme efforts. So, it is strongly recommended to extend the outreach of the hygiene education activities.
- There are some critical elements that require follow-up and regular monitoring. These include:
 - i. Hand washing after defecation – the proxy indicator may be the availability of soap in the community latrines
 - ii. Protection of the water-seal in pit and community latrines. Broken water-seal causes bad odour and discourages latrine use,
 - iii. Presence of an electric light in the community latrines. This may increase the latrine use during the night.
- It is suggested to involve CBOs in different monitoring and impact assessments, to encourage and enable them to take corrective measures.

Social aspects

Building on social capital

- The social capital developed by the project intervention (training, hygiene promotion, community development, etc) should be

retained and used to take the communities forward. The social dignity had increased in all instances for using latrines. This willingness to continue with the elevated sense of dignity may be positively used to maintain proper use, maintenance and good hygiene practice.

Menstrual Hygiene Management

- The study clearly found that the separate menstrual chamber is not preferred and in most cases not used. The model of the larger female latrine chamber, which can also be used for menstrual management purpose, is preferred and thus recommended.
- It is recommended to review the experiences of the WAB Rural Programme, where a separate box was attached to the latrine wall for safe disposal of menstrual materials. The emptying and safe disposal of the material is an issue that needs to be thought out. It is also suggested to review the impact of such a box to de-stigmatise some related social issues. Based on these findings the decision of setting of a separate box in the latrines in an urban context may be considered.
- One of the major problems of the females was drying of menstrual cloths in a private space after washing. The study could not come up with a workable technical solution given the limited space available in the community latrines. It is thus suggested to encourage females through the hygiene promotion programme to address this issue at a personal level in a more hygienic way.
- It is suggested to undertake a separate awareness campaign on menstrual hygiene management for adult women and adolescent

girls because of the different level of knowledge, culture and beliefs.

Gender and governance

- The study finds a reasonable balance between the roles and responsibilities of men and women in the context of the society where males dominate decision making. (Currently some males tend to avoid O&M responsibilities.) To improve the balance in sharing social responsibility, it is important to sensitise both men and women on, for instance, social responsibilities and menstrual hygiene management.
- Normally the enclosure for females (including children) is larger than the male enclosure. The programme (and CBOs) should be vigilant so the male does not take over the female enclosure as many may find it more convenient for them.
- Periodic users' satisfaction survey and dissemination of results among communities and other stakeholders are recommended for transparency and accountability of project authorities.

Addressing the needs of elderly and differently-able people

- The study found that the elderly and differently-able people use the community latrines. However, a few of them mentioned that the height of the approach way and the height of the foot rest in the latrine chamber was a bit uncomfortable for them.
- It is recommended to add a railing in staircase of latrines and a handle attached to the inside wall of the latrine chamber. This

will be convenient and safe for these groups of people.

Technical aspects

See consultant's report (Ahsan, 2007).

Institutional aspects

- Proper operation and maintenance of the latrines is the single most important factor for sustainability of the latrines. Appropriate institutional arrangement for this function is fundamental. Although the consultants recommended contracting out the management to private parties or individuals, it is felt that this is not a recommendation that should be supported. Instead, WaterAid is encouraging the formation of a management committee and the selection of caretakers (paid or non-paid) among the users to take responsibility for maintenance.
- A well-run CBO is an essential element for sustained operations of the latrines and other facilities (water supply, drainage, etc). It is also important for maintaining good hygiene practice. However, the working procedures are not yet formalised or uniform and would benefit from more elements.
- Therefore, it is strongly suggested that WAB prepare a guideline for organisational development of CBOs including a provision for a CBO constitution, which should be duly endorsed (and modified if required) by the community.
- The CBOs are recognised by the programme. Advocacy may be undertaken to make the CBOs recognised by and increase their access to other stakeholders such as the Ward Commissioner's office, WASA zonal offices and other NGOs.
- CBOs should be more involved in site selection, technology choice and selection of CBO members.
- It is recommended to carry out a training need assessment (TNA) of the CBOs and to design training programmes accordingly.
- CBOs are established for project specific activities. When this local level institution is established and functioning, it can be better used by extending its scope for addressing other social and development activities.
- There should be a clear strategy of gradual phasing-in of CBO responsibilities and – at the same time – phasing-out of the partner NGO involvement. This strategy should be made known to all parties from the start of the programme.

References

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3 Development of community-based sanitation infrastructure in Hasanpura, Faisalabad

Irteza Haider

Abstract

Sanitation facilities in impoverished communities in developing countries are often very inadequate and contribute to the poor health of the community. Most households living in such communities lack the financial means to improve their own sanitation facilities. At the same time, municipal authorities are often reluctant to improve sanitation facilities in impoverished communities. This results in the decay of urban environments and deteriorates the health of individuals. As urbanisation continues unabated in developing countries such as Pakistan, the pressure falls on authorities to provide sanitation facilities commensurate with the increase in population.

The success of community-based sanitation development in the Orangi Pilot Project, Karachi, motivated the sanitation development in Hasanpura, Faisalabad. Following the lead of a local NGO, residents of Hasanpura developed their own water supply and sanitation schemes by adopting a component sharing approach. The community paid for the infrastructure development within the community boundaries and the local authorities paid to link the community's infrastructure with the municipal infrastructure.

The process was a great success and its impact extremely positive. The experience allows for replication elsewhere, so long as the identified constraints (especially that of overcoming distrust in local government) are overcome.

Introduction

Inadequate water supply and sanitation infrastructure continue to pose a challenge for the government and people of Pakistan. Poor quality drinking water and sanitation conditions contribute to the poor health of communities. The result is a very high burden of disease and a significantly large number of deaths every year. Thousands of other people suffer short-term or prolonged illness, which prevents them from being productive members of society, in general, and for their households, in particular.

The last census of Pakistan in 1998 reported that only 79% of households received water from municipal sources or by drawing it from the ground. Low-income communities in Pakistan fared worse than the national average when it came to water quality and sanitation facilities. The 1998 census reported that 51% of individuals in Pakistan did not have access to a proper toilet. Lack of adequate supply of potable water and poor sanitation facilities often cause poor health among communities across Pakistan, where a significantly large number of deaths and illnesses result from inadequate sanitation and waterborne diseases.

Given the inadequate resource allocation frameworks in Pakistan, municipal governments have lacked financial resources and the capacity to offer adequate municipal services to their communities. In the absence of buoyant sources of taxes, the municipalities rely on property taxes and the transfer of funds from the higher tiers of government to provide municipal services. Lack of technical capacity, poor governance, and inadequate leadership at the municipal level has left most urban communities in Pakistan with poor water supply, sanitation, and other municipal services.

Realising that governments were either unwilling or simply did not have the capacity to provide relief, some communities in Pakistan pooled their own resources to educate the masses about the consequences of poor water supply and sanitation. They also organised the community to plan, finance and develop their own water supply and sanitation schemes.

This report chronicles the struggles and triumphs of a small community on the urban fringe of a large industrial city in Pakistan. The community relied on itself to improve its sanitation infrastructure and in so doing improved the health, social standing, financial status and morale of the community.

This report is organised as follows: first, it outlines the poor sanitation conditions in the low-income community of Hasanpura, located in the third largest city of Faisalabad in Pakistan. A discussion on the social and health-related impacts of poor sanitation follows. It then introduces Anjuman Samaji Behbood (ASB) a not-for-profit organisation that galvanised the community to strive for better sanitation on a self-help basis. What follows is a detailed discussion on ASB's philosophy of community-based infrastructure development and the implementation details from ASB's first sanitation development project in Hasanpura. The paper also describes community outreach initiatives through gender-sensitive campaigns that focused equally on male and female members of the community. A discussion of outcomes of ASB schemes follows to explain their impact on the community and the factors responsible for success. Finally, the report details the unique challenges faced by ASB and the communities it helped over the years to spread clean water supply and sanitation facilities to low-income communities in Pakistan.

Background

Faisalabad is the third largest city in Pakistan. A rapidly growing town of two million (MoEAS), Faisalabad faces challenges brought about by rapid urbanisation. As the urban areas continue to increase in population and density and the urban fringe incorporates, albeit haphazardly, rural areas into the urban fold, rapidly urbanising communities face a myriad of challenges in infrastructure provision and municipal service delivery.

Low-income communities in Faisalabad lack an adequate supply of water and sanitation services. The following table presents a breakdown of water supply and sanitation conditions recorded in the 1998 census for Faisalabad. Handpump provides the primary source of water supply in both urban and rural areas of Faisalabad. Whereas 46% of urban households reported using tap water, only 15% of rural households reported access to tap water. As for sanitation, only half of urban households reported access to private toilet facilities. Some 41% of urban households had access to shared toilet facilities, whereas only 9% of urban households do not have access to any proper toilet facilities. More than 66% of households in rural Faisalabad do not have access to adequate toilet facilities. Only one in five households in rural Faisalabad reported access to private toilet facilities. It should be noted that because of the stigma associated with the lack of access to adequate sanitation facilities, households might have overstated their access to sanitation facilities.

Problems with sanitation

Hasanpura is a community of 2,500 households in Faisalabad. In 1994, when ASB started working with the community, Hasanpura was home to 1,000

TABLE 1 Water supply and sanitation conditions in Faisalabad

Faisalabad district		Total	Rural	Urban	
Source of drinking water	Outside house	Tap water (%)	2.4	1.1	4.1
		Handpump (%)	3.5	5.1	1.3
		Well (%)	0.1	0.2	0.0
		Pond (%)	0.2	0.4	0.0
		Other (%)	1.8	2.3	1.2
	Inside house	Tap water (%)	28.1	15.3	45.9
		Handpump (%)	63.6	75.7	46.9
		Well (%)	0.3	0.2	0.5
Toilet facilities	Private (%)	33.5	21.6	50.0	
	Shared (%)	24.4	12.3	41.3	
	None (%)	42.1	66.2	8.7	

households. Given the sanitation and water supply conditions prevailing in 1994, Hasanpura could be categorised as a peri-urban slum settlement. Before 1994, the community and its leadership had lobbied various tiers of government for improved water supply and sanitation facilities. Despite their continued requests over the years, Hasanpura was not connected to the municipal water supply and sanitation infrastructure in Faisalabad.

The results of this neglect were appalling. Lack of municipal water supply forced the community to purchase water from private suppliers who brought water in on donkey carts. The private suppliers provided poor quality water at premium prices, charging Rs 5 for 35 litres¹. The residents of Hasanpura were therefore forced to spend Rs 1.8 million per year to acquire water. Despite being a low-income community, Hasanpura residents were paying a higher rate for water than the wealthier communities receiving municipal water and sanitation services. The municipal authority was charging Rs 40 per month for water and Rs 20 per

¹ US \$1 = Rs 60 Pakistani (2007)

month for sanitation for the restricted supply it maintained in Hasanpura, which fell significantly short of universal coverage.

In the absence of proper sanitation facilities, solid and liquid household waste was released into the streets, which became breeding grounds for disease. As household waste ran in open drains in the streets, it accumulated into ponds whenever the flow could not continue under gravity. This caused human and animal waste to pile up in the streets, creating a stench and attracting a host of diseases including typhoid, cholera, gastroenteritis, and diarrhoea. Children were the most vulnerable of all. While children played in streets littered with filth, they became victims of a host of diseases and illnesses. As the children became sick, they passed on the illness to their mothers who inadvertently passed the disease on to other children in the household. Thus, whenever a child became ill, the entire household went down with the disease. Independent estimates of the financial costs for treating illness resulting from poor sanitation in Hasanpura put the burden of disease at Rs 9 million for the 1,000 households in 1994.

As the sewage flowed into streets, it seeped into the ground water and contaminated underground sources of drinking water, compounding the problems. Furthermore, wastewater damaged the foundations of the housing stock in the community: causing severe damage to the community's homes. The damage to the housing substructures and the waste littered streets in Hasanpura were partly responsible for a decline in property values in the community. Since most households in the community held legal titles to their property, the declining property values eroded the equity they had been building in their homes.

The problems associated with inadequate sanitation extend beyond the burden of disease and resulted in a myriad of social problems. Residents of Hasanpura reported being shunned by relatives who were reluctant to visit them because of the filthy streets, which were an eyesore and a risk of disease. Furthermore, in Pakistan where most marriages are arranged by parents, households with unmarried girls complained of facing hardship in finding suitors for their daughters because of the poor state of local sanitation. Prospective suitors were deterred by the appalling state of sanitation in the streets, which made even walking a challenge for most.

Anjuman Samaji Behbood (ASB) is a Hasanpura based community organisation that was founded in 1964 to improve services within the community. Up until 1987, ASB had limited success in improving water supplies and sanitation services. So ASB started to act as a lobby group and tried to convince political leaders to improve the quality of water supply and sanitation in Hasanpura and the neighbouring community of Dhuddiwala. However, years of lobbying failed to improve the state of the infrastructure.

Realising that lobbying politicians was not a successful strategy, Mr Nazeer Ahmad Wattoo, founder of ASB, searched for alternative approaches. In 1987, he met Dr Akhtar Hameed Khan who had pioneered self-help infrastructure development schemes in Orangi, a large slum in Karachi. Dr Khan was successful in developing sanitation, water supply, and micro credit facilities in Karachi and the Orangi Pilot Project (OPP) – a low-cost community driven sanitation scheme – had brought him worldwide fame in relevant circles. Over the next few years, Mr Wattoo visited Karachi

to learn from the Orangi experience and by 1994 ASB and Mr Wattoo were ready to implement OPP-inspired water supply and sanitation schemes in Faisalabad.

Development approach and philosophy

ASB's development philosophy was inspired by the development paradigms proposed by Dr Khan, in light of his work in Orangi. His philosophy included mobilising the community to pool its resources to develop basic infrastructure with community participation. OPP divided infrastructure development into two distinct phases: internal development and external development. Internal development referred to the placing of basic infrastructure within the house and the streets. Households would self-finance internal development. External development referred to laying down trunk and collector sewers, which would receive sewerage from lane sewers. The municipal authorities would finance construction and operation of trunk and collector sewers. This component sharing approach reduces the total cost of the project and makes it possible for low-income communities to enjoy water supply and sanitation services.

While ASB learned from the OPP experience, it also modified the OPP methodology to meet the local needs in Faisalabad. For instance, unlike the OPP method, ASB offered loans to households who could not finance the construction of internal development. Unlike the residents in Karachi's OPP, some residents in Hasanpura did not have the means to finance internal development. ASB used previous grants received from WaterAid for water supply projects to extend revolving loans to the community. Over the years, the community has already returned a large portion of the borrowed

money. Had ASB not arranged for the revolving loans for the poor households in Hasanpura, such households would have been left out of the project. Their integration at a later stage would have proven more expensive because the streets would have had to be dug again to link the household's discharge with the lane sewer.

ASB also collaborated with key community leaders who were encouraged to be early adopters of the programme. These community leaders later worked on convincing the community at large to buy into the infrastructure development programme. Thus, the community leaders themselves took initiatives for community mobilisation.

The following section presents in detail the implementation of the sanitation scheme in Hasanpura.

Implementation

The sanitation scheme in Hasanpura succeeded because it was an integrated effort where ASB mobilized the community to provide labour and finances, WaterAid provided a loan as a revolving fund, and the local municipal authorities provided access to the trunk sewer. The integrated approach that brought actors together from different spheres was ultimately successful in providing quality sanitation to the peri-urban community of Hasanpura.

Development approach

To develop a better comprehension of the ASB model, one needs to understand the concept of the internal and external development in a little more detail. As the name suggests, the internal development refers to all construction activities that take place inside the house (including a

sanitary latrine) and in the lane (street) including an underground sewerage line connecting houses with the primary lane sewer or the secondary or collector sewer. Whereas the external development comprises the trunk sewer or natural or main drain development, and pumping station, sewage treatment plant and its operation and maintenance, etc.

The following section details the step-by-step breakdown of the ASB's development methodology.

Selection of project area and baseline data gathering

The initial project work was undertaken by ASB. It began with the primary visual survey of the area for need assessment and identification of existing infrastructure. This was followed by Geographic Information Systems' (GIS) mapping of the area. ASB has been a leader among the NGOs in deploying GIS for urban infrastructure development and planning. The survey effort resulted in the documentation of existing infrastructure. This helped infrastructure planners to determine access points to connect the primary sewers (internal development) with the trunk or connector sewers.

ASB assessed the socio-economic conditions of the community to determine its willingness to accept intervention and also the community's willingness to pay for the improved sanitation facilities. Finally, ASB reached out to local planning authorities, such as Water and Sanitation Authority (WASA) and other development authorities (district government of Faisalabad) to develop a rapport with municipal planners, so that necessary support could be obtained from the local bureaucracies in future.

Community mobilisation

ASB relies on community mobilisation to achieve its objectives of improving infrastructure services in the community. ASB seeks out respectable community leaders and works with them by identifying sanitation-related shortcomings in the community. The community leaders first learn and adopt the development model and later work with the community at large to develop a consensus for infrastructure development. While the early adopters and community leaders are at the forefront, ASB works behind the scenes. The community leaders organise the community into lane committees headed by a lane (street) manager. Finally, ASB signs a Memorandum of Understanding (MoU) with the lane committee that binds the committee to provide labour and financial resources, and commits ASB to offer guidance and technical support to execute the sanitation scheme.

In Hasanpura, ASB conducted a series of motivational meetings and slide shows to educate the masses about the steps needed for the implementation of the sanitation programme.

Actual project implementation

The first stage of community mobilisation included the signing of an MoU between ASB and the community, followed by the actual project implementation. The first task in the implementation phase included a level survey of the community to determine the technical specifications of the sanitation scheme. The level survey also helped to develop preliminary cost estimates for the internal and external parts of the project.

The level survey led to the development of cost estimates, ASB mobilized the lane committees to

collect money from the community to finance the internal development of the project. The community was always aware of the actors involved in the development process and hence community members did not hesitate in handing over the funds to the lane committees.

The construction phase began after funds had been collected from the community. Lane committees undertook construction of the internal development and ASB provided technical guidance. After internal development works were completed, the community connected its sanitation infrastructure with trunk sewers in collaboration with the local planning authorities.

Documentation of the project

After the completion of internal and external development, ASB proceeded with documentation of the completed tasks. Furthermore, ASB liaised between the community and the local authorities to ensure that the community paid operational and maintenance fees to the local authority for accessing their trunk sewers. ASB also registered the community members with the local planning authorities to ensure proper and timely monthly billing for the use of trunk sewers.

Promoting sanitation awareness

ASB undertook a systematic awareness campaign about the sanitation related problems before the implementation of sanitation projects in Hasanpura. ASB mobilize women in the community because of the pivotal role they play in maintaining good health and hygiene within the household. While collecting key facts and figures during the situational analysis survey of Hasanpura, ASB wanted to make the community realise that the cause of poor health

and the problems resulting from disease had their roots in the poor water supply and sanitation services within the community.

In Hasanpura, ASB first identified approximately 50 influential people in the neighbourhood who were likely to agree with ASB's assertions for improved water supply and sanitation. From this list, ASB further identified four individuals who would play the role of community motivators. ASB enacted these four individuals in their own homes, before the community motivators took ASB's message to the community. Finally, a community meeting was held at the local mosque, which was attended by 48 of the original 50 individuals identified for the project.

While ASB worked with the male members of the community, its social mobilizers also contacted women by going door to door to spread awareness of the benefits of better sanitation and water supply. Once convinced, the women played a significant role in convincing other members of the household, especially men who were more likely to make decisions about household investments. The following section explains the details.

Gender-based awareness campaigns

ASB's gender-sensitive approach for its awareness campaign was integrated into the situation analysis phase. During the door to door survey for situation analysis of the area, the female staff of ASB, comprising a Lady Health Visitor (LHV), a trained midwife and two female field workers, spoke with women about health and sanitation practices within their household and at the community level. ASB organised further community meetings for women where it showed slideshows about health, hygiene and sanitation.

ASB organised women at street level and held weekly meetings of street-level committees on public health related issues. ASB also provided paramedical health services such as weight checks for babies and basic medicine for minor ailments. ASB also delivered promotional material on improving mother and child's health to women who were about to or had recently given birth. ASB also organised hygiene and cleanliness competitions in each street, presenting prizes to households with a clean kitchen or well-groomed children.

ASB ran special programmes for mothers and childcare within the community, offering treatments for minor ailments and, more importantly, serving as an information clearing house by offering women information about family planning, neonatal care, breastfeeding, necessary vaccination, and referral to better healthcare facilities in cases of serious illness.

By promoting health and hygiene within the community and empowering women through training, ASB was successful in generating goodwill for its services. It was also able to garner support among women who, in turn, helped to convince the men in the community to invest in improving sanitation services.

Technological choices

Before the ASB-led sanitation scheme in Hasanpura, the 35-street (or lane) community's open street drains discharged their sewage into a canal, originally used for irrigation purposes. The canal was often choked because neighbouring communities disposed of garbage there. In 1989, Faisalabad Municipal Corporation (now defunct and replaced by a new district government) constructed an open drain parallel to the canal and connected

it to a trunk sewer, maintained by the Water and Sanitation Authority (WASA). However, this open drain also choked regularly, causing lanes to become inundated with sewage. In addition to the 35 lanes, many shops in the neighbourhood's Jalvi market also dumped their waste and sewage into the open drain.

ASB was acutely aware of the fact that the technological choices had to be affordable to most of the community in Hasanpura. The community's income and financial resources had a direct bearing on the technology of adopted sewers. Local experience suggested that open drains, despite being cheap, did not offer a sustainable solution. ASB realised it was working on improving sanitation facilities in a low-income community, so the technological choices about the sanitation infrastructure had to be contextualised within the community's willingness and capacity to pay for the proposed intervention.

While open drains are much cheaper to install, such drains continue to pose health-related problems as the sewage flows expose the population to germs and bacteria. Although having sewage flowing in open drains may still be better than sewage suspended as ponds in the lanes, open drains do not meet the objective of creating a disease-free community.

So, in consultation with the community, ASB opted for underground sewers where collector sewers would connect the community's infrastructure (lane sewers) with trunk sewers, maintained by the local planning authorities. Once the decision was made about the type of sewers, the next big step was to determine the community's willingness and its ability to pay for the proposed infrastructure. ASB

was aware of the fact that the community was not capable of paying for the government-specified standard sewers, which were more expensive and prohibitively so for most members of the community of Hasanpura. ASB searched for cheaper alternatives and adopted the model developed by the research team in Orangi, Karachi. The chosen technology comprised shallow sewers of nine inches in diameter that linked the single chamber septic tank within each home with a cast-in-situ manhole in the lane. The chosen technology has been successful because after more than 12 years in operation in Hasanpura, the sanitation infrastructure has been working without major problems.

While ASB modelled itself on the Orangi's experience in Karachi, it has gone beyond the mere adoption of the techniques developed there. It has innovated to address local needs. Unlike Orangi, where sewage flowed under gravity to nearby open drains, ASB devised solutions to facilitate sewage flow in Hasanpura where flat grades prevented sewage flow under gravity. This required ASB to construct collector sewers to collect the sewage from lane sewers and transport it to municipal trunk sewers.

While construction of the collector sewer made perfect sense from a technological point of view, it posed significant challenges from the affordability point of view. The community was willing to finance the construction of lane sewers within their own streets; but it was not willing to sponsor the construction of a collector sewer before the construction of its own lane sewers. ASB realised that the community would be willing to pay for the construction of a collector sewer only when individual lane sewers were being connected to the collector.

In January 1996, Noor Muhammad Saifi, an experienced technician in community-based sanitation infrastructure development in Orangi, arrived in Hasanpura to train ASB in documentation, cost estimation, levelling, use of shuttering for manholes and the laying of sewers. Construction work began soon afterwards in Hasanpura.

Five lanes were completed in the following five months. The initial work on the first five lanes was undertaken without a collector sewer because of affordability issues. Sewage collected from the five lane sewers was disposed into the open drain running parallel to the community. However, this was not a sustainable solution and the community and ASB were aware of its limitations. ASB therefore decided to clean the open drain and replace it with a collector sewer, which would connect to the trunk sewer. A revolving fund of Rs 500,000 from WaterAid was used to construct the collector sewer. When the lane committees connected their lane sewer to the collector sewer, the lane members paid their share of the cost of constructing the collector sewer.

ASB requested help from the OPP in designing and laying the Jalvi market collector drain. The OPP again dispatched Noor Muhammad Saifi to Hasanpura. He spent two weeks training the ASB team and supervising construction. Construction of the Jalvi market collector drain began on 4 November 1996 and was completed in four months, resulting in 1,700 running feet of collector sewer.

Pro-poor provisions

The revolving fund played a critical role in alleviating the affordability constraints faced by the very low-income households within Hasanpura.

While most members of the community were able to finance their own internal development, some could not. The revolving fund provided interest free loans to such households to finance internal developments so they were not left out of the project. The loans were managed by the lane committees, which were responsible for repayment. ASB's experience shows that the loan strategy was a great success because a vast majority of the households who borrowed money to finance internal developments have since repaid them in full.

Project costs

The average cost per household for constructing the collector sewer was around Rs 600. Households also paid for the construction of lane sewers at an average cost per household of between Rs 700-900. Lastly, households on average paid an additional Rs 750 for installations within the house. Therefore, the total cash outlay per household averaged around Rs 2,200 (approx \$40). The average household income in Hasanpura, according to ASB, was between Rs 2,000-4,000. Furthermore, during 1994, Faisalabad Development Authority and the Water and Sanitation Authority implemented similar water supply and sanitation schemes near Hasanpura at costs that averaged 60% more than the ones incurred in Hasanpura². Compared with the cost structures of government-developed sanitation schemes, ASB was successful in installing sanitation infrastructure in Hasanpura at nearly half the cost charged by the government.

ASB operational costs

ASB's major achievement is its low overhead and small staff. The easily managed, three members of ASB staff are drawn from the community, fostering understanding, links and collaboration. ASB's annual budget for the year 1999-2000 was Rs

379,000, covering staff salaries, operational costs, and other equipment-related expenses.

Innovation in methods and approach

ASB used technological and procedural innovations to implement its sanitation schemes. On the technological front, ASB relied from the very beginning on GIS as a tool to develop inventories of existing infrastructure, and to determine the spatial dimensions of the demand for infrastructure provisions within the community. The use of GIS also made ASB credible in the eyes of the municipal planning authorities, which were impressed by ASB's ability to work with GIS while they could not.

Unlike many other NGOs, ASB has actively pursued collaborative links with government agencies. While many other NGOs have confronted the government and its institutions, ASB has strived to work in collaboration with the municipal and provincial planning authorities. ASB realises that, despite its technical knowledge and the community's willingness to help itself, large-scale municipal infrastructure, including trunk sewers, sewage and water treatment plants, cannot be financed or built by local communities. Given the nature of municipal services, government authorities – working as monopolies – are the only entities capable of providing citywide solutions. Therefore, ASB's willingness and ability to work with municipal authorities has helped it to achieve its goals in Hasanpura and enabled it to later spread its projects to other jurisdictions within Punjab.

ASB has also forged links with international donor agencies and institutions involved in infrastructure development and urban planning research. Its collaboration with WaterAid UK is one such

² Cost estimates provided by ASB

example. At the same time, ASB has forged links with research institutions at foreign universities that focus on urban planning and infrastructure development. For instance, ASB collaborates with the Institute of Housing and Mobility at the Ted Rogers School of Management at Ryerson University in Toronto, Canada. ASB called on such links to enable it to showcase its projects at a seminar on urban infrastructure development in South Asia at the University of British Columbia in 2006.

As ASB operates in very poor communities, it has been able to help the community to offer finances and labour for the construction and maintenance of internal development. The component-sharing model not only includes financing the internal development by the community, but it also includes labour offered by the residents as an in-kind contribution, which helps reduce the costs. Furthermore, the revolving fund ensured that those households who could not pay for the internal development costs would still have a chance to benefit from the project. Their integration into the project later would have been proven more expensive for the household and disruptive for the community.

Outcomes

This section describes the economic, health and social changes that were realised as a direct or indirect consequence of improved sanitation in Hasanpura.

Access and use of toilets by households

Since the implementation of the sanitation project, use of proper toilets in Hasanpura has doubled from almost 50% to 100%. There are no more cases of open defecation by either children or adults

within the community. The streets are clean and free of any signs of human or animal waste.

Evidence of impact on the community

Since 1996, the community led sanitation project has led to the dramatic transformation of Hasanpura. That the streets, once filled with sewage and refuse, have been transformed into clean, safe environments where healthy children play and seniors relax is testimony to the success of improved sanitation in Hasanpura. The burden of disease has been reduced considerably; children are clean, healthy and happy. Parents are delighted that they do not have to pay huge medical bills or see their children suffer in pain.

The author of this report visited Hasanpura and interviewed households about their experience with the sanitation scheme. The physical survey of the neighbourhood revealed clean, paved lanes filled with people and life. Residents are planting trees in streets, which is a telltale sign of gentrification. Before the sanitation project was implemented, residents planted trees only within their own houses. The community is also working with the municipal representatives to install streetlights.

The local doctor informed the author that water and sanitation related diseases have declined by more than 60% in Hasanpura. He joked that doctors were now losing money in Hasanpura. ASB estimates that between 1996 and 2007, the community has saved millions of rupees in healthcare expenses and other costs associated with damage to property and livestock. Residents of Hasanpura spent around \$100,000 (\$40 per household for 2,500 households) for the internal development of their infrastructure. To understand

the benefits of improved water supply and sanitation in the community, let us assume that the average household in Hasanpura saved Rs 100 (US\$2) per month in health-related expenses. The breakdown of health costs under this assumption is presented in the following table:

TABLE 2 Out-of-pocket savings due to illness prevention

Year	Households	Monthly	Yearly	Total	Total US\$=50
1996	1000	100	1200	1,200,000	24,000
1997	1090	100	1200	1,308,000	26,160
1998	1188	100	1200	1,425,720	28,514
1999	1295	100	1200	1,554,035	31,081
2000	1412	100	1200	1,693,898	33,878
2001	1539	100	1200	1,846,349	36,927
2002	1677	100	1200	2,012,520	40,250
2003	1828	100	1200	2,193,647	43,873
2004	1993	100	1200	2,391,075	47,822
2005	2172	100	1200	2,606,272	52,125
2006	2367	100	1200	2,840,836	56,817
2007	2500	100	1200	3,000,000	60,000
Total				24,072,352	481,447

The above table suggests out-of-pocket savings of \$481,000, which is above and beyond the benefits of access to improved sanitation and water supply services, and return a benefit cost ratio of 4.8³. Even with the assumption of merely \$2 per month savings in health costs per household, results suggest that investment in basic municipal services carry huge returns for the community and for the government, which would have otherwise had to finance subsidised healthcare facilities for those who become ill because of poor sanitation and water supply services.

The end result of improved sanitation and better health is that households have more discretionary

funds available to them as their health-related expenses have declined considerably in recent years. The residents informed the author that quarrels between residents over water and sanitation problems have been eliminated. Furthermore, residents were confident that because of the improved sanitation and quality of the streetscape, property values have increased noticeably in the neighbourhood, which has added to the equity held by the households in their homes.

One value-added consequence of the improved sanitation and clean streets has been that cottage industry and small businesses have relocated to Hasanpura, bringing new jobs to the community, which was an indirect objective of the ASB's development philosophy. Soon after the sanitation project was implemented, 30% of households reported an offer from industry to open small industrial units, such as garment factories, thread fibre making, and small printing presses in their homes.

This report's author has conducted a small, unscientific survey of the community. The survey collected information from 11 households in 11 distinct lanes, which were part of the 35 original lanes that comprised the Hasanpura project in 1996. The results of the survey are presented in Table 3. The average household sample size was eight with 3.5 males, 2.5 females and two children per household. The 11 households observed that the lane sewer was installed by the lane committees organised by ASB. Respondents from five of the 11 households in our survey stated they had participated in implementing the sanitation project as lane managers. Survey respondents reported that installation of lane sewers cost around Rs 1,000 for each household in 1996. These costs were

³ All figures are nominal and a fixed conversion rate of US\$1 = Rs 50 has been used in the calculations.

TABLE 3 Results of a survey of households in Hasanpura conducted in October 2007

No.	Household members				Lane sewer		Status Prior to Sanitation			Server O&M Costs	Health Costs	Toilet Type	Water Supply			Solid waste		
	Total	Male	FEM	Children	Type	Cost	Health	Income	Hygiene				Source	Service Quality	Private cost (Rs.)	Cost Rs/ month	Quantity (kg)	Final disposal
1	9	2	2	5	LC	1300	bad	low	poor	33	350	FTL	WASA	contaminated	12/351	25		Inc.
2	5	2	2	1	LC	1300	bad	low	poor	10	250	FTL	WASA	potable		20	1	Inc.
3	6	3	3	0	Manager	1200	worst	low	worst	10	1000	FTL	Nbrs	contaminated	15/201	40	3	Inc.
4	7	4	3	0	Manager	1200	worst	low	worst	50	1000	FTL	WASA	GW		40	4.5	Inc.
5	3	1	1	1	Manager	1200	worst	low	worst	0	400	FTL	WASA	GW		30	2.5	Inc.
6	9	5	4	0	LC	650	bad	low	poor	0	1000	FTL	WASA	GW		30	9.5	Inc.
7	9	4	3	2	LC	850	bad	low	poor	20	250	FTL	WASA	brackish GW		20	2.5	Inc.
8	11	5	4	2	Manager	650	worst	low	poor	50	400	FTL	WASA	brackish GW		50	4.5	Inc.
9	12	5	4	3	Asst. Man	650	worst	low	poor	40	550	FTL	Nbrs	brackish GW		0	5.5	Inc.
10	5	4	1	0	LC	1300	bad	low	poor	25	300	FTL	WASA	contaminated		40	2	Inc.
11	10	2	1	7	LC	700	worst	low	poor	30	300	FTL	WASA	contaminated		30	1.5	Inc.

Note: LC - Lane Committee; FTL - Flush Tank Latrine; Inc - Incineration; Nbrs - WASA supply from neighbours; GW - Groundwater

in addition to the cost of in-house installations at household level.

The respondents rated health and hygiene as bad or poor before the sanitation scheme was implemented. All households reported income levels to be low before the sanitation scheme. The households reported that on average they spent Rs 24 per household for the operation and maintenance of lane sewers, which on average are clogged every six months. The survey revealed that almost all households in the community have an in-house flush latrine connected via a single chamber septic tank to the lane sewer.

The interviews revealed that owing partly to the clean environment in the streets and partly to the awareness campaigns ran by ASB, the general sanitation practices have considerably improved within the community. Elders and children report washing hands before and after their meals and after visiting the toilet. Furthermore, there has been a greater awareness about hygiene, health care and waterborne diseases among nursing mothers and mothers of infants and toddlers.

Since the implementation of the sanitation scheme, income levels within the community have increased considerably owing to of the small business opportunities that have been created in Hasanpura. By either working from home or renting out space to small factories or industrial units, residents of Hasanpura have seen their real incomes increase as a direct benefit of the better sanitation environment.

A large number of residents reported ease of mobility as a direct benefit of clean streets. They informed the authors that before the sanitation project, seniors' mobility was considerably

compromised. Furthermore, transporting patients from homes to hospitals was becoming increasingly difficult owing to the sewage and clutter that made mobility impossible. Residents have reported that streets are clean, wider and free of odour and filth. Residents also mentioned that their properties are no longer threatened by sewage seeping into the foundations and damaging the structural integrity of their homes.

Developments beyond sanitation

Apart from the employment opportunities and income-generating schemes that moved to Hasanpura after sanitation was improved, other complimentary infrastructure development also took place. Similar to the sanitation project, a Hasanpura water supply scheme was also developed and managed by the community, which connected the community to the municipal water supply infrastructure. The water supply scheme was developed along similar principles as the sanitation scheme. The community developed and paid for the internal development, paid the cost for linking to the water supply main, while the municipal government operated and maintained the water supply mains.

Solid waste management was also dealt with as part of the sanitation campaign. Households were discouraged to discard their solid waste in the streets. Instead, metal containers were placed in the streets for primary disposal and collection by sanitation staff, which removed waste from the containers and incinerated it in a nearby open space.

Evidence of sustainability

ASB-led water supply and sanitation schemes in Hasanpura and Dhuddiwala in Faisalabad have

continued to operate successfully since the mid-1990s. Respondents to our survey expressed their satisfaction with the infrastructure and services made possible by the ASB's community-based schemes.

Since the success of its schemes in Faisalabad, ASB is acting as a franchising agency and has expanded its operations in various districts of the province of Punjab in collaboration with local industry and governments. For instance, ASB is assisting the town of Jaranwala, Union Council 60 in Lahore, and other places in developing community-based water supply and sanitation schemes on a component-sharing basis. ASB has gained credence among policymakers at local, provincial, national and international levels because of the success of the component-sharing paradigm in infrastructure development in Faisalabad. That ASB has been retained by the Urban Unit of the Planning and Development Board of the Government of Punjab as advisers for a number of water supply and sanitation schemes planned in its low-income communities is proof of their success and acceptance.

Factors of success

A number of factors contributed to the success of this project. Firstly, the leadership demonstrated by ASB as an institution and Malik Nazeer Ahmad Wattoo as an individual was instrumental in planting the idea of improved sanitation, hygiene and health.

Secondly, ASB benefited a great deal from having direct access to the expertise and experience of the Orangi Pilot Project in Karachi, which had already implemented a community-based

sanitation scheme using a component sharing approach. By learning from the Orangi experience and adapting it to meet the particular needs of the community in Faisalabad, ASB had successfully offered a context-relevant solution to the residents of Hasanpura.

Thirdly, ASB's decision to work with, rather than antagonise, the planning authorities created synergies that brought together the community, social mobilizers, and municipal planners to improve sanitation facilities. While building on the OPP's model of community led infrastructure development, ASB promoted close cooperation and collaboration with the municipal planning authorities, which helped to integrate the community's infrastructure with municipal infrastructure. ASB's model of infrastructure development was based on the premise that the community and social mobilizers would work with the municipal authorities rather than replace them.

Fourthly, the revolving fund provided by WaterAid played a pivotal role in ensuring that all members of the community, including those who did not have the necessary funds to participate in the component sharing scheme, were able to participate in the sanitation scheme and benefit from the services. Leaving poor households out of the project would not have solved sanitation problems in the community. The revolving fund extended interest-free loans to poor households. Members of the community administered and oversaw the repayment of loans over time. The equity plug not only resulted in a more inclusive development scheme, but it also helped to reinforce ASB's standing as a community leader that was able to bring resources to the community.

Finally, the health and hygiene awareness campaigns, which were run before the implementation of the project by ASB, were instrumental in convincing households that improved sanitation would improve their health and reduce medical bills. Furthermore, creating health and hygiene awareness among women in the community ensured that the demand for better sanitation arose from within each household, rather than being seen as an idea suggested by an NGO.

Main constraints faced

The primary constraint faced by ASB in promoting better sanitation within the community was the belief held by the community that it was the state's responsibility to provide and pay for water supply and sanitation services to Hasanpura. ASB faced a formidable challenge in convincing Hasanpura residents of the benefits of a component sharing approach, where the community would pay for the internal development and the government would finance external development. The community waited for years in the hope that the local political leadership would deliver on its promises. ASB spent years in mobilising the masses to convince them of the alternative approach.

While ASB was pushing for self-help schemes on a component-sharing basis, the local political leadership continued to offer empty promises to the community. Furthermore, local political leaders tried to dissuade residents from ASB's self-help approach. The local politicians were afraid that once sanitation was improved without any input from them, it would erode their credibility and support. Hence, local politicians tried to resist rather than join ASB's effort to provide sanitation to Hasanpura on the self-help basis.

Challenges that could not be addressed

Despite the improved sanitation and water supply in Hasanpura, some challenges still remain. For one, there is an immediate need to improve the quality of water being supplied to Hasanpura. While the communities receive water from the municipal water supply, the quality of tap water is not consistent and continues to be the source of waterborne diseases. Municipal water often gets contaminated either at the source or suffers cross-contamination when water supply and sanitation pipes run close to the lane level. Even in our small sample of 11 households, most households complained of contaminated water. Furthermore, the local groundwater is also of inferior quality and unsuitable for drinking and washing purposes.

Hasanpura lacks a proper solid waste management disposal system. The current practice in the community is that solid waste is recovered from households by sanitation staff for around Rs 25 per month. The final disposal takes place nearby in an open field where the waste is incinerated. This is damaging to the health of the community, a low-cost solid waste disposal system is a pressing need.

The lane sewers are often blocked, on average every six months, requiring sanitation workers to be called in. ASB and the community need to monitor the situation closely to see if solutions could be developed that would reduce the frequency of such interruptions.

Current scale and possibilities of increasing scale

ASB has spread its efforts beyond Faisalabad and is now involved in sanitation and water supply schemes across Punjab. ASB has forged links with local governments and the provincial and federal

TABLE 4 ASB's development portfolio

Sanitation update	
No of locations	82
No of lanes	647
No of houses	10,227
Sewer pipe laid (RFT)	208,065
Cost of lane sewer (Rs)	1,584,5392
Cost of internal fittings (Rs)	15,828,490
Cost of main external sewer (Rs)	1,652,890
Total contribution in sewer (Rs)	33,326,772
Cost per household (Rs)	3,259
Water supply update	
No of locations	13
No of lanes	85
No of connections	878
Water pipe laid (RFT)	20,442
Total line cost (Rs)	1,447,572
Internal fitting cost (Rs)	517,200
WASA fee (Rs)	1,064,135
ASB service charges (Rs)	42,715
Total contribution in water (Rs)	3,071,622
Cost per household (Rs)	3,498
Total water supply and sanitation	
Total locations	95
Total lanes	732
Total houses	11,099
Total pipe laid (RFT)	228,507
Total contribution by communities	36,398,394
WaterAid's revolving fund	500,000

As of November 22, 2007

level planning authorities to promote community-based water supply and sanitation schemes on a component-sharing basis. ASB is currently collaborating with the government of Punjab on a large-scale implementation of its approach in Union Council 60 in Lahore. ASB is providing services for social mobilisation in Union Council 60. The

community is contributing 39% towards the total project cost, WASA is providing design and engineering services, while the local government is providing funding for the external development. The integrated approach for water supply and sanitation builds upon ASB's experience in Faisalabad.

Over the past decade, ASB has been successful in assisting more than 11,000 households to obtain adequate water supply and sanitation services. In the process, it has helped the communities raise Rs 36.5 million towards the costs of developing infrastructure (Table 4). A total of 230,000 feet of running pipes have been laid by the communities for water supply and sanitation schemes. These figures suggest that ASB has been very successful in working with the communities to develop their infrastructure and improve their livelihoods.

Challenges for scaling up this approach

While ASB has been able to convince the higher tiers of planning authorities of the utility of its approach, the distrust of community-based initiatives still persists at the lower level. ASB faces resistance by local planning authorities whom often treat ASB's intervention as an attempt to undermine their authority. There is a need to reach out to local planners and explain that ASB and the community would like to work alongside planning authorities and not against them.

Outdated government regulations and procedures can prohibit community-based interventions. While the government regulations have been revised recently, there is room for much improvement to enable the community's participation in developing local infrastructure.

Large-scale infrastructure development requires capital. While governments often finance capital costs for the large-scale infrastructure projects, there is still a need for greater funding. It is felt that unless local banks enter the infrastructure development market, sufficient funds will not be available for large-scale development of water supply and sanitation infrastructure. The experience with WaterAid's revolving fund suggests that the low-income communities possess the capacity to repay loans over time. The scale of municipal service delivery will expand considerably once commercial banks start financing community-based infrastructure development schemes.

The political leadership in Pakistan continues to be wary of community-based initiatives in Pakistan, believing that if communities realise they can help themselves, they would no longer rely on politicians, leading to an erosion of politicians' authority. Furthermore, political leaders fear that as NGOs such as ASB offer support and services to the communities, these organisations may compete in popularity with local politicians. Therefore, the elected members of the local, provincial and federal assemblies try to use government funds to arbitrarily initiate parallel water supply and sanitation schemes. This results in duplication of efforts and waste of scarce resources. A wide-scale implementation of community-based infrastructure development requires that the community, social mobilizers, planning authorities and politicians work in an integrated manner, rather than competing against each other.

Finally, there is a need to document the development projects assisted by ASB to create a knowledge bank, which could be made available to other communities and community leaders

interested in promoting and implementing community-based initiatives.

The future efforts in promoting communities wellbeing through better water supply and sanitation requires focused efforts to promote trust and respect between the community and social mobilizers, and between government authorities and NGOs. The lack of trust has been one of the primary reasons for delays in implementing these projects. International donor agencies may want to focus their efforts in determining ways to promote trust between the various stakeholders, the community, social mobilizers, and municipal authorities, to eliminate barriers that cause unnecessary delays in the implementation of such projects. NGOs, such as WaterAid, can promote workshops that could bring together the above-mentioned stakeholders under one roof to share their aspirations and apprehensions. Such events may help resolve conflicts and promote awareness, respect and an appreciation of the capabilities and strengths of those involved in improving water

supply and sanitation in impoverished communities.

Conclusions

ASB and Hasanpura have collectively demonstrated that communities, rich or poor, have strength and resources, which could be used to find solutions for their problems. These are the same communities that have waited for years hoping that government would provide them with basic water supply and sanitation services. At the same time, governments and the planning authorities considered these communities poor and not worth their financial support.

Over the years, ASB has mobilized communities to simultaneously build their own infrastructure and raise millions of rupees. These communities, which were considered poor when mobilized, raised over Rs 37 million to build their own infrastructure. ASB's experience in Faisalabad has shown that once communities are empowered, they are quite capable of finding solutions for their own problems.

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4 Subsidy and sustainability in urban sanitation: The case of Quetta Katchi Abadis Environment Management Programme 1997 - 2003

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Abstract

Urbanisation and inadequate institutional capacities have hindered the development of an adequate sanitation system in Quetta, Pakistan's 12th largest city. This can cause chronic problems in the city's 47 Katchi Abadis (informal settlements).

Between 1997 and 2003, the Netherlands Government funded a local environmental management programme which involved a partnership between city governments, community and non-governmental organisations.

This paper offers more details about the programme, specifically:

- *Institutional framework*

- *Technology options*
- *Implementation arrangements*
- *Hygiene promotion activities*
- *Cost and tenure issues.*

A survey conducted in December 2007, after the project had finished, details the outcomes of the programme. Across the range of indicators adopted the outcomes are generally positive.

This document also outlines factors in the success of the programme as well as some of the constraints faced, challenges that need to be confronted and issues for future scaling up.

Context

Quetta *Katchi Abadis* Environment Management Programme (QKAEMP) was based on the principles of self-help environmental management by communities. Residents of low-income settlements were mobilized by a number of support organisations that shared a common methodology for lane sanitation. They worked independently in 47 different *Katchi Abadis* (informal settlements) across Quetta city.

What were the effects and impacts of the programme?

The monitoring and evaluation unit of PIEDAR designed and supervised the second post-project evaluation of QKAEMP, four years after its completion. The primary objective was to find out whether the sanitation and health benefits of the project were being sustained on a household and community scale. Another was to investigate what other effects could be attributed to the programme.

To evaluate the programme, a sample survey was undertaken. It comprised interviews of randomly selected beneficiary households. Physical observations in the intervention areas were also made.

Background

Quetta, the capital of Balochistan Province, is the twelfth most populous city of Pakistan (according to the 1998 Census, it had a population of 639,000). Owing to rapid population growth and inadequate institutional capacities to plan and provide services, nearly half the city's inhabitants live in informal settlements, locally known as *Katchi Abadis* (KAs). The settlements have grown organically, making the provision of infrastructure a challenge for Local Government and communities.

Most of the KAs have been officially incorporated within the jurisdiction of City District Government (CDG) Quetta, and many now have piped water. However CDG has not been able to provide sanitation infrastructure to these KAs. Because of the increase in population and the use of water per capita, effluents have also increased without any provision for their disposal. This poses severe health hazards from faecal - and water - borne diseases.

Governance, especially the law and order situation, in Quetta was unsatisfactory at the start and became more adverse over the duration of the project. In 1994, the Netherlands Government abandoned a previous water supply and sanitation project because of corruption in the government agency it was working with.

Quetta was and remains a frontier city in the international war on terror. An elected Local Government with enhanced responsibilities emerged as a result of Local Government Ordinance in 2001. But it lacked experience and capacity for enabling community-based development.

A coalition Provincial Government, formed in alliance with religious parties, came into power in 2002, the penultimate year of the project. The Minister for Local Government was strongly opposed to the involvement of women in civic life or in any activity beyond their own homes.

Implementation

Introduction to actors

The Royal Netherlands Embassy (RNE) in Islamabad executed the Quetta *Katchi Abadis* Environmental Management Programme (QKAEMP) from November 1997 to December 2003. It had two contracts with PIEDAR, who acted as a technical

advisor (TA) and M/s Ferguson Associates (Pvt) Limited, who were fund managers (FM).

Subsidiary memorandums of understanding established the working arrangements between TA, FM, City District Government Quetta (CDGQ), and six Quetta-based NGOs as Implementing Partners (IPs). Community Participation Agreements (CPA) between the IPs and communities living in *Katchi Abadis* governed the on-ground construction and management.

Approach

A document entitled *Quetta Katchi Abadis Environmental Management Programme* (QKAEMP, May 1997) was put together after two years of consultations in Quetta and orientation and exposure of local stakeholders to best practices for community-based sanitation across the country. It envisaged that management of the intervention would be at a community level, mobilized by a number of catalytic organisations who would share a common programme approach.

A system of matching grants was adopted to support the effort. The IPs felt that a pure self-help approach would be too great a departure from the institutional climate in Balochistan, where government and NGOs had been heavily subsidising capital and running costs.

After processing and approval of the document, QKAEMP was launched on 20 November 1997 with the following development objectives:

- To contribute towards a process of sustainable urbanisation in Quetta by creating an enabling institutional framework for promoting local organisations in low-income areas to undertake internal development.

- To institutionalise a partnership between Local Government, local NGOs, CBOs and Lane Organisations for better environmental management by promoting technical capacities and democratic decision-making among stakeholders for carrying out development work.

This systematic approach was adopted to implement QKAEMP.

A four-tier governance system was set up:

1. Annual Stakeholders Conventions were open forums for critique, suggestions and feedback from all stakeholders.
2. The Implementing Partners' Forum served as a platform for the sharing of information, mutual support and coordination at Quetta.
3. The Project Management Committee (PMC) at Quetta acted as a supervisory body for making major operational decisions as well as monitoring and reviewing physical progress.
4. A Policy Steering Committee (PSC) at Islamabad worked, during the initial years, on policy and strategic decision-making. That's until some of the functions were devolved to the PMC, while others, such as management of external monitoring, reverted to the RNE.

Social mobilisation

Social mobilisation played a key role in the programme. Guidelines were developed to streamline the process. A manual that became known as the *Seven Steps for Social Mobilisation*, was shared with all IPs and their staff members, who were often reminded of its contents.

Social organisers initially mobilized communities around hygiene and environmental issues and

assessed the willingness of each community to undertake investment in common infrastructure. Following a positive response, a survey was undertaken jointly with lane residents.

Other key steps were:

- The formation of a Lane Organisation (LO) and Women Lane Organisation (WLO).
- The signing of CPA between IP and each LO.
- A technical survey to prepare the area and ground profiles.
- Detailed designs and cost estimates.
- The opening of the LO's Bank Account.

Based on estimates, the LO was asked to raise 50% of the cost of the lane sewer. The cheque for the matching grant was released through the IP to the LO account. Six hardware items were given to each household for the construction of a pour flush latrine. The household was entirely responsible for its superstructure. LOs executed the works with the technical assistance of the IP's engineer.

Hygiene promotion

The promotion of better hygiene was an integral part of the project. Indicators for widespread awareness of the germ theory of disease and of the best hygiene practices were included among the key measures of success. The project aimed to get 85% of children aged five and over to wash their hands with soap after defecation.

Female social mobilizers demonstrated how to wash their hands with soap during visits to households in every community during the LO/WLO formation and fund raising stages.

Pro-poor provisions

City government provided an overall list of officially declared KAs. They are mostly located on private land, and comprise a range of habitation types and standards.

The TA developed indicators for categorising the KAs. The IPs identified their working areas on the basis of past outreach experiences and/or community interest from within the KA list. The TA team at Quetta checked the proposed working areas against the indicators to ensure that poor settlements (categories C and D) were selected along with a few that were marginally in Category B.

Five settlements in Category A that solicited project services were provided only with technical assistance and were required to pay the full cost of the sanitary infrastructure. Within the KAs, the poorest households contributed by providing labour for excavation and pipe laying.

QKAEMP modified its approach to working with "bottom of the pyramid poor", such as Christian and Hindu minority communities living in the slum of Shantinagar, Quetta. In this congested area, the project promoted locally managed boreholes for water supply and communal toilets. It also modified its work schedule to suit transient residents, who leave the city in winter months for livelihoods in the plains. However, after a negative initial response, QKAEMP did not persist with the attempt to promote sanitation and hygiene among the colonies of migrant tent dwellers at the fringes of the city.

TABLE 1 Housing tenure in urban Pakistan and urban Quetta (%)

Type	Urban Pakistan	Urban Quetta
Owned	67.6	54.4
Rented	23.2	35.0
Rent Free	9.2	10.6

Sources: Population and Housing Census, 1998,
District Census Report, Quetta

Land tenure issues

Table 1 shows that relatively more accommodation is rented in Quetta than the national urban average. However, tenure did not emerge as a major issue in the social mobilisation process for lane sanitation in its informal settlements. Ethnicity and ethnic diversity were the key determinants. Social mobilisation was relatively easy in progressive communities, such as the Hazara. It was difficult in KAs, where conservative tribes, such as the Baloch, lived. It was most difficult in lanes where people from many ethnic groups lived together.

Project management

During QKAEMP, four Annual Stakeholders Conventions (ASCs) were held in the main auditorium and lawns of the CDGQ, traditionally in the second week of March before the start of the construction season. On each occasion, 150 to 400 men and women lane managers and committee members took part and shared their sanitation experiences with provincial health, Local Government and environment ministers.

The IP Forum met 22 times to make arrangements for common events, share ideas and experiences, and where possible, support each other's field activities in different KAs.

The PMC met 28 times to discuss technical and social issues facing the IPs in their work. It also became a forum for organisational and project policy issues. A designated IP recorded the minutes and progress was monitored every subsequent meeting.

The PSC met 16 times at Islamabad and Quetta to address policy and financial matters and issues arising from external monitoring. That's until it was wound up after August 2001.

Before the start of field activities, the technical advisor, fund manager and implementing partners jointly developed the Plan of Operation. It specified administrative arrangements, physical targets, and the schedule of activities. An Annual Work Plan (AWP) was prepared for each subsequent year in the same manner. The AWP's were submitted to RNE before October 15, so that RNE could respond to the proposed plans and release allocated budgets.

Technology/technology choices

The choice of a sanitation system for a locality depends on cultural, social, economic and technical variables. At Quetta, a hard non-porous soil, relatively high population densities and availability of nearby ravines for disposal of the effluent, led, in most cases, to the selection of a system in which solids are retained on site while the liquid is transported off-site through a small-bore sewer.

A manual, *Seven Technical Steps*, was shared with each IP. It laid out the steps for planning, designing, estimating the costs of a sewerage scheme, and constructing and maintaining it. In this, a small

diameter pipe is laid at shallow depth and low gradient. The system has the following components:

- Connection from the house to Tee-hodi (grit interceptor).
- Interceptor tank or Tee-hodi where floatable and settleable materials are temporarily stored while foul gases are emitted by a vent pipe installed at the entrance of the interceptor.
- A service line, normally a four-inch in diameter RCC or PVC pipe, connecting the interceptor to the manhole for the drainage of liquids.
- Circular manholes provided at major junctions for maintenance. These are connected to a collector main - normally a six to 15 inch diameter RCC pipe - which takes the effluent, by gravity, to the nearest ravine, open drain or trunk sewer. The depth at which the main is laid varies as a function of external street loads and environmental conditions.

The system has worked largely as it was designed. When it is needed, the Tee-hodis are opened and their contents are stirred with a stick and flushed. Stones and plastic are removed physically. The effluent is disposed off to municipal sewers, open drains and natural ravines. There is no wastewater treatment facility in any locality of Quetta.

The residents had a choice of technology. In Marriabad and Mominabad KAs, located on hillsides, they opted to cover their open drains with slabs. In congested Shantinagar, residents chose to install communal latrines.

Innovations

Communities were eager to know in advance exactly how much money they would need to spend on

the scheme since they needed to spend their households' savings on it. Accurate cost estimates became important as households were generally suspicious of and resented a second round of fundraising.

A simple, user-friendly computer programme was developed by PIEDAR to optimise the design of lane sewers and generate transparent quantities and costs. It was tested and handed over to partner organisations for their use. Any computer-literate person can easily operate the software, based on a simple Excel spreadsheet. All the IPs used this software throughout the programme period.

Given that most women were excluded from decision-making outside their houses, Women Lane Organisations were a major innovation for Quetta. The idea was introduced alongside health and hygiene training. Under QKAEMP, 181 WLOs were formed in 42 KAs. The WLOs played an effective role in raising money to pay for the scheme and in motivating the men to supervise the laying of lane sewers and installing of latrines.

QKAEMP succeeded because of its dedicated team of female social organisers, and because women

TABLE 2 Unit costs of sewers and pour flush latrines (Pakistan Rupees)			
Items	Unit of Measure	Average	Range
Lane sewers (9" - 12")	Running feet	36	30 - 44
Pour flush latrines	Six items provided per latrine	854	612 - 1074
Note: Exchange rates ranged between PRs.21.4 to 26.9 per NLG and PRs.43.2 to 58.7 per US\$ during 1997-2003. Source: Economic Survey, Government of Pakistan, 2002-03, Table 8.14			

worked at all levels in QKAEMP, some as team leaders, others as supervisors, trainers, finance managers, accountants, or extension workers.

Costs (hardware, software, programme overheads)

The unit costs of the lane sewer and six hardware items (pan, p-trap, connecting pipe, vent pipe, t-joint, and a bag of cement provided to each household for its latrine) during 1998 to 2003 are reproduced in Table 2. Not included are costs of the trunk sewers and the (eventual) treatment before end-disposal.

Households were required to contribute 50% of the estimated cost of the lane sewer. In most cases, the LOs divided the burden equally among the dwelling units in the lane. They decided whether to make any exceptions for the poorest households, who provided labour for the project. The share ranged from Rs.600 to Rs.2000 per household depending on how big the front of the "housing lot" was and the length and depth of the sewer. Many women said that raising the required amount had been difficult.

TABLE 3 Recall of household share paid for the sewer (December 2007)

Rupees	Frequency	%	Cumulative %
100 to 599	4	8	8
600 to 1099	11	22	30
1100 to 1599	4	8	38
1600 to 2099	1	2	40
Paid, but don't know amount	27	54	94
No response	3	6	100
Total	50	100	

In this context, it is interesting to document, after a period of four to 10 years, how much people can

remember paying for the project. Table 3 provides the results. At least 8% of respondents benefited from an internal community cross-subsidy. Some of them paid in the form of labour.

External support

The components of actual expenditure over the six years of the programme are displayed in Table 4.

TABLE 4 Financial highlights

S. No	Components	Amount (PRs. Million)	%
1.	Netherlands programme costs* @ Rs.23.5/NLG	76.6	61.0
1.1	Technical Advisor (TA)	13.3	10.6
1.2	Fund Manager (FM)	18.8	15.0
1.3	Implementing Partners (IPs)	33.1	26.3
1.4	Direct Assistance (Subsidy) to Lane Organisations (Transfer Funds)	11.4	9.1
2.	Investments by Beneficiaries	23.0	18.3
3.	Investment by City Government (on street pavements)**	26.0	20.7
4.	Grand total	125.6	100.0

* Excludes payment to external monitor, WASTE Consult

** Excludes other investments by City Government related to the programme.

The Royal Netherlands Government was the sole external supporter of the project making an investment of NLG 3.2 million. The Pakistan Rupee declined from Rs.21.4 per NLG to Rs.26.9 per NLG over the duration of the project. To simplify the computation, the median year exchange rate has been used to compute the shares of RNE, City District Government, Quetta and the ultimate beneficiaries.

An important point to note is that most of the external support went into software costs. These

included technical advisory services, such as the training of staff of the IPs, fund management, social mobilisation by the IPs, supervision of procurement and construction by the LOs, and monitoring and evaluation of the programme. In fact, direct assistance to the communities amounted to only 9% of the total investment by all parties (and 15% of that by the Royal Netherlands Government).

Outcomes

The direct results of the project have been impressive. Over six years, 49 kilometres of lane sewers were laid in 315 streets located in 42 low-income wards and informal settlements across Quetta. This has helped create a more clean and healthy environment. A total of 5,273 households directly benefited from the project with an external input of around US\$1.4 million.

The average household size in urban Quetta is 8.3 people (Census, 1998) owing to joint and extended families. It is around 10.5 people (various surveys, 1998-2007) in the city's KAs. QKAEMP records show that 54,593 people or around 8% of the 1998 population of Quetta (or an estimated 16% of that residing in KAs) benefited from its interventions.

If QWSEIP, the current implementer, succeeds in meeting its targets, almost all of the population in the informal settlements of Quetta could be covered with basic sanitary services. City government has paved many of the streets, and this is an additional

benefit. Cost-effectiveness and institutional synergy are other key elements in the success.

Access and usage of toilets by and within households

TABLE 6 Condition of the pour flush latrines

	Frequency	%	Cumulative %
Clean	47	94	94
No response	3	6	100
Total	50	100	

A post-project survey was conducted during 12 to 18 December 2007. The survey team visited 50 random households in 25 lanes, where sewers had been installed under QKAEMP.¹ Staff associated with QKAEMP and others based in Quetta conducted the surveys. In addition, Local Government officials were interviewed and concerned staffs of partner NGOs were asked to recall and reflect on their experiences.

Three respondents said they had toilets from before the project, but 45 stated that their latrine had indeed been installed under the scheme (Table 5). Most agreed to show the team their latrine. Almost all the inspected latrines were in use, and were found to be "clean", (as opposed to "filthy" or "choked") (Table 6).

Hygiene practice by and within households

A post-project evaluation survey conducted in May 2004 found that nearly half of mothers in the intervention areas said their children washed hands with soap after using the toilet. This was significantly higher than the situation in the comparison lanes. But claims do not necessarily reflect the actual

TABLE 5 Pour flush latrines installed

	Frequency	%	Cumulative %
Yes	45	90	90
No	3	6	96
No response	2	4	100
Total	50	100	

¹ Given the objectives of the survey, a target level of error in the estimates of +/-7.5% was set, and sample size fixed accordingly.

level of practice and could be biased by training exposure.

The responses made it obvious that QKAEMP, at its closure, did not achieve its target of getting 85 % of people to regularly wash their hands at appropriate times.

It is rather surprising that 90% of respondents in December 2007 claimed they regularly washed their hands with soap. This could be validated by probing respondents, observing their behaviour and looking at whether soap is actually available. The result may be attributed to subsequent health and hygiene promotion efforts of Government, NGOs or soap companies in the private sector.

Open Defecation Free status and its validation

TABLE 7 Open faeces / 100 ft of lane

	Frequency	%	Cumulative %
Some	2	8	8
Nil	23	92	100
Total	25	100	

Researchers studied 100 feet areas in the 25 randomly selected intervention lanes and found faeces there in only two instances (Table 7). This is a most encouraging result. However, the survey was undertaken in December (2007), when open defecation is least likely in the bitter winter of Quetta.

User-reported benefits

Men and women lane managers and committee members reported nine major benefits of lane sanitation at the Annual Stakeholders Conventions:

1. Sewage disposal

2. Less smelly environment
3. Improved pedestrian access especially in winter when the frozen slush becomes slippery
4. Vehicle and goods access
5. Easier to move sick people
6. Creation of a space for social events
7. Building foundations protected from seepage
8. Protection of groundwater
9. Increase in property and rental values

Beyond toilets: sustaining paving, sewers and solid waste management

Tables 8 to 13 provide an assessment of the current state of sanitary infrastructure installed under the project. It is encouraging to note that most sewers are running some four to ten years after they were installed (Table 8).

BOX 1 Cases of community ownership

At STN Colony on Sabzal Road, residents have replaced half the manholes and tee-hodis that had broken or been displaced, and repaired the sewerage system with their own funds.

At Syed Talib Street in Marriabad and at Haji Bangul Street in Kharotabad, the residents are most happy with the process and results of QKAEMP and would like to see more community-based programmes in other sectors.

At closure in December 2003, Local Government had paved 140 streets, that is about 44 % of the 315 lanes, after sewers were laid there. Interestingly 88% of the sampled lanes are now paved (Table 9). The on-going lane paving programme can be seen as an indication of both the effective voice of

TABLE 8 Are the sewers running?

	Frequency	%	Cumulative %
Yes	22	88	88
No	3	12	100
Total	25	100	

TABLE 9 Street pavement

	Frequency	%	Cumulative %
Paved	22	88	88
Unpaved	3	12	100
Total	25	100	

TABLE 10 Are street man-hole covers intact?

	Frequency	%	Cumulative %
Intact	14	56	56
Broken	7	28	84
Not Visible	4	16	100
Total	25	100	

TABLE 11 Streets with tee-hodis intact

	Frequency	%	Cumulative %
Intact	18	72	72
Broken	6	24	96
Not Visible	1	4	100
Total	25	100	

TABLE 12 Dustbins used

	Frequency	%	Cumulative %
Yes	4	16	16
No	21	84	100
Total	25	100	

TABLE 13 Litter/100 ft of lane

	Frequency	%	Cumulative %
Few	15	60	60
Nil	10	40	100
Total	25	100	

organised citizens and the sustained level of Local Government responsiveness.

On the other hand, it is a matter of concern that in a quarter or more of the streets, some manhole covers and grit interceptors are broken (Tables 10, 11). Community rehabilitation, however, has occurred (Box 1) but unless they are replaced, sewers will be blocked, especially in view of the poor solid waste management.

It is also disappointing to note that dustbins are in place and in use in only four of the sampled streets (Table 12). So, it is not surprising that litter was found on 60% of the streets (Table 13).

Evidence of institutional and financial sustainability

Institutional sustainability is the most challenging feature for any local development programme. In the case of QKAEMP too, most of the local organisations have become dormant (Table 14) and bank accounts established for the project have closed (Table 15). The maintenance of the installed infrastructure is undertaken on a needs basis or not at all (Table 16).

Evidence of impact (hygiene, health and gender)

In May 2004, PIEDAR conducted a survey of 158 mothers who had at least one child less than two years of age. Around 80% of the mothers were from households in the QKAEMP intervention areas and were selected randomly, with strata for the IPs. A further 20% of the comprised mothers were from randomly selected households in controlled areas.

TABLE 14 Current status of Women Lane Organisation

	Frequency	%	Cumulative %
Linked	2	4	4
Isolated	48	96	100
Total	50	100	

TABLE 15 Status of bank accounts

	Frequency	%	Cumulative %
Functional	1	4	4
Closed	24	96	100
Total	25	100	

TABLE 16 Co-operation for operations and maintenance

	Frequency	%	Cumulative %
According to need	1	4	4
Non functional	13	52	56
No response	11	44	100
Total	25	100	

Mothers in the intervention areas were interviewed in their homes, as were the mothers in the unimproved KAs. Both sets of mothers took part in a survey, a common Knowledge, Attitude and Practice (KAP) one. The survey was started and completed in May 2004 when temperatures were high and diarrhoea was widespread.

The difference was clear. Nearly 59% of children in the controlled areas had suffered from diarrhoea in the previous three months compared to 32% of children in the intervention areas. The difference is statistically significant with a chi-square value of 7.34, significant at the < 0.01 level.

Results showed that hand washing with soap reduced incidences of diarrhoea. When mothers regularly washed their children's hands with soap, diarrhoea dropped to 23% (chi-square 11.01; significant < 0.004), and to 24%, when children regularly washed their own hands with soap (chi-square 6.7; sig. < 0.01).

The involvement of women of the KAs of Quetta in the process of sanitation implementation was a notable feature of QKAEMP. The WLO formed under QKAEMP provided a new social space for women to negotiate and make the programme more responsive to their needs.

Many WLOs played an effective role in raising savings and motivating the men of the community to supervise the laying of lane sewers and installation of pour flush latrines. Women were also actively involved in the solid waste management (SWM) component of QKAEMP. They proudly spoke about their achievements at the Annual Stakeholder Conventions.

Some of this success may be attributed to a gender-sensitive project design. Women worked at all levels in QKAEMP - as team leaders, supervisors, trainers, finance managers, accountants, and as extension workers. The project proactively sought women-led NGOs as IPs and women team leaders. It reserved posts for female social organisers and ensured their mobility. The selected entry point, sensitisation and training in health and personal hygiene, enhanced the role of women and increased the acceptability of the intervention among men. It is regrettable that the overall situation of women's rights has not improved in Quetta. Rather, it regressed during the tenure of coalition provincial government that has just completed its term of office in December 2007.

Current scale and possibilities of increasing scale

Balochistan Water and Sanitation Agency (B-WASA) has replicated key elements of QKAEMP procedures in the design of Quetta Water Supply and Environmental Improvement Programme (QWSEIP).

This aims to reach five times as many low-income households. PIEDAR has also demonstrated the approach to communities and NGOs in Punjab and North West Frontier Province.

A pool of trained engineers, social organisers, masons and skilled labourers is available in the Quetta city for providing assistance in self-help sanitation. Partner IPs retained around 30% of staff after the project, but most have joined other organisations on better salaries.

Factors of success

A two-year period of preparation (1995-97) was crucial to the success of QKAEMP. Workshops in Quetta and visits to Orangi Pilot Project, Karachi and other model sanitation interventions across the country enabled the transfer of basic knowledge and skills to city-based organisations. Their inputs into its design created a sense of ownership that was crucial.

The collaborative-competitive framework that was set up for QKAEMP's implementation enabled the six city-based IPs to learn from each others good practice. It established benchmarks for the measurement of quality, unit costs, and progress. None of the IPs had a monopoly on the project, but collectively, they could speak with a strong voice to the TA, FM and RNE. The progressive transfer of responsibilities to IPs and communities was another key factor for the success of the programme.

Under QKAEMP, residents of low-income wards and squatter settlements were mobilized to raise half the amount required for a common lane sewer. Communities made internal arrangements to

subsidise the poorest households, who provided labour in place of monetary contributions. When the savings target was accomplished, the project directly transferred the balance to a community held and operated account. The process and results were intensively monitored by national and international assessors. This transparency is a key factor in the success of QKAEMP.

Main constraints faced

Before the World Summit on Sustainable Development in 2002, it was novel to have public, private and NGO sector partnerships. QKAEMP was a partnership between Local Government, a chartered accountancy consulting firm, a number of NGOs and civil society in Quetta.

In the 1990s, it was an innovation for low-cost sanitation programmes anywhere in Pakistan to establish Women Lane Organisations. Owing to these and other novel features, the six-year experience of QKAEMP has provided many lessons to all stakeholders. Some of the most important lessons that have implications for policy and programme design are:

- QKAEMP was based on an input budgeting system. It focused attention on the quality of staff and other resources assembled by the IPs to undertake the activities to implement the programme. This was felt to be an intrusion by the IPs in their internal affairs. It also diverted attention from the real issues of quality in social mobilisation and physical implementation. The programme should have been based on an output budgeting system (OBS). A focus on measurable social and physical achievements would have resulted in more cooperative partnerships. It is possible

that an OBS may have facilitated supervisory arrangements that were more light and cost-effective.

- Direct assistance to target communities provides tangible results in a defined time frame. This leads many development support agencies to repeat a common error - a one-sided focus on project objectives. It means that not enough attention is given to the requirements of the implementing organisations and to their operational context. The risk of project results not being sustained is high (Kiggundu, 1989).
- QKAEMP largely avoided this common error, yet it could not entirely escape the dynamics of a physical programme. For some stakeholders, the achievements, in terms of running feet of sewers, became the leading indicator. The primary focus should have been on institutional development and organisational strengthening (ID/OS). This focuses more on building the capacities of involved organisations, on the relations between organisations, and the embedding of specific project activities within these organisations (Uphoff, 1986).
- Intermediate organisations would have been the primary focus of an ID/OS approach but this does not mean the target community would be distanced from the programme (Carroll, 1992). Rather ID/OS promotes a chain that builds replication capacities down to the grassroots. In the case of QKAEMP, this implies that the IPs, for example, would have been required to share with local CBOs, not just skills for solid waste management, but also techniques for social mobilisation and computer-based modelling for the design of lane sewers.

- The Government of Balochistan took two years (1997 to 1999) before allowing the Local Government in Quetta to participate in the programme. The Planning and Development Department claimed it had misplaced the 1995 to 96 files relating to its own role and its permission to the Urban Basic Services (UBS) Cell of CDGQ to participate in the programme. With Government, it is important to confirm every agreement whenever a key official moves on.

The project was an experiment in a public-private and civil society partnership for a pro-poor intervention. Among the various types of public-private partnerships (PPP), it fell in the category of Management Contract, where the whole service is contracted out to a company and a NGO on fixed prices.

There are other types of PPPs, such as Concession, Joint Venture, and Build-Operate-Transfer, where the profits and risks are shared in different, perhaps more equitable and/or efficiency enhancing, ways (Lovei and Gentry, 2002; Weizsacker et al, 2006). If the needs of the 40 million plus poor people in Pakistan are to be addressed effectively and efficiently, these other models should be tested and their successes disseminated.

Challenges that could not be addressed

Heterogeneity of population and interests. Three sewers (out of the sample of 25 surveyed) are blocked. There is a problem of downstream disposal in a fourth sewer. They indicate challenges that could not be properly addressed. Masjid e Kausar Lane on Kirrani Road is ethnically very diverse. Kawish Welfare Society in Essa Nagri is a

multi-religious community. The lack of proper negotiations with the downstream landowner is hindering disposal from the sewer at Lashari Street in Karimabad. More effective negotiations and consensus building among neighbours is needed in situations of such diversity of interests and values.

Reliable water supply. QKAEMP avoided addressing the crucial issue of water supply in Quetta except at a pilot scale in a minority community. The provision of water was felt to be a human right and a responsibility that Government could not delegate. The success with the pilot project in the slum at Shantinagar indicates that a more assertive approach could have yielded positive results for more low-income communities in Quetta.

Total sanitation. Research by various agencies including the Water Supply and Sanitation Collaborative Council (WSSCC) based in Geneva, International Science Federation for Home Hygiene (IFH) and London School of Hygiene and Tropical Medicine (LSHTM), has established the relative benefits of investments in safe water, improved sanitation, and better home hygiene practices. The results were not available to QKAEMP proponents in 1997. It is now known that hygienic cleaning at home can most effectively reduce the incidence of infectious diseases.

Future projects should promote the total sanitation and home hygiene concepts. They should focus on mothers and children to best communicate behaviour change communication in sanitation and hygiene practices.

Safe end-disposal of sewage. At present the sewage is disposed in dry ravines and drains at a

considerable distance from human settlement. Quetta has a dry climate with strong sunlight, which mitigates the health and environmental impacts of sewage discharged away from populated areas. However, long-term, safe and environmentally sustainable end-disposal is an objective and a challenge.

Challenges for scaling up the approach

Policy issues. Despite repeated advocacy over its closing years, QKAEMP failed to convince the leadership at CDGQ that substantial improvements had been achieved and that it was the appropriate time to reduce and in perhaps even eliminate the direct subsidy. The City District Nazim (Mayor), in fact, continued to argue that the subsidy should be increased from 50 to 75%. The massive Federally funded QWSEIP has strengthened his line of argument.

Until clarity and consistency is achieved in Federal and provincial policies on sanitation, the sector will continue to need improvement in Pakistan. The issues of procedural clarity, system-wide responsibility, and of equity are particularly important to resolve, as noted below.

Procedural complexity. QWSEIP has adopted the institutional arrangements of QKAEMP, with NESPAK (a large national engineering firm) as TA, Office of Accountant General as Fund Manager; UBS and five city-based NGOs as IPs.

QWSEIP has also adopted its social mobilisation procedures, forming LOs and WLOs, and its technology for shallow small bore sewers. However, subsidy has been increased to 80% of the cost of the lane sewer. IPs are reimbursed the costs of

accomplished sanitation infrastructure. A deduction of up to 25% is made for sub-standard works.

Progress has been slow so far because of the cumbersome procedure of drawing money from the AG Office (Interview with Mr. Ghulam Qadir Lehri, Coordinator, UBS, CDG Quetta on 26 December 26 2007).

Socio-economic equity. QWSEIP also installs deep, large diameter sewers along the main roads of the city under departmental and contractor modes without any direct charge from the residents along the main road. Many people living in the side lanes perceive the requirement for any contributions for condominium sewer as inequitable and unfair (Interview with Mr. Safi Wasiuddin, CEO, Society for Environmental Awareness, an IP of QKAEMP and QWSEIP, 27 December 27 2007).

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5 Ecological sanitation latrines: The experience of Nepal

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Abstract

The urbanisation trend in developing countries including Nepal is accelerating, thus exacerbating the condition of proper sanitation coverage. Despite greater sanitation coverage in urban areas compared to rural parts of Nepal, access to sanitation facilities does not solve the problem of improved sanitation. This is because conventional latrines normally lead to various other pressing environmental problems, along with the injustice of scarce water resources for flushing latrines to keep excreta out of sight, which means that other community-accepted sustainable solutions are needed. Therefore, considering the present context and sanitation situation of

the country, there is a need for a holistic approach to call for hygienic, sustainable and eco-friendly alternatives and hence, ecological sanitation toilets.

This paper argues that Nepal's historical acceptance of ecological sanitation, and its recent experience in using the approach - set out in the evidence presented here - mean that Ecological Sanitation (Ecosan) could be very valuable. It could confront these problems and provide potential "added value" to the livelihood link through agricultural production and water and environment conservation. This paper highlights acceptance and use related issues, lessons learned and challenges experienced for scaling up.

Background

Global context

There are at least 2.6 billion people (ie 80% of the global population in the world) without improved sanitation. But technically, even access to improved sanitation does not solve the problem of sanitation because conventional latrines (usually pit latrines or pour flush latrines) often fail to sanitise and therefore do not provide safe sanitation access to the maximum number of people. Among the reasons for this are: in many areas soil conditions are inappropriate for conventional types of sanitation, and elsewhere, the water table is often too high, rendering ground water susceptible to pollution. In addition, conventional latrines (ie the septic tank and sewage treatment systems) often discharge into the environment with little or no sanitisation, or nutrient removal. Therefore, the figure for people in need of access to hygienic and sustainable sanitation is actually higher than 2.6 billion.

While the proportion of people having access to sanitation services is considerably greater in urban areas than in rural areas in Nepal, the situation is changing because of the demographic change taking place, and which is characterised by rural to urban drift. This rapid and uncontrolled drift has been fuelled by rural dwellers' desire for jobs, which they seek to provide a better income and standard of life.

Additionally, the reality of the situation in urban areas may be compounded by overstated estimates of coverage; this is due to the nature of informal settlement in and around towns and cities. There are large disparities between "haves", who reside in the formal city and have access to

reasonable levels of service (often at subsidised rates), and the "have-nots", who have created settlements that are not yet adopted by the city authorities.

Context of Nepal

The current global trend of urbanisation is creating pressure on Nepal's eco-system. Nepal is also struggling with the most rapid urbanisation trend in the South Asian sub-continent, with around 15% of its total population living in 58 designated urban areas. This figure is expected to reach 23% by 2016 because the urban population is increasing at 6.6% a year, reflecting an increase in migration to towns as an escape from rural poverty, conflict and the reclassification of emerging towns from villages to municipalities.

Present sanitation coverage in Nepal indicates that only around 46% of the total population has access to some kind of latrine facilities. The scale of the problem is further illustrated by the present achievement made by the country to meet Millennium Development Goal (MDG) targets. The toilets constructed in some parts of the country often fail to meet required level of hygiene. The challenge is to increase the toilet coverage and its accessibility by increasing the depth of understanding among communities to ensure sustained use and hygiene behaviour. In all circumstances, a toilet must be hygienic, safe, environmentally friendly and affordable.

Need for alternatives

Most of Nepal's major cities are short of water and subject to critical environmental degradation. Their urban areas are among the most polluted; the peri-urban areas are also gradually being

polluted, as sewerage discharged from centralised systems is polluting surface water and seepage from sewers and septic tanks, while pit latrines are polluting groundwater. Even if the sanitation crisis can be communicated to and understood by more people, the need to find eco-friendly alternatives to conventional technologies for developing countries like Nepal remain. Therefore, considering the present context and sanitation situation of the country, there is a dire need of holistic approach to call for hygienic, sustainable and eco-friendly alternatives, and hence the option of ecological sanitation toilets.

An introduction to Ecosan

The goal of closing the nutrient and water cycles needs to be fulfilled on a large scale to render current sanitation practices eco-friendly. However, it is generally agreed that it is wise to re-use nutrients and save resources. The Ecosan toilet technology fulfils this aim and provides effective alternative solutions, with or without water, because this technology can be viewed as a three-step process, dealing with human excreta: ie containment, sanitisation (treatment) and recycling.

Basic principles of Ecosan latrine:

FIGURE 1 Ecosan – closing the sanitation loop



- Offers a safe sanitation solution that prevents disease and promotes health by successfully and hygienically removing pathogen-rich excreta from the immediate environment
- Environmentally sound because it doesn't contaminate groundwater and also saves scarce water resources
- Recovers and recycles the nutrients from the excreta and, thus, creates a valuable resource to reduce the need for artificial fertilisers in agriculture from what is usually regarded as a waste product.

The Ecosan latrine, therefore, represents a conceptual shift in the relationship between people and environment, being built on the necessary link between people and soil. The technology helps to maintain healthy humans and a natural environment by using affordable and appropriate technologies, and matching the needs of the country.

Objective

The basic objective of this paper is to share the status of Ecosan latrines in Nepal and the experiences achieved so far in promoting Ecosan latrine technology in Nepal. In addition, the paper has the following specific objectives:

- To understand the historical context behind the promotion of Ecosan latrines in Nepal and its relevance in its urban context
- To highlight the status of Ecological Sanitation (Ecosan) latrines in Nepal and share the experiences regarding gender roles, livelihood link, financing systems and the lessons learnt
- To understand and analyse the major issues and challenges in acceptance and use of Ecosan latrines in Nepal for scaling up
- To understand the options pointing the way forward to scale up this technology to

confront various environmental problems in an acceptable and affordable way.

Methodology

The methodology below was adopted while preparing this paper:

- The paper was prepared with reference to the report: “Study of Ecosan assessment in Nepal” prepared by WaterAid Nepal (WAN) and the Environment and Public Health Organisation (ENPHO)¹ in 2007.
- Besides this, additional sources of information to shape this paper were the review of various available literature, research papers, articles and reports on various sanitation options including ecological sanitation; re-use of human excreta, pathogen die-off, etc
- Field observations through visits to the settlements and interaction with Ecosan users, their neighbourhood and Ecosan promoters were also conducted to flavour this paper with field-based experiences.

Ecosan latrines in Nepal

Understanding technology and types of Ecosan latrines in Nepal

The Ecosan latrine technology, promoted in Nepal to date, works on a three-system process. The first system collects faeces in shallow pits separating them from urine and the second system processes faeces for composting (ie two of its three main systems process the excreta in shallow pits). The third system keeps urine separate from faeces where they are processed separately.

All the Ecosan latrines in Nepal are promoted and built on the principle that when soil and ashes are added to faeces, the mixture rapidly breaks down

to produce compost that is an asset to any farm or garden. The mixture is odourless, as long as it is not too wet. Ecosan latrines are permanent, easy to handle, generate rich compost over time, and are cheap compared (limiting not only to initial investment) to other sanitation technologies.

Therefore, Ecosan latrine technology, having three step structures – containment, sanitisation and recycling – takes the principle of environmental sanitation a step further as it is structured on the aforementioned three key steps. This means it keeps the nutrient and water cycle in a closed loop sanitation process with a low energy approach that uses a complete natural process.

The Ecosan latrines constructed in Nepal are more or less the same design but with slight modifications in design, construction materials and use. Based on the principles of operation, the following types are the major ones:

- Double Vault Urine Diversion (DVUD)
- Single Vault Moveable Container Type (SVMCT) – also called indoor Ecosan
- Two Vault Solar Model (TVSM)
- Urine Diversion Pour Flush (UDPF) - also called wet Ecosan toilet

Relevance of Ecosan latrines in urban context of Nepal

Growing cities such as Kathmandu have been affected by water crisis and environment imbalances in the recent decade of urbanisation. Thousands of migrants and concrete cultures demand a water and sanitation facility. Ironically, more water is being wasted for flushing toilets than is used for drinking. A conventional sanitation facility is intricate in terms of commission and operation. It harbours many

¹ ENPHO is an implementing partner of WaterAid Nepal

loopholes. It adds more wastewater than is manageable. Rivers and ponds now are merely an open sewer for most periods of the year.

An alternative approach to the gradual decline of the existing scenario has been put forward in recent years as a solution to the water crisis and pollution control. However, the approach adopted by the Ecosan toilet technology is not new for farmers of urban and peri-urban areas of Nepal, particularly Kathmandu Valley, which has been practicing the use of “night soil” in combination with animal waste, kitchen and other agricultural waste as the main fertilisers in the agricultural fields for decades. In this context, apart from fulfilling the sanitation purpose, the Ecological Sanitation (Ecosan) system is reviving the traditional, yet forgotten, art of applying night soil to agricultural fields. In addition, the Ecosan toilet also incorporates almost all the dimensions of environmental sanitation concerning water conservation, pollution minimisation and environmental soundness.

The Ecosan latrine – a hygienic sanitation option – prevents pollution, fights infections, saves water, promotes zero waste management and encourages food production. Realising these benefits, the urban farmers of Nepal, particularly urban and peri-urban dwellers of Kathmandu valley, historically accepted the technology and created an environment to persuade others to replicate it. Considering its potential to “add value” to agricultural production and to water, and its environment conservation, it has become gradually easier to promote this technology in other peri-urban areas. Ecosan latrines, therefore, seem to be the right product at the right time, particularly for the urban and peri-urban dwellers. Based on

the literature, the demand for these latrines seem to be fuelled by:

- Declining fertility of land
- Increased cost of artificial fertiliser, and related poverty
- High number of subsistence farmers in the urban and peri-urban areas
- Minimum use of water
- Possibilities of groundwater contamination reduced (where there is a high water table).

Status of Ecosan latrines in Nepal

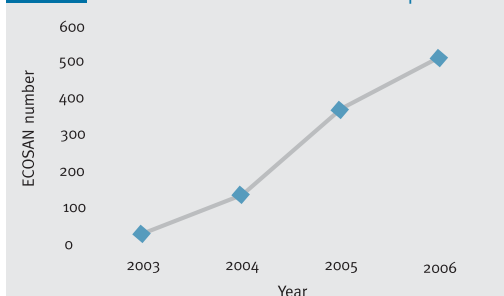
In Nepal, the concept of Ecosan toilet technology was piloted in Nepal in 2002 with the implementation of Double Vault urine diverting dry toilets by ENPHO (with the support of WAN in Khokana, by the Department of Water Supply and Sewerage (DWSS), and with technical support from the Development Network (DNet) Pvt Ltd) and financial support from the World Health Organisation (WHO) in Siddhipur. Both Khokana and Siddhipur are the peri-urban areas and are located in the outskirts of Lalitpur sub-metropolitan city but within the Lalitpur district of Nepal. Both programmes were well accepted and admired by the community as they had two advantages. Firstly, for the service of latrine facilities and, secondly, because the human waste produced therein was recoverable and recyclable, creating a valuable resource for agricultural needs. This was for the first time in Nepal that latrines were linked to economic benefits and livelihood opportunities for people.

With the success of the pilot programmes, the Ecosan latrine technology was gradually promoted to various other parts of urban and peri-urban areas of Nepal by many leading organisations

including: Water Aid Nepal (WAN) through partners such as ENPHO, LUMANTI (Support Group for Shelter), Centre for Integrated Urban Development (CIUD), Nepal Water for Health (NEWAH), and DWSS. During the pilot stage, Thimi municipality was engaged with NEWAH in promoting this type of technology. However, support was sporadically also being provided at municipal levels, which are not now fully involved in promoting and developing this technology. The passivity of municipalities may be because of vacant local bodies, ie lack of elected representatives in local governments or may be put down to their inadequate knowledge of Ecosan and its three-fold benefits, which made them suspect the functioning of Ecosan in urban areas.

Within five years of experiences in Nepal, 517 Ecosan toilets were constructed and practiced, with 97% of them in proper use, ie kept clean, well maintained and subsequent use the compost as fertiliser for their local agricultural fields. Similarly, around 100 Ecosan toilets are under construction under WAN's support through its implementing partners. The majority of the Ecosan toilets were constructed within the peri-urban areas of Kathmandu Valley, and as few as 8% were constructed outside the valley.

FIGURE 2 Number of ECOSAN toilets in Nepal



Source – WAN and ENPHO, 2006

Some 81% of Ecosan users list agriculture as their main occupation, with 73% owning agricultural land of more than 510 m² and some 8% do not own any land. Around 91% of Ecosan users do not have any alternative toilets except open defecation, 4% have pit san, 4% have pour flush san and the remaining 1% have modern flush san.

The Nepalese government recognised the Ecosan toilet as one of the most important and inevitable sanitation options available and suggested, in its paper on sanitation, that Ecosan needs to be promoted (SACOSAN, 2003). This technology is also being gradually piloted in rural areas of Nepal by ENPHO and DWSS, with slight modifications in the concept and design. Based on the acceptance of the technology by the rural community, ENPHO, DWSS and other agencies (mentioned below) are also trying to replicate this modified Ecosan toilet technology in rural areas, under the name: WET Ecosan toilet.

Actors involved in promoting Ecosan technology in Nepal work on two levels:

- a. *Implementation level:* ENPHO, Lumanti, CIUD, NEWAH, NRCS, CODEF, DNet Pvt Ltd, Plan Nepal, DWSS etc
- b. *Donor level:* WaterAid Nepal, WHO, UN-HABITAT and Practical Action Nepal as of now.

Assessment of Ecosan latrines in Nepal: an indication of success

The assessment study of the Ecosan toilet in Nepal was conducted by WaterAid Nepal through ENPHO in 2006 in 440 households of 18 clusters, including five clusters outside Kathmandu Valley. In addition, the neighbours (32% of the surveyed households

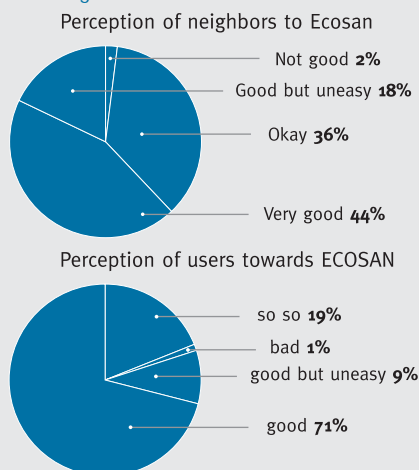
using Ecosan toilets) are also included in the study so their perception on the merits and pitfalls of this technology can be documented and considered.

Perception of Ecosan users

The general perceptions of people on ECOSAN were found encouraging. 71% of the users felt excited whereas 19% expressed their satisfaction. However 9% expressed the need for further improvement whereas 1% expressed negative perceptions towards this technology. Similarly, the majority of the neighbours of the ECOSAN users (44%) expressed a positive perception of ECOSAN whereas 36% expressed satisfaction and 18% expressed the need for further improvement and 2% of them are not convinced.

The motivation for becoming attracted to the Ecosan toilet is mainly due to easy availability of

FIGURE 3 General perceptions of users and neighbours towards ECOSAN



Source – WAN and ENPHO, 2006

fertilisers (according to 71% of respondents). Similarly, 17% expressed that Ecosan offers safe sanitation and environmentally sound technology and, thus, protects the environment. Some 9% of respondents were influenced by their neighbours' use of Ecosan latrines, and 3% were attracted by the subsidy.

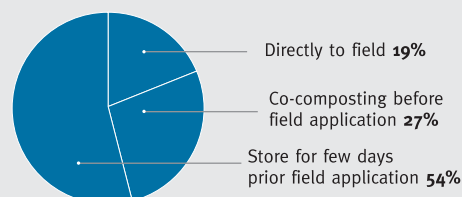
Around 93% of Ecosan toilets are used by all family members, including children; some 4% are used only by adults, and the remaining 3% are used only by female family members. Similarly, 98% of respondents use Ecosan for defecation and urination, while 2% do not use it for urination, particularly males, which may be due to difficulties they might have in urinating in standing positions.

Use of faeces and urine

Technology of the Ecosan toilet, as already mentioned, constitutes three steps (ie containment, sanitisation and recycling), which are practiced by collecting in the vault, composting and finally applying the compost in the field as fertiliser.

Composting of organic waste is one of the traditional practices of farmer families in Nepal, especially in Kathmandu. Most families are aware

FIGURE 4 Uses of faeces after emptying vault chamber



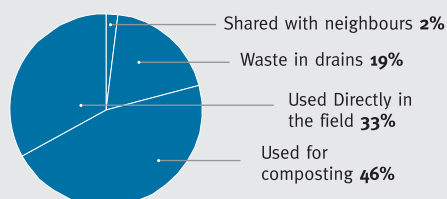
Source - WAN and ENPHO, 2006

about the need to store the content of the vault (ie faeces for few days) before applying it in the field.

So, the majority of the users (54%) practice this by storing for a few days either in the sun (24%) or in a shed (30%) before field application. After emptying the vault, some 27% mix the faeces with other composting materials in a compost pit for co-composting before applying to the field. The remaining 19% said that due to lack of space for composting, they apply the vault content (digested faeces) directly in the field.

Though toilet owners are very much aware of the importance of urine and its nutrient value, its application is not practiced as much as expected. Only 33% of the users apply in the field, whereas 46% of them prefer to use it for composting. Similarly, due to lack of agricultural land on which to apply urine, 2% of them shared with the neighbours once the urine collection tanks are full while the remaining 19% used to throw it down the drain. Some 70% use urine for vegetables, 22% for all kinds of crops and 6% use it in annual crops such as wheat, maize, and paddy, etc. However, efforts to improve the collection, storage and use of urine are necessary for better outputs by preventing the possible loss of nutrients through waste of urine down drains.

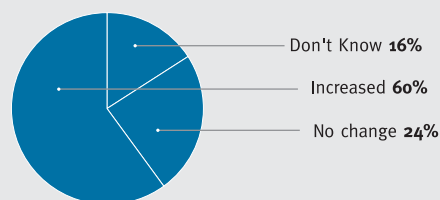
FIGURE 5 Application of urine



Source - WAN and ENPHO, 2006

All Ecosan users collect urine in a urine collection tank, kept inside the toilet and used in the

FIGURE 6 Changes in production due to application of urine

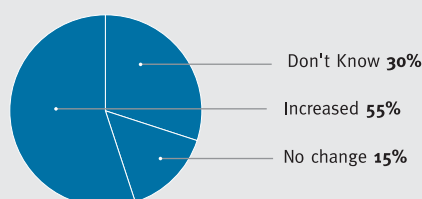


Source - WAN and ENPHO, 2006

agricultural field in a 1:3 ratio of urine to water. Some 60% of the Ecosan users had experience of increment in production, 24% noted little difference, and 16% found no change in production at all. Regarding quality of taste, 55% experienced improved quality and taste, 15% found no change and the remaining 30% didn't notice any difference.

None of the Ecosan users expressed concerns regarding a decrease in production in quantity and quality when urine was applied as fertiliser. Indeed, the majority expressed positive results in production when compared to that grown without the application of urine. They also responded that urine acts as a pesticide.

FIGURE 7 Changes in quality due to application of urine

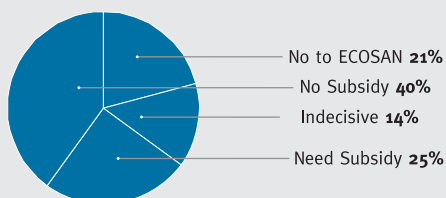


Source - WAN and ENPHO, 2006

Willingness to install Ecosan latrines

In project areas where Ecosan toilets are being promoted, every household does not have an Ecosan toilet. Some are using conventional sanitation options like primarily pit san, flush san and open defecation. Some 60% of Ecosan users expressed that their neighbours hold a strong interest in and appreciation of the technology; 32% are generally positive, and 11% feel dissatisfied and unconvinced with this technology. Around 65% of the people practicing open defecation (ie without any form of toilet facility) expressed willingness to build Ecosan toilets (40% with and 25% without subsidy), 14% are indecisive, and 21% are not willing to invest in any form of toilet.

FIGURE 8 Willingness to install ECOSAN toilets



Source - WAN and ENPHO, 2006

Link with agriculture

It is encouraging to know that only 2% of the users are against Ecosan toilets, whereas the majority (69%) expressed their satisfaction of this technology and requested to scale up as far as possible. Some 14% indicated the need to expand the coverage (but with modification as per the location and individual needs) whereas 13% expressed the need for awareness while promoting the technology to scale up in new areas.

Most of the Ecosan users are agriculturalists by occupation and so, more or less, familiar with the

BOX 1 Research on pathogen die off in stored faeces

Untreated human faeces contain large amounts of pathogenic organisms, which may be of high risk to the users. For safe handling, it is imperative that the faeces should be free of pathogenic organisms. Hence, a better understanding on the fate of micro-organisms (including pathogens) during the storage period is essential to provide safe and sanitary use of human faeces as fertiliser. A storage period of six months has been set for the complete inactivation of micro-organisms in Ecosan of various countries.

Research on the investigation of pathogen die off in stored faeces was conducted in different design of Ecosan latrines, with different storage periods ranging from 180 to 300 days by WAN and ENPHO in 2005 in Nepal. The study revealed that the faeces storage period of 300 days is sufficient for the complete inactivation of pathogen (Ecoli, Total coliform and Enterococci) indicators as per the standards given by WHO and USEPA. Similarly, it was also revealed that the pathogen die off is more significant in co-composted faeces.

methods of making compost and co-compost through mixing the humus formed in toilets with infertile and worked-out soil. They mostly appreciate that all the fertile materials can be mixed to form an enriched soil suitable for planting vegetables and other crops. Such humus, when properly used in agriculture, helps to improve food yields considerably, thus providing more food security and improving the nutritional status of the beneficiaries. The urine on the other hand can be used as the main fertiliser source for growing crops, such as green vegetables and maize, etc. The potential for an important relationship between sanitation and agriculture has been appreciated and users are further motivated by this to use Ecosan toilets.

Gender roles in Ecosan latrines

Ecosan has had an interesting effect on the gender roles associated with latrine construction. During the assessment study, it was found that in households with Ecosan toilets (dry Ecosan or wet Ecosan, ie urine diversion toilets), the task of emptying the urine container and the vault (also called faecal bin) seems to be that of males, but when it comes to conventional pit-san toilets, the task was usually carried out by women. Thus, Ecosan related task has not contradicted societal norms about the division of duties, while new ideas regarding benefits of recycling nutrients can introduce new values. In addition, the production of fertiliser through the use of Ecosan toilet has influenced both genders in the importance of latrines and their proper maintenance to benefit from the compost produced. However, some concerns were shown by some communities about disposing of menstrual blood in the Ecosan toilet, and such a practice also poses a challenge for the reuse of urine as fertiliser.

The experience, based on the findings of the Ecosan assessment study conducted by WAN and ENPHO in 2006, showed that the use of Ecosan is accepted not only by the adult members of the family, but also by the children (as they were made aware by the family) and in schools through a value-based water and sanitation education programme. The men shared opposite interests to the women, who were more interested in the hygiene aspects of latrine use than the fertiliser. However, the end result is the same, a reduction in children's faeces around the compound and settlements' surroundings. Apart from the children, women too, who otherwise practiced open defecation, now used this toilet with greater confidence, privacy and

security at any time (particularly at night) as they used to during open defecation.

Financing Ecosan

Costs of Ecosan: a comparison with other sanitation options:

The ecological sanitation (Ecosan) toilet is a new type of toilet in which urine and faeces are collected separately and used as fertiliser and manure, respectively for growing crops and vegetables. The farmers of the community accepted the technology and created an environment to persuade others to replicate it considering its potential to "add value" to their agricultural production, to the water and to environment conservation.

Similarly, the quality of toilets relating to water conservation and environmental soundness are least discussed. However, the Ecosan toilet incorporates all of these dimensions and therefore seems to be a little bit costly at the time of investment. But this apparent costliness is felt before people have really analysed its future benefits – more than any type of other sanitation option. On this very basis, the Ecosan toilet should not be considered as expensive sanitation option, although the community people often shared this misconception.

Despite all its merits, one of the common criticisms faced by Ecosan promoters is that the toilet is expensive. No doubt, there is a cost associated with building structures that can separately collect and store faeces and urine properly; Ecosan toilets do cost more than simple pit latrines. However, one needs to understand that Ecosan is more than a toilet; it is actually a toilet and a treatment or recycling system. In this context, the cost of Ecosan

is significantly less than other toilets and treatment systems.

Further details can be found in Annex 1.

Subsidy policy for construction of an Ecosan toilet

WaterAid Nepal considers subsidy as a promotional tool, not a crutch, ensuring that the rate at which latrines are built remains acceptably high while simultaneously, the level of subsidy is not so high that the product is devalued. However, achieving the right balance is difficult and should be regarded as more of an art than a science. When we look at the subsidy policy for promoting Ecosan toilets in Nepal, every household should always make a financial contribution towards the cost of their Ecosan toilet, even though in some cases this may be relatively small. The programme contributes only to the pan level, which includes two vaults for faeces storage, a urine storage tank, and two pans in case of dry Ecosan otherwise one for wet Ecosan toilet.

The Ecosan promotion programme however considers the materials, which would include bricks, grass, bamboo and labour (unskilled) works, etc, provided by latrine users while discussing the financial aspects of latrine construction. The reason behind this is that the value of labour (ie the value of a person's time) is equivalent to the amount of money that the person could have earned if they were not employed in latrine construction, and thus considered this an "opportunity cost" in community contribution for latrine construction.

So far, various organisations, including ENPHO, have been promoting Ecosan toilets by providing

technical assistance as well as financial assistance to cover the cost of the toilet till pan level. The project provides financial contribution to the pan level only and wants the rest of the superstructure to be built by the owners. So, out of the total cost of an Ecosan toilet: ie (Nepal rupees) NRs 16,000 (GBP £120); NRs 6,000 (GBP £45) will be contributed by the toilet user and NRs 10,000 (GBP £75) by the project to ensure financial contribution up to pan level, again excluding unskilled labour works. This contribution from the project, which amounts to around 60% of the total costs, is considered a subsidy and has been instrumental in generating demand even when the technology is relatively new. As people become more aware about the benefits of the technology, the subsidy can be gradually reduced or replaced by provision of low-interest loans through revolving funds.

Challenges in development and scaling up

Social status of Ecosan toilets: There is a misconception among potential users that more costly and water consuming toilets are the best, which has led them to install water carriage toilets. At present, most Ecosan toilets are constructed in poorer communities with financial subsidies as a promotional tool. Unfortunately, this feeds the existing misconception that the Ecosan toilets are specifically developed for poorer sections of the community.

Orientation to the outsiders on the use of Ecosan toilet: The major problem raised by the users of the Ecosan toilet is the need to orient and familiarise outsiders or guests with how to use the toilet. There were hardly any complaints regarding the odour and cleaning of toilets (unlike other toilets, one cannot pour water freely to clean an

Ecosan toilet). In fact, the majority of users didn't report any problems with their Ecosan toilets.

Odour: A few Ecosan toilet users did complain about a bad smell and it is still considered an issue by them. It was observed that a shift from conventional pit or flush toilets to Ecosan will be more easily accepted if there is little or no odour from the excreta. Covering the faeces with additives (such as ash, rice husks, saw dusts, lime, etc) effectively reduces the smell, and zero smell can be achieved by ventilation. Problems experienced with the odour are not a result of a fault with the technology, but a lack of sufficient level of awareness and knowledge on proper functionality and maintenance of the Ecosan toilet among users.

Space constraints: Despite being a good and environmentally friendly technology, a lack of space within people's houses obstructed the installation of some Ecosan toilets. Similarly, the lack of an agricultural field also discouraged the community people to install this type of latrine. Despite the absence of agricultural land, some people installed an Ecosan toilet with some modifications in their households and provided the content of the vault to the neighbours for application in their field. It is believed that the constraints of space within premises or the lack of agricultural land are the main challenges faced to scaling up this technology. The driving factor for the promotion of the Ecosan toilet is due to its economic value rather than its health value. Because of this reason, as in peri-urban areas, it has not been possible to promote and scale up this technology in the informal settlements (eg slums and squatters) in most of the dense urban areas, where other options of sanitation facilities are being promoted.

Level of awareness and knowledge on the importance and management of urine: The level of satisfaction from the use of urine as a fertiliser is low compared to the use of human excreta (faeces). This may be due to a number of reasons:

- a. Lack of understanding, knowledge and awareness regarding the effective methods of urine handling, recycling and its use in co-composting. It is either simply not collected and therefore wasted, or collected in small vessels (in most cases) that are not airtight, leading to nitrogen loss
- b. Transportation of urine from toilet to farm area is problematic
- c. Confusion regarding quantity of urine application in the field and for co-composting
- d. Low level of knowledge on the importance of urine, its nutrient potential and subsequent impact on agricultural production. Lack of quantitative benefits of urine application is hindering the motivation for the use of urine.

Less consideration of environmental soundness attributed by Ecosan toilet: The environmental benefits of the Ecosan toilets are not considered much by the users. The main reason for this is due to a lack of proper rules and regulations for the prevention of pollution in natural water bodies. People are discharging the highly polluted black water directly into the natural water body. In this situation, it is very obvious that the value of environmental protection that can be derived from this Ecosan technology will be insignificant.

Initial investment: Initial investment for an Ecosan toilet is relatively high compared to other sanitation options. As a result, the people normally expect and demand subsidy to adopt the technology.

Subsidy is nothing more than a promotional tool and is financial assistance to the hardcore poor for adopting sanitation facility. People need to be convinced, however, about the future benefits that can be reaped from this technology from an agriculture and an environmental perspective.

Changes in people's perception and behaviour:

During the course of promoting the Ecosan toilet within the communities, it is felt that one of the major challenges is to change the existing perception and behaviour of the people. Obviously, it and cannot be expected to change perceptions that are centuries-old overnight. This is more challenging in the rural areas and urban areas, particularly out of the Kathmandu Valley. The reason might be that Ecosan toilet technology, as such, is not new for farmers of urban and peri-urban areas of Kathmandu Valley, who have used a combination of night soil with other organic waste as the main fertilisers in their agricultural fields for decades. However, piloting has already started in other urban and peri-urban areas outside Kathmandu valley and in some rural areas to pave the way for identifying methods of promotion with the required modification.

Way forward for scaling-up

Promotion: Based on observation and experience, I believe that the one-size-fits-all approach is not appropriate. Different cultural, geographic and demographic situations produce different reactions to Ecosan technologies. Many communities are interested in these technologies in light of the convincing demonstration of improved crops due to the value of faeces as organic fertilisers. Whereas some communities are still attracted to a permanent structure inside the house, but showed little interest in content re-use. The promotion of Ecosan may,

therefore, have more success when presented as an option in a range of technologies rather than through a doctrine position that states: "this is the only way".

Do not scale up too fast: first create appropriate 'sellable' toilet devices, eyes are watching you!

Technology: Approaches to technology must be more flexible in terms of choice of toilet type and use of materials. Over designed, expensive or imported components make replication difficult without subsidies.

Every sanitation technology needs some user education and orientation. For new users, Ecosan may introduce another level of complexity at the initial stage. Therefore, users need to be made fully aware of their responsibilities and provided with appropriate instructions and follow-ups until confident in handling operational problems.

Awareness generation

- The generation of awareness about Ecosan latrines among users, activists and at the political level is strongly needed. At present, it is insufficient to enhance sanitation coverage.
- The IEC (Information, Education and Communication) materials for the promotion and use of Ecosan toilets currently being carried out are not sufficient. More audiovisual, IEC materials and media campaigns on the topics are necessary for generating increased awareness.
- The major principles of the Ecosan toilet and its potential benefits should be disseminated among school students who make excellent

representatives for Ecosan toilets by encouraging potential users in their community.

- A bigger awareness programme on the use of urine and faeces with a nutrient recycle concept should be designed with the aim of providing knowledge on the merits of Ecosan toilets.

This agenda should be set, however, as one of advocacy while promoting and expanding Ecosan latrines. While scaling up, the pros and cons should be disseminated widely, allowing users to take the final decision between the various sanitation options available.

Management requirements

- The practical demonstration of the usefulness of the by-products of human excreta in agriculture is seen as an important component of all ecological sanitation programmes. Consequently, the crucial step of linking toilets with a method of producing humus or urine for use in agriculture (or forestry) must be emphasised. This very important management procedure is vital to the success of Ecosan toilets.
- In Ecosan toilets, success depends on proper management, and thus depends on user participation to a far greater extent than conventional sanitation systems. It is no longer a case of sit and flush or squat and deposit. Ecological sanitation embraces a philosophy, which the users must believe in and practice daily. Disseminating and convincing of such an understanding and practice takes time.

Role of subsidies

- Almost all the projects used some form of subsidy to promote or support widespread

use of this new technology. The subsidy approach for promoting Ecosan latrine technology must be adopted as a promotional tool and should be promoted only in such a way that users require some form of “buy-in” from it, on one hand or alternatively, must avoid distorting decision-making to the extent that wrong choices are made.

- While discussing the role of subsidies in promoting Ecosan toilet, the poorest members of the community should gain access to the benefits that improved sanitation can bring. There are areas for potential improvement and experimentation by developing various options including graded subsidy systems.
- Hardware subsidy should be governed by a clear subsidy policy of the promoting organisation, with explicit objectives and political commitment to the total amount of funds that would be necessary if programmes were scaled up.

Research and development: The initiations of WAN through its local level partners are primarily designed to implement and demonstrate alternatives (or complementary approaches) to conventional sanitation practices. Alongside the emphasis on research and development to be placed to adapt technologies to local conditions, here are some areas recommended for R&D for further promotion of Ecosan technology:

- a. Concept of trading in urine and faeces should be developed. Commercialisation of nutrient recycling from human excreta, thereby linking with livelihood is necessary for further promotion of this technology
- b. More research on sanitisation of faeces should be done to find out the effective and easy way of sanitising the excreta

- c. Research on reducing the volume of urine is also deemed necessary as a reduction of urine volume may be the best way to ease its transportation.

The outcome of the design process should be a pleasant and affordable toilet facility that sends a hygiene promotion message to other families and is easily replicable.

Conclusions

In summary, the advantages of Ecosan toilets – as perceived by users – indicate mostly the fertiliser value of excreta and nutrients recycle; and cheaper substitution of organic fertiliser to expensive chemical fertiliser, resulting in a reduced use of chemical fertilisers. Water saving is another potential merit in addition to the contribution made by this technology in protecting the natural environmental and preventing groundwater pollution.

Ecosan latrines are well accepted by all the members of the families without any gender conflicts. They are gender friendly, as indicated by their satisfactory maintenance shared among male and female counterparts. This appreciation for Ecosan latrines extends to the majority of their neighbours, who also showed a positive attitude. Some 65% of the neighbours without any latrine facility, showed their willingness to build an Ecosan latrine. This demonstrated the good impression of Ecosan in the peri-urban settlements of Nepal, where agriculture is a common livelihood.

Similarly, the level of knowledge among Ecosan users regarding use of human excreta is comparatively better than the level of satisfaction from the use of urine as a fertiliser: which is low

compared to the use of human excreta (faeces). The majority of users found their production increased when using human excreta as fertiliser and this stimulated their neighbours towards Ecosan latrine.

The rate of direct application of urine in the field is comparatively low and is not impressive compared to the efforts made, despite disseminating the importance of urine and its nutrient value among the Ecosan users. However, the users preferred to use urine for composting rather than in the field directly. The reason for this is the difficulty in transporting urine to the field.

It is known to all that because of their pressing priorities in fulfilling other basic needs, the majority of people in developing countries do not want to invest in toilets, believing them to be a sheer waste of money. Nepal is definitely not an exception to this. This indicates that people do not fully understand the importance of toilets. Investment in Ecosan toilets is also the same. People are interested to install the Ecosan toilets, but without investing their own money. That people expect subsidies for constructing Ecosan toilets despite the cost of Ecosan (dry toilet is comparatively more than wet ones) is simply reasonable and is within the reach of any person, either poor or non-poor. The cost-effectiveness of Ecosan is justifiable if one considers the potential for Ecosan latrines to “add value” to agricultural production and to conserve water and the environment.

The use of subsidy policy in promoting any sanitation technology must be cautious. It will definitely help to achieve some short-term gains, but appears to militate against long-term affordable solutions of the type that will be necessary to

achieve meaningful progress for further expansion of this technology. Future approaches must be more sensitive to what local economies and customs can embrace.

In summary, the people using Ecosan latrines have started to view excreta as a resource, rather than a waste, and realised its economic value to the process of developing a sustainable latrine building programme. This is definitely because of the ability of Ecosan latrines to produce fertiliser and link with the livelihood opportunities through generating income from existing agricultural practices. This has added a much needed, direct and easily recognised benefit to building and using a latrine. Ecosan, in addition, will no doubt help to improve health, water saving and food production. It is logical

and cost effective in theory and practice and can be equally pro-poor and pro-rich. Thus, the level of acceptance of Ecosan by the users and willingness to install by non-users indicated possibilities of further scaling up this technology within the peri-urban settlements. However, scaling up in rural areas, where it is being promoted on a pilot basis, still remains a challenge, as it requires further awareness on behavioural changes.

Despite its many positive aspects, this approach will be of little use unless the target communities are willing to adopt it. Therefore, it is important that general principles of Ecosan toilet models are adapted to local conditions rather than introducing universal, specific technologies developed under different conditions.

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Annex – 1

Costing of an Ecosan toilet and its comparison with other latrine options

The construction cost associated with Ecosan can vary from place to place depending upon materials used, designs adopted and fluctuations in market price. The average cost of a dry double vault Ecosan toilet with brick and cement superstructure in Kathmandu Valley is around Rs 16,000 (US\$ 230). Overall the construction cost can be divided into two parts:

a. Construction up to pan level: This includes two vaults for faeces storage, a urine storage tanks

TABLE 1 Breakdown of material cost for Ecosan latrine up to pan level for Kathmandu Valley

S.N.	Description of work	Quantity	Unit	Rate (NRs.)	Amount (NRs.)
1	Bricks	650	bag	3.50	2,275.00
2	Cement	5	cuft	500.00	2,500.00
3	Sand	35	cuft	22.00	770.00
4	Aggregate	15	cuft	33.00	495.00
5	MS bar	10	kg	50.00	500.00
6	Mason	6	nos	250.00	1,500.00
7	Pan	2	nos	350.00	700.00
8	Pipe and Fittings				
	* 3" Poly bend	1	nos	55.00	55.00
	* 3" Poly tee	1	nos	60.00	60.00
	* 3" Poly cowl	1	nos	30.00	30.00
	* 3" Poly pipe	6	rft	20.00	120.00
	* 2" PVC tee	1	nos	110.00	110.00
	* 2" PVC bend	3	nos	90.00	270.00
	* 2" PVC net cap	3	nos	20.00	60.00
	* 2" PVC pipe	1	rm	45.00	45.00
	* 1/2" GI nipple	2	nos	24.00	48.00
	* 1/2" GI socket	1	nos	20.00	20.00
	* Plastic tap	1	nos	15.00	15.00
	* 100 liter plastic container	1	nos	550.00	550.00
			Total		10,123.00

and two pans in case of dry Ecosan. The cost of Ecosan up to pan level in Kathmandu is NRs 10,123 and its breakdown is presented in Table 1 below:

b. Construction above the pan level: This is almost the same as for any other toilet and this cost will vary significantly depending on the materials used for building the walls and roofing. The cost is estimated to be around NRs 6,000 if built using brick and cement with a CGI roof. The cost comparison of the Ecosan toilet with other toilet options is given in a Table 2 below:

While comparing the cost of an Ecosan toilet as a whole with the other types of sanitation facilities prevailed in rural and urban areas of Nepal (based on the study conducted by ENPHO under WaterAid Nepal's support), it was revealed that the cost of the Ecosan toilet ranks as the third cheapest. While accounting the additional value (both positive and negative) of the by-products (eg urine and faeces) of these toilets (as mentioned below in Table 3), one will definitely express that Ecosan toilet is cost effective and sustainable in the long run. Generally, the cost of handling of faeces, treatment of waste, etc, is not usually included for other sanitation options.

TABLE 2 Cost comparison of various latrine options (up to pan level)

SN	Toilet options	Cost (NRs)	Remarks
1	Single pit latrine	10,000	The indicated cost is only for construction up to pan level
2	Double pit latrine	12,000	
3	Soak pit	3,500	
4	Ecosan	10,100	

TABLE 3 Cost comparison of sanitation options in rural and urban areas

Description	Toilet with septic tank	Twin pit sulabh	Single pit sulabh	Flush toilet with modern treatment facilities	Flush toilet with reed bed treatment facilities	Ecosan toilet	Remarks
1 Individual toilet cost	6,000	6,000	6,000	6,000	6,000	16,000	
2 Septic tank and soakage pit	12,000	6,000	3,000	12,000	12,000		@ 2000 per capita assuming average HH size is 6
3 Sewer line							
4 Treatment plant cost				3,000			@500 per capita excluding land cost
5 RBT treatment plant cost					11,000		@1000 per family excluding land cost
6 Operation cost (basically for de-sludging)	600	200	300	300	60	200	@ 50/ capita/year in modern treatment and 10/capita/year for RBT
7 Maintenance cost	186	140	100	250	300	185	@1% maintenance cost for all types of facilities
8 Monetary value of urine and faeces	No	Low	Low	No	Low	2,100	Extracted from financial analysis offEcosan toilet
Total	18,786	12,340	9,400	21,550	29,360	14,285*	*[= (sum of 1 to 8)–(9)]
9 Fertiliser value	No	Low	Low	No	Low	High	Note: All amounts expressed in Nepalese currency
10 Water requirements	High	Medium	Medium	High	High	Low	
11 Risk of ground water pollution	Medium	High	High	No	No	No	

6 Sanitation, water and hygiene programme in Faridpur

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Abstract

This paper summarises the experience of Practical Action Bangladesh in promoting water, sanitation, waste and hygiene related infrastructure and services in the town of Faridpur, Bangladesh. Practical Action attempted to help community groups to organise and develop participatory slum improvement plans with the municipality. This led to prioritising needs, and agreeing roles and responsibilities in the delivery. Communities also identified the opportunities for income generation and employment within the delivery, operation and maintenance systems. They have also acquired other skills to boost their income. The involvement of

people and their empowerment is leading to better use and maintenance of water, sanitation and hygiene infrastructure and services. Communities have also negotiated better deals with the municipality to use municipal land for waste recycling and to finance the larger infrastructure. The sustained income from users' charges was shown to be a more complicated issue than initially thought. This is mainly because of social structure, ownership and expectations at the community level. Practical Action has realised that larger slums of more than 100 families need more detailed technical planning for services. Overall, the Faridpur slum model has potential to scale-up in terms of physical and social infrastructure.

Context

Bangladesh has a total population of 144.2 million, with 36% living on less than US \$1 per day. The population densities in Bangladesh are perhaps the highest of any country in the world. Officially, 23% (some 30 million) of the population was living in urban areas in 2001, and the urban population growth rate is more than double the national rate. The actual population of these slums may be much higher.

Migration to towns and cities for income and employment leads to chronic shortages of housing, and families living in overcrowded conditions. This trend is set to continue: in future, large and concentrated populations in towns will require basic services such as water supply, sanitation, transport and electricity.

Practical Action has worked with people for more than 40 years and in the past 10 years, it has paid increasing attention to accessing urban services as a means to liberate people from poverty. Intended outcomes from this work include better health, improved environment and increased income opportunities. In Bangladesh, Practical Action has been working in a number of secondary towns including Faridpur.

The district town of Faridpur, located more than 100 km southwest of Dhaka, is home to 126,226 people. The town has moved locations several times due to erosion caused by the mighty force of the river Padma. Faridpur Town still wears the look of a neglected market town and lags behind many other district towns in terms of infrastructure and urban facilities. The town's inhabitants include a high number of victims of floods and river erosion. These people take refuge mainly in the elevated

khas land (fallow government land) and along the embankments and riverbanks. There are 22 informal settlements (slums) within the municipal area. According to data from the municipal authority, 9,735 people live in these slums. Although the population of slum dwellers in the district is 10%, a number of low-income areas are not any better than slums. Most of these slums are settled on the land, close to the city centre and markets. Practical Action's project in Faridpur: 'Integrated Urban Development' (IUD) began with three main objectives:

- 1) To demonstrate a participatory process of delivering environmental infrastructure, which can improve quality of life and create livelihood opportunities in the area
- 2) To prepare participatory plans and facilitate partnerships, so other infrastructure and services can be delivered as per needs and priorities of the poor
- 3) To support community in mobilisation and training, to enhance their income and employment with some services
- 4) To collect evidence and promote IUD as a replicable model to provide infrastructure and services to slum areas.

This paper provides an analysis of Practical Action's work in Faridpur and some of the key lessons learned.

Services in the slums of Faridpur

In this section, we set out the main issues relating to services in these slum areas. We observed that the municipal attitude was constructive when it came to supporting the provision of basic services to these slum areas, yet they lack financial resources and technical capacity to provide these services.

Most people in these slums depend on pond water for bathing and washing. They access tubewells for drinking water and have no street paving in most of their streets. Neither was there any drains or collection of solid waste. The transport service is only restricted to three-wheel rickshaw vans, pedaled by a driver. The access to sanitation was also mixed with very high numbers relying on the temporary hanging latrines and defecating directly into ponds. Practical Action carried out baseline surveys on the level of various infrastructure and services. This survey covered the entire population and included men, women and children. We made sure that all groups took part in the survey, irrespective of their ethnicity and ability to participate. We found that only 27.5% of the population has access to treated municipal water supply, while 72.5% rely on tubewells.

The sources of water are also inconveniently located, as almost half of the population has to travel more than 15 meters to collect water. One third of the population travel 50 to 120 meters to collect water. This not only demonstrates the hardship in collecting water but also has a major impact on the quantity of water they are able to collect, and risk of contamination while transporting

and storing. Residents express problems in water collection and availability of less quantities, but they usually have little understanding of sources of contamination. Availability of less water has an impact on hygiene and has serious repercussion on the choice of sanitation technology.

Faridpur is an arsenic-affected area and it is possible that residents' only source of drinking water is contaminated with high levels of arsenic and iron. The baseline survey and programme for screening of water points shows that 11.67% tubewells are contaminated with arsenic above the safe limit (e" 50 ppb) as per standards recommended by the World Health Organisation (WHO). The concentration of arsenic ranges from 75 ppb to 500 ppb in those tubewells. Residents did not see arsenic as a major problem, as its impact on their health is likely to be slow. Also, in many cases, residents have no alternative sources of water or treatment system.

In addition, the screening of water points revealed that about 51.67% points are at risk of microbial contamination as they have no platform to drain used water and a heap of garbage around the water point is very common.

FIGURE 1 Sources of water for drinking

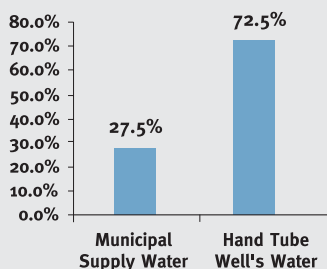


FIGURE 2 Situation of arsenic contamination of existing shallow tubewells

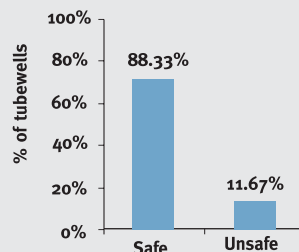
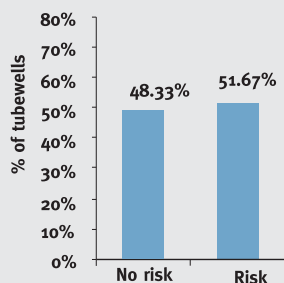


FIGURE 3

Risk of microbial contamination due to absence of platform with tubewell



The common mode of sanitation is individual and shared toilets, which are often of poor quality and temporary. These toilets are located outside the house boundaries and owned by a family or a group of families. Their use is based on an understanding among neighbours, without any financial payments. Though the sanitation coverage in Bangladesh has increased from 20% in 2003 to 65% in 2006, there are no signs of this in the slum areas of Faridpur. There are emerging issues of proper maintenance and resources to sustain hygienic practices in areas where local governments and NGOs have piloted these programmes. Under the national sanitation strategy, the line ministry directed municipalities to spend 20% of their annual development budget on the promotion of sanitation. Under this initiative, the municipality subsidised the construction of sanitary latrines. In most cases, the technology was single pit latrine. Though the success is outstanding in some areas, the people expect a reliable and coordinated service to de-sludge these latrines. There were also possibilities of groundwater contamination, which need more scientific studies. These were very important learning points for planning our programme in Faridpur. In slum areas of Faridpur, an estimated 22.5% of people are still using

common or shared latrines and they have to contribute more than Tk 30/= per month as a service charge. Among other major causes of poor health and environment, waste collection and inhalation of harmful gases were also identified as priority issues. Most of the slum people (98.9%) use single mouth earthen stove for cooking purposes and 68.8% people use firewood, jute sticks, cow dung and tree leaves as firewood for cooking. Most of the slum people have no legal land tenureship and have previously faced constant threats of evictions. Such insecurity restricts further investments on services by the municipality and by households. Households do not want to invest money for permanent structures, but with the investment in infrastructure services supported by NGOs and the municipality, the confidence of households to invest and their trust in the municipality increases.

Participatory planning

In January 2006, Practical Action started a three-year project in Bangladesh, Nepal and Sri Lanka to contribute to the reduction of environmental threats to the health and livelihoods of urban slum dwellers. The purpose of the project was to develop and promote an integrated approach at the neighbourhood level, in ways that are driven by and improve the livelihoods of poor urban women and men. The basic idea was to promote those improvements, which can improve income, employment and investments in the area. The approach was to work with the people, understand their priorities, prepare participatory plans, promote partnerships and strengthen community organisations for proper operation and maintenance of services. In addition, support opportunities, wherever possible, to enhance income and employment during the construction

of infrastructure and services. The municipalities, community groups and local NGOs are the project partners. In the first phase of the project, participatory plans were prepared, and community groups identified water, sanitation and waste collection as the top priority needs within the context of their local environment. However, further discussions with the community revealed that they do not clearly see the links between poor health and their poor hygiene actions. In slum areas, where people rely on daily wages and run local shops, the health and local environment are extremely important. Upon completion of participatory plans, community use it in various ways, especially influencing municipality to investment finances and support collectively agreed priorities of the poor.

In Faridpur, the project selected eight slum areas. To further explore major environmental health hazards for slum/low-income settlement dwellers,

a focus group discussion was held in each of the eight slums. Participatory tools were used to identify and agree on priority needs. After a series of discussions, the community was asked to assign marks to their priorities, as shown in the table below. It is clear that safe water supply, environmental sanitation and proper waste disposal facilities were the main problems identified.

The community understood the project's context and identified their priorities within that. Issues like security of tenure and evictions may be very important, but the community may prefer to work on these issues once their immediate needs are addressed. Education and health needs are addressed through available facilities in the town and communities did not see a need to establish separate systems for such facilities in the slum areas. Community groups want improved water and sanitation facilities to improve their quality of life, enhance their livelihoods opportunities and for better health.

TABLE 1 Community priority needs

Priority Need	Marks obtained	Percentage	Ranking of problems
Safe water supply	71	17.66%	1st
Environmental sanitation	61	15.18%	2nd
Waste disposal	46	11.44%	3rd
Education	3	0.75%	11th
Unemployment	30	7.46%	5th
Water logging	30	7.46%	5th
Internal walkways	46	11.44%	3rd
Housing	25	6.22%	6th
Electricity	4	1%	10th
Basic health services	1	0.25%	12th
Land tenure	21	5.22%	7th
Lack of knowledge on hygiene	39	9.7%	4th
Eviction	17	4.22%	8th
Municipal tax	8	2%	9th
Total marks	402	100%	

Trust between slum dwellers and the project team improved over time and the project team asked communities to form more structured and representative organisations. A set of rules for each community group was recommended to ensure their inclusiveness, and their respect within the wider communities. The rules recommended that each community group should have female representation, well respected leadership and understand the needs of less able people. They were encouraged to meet regularly, review the priorities and prepare themselves to negotiate their needs with the municipalities. Gradually, the community organisations and municipality prepared the participatory neighbourhood plans. This was a detailed plan on needs and how the needs will

be addressed through a participatory process. This whole exercise requires time and effort, but improved the ownership of development. Once the participatory plans were developed and broadly agreed by the community groups, municipality and the project team, the actual construction of some infrastructure and services started. Community organisations sought other partnerships for needs that were identified in the participatory plans, but could not be supported by the project funds.

Project implementation

Very often, when local authorities or external consultants make decisions, poor communities do not have an opportunity to express their views. As a result, services either don't reach them, are too expensive, or are delivered in a way which does not meet their needs. In such cases, services are not maintained properly and may have minimal impact. Participatory planning is a way of ensuring that the voices of local residents are heard and acted upon. It also provides a springboard to leverage additional resources. In Faridpur slums, the participatory plans were prepared and jointly owned by the community organisations and municipality. A local NGO, the Society for Urban Poor (SUP) was involved in the pro-poor development, supported the whole approach and worked as an equal partner. SUP also assists slum improvement committees to raise their voices. This helped the municipality to support certain activities through their budgets and play a role as a more resourceful partner. The slum improvement committee identified infrastructure and services that could improve the overall environment in the settlements and reduce the risks of water- and waste-related diseases. Project staff prepared the design in consultation with the community, assisting

with the estimates and jointly supervising the construction. Slum improvement committees also monitored the quantities and quality of materials used in the construction and jointly approved payments to contractors. For the water- and sanitation-related infrastructure, community organisations identified improved toilets, water points and street paving as their priorities. In some areas, depressed land was filled, and solid waste bins and drainage were also constructed. The community committee held monthly meetings to monitor progress, continue maintenance of the toilet blocks and water points, and also encouraged the contribution of Tk 150 per family per month, to be held in a bank account to cater for any future repair and maintenance needs. The community committee played a key role in the collective negotiation with the municipality, which led to its agreement to allocate funds on relatively larger infrastructure and services needed to support the community level infrastructure. In addition, the municipality also leased out a piece of land to recycle solid waste into compost.

It is often not possible to suggest one type of technology for water, sanitation and hygiene to fit all types of situation. People's preference and other criteria vary. In this project, we suggested a possible range of options to the slum dwellers, keeping in mind the technical possibilities and the community took the final decision. In some cases, twin pit toilets were chosen, in others a septic tank was possible, or a single pit with soak-away system was the only possibility. Hygiene education was provided with a focus on regular toilet use, washing hands and proper maintenance of toilets.

At the start of the project it was envisaged that a number of families could enhance their income

through fees and other charges from the water, waste and sanitation facilities. This happened to a certain extent, but people expressed their need to learn more personal skills, which could help them to earn a sustained income. Depending on the time available and other responsibilities, a number of women and young adults acquired skills to make paper bags and other types of embroidery. They have also been matched with buyers and other actors in the market chain. This programme was necessary to ensure that the improvements in the water, sanitation and hygiene status go hand in hand with social and economic improvement. Otherwise people in the community will not be able to contribute to the operation and maintenance of the facilities provided.

Project outcomes and learning

The project is in its second year and the mid-term review was carried out from January to March 2008. This paper serves to highlight our own learning from this process, which is based on our observations and feedback from people in the communities:

- The project aims to improve the local environment and enhance income from the infrastructure and services. The beneficiaries were empowered to choose where they want to see money invested and the process of implementation. This process led to some real improvements in the area and enhanced the ownership of the process. In addition to water and sanitation facilities, people also prioritised street paving, drainage and waste collection to see an overall positive impact in their living environment. It is obvious that in high-density settlements, these improvements contribute significantly to better hygiene and enhance the impact of sanitation and water

infrastructure. There are clear indicators that the water and sanitation services are maintained well.

- As mentioned earlier, the project design has two innovative features: providing the set of services to improve the environment and linking income generation from these services. The idea was to promote income generation within the service provision. However, the project design was modified as per the situation on the ground.

Firstly, the nature of infrastructure is such that fee collection is not possible in all cases. For example, charging for a common street paving and drain that serves a group of households is technically challenging. Nevertheless, there is some indication of community contribution in the capital cost.

Secondly, the ownership of infrastructure and agreements for its use also vary from one set of infrastructure to another. For example, in some cases the handpump is owned by one family, which has agreed to allow other families to use it. In the other, the infrastructure is owned by a group of 4 to 6 families. In some cases the ownership is with an extended family, which includes a number of households. In the case of water supply, the pipe and water point is owned by the municipality, which may impose a system of charging on the bulk supply. Practical Action has avoided a blueprint of ownership for newly constructed infrastructure services. This situation also makes fee collection from users extremely difficult. So, the proposed approach to make CBOs the overall and collective managers of the infrastructure services seems to be the most appropriate and innovative. Practical Action helped communities to form an organisation, make it inclusive, build their capacity to work

together, manage the affairs and open a bank account. It was suggested to ask each family to contribute Tk 150 per month into the bank account, which could be used in the event that repairs were needed. It is necessary to include a number of well paying customers for income generation and the project has moved towards this in the waste collection programme. The fees from middle class income groups cross subsidised the lower fees from the low-income areas.

- The skills enhancement for income generation is working well for both groups. One group would like to do this as a casual work, while the other would like to do it as a full time work. Income generation through household-based production, such as making paper bags and tailoring, is more popular among casual workers. Training for the more business oriented Cutchupi (a type of embroidery) was taken up by young adults, who may have more time at their disposal, while paper bag making and stitching clothes tended to suit women with the responsibility for young families. This training is done in collaboration with NUF, a local NGO working on economic empowerment for women. We would like to understand more on this subject, particularly the impact of income generation on payments for services.
- The integrated model seems to be more successful, where the communities are smaller, such as Basher Mia and Bishorjan Ghat slums (which comprise less than 40 families). In the slum areas of more than 100 families, the

needs are bigger and more complex. Some of the larger settlements, such as Bihari Para (120 families), require integrated planning for infrastructure services, particularly for the drains and filling of depressed land. Laying one drain without getting a topographic survey of the whole area and making sure that the discharge levels are coordinated can lead to future problems. Similarly, filling one depression, without analysing flow patterns of surface and sub-soil waters could merely serve to transfer the problems. Engineering planning is an important activity for such areas. Use of topographical surveys and putting important information on GIS could be very useful for future work.

- In addition to the above outcomes, there is clear evidence that the communities have acquired the ability to organise, agree and raise their voice to the local government. This has led to greater attention, government investment and transparency. We are expecting to collect more concrete evidence of this during the mid-term evaluation.

The Integrated Urban Development (IUD) project in Faridpur has directly benefited 2,500 people. More importantly, it has experimented with a model of slum improvement, where participation, ownership and income generation can truly enhance the benefits of physical infrastructure. We anticipate that this will lead to a greater impact and sustained benefits of infrastructure services in future.

7 Decentralised wastewater management using constructed wetlands

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Abstract

Environment management is a significant challenge in developing countries mainly due to lack of strong legislation to control wastewater and institutional capacity for integrated planning and management. This paper describes the importance of small scale decentralized wastewater treatment using reed bed treatment systems (RBTS) in Nepal. It shows how public/community participation can support small scale construction work while ensuring checks on quality and price of construction. It includes examples where this system provides good quality, low-cost services.

Environmental Public Health Organisation (ENPHO) introduced the system in Nepal through research and then by designing and constructing a pilot-scale wastewater

treatment system in Dulikhel Hospital in 1997. Since then this has been followed by 13 such systems at various institutions (e.g. hospitals, schools, university, and monastery) and individual households. The system is found to be highly effective in removing pollutants such as suspended particles, ammonia-nitrogen, BOD, COD and pathogens.

With the experience of designing the system and more than eight years of monitoring and evaluation of the system, the challenge was to upscale this technology to a community scale. To overcome this challenge a community scale wastewater treatment system was designed for Madhaypur Thimi Municipality, a first of its kind in Nepal. As the local people in Madhaypur Thimi Municipality showed interest in wastewater treatment, ENPHO with support of

the Asian Development Bank (ADB), UN-Habitat and WaterAid Nepal (WAN) constructed a wastewater treatment system in Sunga area. The treatment plant has the capacity to treat 50m³ of wastewater per day. The local community has formed a committee for construction and future O&M of the RBTS. This RBTS will set a valuable precedent for other larger systems in other parts of the country as well as systems envisaged under national urban development projects in Nepal, such as the Urban Environment Improvement Project.

Introduction

Haphazard disposal of untreated wastewater from households as well as institutions and industry is causing severe deterioration of water bodies in many urban areas in the developing world. Most cities do not have adequate systems for the collection and treatment of wastewater and this is usually not considered to be a priority for investment. It is estimated that in developing countries, 300 million urban residents, 34% of them in South Asia, have no access to sanitation (WaterAid Nepal, 2006). Approximately two-thirds of the population in the developing world has no hygienic means of disposing of excreta and an even greater number lack adequate means of disposing of wastewater. This is a major public health risk as it can lead to outbreaks of diseases such as diarrhoea, cholera, and typhoid.

Although urbanisation is a relatively new phenomenon in Nepal, with only about 15% of the

population living in urban areas, the rate of urbanisation is very high. This rapid urbanisation is haphazard and so exerts immense pressure on the urban environment. Municipal managers often lack the expertise and resources to deal with this issue. As a result, urban sanitation has become a major challenge for municipalities and small towns in Nepal. Most of the urban and semi-urban areas of the country rely on on-site sanitation facilities such as pit latrines, pour flush toilets and septic tanks. It is estimated that only about 12% of urban households are connected to the sewer system and wastewater treatment is virtually non-existent. Almost all the wastewater is discharged into nearby rivers without any treatment. The total wastewater produced in the country is estimated to be 370 million litres per day (MLD). The installed capacity of wastewater treatment plants is only 37 MLD (10% of total demand) and functioning wastewater treatment plants account for 17.5 MLD, or 5% of total demand (Nyachhyon, 2006).

The problem of wastewater management is particularly severe in Kathmandu Valley, which has five municipalities and is the largest urban centre in the country. In the 1980s four wastewater treatment plants were built in Kathmandu Valley, one in Sundarighat, Lalitpur to treat wastewater from the core areas of Kathmandu, another in Balkumari, Lalitpur to treat wastewater from the city of Lalitpur and one each in the Sallaghari and Hanumanghat areas of Bhaktapur. These treatment plants are based on simple lagoon systems, where wastewater is treated through natural processes such as sedimentation and biological degradation in a series of large lagoons. Although these plants are technically very simple with no mechanised parts, they are still not functioning well because of poor operation and maintenance and

mismanagement. In 2002 another wastewater treatment plant that uses a more complicated oxidation ditch technology has been constructed at Guhyeshwori. Although this plant is partially functioning the cost of operation is very high and its sustainability is questionable.

Overall the wastewater generated by about two million residents in Kathmandu Valley has severely deteriorated the water quality in the Bagmati river, particularly in the urban stretches. This primarily affects the poor people who live near the river and are more exposed to the pollution.

The issues that arise from this prevailing position can be summarised as follows:

- As wastewater management is not a priority for most people or the government, simple and cost effective systems are necessary to ensure that they are managed in a sustainable manner.
- A simple and effective operation and maintenance system is essential for operating a wastewater treatment system.
- Centralised wastewater management systems are difficult to operate because of the difficulties in maintaining the long sewer networks and treatment plant.

In the late 1990s, in an attempt to try and deal with some of these difficulties, a new low-cost, low technology process was introduced, by which wetlands are constructed and wastewater treated in them. In this paper, the constructed wetlands process is presented, and its implementation in Nepal described. Some case studies provide particular details and then some commentary discusses the challenges involved and the way ahead.

Constructed wetland wastewater treatment system

Constructed Wetlands (CW) is a biological wastewater treatment technology designed to mimic processes found in natural wetland ecosystems. These systems use wetland plants, soils and their associated micro-organisms to remove contaminants from wastewater. Application of constructed wetlands for the treatment of municipal, industrial and agricultural wastewater as well as storm water started in the 1950s and they have been used in different configurations, scales and designs. CWs are receiving increasing worldwide attention for wastewater treatment and recycling due to the following major advantages:

- use of natural processes
- simple construction (can be constructed with local materials)
- simple operation and maintenance
- cost-effectiveness (low construction and operation costs)
- process stability.

Research studies have shown that wetland systems have great potential in controlling water pollution from domestic, industrial and non-point source contaminants. As it has been widely recognised as a simple, effective, reliable and economical technology compared to several other conventional systems, it can be a useful technology for developing countries.

There are various types of constructed wetland systems for treating wastewater based on the type of plants used, type of media used and flow dynamics. The most common type of constructed wetland system used in Nepal is the sub-surface flow system, which is also known as the Reed Bed Treatment System (RBTS). The basic features of

RBTS include a bed of uniformly graded sand or gravel with plants such as reeds growing on it. The most common type of plant used in Nepal is *Phragmites karka*. The depth of media is typically 0.3-0.6 m. Wastewater is evenly distributed on the bed and flows through it either horizontally or vertically. As the wastewater flows through the bed of sand and reeds, it gets treated through natural processes like mechanical filtering, chemical transformations and biological consumption of pollutants in wastewater. As RBTS uses simple natural processes, it is effective yet inexpensive and simple to operate.

As noted above, the RBTS can be of two types: vertical flow (VF), where the wastewater flows

vertically from the top to the bottom of the bed, and horizontal flow (HF), where the wastewater flows from one end of the bed to another. VF beds are fed intermittently in a large batch flooding the entire surface. After a while the bed drains completely free, allowing air to refill the bed. This kind of feeding leads to good oxygen transfer and hence better removal of pollutants. VF systems also require less land area (1-2 m²/person) than HF systems, which need 5-10 m²/person for secondary treatment. A typical VF system can

FIGURE 1 Horizontal flow constructed wetland

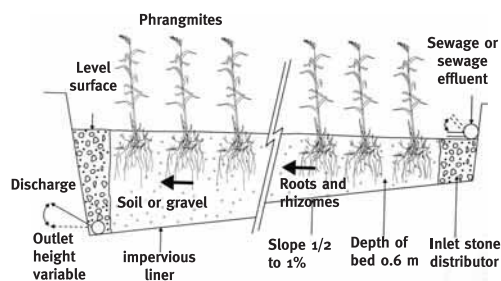


FIGURE 2 Vertical flow constructed wetland

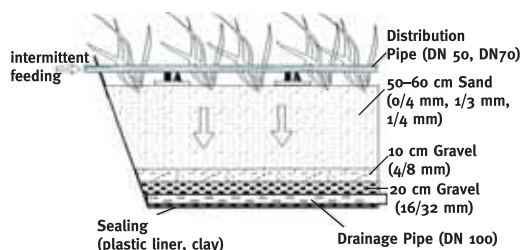


TABLE 1 Pollutant removal mechanisms in constructed wetlands

Wastewater constituents	Removal mechanism
Suspended solids	Sedimentation
	Filtration
Soluble organics	Aerobic microbial degradation
	Anaerobic microbial degradation
Phosphorous	Matrix sorption
	Plant uptake
Nitrogen	Ammonification followed by microbial nitrification
	Denitrification
	Plant uptake
	Matrix adsorption
	Ammonia volatilisation (mostly in SF system)
Metals	Adsorption and cation exchange
	Complexation
	Precipitation
	Plant uptake
	Microbial oxidation/reduction
Pathogens	Sedimentation
	Filtration
	Natural die-off
	Predation
	UV irradiation (SF system)
	Excretion of antibiotics from roots of macrophytes

Source: Cooper et al., 1996

remove the BOD₅¹ of up to 96%; the HF system can remove only up to 65%. In recent years, a combination of the two (hybrid system) has become popular due to the higher efficiency of organic removal.

Constructed wetlands remove pollutants from wastewater through various physical, chemical and biological mechanisms. Some of the main pollutant removal mechanisms in constructed wetlands are presented in Table 1.

Constructed wetlands in Nepal

In Nepal, the Environment and Public Health Organisation (ENPHO) introduced CW for wastewater treatment in 1997 by constructing the first plant at Dhulikhel Hospital. Since then, the interest in this technology has been growing and more than a dozen constructed wetlands have been established for various applications such as the treatment of hospital wastewater, grey water, septage, landfill leachate, institutional wastewater and municipal wastewater. The first constructed wetland treatment plant in Dhulikhel was designed to treat 10 m³/day of wastewater but it is successfully treating more than four times that amount.

Satisfied with the performance of the treatment plant, the hospital is now expanding the capacity of the plant. Recently, ENPHO with support from the Asian Development Bank (ADB), UNHABITAT, WaterAid Nepal, Madhyapur Thimi Municipality and the local people have established the first community-based wastewater treatment system in Nepal using this technology. The Urban Environment Improvement Project (UEIP) which is being implemented in eight urban centres with the

TABLE 2 Constructed Wetlands in Nepal

SN	Location	Type of Wastewater	Treatment Capacity
1	Dhulikhel Hospital	Hospital	Designed for 10 m ³ /day but treating 40 m ³ /day
2	Private house at Dallu	Grey water	0.5 m ³ /day
3	Kathmandu Metropolitan City	Septage	40 m ³ /day
4	Malpi International School	Institutional	25 m ³ /day
5	Sushma Koirala Memorial Plastic & Reconstructive Surgery Hospital	Hospital	15 m ³ /day
6	Kathmandu University	Institutional	40 m ³ /day
7	Staff Quarter of Middle Marshyangdi Hydro Electric Power Station	Domestic	26 m ³ /day
8	ENPHO Laboratory	Domestic and laboratory	1 m ³ /day
9	Kapan Monastery	Institutional	17 m ³ /day
10	Septage and Landfill leachate treatment plant	Septage and landfill leachate	Septage: 75 m ³ and Leachate: 40 m ³
11	Sunga	Municipal	25 m ³ /day

TABLE 3 Treatment efficiency of constructed wetlands in Nepal

Location	TSS Removal Rate (%)	BOD ₅ Removal Rate (%)	COD Removal Rate (%)	NH ₄ Removal Rate
Dhulikhel Hospital	98.6	98.9	83.7	57
Dallu House	98.6	99.5	96.8	97
Malpi School	99.1	99.5	99.5	98
SKM Hospital	98.1	99.2	95.4	98
Kathmandu University	97.9	98.9	99.1	99
ENPHO	92.1	99.7	97.8	91

Source: Shrestha et.al., 2003

¹ Microorganisms placed in contact with organic material will utilize it as a food source. In this utilization, the organic matter will eventually be oxidized to stable end products like carbon dioxide (CO₂) and water. The amount of oxygen used in this process is called the Biochemical Oxygen Demand and is considered to be a measure of the organic content of the waste.

assistance ADB is now in the process of constructing 18 more plants in these towns. A list of operating CWs in Nepal is given in Table 2.

In general, the performance of the CWs has been excellent. Regular monitoring of the systems shows high pollutant removal efficiency achieving close to 100% removal of total coliforms and organic pollutants. The pollutant removal rates in six different constructed wetlands are shown in Table 3.

Challenges

The experience with constructed wetlands over the last decade has clearly shown that this simple and cost effective system can be used to treat various types of wastewater ranging from grey water to leachate and septage. However, in spite of the enormous potential for the use of CW for wastewater treatment, there are some challenges in the promotion of this technology in Nepal, which are as follows:

- Due to the lack of awareness of CW technology, it is often difficult to convince people that it will work
- Although the cost of the technology is relatively low, it is still difficult to convince people to invest in a treatment plant instead of just discharging effluent into the river
- Although CW technology uses locally available materials, in some places specified types of sand and gravel or reeds may not be readily available
- This is a low maintenance system, but people often think it is a no maintenance system. This sometimes leads to carelessness in taking care of simple operation and maintenance requirements such as checking for blockage in the pipes, harvesting the plants etc.

BOX 1 Dhulikhel Hospital establishes the first constructed wetland in Nepal

In 1997, Dhulikhel Hospital, a community-based hospital located in Dhulikhel Municipality, set up the first constructed wetland wastewater treatment system in Nepal to treat all the wastewater generated in the hospital and ensure that the people living around the hospital have access to clean treated water for irrigation. The system was designed by the Environment and Public Health Organisation (ENPHO) with technical support from the University of Natural Resources and Applied Life Science (BOKU), in Austria. As this was the first experiment with constructed wetlands in Nepal, the system was designed using fairly conservative assumptions and plenty of safety margin to ensure that the treated water would be of acceptable quality. As a result, although the volume of wastewater has increased more than fourfold, the treatment system is still operating effectively today. The treatment system was originally designed to treat 10 m³ of wastewater per day, but it is currently treating about 40 m³ per day as the capacity of the hospital has increased significantly over the past 10 years.

The constructed wetland at Dhulikhel Hospital has a sedimentation tank of 10 m³ capacity for pre-treatment followed by a horizontal flow bed then a vertical flow bed. The horizontal flow bed has a surface area of 140 m² and is filled with 0.6 m sand and gravel. Similarly, the vertical flow bed has an area of 120 m² and is filled with 1.05 m of sand and gravel. Both the beds are planted with local reeds of the species *Phragmites Karka*. Initial tests done in 1997 showed that the plant was able to remove 98% of total suspended solids (TSS), 98% of BOD₅, 96% of COD and 99.9% of total coliforms. It also removed 80% of the ammonia nitrogen and 54% of phosphate. Follow-up monitoring in 2003 showed that the plant was still removing 96% of BOD₅ and 93% of TSS and COD.

The Hospital as well as the local people are very satisfied with the performance of the treatment system and the system has become a showpiece for the Hospital. Many researchers, students, journalists and other people regularly visit the Hospital to see the constructed wetland in action and learn from it. The Hospital is now in the process of expanding the system.

BOX 2 Greywater recycling at the household level using constructed wetland

Dr Roshan Raj Shrestha's family has a simple house built on about 40 m² of land in Dallu, ward 15 of Kathmandu Metropolitan City. At first glance, the house does not look much different from the other houses in the neighbourhood. But it is very special because it is the first house in Nepal that treats and recycles its waste water to reduce water consumption as well as water pollution. In 1998, Dr Shrestha, who pioneered the use of Constructed Wetlands in Nepal, demonstrated how this technology could be applied to treat grey water at the household level, significantly reducing water demand and water pollution in a cost effective manner. In a city where the water demand is more than twice the supply and the discharge of untreated wastewater has significantly deteriorated the local rivers, this system has demonstrated how each family can make a difference.

The system consists of a 0.5 m³ water tank that has been converted into a settlement tank followed by a feeding tank and a small vertical flow reed bed with an area of only 6 m². The system is good enough to treat all the grey water generated in the house with seven members and the treated water is used for non-consumptive uses such as flushing, gardening and washing. Tests done on the treated water showed that the system was able to remove 97% of the TSS, 98% of the BOD₅, 98% of ammonia nitrogen and 99.9% of the total coliform. Dr Shrestha points out that the system required an investment of only about Rs. 35,000 (US\$500) and the family is able to save about 400 litres of water per day.

BOX 3 Community-based wastewater management

Located in Madhyapur Thimi Municipality, Sunga Tole is the owner of the first community-based wastewater treatment plant in Nepal. Madhyapur Thimi is an old Newar community in the Kathmandu Valley, which is believed to have been settled in the 7th century. Situated on elevated land area at an altitude of 1325 m, the municipality covers a total area of 11.47 sq km and

had a population of 47,751 in 2001. As the town was designated as a municipality only in 1996, major infrastructure developments like the sewerage system, water supply and road network are all still in the planning phase. Sanitation improvement is one of the most urgent issues the city needs to address, with more than 50% of the population still lacking proper sanitation facilities. Though a part of the municipality was connected to sewers in the 1990s and the wastewater was supposed to be treated through oxidation ponds the work remained incomplete because of a lack of funds.

At the request of the Municipality, in 2005, ENPHO, with support from ADB, UNHABITAT and WaterAid Nepal, initiated the construction of a community-based wastewater treatment plant at Siddhikali, where there was an outfall of a large sewer line and wasteland. However, after the construction began, a few people raised objections to the plant saying that it would pollute the local area. Even though a lot of effort was made to convince the local people and they were taken on observation visits to existing treatment plants, they refused to allow the construction to proceed. This meant that, although most of the local people supported the project, the objections of a few led to the failure of the initiative in Siddhikali, thus demonstrating the need for extensive community mobilisation.

Although disappointed by the initial setback, ENPHO and the municipality were delighted when the people of Sunga invited them to build the treatment plant in their neighbourhood instead. With the support of the local community, a new system was soon designed and built on steep terrain, which was previously a waste dumping site next to a school at Sunga. Now the site has a beautiful garden and a model treatment plant that provides a learning ground for students as well as professionals.

The constructed wetland at Sunga consists of a coarse screen and a grit chamber for preliminary treatment, a 42 m³ anaerobic baffle reactor (ABR) for primary treatment, horizontal flow followed by vertical flow reed beds for secondary treatment and two sludge drying beds for treating sludge. The total area of the constructed wetland is 375 m². The treatment plant has

a capacity to treat wastewater from 200 households, but it is currently treating wastewater from 80 households. The plant receives an average daily flow of 10 m³ of very high-strength wastewater (average BOD₅ of raw wastewater is 1,775 mg/l). Monitoring of the performance of the system over its first year of operation shows that it removes organic pollutants highly efficiently (up to 98% TSS, 97% BOD₅ and 96% COD). It was also found that the ABR was very effective in removing organic pollutants and could remove up to 74% TSS, 77% BOD₅ and 77% COD (Singh et al., 2007).

The total cost of the treatment plant was Rs. 2.5 million and the municipality has agreed to provide Rs. 50,000 per year for operation and maintenance costs.

The total construction cost of the wetland amounted to NRs. 1,800,000 (US\$ 26,000) at NRs. 2,900 (US\$ 40) per m² of the wetland. The average O&M cost of the wetland is about NRs. 20,000 (US\$ 290) per year.

BOX 4 Treatment of landfill leachate and septage

Leachate from landfill sites and septage from septic tanks are known to have very high concentrations of pollutants. As more and more cities construct landfills to manage their waste, there is a need to treat the leachate they generate. Often a simple pond is constructed at the bottom of the landfill to collect the leachate, which is then either recirculated back into the landfill, as in the case of the Sisdol Landfill in Kathmandu, treated or sent directly to the river. The experience from Sisdol shows that recirculation has not been effective in treating the landfill and direct discharge in the river can cause significant pollution downstream.

Septic tanks have been widely promoted as a means of on-site sanitation. In urban areas, many houses or institutions have septic tanks to partially treat the wastewater they

generate. But these have to be periodically cleaned, which generates large quantities of highly concentrated faecal sludge or septage. Several municipalities and small private companies operate septic tank cleaning services. However, in the absence of treatment systems, the highly contaminated sludge is simply dumped in rivers, resulting in heavy pollution.

Pokhara Sub-Metropolitan City is a major tourist hub in western Nepal. The city is spread over an area of 55 sq. km. and had a population of 156,312 in 2001. In 2003, the Asian Development Bank supported Pokhara Environmental Improvement Programme to build a sanitary landfill site for the city as part of the Second Tourism Infrastructure Development Project. There was a need for a simple and cost effective system for treating the leachate as well as the sludge produced by cleaning of septic tanks in the city. It was estimated that the city generated 12,000 m³ of faecal sludge and 15,600 m³ of municipal waste every year, all of which would be collected and brought to the site. In response, a special wetland was built at the site which consisted of seven sludge drying beds occupying a total area of 1645 m², where the faecal sludge is initially treated. Each day, sludge is spread on a separate sludge drying bed, resulting in a weekly feeding cycle. The dry sludge is removed and composed while the leachate from the sludge drying beds, as well as the leachate from the landfill, is fed into a feeding tank and then to two compartmental horizontal flow and four compartmental vertical flow constructed wetlands. The plant is designed to treat 35 m³ of septage and 40 m³ of landfill leachate per day.

The treatment plant at Pokhara is the largest constructed wetland in Nepal and it was built at a cost of Rs. 6 million (US\$ 85,700). The effectiveness of the treatment plant has not yet been monitored as it is still not fully operational. However, as experiences from other countries have shown that constructed wetlands can be used to treat faecal sludge, the treatment plant built in Pokhara can be a model for other cities if it is operated properly.

- Wastewater treatment is not a priority for city governments, private industrialists or institutions, due to the lack of strong legislation and standards.

The way ahead

The following steps should be taken to further promote decentralised wastewater management through constructed wetlands:

- As this technology is still relatively new, there is need for continuous research and development to test the viability of this system under various conditions, including applicability for different types of wastewater, effectiveness under different climatic conditions, and the use of different materials and plants. The performance of existing constructed wetlands should be carefully monitored and additional research is required to optimise design and minimise construction cost.
- Pilot projects should be conducted to experiment with the use of this technology for industrial sites that produce wastewater with a high organic content, such as slaughterhouses, dairies, breweries and food processing industries.
- Although constructed wetlands are low maintenance systems people often think they are no maintenance system, resulting in poor performance due to simple problems such as clogging of pipes. Therefore, all systems need to be regularly monitored and proper systems for operation and maintenance should be established.
- Local governments, as well as international organisations involved in the water and wastewater sector, should promote this technology by building local capacity and scaling up its application.
- Professionals and organisations involved in promoting CW technology should be given opportunities to conduct experiments, improve their skills, network with one another and disseminate their findings.

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8 Mapping as a basis for sanitation implementation in Pakistan: The case of the Orangi Pilot Project

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Abstract

In Pakistan, the Orangi Pilot Project - Research and Training Institute (OPP-RTI) and its partners use mapping predominantly in informal urban settlements. Mapping is part of OPP-RTI's wider approach to development, based on research and extension applied to support people in the informal settlements of Orangi Town in Karachi. Mapping started in 1981 to help people design local sewerage systems and has since been extended to mapping all major drainage channels and the entire sewerage system of Karachi. The production of maps is kept in-house at OPP-RTI and carried out by youths from informal settlements with low-tech and low-cost

technologies. Apart from helping one million people in Orangi and elsewhere in Karachi to gain access to safe sewage disposal, mapping has had profound repercussions on sanitation policy and practice in Karachi and elsewhere in Pakistan. The major factors for OPP-RTI's success in using mapping are linked to (1) the production of maps themselves, which is oriented at the capabilities of mapping agents in informal settlements, (2) the advocacy strategies employed including multiple channels of dissemination such as academia, media, CBO networks, informal contacts with government officials, etc and (3) to OPP's philosophy, which encourages critical assessment of past mistakes and internal learning processes.

¹ This case study is an abridged version of a report produced for WaterAid by Katherina Welle of ODI, *WaterAid Learning for Advocacy and Good Practice: Water and Sanitation Mapping in Pakistan*

Introduction

Rapid urbanisation left many in Pakistan's cities without access to basic needs, especially water and sanitation. This case study is about how a Karachi based NGO set out to address the multiple challenges involved in addressing the problems in meeting these needs; especially in how its approach is based upon:

- Separating responsibility between the community and the utility, and
- Conducting community-based mapping as a basis for advocacy and planning.

It draws on interviews with government officials, local politicians, donors, academia, the OPP-RTI and partners, and on a review of background literature including newspaper articles, published and unpublished reports and studies.

Extensive lessons are drawn on the activities of OPP, the impact of the activity is highlighted, as are the issues around scaling up.

Urbanisation and its repercussions

Since its foundation in 1947, Pakistan has undergone a rapid process of urbanisation. The urban population increased as a proportion of the total from 14.2% in 1941 to 32.5% in 1998 (Hasan & Mohib, 2003). In the same period, the population of Karachi, where OPP-RTI is active, has grown from around 436,000 to 9.8 million inhabitants (Hasan & Mohib, 2003) and to approximately 13 million in 2005 (Hasan, 2005). For a full appreciation of the rapidity of this urbanisation, there has been a 22-fold increase in less than 60 years.

With this rapid population increase a housing crisis emerged in Karachi that the government was unable to resolve. In the 1970s, an informal system of acquiring land evolved in Karachi. This involved "professional" land grabbers, who parcelled out vacant state land on the periphery of the city, based on the official pattern of planning. They sold small plots of land to people on low incomes for cash, without providing official documentation. As a result, all urban dwellers who acquired land informally do not have a legally recognised ownership of their plots. With the growing occupation of these informal settlements, known as *Katchi Abadis*, services such as roads, electricity, street-lighting, water supply and sewage disposal were partially extended to the areas through political "gifts" on an ad hoc basis.

Yet, the inhabitants of *katchi abadis* themselves have developed the majority of theoretically "public" facilities, including sewage disposal, water supply, schools and clinics, through self-help initiatives². These *katchi abadis* today accommodate approximately six million people, a little under half of all Karachi's inhabitants.

Since 1975, a policy of *katchi abadi* regularisation was adopted, aiming to formalise the leasehold of occupied plots and upgrade services. The Sindh Katchi Abadi Authority (SKAA) was created to facilitate the process but, despite temporary successes, regularisation remains cumbersome and slow with only 1.5% of *katchi abadis* being regularised per year (Siddiqui, 2004; Hasan, 2005).

As noted below, due to the lack of sanitation in the *katchi abadis* living conditions were grim, with

² In those 334 *katchi abadis* in Karachi, surveyed by OPP-RTI (out of a total of 539 *katchi abadis*), documentation shows that local charities and individuals have established some 1,041 clinics. This figure compares to the 12 government clinics and 773 schools that were built and run by private initiatives, and to 143 government-run schools (Rahman, 2004).

open drains carrying faeces. Sanitation was considered by communities as the priority issue. Before discussing the activities of OPP, the next section presents the context in which OPP was to operate.

Devolution and responsibilities for sewage disposal in Karachi

Pakistan is a federal state divided into provinces, rural districts/urban city-districts, rural and urban sub-districts/towns, and urban and rural union councils (UCs). A UC, the lowest administrative tier of an urban administration, covers between 25,000 - 100,000 people. Since 2001, Pakistan has been undergoing a process of devolution whereby the

mayors, deputy mayors and 21 councillors of the union councils are directly elected³. In Karachi, the city government has been subdivided into 18 towns comprising 178 UCs. Each town has between nine and 13 UCs and comprises up to one million inhabitants (OPP, 2005).

When it comes to sewage disposal in Karachi, the co-existence of formal and informal settlements, and the use of natural channels for sewage disposal in many areas has led to confusion over responsibilities between different government agencies. This resulted in a general negligence of sewage disposal. The official responsibilities of the different agencies, their sources of funding and the

TABLE 1 Responsibilities for drainage and sewerage by agency

	Areas of responsibility	Budget sources	Inconsistencies and problems
CDGK	- development of storm drains - any other functions that the government may assign	- taxes and levies - budget for sewerage passed on to KWSB	- dispute with KWSB on who is responsible for drains used for sewage disposal (until 2000)
Towns	- the same responsibilities as CDGK, within their geographical boundaries	- CDGK	- lack of coordination with UCs and CDGK
UCs	- identification of infrastructure development and maintenance within their jurisdictions, including sewerage and drainage	- CDGK, towns	- lack of technical capacity, human and financial resources and of information - weak coordination with higher tiers of local government
KWSB (former KMC)	- water and sewerage infrastructure development and maintenance across Karachi	- CDGK, service charges, special funds from provincial and national governments, foreign loans (until 2000)	- insufficient revenues - dispute with CDGK (see above) - dependence on federal/provincial government grants
SKAA	- training and support to town staff on infrastructure services in <i>katchi abadis</i>	- own resources	- still implementing rather than supporting infrastructure development in <i>katchi abadis</i>

Sources: OPP-RTI 2000, Interviews

³ In theory, non-party based candidates present themselves for election. However, growing pressure from dominant political parties at the local level has intimidated many independent citizens who, consequently, have not run for the most recent local elections in autumn 2005 (Interviews).

discrepancies and problems in fulfilling their roles are summarised in Table 1. However, much of that past confusion is now gradually being resolved.

Obstacles to coherent infrastructure development

However, there are a number of issues that were widely held to hinder the coherent planning, development and maintenance of sewerage and drainage infrastructure in Karachi.

Encroachment by other agencies: There is a tendency for agencies and individuals to intrude into the responsibilities of the City District Government of Karachi (CDGK) and the Karachi Water and Sewerage Board (KWSB), leading to overpriced, ineffective infrastructure development and to inefficiencies in management. Concerning the development of infrastructure, there is also substantial pressure from IFIs and bilateral donors wishing to carry out major infrastructure development projects. Such projects have proven to be based on unnecessary, expensive designs and overpriced contracts: leading to substantial increases in foreign debt, according to OPP-RTI's assessment (Source: Interviews by the author; Daily Dawn newspaper, 19 February 2006).

Lack of sanitation infrastructure information: Urban infrastructure maps, the essential basis for any coherent infrastructure planning, are generally lacking. Mapping efforts of the Survey of Pakistan and UNDP, for the Karachi Master Plan, have not been updated since the 1970s and mid 1980s respectively. In addition, informal settlements are generally neglected when it comes to infrastructure planning, and are not coherently captured in maps produced by government agencies (Interviews).

Lack of accountability: In the absence of information, clear responsibilities and funding, sewerage and drainage infrastructure development and maintenance in Karachi has been ad hoc and piecemeal. The lack of information about existing infrastructure, in particular, has opened the doors for corruption and wasted resources in large sewerage and drainage infrastructure projects. A powerful partnership between government officials, engineers and contractors resulted in substandard, yet expensive work. The problem underlying poor sanitation infrastructure in Karachi is, thus, not a financial one but rather the lack of transparent processes and systems.

It was these cumulative shortcomings that gave rise to the formation of OPP and to the specific methods that it adopted. The work of OPP and, in particular, its use of mapping as a planning and advocacy tool, is the subject of the remainder of this paper.

Mapping

The Orangi Pilot Project and a brief history of its sanitation mapping

OPP's sanitation mapping needs to be understood within the wider context of the Orangi Pilot Project (OPP). OPP was established in 1980 in Orangi, one of the 18 towns which form Karachi. Orangi is a *katchi abadi* of approximately 1.2 million inhabitants. The philosophy behind OPP is based on the concept of research and extension and consists of four steps: seeing, observing, learning and teaching. The objective of OPP is to:

- Understand the problems of Orangi and their causes
- Through action research, develop solutions that people can manage, finance and build

- Provide technical guidance and managerial support for implementation, and
- Overcome constraints that governments face in the upgrading of *katchi abadis*.

So, OPP does not itself carry out project implementation but promotes community activities and provides technical support to such initiatives, and to government bodies, in overcoming constraints to development. It acts as a resource and training centre that is open for community activists and government officials alike.

In 1980, participatory research identified sanitation as the most important problem in Orangi. To confront this, OPP developed a low-cost sanitation programme⁴. The methodology is based upon dividing responsibility between community and government as follows:

- “internal development” developed and built by communities (sanitary latrines in the house, underground sewers in the lane, neighbourhood collector sewers); and

- “external development” (main sewers, treatment plants) carried out and financed by the government (Hasan, 2005a; Rahman, 2002; Interviews)

This model, called internal-external component sharing, forms the basic principle of OPP's approach. It is further explained in Box 1 and Figure 1 below.

Over the last 27 years, OPP-RTI's approach has achieved enormous successes. In Orangi, nearly 100,000 households (representing approximately one million people) have now developed their own sanitation systems. Outside Orangi, another 40,000 houses in 11 other Pakistani towns have built their internal sanitation systems (Hasan, 2005a).

This has been possible because the approach has been replicated by CBOs and NGOs outside Karachi. Today, OPP-RTI has more than 30 partner organisations, which are linked through the Community Development Network (CDN), a regular

BOX 1 OPP's internal-external component sharing model

In OPP's model, the internal component for sanitation and sewage disposal stands for the construction and maintenance of sewage lines in primary and secondary lanes. As shown in Figure 1, a primary lane is a street of around 16 - 20 houses, which, at both ends, leads into a secondary lane. The secondary lanes connect to the main streets. Neighbours, with the help of community organisations and local social activists, organise themselves to finance, construct and maintain these sewerage systems. The internal component covers 70% of the total sewerage system. Figure 1 shows that, from secondary lanes, sewage is directed into main streets or natural channels and drainage systems. The sewage system at this level is called the

external component by OPP. It needs to be developed and maintained by the government.

The internal-external component sharing model is based on an understanding that the development of service provision in any given settlement does not start from a blank sheet. A certain level of service provision has usually been built up through self-help initiatives and ad hoc government interventions. People are willing to contribute to an improvement of service provision in their immediate neighbourhood but need technical and organisational guidance to make their efforts sustainable. Their work needs to be complemented by the government in those areas that cannot be sustained by individual efforts.

Source: Interviews with OPP-RTI

⁴ OPP supports the urban poor in improving their livelihoods. In addition to the low-cost sanitation programme, the organisation has developed four other basic programmes of housing, health education and credit for micro-enterprise (Rahman, 2002).

forum to exchange experiences. OPP-RTI's model of internal-external component sharing has also been taken up by international donors working in Pakistan and by one government agency, the Sindh Katchi Abadi Authority (SKAA). Over the years, the model has been adopted as a policy by two of the four provinces and, most recently, has been included in the national sanitation policy.

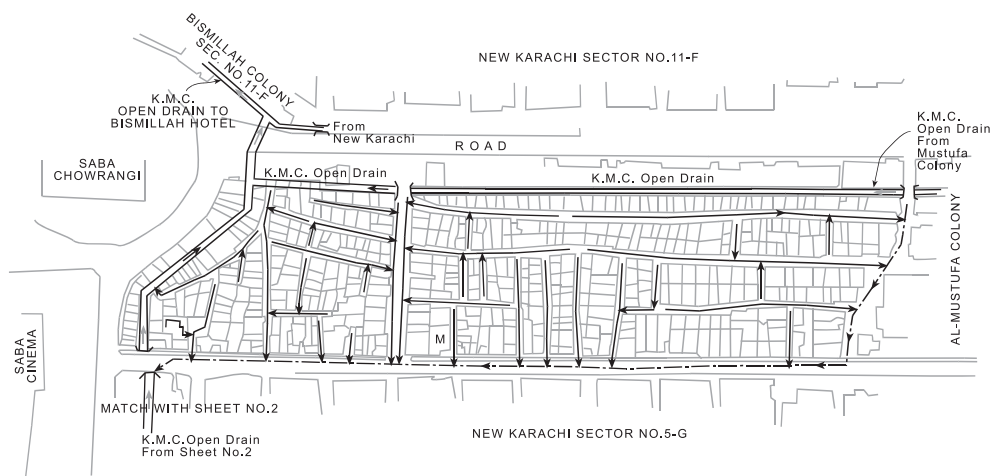
Objectives and target groups

The purpose of mapping is twofold. The first objective is to document the reality on the ground, and to reduce the cost of laying pipelines by developing low-cost designs and by linking up peoples' own efforts at the lane and

neighbourhood level. The immediate target groups for this are the people living in Orangi and other low-cost housing areas.

The second objective is to influence the government so as to supplement, rather than ignore, people's initiatives, and to reduce the corruption and waste of resources in infrastructure projects (see "Obstacles" section above). Mapped areas have expanded from maps of settlements to maps of Union Councils (UC), towns and the entire sewerage system of Karachi. Accordingly, UC mayors, CDGK and KWSB engineers and the International Financial Institutions (IFIs) are the other target groups of OPP's mapping activities.

FIGURE 1 Map of a settlement showing sewerage lines



KEY: Sewerage Lines Laid By People
Sewerage Lines Laid By Government

SCALE: 0 27.5 55 82.5 110 FT.



MAP SHOWING SEWERAGE LINES IN
ASHRAF COLONY

Sheet 1 of 2

Inputs

Mapping at OPP is an ongoing process, a service provided to *katchi abadis* and to the wider city for the development of a Karachi-wide sewerage system. The mapping department at OPP-RTI is the backbone of the organisation. OPP's sanitation mapping is a low-cost activity because the development of maps also serves as a training activity for young people in *katchi abadis*, and salaries at OPP are modest. OPP-RTI finances its core expenses through a yearly grant provided by international charities on an open-ended basis. Based on the calculation of time and material, OPP has recently estimated that the production of a Union Council Plan Book, covering a population of around 75,000 people and providing maps displaying different types of services, costs around PKR 10,000 (GB £100). This includes staff time and all the material needed for the production of related maps and statistics.

The **technical inputs** for sanitation mapping are oriented on the capabilities and conditions in the unplanned settlements. To produce a settlement map, all work is done by hand and only requires a drawing board, scales, paper and pencil. For more sophisticated maps of drains or larger proposals, plain tables (GB £20) and level machines (GB £250) are used. Since 2004, OPP has increasingly digitised hand-sketched maps with Autocad, a database software that can be obtained free of charge. Most recently, OPP has also started to use satellite images as a means of documenting neighbourhoods, downloaded for free using Micro Media Freehand software from Google Earth⁵.

The low technical inputs required for OPP's mapping methodology mean that the **human resources** required during the process are high. OPP's mapping department employs 15 people. Of these, six to eight mappers are supported through a Youth Training Programme (YTP) lasting between one to two years and the remaining people are employed on a permanent basis. The whole process of producing a map, which indicates the basic services of a settlement of around 500 houses, takes six to eight weeks. Producing a Union Council Plan Book takes around three months.

Sanitation mapping methodology and process

In OPP's model, sanitation mapping is the first step of a wider process leading to the development of a sewage disposal system in a settlement, a town or city.

Surveying and drafting: On average, a settlement comprises of 60-70 lanes with around 500 houses. A pair of students⁶ conducts the survey by "walking houses and lanes", taking measurements and sketching a "proxy-map" by hand. During this process, interested community members are informed about the rationale and process of mapping. Then, back at the office, the proxy-map is drafted - it is put into scale (Interviews).

Documentation of existing services: The students return to the settlement - this time documenting all existing water supply and sanitation services, their technical specifications, costs, state of functionality and who constructed them, based on

⁵ <http://earth.google.com>

⁶ Students may come from a variety of backgrounds. They include university civil engineering or architecture students but have in recent years predominantly been drawn from young men in the settlements themselves. The programme has thus provided these young people with skills for future employment.

information by local community leaders or CBOs. At this stage, the map and additional documentation is also double-checked by a supervisor. Back at the office, the existing sewerage lines are added into the map (see Figure 1 above).

Proposal development: For maps used by OPP-RTI to work with government agencies, a proposal is developed based on the existing map. This proposal consists of a number of suggestions for improvement of sanitation infrastructure, based on the status of the documented infrastructure and a cost estimate.

Various mapping outputs

The basic output of mapping is a **map of a settlement** and detailed maps of individual lanes displaying technical details for the construction of sewerage lines. This map is used as guidance for constructing the internal and external components of sewerage systems. An example for such a map is shown in Figure 1.

As sewerage systems in *katchi abadis* built through people's initiatives expanded, the need arose to focus on wider problems such as improving the main drainage systems cutting across different settlements, Union Councils and towns within Karachi. Accordingly, OPP started to map major drains and natural channels cutting across Orangi and other *katchi abadis* in Karachi.

The improvement of major drains brought the entire sewerage system of Karachi into the picture. OPP-RTI felt that, without the documentation of all natural channels and drains, which are the main means of disposal for sewage and rainwater in

Karachi, it would be impossible to develop a realistic concept of a city-wide sewage disposal system⁷. OPP-RTI therefore produced **city-wide maps showing all existing main channels and drains** and, based on this, developed detailed proposals with conceptual plans for Karachi's future sewage disposal. One such conceptual plan is shown in Figure 2 below.

With the devolution plan introduced in 2001 (see "Devolution" section above), OPP-RTI felt the need to support Union Councils in the *katchi abadis* of Karachi with their new planning and development tasks. OPP-RTI did so through the production of detailed maps showing the settlements and different types of social services in their jurisdictions. These so-called Union Council Plan Books contain seven maps showing (1) sewerage systems, (2) water systems, tanks and pumping stations, (3) schools and training centres, (4) maternity homes, health centres, clinics and hospitals, (5) playgrounds and parks, (6) solid waste disposal points and (7) religious spaces. The UC Plan Book also contains detailed statistical and technical information, and a proposal for each UC concerning possible repairs and upgrading of the sewerage system.

In addition, OPP-RTI has produced maps of various towns in Karachi, and its partner organisations have developed maps of other towns in Pakistan. In total, around 650 maps have been produced by OPP-RTI and its partners, with OPP-RTI's guidance.

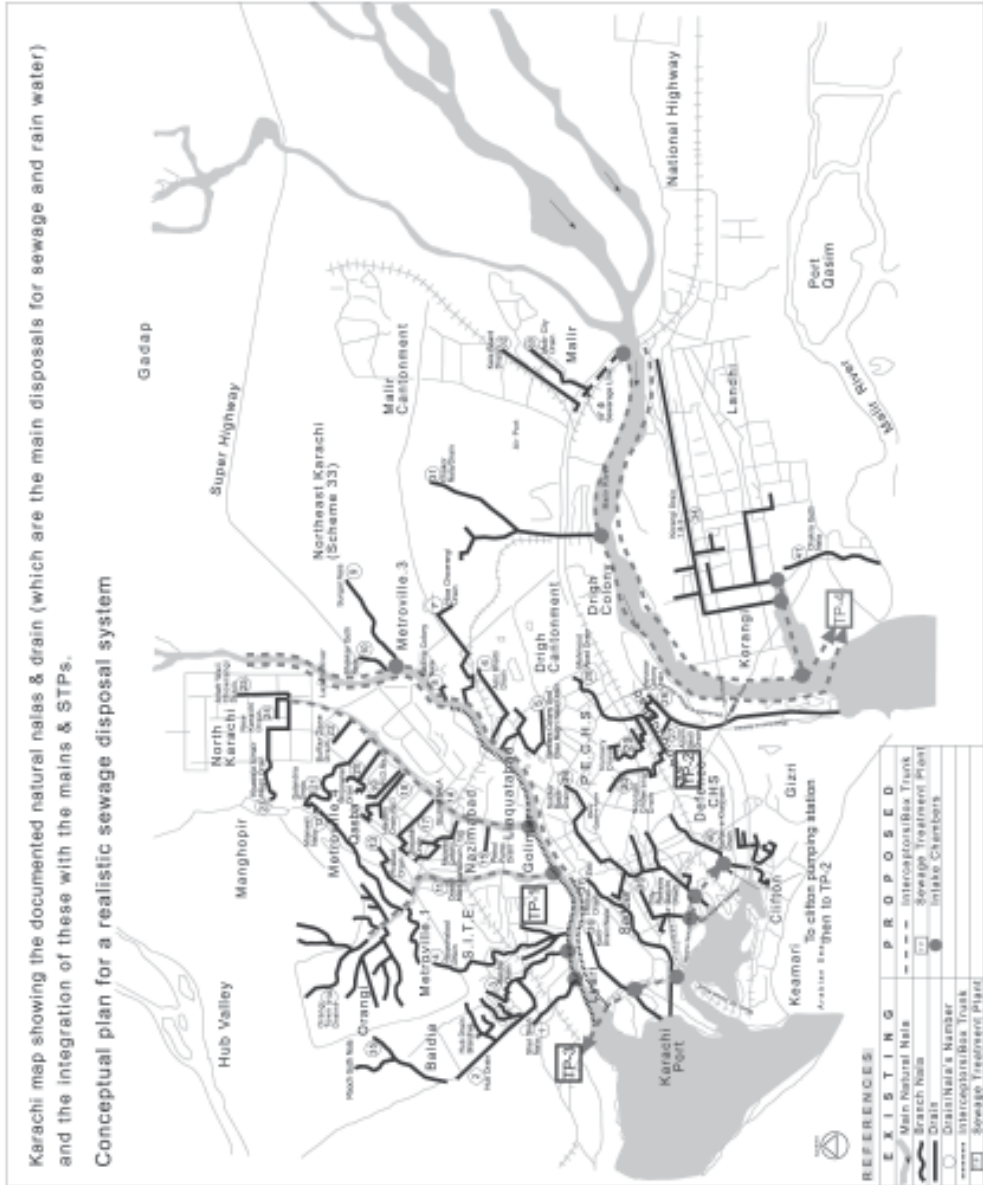
Use of mapping and its political repercussions

The internal-external component sharing model, advocated by OPP-RTI, has had repercussions on

⁷ The model of converting open storm drains and natural channels into covered box trunks carrying sewage was highly disputed on technical grounds when first proposed by OPP-RTI. However, over time, OPP-RTI has been able to convince the different government agencies of its technically sound approach by providing examples from other countries (ie Japan) where this system is common practice.

FIGURE 2

OPP-RTI map showing natural nalas and drains in Karachi



S.NO.	NAME OF DRAIN/NALA	LENGTH (M)
1.	Natural nala no 1 to 35 dispose into the Arabian Sea from the city	8803
2.	Hub Drain + Branches	38438
3.	Baida Nala/Drain	15715
4.	Heronabad Drain	25989
5.	Wellbore Colony A&B	18871
6.	Easa Nagar Nala/Drain	13858
7.	Ariz (Shahi) Drain	15588
8.	NIPA Chawangi Drain	1088
9.	Madina Colony Nala	8680
10.	Sargal Nagar Drain	3585
11.	Shakar Goth Nala	38258
12.	ORANGI NALA (Change to level drain)	94234
13.	Orangi Town Drain/Nala to beach	11258
14.	Mariwala Colony Nala	5558
15.	Parachaymalabad Drain	48888
16.	GOJAN NALA	3358
17.	Majid Colony Drain	12588
18.	Zaidi Hospital Drain	7888
19.	Haidary Drain - 1	8888
20.	Haidary Drain - 2	7888
21.	Shimron College Drain	6578
22.	Qalandari Drain	17288
23.	Barfar Zone Drain	1588
24.	Khanja Amir Nagar Drain	5888
25.	New Karachi Drain	2588
26.	Alam Wali Chowangi Drain	18588
27.	Masrur Colony Drain	11788
28.	Arzon Basti Drain	1758
29.	Mahmoodabad Drain Nam	13488
30.	Norway Drain (municipal)	6075
31.	Norway Chowangi Drain (house nala)	15958
32.	Chakor Nala/Drain	23888
33.	Kale Road Drain	9358
34.	Malir City Drain	9558
35.	Korangi Drain 1 & 2	48486
36.	Norway Drain 3 & 4 dispose into the lake water and drain into the sea	23588
37.	Malir Drain / Nala	94234
38.	Picher Drain	12124
39.	City Railway Station Drain	18825
40.	Saidi Bazar Drain + 4 Branches	48888
41.	Mir-e-Khasam Drain	5828
42.	Orangi Drain Nala	7888

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the planning, operation and maintenance of infrastructure, and on the relationships between local communities, NGOs and the government throughout Karachi. Using maps has played a crucial role in this process. In general, maps documenting the existing infrastructure and people's efforts have brought to the fore what was previously invisible and therefore conveniently ignored by government officials and contractors. OPP-RTI has identified a variety of stakeholders at different levels for exerting political influence through the use of maps.

Use by communities

When working with communities, OPP-RTI has mainly used settlement maps (see Figure 1) illustrating the individual lanes and infrastructure specifications (material inputs and designs) to assist them with the development of the internal sanitation component. Starting from the early 1990s, the maps have mainly been produced by youths from these settlements. The mapping process itself thereby also has the positive side effect of providing many local youths with additional skills and livelihoods.

In addition to the settlement maps, OPP-RTI provided the communities with maps depicting the design and specifications of main sewer lines. These maps enabled community members and CBOs to monitor the construction of the external sanitation component in their neighbourhoods, making the relationship between dwellers in informal settlements and local government representatives more equitable.

Use by different government agencies

The Sindh Katchi Abadi Authority: The Sindh Katchi Abadi Authority was the first government agency

to take on the approach. In 1994, the agency adopted the internal-external component sharing model as a policy. In the same year, SKAA hired OPP-RTI as a consultant to document the existing sanitation and water supply infrastructure in the settlements, and to supervise the process of upgrading. In the process, as many as 150 *katchi abadis* were documented, which represents more than a quarter of all *katchi abadis* within Karachi (Hasan, 2005b). With the help of maps provided by OPP-RTI, the authority was able to identify particular areas for regularisation and to set priorities - in cooperation with the communities - in upgrading based on the already existing infrastructure. Based on mapping, the agency has been able to substantially speed up the upgrading process. In addition, the existing maps of *katchi abadis* have provided their inhabitants with a negotiation tool for future infrastructure development (Interviews; Ismail, 2004; OPP, 2005)⁸.

The Karachi sewerage agencies: According to various chief engineers at CDGK and the deputy Managing Director of KWSB, both agencies use OPP-RTI's maps regularly. They mainly rely on OPP-RTI for maps of *katchi abadis*, of which they have no documentation of their own, and for maps of the major natural channels and drains, as well as the entire drainage system of Karachi. The close collaboration between OPP-RTI and the city government is best illustrated by CDGK 's recent invitation for OPP to become part of a focal group on the development of natural channels and drains throughout Karachi. The collaboration is based on a proposal for a Karachi-wide sewage disposal system by OPP-RTI, taking existing natural channels and storm drains as a starting point. Converting these channels into covered box trunks, rather than creating a parallel system has considerably reduced

⁸ Yet, this process has slowed down again since SKAA has a new director. In addition, the role of the organisation has changed with the recent decentralisation process in Pakistan.

the total cost of sewerage development; thereby making CDGK less dependent on foreign loans.

Yet, the relationship between OPP-RTI and the major agencies responsible for sewerage and drainage across Karachi has not always been so good. Rather, it has developed very slowly over time. OPP-RTI's growing documentation of the success of its own approach in working in *katchi abadis*, and its documentation of failures of IFI supported projects, slowly built up a body of evidence that could no longer be overlooked.

Union Councils: In Karachi, UCs have very limited technical personnel/support and information about their newly created governance areas. To support the newly elected local mayors, OPP has developed the UC Plan books described above. Some mayors have used the mapping and statistical information to make decisions about infrastructure projects in their areas.

The development of a national sanitation policy: An important demonstration of OPP-RTI's subtle influence on sanitation policies in Pakistan is the current formulation of a national sanitation policy. The Government of Pakistan appointed Arif Hasan (Chairman of OPP-RTI and the Urban Resource Centre) as the national consultant to draft the document. The policy relies heavily on OPP's model for implementing sanitation (MoE, 2006). This includes mapping as a fundamental step before any intervention, and the sharing of internal and external infrastructure development between citizens and the government. While this does not mean that the OPP model will automatically be adhered to in the future, this is an important step to further strengthen the influence of OPP-RTI's approach to sustainable sanitation development.

Policy repercussions in summary

1. Documenting of *katchi abadis* brought people's involvement and investment in sanitation development to the fore. As a result, planning agencies and local government responded to the need to support, rather than duplicate, people's efforts.
2. People have acquired skills and knowledge that allow them to engage in a more equitable relationship with government agencies, to improve their settlements and to build local institutions.
3. The documentation of infrastructure provides the foundations for bringing into question government and IFI planning policies and development projects, and for promoting viable alternatives based on a sound knowledge of ground realities.
4. Through the extensive documentation of sanitation infrastructure throughout Karachi, OPP-RTI's concepts have been reinforced by statistics and maps. This has increased its standing and credibility over the period of more than 25 years. Today OPP-RTI's guidance on sewerage and *katchi abadi* upgrading is sought after at national, provincial, city and community level.

Replication of OPP-RTI's component sharing model

The OPP-RTI sanitation model has been replicated by many CBOs and NGOs inside and outside Karachi, as well as by various donor and government programmes in Karachi and throughout the country⁹. Not all attempts have been successful, and OPP-RTI has learned a number of lessons concerning which factors are likely to lead to successful replication.

⁹ CBOs and NGOs replicating OPP-RTI's sanitation model, generally receive financial support for their administration and overhead costs from WaterAid.

Factors for successful replication

Supporting organisations with local roots: For any organisation that wants to take on this sanitation model, it is important for it to have close relationships with the community it aims to serve, as well as an ability to establish dialogue with local government. Therefore, OPP-RTI has seen most successes with neighbourhood-based organisations, initiatives and activists that want to bring about changes to their areas and already has experience in dealing with local government bureaucrats and politicians.

Building a team with social organisation and technical skills: It is important to develop social organisation, technical mapping, construction supervision and accounting skills within the team that approaches OPP-RTI. Hiring a technically skilled person has led to high staff turnover, with the organisation repeatedly having to start from scratch. A crucial skill that the organisation needs to develop in-house over time is the preparation of maps. In this sense, OPP-RTI has also found it important to match the technology used with the skills of the people employed.

Allowing for institutionalisation based on a continuous engagement with OPP-RTI: The process of developing a programme based on the component-sharing model can be cumbersome, and requires patience and the commitment to a long-term engagement by any CBO/NGO. During this process, it is important that the organisation regularly documents and reviews progress, assesses weaknesses and how to overcome them. OPP-RTI can best support the organisation in this process if it stays in close contact with OPP-RTI for advice and training on accounting, reporting, research and monitoring.

Transparency in account keeping and resistance to large donor funding: Over the years, OPP-RTI has seen a number of NGOs collapse after accepting substantial donor funding while still immature. Along similar lines, transparency in account keeping has proven to be a major factor for trust in the organisation.

Dealing with the conditions of the sewerage systems in place: When OPP-RTI started sanitation mapping in Orangi Town, the conditions of the existing sewerage systems were such that new lines could easily be connected to the existing main sewers. In other towns, though, this is not always the case. Where disposal points for sewage are not available through natural drains or existing sewers, “external” development by the government needs to precede “internal” development. This is a more difficult task since it requires negotiation with the local government before commencing work with communities.

Lessons from OPP-RTI's approach to mapping

OPP-RTI's mapping documentation is being used by community activists, CBOs and NGOs, mayors and government agencies alike. The documentation of existing infrastructure has led to significant policy repercussions including the government's withdrawal from IFI-funded sanitation infrastructure projects in Karachi. Most impressively, OPP-RTI has, at least in some cases and increasingly so, managed to change people's mindsets about development and the informal institutions governing these processes until then. It has been instrumental in making apparent the reality on the ground - in this case the existing infrastructure created by people's efforts - and in building on this existing reality rather than ignoring it. Through its development proposals, OPP-RTI has not only

managed to get this alternative reality accepted by all major government agencies, but has also been able to considerably improve the process of development. Based on OPP-RTI's proposals, corruption is reduced and through a process of continuous monitoring of works through CBOs, sub-standard construction is diminished. In a mega city whose population in 2006 was approximately 13 million inhabitants, this is a considerable achievement. The changes brought about by OPP-RTI's mapping are well summarised in the phrase used recently by a high-ranking government official in Karachi that "a map is for a planner what an x-ray is for a doctor" (Interviews).

There are a number of reasons that explain OPP-RTI's success in sanitation mapping, which can serve as lessons for other organisations wishing to replicate its model.

Evidence

The production of evidence is a basic ingredient to change a policy process. For evidence to be taken up, it must be trustworthy, readily understandable and easy to produce by those who intend to use it. The following examples highlight some factors that have made OPP-RTI's mapping process very successful.

Technology compatible with capacities: The technical inputs used by OPP for mapping are low-cost and low-tech. They therefore stand in a direct relationship with the skills available in the settlements where the organisation works. The organisation is very cautious when it comes to introducing new methodologies but does not close its eyes to new developments. One example of this is the recent introduction of satellite images, which considerably shorten and simplify the mapping process.

Who creates maps, matters: In Karachi, various government agencies have produced maps showing sanitation infrastructure. Yet, maps produced by KWSB for the Korangi Waste Water Management Project in the 1990s only showed the infrastructure put in place by KWSB. Infrastructure put in place by local people and other agencies, in contrast, was completely ignored. This means that 'who maps, matters'. A map will always reflect the concern of the mapping agent. OPP-RTI, therefore, produces all its maps in-house and has introduced a thorough process of cross-checking all information documented to ensure that mapping information is accurate and comprehensive.

Time and consistency is important: OPP-RTI has gained trust and strength through a coherent approach that it has continued to promote for more than 25 years. The internal-external component-sharing model itself has taken on an internal dynamic, where the people that OPP mobilized have become promoters of OPP's approach.

Through mapping, OPP-RTI brought people's efforts in their own services to the surface. Through its technical advice, it helped to expand these services, which it then documented again. Over time, this alternative reality has grown immensely. In Karachi alone, 60% of all informal settlements and all major drains and natural channels have been documented. Now, OPP-RTI's documentation has increased so much that it cannot be overlooked any more. In addition, it has become much easier for OPP-RTI to reach government officials in recent years because a number of engineers, who have been working with OPP-RTI for more than 15 years, have now been promoted to high-ranking positions in government.

Continuous and thorough documentation: In thorough quarterly reports, OPP has documented

all its steps, reflections, failures and achievements since it began more than 25 years ago. These reports provide a rich source of information about the entire process surrounding the component model, including mapping. In addition, OPP-RTI and others have published numerous reports dealing with different aspects of OPP-RTI's approach and people's engagement in their development.

Links

Communicating evidence to target audiences and stakeholders is another important element for changing policy processes. Established practices are generally supported by special interests and changing them involves attacking existing preferences. Thus, communicating evidence effectively and creating networks of support for new practices, is crucial in this process.

Building up support networks: In the beginning of its engagement in sanitation, OPP mainly collaborated with engineers working in Orangi settlements. With the two main government agencies responsible for sanitation, KWSB and CDGK, it first established contact with the sewerage and drain maintenance wings. Personnel in these departments were confronted with the same shortcomings of the existing infrastructure as the people living in *katchi abadis* and were therefore more ready to listen. In addition, OPP-RTI also built up its own support networks from among CBOs and NGOs working on similar issues. It was, for example, instrumental in establishing the Urban Resource Centre (URC), a watchdog institution that investigates and provides information on city-wide issues ranging from sanitation to transport and

the defence of public spaces¹⁰. The URC was thus consciously established to address a wider audience at city-wide and international level. The Community Development Network, in turn, which is made up of OPP-RTI's partner organisations, serves to exchange experiences and create a public space for those CBOs and NGOs supported by OPP-RTI.

Using multiple channels for communicating information: OPP uses a variety of communication channels to promote its messages, including local and national media. OPP's chairman and befriended journalists regularly publish opinion pieces revealing shortcomings of infrastructure projects in major national newspapers¹¹. In addition, the director and chairman of OPP promote OPP-RTI's approach through their university teachings and academic publications. Furthermore, OPP-RTI's director is regularly invited to present at the School for Public Administration where all government employees are trained. OPP-RTI also receives delegations of government representatives, NGOs, academia and donors from all over and beyond Pakistan.

Employing different means of communication: OPP-RTI is very conscious of the importance of presenting evidence effectively to make it understandable and accessible to different audiences. To communicate with community activists, it produces information leaflets and posters as well as holding meetings; it reaches out to government officials and professionals through presentations at their own training institutions and through university teaching, various publications and maps; the wider public is

¹⁰ <http://www.urckarachi.org/home.htm>

¹¹ See for example: Daily Dawn (19 February 2006): IFI Loans and the Failures of Urban Development, by Arif Hasan

engaged through video production, pamphlets and newspaper articles; and in academic circles, articles and books reflecting on OPP's approach, as well as teachings, spur discussions.

Context

The wider political context greatly impacts on how readily new evidence is adopted. Some policy processes are defined as more 'closed' than others, thereby making it difficult for new evidence to be taken up. In the case of sanitation mapping, for example, the informal institutions surrounding the distribution of land and services in informal settlements serve important personal interests, and is therefore difficult to reform.

Ability to adapt to changes: The latest local elections in Karachi, which form part of the official devolution policy in Pakistan, have brought militant groups to power in many informal Karachi settlements. Since their election, mayors supported by these groups have strongly discouraged any independent interventions by CBOs and NGOs in their jurisdictions, which has considerably closed the political space where OPP-RTI operates. Yet, OPP-RTI is able to take on a wait-and-see approach since it is not pressured by short-term advocacy objectives. Furthermore, its function as a resource centre, and its well established contacts, lead to UC mayors continuing to approach OPP for support.

OPP-RTI's approach to development

In addition to the above mentioned factors for OPP-RTI's successes, there are some aspects that differentiate OPP from many other development organisations.

Firstly, OPP's approach of seeing, observing, learning and teaching is fundamentally different from the approach followed by typical development organisations. OPP-RTI acts effectively as a resource centre and does not provide funding for implementation. This function puts it in an ideal situation for producing and providing mapping evidence. Because mapping is OPP-RTI's core activity, updating information is not a problem.

Secondly, OPP-RTI's success is closely linked to the people working at the organisation. Most OPP employees have never left the organisation, thereby accumulating an impressive wealth of information, skills and contacts. This high retention rate helps to retain the spirit of development as a process of self-help, and commitment to transparency and accountability towards people.

Lastly, the process of continuous and self-critical engagement with its own work is a unique characteristic of OPP.

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A grayscale photograph of a woman and a young child standing in front of a small, open wooden structure, which appears to be a rural toilet facility. The woman is smiling and wearing a light-colored shirt with a dark sash. The child is also smiling and wearing a light-colored shirt. Inside the structure, a toilet is visible. The background shows a rural setting with trees and other buildings.

Rural sanitation

Rural sanitation

9. School Led Total Sanitation: A successful model to promote school and community sanitation and hygiene in Nepal

– S ADHIKARI AND N L SHRESTHA

10. India's national sanitation and hygiene programme: From experience to policy West Bengal and Maharashtra models provide keys to success

– S C GANGULY

11. Community Led Total Sanitation Approach: Some personal experience from Bangladesh

– E HUDA

12. BRAC WASH Programme

– B KABIR, T A HUQ, R KARIM AND M RAHMAN

13. Sustainable Community Owned Total Sanitation

– A Kalimuthu

14. School led sanitation promotion: Helping achieve total sanitation outcomes in Azad Jammu and Kashmir

– F KHAN, R T SYED, M RIAZ, D CASELLA AND V KINYANJUI

15. Community Led Total Sanitation in Pakistan

– S N KHISRO, M AHMAD, M YOUNA, M N TAHIR AND M KHAN

16. Promoting sanitation through decentralised governance: A case study of Rajukhedhi Panchayat in India

– S KUMAR AND Y KUMAR

17. Preventing corruption, encouraging transparency and accountability in the water and sanitation sectors: A case study from Kerala, India

– K MATHEW, S ZACHARIAH AND R JOSEPH

18. "Money down the pan?" Community level models for financing sanitation in rural Nepal

– L D PRETUS AND O JONES

19. The reuse of human excreta in Bangladesh

– A R QUAZI AND R ISLAM

20. Moving up the sanitation ladder: A participatory study of the drivers of sustainability and progress in Community Led Total Sanitation

– S SHAYAMAL, M A KASHEM, S M RAFI, EDITED BY P RYAN

School Led Total Sanitation: A successful model to promote school and community sanitation and hygiene in Nepal

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Abstract

A history of inadequate intervention in sanitation and hygiene, and the resultant low coverage level, has left Nepal with much to do to reach the national target of 100% latrine coverage by 2017. The recognition that children can act as change agents, allied with the success of School Sanitation and Hygiene Education (SSHE), led UNICEF Nepal to develop School Led Total Sanitation (SLTS), where open defecation free areas are achieved with school children in a leading promotional role. The paper shows how SLTS has had very promising results to date and paves the way to speed up the process of intensive latrine coverage in school catchment areas.

Context

There's no recorded history of latrine and hand washing coverage or any sanitation and hygiene promotion efforts in Nepal being made before 1980. In the UN-declared International Drinking Water Supply and Sanitation decade (the 1980s), however, breakthroughs were made in the area of water supply. Although the declaration advocated to some extent on sanitation and hygiene, little progress was made in this area.

In 1987, UNICEF partnered with the Nepal Department of Water Supply and Sewerage (DWSS) to design and implement a water supply and sanitation programme. Then, in 1994, the Nepal Government formulated sanitation policy that aimed to promote sanitation throughout the country. After a number of efforts which were made in the sector, a national baseline survey of 1994 reported increased latrine coverage of 12%. That compares to 6% latrine coverage in 1990.

In 1998, a national level sanitation steering committee was established bringing together government agencies, donors, inter-governmental organisations (INGOS), non governmental

organisations (NGOs), and relevant organisations. In the succeeding year, a Basic Sanitation Package (BSP) was developed and implemented in most water supply districts of Nepal. Since 2000, National Sanitation Action Week (NSAW) and SSHE programmes were introduced. Both programmes are generating good results in the hygiene and sanitation sector. The SSHE programme is now used in over 1,000 schools in Nepal. The aim is to focus attention on child-friendly, gender-sensitive and disability-friendly water, hygiene and sanitation facilities.

Acute Respiratory Infection (ARI) is the leading cause of death with approximately 10,900 under-five child deaths per year and diarrhoea is the second major cause of death in Nepal (MoHP, 2006). Most affected from such vulnerability are poor, disadvantaged and rural-based people. Approximately 38% of Nepalese live on less than one US dollar a day.

Most poor households have little or no access to hygienic sanitation and clean drinking water facilities. An estimate of the annual economic loss due to the lack of improved facilities is between 4-10 billion Nepalese Rupees (\$57-143 million). This includes costs for increased illness and expenditure on health, lost time for productive work and reduced tourist revenues due to environmental degradation (UNICEF, 2000).

The coverage of latrine and water supply in Nepal is between 46 and 76%. Despite the increasing coverage, where facilities are not available suffering remains immense. In some cases, girls and women have been susceptible to sexual violence due to lack of latrines. Unsafe menstrual care in the absence of latrines and inconvenient or mistimed defecation/urination puts girls and the health of women at serious risk.

In schools, latrine inaccessibility is known to lead to increased drop out rates among girls. Despite this, and possibly because of the sensitive nature of issues such as defecation and menstruation, the poor health and hygiene situation has not yet received attention to the extent that is required from policy makers, development programme implementers and communities. Even among those concerned, varied support levels exist and these lead to scattered intervention in sanitation and hygiene.

Nepal is committed to fulfil the sanitation target within Millennium Development Goal (MDG) seven. There is a national goal to reach 100% sanitation by 2017. To reach this, Nepal has a lot to do. Specifically, work needs to be done to build on previous efforts, speeding up the process, scaling up initiatives, and incorporating large numbers of disadvantaged groups into the sanitation and hygiene target population.

In this demanding context, a more rapid approach to scaling up sanitation impact on communities was required. So, in 2005, a pilot project entitled SLTS was initiated in coordination with Government and other concerned partners. It recognised the potential crucial role that children can play as agents of change in sanitation and hygiene. The model builds on the achievements of a programme called SSHE. It integrates the reward and revolving fund aspects of Basic Sanitation Package (BSP) and the participatory tools and techniques elements of Community Led Total Sanitation (CLTS).

The main objective of SLTS is to build on children's awareness of better sanitation and hygiene practices gained through the SSHE programme. This enables them to promote better practices in joint efforts with community organisations/groups

and adults in their school catchments/settlements. This will lead to the eradication of open defecation, through the construction/use and maintenance of latrines by 100% of households/institutions.

The five specific objectives are:

1. 100% coverage of latrines in the programme intervention areas and eradication of open defecation.
2. Enhance personal (focusing on hand washing with soap), household and environmental hygiene and sanitation facilities and behaviours.
3. Empower children in development activities, thereby enhancing their personality and leadership.
4. Increase ownership of school and community in hygiene and sanitation activities.
5. Maintain sustainability of hygiene and sanitation facilities and behaviours through school-community partnership.

The SLTS programme, which started in 2005, is underway in 15 UNICEF supported Decentralised Action for Children and Women districts of Nepal. The programme's areas encompass around 60,000 households and 300,000 people, centring upon actions in 200 schools.

The purpose of this report is to document progress made to date and to highlight successes, challenges and issues for scaling up.

Implementation of SLTS programme

Introduction to actors

The institutional arrangement for the SLTS programme was developed with four tiers of

committees at national, regional, district and school/community levels. The National Steering Committee for Sanitation Action (NSCSA) is the most active with a task force dedicated to the SLTS programme's design and facilitation. The NSCSA itself comprises 25 active government bodies, NGOs, INGOs and donors, including a number in the private sector.

The model is a decentralised one which has led to the establishment of the Regional Sanitation Steering Committee (RSSC), District Sanitation Steering Committee (DSSC), and sanitation sub-committees and child clubs. The DSSC implements, monitors the SLTS programme in the field and reports to NSCSA on its achievements and key learning. DSSC manages, mobilizes and supervises the school-based child clubs and sanitation sub-committees.

There are 162 child clubs in 162 schools and sanitation sub-committees carrying out preparatory work, ignition/implementation and self-monitoring/follow-up of the SLTS programme in the school and community. There are also a number of local level networks and bodies involved. These include: school management committees, parent teacher associations, Village Development Committees (VDCs), women cooperative groups, community-based organisations/clubs and volunteers. They're all playing an effective role in local level community mobilisation, awareness generation, as well as the programme's implementation and monitoring.

How the sanitation promotion was done

SLTS programme interventions have been made at three phases:

1. Preparatory phase
2. Ignition/implementation phase
3. Follow-up phase

Sanitation sub-committee and child clubs took the lead on most activities with support from school teachers, school management committees, parent teacher associations and community-based organisations.

In the preparatory phase, DSSC selected schools in which an SSHE programme had been in operation for at least one year. The selection is made based on demand and need. The DSSC/implementing organisation collected demands, carried out a feasibility study and assessed eligibility to select potential schools. Then DSSC and implementing organisations started building rapport with and briefing schools and communities.

With the guidance and support of an implementing agency, schools and communities identified the school catchment area, reformed child clubs and established sanitation sub-committees to implement the SLTS programme activities. Simultaneously, preliminary agreements were made with child clubs and the committees for SLTS promotion. The sanitation and hygiene situation of the school catchment areas were assessed. Households with access to latrines and those lacking access to them, along with defecation areas, were identified and recorded. Social and sanitation mapping were developed. Subsequently, child clubs, sanitation sub-committees, along with school teachers, jointly developed a SLTS action plan. Various VDCs and community level orientations and training were provided to child clubs, sanitation sub-committees, teachers, facilitators, volunteers and community mobilizers.

In the ignition and implementation phase, children used participatory tools and techniques to raise community awareness of improved sanitation and

hygiene. Children conducted walks of praise, planted flags indicating open defecation areas, calculated the amount of faeces produced by people in the area and prepared local resource maps indicating the existence of latrines. Door to door visits were organised and information boards erected to raise awareness.

Open defecation was stopped and latrine construction efforts initiated. A financial resource generation mechanism was set up at local level. Sanitation and hygiene promotion brochures were developed. Rules and regulations on sanitation and hygiene practices were formulated with details of penalties and rewards. Fundraising programmes generated financial resources at a local level. Special campaigns including National Sanitation Action Week (NSAW) were held. Video documentaries were shown at special events. Exchange visits of child club members were arranged and creative activities organised in communities and schools. Latrines were demonstrated in communities and were then constructed in households. When all school catchment area households constructed latrines and people stopped open defecation, the school catchment areas were declared No Open Defecation.

Through the process, 75 school catchments, 25 settlements and four VDCs were declared No Open Defecation areas. Another 125 school catchments are in the process of declaration.

The “follow-up” phase starts after the declaration of No Open Defecation areas. The eligible school catchment area is rewarded and recognised. Monitoring and evaluation activities are carried out frequently in the recognised school catchment areas. Reporting and documentation is undertaken and shared with concerned stakeholders. During

this period, focus is given to community latrine upgrading and behavioural changes on latrine use, as well as cleanliness, maintenance and hand washing with soap practices.

Critical concepts (main principles used in the SLTS process)

The SLTS programme aims to bring total sanitation (100% Open Defecation Free) in targeted school catchment areas which are made up of identified settlements and clusters. Incorporating the approaches and tools of School Sanitation and Hygiene Education, Community Led Total Sanitation, Basic Sanitation Package into the School Led Total Sanitation model has further enhanced the prospect of achieving total sanitation and sped up the steps of reaching the MDG and national goal of achieving 100 per cent latrine coverage by 2017.

The underlying principles and contributing activities are mentioned here-below:

Positive management of stakeholders

The SLTS programme adopted a “strength-based appreciative” approach to promote sanitation and hygiene at a local level. For example, a “praise walk” has been used instead of the “shame walk” as an ignition tool to motivate communities to construct latrines. Instead of getting communities to construct latrines with insulting and shameful enforcement, the approach was to encourage communities to be motivated and emulate the toilet construction.

Local to central level stakeholders have played their respective roles to achieve set targets of SLTS in an appreciative and positive way. Schools and communities have managed entire programme

phases, from planning to monitoring and evaluation. Child clubs/Sub-committees, including students themselves, led on organising most of the local level activities. Other local and district bodies are supporting construction of latrines and generation of awareness on better sanitation and hygiene practices. As mentioned earlier, the district level stakeholders have designed, planned and supported programme activities. The constructive efforts have boosted morale, optimism and conviction among stakeholders.

Adoption of participatory approaches

Established useful participatory tools and techniques, especially Participatory Rural Appraisal (PRA) and Participatory Hygiene and Sanitation Transformation (PHAST) tools, have been used. For example, social/latrine mapping was carried out with the participation of communities locating sites of open defecation. Using a participatory approach, defecation mobility maps were designed to trace contamination patterns from open defecation and unhygienic water sources. Flow diagrams have been developed to trace the transmission routes of diseases. The diagrams were used to help the community calculate how many grams of faeces they produced and subsequently consumed, through the transmission routes, each year. The community also worked out how many baskets/trucks of faeces they produce each day/month/year. They placed coloured flags in open defecation areas. Flags are taken away after open defecation is completely stopped. The complete removal of all the flags from the community indicates it has become Open Defecation Free.

A participatory monitoring system has been used to monitor the progress of the SLTS programme both at school and in the community. To help the

process, a planning, monitoring and evaluation pocket chart has been used. Sanitation sub-committees and child clubs, with support from facilitators/women groups or action groups, have monitored the school and community on a weekly and monthly basis.

Partnership building and integration with related programme

As mentioned earlier, the programme has focused on joint and coordinated efforts. A National Steering Committee for Sanitation Action at a national and District Sanitation Steering Committee at a district level are building alliance from their respective positions. Similarly, SLTS has mobilized teachers, school management committees, parent teacher associations, women groups, health volunteers, local clubs and community-based organisations to build school and community partnerships led by child clubs and sanitation sub-committees. The enhanced partnership has supported the ignition/implementation of the SLTS programme at great length.

Moreover, SLTS is working to promote public, private and community partnerships in order to achieve No Open Defecation at school catchment areas and VDCs. Less advantaged families residing in the localities have received community support in order to achieve Open Defecation Free status.

The SLTS programme is integrated with water supply schemes and other related programmed such as those in education, environment, health and nutrition.

Capacity building of stakeholders

Orientations and training on SLTS concepts, strategies and approaches were held at local,

district and national levels. The local level stakeholders who receive the orientations/training are:

- Child clubs
- Sanitation sub-committees
- School management committees
- Parent teacher associations
- Community level frontline workers
- Volunteers
- Facilitators
- Natural leaders
- VDCs
- Community-based organisations.

District stakeholders, including District Sanitation Steering Committees, also received similar orientation. The stakeholders are also provided with support to enhance their capacity in planning, monitoring and evaluation of the SLTS programme. A National Steering Committee for Sanitation Action (NSCSA) visits areas where the programme is implemented, facilitates stakeholders, documents the implementation process, prepares reports and shares learning with central level organisations.

All child clubs and sanitation sub-committees are comprised of around 50% girls or women members. In some school catchments, women groups and cooperatives are active in supporting programme implementation.

Advocacy and social mobilisation

The SLTS programme has set criteria to select and organise tiers of facilitators at school/community and district level. Sanitation sub-committees and child clubs are the main facilitators working on the ground. Additionally, child clubs and sanitation sub-committees have mobilized local community-based organisations, indigenous groups such as mothers'

groups, ex-army groups, saving and credit groups and farmers groups in community.

The sanitation sub-committee is comprised of seven to 11 members. The members include a school headmaster, chairperson of child club, as well as a representative of school management committee, the parent teacher association, Water Users and Sanitation Committee (WUSC) and other local level organisations.

Local, regional and national level electronic and print media are used for advocacy and increase awareness on proper hand washing and the need for toilet construction. Also, Information, Education and Communication (IEC) materials have been developed considering gender aspects and have been distributed.

Resource mobilisation

Resource mobilisation efforts are made from a central to local level. The centre and district is responsible for providing the necessary financial and technical support to schools and community. At a local level, child clubs, sanitation sub-committees, VDCs, school management committees, parent teacher associations and local groups are involved in fund generation and social mobilisation activities. As mentioned earlier, the necessary human resources are sourced and managed by mobilising concerned stakeholders.

Technology and technological choices

Schools and communities are offered a wide range of technical options based on ecological belts, affordability and sustainability. Local people have made use of both indigenous knowledge and technology based on cost and efficiency. The SLTS programme has motivated local entrepreneurs to

invent technology, develop toilet products and promote these in communities.

In a number of catchment areas, new technological options such as low-cost latrines, shared latrines and Ecosan latrines have been installed. Materials required for construction of latrines, for example, pans, pipes, fittings, cement are now available in the local shops, including, in a few places, in SaniMarts. SaniMarts are easily accessible shops, staffed by trained sanitation promoters, where latrine construction materials are sold at affordable rates. For this programme, SaniMarts are encouraged to supply additional sanitary products such as soaps, nail cutters, towels, Harpic, brushes etc. along with sanitation and hygiene-related information and IEC materials.

Child-, gender- and disability-friendly latrines with hand washing with soap and water facilities are constructed in schools. In a recent exercise to develop new materials and training modules for SSHE, a technique was developed to facilitate children's inputs into the design of the future facilities.

Social mobilisation

The SLTS programme has received support from central, district and local bodies, at different stages, for social mobilisation. For example, UNICEF/DWSS have provided guidance and resources to bring together adequate actors in the community. The community, and other bodies have implemented and taken part in programme activities.

Social mobilizers in the SLTS programme catchment areas on the ground can be grouped as following:

1. School-based organisations including child clubs, parent teacher associations, headmas-

- ter associations and school management committees.
2. Local community-based organisations including sanitation committees, sanitation sub-committees, women's cooperative groups and volunteers.
 3. Decentralized local government (District Development Committees and Village Development Committees)
 4. Partners and networks working in the different fields in the community.
 5. Full-time and dedicated facilitators at local and district levels.

All local institutions and community groups have worked together to plan, implement, monitor and re-design the social mobilisation-based SLTS promotion activities. Child clubs and sanitation sub-committees, in coordination with local bodies, have used participatory tools and techniques to carry out social mobilisation activities, as mentioned earlier.

Sanitation/hygiene promotion and education

The SLTS programme has implemented a number of methods and activities for sanitation/hygiene promotion and education. Broadly the methods and activities are:

1. Door to door visits, group communication and through the mass media.
2. Campaigns for latrine construction and hand washing with soap.
3. Community awareness generation activities, including advocacy at different levels.

These methods and activities contribute to each other but specific and focused activities are carried out in the catchment areas.

To generate awareness in communities, child clubs and sanitation sub-committees have performed hand washing demonstrations, street dramas, dance programmes, song competitions, speech contests, poem competitions, essay competitions, miking, and other activities.

At a national, regional, district and local level, radio, print and television media have been mobilized to disseminate sanitation promotion messages. A large number of communities have been efficiently reached through the media. Information boards and bill boards with sanitation messages on them have been another promotion method.

National Sanitation Action Week runs in all the catchment areas every year. School and communities hold half yearly campaigns and events in order to promote latrine construction and proper hand washing practices. UNICEF and the Department of Water Supply and Sewerage have also distributed adequate information, education and communication materials in all programme catchment areas.

Pro-poor provisions

The aim of SLTS is to create No Open Defecation areas and 100% sanitation in the whole settlement and school catchment areas. The approach involves poor and disadvantaged households in total sanitation initiation. SLTS has set objectives focusing on poor and disadvantaged groups. As most poor and disadvantaged people lack money, education and motivation to construct latrines, the SLTS programme has made attempts to educate them, and provide necessary resources to construct toilets.

In some areas, women cooperative groups are providing financial support to enable landless people to construct latrines. A school/village level revolving fund has been set up and poor people have received credit on low interests to construct latrines in their households. For example, despite a large number of poor people living in Fulbari Village Development Committee Chitwan (the third No Open Defecation declared VDC in Nepal), new funding has helped latrine construction in the community.

Innovations

Nepal's concerned stakeholders have regarded SLTS as an innovative approach to promote sanitation and hygiene in Nepal. The set objective, the declaration of No Open Defecation in all programme intervention areas, uses creative ways to achieve results efficiently.

In some of the catchment areas, child clubs and women cooperative groups have used creative initiatives to provide micro-credit, financial and other support to poor and disadvantaged groups. Such initiatives are praised and used as examples among sharing and discussion forums. Awards handed to the sub-committees of No Open Defecation declared zones are another innovative way of motivating communities.

Child clubs, sanitation sub-committees and other stakeholders are carrying out innovative and creative activities respective to the geographical, economic, cultural and social backgrounds of catchment area. Examples of innovative and creative activities include setting up an area for hand washing with soap, having a table where lots

of people can wash their hands at the same time, local level recognition and rewards, fundraising activities, latrine cleaning schemes, and setting up an operation and maintenance fund for latrine and water supply.

Costs

UNICEF/DWSS have developed an effective software support mechanism for education, training, and ignition/campaigns. But it does not provide direct financial support for the construction of latrines at a household level. Reward and revolving fund mechanisms have been set up at a school catchment level to motivate and support poor households.

Implementing partners, such as the government, schools and communities, are not offered programme overhead costs. However, when necessary, a maximum amount of 50 to 80% is allocated for school sanitation, and water facilities. Schools and VDCs have provided the rest of the financial requirement. In some intervention areas, Village Development Committee and District Development Committees have allocated funds to contribute to the mission of developing 100% sanitised settlement/catchment areas.

In a number of catchment areas, schools or sanitation sub-committees have managed a revolving fund with the aim of helping poor and disadvantaged groups to construct latrines. The committee prepare a priority list made up of poorer households to which they can offer financial services. The government/donor funds 10,000 to 25,000 Nepalese Rupees to the revolving fund and VDCs are also asked to provide the same amount for latrine construction.

A lump sum is awarded as an incentive to 100% sanitised settlement and catchment areas. After total sanitation is declared in school catchment areas, schools are awarded with 10,000 to 20,000 Nepalese Rupees after they have been monitored by the DSSC.

UNICEF and the Department for Water Supply and Sewerage (DWSS) are leading the SLTS programme providing major technical and financial support to the targeted communities. There are cases where other concerned stakeholders have also provided financial and technical support to the SLTS programme.

Outcomes

Access and usage of toilets within households

Out of 200 SLTS school catchment areas targeted in 15 Decentralised Action for Children and Women districts of Nepal, 75 are No Open Defecation areas. All 75 schools have child/gender friendly latrines and water supply facilities. All 40,000 households inside the 75 school catchments areas have access to latrine facilities. In the 15 DACAW districts, four VDCs have been already declared No Open Defecation areas. More than 25 settlements have declared their settlements No Open Defecation adopting the step by step approach of SLTS. In all No Open Defecation declared programme interventions areas, people have stopped defecating in open and public areas, are using toilets and exercising better hand washing with soap practices. The other 125 school catchment areas are moving towards No Open Defecation status during the International Year of Sanitation 2008.

Hygiene practice by and within households

The hygiene education component of the programme has focused largely on school children. Most schools have set up a multiple hand-washing table. This is one of the innovative activities initiated under SLTS and SSHE. Hand washing techniques have been introduced in schools. School children are practicing the proper hand washing as they were taught. Hand washing with soap practice is promoted at great length in school and in communities.

Open defecation free status and its validation

As mentioned above, out of 200 schools, 75 schools are Open Defecation Free. Districts under the declaration include Chitwan (30 schools), Tanahun (24 schools), Kaski (six schools), Kavre (five schools), Nawalparasi (four schools), Kapilvastu (four schools), Dang (one school) and Panchthar (one school). Most National Steering Committee for Sanitation Action (NSCSA) members have participated in No Open Defecation ceremonies. All District Sanitation Steering Committee members have participated in No Open Defecation declaration day in their respective areas.

Most of the school catchment areas have developed brochures and submitted reports on their achievements. Neighbouring villages beyond the catchment areas are impressed with the SLTS programme activities and have requested the project be implemented for them so they can be declared No Open Defecation.

Beyond toilets

The integrated intervention approach adopted by SLTS has helped increase latrine construction and

promotion of hygiene behaviour in programme districts. The communities now have better knowledge of sanitation and hygiene.

Communities are now able to understand the gap in water supply and sanitation coverage and the importance of filling in the disparity. They recognise the relationship between sanitation and water supply and the diseases borne through improper hygienic practices. They are now able to take prevention and curative measures.

Communities are now used to frequently cleaning their yards. They are used to covering up food and water. Garbage pits have been constructed, as have waste water management systems and hand washing practices have greatly increased in communities. Child-friendly facilities including water, sanitation and hygiene have increased and children's roles in communities has been enhanced. They have also improved at school.

Evidence of sustainability

School and community ownership of the SLTS programme is a key indicator of how sustainable the approach is. Schools and communities are aware of the SLTS objectives, strategies and approaches and have developed their own plan of action to promote latrine construction and hand washing behaviour. They have used participatory tools and creative approaches to promote sanitation and hygiene. The respective communities and child clubs have developed social/latrine mapping of school catchment areas. Efforts made on advocacy and promotional activities resulted in enhanced media coverage in radio, print and television.

The SLTS intervention has strengthened cooperation, coordination, social bonding and

relationships among different local stakeholders. A strong network and work force has developed. Furthermore, 162 child clubs and over 100 sanitation sub-committees have been established in schools and communities. Stakeholders' institutional capacity is enhanced. Mutual efforts have helped generate resources, manage capital, implement, monitor and take necessary corrective actions to improve hygiene and sanitation status. Local bodies have planned how improved activities can be carried out once the programme ends.

In some catchment areas, school and communities themselves have set up and regulated revolving fund mechanisms along with operation and maintenance funds. Child clubs, VDCs, sanitation sub-committees, school management committees and parent teacher associations are active in coming up with ways to fund the scheme.

Two frameworks, Rural Water Supply and Sanitation National Policy and Strategies (2004) and Rural Water Supply and Sanitation Sectoral Strategic Action Plan (2004) have been developed. And the National Hygiene and Sanitation Policy, Strategies and Guidelines (2005) has been initiated. Policies, strategies, action plans and guidelines now also prioritise methods to achieve the goal of SLTS intervention. Expansion of No Open Defecation areas have resulted in hygienic environments, unpolluted water and an improved hygienic lifestyle for communities.

Evidence of impact

Most people in the programme intervention areas recognise that there is close connection between excreta and disease. Girls' enrolment and regular attendance in school has increased. Drop out rates have decreased after the programme intervention.

All child clubs are made up of equal numbers of both sexes. Illness has decreased since the programme was launched and this trend is very evident in the open defecation free declared catchments areas. Now diarrhoeal diseases and worms are not the cause of students' absence in schools in the total sanitation declared areas. Multiple hand-washing tables have helped students stay clean and healthy. Reported cases of diarrhoea in children under five at one sub-health post in a VDC in Dang has decreased from 7% in 2005 to less than 5% in 2007.

Current scale and possibilities of increasing scale

The SLTS is focused on improving rural hygiene and sanitation status. The programme is being implemented in 15 DACAW districts of Nepal that include 40,000 households, 162 schools, and a population of 200,000. As latrine coverage in Nepal is reported to be only 46%, the remaining 54% of the country that don't have latrines is a further target area. Government's budget in water supply projects has also aimed to scale up the SLTS programme throughout the country in response to priorities set out in sanitation policy and guidelines. The programme has created further potential to receive support from national/international governmental and non governmental organisations.

Factors of success

Stakeholders regard strong community participation along with school child clubs' intervention in school and community as effective ways of achieving SLTS objectives. The participatory approach which has been adopted

and ownership taken by concerned schools and stakeholders is also crucial. The sanitation model operated by the VDC and reward mechanism is also appreciated by stakeholders for its effectiveness in motivating communities.

The programme has received commitment and support from UNICEF, the DWSS and other concerned stakeholders. Joint efforts among all stakeholders, adoption of strength-based approaches, adaptive programme management and power devolution mechanisms are some other contributing factors to the success of the programme. Human resource management, financial management, monitoring, corrective measures taken from key learning have also played a major role in the success of the programme.

Main barriers faced

Poverty, illiteracy, remote and inaccessible villages and cultural mindsets, are major barriers in accelerating sanitation and hygiene improvements.

Government policy has not been implemented as required to promote sanitation and hygiene. In addition, cultural taboos and traditional beliefs are barriers to efficiently carry out hygiene and sanitation promotional activities. Scattered efforts and varied models in sanitation and hygiene promotion programmes exist. Because of the raging unemployment, lack of money and social obligations, communities don't consider latrine construction and hand washing to be priorities. Political conflict that occurred in Nepal for over a decade created many constraints in development work including sanitation and hygiene promotion. Huge disparity exists between water supply and

sanitation coverage and there is a lack of political will to address this gap.

Challenges that could not be addressed

Reducing death and suffering of children due to diarrhoeal diseases remains a challenge. It's a challenge to get the attention of government, development workers and relevant stakeholders focused on the sector. Creating meaningful changes in attitude and behaviours to sanitation and hygiene is difficult.

The hygiene and sanitation programme has not yet addressed the economic aspects of community development. It was realised that the role of the private sector and an integrated approach were crucial but efforts have not been made to respond to these needs.

Challenges for scaling up this approach

The portion of unsanitary coverage still remains large so equivalent programmes should bear size of catchment areas in mind to scale up the approach. Adequate human resources, finance, social mobilisation efforts, dedication and commitment from concerned stakeholders is needed.

Government have had input into the programme but it has been inadequate in: developing policy, human resources management, financial management, and including the poor and disadvantaged. The integration of the private sector and development of communities' economic capacity to receive sanitation services are challenging, not only for SLTS, but all sanitation and hygiene promotion efforts.

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India's national sanitation and hygiene programme: From experience to policy West Bengal and Maharashtra models provide keys to success

Sumita C Ganguly

Abstract

The national rural sanitation programme of the Indian government began in 1986. It has evolved into the Total Sanitation Campaign (TSC), which now operates in 578 districts of 30 states/union territories and is resourced with over US\$1 billion, to reach India's rural population of 71%. TCS successfully encourages households to finance their own toilets while giving financial incentives to poorer people. The 1% average annual progress of 1981-2001 grew to 3% in 2002-2007 and presently suggests an annual growth of 5-7%. A nationwide network of Rural Sanitary Marts and Production Centres has been established with government funds, although they are run primarily by NGOs and CBOs. This has boosted the supply chain, promotes sanitation and hygiene and caters to 138

million rural households of which around 55% are still without toilets. Lessons from three decades of a government-driven programme suggest that forward looking policies, combined resources, a strong institutional setting and decentralised delivery are key to reaching at least half of these by 2012, the end of India's 11th five-year plan. Although progress is uneven, models in West Bengal, Maharashtra and elsewhere show how informed strategies, high people participation, strong monitoring and political determination yield results that can be scaled up rapidly. TSC provides a platform for innovation and creative solutions. Tamil Nadu - one of the leaders in school sanitation, hygiene education and gender concerns - is now joined by states including Gujarat and Uttar Pradesh to infuse the much-needed qualitative aspects. As competition is

fired by the national award, Nirmal Gram Puraskar, for measurably ending open defecation, the deeper issues of environmental safety, management of diminishing water resources, water less/low water technology options, standards for personal and household hygiene practices and gender-sensitive approaches, require culture-appropriate programmatic responses. TSC will now have to embrace far more than the basics to make water and sanitation goals achievable, sustainable and equitable.

Objectives

The aim of this paper is to set out progress towards the Millennium Development Goals (MDG) on sanitation in India against the backdrop of the history of attempts to increase coverage in the country. The analysis centres upon progress of the national Total Sanitation Campaign (TSC) being implemented in rural India. The focus in particular is on the states of West Bengal and Maharashtra which are in the forefront of the march towards sustainable sanitation, with the exception of Kerala which leads in almost all social development indicators. This paper attempts to show that despite policy and access to funds, the national progress on sanitation has been slow and uneven for almost two decades. The introduction of reforms and some strategic shifts combined with the commitment towards the MDG has helped to trigger acceleration of progress in some states, which now offer learning ground for others. The paper also highlights the role of the Panchayati Raj Institution

(PRI), a system of local governance by elected representatives which came into force in 1993 under the 73rd amendment of the Indian constitution. The core of this was devolution of powers to local bodies known as Gram Panchayats to manage development administration. Water and sanitation implementation became the responsibility of the Gram Panchayat with technical support from the relevant line departments.

Background: The national sanitation programme

Until industrialisation was initiated by the first Prime Minister of independent India in its first five-year plan for development from 1951-1956, India was a predominately rural country. This meant the abundance of empty spaces, vacant lots and forest clumps were ideal and unquestioned choices for use as public toilets; open defecation was a standard part of normal daily living in rural India for centuries.

Sanitation and hygiene was not questioned as disposal happened at a distance from the homestead, odours dissipated in the open, and there were no nuisances to contend with. Decomposition and disintegration into the surrounding soil were convenient in outdoor temperatures that often exceeded 40°C under bright sunshine most of the time barring the two monsoon months in the plains. As it had been happening for centuries people accepted this tradition as the most 'user-friendly' practice, it was perfectly logical and, in their perception, 'sanitary'. As a result, sanitation has been commonly perceived as sweeping and heaping of household refuse, keeping streets clean and maintaining channels for drainage and excess water flow. The period of colonisation by the British inevitably brought with it technologies such as treated piped

water, below ground sewer lines, and the first toilets with cisterns and flushing arrangements in select elite city homes in the 19th century.

However, this was not the picture in urban living where even in the Vedic times (1500-500 BC) ancient India had established town planning practices with water reservoirs and drainage systems. Not much is known about the collection of refuse and disposal of human excreta. Presumably the poorest segments of society were pushed into such occupation as collecting human waste and disposing of the dead (both human and animal), thus giving rise to the abhorrent and still not fully eliminated practice of “scavenging”; despite public policy to the contrary certain groups get roped in to this occupational trap by circumstances of birth into the caste system. Although both the government and NGOs such as Sulabh Shauchalaya, supported by government funds, have been working to wean people out of this occupation by promoting conversion from ‘bucket latrines’ to sanitary toilets, it continues to be a huge challenge. Attempts to provide alternative jobs with skills training and financial incentives have been partially successful. However, demand generated by small towns to continue this occupation is overpowering, especially for poor women who have virtually no education and little other skills. Policies do not have sufficient power to stop the demand-supply cycle. There is also documented evidence of elaborate rules about sanitation and hygiene behaviour laid down in ancient Indian scriptures that had to be observed by society at large. However these rules or codes of conduct have faded away through the centuries, replaced with open defecation becoming an acceptable practice (Kochar, 1978; Londhe, 2008; Personal communication Kumar Alok, Project Officer WES, UNICEF, India). Water supply and sanitation

became development issues during the formulation of the country's first five-year plan. However, it was only in the 1980s – the International Water and Sanitation Decade – that India's first nationwide programme for rural sanitation, the Central Rural Sanitation Programme (CRSP), was launched in 1986 by the Ministry of Rural Development. The main objective was to improve quality of life for people in rural areas and to provide privacy and dignity to women. The programme provided a sizeable subsidy, Rs. 2,000 (US\$ 50), for construction of household sanitary latrines for Below Poverty Line (BPL) households. It was a supply-driven, highly subsidised programme, which gave emphasis on a single construction model: twin-pit-pour flush latrines.

External support agencies such as UNDP, WHO and UNICEF, formed a technical advisory group to support the government of India on issues of technical and capacity development to implement the newly started CRSP. After six years, when the programme was reviewed in 1992, it became apparent that a new strategy was needed because the heavily-subsidised constructed toilets for the poor were not being used. This was due to various reasons, for example, people perceived the need for sanitation of toilets as low, in comparison to drinking water and drainage. The revised CRSP brought with it greater emphasis on information, education and communication (IEC) on the main aspects of sanitation, hygiene and health. It changed track to emphasise an integrated approach to rural sanitation composed of seven sanitation components including personal and household hygiene, and not just toilets (UNICEF, ca. 1995).

Since the inception of the CRSP and up to the end of the 9th Plan (2003), 9.45 million individual subsidised latrines were constructed primarily for

poor rural households. The total investment made by the government was around US\$370 million (Gol, 2006). The programme led to a marginal increase in the overall rural sanitation coverage, with average annual increase of only 1% per year between 1981 and 2001 with the census of 2001 reporting rural household latrine coverage as 21.90%, with combined rural and urban coverage as 36.4 %. There were many factors contributing to the low coverage: it is now widely recognised that community participation was insufficient in this conventional, supply-driven, subsidy-oriented, government directed programme. The result was that toilets were constructed but remained unused or were used for storage purposes such as for firewood and fodder. There were many reasons for this, for example a lack of awareness about the leach pit technology, especially the siphon system, lead people to believe that since water remained in the hole excreta would not get flushed out properly; poor quality of construction, and fear of the pit overflowing. Emphasis on robust designs also hiked up the cost, giving people the impression that sanitary toilets were costly and beyond their means. Participation of community members was virtually non-existent, there was a lack of post-construction communication on use and maintenance, and a near absence of hygiene education, much of which was due to the misplaced notion that technology was the driving force and the top-down approach of government directives was insufficiently persuasive.

It was also assumed that somehow the subsidy-driven toilets (specifically for the disadvantaged) would stimulate demand among the better-off families who would self-finance their units. This, however, did not happen as expected. The national programme which hinged on substantial subsidy as a means for “creating demand” for household

toilets was strategically weak. Of the sanitary pour flush toilets constructed in the 1980s and 1990s, less than half were used by someone in the family for the above reasons. Studies further showed that subsidy was never sufficient motivation for a family to develop behaviour change – primarily regular use of the toilet. Between 1980 and 1992, and with heavy subsidies, CRSP raised rural latrine coverage from 0.5 to 2.7% only, while 8% of rural households had installed a latrine through the private sector (Ministry of Rural Development, 1992). Factors other than subsidy had far greater appeal in generating demand and a desire for ownership. In 1996/7, a national survey on Knowledge, Attitudes and Practices by the Indian Institute of Mass Communication showed that only 2% of the respondents with a latrine gave the subsidy as the major motivating factor while 54% mentioned privacy and convenience (Gol, 2001). This was later borne out in UNICEF assisted integrated water and sanitation projects in the 1990s. Despite subsidy playing a central role in supporting the poor households as a matter of policy, substantive investments were made in building management and communication skills among all levels of staff, sensitising them on issues of privacy, dignity, safety and security of girls and women, the sick and the elderly, on gender concerns, on quality and affordability, and choices and options (see also Sijbesma, Chapter 25 in this book).

Apart from the programme-related strategic weaknesses in the government’s agenda, construction of roads, drinking water supply, and rural electrification were obvious priorities for rural development. Not only were there visible results for these, but the outcome brought rapid benefits to the rural people and were therefore politically far more attractive than sanitation.

The CRSP had also neglected school sanitation, and failed to build links with various local village level institutions such as the child development programme Integrated Child Development Services (ICDS), women's programmes such as Mahila Samakhya, Community Based Organisations and Non Governmental Organisations, self-help groups (SHGs), youth forums, academic institutions with their unique strengths and outreach; and in particular, the local government institution known as the PRI.

A wake-up call

In 1981, the estimated coverage as measured by individual sanitary household latrines constructed, was 1% for rural India and 27% for urban India. Two decades later, data from the 2001 census indicate that 22% of rural households in India had toilets. This reflected of an astonishingly slow progress of roughly 1% growth per year nationally (GoI, 2003). By this time, the reforms in the sector were in full swing having started in 1999. TSC was being revitalised under the Rajiv Gandhi National Drinking Water Mission (RGNDWM) in the Ministry of Rural Development. UNICEF and other external support agencies (ESAs) stepped up their support in areas of human resource development, capacity building, reviews and monitoring, communications and management. The period 2001-07 saw a resurgence in the sanitation sector that was unmatched not only in terms of increases in allocation of the government's own resources, but also a kind of inclusiveness that embraced strategic inputs from ESAs, international resource institutions such as International Water and Sanitation Centre (IRC), national Non Government Organisations (NGOs), Community Based Organisations (CBOs), individual experts and the private sector. The policy

was to marshal all resources to raise the profile of the sector, secure funding and to accelerate with quality towards sustainable sanitation. The most recent estimate in coverage (2007) is around 44%, reflecting a robust growth which if sustained will see the country reaching the MDG for sanitation by the end of 2012 (GoI, 2007).

Numbers were not enough

The coverage figure, however, masked predictable uncertainties about the use and maintenance of individual household toilets. Use of toilets for purposes other than excreta disposal was common (MARG, 1998); an estimated 20 percent of toilets are used for different purposes other than defecation (Planning Commission, Govt. of India, 2007). Moreover if used as intended, generally only women used them regularly. Men and children are frequently regressed to open defecation. Preventative health and environmental pollution were never perceived as concerns or as social issues. Promotion of the health hazards of open defecation continued to be the main topic of communication and IEC. In order to innovate and step up implementation, other aspects such as safety and dignity of women; safety and security of children; prestige of family; reducing pollution in the community; and national pride; gained in importance and slowly found entry into the communication content. The results were very promising wherever these were implemented in a systematic manner. A case in point is West Bengal where privacy and dignity of women became the strategic tool for prioritising ownership of individual sanitary toilets. One after another, states developed and aired promotional messages on mass media in local languages, focussed on the issues of dignity, privacy, safety of women and girls overshadowing

to some extent the health issues. The national government added other key components to its communication, such as the relationship between good sanitation, safe water and health, latrine access through TSC, the technology, the affordability and the financial incentive for the poor.

Efforts to provide information to community leaders and families offering design and price options, ready access to subsidy to support those below the poverty line, access to institutional finances, loans through self-help groups and availability of trained masons however remained weak, affecting overall efficiency of delivery.

The 1990s

In the 1990s, a pilot project for rural sanitation was implemented in seven districts of India under the umbrella of integrated approach. The Control of Diarrhoeal Diseases-Water Sanitation project (CDD-Wat-San) aimed to reduce diarrhoea by promoting safe drinking water, individual sanitary toilets, personal and household hygiene, access to Oral Rehydration Salts (ORS) and adoption of Oral Rehydration Treatment (ORT) for all villages in these districts (UNICEF, 1990). This gave further impetus to the long-standing collaboration between the government – primarily the Rajiv Gandhi National Drinking Water Mission in the Ministry of Rural Development – and UNICEF India to encourage and promote strategies nationwide that would impact on reduction of diarrhoea and consequently lead to improved child survival and development.

The Intensive Sanitation Project (ISP) was started in 1990 in Medinipur (one of the selected districts with a population of more than 8 million) in West Bengal. At the same time, other states began

implementing this integrated approach that would, during the course of its life, give shape to many innovative ideas and strategies. Notably, many external agencies partnered with the government during this period to support implementation and explore strategic ideas and innovations amenable to scaling-up. When the reforms were launched in 1999, many of the lessons gleaned from the ISP were embedded into the policy framework, notably the shift from supply driven to demand driven; the de-emphasis of the subsidy element; emphasis on marketing the concept of household toilet use through design and price options; funds earmarked for communication drives focusing on sanitation and hygiene as a package; and a concerted thrust on school sanitation and hygiene education (SSHE), by collaborating with the education sector to encourage early learning of hygiene behaviour among young children, aiming at a generational change.

TSC implementation

Institutional arrangements

Rural sanitation is a state responsibility and is therefore implemented by the respective state governments, 30 states and six union territories. The Ministry of Rural Development, part of the government of India, is head of this and formulates policy and supports the states with funding, guidelines, and technical inputs, and is responsible for monitoring progress and outcome. States have to provide matching funds – generally a third of the national amount in order to participate in the programme. There have been instances where a deficit of resources and competing priorities have impeded a state from accessing the readily available national funds, slowing down implementation significantly. Following a decade of implementation and lessons learned from the

innovative projects and successful demonstrations including Medinipur in West Bengal, Ganjam in Orissa, Erode in Tamilnadu, Mysore in Karnataka, the reforms in rural sanitation entailed a restructuring of the earlier Central Rural Sanitation Programme of 1986. It was renamed Total Sanitation Campaign (TSC) and was launched in 1999 under the label of “sector reforms”. TSC is presently operational in 578 of the 610 districts of India. The total project outlay is US\$3.35 billion, of which US\$2.1 billion is paid by the central government, US\$ 43.7 million by the state governments, with US\$500.7 million the community contribution¹ (UNICEF, 2008).

The TSC envisaged not just people's participation but more substantial local management using the active institutional structures, primarily the Gram Panchayat (village level government), which became the prime movers both in terms of handling resources and accountability of results. The objective of TSC was to improve the quality of life of rural peoples, reduce burden of diseases and achieve elimination of open defecation. The aim was to enable rural households to own and use sanitary toilets, to ensure that public institutions like schools, anganwadis (pre-school centres) and other public places have toilet and urinal facilities; and to promote personal and home hygiene. Unlike drinking water, which is perceived as a visible outcome of development and is seen as a public benefit, sanitation, especially the household sanitary toilet programme, is in the private domain, and the benefits are seen of being to individual families. Therefore, to effectively promote sanitation, the Gram Panchayats also assumed the not so familiar role of ‘motivator’, learning about motivating, monitoring, reviewing and periodic reporting. The village water and sanitation

committee (VWSC) became the specialised unit to assess, analyse and act on behalf of the Gram Panchayat. West Bengal was a notable exception for not forming VWSCs, as they saw no need for an additional tier. The shared resources of the national and state governments were made available to the Gram Panchayats through the District Water and Sanitation Committees. This provided for incentives for household toilets for the poor, for school and pre-school toilets and for women's sanitary complex blocks that included washing and bathing facilities at community level.

The resources also provided for operating rural sanitary marts (one-stop shops for sanitary hardware) and production centres for fabricating sanitary hardware components at sub-district level to feed the growing demand for construction. There were also important components related to start-up activities like baseline house-to-house surveys, mobilisation, demand generation and microplanning to facilitate participation of the marginalised and socially distanced. The official estimate, which tends to be optimistic, is that the sanitation MDG will be achieved by 2010 and universal access to toilets by 2012 (rural only). While this is unlikely to happen throughout the country, a few states are moving at a promising pace, for example West Bengal with a coverage of over 70% in 2007 (MoRD, 2008).

Programme delivery structure

The institutional arrangements for TSC focus on the user household and the community. The programme delivery setting follows closely the governance structure of the Panchayat system of local government. A well-designed delivery system from the state through to the Gram Panchayat with well defined roles and responsibilities has been

¹ 1 US\$ = INR 40

the hallmark of the two leading states in terms of sanitation, West Bengal and Maharashtra. Both states share a legacy of strong and functional local governments with elected representatives serving five-year terms. The statutory requirement of women in a third of the seats is exceeded in both states with higher proportions of women elected representatives participating in governance. Both states have demonstrated a high level of determination and persistence backed by strong political will, informed and innovative management, close supervision and strong capacity development involving NGOs, for example in West Bengal the highest official, Secretary Panchayat of the rural development body undertakes field visits every Saturday to assess progress against reported figures.

The generic delivery mechanism for TSC is illustrated in the diagram below. However, flexibilities for state variations are permissible and is exercised by states to suit their own unique circumstances.

The generic delivery mechanism is illustrated in Figure 1:

Communication (also known as IEC)

for behaviour change

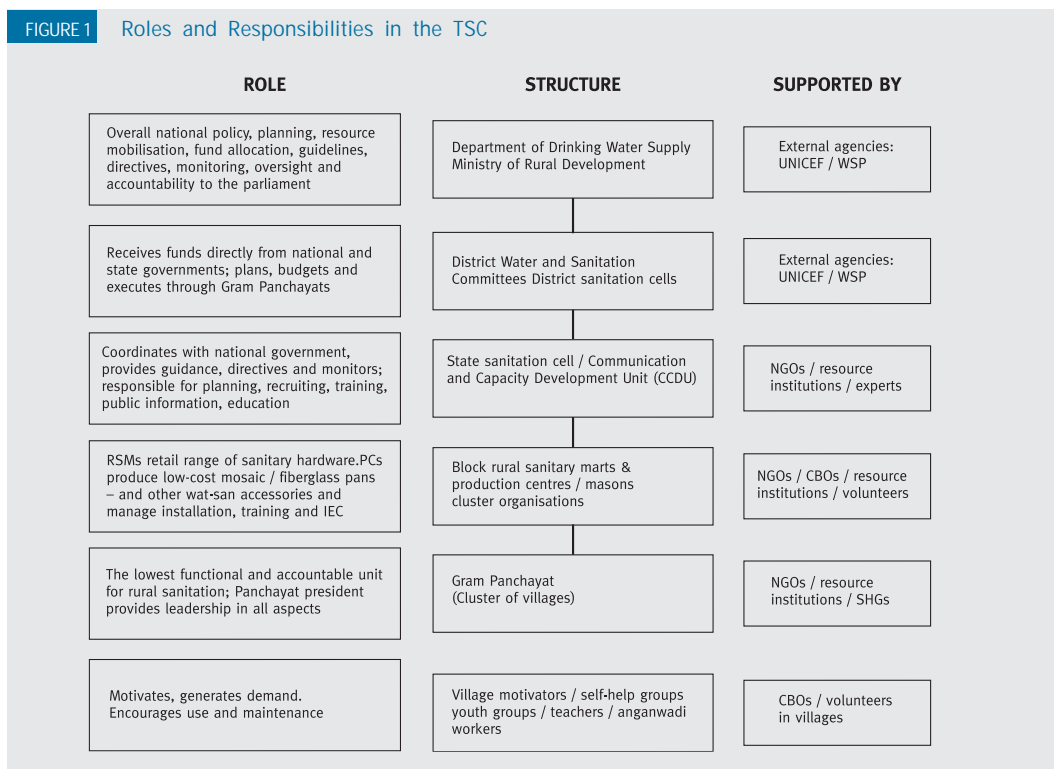
Another aspect of both management and structural reforms has been the reorganisation of support structures at the state level to build capacity at all levels by having a core team of specialists to plan and mobilize human resources for bringing quality into implementation and communications. The Communication and Capacity Development Units (CCDU) have been set up in state nodal departments with full funding from the national government for implementing the TSC. The main

tasks are to develop human resources, network with key resource centres, identify innovations and knowledge opportunities, and to undertake communication planning and monitoring. Actions often have to be negotiated with families and individuals agreeing to comply with those they deem as reasonable. This requires the presence of skilled motivators, mobilizers, or hygiene educators who reside in those communities and are willing to participate in the programme either as volunteers or against payment of small honorariums, rather than general community messages. Respected individuals with credibility setting examples have proven to be good motivators; young women and men with the ability to establish good rapport have been successful communicators. A vast network of such communicators, with skills for interpersonal and group communication and creative individuals such as folk singers, painters and performing artists, are employed by block, district and state units. Their contributions are budgeted into the programme according to standard rates of payment that are usually set locally. Both West Bengal and Maharashtra have relied heavily on an effective communication network to generate interest and demand for sanitation.

Strategy shifts

In early 2004 a mid-term evaluation was commissioned by the national government to assess the impact of TSC implementation in the country and whether its policies were generating the desired results. A public sector company, M/s Agriculture Finance Corporation (AFC), which works with social and economic research agencies, was engaged in the year 2004 to conduct a mid-term evaluation of the TSC programme. The study was

FIGURE 1 Roles and Responsibilities in the TSC



conducted in a sample of 20 TSC districts in the states of Andhra Pradesh, Bihar, West Bengal, Tamil Nadu, Maharashtra, Kerala, Uttar Pradesh, Madhya Pradesh, Rajasthan, Haryana, Tripura, Orissa, Assam and Jharkhand. The main finding was that 61.5% households in the TSC projects had toilet facilities. Financial constraint was the most frequently stated reason for non-adoption of a toilet facility. An overwhelming majority of those who did not have toilets felt there was a need for it. Awareness of TSC and of the relationship between poor sanitation and water borne diseases was high in almost all the study districts. Other salient findings were:

- Households wanted the per unit standard cost for a low-cost toilet to be increased to above Rs. 2,500. Necessity for superstructure was felt strongly everywhere.
- Sanitation issues were discussed by school going children at home in a large number of households and children appeared to be a major influencing factor for toilet installation.
- Awareness and practice of personal hygiene was found to exist to a large extent in almost all the study districts.
- 55% of sampled school toilets were supported through TSC, 15% through state government funds and the rest through the

education sector District Primary Education Project (DPEP) or Sarva Shiksha Abhiyan (SSA).

- Health and hygiene education had become universal practice in schools in those districts where TSC was being implemented.
- The impact of SSHE was seen in lowered drop out rates (in 64% of the sample schools), improving enrolment rates (48%) and decreasing absenteeism (3%).
- Community sanitary complexes were very popular among the poor, especially women who cannot afford toilets.
- The practice of training women as masons, especially in some districts of Tamil Nadu and West Bengal, had strategic values. Besides creating employment the women masons proved to be efficient in construction and also in motivating other villagers to adopt toilets and best practices in health and hygiene.
- Of the total Rural Sanitary Marts (RSMs) studied 40% were operated by NGOs and a quarter by Self-Help-Groups (SHGs). They managed ventures more successfully than others as they combined IEC and motivation work with business (AFC, 2004).

The Maharashtra model

The AFC study recommended that in order to achieve the objective of full coverage of 138 million rural households (2001 census) through appropriate sanitation systems, providing financial incentives to BPL households will have to continue as a strategy. The amount of subsidy as well as unit costs however needed to be revised in accordance with the prevailing conditions. Notably, the Maharashtra model of Community Led Total

Sanitation (CLTS) demonstrated a departure from this policy to show that an Open Defecation Free (ODF) campaign that exhorted communities to end this practice and attain ODF status instead of an emphasis on individual toilet construction and counting toilets as a measure of progress, gave notable results such as achieving a spurt in coverage (see Table 1 below). However, the more qualitative aspects that emerged was a discernible collective movement albeit spurred by a sense of competition among the Gram Panchayats; village lanes and vacant plots were mostly free of dumped rubbish, open excreta was not easily visible, poor households from marginalised communities boasted of a clean toilet within their premises; resistance to the fact that toilets had to be far away from the living quarters had been replaced by early adopters or champions who would show visitors that they had one pit of an off-set toilet embedded under their kitchen floor. Women would say how vacant plots now growing flowering shrubs or medicinal plants and herbs used to be the defecation plots that families used before the toilets came about. The sanitary complexes were popular and were being used (perhaps they served an intrinsic need of people to briefly congregate at a convenient place for exchanging day-to-day notes, greetings and some gossip).

In Suravadi Panchayat in the Phaltan Block of Satara district, Maharashtra – the first in the state to win the Nirmal Gram Puraskar award – all 412 household, 112 of which are below the poverty line, are using sanitary toilets today. This was achieved through a strategic mix of constructing a 28-seater community toilet for access to the very poor, and financial incentives of Rs. 500 to each family to construct its own toilet. The Gram Panchayat and youth groups monitored the use;

TABLE 1 Percentage of rural households in Maharashtra with access to sanitary toilets

January 2001	18.2
March 2003	18.7
February 2008	53.4
March 2012 (projected)	82.2

Source: Report card: progress on sanitation Maharashtra: www.ddws.nic.in

and recognition of ODF status was shown by painting homes pink. Persons still practicing open defecation were penalised with no distribution of wheat and kerosene from fair price shops. (Planning Commission: 54th National Development Council Meeting Excerpts – Dec. 2007). These first successes, including methods that did not bode well for sustainability, were followed up with more awareness and strengthening of environmental concerns, waste management and hygiene behaviour and healthy competition among the GPs.

Policy update

Based on the recommendations of the study conducted by the Agricultural Finance Corporation (AFC) and feedback received from various stakeholders, the TSC programme guidelines were revised. The unit cost for household toilets was increased from Rs. 625 (US\$15) to Rs. 1,500 (US\$38) and from Rs. 1,000 (US\$25) to Rs. 2,000 (US\$50) respectively for two categories of models. The cost includes an amount of Rs650 (US\$15) for construction of the above ground structure. This therefore represented an increase in the subsidy given to families living BPL from Rs. 500 (US\$ 12.5) to Rs. 1,200 (US\$30), the rest of the cost being borne by the householder. Raising the subsidy happened on account of multiple factors: on one

hand there were appeals from various outlets that prices of raw materials had increased and the rates on which the subsidy was established in 1999 (the start of the reforms) were no longer tenable. India's diverse geography including hilly and remote areas required a substantial hike in charges for cartage of raw materials, which was not factored in when the programme had started. Secondly, project managers and implementers were increasingly faced with the task of responding to families who wanted more support to build stronger above ground housing – something that the existing subsidy would not permit. The purpose of raising the subsidy was “to enable poor people to construct reasonably good toilets that are complete with overhead structure” (Secretary, Department of Drinking Water Supply, 2008).

Other relevant points of the AFC report were:

- a component on solid and liquid waste management limited to 10% of the total project cost was included to improve overall cleanliness in the villages.
- in order to accelerate construction of toilet blocks in Schools and Anganwadis, the community contribution was removed in construction of institutional toilets. The national government fund share was increased from 60% to 70% of the unit cost, the balance being the share of the state government.
- in order to promote ease of access to soft credit facilities, links were established with women's self help groups and milk cooperative societies, which share a common concern of home sanitation, hygiene and handwashing, and management of human and animal waste in order to achieve clean villages. A provision of revolving funds of up to Rs. 50 Lakh (US\$ 0.11 million) per district, was made to enable

women in particular to take advantage of 0% interest loans for sanitation.

Network of Key Resource Centres

Reputable institutions that are working in the field of water and sanitation were identified and financially supported for undertaking capacity development activities of a variety of stakeholders. The following five institutions are designated as national resource institutions to conduct orientation and training for programme managers across the country:

- Ram Krishna Mission Loka Shiksha Parishad, Narendrapur, West Bengal
- Gandhi Gram Rural Institute, Dindigul, Tamil Nadu
- Safai Vidyalaya, Sabarmati Ashram, Ahmedabad, Gujarat
- State Institute of Panchayati Raj and Rural Development, Kalyani, West Bengal
- Uttaranchal Academy of Administration, Nainital, Uttarakhand

Notably two of the above institutions are located in West Bengal. In Maharashtra another very reputable institution YASHADA – Yashwant Rao Academy of Development Administration – in Pune, has facilities for Human Resource Development (HRD) and routinely trains various personnel including senior civil servants, and has served as the anchor for many TSC capacity development

activities. All states have been encouraged to designate such key resource institutions as centres of learning for sanitation, hygiene and environmental issues and enable them to develop a knowledge based on the subjects, and to support application and dissemination, monitoring and documentation.

Rural sanitation: West Bengal leads

From 1999, states across the country started implementing reforms in CRSP with different degrees of enthusiasm. West Bengal was a step ahead as lessons had already been learned from the Intensive Sanitation Programme (ISP) of Medinipur where a key strategy was the partnership of the government of West Bengal with the Ramakrishna Mission Lokashiksha Parishad an esteemed NGO led by the Ramakrishna order of monks, extending social services in health, education, livelihoods, and emergencies. The partnership was strengthened further with the participation of UNICEF to support capacity development, technology standards and monitoring systems.

Making technology affordable

In the early years of the CRSP, the twin-pit-pour flush sanitary latrine was the standard model that was promoted across the country. The concept was based on the theory that the poor could not afford toilets and therefore a heavily subsidised and technically sound model was the answer. Targets for construction were agreed between the central nodal ministry and its counterpart in the state government and constructions done by the public works department or contractors. Very soon the programme managers discovered that this model was not affordable for those who were poor yet did not fall into the category of BPL, which

BOX 1 Key demographic features

Population (2001): 80.2 million
Population Density: 904 per km²
Districts: 18
Development Blocks: 341
Gram Panchayats: 3,362
Villages: 40,794

would entitle them to a subsidy. Nor was there any room for the option or flexibility for those who were better off. With the help of the Ramakrishna Mission volunteers, different combinations were explored in Medinipur. The objective was to minimise the basics and reduce the cost drastically without compromising the essentials of the leach-pit technology so that the poorest household would find it affordable. Therefore they came up with the direct single unlined pit with sanitary pan model, costed at Rs. 400 (US\$ 10), which has been increased to Rs. 450 (US\$ 11.3). The share of household contribution is Rs. 225 (US\$ 5.75). This package includes the 'squatting plate', the pan and trap, the cartage and installation cost and a motivator's incentive of Rs. 25 (US\$ 0.7). The pit (1m x 1m) is dug usually with the help of the household members. The toilet housing is more often made of light indigenous material such as bamboo matting, jute cloth, and plastic sheets hung on bamboo frames. Over time, the families upgraded the housing to brick structures. However, as expected there was more demand for the upgrade when the below ground structure was an off-set pit.

In the case of direct pits, families generally continued with a temporary structure, often strengthened with extra back-up because of the ease of dismantling and moving to an alternate spot when the single direct pit got filled. Although in West Bengal the guidelines talk of choices that range from a low of Rs. 450 to a model that costs 10 times as much at Rs. 4,500, a quick assessment will show that around 80% of families own the single pit lowest cost model. The distinct advantage that West Bengal has is not available in many other parts of the country and that is the presence of clayey soil that can support the squatting plate without the reinforcing rings to line the pit. A pit takes around 4-5 years to fill up for

an average sized family after which they dig a second pit at a convenient spot in the vicinity and shift the squatting plate with pan and trap and the temporary superstructure. The mosaic pans are made locally in production centres run by a number of NGOs and youth clubs. It is noteworthy that West Bengal has systematically enabled the establishment of rural sanitary marts cum Production Centres in each of its 341 community development blocks. This network is the backbone of the scaling up effort ensuring that demand creation and promotion is matched by an active supply chain, an efficient delivery system comprising trained masons attached to each Production Centre.

The obvious question is what happens when there are heavy rains and floods which are cyclical and predictable events in these low-lying flood plains. There is very little available documentation on this. Interaction with families during field visits does suggest damage to the toilets by pit flooding during heavy rains. Another problem is burrowing rodents that lead to some pits caving in as they do not have lining rings. The extent of the problem of damage and destruction due to water surges, and damage to the fragile superstructure on account of storms and cyclones, remains anecdotal. In other parts of the country the technology options used are a) single direct or off-set lined leach pits, b) double lined pits with a junction box leaving the second pit option open, c) dry latrines known as Ventilated Improved Pit (VIP) latrines, d) ecological latrines with urine separation e) solar heated ecological latrine with urine separation.

Making social mobilisation work

The single most significant policy to support demand, creation and scaling up has been the earmarking of 15% of the TSC project budget for IEC. Initially IEC

was primarily concerned with generating awareness about the connection between poor sanitation and diarrhoea; later this was expanded to the link between the “sanitation package” composed of seven good sanitation behaviours and reduction of diarrhoea and other sanitation related diseases.

The success of West Bengal, Maharashtra and Tamil Nadu has been due to well laid out systems and creative interventions for social mobilisation. For example, in West Bengal in each of the 18 districts a comprehensive “toilet census” has helped create an overview of the gaps, the priorities, and the local and unique characteristics of each area. This helped to plan and budget for social mobilisation, the pitch, content and intensity.

The establishment of a state sanitation cell was strategic for overall planning, coordinating and monitoring the mobilisation efforts in cooperation with NGOs. While the core function of the cell is to play a guiding role in communication and capacity development, they leave sufficient space for a bottom-up approach where innovations are tried out and local talent is tapped at the sub-district level for their mobilisation efforts.

Most of the motivators for sanitation were drawn from the pool of ‘literacy workers’ – volunteers freed up when the literacy programme was wound up in the country. Having worked closely with the communities they became a valuable resource to the TSC movement in the state. In West Bengal as the toilet density increases the motivators have less and less scope of earning their commission fee of Rs. 20 to 40. Yet that does not seem to deter them at least in Purba Medinipur which is staking a claim to become the first district in the country to have 100% individual sanitary toilets. Maloti, a sanitation motivator smiles as she walks along the village path.

“We feel a great sense of pride to be associated in this achievement,” she says. “See, even my husband and son-in-law sometimes join me at meetings and help me by providing information on families that are facing difficulties or where a child is not using the toilet and doing open defecation... I immediately visit the family and counsel them... this gives most of us a lot of satisfaction... yes, there is not much money in this, but we know that people respect us for our work.” (International Learning Exchange (ILE) delegates’ field visit to Medinipur, 2006, Gol and UNICEF, reported by Ganguly.)

In Maharashtra, the Sant Gadgebaba Gram Swachhata Abhiyan, which launched in 2000, was able to achieve to a large extent its objective of ‘open defecation free’ villages. Reaching out to over 40,000 villages, the campaign banked on the name of a venerated saint and social reformer as well as attractive prize money to spur rural families into action. The use of 11 sanitation and hygiene criteria for judging performance became embedded in the rural life style.

Districts have abundant resources for communications (15% of the TSC budget) but often do not have the understanding and skills to undertake communication planning and investments bearing in mind specific behaviour change objectives. Successful examples are invariably attributable to a talented and inspired chief executive officer (CEO) of a district determined to bring changes in his / her domain. Involvement of the NGO community, CBOs, faith groups, and youth and self-help groups have had positive results.

Sanitation and hygiene communication

Every state has developed its own strategy for behaviour development using the IEC funds

available directly to the districts. The main platform for hygiene communication in the communities are through interactive processes such as group meetings, for example women's self-help groups, youth groups and periodic house visits. The behaviours that are considered key for maximum impact for sustainable sanitation are: toilet ownership, use and maintenance; handwashing with soap; and proper disposal of baby's faeces. Apart from behaviour development, dissemination of innovations as a means of learning and advancing knowledge sharing on sanitation has been adopted as a strategy in TSC for achieving "total sanitation".

Since 2003, Tamil Nadu has been implementing a Clean Village Campaign, which includes management of solid and liquid waste, human and animal excreta, managing plastic waste, water conservation and rainwater harvesting. Innovative add-ons include local production of sanitary napkins by women's self-help groups and simple incinerators for sanitary napkin disposal in schools. Tamil Nadu has also been at the forefront of developing and applying ecological sanitation as an alternative to conventional sanitation. Areas with acute water scarcity, or prone to floods require different technologies and approaches in order for sanitation to be sustainable. In Maharashtra and other states examples of water recycling at community level has shown good results.

Hygiene education is an integral component of the school sanitation programme under TSC. Given that there are one million schools, the potential to reach out to millions of children is enormous. In the education sector the Sarva Shiksha Abhiyan (SSA), the national programme for universal elementary education has 20 days of training for teachers every year and this offers great scope to integrate hygiene and sanitation, for example induction and refresher

courses for teachers being conducted on a periodic basis.

Approach to equity

The policy of subsidies to the poor to enable them to own their individual toilets is at the core of the equity issues. There is enormous political pressure on the national government to increase the quantity of subsidy on the grounds of equity. The decentralised governance structure gives states the flexibility to put in their own resources and increase subsidy, although that goes against the national policy, as learned from the Medinipur experience. On one hand, some states believe that a toilet for the poor should have standard brick structures that are high cost and the major part of the cost should be borne by the government; on the other hand there is the West Bengal example which has stuck to its policy of reducing cost to make a basic sanitary unit affordable to the poorest, with only a small subsidy support from the government.

In Maharashtra the Community Led Total Sanitation approach (CLTS) has a very different approach that emphasises the attainment of "open defecation free" (ODF) villages. The subsidy angle is minimised to a back-dated incentive provided to those families that have installed toilets but have faced financial difficulties. The Gram Panchayat is generally aware of the condition of each household and based on the genuineness of the case they provide support. In other instances, the Gram Panchayat uses the subsidy funds available to the programme to procure sanitary hardware in bulk and makes it available to the poor families. In Maharashtra the ODF approach to community led sanitation is recognised to have its merits; this has primarily been achieved through the construction of a large number of community

sanitary complexes in villages, making it possible for families to access sanitation who are otherwise not in a position to 'buy' their toilets. The same approach has been adopted in cases where space is a major constraint in erecting individual toilets. In such cases, a cluster of families either agree to use public toilets or to share a toilet among a few families. This, along with a strong communication campaign, has no doubt eliminated open defecation, as every family has access to fairly well-maintained facilities. However, it has also deprived them of a chance to own their individual toilet. While this is indeed a short term solution to eliminating open defecation, in the long term maintenance issues may drive the users to revert to open defecation unless there is peer pressure and persuasion to build their own toilets.

In the West Bengal model, the employment of women as masons to fabricate toilet pans and traps has generated significant employment. This has not only added visibility to sanitation but has also empowered very poor women with skills and livelihood opportunities and raised their position in the community. The aspect that is often overlooked is that the majority of the sanitary mart managers are men. Changing this situation will be an uphill task. On the other hand, for each block with around 25,000 families, often more than 50% of the 250 motivators who provide honorary services are women. For every motivational effort leading to a family installing a toilet the motivator gets a financial incentive, which has recently risen from Rs. 20 (US\$ 0.50) to Rs. 50 (US\$ 1.25).

Outcome of TSC

A recent (yet to be published) study on usage of toilets indicates that over 90% of toilets installed are being used in West Bengal and Maharashtra with the latter scoring slightly better. The table

below illustrates the level of variation in achieving progress in sanitation in a large and diverse country. On the positive side there are adequate resources and systems in place for development programmes – but there is still the need to respond to a range of political and social conditions in different ways. The Table 2 features data from project performance reports of the Department of Drinking Water Supply and reflects achievements against planned targets. It does not denote sanitation coverage. It also helps to highlight underlying systemic challenges and questions whether there is a link between sanitation and Rural Infant Mortality Rates (IMR).

TABLE 2 Progress of sanitation (individual household toilet construction) - selected states

State (million)	Population* IMR**	Rural	BPL	APL	School
			category	category	toilets
Andhra					
Pradesh	76.2	62	57.0	43.6	53.0
Assam	26.6	70	8.3	19.9	8.4
Bihar	83.0	62	6.4	1.6	24.1
Gujarat	50.6	62	34.9	42.8	86.7
Karnataka	52.8	53	24.2	18.7	64.8
Kerala	31.8	16	70.9	83.0	60.0
Madhya					
Pradesh	60.3	79	26.3	17.7	48.4
Maharashtra	96.8	42	37.3	38.0	71.3
Orissa	36.8	76	31.0	8.1	38.5
Tamilnadu	62.4	39	60.0	56.7	81.0
Uttar					
Pradesh	166.2	75	46.0	23.5	34.0
West					
Bengal	80.2	40	76.0	49.5	25.0

* Census 2001

** SRS bulletin October 2007

Source: DDWS, Ministry of Rural Development, Government of India, 11.12.2007

Four highlighted states out of the 12 listed in Table 2 have a rural IMR of below 42, which is below the Indian rural average of 62. Kerala has always been the exception and an atypical trend setter with a rural IMR of 16, hence it has been kept aside for this particular analysis. Notably the remaining three states have demonstrated better performance with regard to all categories of sanitation installations – BPL, Above Poverty Line (APL) and school toilets. The explanation for West Bengal school toilet performance being on the lower side is on account of their revised ambitious target to bring all alternative schools in addition to formal schools under the remit of school sanitation. It is unlikely that there is any direct relationship with IMR in this instance, as these are not coverage figures, but what is remarkable is that these same three states have been recognised for their good governance, which is reflected with consistency between rural IMR and rural sanitation performance. In the case of Gujarat which has done exceptionally well in school sanitation, and Andhra Pradesh which is better than Maharashtra in both BPL and APL categories, the rural IMR is comparatively higher, indicating the presence of other factors at play despite these states having the reputation of good governance.

The disparity between BPL and APL coverage reveals some strategic gaps. A low APL achievement is a reflection of weak communication and lack of any specific approaches to address the APL community's needs which centres around strong social marketing to make toilets attractive and open defecation undignified. Repeated visits to houses, use of mass media, interpersonal communication, and peer-group discussions should be compelling enough to persuade these families

to buy their toilets. Wherever this has not happened, or the supply chain does not have the capability to offer design and cost options or provide low quality products, APL progress has been below expectations.

In the case of Assam and, in particular, Bihar, slow progress poses a threat to the overall achievement of the MDG. The above analysis shows that scaling-up does not happen evenly. Each piece has its own dynamics and has to be addressed by an adept programme manager. For this, it is critical to have a reliable and transparent monitoring system with high compliance levels that enables the key stakeholders to share progress. The TSC has an online system of entering data that facilitates this process. However, the strength of TSC is its decentralized implementation in which the district sanitation coordinator plays a key role in moving the different components of the programme.

Key factors for success

National pride and priority: The growing attention to sanitation and hygiene is reflected now not only in a higher resource allocation, as compared to earlier five year plans, but also its inclusion as a flagship programme among eight priority programmes for development by the Ministry of Rural Development. The national government is acutely aware of the fact that India's growing strength in the economic and technology arena is at risk on account of its far lesser success in tackling child malnutrition, public health, sanitation and poverty. The national leadership has been instrumental in enthusing and motivating states to speed up implementation. Notably young parliamentarians are coming forth by visiting projects and raising issues; this process helps in improving accountability.

Political will: The models that have succeeded have had long standing political determination to have public sanitation as a development agenda. Often this has been a matter of chance that enlightened individuals, be they politicians or administrators at the helm, have prioritised issues of sanitation and hygiene and have demanded results from the programme. Both West Bengal and Maharashtra fall into this category. Other states, namely Tamil Nadu followed by Andhra Pradesh, Uttar Pradesh, and Gujarat, have shown significant progress.

Leadership that reviews and monitors: Decisive leadership at political and management levels has been critical in steering and accelerating the programme towards its stated goals. States that hold regular reviews, analyse reports from district sanitation programme managers and conduct regular field visits have needed clarity to address road-blocks and realign resources and make strategic shifts rapidly.

Panchayats and elected representatives in management roles: In both states the Panchayat has played a pivotal role at all levels of managing the programme. This decentralised approach is a major factor for sustainability. Concerted efforts have been made to develop a comprehensive understanding of public sanitation and hygiene in the minds of the elected representatives of the local government through technical workshops, ministerial reviews and handholding for sanitation management. In West Bengal this has taken over a decade to come to fruition. Capacity building on technology, financial procedures, social mobilisation, equity and gender issues are essential as they contribute not only to human resource development but also to overall sustainability of systems.

Robust institutions: Both West Bengal and Maharashtra have well laid out management structures headed by highly competent senior officials who take pride in working in a sector that has traditionally been shunned by senior bureaucrats. Clear roles and responsibilities and the presence of an active nodal unit for communication and capacity development are important in maintaining standards and bringing lessons from field innovations into the training content.

Partnership with NGOs, CBOs and resource institutions: This has been a key feature in contributing to the rapid progress in both states. In West Bengal, the Ramakrishna Mission Loka Shiksha Parishad has been the key institution and the backbone of the sanitation movement. However there are other very competent and dedicated NGOs and CBOs playing important roles in providing field training, monitoring, mobilisation and problem solving. The 341 RSMs in each of West Bengal's 341 community development blocks are run by NGOs and their consortiums. In Maharashtra committed individuals, who have worked for decades on sanitation and environment issues, provide not just facilities for training through their NGOs but also crucial policy inputs from their vast experiences. The NGO-government partnership must be on equal terms in order to be sustainable and productive.

Private entrepreneurship in supply and service management: There is immense scope for small-scale entrepreneurs to engage in the TSC as the unmet need is still so high. The main products will be sanitary hardware and other components of water and sanitation, for example in West Bengal the RSMs in arsenic-affected areas are promoting

and selling domestic filters for treating drinking water. Others are selling prefabricated structures and doors for latrine housing. With India's economic growth and emphasis on rural infrastructure there is bound to be demand for toilet upgrading, bathing cubicles, washing platforms, and simple drainage of domestic grey water. Appropriate eco-friendly technology will be in great demand. The present burgeoning private entrepreneurship efforts have very good growth opportunities.

Mobilisation through communication drives:

Powerful, well-planned and well-executed efforts have created a groundswell in both states. With more and more areas saturated with toilets and declared open defecation free the communities have to be alert about lapses. The communication drive must be sustained. In West Bengal, for example, the blocks that have achieved 100% sanitation have put up public notices that any one caught defecating in the open is responsible for causing pollution and spreading disease and must pay a fine of Rs.50 (US\$ 1.25).

Efficient and transparent delivery system: Collective and participatory decision making with open communication and information sharing – both formal and informal – are important for a tight-knit community process for sanitation and hygiene. Trust and transparency are also of supreme importance and those who are dealing with families should have the skills to inspire confidence. In states that have done well, the delivery mechanism for toilet construction is rapid – a toilet being delivered within 15 days of collection of the family contribution matched with government subsidy. In the case of Maharashtra this does not apply.

Women's self-help groups: SHGs have demonstrated that they can operate micro-credit

very successfully, as demonstrated in Tamil Nadu, Maharashtra, and Tripura among others. In Bihar the Mahila Samakhya, a programme for education and empowerment of women introduced under the Bihar Education Project in 1992, started with a membership of 1,000 women. It now has a membership of 70,000 and is growing by the day (N.S.Moorthy). The programme facilitates the formation of village-level self help groups and provides women and adolescent girls with literacy training and opportunities to develop and act collectively. UNICEF and Mahila Samakhya engaged in a strategic partnership to enhance sanitation and hygiene in 10 districts of Bihar under the TSC. The initiative involved all 2,191 SHGs for women of the Mahila Samakhya. Led by the SHGs in 2006, Barki Chilmi and Goitha Panchayats – both situated in difficult and drought prone areas of Bihar – achieved 100% sanitation and were awarded the prestigious national award Nirmal Gram Puraskar (NGP) from the former president of India Dr A.P.J. Abdul Kalam.

Communities as managers: Participation of the very poor and marginalised still remains a challenge, yet with the rise in literacy, more girls in school and more women in SHGs their opportunities are improving. Female panchayat presidents are conducting the business of development, and in active youth groups including local sports clubs, people are able to ask questions, express choices and dissent. The Right to Information Act, although sparingly exercised, has become an empowering tool in the hands of the informed. Communities are growing in confidence in their role as partners in a process where they can hold the Panchayat and district administration accountable for delays in execution or lack of quality. Issues of corruption are raised more openly and the guilty are exposed even if punishment may take time.

Challenges ahead

The TSC has recently introduced solid and liquid waste management. In order for TSC objectives to be met in spirit a lot more needs to be done especially in the areas of animal excreta management, management of waste in an environmentally friendly manner and in enforcing hygiene practices in handling waste, which is virtually absent now. In rural areas hospital waste and other hazardous waste management is not covered under any guidelines. Even if laws exist the sheer enormity of enforcing them, supported with proper equipment, is a huge financial and administrative challenge. The external support agencies can contribute meaningfully to demonstrate viable models that are affordable.

The reduction in per capita water availability in India is a serious threat to sanitation and hygiene in the future. Minimal water use technologies and dry toilets with urine separation and its possible use as fertiliser needs to be explored in more depth. This again is an area where collaboration with ESAs will bring global benefit.

Despite the documented progress, various international publications continue to show India's improved sanitation coverage as 22% (2004), stating that there has been "no progress" towards the MDGs. With West Bengal claiming sanitary toilet coverage of over 70% and Maharashtra close behind with 52% the assessment system needs to be more dynamic.

The tipping points and next steps

Throughout the course of CRSP and TSC, select programmatic interventions and initiatives have proved to be successful enough to be scaled up, to accelerate improved rural sanitation.

The concept of sanitation as a package of products and behaviours requiring a convergent approach under the CDD Wat-San programme of the 1990s (UNICEF and GOI collaboration) laid the basis for cross-sector cooperation to generate an impact on health and quality of life.

The rural sanitary marts and production centre network has helped sanitation technology to penetrate the remotest areas of India. The 4,881 RSMS and 2,519 production centres (www.ddws.nic.in) were all established with government funding and are run by NGOs, state and district development agencies and SHGs and on a revolving basis will be expected to supply hardware, technology and skilled masons to construct 80.8 million toilets to meet government projections to achieve universal rural sanitation going beyond the MDG targets.

The focus on school sanitation and hygiene education from 2000 onwards has proven to be a flagship project of the TSC. A climate of cooperation between the Rural Development Ministry and the Education Department nationally has been mirrored in most states. More than one million schools have been benefited from the TSC and funds allocated. The potential for a generational change in attitudes towards sanitation and hygiene through daily contacts with 100 million children is overwhelming.

The Institution of the Nirmal Gram Puraskar is a national award introduced in 2005 comprising cash prizes ranging from Rs. 50,000 (US\$ 1,250) to Rs. 50 lakhs (US\$ 125,000), and certification presented by the President of India. The stiff competition to qualify for the Nirmal Gram or 'clean village' against five criteria has unexpectedly motivated states that

had previously been laid-back. The number of villages awarded Gram Panchayats has grown from 40 in 2005 to 769 in 2006 and 4,959 in 2007. As well as the recognition, award winners are encouraged to invest prize funds into further development and to mentor others.

The TSC has been running for eight years. However, with the exception of 10 of the 30 states, the rest are still struggling to catch up with their self-imposed targets. It appears that that intra-country and intra-state variations are posing challenges. Within a state there are districts that are showing exemplary progress whereas others are lagging behind. To help maintain the momentum, the following steps are recommended:

1. Strengthening monitoring and reviews by independent teams of water and sanitation professionals alongside systems reporting. These bring to the table fresh insights and suggestions for improvement. Analytical management based on both quantitative and qualitative indicators must replace routine monitoring which often mask weak spots that require investment of additional resources.
2. Introducing / strengthening participatory practices where communities themselves work on self-set goals, monitor results and come up with practical solutions.
3. Capacities of NGOs and CBOs must be built on an on-going basis in order for them to work as equal partners; NGOs and CBOs in their thousands are supporting the TSC; many of them have very limited capacity to deliver results – this leads to setting unrealistic goals, ending up in unreliable data; this vicious cycle damages programme sustainability.
4. Networking with resource institutions and energising the networking by involving them in various aspects of the programme will bring vigour into the programme and improve institutional capacity. This is happening but needs to be increased by providing small / medium grants to institutions that have proved their credibility or have demonstrated the potential to develop and apply the key principles of TSC to produce results.
5. Both hardware and software often do not conform to standards. Rigour and quality are two elements of the programme that continue to lack in strength and could do with the input of best global practices.
6. TSC must diversify and embrace urban areas too. Neglect of urban India is impacting on public health, for example. India's IMR is 57 as of 2007. Technically this is not feasible under the present system as rural sanitation is under the administrative control of the Rural Development Ministry; sanitation and hygiene must now become the priority of one body with different ministries managing the relevant components.
7. Gender and equity must be central to the monitoring progress. The question to be asked is what and how much have the lives of the 10 poorest families in each village been improved? Are there any women-headed households that do not have safe water and sanitation facilities, for example?
8. Introducing mechanisms to measure the impact on the environment. There is insufficient experience of the impact of post-sanitation activities such as pit emptying, the use of the composted excreta as fertiliser, the feasibility of commercial marketing from public toilets, the conversion to bio-gas and use of clean fuel to gain carbon credits, and many more.

9. Promoting private entrepreneurship including preparing for disaster. Droughts occur cyclically; floods appear every year – these predictable events have helped lead to the development of sanitation hardware that is lightweight (made from HDP) and can be quickly assembled when large tracts of land

are submerged under water. However this operates on the premise that government or external aid agencies will provide the funds to provide them as part of an emergency package. This is not sufficient – more aggressive marketing is required to inform communities about preparedness measures.

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Community Led Total Sanitation Approach: Some personal field experiences from Bangladesh

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Abstract

Community Led Total Sanitation (CLTS) is a participatory approach to hygiene.

Developed in Bangladesh in late 2000. It has inspired people to carry out their own appraisals and ensure total sanitation of the community. The approach has successfully engaged all sorts of people, including children, to work collectively for total sanitation. The early success and rapid spread of CLTS has occurred without much research into its processes.

The most significant outcomes of CLTS are:

- *People can buy cheap latrines, which means they can install them immediately using their own resources.*
- *Government Organization (GO)- Non-Government Organization (NGO) coordination has brought momentum to the issue.*

- *There has been mutual support for installing latrines at community level.*
- *Spontaneous leaders have emerged as part of the process to mobilize the people.*
- *Rural Sanitation Engineers have developed among the community; they provide technical support on the installation of latrines.*
- *Use of safe water has increased significantly though water remains scarce in some areas during the dry season and floods.*

Community initiatives and outside support have significantly reduced open defecation, despite a lack of subsidy for domestic latrines. However, some people still practise open defecation. This is mostly because they did not repair latrines after they collapsed, or failed for a long time to share other latrines.

Some NGOs are providing and subsidising tube wells to the community at public places, including educational institutions and growth centres. Local government is using 20% of the Annual Development Programme (ADP) fund for the total sanitation programme.

Management of solid domestic waste and better hygiene practice are the two major components of CLTS that require more in-depth attention and follow-up by the spontaneous leaders and the implementing organisations. Change in practice from open defecation to the use of hygienic latrines and other hygienic practices will take time and requires strong commitment from all stakeholders.

Regular monitoring and follow-up by the community and NGO staff are necessary for the sustainability of the CLTS approach. The general assumption is that once people are accustomed to using latrines and safe water, they will not opt for open defecation.

We have identified the following issues as effective and essential to scale up this approach:

- *proper ignition*
- *systematic facilitation support*
- *active community participation*

- *affordable options for latrines and tube wells*
- *easy access to raw materials*
- *coordination with local government and other organisations*
- *regular follow-up.*

Background

Community Led Total Sanitation (CLTS) is a participatory approach to sanitation developed in Bangladesh in late 2000. It is a general public health prevention programme which aims to reduce the incidence of human illness and disease from a wide range of activities. It follows the philosophy of Participatory Reflection and Action which has spread to other countries such as India, Pakistan, Indonesia and Cambodia. The nature of its approach, spread and potential has caught the attention of others.

The CLTS approach relies on creating a demand for the elimination of open defecation (and hence for toilets). It is not an external project where toilets are chosen and built for communities. The first step is to raise awareness of the risk of open defecation and to reinforce a natural sense of 'disgust' about this practice.

Facilitators encourage communities to carry out their own appraisal and analysis of community sanitation. This generally leads them to recognise the volume of human waste they generate. They realise how the practice of open defecation results in environmental degradation, which directly affects health and quality of life.

Over the years, NGOs and community-based organisations have committed to increase and

improve support to expand CLTS services to many villages in Bangladesh. CLTS is thought to have been spread to well over 2,000 *paras* (hamlets) in the country. This figure shows that the approach is on track to meet the Millennium Development Goal (MDG) target in sanitation by 2010. This MDG called for access to safe drinking water and basic sanitation for all. Advocates of CLTS see the potential for a movement with exponential spread, bringing multiple gains for all who live in the communities. CLTS is also used as an entry point for broader livelihood activities.

The early success and rapid spread of CLTS has occurred without much research into its processes or the conditions under which it works. Until now, only a few studies have been comprehensively conducted to get a better understanding of the decentralised sanitation system in Bangladesh. Various non-governmental agencies have conducted some limited studies in isolation.

Experiences gained from the field

Experiences presented below are based completely on the field experience of the author. In no way is this an outcome of any study or research.

Access to latrines

The proportion of latrines built during pre-CLTS period varied between villages. Very few household members in the villages used another household's latrine. Poor people lacked land to build their own latrine. Some villages are very small and densely populated.

CLTS process

The ignition process of CLTS at community level is similar in each village. The first task is to awaken

the community to the bad effect of open defecation. Facilitators then work with people to put in place a process to overcome these problems. The activities in this process are described below.

Awareness building

Awareness building starts with an informal gathering of people in the village known as an "*ignition session*". The whole community participates in the discussion. Flow charts, prepared by the participants, show the bad effects of open defecation. The examples might include faeces travelling from the ground to people's mouths via flies, or water being polluted by faeces. Related issues, such as calculating the amount of faeces deposited per day or per year in the community, are also discussed in the session.

Community mobilisation

After becoming aware of the sanitation issues, people develop their own action plan on how they will stop open defecation. They are encouraged to start with the resources they already have and are motivated to see how they can share these resources. People wishing to install latrines are encouraged to start with affordable ones so they are not burdened by high costs. NGOs also mobilize children, students, school teachers, *imams* (religious leaders), and Union Parishad (UP) members to encourage people to install latrines. According to an NGO field staff member, "*Let the people start with a cheap latrine first. They will go for improved quality when they become accustomed to using the latrine.*"

Access to resources

The development of an action plan helps people identify and procure resources from within and outside the community. To begin with, they come forward with the resources (both cash and in kind)

of the family. They also find resources from Union Parishad (local government). UP spends 20% of the ADP fund for the local level sanitation programme.¹ Some NGOs also provide training and technical support to install various types of low-cost latrines, giving poor people an easier start (VERC, 2005).

Many small entrepreneurs come forward to produce latrines and sell spare parts of tube well close to the community. This growing business means people do not have to buy latrines from a distant market place with high transportation costs. A number of small businesses in sanitation seem to have started as a direct result of the community mobilisation/awareness programme.

Several NGOs provide support to extremely poor people through their programmes². Some provide support for installing latrines and tube wells to educational and religious institutions and growth centres.

Changing behaviour: rates of open defecation

Previously, defecation in the open field or in the bush was common among the rural people of Bangladesh. A few rich and educated families had latrines some decades ago, but these were not sanitary. Defecation in the open was a big problem for women as they cannot go out to do this during the daytime. They had to go either very early in the morning or wait until night. More recently, the destruction of bush land and new settlements have reduced the scope for open defecation. In rural areas, roadsides or river/canal banks are now used

for defecation. Children defecate anywhere they like and mothers do not bother to put the faeces in a safe place. The faeces become covered with flies, attracts chickens and infect the water supply. As a result, diarrhoea has become a common disease in rural areas.

The level of open defecation has reduced significantly, although it continues in some villages. It is hard to discover who was responsible, as the faeces are found by the side of road, in the periphery of the villages and on common ground. After more detailed discussion, some households have admitted to open defecation.

Changing trend

Over the years, the Bangladesh government has distributed sanitary latrine sets to people free of charge. They were distributed through UP as part of the national sanitation programme. As described earlier, 20% of the Annual Development Plan (ADP) fund is allocated each year for sanitation improvement in each Union. Some NGOs have also distributed latrines to their members. However, in most cases the latrine sets were used to feed cattle, to keep chickens or to wash clothes on the slab. Many people had even broken the water seal, believing it obstructed stool flow. Although all the installed latrines were in use, some of them were not maintained well.

But the main reason for not using the latrines was lack of awareness. Through NGO staff raising awareness of the consequences of open defecation, the community now gives equal importance to

¹ This is easy for certain areas as some of the organisation is directly involved with the Union Parishad and the various committees and taskforces developed by the government programme.

² BRAC (Building Resources Across Communities) under the CFPR (Challenging the Frontiers of Poverty Reduction) programme and CCDB (Christian Commission for Development in Bangladesh) as part of the health programme.

constructing houses for shelter and latrines for defecation. The construction of latrines has become an indispensable part of their life.

There are still some people who opt for open defecation. The reasons people gave were the failure to repair latrines due to poverty, or the inability to share them. Some said the latrine was damaged by flood, and that there were not any available in the working fields, markets or public places. Other reasons given were children not being able to sit on the pan as the foot rests were too far apart, and being afraid of latrines as they are dark and confined, especially at night.

Options for different types

Before the introduction of modern sanitary latrines, people had to use water-sealed ring-slab latrines. These are costly for poor people. VERC has introduced over 30 different types of sanitary latrine, most of which are within the financial reach of poorer people. The cheapest latrine costs only Tk 50 (US\$ 0.50). In addition, raw materials for the construction of latrines are available in the rural areas. As a result, people can easily make latrines within few hours by using local materials, such as earthen pots, bamboo mats, jute straw and plastic pan and sheet.

Household latrines

The materials used in household latrines vary from place to place. The super-structure also varies; it may be made from jute sticks, bamboo or cement. The pit lining materials differ too, from unlined to bamboo, polythene or concrete. The cost varies, but is mostly around Tk 150 – 400 (although costs have been found to range from Tk 50 to 15,000).

Procurement

People in rural areas have easy access to cheap latrine materials. They do not wait for the government to supply free latrines. Easy technology also encourages poor people to install latrines at their home. NGOs such as BRAC, CCDB, CARITAS and World Vision provide water-sealed latrine sets to poorer people. Some NGOs also extend credit support for installing latrines, with minimal or no interest. Others provide support to primary schools and markets, with tube wells, latrines and urinals.

People learned from others how to install their latrine, or were helped by neighbours who had already installed theirs. Rural Sanitation Engineers³ received training from the NGOs on installing different types of latrine and supporting people with their own installations.

Maintenance

In some villages latrines had collapsed following heavy rain, and people could not afford to repair them. The “*monga*” seasonal poverty was evident in some areas during the investigation. However, we observed that some of the latrines were upgraded with improved design. This shows the high motivation of the community, who now feel that the latrine should be hygienic and usable for all family members.

Coping with disaster

Poor people who can afford latrines still find it difficult to safeguard them, especially during the rainy season and floods. During floods, most areas are submerged by water, resulting in problems of

³ Members of the community who have received training from NGOs on the installation of different types of latrines are known as Rural Sanitation Engineers.

defecation. Awareness programmes run by local NGOs motivated people about the benefit of using latrines, and as a result they reconstruct latrines and houses simultaneously during the post-flood period. People living in riverside areas face frequent problems due to river erosion and loss of land. As a result they migrate to other safe places where they need to construct new houses. Once there, they construct a latrine alongside their new houses. Field experiences support the view that rural people have already developed skills for reconstructing a latrine within the shortest possible time.

Access to safe water

The common sources of water are tube well, river, canal and pond. People use these sources for taking baths, washing household goods and bathing cattle. The situation has now improved – with a few exceptions, people are using tube well water for drinking only.

Access to safe water under total sanitation is another big concern for rural people. People face more difficulties in places with a low underground water table. They used to use pond, river or canal water for all purposes; subsequently, they have used well water for drinking. Due to the effect of media campaigns and the awareness building programme, people are becoming aware of the importance of using safe water.

Past practices

Some women said local belief was that rice and *dal* (pulses) should be cooked with pond or river water to maintain quality. They said pond, river, canal or well water were the common sources for drinking water, as they did not have access to tube wells in the past. People did not clean their

water pot before collecting water, and did not always cover stored water.

Present sources

People who have received health education do not use unsafe water, so the most common source of water has become the tube well. In many villages people said they were using tube well water for all purposes, including drinking. Scarcity of pond and well water during the dry season, as well as pollution of water due to flooding, were the reasons given for not using these sources. The installation cost of a hand pump in high water table areas is about Tk 500, which seems very cheap. But the cost of constructing a platform is very high – about Tk 1,500. Because of this, people opt for installing a tube well, but do not make a platform. As a result, used water trickles down alongside the tube well pipe, polluting the underground water.

Seasonal disaster and scarcity of water

Water is scarce in areas where the underground water table is low. During the dry season it gets lower, and people cannot lift water using hand pumps. They have to depend on the deep tube well – the *tara pump*. Respondents said that installing these pumps is a costly process; the cost ranges from Tk 15,000 to 25,000, which the poor cannot afford. Government and NGOs have now set up *tara pumps* in public places, for use by all the community.

Hygiene practices

Hygiene is an integral part of the total sanitation process. NGOs have managed to raise awareness among rural people of common hygiene practices. In the past, open defecation in bare feet was common among the rural poor. People working in

agricultural fields did not wear slippers or shoes; they did not even use soap or ash after defecation. An effect of the awareness campaign is that people are now following some hygienic practices. Among those reported are:

- using slippers in the latrine
- using soap/ash after defecation
- cutting fingernails
- covering food and water
- washing hands before preparing food and eating.

Respondents said that it was common practice to keep a soap or ash pot inside the latrine. Reasons given for not washing hands were the high cost of soap, soap being taken away by a crow, soap not being available while working in the field, and a lack of water. Reasons given for not using slippers in the latrine were lack of knowledge, inability to purchase slippers and not being in the habit of wearing slippers.

In rural areas, people have made water channels for the easy flow of waste water from the tube well, which is stored in a pit. They generally dump cow dung in a particular place to use as manure in the field or to use as fuel. After NGO intervention, some people have begun dumping household waste in a pit. But the rate of such practices is not significant. When asked about their sources of knowledge on hygiene practices, people mentioned NGOs, government health departments, doctors and the media.

Social capital and spontaneous leaders

Social support

The CLTS program has strengthened the social bond between people of all occupations. During the early

discussion sessions held by NGOs, people were asked to consider the amount of faeces accumulated in the area, and the flow of faeces from the ground to people's mouths. Rich people said they would not be safe if their neighbours used open latrines or defecated in open places. So, mainly to keep themselves safe from disease, they helped their poorer neighbours to install latrines. In some areas rich people provided a range of free materials to the poor, such as bamboo, slab and rings. Some gave land to poor neighbours to set up latrines, and some distributed short-term loans.

The formation of children's groups has created scope for their early involvement in the total sanitation process. The general assumption is that these children will never opt for open defecation.

Rise of spontaneous leadership

The ignition process and social mobilisation has compelled some enthusiastic people to offer voluntarily help to the community. They have given advice, helped people to procure materials for the installation of latrines and tube wells, and offered voluntary physical labour. They are known as "*shavab neta*", or spontaneous leaders. By profession they are day labourers, students, teachers, small businessmen, housewives or farmers. CLTS has created scope for many poor people in rural areas to develop leadership in the overall community development process. Comments from the spontaneous leaders show their enthusiasm and commitment:

- We have to come forward to ensure proper sanitation of the community.
- We have the potential to work for ourselves. We will not be dependent on government and NGOs.

- We will look for our own resources to overcome the problem.
- We are now providing support to our relatives and friends in other areas.
- We will make the people aware of sanitation and support them to mobilize their own resources.
- We will keep contact and coordinate with the UP to achieve our objectives.

Collective efforts of GO and NGO

The CLTS programme has established links between the government and NGOs working on health and hygiene. The government's target of 100% sanitation by 2010 gave an opportunity for the NGOs to work in collaboration with the government. Taskforces developed at different levels have become active, and people from various segments of society participate. People now are more aware of the proportion of the ADP budget allocated for the sanitation programme at Union level.

CLTS has made the UP sub-committees accountable for the use of the funds allocated for a programme. Duplication and overlapping of activities on sanitation programmes by the government and NGOs have reduced significantly in the study area.

Impact of CLTS programme

People used to think that the government should ensure better sanitation for the community at any cost. They also felt that the government should supply latrines and tube wells. After the intervention of the CLTS programme, they now realise that they need to share responsibility with the government to ensure total sanitation.

There have been some changes in the programme implementation policies. The implementing organisations have stopped providing subsidies for latrines. The local UP has also become careful in selecting people for the free distribution of latrines. NGOs are now putting more emphasis on software-based training, motivation and the awareness programme, rather than on distributing latrines. As a result, people's dependency on NGOs and UP for hardware has reduced substantially.

Recent experience shows that people have benefited from CLTS programmes in almost all the intervention areas. Poor people are less likely to suffer from diarrhoea, which means treatment costs have reduced significantly. This has resulted in more working days, which means increased income. People have also been motivated to start sanitation businesses; they are now producing low-cost latrine materials and selling these in the local market.

Sustainability

Sustainability of the CLTS approach largely depends on the proper ignition, monitoring and follow-up activities of the community and NGOs. Once poor people are accustomed to using latrines and safe water, the general assumption is that they will not opt for open defecation. The availability of quality materials at an affordable price for the poor is a prerequisite for the sustainability of CLTS.

To ensure sustainability, implementing organisations need to think about providing child-friendly latrines and to create options for people living in disaster-prone areas. An alternative source of safe water is essential for people living in the

low water table areas. People living in flood-prone areas suffer from a scarcity of safe water and places for defecation during floods. Organisations should give proper attention to the issues facing these areas.

Scaling up

Over the years, NGOs working on CLTS have gradually expanded their working areas, taking into account the total sanitation approach. A range of

issues have been identified which are found to be effective and essential for scaling up this approach:

- proper ignition
- systematic facilitation support
- active community participation
- affordable options for latrines and tube wells
- easy access to raw materials
- coordination with local government and other organisations
- regular follow-up.

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*Babar Kabir, Tanzeba A Huq,
Rezaul Karim and Mizanur Rahman*
BRAC WASH Programme

Abstract

The Government of Netherlands supported BRAC WASH initiative is a scaled up programme to bring sustainable water and sanitation to over 37 million people in a range of locations across the country. It is based upon carrying out a census of the existing situation and an intensively supported hygiene education based approach to encouraging lasting behaviour change. The case study describes the general approach and early progress in one location.

Background

Safe water, sanitation facilities, and hygiene are pivotal for life. They touch every aspect of human activity, from environmental protection to safe drinking water and from empowerment of women and education of girls to the reduction of productivity losses. More than a quarter of all people in the developing world lack access to safe drinking water sources, and more than half lack sanitation facilities (WHO and UNICEF, 2006). Lack of safe drinking water and sanitation has a profound effect on health, especially waterborne or diarrhoeal diseases, which have a significant impact on children. It is estimated that around 3,900 children die from waterborne diseases every day (WHO and UNICEF, 2004).

In recognition of these facts, the Millennium Development Goal (MDG) targets include halving the proportion of people without sustainable access to safe drinking water and sanitation between 1990 and 2015. Table 1 shows the water supply and sanitation (WSS) coverage in Bangladesh from 1990 to 2006. It highlights the fact that the lack of basic sanitation and adequate

hygiene knowledge contributes to child mortality, which could be curtailed through behavioural

TABLE 1 Water and sanitation coverage in Bangladesh

Coverage	1990	2000	2005	2006
Safe water	85.2%	97%	74%	74% ¹
Sanitation	21%	41% ²	39% ³	39%

Sources: UNDP 2006, JMP 2006, SDNP 2005, UNICEF Bangladesh 2006

change in hygiene practices such as access to sanitation and safe water. For example, hand washing alone can reduce mortality by 42%.

The Government of Bangladesh (GoB) has set an ambitious goal of achieving full sanitation coverage by 2010. This requires a 12% per annum increase in coverage whereas the average annual increase since 2003 has been 4%. However, GoB has taken initiatives to achieve this national sanitation target in collaboration with development partners and NGOs. One of these is the BRAC Water, Sanitation and Hygiene (WASH) Programme.

BRAC WASH, the Bangladesh element of the Government of Netherlands funded programme, will support extending access to safe, reliable and sustainable drinking water and sanitation for 50 million poor people. It aims to initiate a holistic approach incorporating hygiene promotion and education to 37.5 million people, ensuring access to sanitation services to 17.6 million people, and providing safe water services for 8.5 million people⁴. It will ensure proper maintenance and

management of the existing water supplies by the community. Fulfilling BRAC's commitment to the poor, the programme incorporates sustainable and appropriate services to the poor and hardcore poor, and particularly to women.

Justification of undertaking WASH programme

In Bangladesh, unsafe water, poor sanitation and improper hygiene practices contribute to the death of thousands of children less than five years old. Therefore, every family in the community should know the risk factors that result in diarrhoeal or waterborne diseases. Contributing to these risks are unfavourable sanitary practices such as faecal disposal in open places, improper waste disposal, absence of latrines, lack of proper hand washing and poor food handling, and lack of access to protected water. Hygiene incorporates healthy habits or practices that ensure disease prevention and a healthy environment. Hygiene practice is integral to a healthy life, an environment free from diseases, and prevention in the spread of various waterborne diseases.

Similarly, safe water, sanitation and improved hygienic practices play an important role in poverty reduction. The WASH programme also pursues the goal of achieving a sustainable influence in health by reducing maternal, child and infant mortality rates by improving the health status of children, adolescents, women and men. In spite of concerted efforts to provide safe water over the preceding decades, approximately 25 to 30 million people are affected by arsenic contamination in drinking water. Coverage has decreased from near universal

¹ Reduced due to arsenic contamination

² Includes non water seal latrine

³ Fixed defecation is considered by GoB as latrine coverage which is 84% in 2006

⁴ Where 7.5 million people will have access to safe water through the repair of existing water facilities and 1 million people will get access to safe water supply through new water supply facilities

access to around 74%, as shown in Table 1. Sanitation coverage is also less than four in ten. Through direct and indirect support, BRAC will raise the sanitation coverage to 80% in 150 Upazilas, including at least half of the uncovered households below the poverty line. There is no reliable countrywide data on hygiene practices; however, the lack of hygiene practices deprives the community from the benefits of safe water and sanitation.

Among the constraints to improving water and sanitation are the lack of hygiene knowledge and practice, insufficient and inadequate financial resources, and inappropriate adaptive approaches in design and implementation of drinking water sources and sanitation systems. The community led approaches in the BRAC WASH programme (and others) may help to conceptualise the water and sanitation situation, leading towards a solution overcoming these constraints. It will help the community to understand the necessity of integrating safe water, sanitation and hygiene practices, which might be a more effective measure than providing only complimentary hardware.

This approach is expected to assist in reducing the burden of disease, relieve human suffering and ensure considerable economic benefits. The Government of Netherlands has helped the BRAC WASH programme to emphasise interventions that will improve the health of the population in an affordable, equitable and sustainable way, with particular focus on reducing child morbidity and mortality.

WASH programme device

BRAC is implementing the programme in 150 sub-districts of Bangladesh with an innovative and

education-focused approach. It is composed of a preparation phase of six months followed by a start-up period of 1.5 years. The BRAC WASH programme was launched in May 2006 and currently has a staff of 5,360. It has a target population of 37.5 million in a total programme area of 1,468 unions and 89 municipalities.

The programme focuses on multiple challenges such as:

1. reaching the poorest people to ensure consistent hygiene practices
2. issues related to water quality and water management
3. improving pro-poor sanitation technologies, especially for high water table areas.

WASH programme goal

The WASH programme aims to help, in partnership with the GoB and other stakeholders, to achieve the MDGs and national objectives related to water, sanitation and hygiene for all – especially for underprivileged groups in rural Bangladesh – thereby improving the health situation of the poor and enhancing equitable development.

Specific objectives

Within the programme area (in rural parts of the country) to:

- Objective 1: Provide sustainable and integrated WASH services.
- Objective 2: Induce safe hygiene behaviour to break the contamination cycle of unsanitary latrines, contaminated water, and unsafe hygiene behaviour.
- Objective 3: Ensure sustainability of and scaling-up of WASH services.

The WASH programme is divided into three parts, or '*phases*'. Each phase consists of 50 sub-districts. Within each phase are three stages of work activities where hygiene education, sanitation and water aspects are addressed respectively. The WASH programme has five major components:

- **Water** (renovation of existing/traditional water sources, small piped water supply schemes by bore holes/surface water, capacity development, innovation and technological options; coverage: 8.5 million).
- **Sanitation** (installation and maintenance, micro-enterprise development, revolving fund for poor, subsidy for hardcore poor, capacity building; coverage: 17.6 million).
- **Hygiene practice** (behaviour change communication, advocacy, hand washing, social marketing, formative research; coverage: 37.5 million).
- **School sanitation and hygiene education** (hygiene promotion and education, installation and maintenance of tubewell/latrine, separate latrines for girls, school compound cleaning and disposal of solid waste).
- **Public-Private Partnership** (partnership with soap companies, local sanitation entrepreneurs, Local Government Institutions (LGIs), Department of Public Health Engineering (DPHE) and other stakeholders such as the Watsan committee, Rural Electrification Board, Power Development Board and an advisory committee comprised of relevant specialised organisations).

While accomplishing WASH activities, BRAC will coordinate with influential stakeholders and community leaders, religious leaders, and union members in the local context to influence and motivate towards WASH activity.

The basis of the targeted water and sanitation coverage

The BRAC WASH programme has taken the present structure from a series of lessons learned over the years in providing various, water and sanitation services at grass roots level. The programme developed with the changing demands and needs of the poor. It is estimated that the proposed 100 pipe water systems will serve 0.25 million (pipe water system 100 X 500 HH X 5 person /HH = 250,000) and the proposed 3,000 deep tubewells will serve 0.75 million people (deep tubewell 3,000 X 50 HH X 5 person /HH = 750,000). Thus, WASH will provide safe water to 1 million people through new water interventions.

The targeted sanitation coverage has also been delineated from the following estimation:

1) Total population	
250,000 /upazila X 150 upazilas	= 37,500,000
2) Target in WASH programme 80% HH	= 30,000,000
3) Existing latrine coverage	
33% HH (base line survey)	= 12,375,000
Therefore, accomplishing target for sanitation in WASH	= 17,625,000

Upazila selection criteria

While selecting 150 upazilas, the Bangladesh sanitation task force has ensured harmonisation between other donors and WASH activities by allocating different project areas for BRAC-WASH according to three selection criteria (poor area, low sanitation coverage, arsenic contaminated area) of the WASH programme. There is a sub Local Consultative Group (LCG) forum on WSS, which coordinates to harmonise the programme and to avoid duplication of development work in the same area through regular review meetings.

WASH programme concepts and strategies

The overall programme strategy has its foundation in hygienic practice and behavioural change. Capacity development, community organisation, institutional mobilisation and the availability of relevant facilities are key components of the WASH programme, which seeks to initiate, establish and reinforce behavioural change and sustainable hygiene practice. The micro-strategy is to sensitise and stimulate bottom-up participation on planning and implementation at the village level. WASH committees represent the villages. Their members are comprised particularly of poor people and women, other active committees and agencies, and other local NGOs. Thus, the programme will be reinforced through learning, reaching beyond the BRAC network. The plans were developed by adopting the Participatory Rural Appraisal (PRA) method and later at union level with a multi-stakeholder group. A standard action plan methodology is used for most villages but this is applied flexibly where the context dictates.

Specific support measures such as access to loans and grants have been included in the programme to ensure construction of sanitary latrines by the poor and the hardcore poor. Aligned with the policies of GoB, the proposed programme has allocated financial support for hardcore poor families to install slab latrines.

Programme Assistants, along with Programme Organisers, are supervised by trained Upazila Managers in each Upazila. Regional Managers of BRAC WASH local offices are responsible for overall supervision of different sub-districts under his or her jurisdiction. A Programme Management Team,

with the assistance of a Programme Specialist team, manages and supervises the programme from central to Upazila levels.

During this initial two-year period, there will be different types of action research and experimental or comparative trials on various issues to develop a highly effective, community driven, large-scale and sustainable programme. At every point the key indicators are checked and monitored qualitatively as well as quantitatively. It is important to assimilate key lessons learned during the first year of the programme and to modify the programme design on a budget neutral basis for improving subsequent activities.

Scope of intervention

WASH interventions occur at six levels: *household level*, through individual and group education or interaction, *institutional level*, through educational and social institutions, *community level*, through involving village WASH and WATSAN Committees, *administrative level*, through social mobilisation and advocacy at sub-district and unions, ensuring *partnership* with corporate sectors for promoting the use of soap, and *reinforcement of messages* through interpersonal, electronic or print media, folk media and popular theatre.

Activities before commencing intervention

Community census

To set targets for the programme, it is important to know the present status of water and sanitation situation. It is similarly important to know the reasons why such a vast number of people do not have latrine and safe water facilities. Community

censuses have been conducted in every household and institution to know the WASH status. The census was instrumental in sensitising people at the grassroots level about sanitation, safe water and hygiene issues.

Programme staff were involved in the “community census” which covered every household. This survey identified each and every household and determined their WASH status before starting project interventions. The objectives of the community census are:

- Identification, benchmarking and quantification of WASH indicators to measure the post-intervention impacts
- Provide a baseline against which to monitor progress
- Identify and locate groups (such as the hardcore poor) within the village that need specific attention
- Provide the background for the development of a village implementation plan in terms of number and types of latrines that need to be constructed and type of interventions that need to be made to ensure safe drinking water supply.

The following activities are carried out under the census:

- Survey method design
- Questionnaire preparation and finalisation
- Training of data collector /staff
- Field data collection
- Toilet observation

■ Data entry and analysis

The community census has been carried out in all 150 selected sub-districts in three phases. Community census of first 50 sub-districts began in August 2006 and was completed in December 2006. The second phase census, consisting of the next 50 sub-districts, began in January 2007 and was completed in June 2007. The final 50 sub-districts began in July 2007 and was completed in December 2007. Findings from the community censuses along with PRA will be used to design and implement WASH intervention activities⁵.

Toilet observation is one of the decisive activities during door-to-door information collection. It provides basic information about the initial latrine status, endorses and helps the WASH staff to be accepted within the community, and increases their accessibility to the community. Furthermore, the community becomes sensitised to the new information and messages being promoted. Rapport and empathy are strengthened through allowing an outsider (WASH staff) into the most private area (latrine) of any house.

Programme Intervention

WASH programme intervention started its field level activities in January 2007 given completion of the census, along with the following assumptions. WASH will continue its programme activities (new constructed toilet observation, social mapping, and formation of village WASH committee) systematically. Hygiene promotional activities are

⁵ There are 9.5 unions on average in each upazila and WASH has three staff at each union. Altogether, that makes 28.5 staff in one upazila excluding four staff at upazila level, thus around 32.5 staff members are in each upazila for the WASH programme. One staff member is able to complete at least 30 questionnaires a day (sometimes more depending on the distance). It was found that on an average, 35 questionnaires (ie households) could be completed in a day per staff member and 1,137.5 households per day per 32.5 staff members. WASH has 1,625 (50*32.5) staff at 50 upazila and therefore 56,875 (1625* 35) household's information can be collected in a day. So, an estimated 2,736,434 HHs in the first 50 upazila can be completed in (2736434/ 56875) 48.11 working days.

initially the primary focus, followed by messages on sanitation practices and safe drinking water.

Assumptions

- Every household should have its own or shared sanitary latrine
- Only two families should share a joint latrine, as per government policy
- Newly constructed sanitary latrines need to be technically safe and sound to the users and environment
- Hardcore poor are identified and selected households will receive materials and install sanitary latrines
- Annual Development Programme (ADP) block grants will be mobilized for proper use by Union Parishad for sanitation coverage under programme area
- Poor families, identified by the Village WASH Committee, will receive loan support to install new latrines and replace latrines
- WATSAN committees in all unions will be active or have reactivated
- Ensure representation of Village WASH Committee, BRAC WASH in the Union WATSAN committee.

Social mobilisation, and hygiene and sanitation promotion through social mapping

The aim of PRA is to help strengthen the capacity of villagers to plan, make decisions, and to take action towards improving their own situation. It also involves BRAC WASH staff learning together with villagers about the village. The lessons are designed to provide staff and villagers with a better understanding of (a) the bio-physical, socio-economic, and institutional characteristics of the

village through PRA, and (b) the use of PRA information as a basis for designing, implementing and managing village WASH (water, sanitation and hygiene) activities.

In the WASH activity areas, BRAC forms a Village WASH Committee that consists of clusters of between 50-300 households, depending on the location of the households in a union. For the formation of the Village WASH Committee, each cluster consists of 10 households. Before the cluster meeting takes place, the Programme Assistant (PA) ensures that female members from all 10 households participate in the meeting. To conduct initial WASH activities, 3.5 to 4 days are needed.

PAs remind community members of previous BRAC interventions involving oral rehydration, or drinking saline, as a health measure for diarrhoea. It is emphasised that the WASH programme is a continuation of the initial interventions, currently undertaken to prevent the spread of diarrhoea and other waterborne diseases. BRAC staff members disseminate information about WASH to the villagers in half a day and extend an invitation for the next meeting.

During the first day of the meeting, respective staff members ensure the presence of local elites and other general people. The staff members provide five messages on hand washing: three on hand washing before taking food, and two on washing after defecation; then they review, with their feedback. A participant is also invited to demonstrate the difference between hand washing with water only and proper hand washing with soap. Then a map is drawn on the ground showing all the houses in the cluster. This map is only within the small women cluster to sensitise. Availability

of sanitary latrines and tubewells are also portrayed in social mapping. BRAC-WASH staff members record which people have drawn the map, demonstrated the hand washing and the number of male and female members who participated in the meeting.

Apart from the cluster meeting for women, the village is split into six clusters taking 50 households each for male members, adolescents and children aged between 9 to 11. They are informed in separate meetings as organised before.

A house that is acceptable to all and located at the centre of the 300 households or the village is selected as the “centre house” and, after consultation with its owner, a time and date is chosen for the next meeting. To assist the formation of the WASH committee, one or two acceptable, active community leaders are invited to draw the social map in the next day at a designated time and place. The next day, people are divided into two groups that walk the whole area of the village and return to the same spot. After the visit, the participants comment on what they have seen and discuss steps to overcome the situation. Initiative is taken to create a sense of competition among the clusters.

With active participation from all, a map is drawn on the ground. Then a social map is drawn on a big piece of paper using code and symbols. The interpretation of using code and symbols are explained in detail. The names of the people who have participated in drawing the map are recorded on the map.

The map is a pictorial tool, illustrating the entire sanitation system, especially the location of latrines,

problems in safe drinking water supply, location of the tubewells, water drainage system and the socio-economic condition of the inhabitants. At a glance, one can glean the information of the respective village motivating discussion to resolve the apparent problems. A comparative analysis is made between this data and the data collected initially by BRAC during household survey or census. Before ending the session, everyone is thanked for their participation and asked to join the next day's meeting.

On the next (third) day, a person is selected among the participants to preside over the meeting. Those who participated in the preparation of the social map and cluster-based information present the findings gathered. A competitive environment is created among clusters to develop the situation.

Formation and orientation of the Village WASH Committee

With upfront participation from all, the Village WASH Committee is formed for the 300 households for a period of two years. The president of the committee is elected from the respected people and local leaders. After electing a representative from female youth as member secretary and one village society or BRAC village organisation member as treasurer, the Village WASH Committee is formed. It consists of 11 members of various groups and trade. To emphasise women participation, the committee must have six women members and five men among the total 11 members. The person elected as president must be able to dedicate enough time to the committee for improvement of safe water, sanitation and hygiene in the village. Union Parishad members and women members in their own area are selected as advisers of the

Village WASH Committee. In other places, two advisers are selected from the qualified and respected people of the village.

After the meeting, a resolution for the meeting is adopted and names and signatures of the participants are recorded. The president keeps the social map, register and file to enable him or her to record future activities.

The committee will usually initiate the following steps to execute WASH activities:

- Identify problems and resolve them by using existing resources
- Mobilize local resources to assist the local poor and hardcore poor people
- Undertake actions considering the significance of public health and develop human resource
- Establish a sanitary latrine in every household and ensure its use
- Repair, maintain and properly use safe water technology
- Hand over responsibilities to the village committee for further improvement after certain period of implementation of activities has passed.

Before forming the committee, a social and professional rapport is built with villagers, which is important to communicate to everyone irrespective of social class, and to assess their interest and strengths.

The members of the committees are empowered by orientation and play a significant role in promoting WASH activities in their respective villages. The first meeting is held within seven days after formation of the committee. An orientation

session is organised within 15 days after formation of the committee, where the members are told their duties and responsibilities. The advisers and committee members create a specific yearly plan to ensure safe water and total sanitation in the village.

In the reporting period (until December 2007), 20,835 Village WASH Committees were formed and orientation sessions were held for all the committee members. The active and enthusiastic facilitation, combined with regular follow-up and monitoring by the WASH committee members, will help to reinforce community participation and mobilisation regarding water, sanitation and hygiene practices.

Challenges at this stage of programme activities

The following challenges have been identified:

- Ensure hygienic practices irrespective of age and socio economic class
- Ensure alteration of unhygienic latrine to sanitary latrine from 66% to 100%
- Ensure installation of sanitary latrines by all, irrespective of socio economic class
- Ensure use of sanitary latrine by all age groups
- Ensure sanitary latrines at atypical areas e.g. *char* (low-lying river islands) land.

Impact indicators

Through home visits, discussions at mosque, religious or education institutions, the committee works to improve awareness, ensure safe water and use of sanitary latrine at every household. WASH also involves school children to make them aware them on these issues. In addition, the village committee – in coordination with the Union

Since it is difficult to elaborate on the impact of the WASH programme in all the programme areas and give detailed information of changes in all the sub-districts, this case study will focus on one sub-district.

Mymensingh Sadar sub-district, located in northern Bangladesh, has been chosen because WASH has been implemented there for more than 16 months. Given the volume of data available for the entire sub-district, the data of one union (about 10 unions to one sub-district) will be used in the case study. Chornilokhiya, which had the lowest sanitation coverage (total latrine coverage 34%, sanitary latrine coverage 19.57%), is a union under the first phase of the WASH programme and is being considered for this analysis. It will provide an overview as well as fresh insight into the process being followed by BRAC WASH to change the general sanitation situation of this area.

Study area: Chornilokhiya; Mymensingh, Village 11

Study population: Total sample size was 43,285 people

Sampling technique: For the intervention group, all eligible inhabitants (those who are not resident to one area for more than six months and/or not visitors are eligible for the survey) of the pre-intervention area were surveyed.

Objective: To reveal the difference in perceptions and knowledge on safe water, sanitation and hygiene practice at baseline (pre-intervention) and after the intervention implementation phase began.

Study design: longitudinal panel study (ie the same individuals at base line and after the intervention implementation started were observed).

Data collection tools: For the quantitative part, a structured questionnaire was used. For qualitative data collection, observation techniques were used and triangulation was done for effective evaluation.

Pre-testing the questionnaire: Pre-testing was also one of the important steps in preparing the final questionnaire. The purpose of the pre-test was to evaluate the level of success in obtaining the objective and goal of the intervention. The pre-test further sought to indicate the clarity of the instructions and the questions, which influenced and motivated the respondents to answer.

Training for the Data Collectors: There are two Programme Assistants, who are selected locally to perform the programme activities and collect data. Training for the Programme Assistants and Programme Organisers is given to ensure consistency of data collection.

Quality control: There is a quality control check in the data collection procedure by Monitoring and Research and Evaluation Departments to ensure the quality of data attained. The Research and Evaluation Department and the Monitoring Department cross check the collected data through an independent random sampling of homes initially interviewed by WASH.

Data analysis: During the survey, which is carried out during the inception period, data is preserved to see the impact after the intervention, and strategies of intervention are designed depending upon the survey findings (sanitation and water situation).

Intervention period

After 10 months of the implementation stage, it was revealed that around 522 latrines were installed and/or transferred to latrines with water seal, and that the *sanitation coverage increased to 25.13% from 19.58%*. It has also been revealed that after formation of the Village WASH Committee, VWC (July 2007), people are more motivated, inspired and become more conscious to change their sanitation and water situation. Hygiene

TABLE 2 Chornilokhiya Union details - pre intervention

HHS	Population	Sanitation								Tubewell					
		hard core poor	total latrine	own latrine	shared latrine	with water seal	without water seal	pit/open defeca- -tion	sanitation coverage (%)	total tube well	func- -tional	non func- -tional	own	shared	tubewell coverage (%)
9,404	43,285	1,163	3,290	2,916	374	1,841	1,449	360	20	5,148	5,088	60	3,541	1,607	54

promotional activities have influenced the installation and the repair of tubewells in the locality, though messages on safe water-related issues have not yet been disseminated at this programme stage. Table 3 shows the status of sanitation and water coverage in Chornilokhiya until November 2007, which can be compared with the initial situation, shown in Table 2.

In the case of Chornilokhiya in Mymensingh, it is apparent that WASH activity in the area has increased sanitation coverage as well as accessibility to safe water. In a comparison between the initial data gathered on Chornilokhiya in Table 2 and the subsequent data reflected in Table 3, the increase in numbers indicate behavioural change and demand creation – two objectives of the WASH programme. The percentage of those who defecate in a pit or in the open has been reduced by more than 16%. Similarly, the percentage of people with their own latrine has increased by nearly 15%. These two statistics in particular are, as previously stated, indicative of positive change aligned with the goals of WASH. The decrease in the percentage of individuals who defecate openly or use a pit

latrine demonstrates a behavioural shift resulting from the hygiene education and promotion approach employed by WASH. Once individuals are informed of the environmental and sanitation hazards associated with certain behaviours, the activity is encouraged to end.

Furthermore, the community approach places pressure on individuals in the community to conform to the agreed behaviours and standards. The increased number of individuals with their own latrine demonstrates the steady progression of the bottom-up demand approach that WASH seeks to promote. Having been educated about issues of sanitation and given the knowledge and means to attain higher sanitary standards, the numbers show that over a ten-month period there has been growth in the demand for sanitation. Given the ways and means, and with the support of the community, individuals have been able to mobilize to secure their demands. Similar inferences can be made of the data regarding tubewells and access to safe water. While the change is gradual, the percentage increase for a sub-district with the lowest sanitation standard shows a marked improvement.

TABLE 3 Chornilokhiya Union details - after 10 months intervention (where after formation of VWC, last 5 months were more constructive)

Sanitation							Tubewell				
total latrine	own latrine	shared latrine	with water seal	without water seal	pit / open defecation	sanitation coverage (%)	total tube well	functional	non functional	own	shared
3,792	3,418	374	2,363	1,429	300	25.13	5172	5,122	50	3,565	1,607

Parishad – will play an important role by helping the hardcore poor population of the village to construct the infrastructure.

The WASH committee also works on arsenic mitigation in the arsenic prone programme areas, safe water management, initiating funds to help the hardcore poor, and the installation and repair of latrines and tubewells. Through constant monitoring on the proper management of the infrastructure and their efficacy, sustainable and

integrated hygienic practices, the WASH committee firmly believes that overall improvement of the public health situation in Bangladesh through safe water supply, proper sanitation and hygiene is not an impossible dream. Thus, WASH is ambitious and looks forward to seeing the impact on morbidity and mortality from faecal and waterborne diseases, sustainable access to safe drinking water and basic sanitation, and sustainable behavioural change regarding hygienic practice in intervention areas.

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13 Sustainable Community Owned Total Sanitation

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Abstract

Low sanitation coverage in India means that increasing energy must be applied to the issue to accelerate coverage. There are problems associated with previous and current approaches, especially in generating sustainability. Accepting that community ownership is vital, and that achieving open defecation free areas is the aim, the issue of subsidy, especially to the ultra poor, remains an open question. Sustainable Community Owned Total Sanitation (SCOTS) is an approach built on an analysis of the strengths and weaknesses of Community Led Total Sanitation and other approaches.

Background

Even in 2006, after 60 years of independence, sanitation coverage in India appears to be low at 33% (UNDP, 2006). The achievements in the sector are, however, significant given that coverage was just 1% in 1981.

A number of initiatives have contributed to this, particularly the Government of India's policies and programmes, such as the *"Total Sanitation Campaign (TSC)"*, and the efforts of NGOs and INGOs. A constant increase in the number of Gram Panchayats being awarded the *"Nimal Gram Puraskar"*¹ every year is a good indication of the increasing momentum of sanitation in the country. International organisations such as Plan India, UNICEF, WaterAid and Water and Sanitation Program (WSP) are known for setting new trends on the ground by piloting innovative and cost effective sanitation approaches for wider replication. In early 2005, Plan India developed one such innovative approach called *"Sustainable Community Owned Total Sanitation (SCOTS)"*. This paper is concerned with the reasons for developing the SCOTS approach, the methods by which it is

¹ An award from government for achievement of open defecation free status

carried out, the impacts that pilot schemes have had, and lessons that can be drawn.

Plan India developed SCOTS to confront the well documented lack of sustainability in sanitation provision. Before going into detail about SCOTS, it is worth looking at the main determinants of sustainability, particularly increased emphasis on “software”, and how to resolve conflicting positions relating to hardware subsidy.

Key Issues in Sustainability

Software

Previous attempts to increase sanitation coverage have focused on constructing as many sanitation facilities as possible - a “supply driven” approach, sometimes referred to as “latrinisation”. It is now widely recognised that more emphasis is required upon “software” issues, such as increasing demand for latrines and fostering hygiene behaviour change – “every latrine should be a wanted latrine”.

The lack of importance given to software activities is widely held to be the critical factor in poor sanitation coverage and use of constructed toilets in rural areas. Sanitation approaches must aim to create awareness among the communities of the ill effects of open defecation. The community should understand that open defecation is the root cause of faecal-oral transmission and associated diseases. As well as making the community understand the health and other benefits of good sanitation practices, the process needs to demystify technical aspects of sanitation.

There are proven examples across the country (and in other countries) which highlight the need to create intensive demand, which leads to faster

coverage and better use of sanitation facilities. But it is also true that these successful sanitation experiences are restricted to small pockets across the country. Lessons learned need to be scaled-up with appropriate capacity building measures, including appropriate Information, Education and Communication (IEC) strategies. Software activities should be a higher priority than hardware.

Plan India undertook a review of its activities and those of other programmes, asking:

- are existing software interventions sufficient to create lasting demand for sanitation?
- has the programme adopted appropriate methods and approaches for changing attitudes and behaviour?
- do these interventions bring a shift away from open defecation? Is this aim their primary focus?
- are the IEC materials which are widely used appropriate for local sanitation issues?
- do software interventions provide enough focus on the follow-up activities such as monitoring sanitation usage, maintenance of latrines/toilets etc.?
- does the programme undertake periodical reviews to update the materials and methodologies?

We concluded that any framework must address the social, technical and economical aspects of sanitation solutions. The framework should also be flexible enough to vary the messages according to local conditions and demand.

Subsidy

There is a growing debate within the sector about whether to subsidise hardware elements of

sanitation programmes. Currently, sector players across the country follow various approaches. These include:

- Varying subsidy scheme (e.g. the Total Sanitation Campaign (TSC)/international non governmental organisations)
- No hardware subsidy (e.g. Community Led Total Sanitation (CLTS))
- No subsidy and reward (Sant Baba Gadge – Government of Maharashtra)
- Subsidy and reward (TSC and Nimal Gram Puraskar).

Inconsistency is problematic for a number of reasons, including:

1. The most effective method should be adopted in all circumstances, where possible
2. Neighbouring communities will be confused by different methods being employed – especially if subsidy is available in one place but not the next.

When Plan India conducted its review, it asked some fundamental questions about the subsidy issue; essentially, **Should subsidy be part of the sanitation package?**

Broadly, two types of argument exist:

- 1) Intensive software intervention is enough and there is no necessity to consider hardware

subsidy as part of sanitation package (for households). Indeed, the need for hardware subsidy indicates that the software elements of the intervention have not been carried out properly. Various studies reveal that the community spends a considerable amount on treating illnesses arising from unsafe water and sanitation. They also lose their daily income due to sickness. Convincing the community that it makes sense to invest in sanitation services for better health would appear be a good approach. The proponents of the Community Led Total Sanitation (CLTS) approach stress its subsidy-free nature. It is widely held to be successful in Bangladesh and some successes are also reported in India and elsewhere. Should not Plan India pursue a similar strategy in India?

- 2) The ultra poor require some subsidy to purchase the necessary materials and/or labour to construct their facilities, however knowledgeable and motivated they are. There are two separate issues here:
 - a) If the zero subsidy argument holds water then the experience in Bangladesh should reveal that the low-cost, simple, shallow pit latrines introduced at the beginning should have been improved (or at least refurbished) since. So what is the present status of the villages that were declared as fully sanitised at the initial

BOX 1 VERCs CLTS approach in Bangladesh

VERC, a non-governmental organisation (NGO) in Bangladesh, could achieve 100% sanitation in 90 communities within a short span. The beauty of the project was that there was no subsidy involved. Making the community aware of the ill effect of open defecation through participatory exercises such

as transect walks, social mapping, defecation map and encouraging the community to find locally available low-cost options for the toilet construction. The cost of the toilet models adopted by VERC target community varies from \$ 2.36 to \$15.14 (Rs.125 to Rs.750)".
(Based on Kar, 2003)

stages of CLTS at Bangladesh? There are indications that subsidy is being provided to CLTS communities to upgrade. If the position has been reached where subsidy is needed, why shouldn't it be included at the start?

- b) In any event, zero subsidy often results in poor families going into debt. This itself is inequitable and unfair. When so much money is being spent on campaigning, meetings, conferences and consultancies, why not divert some funds to hardware components? Surely this is a better way of supporting the poor community than being dogmatic about the subsidy issue when its benefits are unclear and contested?

Plan India concluded that on the above basis household hardware subsidy should be considered, so long as the well-known drawbacks could be confronted. These include:

- **Varying subsidy:** Sector players, including the government, have no uniform subsidy policy. Subsidy fixed by the government of India for the Total Sanitation Campaign (TSC) is Rs.1,200². However there are states which provide subsidy as high as Rs.2750/-³. Analysis of the programmes of international non governmental organisations (INGOs) reveals that every agency has its own norm for subsidy⁴. So do we have to fix a clear framework for the subsidy component (see comments above regarding inconsistencies)? Is it worth setting a minimum and maximum ceiling for subsidy?
- **Misuse of subsidy:** Reviews of poor usage of constructed toilets under different schemes reveal that, in a few cases, families constructed the units just to use the high subsidy

BOX 2

Experiences from Plan International (India) Sanitation Review

The sanitation review, across India Programme Units (PUs) in ten states, reveals that in general the community prefers to construct a pour flush leach pit toilet than the temporary direct pit with squatting slab. Intensive hygiene promotion helps to convince the middle and upper middle class families, and to some extent motivate them to invest in toilet construction, but the same is not feasible for the poor and marginal families.

Most poor families are willing to provide free labour for the construction. But these families desperately need some minimum support to buy basic materials such as pan, p-trap and cement, and to meet the cost of skilled labour. Minimum support for poor families needs to be considered as part of the sanitation package. People who participated in the study made a clear statement that convincing rural communities to construct and use toilets is a very difficult task; after all the hardships, providing a substandard design (which would only last for a short span of two to six months) would demoralise the community. If a unit fails or collapses at an early stage, the chance of bringing sanitation coverage to these families in rural India is lost.

available from the scheme, without a true understanding of the importance of sanitation. Hence software elements of programmes receive the proper attention and resources.

- **Capture of subsidy:** The review exercise reveals that in the majority of cases influential and/or relatively wealthy families were first to use the subsidy component because of their connections with subsidy providers/politicians. In most cases, the poor and vulnerable benefited the least. The need here is to ensure that this subsidy "capture" is resisted through proper targeting. Many now believe that the only way to ensure fair targeting is

² Subsidy amount recently revised from Rs.500 to Rs.1,200 for Below Poverty Line (BPL) family.

³ The support to family for toilet construction in Andhra Pradesh

⁴ Rs.650 per unit is the subsidy fixed by WaterAid, whereas in Plan Programme units, subsidy amount varies from Rs.1,000/- to Rs.2,750/-

for the community to make the decisions on this issue, instead of using externally imposed mechanisms.

■ **Subsidy and appropriate technology choice:**

In addition, lack of sufficient space to construct toilets and the lack of money to supplement and complete the prescribed design excludes poor families from subsidy schemes. If the poor are to access subsidies, it is important to demonstrate various low-cost designs and give families a free hand in choosing an appropriate model. The systems and procedures for accessing subsidies must also be simplified to allow less literate people to benefit.

- **The long wait for subsidy:** In a few cases, though the community wants to construct and use toilets, the time taken for some schemes/ support from the government or from other sources can be extremely long. Waiting without having any clue whether the required subsidy will be forthcoming is a dangerous scenario. It also hinders the acceleration in coverage needed in the limited time span of the sanitation MDG.

Considering the prevailing poverty rate in rural India, Plan India takes the view that poor and marginalised families should be considered for minimum support to meet the basic cost of materials such as pan, P-trap, soil pipe and cement, and for meeting the wages of skilled labour. This support would help to construct toilets with minimum standards, which would last for five to ten years. A lack of support could encourage the poor to build low-cost structures which do not last, and run the risk of their sanitation practices not being sustainable in the longer term.

As well as this, participatory exercises such as well-being/wealth ranking to identify the poor families will help with targeting subsidy. Encouraging the community to use locally available materials, such as boulder with mud mortar for basement construction and thatches for superstructure, would bring down the construction cost.

The resource gaps

Compared to other sectors, a limited number of organisations is involved in sanitation services in India, whereas the real demand in the country is enormous. Around 50% of a population of 1.2 billion, in the rural villages and urban slums, need sanitation services by 2015. One can easily visualise the Herculean task ahead in the sanitation sector in India. Even with a minimum subsidy amount of Rs.1,200 per family⁵, the resources needed to bring full coverage are huge. The government and other sector players have to find a sanitation strategy to address the enormous demand.

In this context the role of NGOs/INGOs is to demonstrate innovative, cost effective and sustainable approaches for others to replicate (the time span for these kinds of experiments should be shorter and quicker). Plan International (India) is attempting/promoting one such approach – Sustainable Community Owned Total Sanitation (SCOTS). Its main features are shaped by the factors mentioned so far in this paper.

What is SCOTS?

The basic principles of SCOTS are:

- Making the community realise the importance of maintaining sanitary conditions in and around the village

⁵ Subsidy available under TSC scheme

- Facilitating them to arrive at a localised solution that addresses their issues
- Enabling them to meet their present and future needs through an appropriate institutional arrangement at village level
- Motivating the community to completely avoid open defecation by taking immediate action and transforming this immediate action into a longer-term solution is a special part of this approach.

SCOTS aims to achieve total sanitised communities by adopting low-cost sustainable solutions while discouraging promotion of high cost design and inputs. Subsidy for Below Poverty Line (BPL) families to procure essential materials, credit for medium-income groups and teaching technical know-how to elite groups are also main elements of the approach.

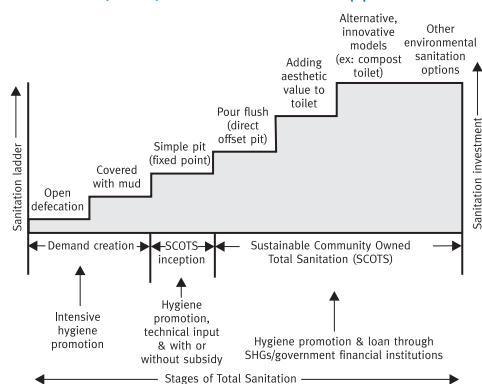
The stages of SCOTS

The chart below shows SCOTS' sequential approach, from creating demand for improved sanitation to addressing other environmental issues in the village.

However, bringing out the shift from open defecation to fixed-point defecation is a challenging task. SCOTS approaches this major shift through participatory processes, with institutional and economic support. The SCOTS approach facilitates the following steps:

- **History line:** The community analyses the water and sanitation facilities and associated problems at various stages of the development of the village. This exercise enables the communities to visualise the changing water and sanitation situation in their own villages.

FIGURE 1 Sequential steps of Plan International (India) Total Sanitation Approach



- **Transect walk:** Motivate the entire village community including children and women to join in the transect walk. This involves visiting the houses with or without sanitation facilities, defecation areas around the village used by different groups of people, water facilities, garbage dumping areas, water stagnation spots etc.
- **Village mapping:** Following the transect walk, the community is involved in drawing their own village map incorporating the observations. The exercise would end with discussion of various problem identified.
- **Input and output calculation:** The community analyses their daily food intake and generated waste (excreta). Encourage the people to work out excreta generated per person per day, per family and for the entire village. Project this calculation for a week, month and year. Make them to realise what is happening to the huge waste generated.
- **Linkage diagram:** The community identifies the faecal-oral transmission route – for example, how the faecal mater is transported from the open defecation site to a new host

through water, pet animals, flies, fruits, vegetables etc. – and list associated effects. Ask the community to identify the ways and means to break the faecal-oral transmission route.

- **Health and non-health benefits:** The community works out health and other benefits of safe disposal of excreta. This helps them realise the money spent on treating diseases like diarrhoea and the wages they lose due to sickness. Involve Auxiliary Nurse Midwife (ANM)/ Primary Health Centres (PHC) staff in the exercise and ask them to share statistics on the number of times the village community has approached them for treatment of water and sanitation-related diseases.
- **Technological options:** The community analyses the various ways and means of tackling the prevailing sanitation issues within essential parameters – availability of materials, costs involved, skills available within the community. They work out an appropriate action plan. Demonstrate various low-cost options so they can choose the right design for their economic status.
- **Skills and capacity building:** Following an inventory of materials and skilled labour available, consider appropriate exercises for developing capability. Young people and traditional masons in the village can be trained in constructing low-cost toilets and producing low-cost materials such as hollow block, mud block and cement rings. Encourage Self Help Groups (SHGs) and Community Based Organisations (CBOs) to provide credit facilities, along with marketing sanitary materials such as pan, P-Trap etc.
- **Subsidy for BPL families:** If there is no government subsidy available for poor

families, consider providing minimum assistance for poor families to meet construction costs up to basement level. Wealth ranking or well-being ranking exercises can be organised to identify the poor, medium and elite group in the village.

- **Credit facilities:** Encourage the community to take loans from their self help groups or from government financial institutions for toilet construction. Wherever possible, promote appropriate revolving funds for the SHGs.
- **Monitoring:** Experience shows that children are powerful campaigners. They are capable of influencing their parents and other community members to adopt good hygiene behaviour, including toilet usage. Making school children understand the importance of good hygiene practices is vital for the sanitation campaign. Children's clubs, SHGs, youth and adolescent girl committees in the village can be actively involved in sanitation promotion and checking open defecation in the village.
- **Links to reward schemes:** The reward schemes promoted by state and central government can motivate communities to achieve clean villages. Traditional leaders, youth/adolescents, SHGs, Panchayats, school committees etc. should have a role in achieving clean villages.
- **Follow-up:** This is a very important step in the SCOTS approach. These initiatives do not stop once the community has shifted from open to fixed point defecation, but goes further to achieve sustainable results in the longer term. Follow-up activity facilitates the following aspects:
 1. Continued hygiene promotion to encourage better use and maintenance of sanitation

- facilities, and proper hand washing at critical occasions.
2. Converting temporary/semi-permanent structures into permanent ones.
 3. Analysing water availability based on the requirements and taking steps to address these through community initiatives or government and other schemes.
 4. Ensuring the community keeps continuous watch on the proper disposal of solid and liquid waste.
 5. Facilitating the community to address water and sanitation needs at schools and anganwadis.
 6. Encouraging the community to take up innovative methods such as ecosan, vermi composting, biogas etc.
 7. Establishing an institutional set-up to meet the day to day needs and future sanitation demands of the village community. This institution can also take up the operation and maintenance of water source and water quality monitoring and surveillance.

Lessons

Subsidy

Whether to subsidise toilet construction is a major debate among the sector players. SCOTS experience suggests providing targeted subsidy to families below the poverty line is appropriate. About 37% of the community live on less than \$1 a day in India, and 80% live on less than \$2. For these low-income communities, meeting their primary needs such as food and clothing takes priority over sanitation services.

As a result, the SCOTS approach involves conducting a participatory “wealth ranking or

family economy analysis” for providing subsidy. The subsidy would cover the cost of materials and skilled labour up to the basement level. Plan India provides a maximum subsidy of \$40 to \$55 to targeted families, taking into account the recent cost escalation of construction materials and skilled labour. The rest of the community is encouraged to invest their own money or use the credit support from the SHGs or local banks to construct toilets.

There are some difficulties in the existing BPL list (colour of ration card). To make sure the right families received subsidy, the children's group and community representatives conducted a “families economy analysis” (wealth ranking). The community themselves decided who needed to be given subsidy or a loan for toilet construction.

The design

SCOTS encourages communities to choose from a range of toilet designs according to their ability to pay. Unlike other approaches, SCOTS aims to give equal importance to the long term sustainability of the basic units along with the awareness creation and hygiene education aspects. This is very important to ensure that fixed point defecation is practised for long enough to bring about a change in mindset. Usually, it aims to promote models which can last up to six to ten years. In waterlogged areas, Ecosan toilets are given priority to avoid the contamination of ground water that occurs in the normal pour flush toilets.

Holistic approach

Apart from promoting sanitary services, SCOTS builds the community's capacity for managing and maintaining its own water sources. If existing water

BOX 3**SCOTS pilot project experience**

Dubba Thanda, a small tribal hamlet of Elakaram Grama Panchayat in Suryapet mandal of Nalgonda District of Andhra Pradesh, was chosen by Arthik Samata Mandal (ASM) Plan India project to pilot the SCOTS approach. Plan India chose this hamlet, which has 40 tribal families, to understand the effectiveness of the approach in a particularly difficult region and also within a backward community.

Basic institutional arrangements introduced at the community level included forming CBOs, SHG, a children's club, youth group, school health committee and village health committees. The project also established strong links between the people's institutions and the local Gram Panchayat and government departments to strengthen the process of change.

The community led the implementation of the activities, with the assistance of ASM and the local Gram Panchayat. Participatory exercises were organised to map out the existing issues and solutions. There were also periodic discussions with the community to identify the issues and probable solutions for carrying out the work successfully. ASM facilitated the process of conducting awareness and capacity building exercises. Investment for the project is minimal – only software support and subsidy to poor families. The rest of the support came directly from Gram Panchayat to district administration due to the active lobbying and advocacy efforts of the village level committees.

Achievements

As a result of the interventions, we have witnessed improvements in the hygiene conditions and the overall quality of life among the tribal people. Now, all the 40 households have toilets in their homes and they are using them. The village is free of open defecation. The practice of safe disposal of waste water and solid waste has been addressed effectively. All the 40 families have a washing platform, soak pit, kitchen garden, and compost/garbage pits.

The government provided the village with a water supply scheme as a result of village committee's lobbying efforts. The villagers have also taken steps to operate and manage the drinking water source and monitor its quality and usage regularly. All the 40 families have an individual water supply pipe connection and contribute Rs.30/- per month towards operation and management of the system.

Children who have learnt about safe hygiene practices are especially important in making sure that their family and other community members follow these. Most households are also able to grow vegetables in the kitchen garden, raised from the waste water in their backyards.

Recently, the Gram Panchayat was awarded the "Nirmal Gram Puraskar" by the President of India for the achievement of total sanitation. The Gram Panchayat president, for the first time in her life, flew to Delhi to receive the award on behalf of the community. The village has become a model for other villages in the area, and several neighbouring communities have requested ASM and the Panchayat to start similar projects in their villages. Communities, especially children, of the Dubba Thanda are proud of the new status of the village as a result of this initiative. They take pride in their achievements while they showcase their work to others visiting the village.

Role of children

The children's club members are the real change agents in Dubba Thanda. The project used weekly meetings of the children's club effectively to explain the importance of improving hygiene practices. The school hygiene programme emphasised these messages further. The enlightened children's club members were also actively engaged in creating demand for sanitation in their respective families and in the community. They were involved in promoting better hygiene practices, monitoring water and sanitation programme implementation and toilet use, and keeping the village environment clean. The children's active involvement was a primary factor in achieving major changes in this remote and economically backward tribal village. Master Chitibabu, children's club secretary, proudly says that "the neighbouring communities who often pass through our village are amazed to see such a clean village in the locality and we are proud of this great achievement".

Impacts

We have observed the following health impacts:

- No diarrhoeal cases for the past year and a half
- Children are not affected by worm infections
- No anaemic cases among adolescent girls/women
- No reports of RTI infections
- Fewer health cases from the village

facilities are not sufficient to meet demand, the programme helps CBOs to acquire the support they need from the government or other sources. The approach also promotes soak pits or kitchen gardens for safe disposal of liquid waste and garbage/compost pits for safe disposal of solid waste. It aims to attaining sustainable sanitation services not only within the community but also in the schools or anganwadis situated in the village.

Before declaring a totally sanitised village, the SCOTS approach aims to put in place the management aspects that are critical for the success of the initiatives.

Replication

The Dubba Thanda village became an eye-opener and a live model for the neighbouring communities, other NGOs and government departments. Dubba Thanda community influenced the Ramanakundam, Kotinayak and Komatikunda communities to achieve similar results. A visit to Dubba Thanda creates confidence in the minds of the people. The thought they often express is “when an economically backward tribal village can achieve such a great transformation with limited resources and in a short time, why can’t we do the same in our villages?”.

The district administration has realised the importance of the active involvement of children and the community in achieving sustainable water and sanitation services, and has asked ASM to replicate the same approach in three more Panchayats.

The achievements of ASM Vijayawada Project have had an impact on their other unit in the Krishna

District of Andhara as well as other Plan India partners working in Orissa (CYSD) and Uttaranchal (SBMA). As a result, four SCOTS communities have received the “Nirmal Gram Puraskar” award from the President of India this year.

Recently, Plan India conducted a mid-term review among its programme units in ten states of India. Realising the impact of the SCOTS approach, we concluded that scaling-up SCOTS would be the only major water and environmental sanitation intervention in India. The achievements in a remote corner of Andhra Pradesh has influenced Plan India's whole country strategy, further confirming the success of the SCOTS approach.

Conclusions

- The Dubba Thanda experience shows that the SCOTS approach can be a viable option in achieving open defecation-free villages along with sustainable water, solid and liquid waste management systems.
- This experience shows that, apart from the motivation and awareness creation aspects, meeting financial needs through targeted subsidy and credit schemes can help promote change. Facilitating communities to choose various options which are locally available and cost effective can address the financial aspects to a great extent. Building a positive environment for change by supporting the poor and vulnerable families also appeared to have a very positive bearing on the rich families living in the village.
- In Dubba Thanda and in the neighbouring villages, achievements under the SCOTS approach clearly indicate that targeted subsidy for poor and vulnerable families is critical. The implementing organisation should

not impose a huge burden on poor and vulnerable communities in the name of innovative approaches such as *“zero support for hardware”*.

- The experiences in Dubba Thanda and in the neighbouring community send a very clear message to the implementing partners in India to look beyond the existing BPL list (colour of ration card etc.) in deciding who is eligible for subsidy. When community groups identify the needy families, the list is often entirely different from the existing BPL list.
- Involving the entire community and local institutions in the process is very important. The involvement of children in the process both at school and in taking the message to families and community is especially critical. Sharing the technical designs with the kids before implementation would help in evaluating the child friendliness of the options.
- The experience of Dubba Thanda shows that piloting the SCOTS approach in economically backward pockets of habitation can have a major impact upon the neighbouring communities and the local governments.
- Even though the implementing agencies may have only a limited mandate, the preparatory planning exercise should include all the aspects mentioned. Dubba Thanda demonstrates that promoting an integrated approach towards a holistic water and sanitation service yields greater results, although it may slightly increase the budget and time. Other programmes and community initiatives may contribute to activities outside the agency's mandate.
- Before withdrawal, agencies should ensure that communities have taken responsibility for sustaining the changes introduced. Slip-back is a major concern, even in villages which have total sanitation.
- As SCOTS calls for an intensive approach that involves creating awareness and motivating communities, there is a need for trained and highly motivated village level workers. Therefore, it is important to develop the capacities of the staff members involved in the process while introducing SCOTS.
- Regular follow-up visits for reinforcing hygiene education and sanitation improvements are needed. Participatory assessment of the changes within the communities also needs to be carried out regularly to involve the communities in the whole process. Agencies need to allot the necessary manpower and time to effectively lead the communities towards change. They need to pay adequate attention to communities which have low literacy levels to transfer the skills effectively.
- Most importantly, developing strong links to involve key leaders and government officials is essential for setting sanitation as a priority even at the village level. Unlike other development issues, sanitation calls for special focus at all levels.
- The Nirmal Gram Puraskar award is also a very effective element that can be used to encourage the communities, especially the local leaders/elected Panchayat representatives, towards achieving total sanitation.

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14 School led sanitation promotion: Helping achieve total sanitation outcomes in Azad Jammu and Kashmir

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Abstract

School-based, activity-oriented, hygiene education techniques - if appropriately implemented - can lead to sanitation and hygiene improvements beyond schools, into households and wider communities. Teachers and students can help parents and communities at large to realize and adopt better practices. In turn, once realization is there communities can be innovative in appropriate sanitation solutions, which are affordable and hence sustainable. The challenge is adoption of consistent strategies by the key players and capacity building of key facilitators.

Background

The state of Azad Jammu and Kashmir (AJK) is situated to the north of Islamabad and to the east of Mansehra in Pakistan. AJK consists of eight districts with mostly hilly terrain, difficult access and scattered human settlements¹. AJK has a population of 4,067,856 (2007 estimate), an area of 13, 297 km², and a population density of 306/km². Like most parts of Pakistan, the sanitation situation is not very encouraging². Before the earthquake on 8 October 2005, UNICEF, in collaboration with the Local Government and Rural Development Department (LGRDD), was implementing a rural water supply and sanitation project, with limited resources for improving sanitation conditions and hygiene promotion. However, despite such good efforts, prevalence of waterborne diseases remains high and communities at large have little realization of the link between poor hygiene and sanitation, and disease.

¹ www.ajk.gov.pk

² The Pakistan Integrated Household Survey (PHIS, 2002), indicates approximately 80% urban and 65 % rural water coverage in AJK. Sanitation coverage is estimated between 20-30%.

After the earthquake in 2005, the situation further deteriorated as many villages were razed to the ground and more than 0.01 million people had to live in 60 crowded Internally Displaced Persons (IDP) camps. The situation was alarming and likely to lead to the spread of epidemics. However, with the coordination of UNICEF as the WASH cluster head, national and international aid agencies intervened on water and sanitation, averted a crisis and saved many lives.

Ongoing hygiene and sanitation promotion interventions in AJK

In response to the earthquake, many international and national organisations initiated service delivery and later behavioural change interventions. These interventions are primarily targeted towards service delivery in communities and communal institutions such as Basic Health Units (BHUs) and mostly schools. Brief accounts of activities include Oxfam GB: since the earthquake mostly worked in camps but has now wound down operations; Catholic Relief Services: in IDP camps and communities and still engaged in rehabilitation activities; Islamic Relief: engaged in IDP camps and communities; Merlin International: IDP camps and communities. UNICEF is leading the school sanitation programme in collaboration with Society for Sustainable Development (SSD), Taraqee Foundation, Salik

Development Foundation, Al-Mustafa Development Network, Integrated Development Support Programme, Pakistan Village Development Program and a host of international organisations. Some partners are also implementing community focused sanitation and hygiene projects with installation of prefab latrines etc.

As shown above, many ongoing behavioral change interventions are targeting schools. This is valid for the simple reason that children are ready recipients for new learning and behavioral change. Children are also agents for societal change. This paper examines whether or not the above two facts are at play in AJK as a result of SSD-UNICEF School Sanitation and Hygiene Education (SSHE) interventions in Muzzafarabad and Nelum Districts.

SSDs approach

SSD, a national level non-governmental organisation, has rich experience in SSHE³. SSD is a pioneer of employing the Child-to-Child (CtC) approach in earthquake-affected areas⁴ and has highly skilled and experienced staff in this approach⁵.

In contrast to most practitioners of CtC in AJK, SSD actually works through all six steps of the CtC approach⁶. This, in essence, means that children not only improve their immediate school

³ SSHE refers to a combination of hardware and software hygiene and sanitation components that are necessary to produce a healthy school environment and to develop or support safe hygiene behaviors. It focuses on development of life-skills, a healthy and safe school environment and outreach to families and communities.

⁴ Starting from CtC based hygiene promotion activities in the camps and communities in Manshera district of North West Frontier Province (NWFP), SSD is today the leading NGO in hygiene promotion sector with fully capacitated HRD center to cater for the needs of partner agencies in this area.

⁵ The CtC approach is primarily an active learning method. Children are encouraged to assess, analyse and act on a given situation. The teacher, trained by the agency, with active involvement of children, identifies an issue (e.g. personal hygiene/school environment/domestic hygiene). Children then collect further information regarding the issue and with the help of the teacher plan action for highlighting/creating awareness among their fellow children or general population.

⁶ These six steps are: 1. Identification of hygiene issue, 2. Finding out more, 3. Planning: how to do it? 4 Action at the community level 5. Evaluation of the action/activity and 6. How to do better next time

environment and change their behaviors but also take messages and catalyse change at the household and community levels. SSD key associates successfully piloted Community Led Total Sanitation (CLTS)⁷ in Tehsil Takhtbahi earlier in 2004. Since SSD is instrumental in formulating outcomes-based sanitation policies for North West Frontier Province (NWFP) and state of Azad Jammu and Kashmir (a project in the pipe line), it was very natural for the organisation to experiment with a new approach. This approach allows a UNICEF-funded Ctc-SSHE project to realise immediate goals and may also result in greater impact at the community level. The resultant approach, as explained below, is called the School Led Total Sanitation (SLTS) approach. This approach is similar to CLTS but with an additional schools/child focus, as explained below.

School Led Total Sanitation approach

In contrast with the typical CLTS approach, the SLTS approach fundamentally builds on an SSHE approach with key additional features from CLTS. A typical CLTS process was followed alongside others processes, explained further below:

- Social mapping
- Defecation area transect walk or 'walk of shame'
- Visual demonstration and shock
- Shit calculation
- Transmission routes
- Medical expense calculations
- Emergence of natural leaders
- Open Defecation Free (ODF) action planning

As it unfolded in the action learning process, the typical CLTS approach merged with the typical

SSHE process⁸, resulting in a new approach called SLTS, which has the following additional features:

Fun based hygiene education

It is widely acknowledged that children better learn and understand messages that are communicated to them through fun activities or events such as drama, poster competitions and puppet shows. SSD made a conscious effort to exploit all such options (as explained below) for a more effective SSHE approach:

Poster competition

SSD arranged a poster competition in 211 schools to enhance students' confidence and sense of participation. Students were allowed to paint anything they liked. The contest created enthusiasm and a competitive spirit among the students. Many produced good quality posters. Some posters conveyed the catastrophic effects of the earthquake, while others showed the importance of a clean environment.

Zakoota show

Besides poster competitions, SSD also organised live Zakoota shows based on the famous TV character Zakoota. The character plays the role of a jinni along with other fellow artists. The show takes children into a fantasy world. Later, the artists engage children to think and talk about how to improve their own hygiene situation. The shows managed to amuse large numbers of children and teach them hygiene messages. Zakoota shows became so popular that schools repeatedly asked SSD to arrange additional shows.

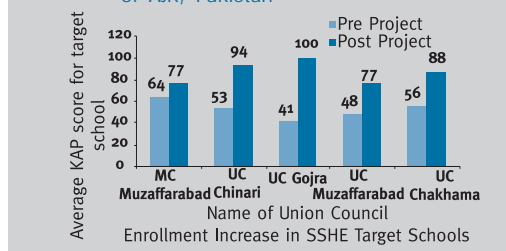
⁷ This is a radical participatory approach in which mainly rural communities are facilitated to analyse their practice of open defecation and its effects and through disgust and self-respect decide to take action to stop it. Typically this takes a matter of only weeks or months. The target is not total latrinisation but to become open defecation free.

⁸ eg: teacher training and refresher, class room hygiene sessions and follow up, hardware and training, etc.

Sanitation Week

Meanwhile, the AJK government, in collaboration with UNICEF, realised the importance of sanitation promotion and celebrated Sanitation Week from 7-14 March 2007. This dedicated week was aimed at creating public awareness through different communication channels and drew concerned government departments to this vital issue.

FIGURE 1 KAP scores for 211 schools in 5 Unions of AJK, Pakistan



The children became fully involved in different activities including debates, poster competitions, awareness raising walks and parades, and by displaying posters and banners bearing key hygiene messages. Their involvement gave them further impetus and confidence to more effectively play the role of change agents for hygiene promotion in their respective villages.

Outcomes of the School Led Total Sanitation approach

The outcomes of the SSD approach featured at school and community level as described below:

At school level

Almost nine months into targeting 211 primary schools in the Muzaffarabad district, the SSDs CtC approach proved extremely successful in terms of

improving the confidence of the children to assess, analyse and act on any issue. Outcomes included:

- Children's personal hygiene levels improved and they are now more used to hand washing with soap at critical times (SSD, 2007)

BOX 1 Children promote latrine use in Chakama Union Council

In Union Council Chakama, situated to the extreme east of the Muzaffarabad district, there is village called Kharthama. This village has 200 households. The only government-provided facility is a primary school for girls. As part of the UNICEF-funded SSHE program in AJK, SSD started its intervention in this village in May 2007. The teacher was trained in the CtC approach and engaged her students in the activity-based learning process. She taught them to increase their personal hygiene and school environment. Then, after she had discussed diarrhoea and common defecation practices in the villages, she mobilized children to take action on the absence of village household latrines. The School Environment Committee (SEC), which comprises five students from classes 4 and 5, and a class teacher conducted several meetings with village elders, drawing their attention to this important issue. After convincing the village elders of the need for action, the students arranged a walk to raise awareness in their village. All students, teachers and village elders took part in a parade, during which speeches were made on the importance of latrine use. The students divided the village into different wards (Muhallah) and the SEC members visited the wards once a week for many weeks to deliver key hygiene messages and to focus on household latrines. The students also participated in the sanitation week and their posters were highly appreciated in the district poster competition. The appreciation and exposure of these students from a remote village further strengthened their resolve to promote household latrine use in their village. By August 2007, with teachers and school children's efforts, 90 households had already constructed their latrines. The unsubsidised latrines come in a variety of shapes and forms and are built with local materials. The school students are confident and believe that very soon the whole village will be free from open defecation.

- School children at schools targeted by SSD now avoid open defecation in and around the school. This is evident from schools' monitoring checklist scores. Therefore, risks of waterborne diseases have been considerably reduced (SSD, 2007)
- Children exhibit keener interest in the beautification of their school. One such example from a number of schools is the raising of flowerbeds and planting trees in the school premises.

At community level

While the above-mentioned outcomes in schools were planned and expected, the theory behind the CTC approach also anticipates actions in households and communities too. To assess if the approach worked beyond schools, a large number of target schools and communities were visited. Almost everywhere the "beyond the school" outcomes are visible as households were mobilized to construct latrines and bring an end to open defecation. The latrines are reported to have been constructed at little or no cost using mostly recycled construction materials. Unsurprisingly, as latrines were constructed after self-realisation of need, their effective use by all members of each household is reportedly high.

Role of teachers and School Management Committee members as 'barefooted consultants'

Learning from the example of Chakama village (see box 1 above) and the prevalent experimentation elsewhere under CLTS globally, it was considered worth trying to engage local teachers to spread the word in nearby villages. Since SSD's ongoing

programme was school-focused, teachers were obvious candidates as activists cum barefooted consultants. Teachers were also trained in behavior change, facilitation skills, basic sanitation and hygiene; have good links with the community, have regular contact with a large number of children, and are held in high esteem in these communities where schools are often the only formal institution. Therefore, a simple Memorandum of Understanding (MoU) was signed with respective teachers to make things happen beyond school level to convert their villages into open defecation free (ODF) villages. For further motivation, the barefooted consultants were awarded Rs5,000 for each converted village.

Scaling up

Since June 2007, 11 villages have achieved ODF status, thanks mainly to barefooted consultants engaged by SSD under an MoU.

One such village is Tila Dori, where only 12 out of 30 households used to have access to a latrine. Safia Bibi, a female teacher from the Peera Bandi School became one of the first barefooted consultants. Within one month she converted the village into an ODF site.

Similarly, a quarter of the 60 households in Garmand Upper had latrine coverage until teacher Javeed Rauf became a barefooted consultant and through the active participation of school children made the entire village ODF in 45 days.

In the Union Council Chinari the village Kari Bandi, only two out of 31 households had toilet facilities. Mr Karam Din, School Management Committee chairman, was engaged as a barefooted consultant and within 15 days all the households constructed toilets and the village became ODF.

In Darang Chinari, another village has 60 households. Before intervention, the village had only two household toilets. Tariq Mughal, the School Management Committee chairman, was engaged as a barefooted consultant and convinced the whole community to construct latrines and achieve the ODF status in 25 days.

In Union Council Gojra, the village, Kot Sarian, only eight out of 53 households had toilets. Here, local activist and School Management Committee chairman, Mohammad Saddiq, enlisted school children to motivate people to construct toilets in their houses. Within just 20 days, the barefooted consultant convinced every family to construct a toilet and the village became an ODF site.

Thangar, another village in the same Union Council, has 70 households, only 18 of which had household toilets before the intervention. One month later, school teacher and new barefooted consultant Miss Yasmeen had motivated the whole village to become ODF.

Karna, yet another village in the same Union Council, has 33 households and only two had toilets before the intervention of the School Led Total Sanitation approach. Local activist Khalil-ur Rehman was trained and with the help of school children, had motivated the villagers to avoid open defecation. Within one month, the remaining 31 households had built household toilets and the village became ODF.

There are more villages where this process continues to successfully unfold and the number of ODF villages is expected to increase manifold in the near future. One reason for optimism is the fact that communities in AJK have always been known for their indigenous institutions and responses

to challenges. Communities in AJK have for centuries developed a variety of coping mechanisms (such as indigenous stoves and heating systems). They are capable of finding their own solutions to sanitation issues and the SLTS pilot has again demonstrated that we need not prescribe solutions.

Similarly, recognising the vital role of teachers and activists in achieving ODF, all 11 activists from AJK were invited to a national conclave of activists and were presented with medals. Later, UNICEF also awarded shields to all these activists. The activists are geared up to spread the ODF campaign once winter is over.

Sustainability of self-built latrines

The basic aim of the latrine is safe disposal of human excreta, to break the link between flies and human excreta. In the total sanitation approach, children overcame the typical misconceptions of parents and elders that latrine construction requires heavy investment.

After understanding the latrine concept, the villagers dig a pit, six- to seven-feet deep and normally use a plank of wood with a hole to serve as a squatting slab. The hole is covered by a wooden piece after squatting. The superstructure is mostly made of plastic sheets or discarded sacks or other material. As a result, these latrines, made of local material, are cheaper and within the range of most rural poor, which constitutes a large part of the population. Since the first priority for field implementors is to generate a shift in community behavior from open defecation to the use of a toilet (however simplistic), non-compliance with in-vogue technical considerations are seen as a

secondary priority. Once behaviour change has been affected, it is believed that communities will, after benefitting from rich local wisdom, themselves seek more sturdy and good looking latrine options. This graduation from simple to better latrine options will not be difficult because existing built latrines can easily be upgraded if so desired and existing superstructures of latrines and pans can be easily relocated if needed once a pit fills up

UNICEF and SSD has plans to continue supporting ODF villages by developing links between LGRDD (mandated to provide technical support vis-a-vis latrines technology, etc) and ODF villages. Since communities in these ODF villages now better appreciate the value of sanitation and hygiene, it will be only natural for local entrepreneurs and the private sector to take advantage of the new and emerging outlets for their sanitary products. SSD plans to work with LGRDD and UNICEF to develop a plan to encourage local entrepreneurs and the private sector to sell sanitary products in ODF villages.

Girls' school enrollment and impact on women

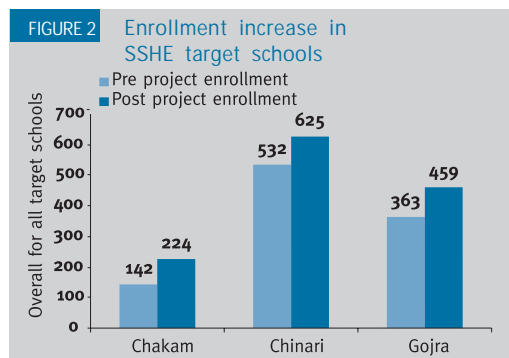
Women have been strongly affected by the programme at school and village level. Previously,

parents were reluctant to send grown-up daughters to schools due to the non-availability of latrines there. The female teachers also faced problems during menstruation. While no scientific attribution study has been conducted to show the impact of the SSHE programme on increasing female school enrollment, the fact remains that female enrollment within the target schools has shown an upward trend since the start of the project, as shown below.

At village level, women have become strong advocates of the programme because they have noticed the change in their own and their families' diarrhoea patterns. This programme has had personal impact on women. In a conservative society, open defecation for a woman is a compromise on moral standards. Therefore, in villages women either go for defecation before sunrise or after sunset. This causes them terrible health problems. The value of moving from open defecation to privacy in one's own house is immense. Digging their own pit to do so was considered a minimal inconvenience.

Conclusions and lessons learnt

These following lessons are based on the learning from the ongoing SSHE programme and the SLTS approach:



In just five months, at least 11 villages have achieved the ODF status, increasing total existing household latrine coverage from 77 to 456. The ten barefooted consultants hired to work in these villages cost SSD Rs 55,000 (US \$900). Per household expense is calculated at around Rs 145. Comparatively, many donors promoting household latrines provide an average per household subsidy of Rs 15,000 – 100 times more than the cost of one latrine built under the SLTS barefooted ODF village consultants programme.

The success of this programme largely depends on the knowledge and understanding of the teacher and School Management Committee (SMC) members regarding CtC, hygiene and most importantly, facilitation skills. If teachers and SMC members are not properly trained they may not effectively inspire enough confidence in the children and community at large to mobilize them to take action.

Another limitation is the challenge from subsidy-based approaches for latrine promotion being pursued by a number of projects or donor agencies in the same area. Such divergent strategies will certainly hamper non-subsidy based, community led sanitation movements.

In the long run, the success of this strategy depends upon the institutionalisation on the part of the government and other donor agencies. They have to understand that full latrine coverage is possible to achieve without subsidies. However, there is a strong need for capacity building of teachers and other key players at the community level.

Teachers and students' action beyond school and into the village provided a positive feedback to the SSHE programme as well resulting in deeper impact at school level. Hence a **school-community-school** loop has been found to be helpful in achieving outcomes at community level and essential for better SSHE outcomes.

Recommendations for scaling up

In AJK, through SSD experimentation and UNICEF support, the total tally of ODF villages has reached 11. While it is too early to call it an unfolding of a

'total sanitation' revolution in AJK, these early steps are extremely encouraging and trendsetting. This achievement, made within four to six months, shows the way forward for achieving sanitation-related Millennium Development Goals in AJK. Otherwise, the traditional subsidy-based sanitation promotion approach is highly unfeasible.

Unfortunately, in the aftermath of the October 2006 earthquake, many donors are still pushing more and more money into sanitation in the name of emergency response. For dispersed, household and community level rural sanitation, under a transition programming phase, subsidy for latrines at the community level is doing much harm in inhibiting and preventing the spread of SLTS/CLTS. NGOs that might have otherwise adopted and facilitated SLTS/CLTS have continued to expand hardware-oriented subsidised programmes. They are driven by the need to spend budgets and report on achievements in terms of latrines constructed, rather than latrines used.

In this context it is highly recommended that orientation / exposure sessions are arranged for key people, and in government and donor agencies to:

- Gain field experience of SLTS/CLTS so that they understand the need for restraint in spending
- Understand that existing large hardware subsidy programmes need to be withdrawn, especially in many rural areas favorable for CLTS
- Develop annual plans based on smaller grants for facilitation under SLTS/CLTS approaches and not hardware-oriented plans

that focus more on achieving disbursement targets

- Develop plans that cite total sanitation and ODF status as their objective and a criterion for success, rather than numbers of latrines constructed

Modern research and SSD experience shows that children learn and understand better through fun oriented techniques. It is imperative to communicate hygiene-related messages to students through drama, puppet shows and fun learning events, such as the Zakoota shows.

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Disclaimer

The views expressed in this paper are solely the personal views of the authors and do not necessarily reflect views of NWDA, SSD or UNICEF Pakistan.

15 Community Led Total Sanitation in Pakistan

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Abstract

Development projects in rural areas have lagged behind their urban equivalents in post-decentralisation Pakistan. What little investment is going into sanitation projects from various line departments and municipal administrations is output oriented. The projects are implemented using traditional approaches with heavy focus on the creation of infrastructure.

The project planners and implementers are interested in counting the numbers, the tangible outputs of any infrastructure project, at the end of the project cycle. None of the projects count "outcomes", that is, the end impact or likely impact on the health of beneficiaries and the environment. Another dilemma for the sanitation sector is that there is little focus on "softer" issues, such as

healthy hygiene and behaviour change, either as part of a project or independently. Most infrastructure projects fail because they are not demand driven, through a lack of ownership, and because they do not address the issue of behaviour change. Consequently the project becomes dysfunctional some time after completion.

The new partnership between WaterAid and Integrated Regional Support Programme (IRSP) paved the way for the introduction and scaling up of Community Led Total Sanitation (CLTS) in Takht-e-Bhai in coordination with the Tehsil Municipal Administration (TMAs) in Mardan district of North West Frontier Province (NWFP). With its focus on "behaviour change" and "outcomes", the CLTS approach was implemented properly and gained success.

The successful story of CLTS in Takht-e-Bhai is spreading slowly and steadily. One day, it will replace the traditional sanitation system in Pakistan. Currently, only 42% of the population, including 65% in urban areas and 30% in rural settlements, has access to sanitation facilities. With the exception of a few big cities, sewerage is almost non-existent, causing serious health and environmental problems. Some 58% of rural households were without any form of sanitation system in 2005-06, compared to 66% in 2004-05 (PLSM, 2006). Although 42% of the population has access to sanitation, this does not mean that usage is also 42%. A significant proportion prefers to defecate in the open, despite having access to a toilet.

Introduction

Pakistan has the seventh largest population in the world with nearly 150 million people, and an annual growth rate of 2.4%. 70% live in rural areas, with an average annual per capita income of US\$470. Pakistan is listed among low-income countries (MoF, 2005). As a result of unequal distribution of wealth, almost 40% of the population lives below the poverty line (UNICEF, 2005).

These poor people mostly live in rural areas or urban slums without facilities, where there are always threats to the environment and natural resources. They also lack access to education, basic health and safe drinking water and sanitation services. This lack of facilities severely and directly affects the people's health and employment.

The situation in North West Frontier Province (NWFP) is further exacerbated by the presence of an estimated three million Afghan refugees, a substantial addition to the local population of 20 million. This has had an adverse effect on basic services and overall social economy. According to the NWFP government, only 59% of people have access to potable water while only 30% have access to hygienically safe sanitation (PLSM, 2006).

After devolution of power in 2001, under Local Government Ordinance (LGO) 2001, it was realised that the provision of water and sanitation services needed to improve. A large portion of urban and rural areas was intended to receive services. However, the complications of the devolved system mean urban areas have benefited but the rural areas still face the same uphill task.

Participating partners in development

To overcome these issues and to strengthen the efforts of the government, many development partners play crucial roles in providing sustainable water and sanitation services in urban and rural areas.

Water Aid is new to the Water and Environmental Sanitation (WES) sector in Pakistan but has a fully-fledged country office, and supports the activities of local partners in rural areas of Pakistan. In NWFP it has signed a partnership agreement with Integrated Regional Support Programme (IRSP) of Mardan District, a local NGO, and started activities in Tehsil Takht-e-Bhai of that district.

IRSP is a multi-sector non-government organisation working for rural development, poverty alleviation and development of local institutions. Using its

expertise in water and sanitation, it initiated an innovative model of community development, Community Led Total Sanitation (CLTS), in districts of NWFP. It also extends its services to others parts of the country.

The partnership of IRSP with WaterAid is unique because they are working in parallel to strengthen the efforts of Tehsil Municipal Administration (TMA) in providing sanitation services to the community. TMA consists of Tehsil municipal officer, Tehsil officer, chief officer and other local council officials and elected representatives from the whole of Tehsil. Each Union Council in the Tehsil jurisdiction is represented by union council Naib (assistant) Nazim (Chief elected official). Under the Local Government Ordinance 2001 TMA is responsible for the provision and monitoring of safe drinking water and safe sanitation. Historically the Government of Pakistan has followed traditional implementation methods for development projects, generally involving contracting out service provision. Usually communities get schemes which are full of flaws.

Now, due to the CLTS process, the TMA Takht-e-Bhai realises that only CLTS can solve their sanitation problems.

This paper tells the story of CLTS as it was developed in Mardan District. In part, we are doing this to share local experience, but we also invite observations from practitioners who have implemented CLTS in other locations.

An introduction to the programme area: District of Mardan

The area constituting Mardan district is a part of the Peshawar valley, which first appears in history

as part of the Gandhara kingdom. After the invasion of Alexander the Great, the mists of obscurity began to clear. The armies of Alexander reached the Indus valley by two separate routes, one direct through the Khyber Pass and the other led by Alexander himself through Kunar, Bajaur, Swat and Buner in 326 B.C. After Alexander's departure, the valley came under the rule of Chandragupta, who ruled the valley from 297 to 321 B.C. During the reign of the Buddhist emperor Asoka, the grandson of Chandragupta, Buddhism was the religion of the Peshawar valley. The valley saw the revival of Brahmanism after the Greeks took over in the time of King Mehanda. The Seythians and Indians followed and retained control of the valley till the 7th century A.D.

The villages are divided into Kandis (Clusters, a local traditional word used for Mohallas and streets) and are densely populated. Each Kandi is further divided into sub-sections, on the pattern of agricultural lands. Their houses generally consist of two or three rooms, a ghollai (courtyard) and veranda. The house provides shelter for cattle and poultry along with the family.

Each Kandi of the village has its own mosque and its own Maulvi (Mosque Leader), and a place of meeting or for public assembly called a Hujra. In most cases it is the property of elders of the Kandi who are expected to feed and give shelter to visitors and travellers. These Hujras are commonly used for settling public disputes and business, as well as for public meetings. Residents of the Kandi assemble there to smoke, hear the news of the day and discuss their problems and politics. Nowadays, people working abroad have accumulated sufficient wealth to bring a distinct change in the life of the villagers, who construct 'pacca' houses of cement, bricks and timber.

Many houses also have a tandoor (oven) for baking bread, though sometimes three or four houses will share one tandoor. The houses have huge compound walls with gates. The well-to-do have chairs and tables, while others use the ordinary Charpaie (bed).

Lack of sanitation facilities is a big issue in these clusters. A high population density and lack of open spaces for open defecation aggravates the problem, especially in thickly populated semi-urban areas, though in rural areas there is much open space for defecation.

In initial discussions, community members cited sanitation as an urgent priority. WaterAid and IRSP selected the district for implementing CLTS because community representatives had already identified sanitation as a priority issue, and because of its unique cultural system and close social interaction. A unique model of joint cooperation between IRSP – Mardan and TMA Takht Bhai led to the selection of Tehsil Takht-e-Bhai of Mardan district for the CLTS project.

Sanitation situation

With increasing population and population density, the sanitary condition of rural areas, once known for their beauty, has been degraded to an unimaginable extent. Now cities, famous for bad smells and clogged drains, have become an attractive abode for living. Poor sanitation (e.g. the continued routine practice of open defecation) has exacerbated the problems of increasing population density. Neither has latrine construction kept pace with population growth. A large sum of money is spent on treating preventable diseases, but the state has not been able to curtail the spread of these diseases. Worsening sanitary conditions

may contribute to the prevalence of preventable diseases in Takhat-e-Bhai.

The sanitary situation of Tehsil Takhat-e-Bhai, like other parts of the country, is at the lowest ebb. Unsanitary conditions have in one way or another contributed to sanitation-related diseases like diarrhoea, scabies and eye infection. The figures from HMIS Mardan reveal the extent of sanitation-related diseases in Tehsil Takht-e-Bhai in 2005:

TABLE 1 Sanitation related diseases in Takht-e-Bhai, 2005

S.N.	Disease	No. of patients	Percentage
1	Scabies	2,326	3%
2	Eye Infection	7,316	10%
3	Anaemia	8,761	12%
4	Malaria	12,301	16%
5	Diarrhoea	44,472	59%

Table 2 gives further evidence of the poor sanitation situation in Tehsil Takht-e-Bhai. This information suggests that low latrine coverage contributes to the current poor sanitary situation. Few people in rural areas understand the extent to which household latrines can control disease. Rural people remain shy about using latrines, and prefer to defecate in the open. Drains in most places are filled with stinking mud, water and garbage. Water remains stagnant in most of these drains providing a breeding ground for insects and microbes. Garbage is piled up in the streets and there are no proper solid waste management arrangements. The over-populated areas where refugees mix with the local population create further water, sanitation and hygiene problems.

As the above shows, the hygiene situation is very poor. If we link hygiene issues with water and sanitation, it becomes clear that where the water

and sanitation situation is bad, hygiene also suffers. The data below shows that open defecation remains common for many as household latrine coverage is low. Less than 30% of the population in these Union Council (UC) wash their hands with soap after defecation, although more than half now wash their hands with water – an encouraging trend.

Implementation of CLTS in Mardan District

WaterAid and IRSP adopted a unique approach of Community Led Total Sanitation to promote safe sanitation. This approach is based on changing attitudes and behaviour. 'Total' sanitation means the community needs to address three issues: stop open defecation (the highest priority); properly dispose of solid waste; manage waste water. Only

then does the community achieve the status of total sanitation.

The approach uses the main principles of participatory rural appraisal (PRA). CLTS-PRA techniques mobilize a community towards safe sanitation. Their first step is to stop open defecation, which causes water-borne diseases, affecting the living standards of the community. There are three important elements to CLTS-PRA that the facilitator triggers during the Broad Base Community Meetings (BBCM): 'shame, shock and disgust.' These go on to create self-respect within the community.

The NGO increased its staff to six (three male and three female, including a programme manager and

TABLE 2 Latrine coverage in Takht-e-Bhai

S.N	Union Council	House holds	Hh. with latrine		Hh. without latrine		Types of latrine			
			No.	%	No.	%	VIP	%	Flush	%
1	Damen-i-Koh	2,149	1,402	65.24	747	34.76	15	1.07	1387	98.93
2	Hathian	1,914	453	23.67	1,461	76.33	144	31.79	309	68.21
3	Jalala	2,341	1,152	49.21	1,189	50.79	106	9.2	1,046	90.8
4	Jehangir Abad	2,309	549	23.78	1,760	76.22	52	9.47	497	90.53
5	Kot Jungarah	2,140	843	39.39	1,297	60.61	25	2.97	818	97.03
6	Lund Khwar	2,214	1,547	69.87	667	30.13	825	53.33	722	46.67
7	Madey Baba	2,128	707	33.22	1,421	66.78	15	2.12	692	97.88
8	Makory	2,357	1,159	49.17	1,198	50.83	596	51.42	563	48.58
9	Mian Isa	2,411	582	24.14	1,829	75.86	9	1.55	573	98.45
10	Naray	2,115	724	34.23	1,391	65.77	4	0.55	720	99.45
11	Pat Baba	2,341	1,319	56.34	1,022	43.66	216	16.38	1,103	83.62
12	Pirsaddi	2,278	301	13.21	1,977	86.79	22	7.31	279	92.69
13	Purkho	1,551	361	23.28	1,190	76.72	34	9.42	327	90.58
14	Sari Bahlol	2,484	397	15.98	2,087	84.02	57	14.36	340	85.64
15	Saro Shah	2,345	1,073	45.76	1,272	54.24	29	2.7	1,044	97.3
16	Sher Garh	843	524	62.16	319	37.84	451	86.07	73	13.93
17	Takkar	2,144	1,533	71.5	611	28.5	14	0.91	1,519	99.09
Total		36,064	14,626		21,438		2,614		12,012	

interns). It then developed an operational plan for field staff and initiated activities like an Alliance Building Workshop with TMA and other stakeholders. It trained 20 staff members, 50 UC staff, 40 Religious leaders, 30 sanitary shop owners, 20 Lady Health Workers (LHWs), 30 Community Based Organisations (CBOs) and 40 natural community leaders. In this process the activists/natural leaders and religious leaders/Pesh Imams played an important role in disseminating the message according to the teachings of Islam. The religious leaders especially can easily bridge the gap between community and programme, improving the perception of the NGO within the community. The NGO field staff (male and female Social Organisers [SOs]) conducted a series of corner meetings (CMs) with natural leaders/activists, religious leaders, school teachers, UC Nazim, Naib Nazim and village councillors male and female. These prepared the ground for the broad base community meeting where they applied CLTS-PRA techniques.

The elected representatives at grassroots level (from all 17 union councils and tehsil councils), local school teachers, students, playgroup children, religious leaders, government officials (including the union council secretary), CBOs, Voluntary Organisations (VOs), influential natural leaders and female councillors (who make up a third of all tiers of local government) all participated in the campaign. This made sanitation become everyone's concern and shaped a true people's movement in Tehsil Takht-e-Bhai.

PRA uses community mobilisation techniques like transect walking, social mapping, calculation of faeces, flow diagrams (demonstrating how human excreta can contaminate food and water), calculation of medical expenses on water-borne

diseases, solution ideas, action planning and monitoring systems.

The PRA session played a vital role in increasing the community's understanding of sanitation. The people decided – or rather determined – to promote safe sanitation in their community. They took a collective local decision to create an Open Defecation Free (ODF) environment. The community members started latrine construction according to their own resources. The community activists and natural leaders, with the support of IRSP – Mardan staff, declared 80 villages Open Defecation Free and allowed no one to defecate in the open. In just three and a half years, 3,220 latrines have been built in 80 villages. Women decided on much of the latrine construction process, and in most cases women themselves dug simple pits and constructed latrines. Since women and children suffer more from the unavailability of latrines, they immediately started building their own household latrines.

In the CLTS approach people have various technology options – wood, mud, plastic sheet, pipes, ash, waste cloth, tin, bricks, stone etc. With the help of these local materials, communities can construct different types of household latrines. The pour flush system uses slab, pan, pipes etc.

Some technical problems arise in constructing latrines in cases where the water table is high. Our mobilizer faced a sort of resistance in such areas. People are afraid of the risk of water contamination from the construction of underground dry pit latrines in large numbers. This, in some areas, creates a question mark for implementing partners which needs thorough research. Donors and research organisations need to intervene in resolving this issue.

It is difficult to change the behaviour of the people in a single meeting. To change people's attitudes towards the use of latrines, hand washing etc. health hygiene education sessions are conducted using IEC materials. The community members separate good behaviour and bad behaviour in the IEC material. As a result of this session, 480 male and female children became sensitised to health and hygiene issues.

CLTS mobilizes all members of the community, which benefits each and every member of the community, especially the poorest of the poor. The landless poor people in the community are always reproached by the land owners for defecating in their fields.

There is no concept of external subsidy in CLTS, but it fits the "social solidarity concept". Under the social solidarity approach, the rich help the poor and this further develops social cohesiveness within the community.

Mr Haji Abdul Khaliq, resident of the village of Jangrez killi UC Jamal Ghari, announced plans for constructing simple latrine pans in all 60 households that had no latrine facility, proving the importance of social solidarity.

CLTS helps the poorest of the poor to construct household latrines. This stops open defecation and saves them from the harmful effects of water-borne diseases and the medical expenses these bring. As a result of this change of behaviour, the community develops and moves towards prosperity.

In latrine construction, local innovation and community action is encouraged. People construct their household latrines according to their needs

and priorities. Some people construct a dry pit and cover it to stop the flow of rain water into the latrine. Others use plastic sheets where the water level is high to save water from contamination.

It is also worth mentioning that the cost of latrine construction varies from 300 to 10,000 rupees:

- A simple pit latrine can cost up to 300 rupees. Usually, the pit is dug by the members of the household and they use mud for the super-structure and boundary wall. Latrine construction uses wood, plastic, tin, stone and locally available, affordable materials.
- Hardware bought from external markets raises the cost up to 10,000 rupees. In the case of pour flush latrines, hardware is normally bought from outside the community.

In the overall process of mobilisation there are no sweet incentives or subsidy to the community for constructing latrines. The community is rewarded only after acquiring ODF status. This reward is not meant for latrine construction, however; it shows appreciation of the work already achieved.

Outcomes

The first and the most prominent outcome of the CLTS process in Pakistan is its official recognition by the federal government. They now include CLTS in the approved national sanitation policy, and it is also reflected in the provincial sanitation strategies. To measure the outcome of the CLTS programme in a community we considered two types of indicators: visible and invisible.

- By visible indicators we mean that, first, the community stops open defecation and builds household latrines.
- The invisible indicators refer to the attitudinal and behavioural changes of the community.

Field staff monitor ODF status and conduct household monitoring visits. When a village achieves ODF status, internal monitors regularly assess the process. If a latrine collapses or people start open defecation again, the natural leaders persuade the people to rebuild and continue using it. The CLTS concept is different from other approaches. In the past, the focus was on the number of latrines constructed, while in CLTS the only focus is changing people's attitudes and behaviour towards safe sanitation. The CLTS approach also encourages the local community to identify local issues and stresses collective decision making for solutions. This makes it more sustainable than other programmes.

Visible

After a village has been declared ODF, the people (children, young, old, male and female) use latrines and don't defecate in open. School children also use school latrines. The outcome is measured by staff (especially female social mobilizers) and natural leaders of the village. The female social mobilizer conducts monitoring visits at household level to see the latrine construction and healthy hygiene behaviour of the household members, especially women and children. The monitoring is part of the process and only starts when the community shows willingness.

The natural leaders are involved in internal monitoring of the development process. They draw a village map showing latrine coverage on a white sheet of paper and display it in a public place. Every household member or natural leader puts a tick mark in front of those households who have constructed latrines. This is a very strong monitoring process, which develops competition among the community. The information is shared with other

villagers and the natural leaders encourage the villagers.

NGO staff conduct monitoring visits after a village declares itself Open Defecation Free. They walk the village checking for any signs of open defecation. It is interesting to note that in Takht-e-Bhai a monitoring committee was formed, comprising the Tehsil Nazim, an NGO member and a community member. They also conducted monitoring visits to see the environment of the village. Once the monitors find the village, fields and drains to be free of excreta, the village is certified as ODF.

In some communities and areas, the older age group initially resisted the using household latrines. They were of the opinion that they cannot use household latrines in front of their family members, especially female members. With the passage of time, these elders started to use their household latrines and also built communal latrines (in public places like Hujra, Masjid and near the fields).

Data from local medical practitioners was also used to see the trend of water-borne diseases in an ODF community.

Invisible

When the community stops open defecation and follows safe hygiene behaviour, health and hygiene conditions improve.

Once a village has been declared ODF, some drastic changes are seen in health and hygiene. People spend less on medicines compared to places where there are no latrines and people defecate in the open. According to a rough calculation the villagers

spend an average of 3,000 rupees per household annually on diarrhoeal diseases which spread from open defecation. CLTS makes villagers identify how diarrhoea is spread through flies, fingers, fluids, fields, foods etc.

People in ODF communities said that they were enjoying ODF status, which had brought positive changes in their health. Fewer diseases meant less spending on diseases, ultimately decreasing poverty. They also said that after achieving ODF status the sugarcane crop improved. This is because when they practised open defecation in the fields they used to leave a minor portion of their crop during harvesting. Now, they are able to harvest the whole crop, increasing their income.

The spreading and scaling up of CLTS is very high. It creates an element of shame, disgust and fear which minimises the dependency syndrome. It also depends on the facilitator who introduces CLTS techniques. Some of the nearby communities started interventions in their own villages without NGO support and got ODF status. This proactive behaviour shows the level of interest in CLTS.

It is interesting to see that the activists of Inzar Kali (the first ODF village in Pakistan) initiated this programme in two villages, Badyano and Rahim Shah Band, and made them ODF in four months.

The reward mechanism also speeds up the pace of the CLTS programme. ODF villages are rewarded by local government (e.g. TMA) and other donors (UNICEF etc.) At local government level, TMA is also involved in water and sanitation which will give a new dimension to achieving sanitation objectives.

The national level sanitation policy and provincial sanitation draft strategy gave a new direction towards achieving sanitation objectives, including the Millennium Development Goal. When the sanitation strategy is enforced, the provincial government will reward the ODF Union Council and Tehsil through TMA.

According to our experiences some subsidy approaches that work parallel to the CLTS approach create a dependency syndrome among the community. This competition can make it difficult to interest people in an incentive-less programme.

Now, government agencies are discouraging subsidy-oriented sanitation programmes and concentrating on CLTS for the larger interest and benefit of communities. The government has observed that CLTS can provide safe sanitation to all the population.

Introducing the programme to children under five is difficult because of their age and their mothers' lack of education. These children spend much of their time outside their homes playing in the streets. These children do not understand such concepts as shame, shock, disgust or self-respect.

We also need to produce material which is durable, cheaper and easily available for the construction of latrines.

The CLTS approach brings about community development through bringing a social change but it doesn't occur immediately; it is a slow and sustainable process to meet the sanitation challenges in future.

There is a fundamental missing link between demand and supply, which should be given due importance. Demand is generated by the CLTS promoters but the supply side is not focused. In most villages there are no hardware manufacturers and shops. People have to go far away to buy a sanitary latrine and other materials that cost more money. There is, then, a need to develop a strategy for supplying sanitary latrine materials. The strategy should be developed based on estimating demand and demand-supply gap, availability of raw materials and technology, attitude of the private sector and affordability for the people of the community. After analysis of the demand and supply situation and existing conditions of the community, the strategy would provide some indications as to the appropriate measures for minimising the supply gap and making available sanitary latrine materials. In some places, small entrepreneurs may be attracted to producing sanitary materials, some may feel encouraged to keep sanitary latrine materials in the grocery shops with other products, or even set up separate hardware shops. The promoters of CLTS could introduce a mobile festival to display different materials for sanitary latrines in the villages once a month. This would motivate the villagers and create demand among the people for sanitary latrine materials.

Technology options

The project worked with limited technology options. There were inadequate technology choices, and the project did not explore many options. There was a tendency not to look beyond single pit technology, as it is considered low-cost and a simple way for the community to switch from open defecation to fixed-point defecation. There were only four technology options:

- simple pit latrine (300 rupees)
- VIP pit latrine – simple pit latrine with ventilation facility (500 rupees)
- pour flush (10,000-12,000 rupees)
- pour flush with overhead tank (12,000+ rupees).

The single pit latrine technology was highly promoted because it is cheap, affordable and easy to install. Introducing low-cost technology still needs some intervention and encouragement from other partners. In Pakistan, latrine technology is still in its initial stages, and needs to be improved to encourage private sector investment.

Conclusions

Community Led Total Sanitation, which is a unique programme for sanitation promotion adopted in Pakistan's Mardan district, has brought a revolution in the field of sanitation. In Pakistan, sanitation was given a due priority for the first time after a sanitation policy was approved in 2006. The people of Mardan district proved that the CLTS programme can be successfully implemented everywhere. They changed the centuries-old practice of open defecation and broke the dependency syndrome.

The CLTS concept successfully changed the subsidy culture and it was proved that sanitation and latrine construction is not a problem of money and poverty, but it is an issue of knowledge, which can be solved by strong motivation skill. PRA techniques analyse the situation and issues of a village and inspire the community to solve their problems according to their own planning.

The intervention of government and other donors proved to be successful in scaling up and sustaining CLTS. The Government of Pakistan has marked out

CLTS as one of the programmatic approaches for achieving the sanitation objective and Millennium Development Goal.

The involvement of the children and playgroup is very important in the scaling up of CLTS. As an exercise to attract the attention of playgroup children, they were assembled in a group and encouraged to shout “Bahir tati band karenge”, meaning “we will stop open defecation”.

CLTS involved the community in deciding to stop open defecation and constructing household latrines. The household latrine construction involved various technological options, and it is interesting to note that there is no low-cost technology model. There is a need for interventions from partners to develop suitable low-cost technology in Pakistan.

The project will have to develop monitoring and follow-up mechanisms for achieving total sanitation, where the community is responsible for supervising different areas of the process. The monitoring committee should include representatives from the project, community activists, social leaders and local government. It will create ownership among different parties. Continuous monitoring is directly related to the sustainability of the total sanitation programme. In the first phase, the committee should monitor the general progress of different activities related to stopping open defecation and installing latrines at the household level. Later on the monitoring mechanism should measure behavioural changes, hygiene practices and the installation of more improved latrines. Field workers and social activists should also develop a model for analysing this crucial monitoring process.

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16 Promoting sanitation through decentralised governance: A case study of Rajukhedi Panchayat in India

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Abstract

Despite advances in coverage, sanitation in India still only reaches 36% of the population; even if the Millennium Development Goal (MDG) is reached, half a billion Indians will not have access to safe sanitation.

The downside of supply-driven programmes is centrally recognised and the new programme Total Sanitation Campaign (TSC) is demand-driven in theory. In practice, however, the fact that it is centrally driven has led it to be a numbers game and so the pitfalls of latrinisation afflict it.

The experience of Rajukhedi Panchayat shows how, through the efforts of a particularly active Gram Sabha and the local community, open defecation can be

eradicated. The keys to this progress have been a combination of the community learning about the key issues, and deciding to take responsibility.

The health and financial benefits are significant and clear, to the extent that surrounding Panchayats have followed suit.

Context

Opportunities to increase dignity and good health through sanitation continue to be neglected either due to poor demand or inappropriate institutional arrangements. Around 900 million people in South Asia face the humiliation of a lack of dignified sanitation. The widely championed easy options of sanitation are neither in close reach at grassroots level nor considered adoptable by the community. Sanitation is a widely discussed issue, but open defecation is not a high priority in the Indian political agenda. The choked drains, overflowing water and garbage dumps attract the attention of

the concerned citizens, but not the lack of household toilets or defecation habits do not.

This paper attempts to highlight the bottlenecks of the Government of India's large-scale sanitation programme, the Total Sanitation Campaign (TSC). Moreover, it aims to demonstrate that effective sanitation coverage *is* possible. Rajukhedi Panchayat of Sehore district in Madhya Pradesh (MP) is an example of decentralised sanitation implementation, which was adopted through the institutional backing of the village Panchayat. The leadership of the Panchayat not only achieved the Nirmal Gram Puraskar, an award for attaining open defecation free status, for its own Panchayat, but also influenced many neighbouring Panchayats to adopt the same process. It also influenced the Total Sanitation Campaign (TSC) execution in the district of Sehore.

Sanitation continues to attain low priority for community and the government

The sanitation programme's failures can be attributed to poor demand for sanitation from the community, who are used to open defecation, and the unresponsive attitude of the government service delivery system in providing basic technical support, cost estimates and subsidy to the deserving poor families. Samarthan, a voluntary organisation working in Madhya Pradesh, conducted a study on expected services and the Panchayats' capacity to deliver them. The study had a very significant finding: the community does not articulate the need for household sanitation compared to the need for village drainage and general ("environmental") sanitation. However, departmental functionaries label toilet construction as a high priority as it is one of the government's well-emphasised programmes.

Panchayats, the local self-governance bodies, are mandated to play a significant role in promoting household sanitation. All the different stakeholders identify drinking water as the most important development need. The elected head of the Panchayat, the community and the administration all think alike on the issue of water, but do not share the same priorities when it comes to sanitation. Evidently, sanitation takes a back seat for the community as an urgent development issue, though the community does attach a high importance to improvement in health. The link between health and sanitation is not generally seen at the community level.

The development administration accords high priority to household sanitation, but not to primary health or environmental sanitation, though these are interlinked to household sanitation in rural areas (Samarthan, 2007).

Programmatic shifts in sanitation programmes in India

From supply- to demand-driven programmes

Unlike water, sanitation has struggled to gain political currency in India over the decades. According to the 2001 census data, only 36.4% of the total population in India has household toilets. In rural areas the percentage was as low as 21.9%. The states of Madhya Pradesh, Orissa and Uttar Pradesh are the worst affected (Reddy and Dev, 2006).

A major fillip to the sanitation programme was given in the Sixth Five Year Plan, with the initiation of the Centrally Sponsored Rural Sanitation Programme (CSRSP) for augmenting rural sanitation services. The Ninth Plan attempted to restructure

the CSRSP and set a target of 50% coverage for rural sanitation (the TSC programme was launched in April 1999). After the experiment with the 'supply and subsidy' led CSRSP, policy makers realised that creating demand for sanitation through generating awareness is essential in curbing open defecation (Sijbesma, 2006). Subsidy is now supposed to play only a marginal role in motivating the community. As a result, the CSRSP was followed by the Total Sanitation Campaign (TSC), which took a demand-driven approach. The Total Sanitation Campaign was designed with an emphasis on people's participation, cost-effective technology options and marginal subsidy for poor households. Currently, the TSC is being implemented in 559 of the 603 rural districts in the country (WaterAid, 2006).

The Total Sanitation Campaign had set itself ambitious targets. Yet after seven years of TSC, 60% of the rural population, the majority of them poor, do not have access to dignified sanitation. Even if the MDGs are reached in 2015, almost half the rural population (around 388 million people) and about 112 million people in urban areas would still be without basic sanitation – around half a billion people in total. TSC has been widely appreciated for increasing the sanitation budget by 43% from Rs. 7.40 billion in 2006-07 to Rs. 10.6 billion in 2007-08 (Hindustan Times, 18 November 2007).

National supply and target-driven – the reality of the TSC

Sanitation, like water, deserves national attention, though it is typically a local issue which demands local solutions. The real challenge in sanitation is to find ways and means to stimulate and sustain demand for sanitation at all levels. However, until

now, the policy-makers have dealt with the issue in a largely centralised manner. The focus remained on targets and delivery, rather than sustained change in community habits and institutional strengthening of both demand and supply of sanitation. Though designed with people's participation as the central element, the TSC got too entangled in number crunching. People's participation and institutional capacity building *are* reflected in budget headings but such components lack comprehensive strategic thinking and reflect only a budget expenditure line. The consequences of this lopsided emphasis are visible in the Total Sanitation Campaign's poor implementation. Just scratching the surface of the Total Sanitation Campaign's achievements reveals that most of the constructed toilets are incomplete or not in use. Poor demand, as a result of the delivery-oriented approach, has contributed to the poor success of the TSC in containing open defecation habits. Jait Panchayat presents a classic example of TSC execution of a sanitation programme.

Rationale for decentralisation in sanitation

Whether centralisation or decentralisation promotes and enhances the pace of development is a matter for debate. It has been well argued that decentralisation reduces supply costs and brings efficiency in providing basic public services. At the same time, centralisation is favoured on the grounds that the quality of governance and capacity to undertake development work at the local level are poor.

But with a subject like water and sanitation and in a country like India with its enormous size, diversity and development challenges, decentralisation is perhaps the only way to reach out effectively to

BOX 1**Jait Panchayat fails due to inappropriate institutional backing**

Jait Panchayat is located in the tribal dominated Budni Block of Sehore district in Madhya Pradesh. It is a relatively better-off Panchayat due to the overflowing Narmada river in the vicinity.

Jait also has the exclusive distinction of being the Panchayat from which the present Chief Minister Shri Shivraj Singh hails. In 2006-7, when Shivraj Singh was nominated for the chief ministership, the obvious response from the administration was to do its best demonstration in this Panchayat. At the beginning of 2007, about 90 individual toilets were constructed in the Panchayat. A contractor was trusted with constructing the toilets. A high-paced construction got this over in a week as more than ten toilets were constructed per day. The contractor even managed to extract Rs. 150 from each household in the form of a matching grant for the minimum amount needed for the toilet construction.

However, the toilets were not used as the community was not convinced about switching to new sanitation habits, nor was any local institution motivated to take charge. Since the community was not exceptionally motivated to use the toilet, they did not bother to erect the superstructures (minimum boundary wall, roof

etc.) resulting in further de-motivation. Only toilet pan traps were provided by the Public Health Engineering Department (PHED). Many toilets were of such poor quality that they were simply dissuading any kind of usage. Within a few months of construction, many of the toilets required repairs. In most other cases construction of the pits was faulty. A few months after construction, all but three toilets were out of use.

The district administration had commissioned five NGOs in the district to undertake Nukkad Natak (street plays) in all the nearly 500 Panchayats of the district in the name of IEC activity. In Jait Panchayat, too, Nukkad Natak were commissioned from the best team of the district, who had the distinction of undertaking similar work. However, two Nukkad Natak (street plays) persuaded only about five households to improve and start using their toilet. There were no accountable institution or local champion to promote sanitation after the toilets were constructed. The Panchayat, as an institution responsible for the development of their villages, was neither involved in the toilet construction nor in promoting behaviour change to prevent open defecation.

remote corners and to the masses. In the last ten years of democratic decentralisation, India has constitutionally recognised the Panchayats as the local governance institution. This experience has established that Panchayats *are* quite capable of handling local development issues.

We have seen in the previous section that toilet construction is not an articulated need of the community, so Panchayats themselves do not have enough motivation on the issue. However, being the local institution, Panchayats not only have close interaction with the community but also have capacity to motivate and command a leadership role. Gram Sabha, the village assembly constituted by all the voters, is the supreme decision-making body at the grassroots, and can be mobilized to identify ways to eradicate open defecation in the

village. Gram Sabha can support and oversee sanitation promotion and coverage.

Panchayats' capacities for dealing with sanitation – stakeholder's perception

In the previously-mentioned study, the sample was collected from three districts of Madhya Pradesh, involving elected representatives of the Panchayati Raj Institutions (PRIs), village, government officials at district-level and below, and a sizeable number of ordinary community members, including women and youth. Questions were asked about the Panchayats' capacity to deliver various development issues.

The study revealed that Panchayats have different capacities for managing the various components of water and sanitation. They have high capacities

for constructing drains, and installing and maintaining hand pumps and piped water supply systems. However, they have moderate capacity for providing technical support for the construction of household toilets. The study also highlighted that Panchayats have high capacity to generate awareness and motivate the community to construct toilets. This is used as an argument against the Panchayats promoting sanitation programmes. However, the Panchayats could hire technical help and gradually develop their own technical competency.

Legislative framework for engaging Panchayats in sanitation

The 73rd Constitutional Amendment implemented in India in 1992 empowered elected local bodies to take responsibility for “economic development and social justice” in their area. There are 29 development functions, which have been devolved to the Panchayat, and water and sanitation is one of the core devolved functions. There are various centrally-sponsored development programmes where Panchayats are the principal implementing agency.

In the state of Madhya Pradesh, a positive step towards convergence of sanitation with the Panchayats at ground level has been attempted. The Total Sanitation Campaign, which was being handled by the Public Health and Engineering Department (PHED), has been brought under the Rural Development and Panchayat Department. Simultaneously, the Health Department, under the aegis of National Rural Health Mission, is forging an effective convergence. The National Rural Health Mission is forming a village health and sanitation committee in every Panchayat. The committee has an untied grant of Rs. 10,000 to look after the

miscellaneous health and sanitation needs of the village. It can even contribute to the construction of toilets for poor families and use the amount as a revolving fund for small health and sanitation needs. The village sanitation committee is preferably headed by a female Ward Panch of the village.

Rajukhedi Panchayat demonstrates “Sanitation and Water” for good health

In this decentralised context, the Rajukhedi Panchayat of Sehore district has emerged as a role model of rural sanitation for other Gram Panchayats in Madhya Pradesh. The success of the Panchayat in managing water and sanitation is not only covered in developmental magazines but also in leading national dailies. It shows a method for motivating better management of water and sanitation issues, especially in an underdeveloped Malwa region of Madhya Pradesh where water is scarce. Rajukhedi Panchayat is entirely free of open defecation, toilet use is high and positive health behaviour common. The Panchayat has addressed environmental sanitation through an improved drainage system and rainwater harvesting. Local committees are enabled and empowered, with the help of Panchayat, to work out a profile of development activities based on their own assessment of locally available resource potential and the needs of the people.

The main activities in the achievement of this success are considered below.

Rajukhedi starts a battle for better health in Panchayat

Only three years back, Rajukhedi, along with many other Panchayats of the region, was facing a severe

water shortage due to extremely poor rainfall for three consecutive years. This Panchayat had a high incidence of water-borne diseases, especially during summer when the hand pumps used to dry up and the villagers used the water from open sources like ponds and wells. Receding water level was plaguing the community as well as the elected head of the Panchayat. They decided to tackle the depleting water levels by constructing check-dams in their village. On the initiative of the Gram Sabha, four check-dams were constructed in a single day on the seasonal *nullahs* flowing through the village. Consequently, the water levels started improving and the village realised the dormant potential of local planning.

Panchayat starts community-based monitoring on health

The Gram Sabha and the Sarpanch were concerned about the health conditions in the Panchayat and decided to oversee these. They started monitoring the service delivery of the health providers. A local NGO helped constitute a monitoring committee of village youths. The community monitored the type of health problems occurring in the Panchayat and the delivery of the health department's services, both vaccinations and primary health care. The community monitoring committee would conduct a meeting every fortnight to review the performance of health services in their Panchayat and decide on any action that needed to be taken.

Rajukhedi Panchayat was still concerned about the health of the people, which was wasting money and causing physical discomfort to the majority of the population, especially children. Rajukhedi Panchayat started working for its people's good health. They looked into various aspects of health

such as nutrition and immunisation, as well as sanitation. The village assembly met several times to work out options. Even now, Rajukhedi has a tradition of having a Gram Sabha every fortnight to discuss local issues instead of the mandatory four meetings in a year. The Panchayat acted on several fronts to improve health conditions in the village. They streamlined the midday meal programme running in the village primary school. The Panchayat realised that the school teacher arrived very late in the village. They locked up the school building and did not allow entry to teachers who regularly came in late. They also brought the matter to the district administration. The teacher was transferred, midday meals became regular and

BOX 2 Improvements in Rajukhedi

- A piped water supply system has been installed with two water tanks with a capacity of 10,000 litres and 5,000 litres each. Households connect individually for a monthly payment of Rs.30 and six months' payment in advance. Alternatively, they may opt for a community connection at Rs. 20 per month.
- A monthly charge of Rs.1,120 pays for chlorinating the source twice a month and the electricity bill. A small amount is also saved every month to build up a kitty for any unforeseen repair in the future.
- A monitoring committee comprising the youth of the village monitors the delivery of various departments in the village. It monitors the functioning of the village school and midday meal distribution in school. It also monitors the distribution of supplementary nutrition from Aanganwadi centre.
- The committee also closely monitors the village health functionary to ensure immunisation of the children in the Panchayat. If there are problems with any of the above, they are discussed in the monitoring committee meetings and subsequently in the Gram Sabha meetings.
- The Panchayat realises that household sanitation is crucial to good health and has started door to door visits to motivate the community.
- The Sarpanch himself participates in all the "Shram Dan" and motivates the community to do the same.

their quality has improved. The Gram Sabha realised that most of the common illnesses in the Panchayat were related to water and sanitation. The Panchayat started working on these issues, including the toilet construction, to improve the health of the villagers.

The Panchayat initiates dignified sanitation

Before 2005, there were only 19 toilets constructed for the 99 households of the village. Only three toilets were used partially. The remainder needed repair, as households had converted them into stores or makeshift sheds for their cattle. The Panchayat decided to begin toilet construction in the village. Fortunately for the Panchayat, WaterAid, an international NGO specialising in water and sanitation, got agreement with a local NGO, Samarthan, to work in Rajukhedi Panchayat. It equipped the Panchayat with additional knowledge on sanitation issues and technical support, and also provided the incentive of partially offsetting the cost of toilet construction for individual households.

Instead of constructing a demonstration toilet, as required by the WaterAid Project, the Panchayat insisted that the money should be used to repair the unusable toilets and as a part-contribution for the first people to come forward for toilet construction. About 16 toilets were repaired with the WaterAid grant. Sarpanch of the Panchayat, Kamal Singh Mewara, initiated the sanitation campaign in the village. He went door to door to talk to the community and make them understand the advantage of the household toilets. The Panchayat organised several Gram Sabha meetings to work out the strategy for a healthy and clean village.

Panchayat ensures effective implementation of the Total Sanitation Campaign

As a first step to implementing the Total Sanitation Campaign, Rajukhedi Panchayat promoted safe drinking water and sanitation in the Panchayat. This was followed by the education and motivation of the community on household sanitation. This demonstrated the Panchayat's abilities on sanitation, and the community was already satisfied with their efforts to improve the general sanitary condition of the village. Only after ensuring minimum water supply and sanitation standards did the Panchayat begin a full implementation of the Total Sanitation Campaign for the construction of household toilets. Thirty-five Below Poverty Line (BPL) families were identified who could access the subsidy available under TSC. The Panchayat collectively forwarded 37 applications. A Gram Sabha meeting was organised to decide how the village should implement the TSC, and what to do for the few families who could still not afford to construct a toilet even after accessing the TSC fund.

Impact of the water and sanitation programme undertaken by Rajukhedi Panchayat

Improved health and quality of life in Rajukhedi Panchayat

Kamal Singh Mewara, a 50 year old man with a family of five, says not one doctor has shown his face in the village in the last year. Even four unqualified jhola chap (local quack doctors) who usually frequented the villages from March till September have not visited even once. Before toilet construction in 2005, each family spent an average of Rs.250 - Rs.500 per month, depending on the size of the family and the type of illness.

BOX 3 Important decisions of Gram Sabha for improving sanitation coverage in the village

- Undertake repair of all faulty toilets constructed under TSC two years back, and make them usable.
- Door to door campaign initiated by the Panchayat to motivate the community to improve general sanitation and use household toilets.
- There is no need for constructing any demonstration toilet – instead the money will be used to offset 25% of the costs for the “early birds”.
- The Panchayat will take the lead in accessing TSC funds from Zilla Panchayat. All the Below Poverty Line families will construct their toilets with subsidy from the TSC.
- Each toilet will have the necessary superstructure so that families have no hesitation in using them.
- Fix days when everybody will contribute manual labour to repair the drains around their houses. The Sarpanch himself contributed manual labour towards creating toilet superstructures, repairing drains and soak pit construction.
- Gram Sabha discussed the support for very poor families who could not afford to build a toilet. A minimum of Rs 1,800 to 2,000 was needed to construct a functional toilet and only Rs. 1,200 is available as subsidy.
- Decide that better off families will contribute material like cement and bricks to extremely poor families so that they can also construct toilets.
- Gram Sabha decide to fine families whose members defecate in the open. A monitoring system was designed with the help of youth and school children.

Today it is not just money; even the quality of life has substantially improved. Women have more time to themselves and their families. There are fewer mosquitoes, and a lower incidence of malaria. The community observed that the substantial reduction in the number of mosquitoes meant physical irritability has gone down and the quality of sleep has improved.

The impact is greatest in the Dalit hamlets, where the expenditure on health had been highest and many families regularly needed short-term credit to meet their health expenditure. Prem Singh, a Dalit, used to spend nearly Rs.5,000 every year on medical expenses. Convergence of sanitation with other programmes (school education, immunisation, improved functioning of Anganwadi¹) will soon bring better health, education, income and quality of life in Rajukhedi Panchayat.

Sustained interest on sanitation by local organisations

The engagement of the Panchayat meant local youth and children also got actively involved, helping to institutionalise sanitation in the community. Younger schoolchildren monitor hygiene and safe water practices, while the village youth groups monitor the health services. The Panchayat and Gram Sabha meet frequently to discuss health problems and solutions. Sanitation is now a priority for the Panchayat and will remain important even without any external intervention.

Enhanced capacities of the Panchayat

The Panchayat has built capacities to handle the issue of sanitation. They are able to construct drainage with the correct gradient. They not only understand the value of soak-pits and water recharge but are also able to undertake such

¹ Anganwadi centres are located within a village as a primary crèche for the children of the village. The female worker who runs the centre is also responsible for providing basic services to the pregnant women and children below five years for their immunisation, nutrition and health check-up with the formal Auxiliary Nurse and Midwife (ANM) who is responsible for about ten villages.

construction on their own. The Panchayat has learnt to negotiate effectively on the implementation of TSC with the district administration and community, and has developed understanding of the technical aspects of toilet construction. The Panchayat has increased capacity for health and sanitation surveillance, support and education.

Ripple effect in other Panchayats

Rola is the adjoining Panchayat of Rajukhedi. The success of Rajukhedi prompted the Sarpanch of Rola Panchayat to change his attitude and behaviour. The youth of Rola Panchayat got together and visited Rajukhedi Panchayat as many of them had friends and relatives in Rajukhedi. The youth group of Rajukhedi provided a structured exposure and promised support. The young people of Rola constituted a formal youth group and organised a Gram Sabha. They asked some of the Panchayat representatives to visit Rajukhedi. Rola Gram Sabha resolved that the Panchayat will attain open defecation free status. A water and sanitation committee has been formed with active leadership from the youth group. Today, Rola is a different Panchayat, and hopes to receive a Nirmal Gram Puruskar this year. Like Rola, at least 20 other Panchayats in the adjoining area are striving to achieve open defecation free status and learn better water and sanitation habits.

Increased readiness in the district administration for improved TSC implementation

Within six months of Rajukhedi's success, 770 toilets in 17 Panchayats were constructed in Sehore block itself, with a total subsidy of Rs.1000,000. The district instructed officials to visit Rajukhedi and disseminate the learnings and models in other Panchayats. The district administration sanctioned

special funds to hire buses and taxis to bring elected representatives of other Panchayats to Rajukhedi. There is an increased acceptance of the Panchayat's proposals for the implementation of the TSC. There was lot of cynicism and mistrust when Panchayats first proposed toilet construction in the villages. However, visiting Rajukhedi has changed perceptions.

Learning and ways forward

Inadequate institutional backing

Sanitation is a local issue and may be best championed with the institutional backing and support of local, stable and influential institutions like Panchayats. It may not be possible for any department to specifically sustain the educational and motivational activities in the community without a local torch bearer. This means specific IEC (information, education, communication) strategies need to be built for Panchayats, so that they in turn can provide information, education and communication on sanitation issues in their specific Panchayat. Similarly, various capacities of the Panchayat must be strengthened (education on sanitation and water issues, technical competence in hygiene education, soak-pit construction, toilet masonry etc.) so that Panchayats can both support and monitor the process.

An IEC campaign without follow-up support is more or less futile. This support is not possible unless a local institution with strong leadership is involved. A strong IEC campaign converts latent demand for sanitation into articulated and effective demand. Families want to know the technological options and costs. This is not done within a couple of days or weeks, and without follow-up, the effects of IEC die down. Panchayats may play a meaningful

role by engaging youth groups and relevant committees to provide primary information to the interested families and motivate them to get a toilet at the earliest opportunity. They may ask the local mason to provide basic design and cost details. The local mason can build a toilet to the family's requirement, keeping affordability in mind.

Unless a local institution is involved, even the execution and implementation may just be a numbers game. Sanitation habits may not change, and toilet construction may not actually lead to usage, unless motivation and monitoring is institutionalised at a local level. It may be possible to develop Panchayat sanitation hubs, where Panchayats offer technical support, education and motivation on water and sanitation issues to both its own residents and those of nearby Panchayats.

Changed IEC practice on sanitation

Current IEC practice is grossly insufficient and more of a custom. There is no appointed IEC expert within the department, so the department has to seek help from outside agencies from time to time. Absence of ownership and ad hoc delivery of IEC leads to poor take-up of toilet use. A sustained long-term IEC strategy with the Panchayats may provide the right balance of expert knowledge and local adaptation.

Selling sanitation as a sub-component of health rather than a stand alone issue

Significantly, the community may not be interested in household sanitation in isolation. However, the community itself has pointed out that primary health is an extremely desirable development need. Sanitation needs to be packaged as

BOX 4 Panchayats are efficient financial managers

The Gram Sabha of Rajukhedi decided that the Panchayat should undertake centralised purchasing of material. It should distribute the material, instead of cash, to the community. This would reduce the cost due to bulk purchases. Centralised purchasing also covered individuals who had decided to access TSC money but construct poor quality toilets to save money.

The Panchayat bought stone dust instead of sand to do the brick work. It was cheaper: a trolley of stone dust cost only Rs.700 compared to Rs.1,700 for a trolley of sand. It was stronger too and, importantly, it was locally available. The seats, cement and bricks were purchased from Sehor town at a subsidised rate. The Panchayat also made a plan to contribute manual labour for constructing the superstructure of the toilet. These initiatives allowed the Panchayat to make the most out of the TSC subsidy. The families of scheduled castes, scheduled tribes, and the most underprivileged were supported by their neighbours in the form of material (cement, bricks etc.) on a returnable basis, so they could also construct toilets.

The challenge for the Panchayat was to convince the community of the appropriate technological option. Influenced by their urban counterparts, many in the Panchayat insisted that they would only construct a toilet with a septic tank. For a village, septic tanks are of limited use, are expensive and take up more space.

However, the Panchayat managed to resolve the community's initial opposition to the twin soak pit type of toilet. They organised discussions with the families who had constructed septic tank toilets in the Gram Sabha. The families agreed that there is a problem of discharge, which attracts breeding mosquitoes. Even when the tanks get full, they are difficult to empty. The community also realised that twin soak pit toilets take less space and less water.

improvement in health. If it is delivered with other health-related issues and schemes, the community will see it as a logical choice.

With diminishing community spaces for open defecation and growing literacy levels among adolescent girls, having a private toilet is also emerging as a social need. Young people, who are increasingly mobile, have been exposed to neighbouring urban centres, and have shared their experiences with friends and family members. Besides, television has now reached every roadside village, and this exposure to better lifestyles is apparent.

Wherever government programmes and civil society groups are active, strong self help groups of women are emerging. The women's empowerment initiatives, besides thrift and credit, have motivated

women to influence demand for a household toilet in their family. It is seen as an issue of dignity and self-respect.

If the Total Sanitation Campaign is promoted only as a toilet construction programme, it merely reflects the target-driven approach and not the concern of the administration to promote better sanitation habits. There is a need to consider various dimensions of the socio-economic fabric of the village to motivate families to accept sanitary toilets. In a country like India, where many districts are water deficient and lack of water can discourage dignified sanitation, the incentives for promoting sanitation need to be higher and practically meaningful. Similarly, where self help group movements are strong, the TSC may provide revolving sanitation loans so that the funds may be used in other villages.

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Preventing corruption, encouraging transparency and accountability in the water and sanitation sector: A case study from Kerala, India

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Abstract

Many see corruption as a huge obstacle in undermining development efforts generally and those in the water and sanitation sector specifically. It is mostly agreed that the key to its eradication is through efforts to increase accountability and transparency.

This paper sets out how this was done in a water and sanitation project, Jalanidhi, in Kerala State. It indicates that success was considerable and corruption reduced through the direct involvement of community members in the detail and management of the project. This is despite the fact that opposition was encountered from some sources.

Introduction

Transparency International defines corruption as “the misuse of entrusted power for private gain” (Transparency International, 2008). Corruption is “draining” the water sector. It reduces economic growth, discourages investments, and violates human dignity. It increases health risks and robs poor people of their livelihoods and their access to water.

In the water sector, observers estimate that 20 to 70% of resources could be saved if transparency were optimised and corruption eliminated (Shordt et al, 2006). This would free up most of the resources needed to achieve Millennium Development Goals for sustained water and sanitation services that reach the poor. (Shordt et al 2006)

The harmful effects of corruption have a severe effect on the poor, who are least capable of paying the extra costs associated with bribery, fraud, and the misappropriation of economic privileges. Corruption sabotages policies and programmes that aim to reduce poverty. So, attacking corruption is critical in water and sanitation programmes.

It is widely believed that promoting good governance and transparency will help to stop corruption in the sector. Van Oostrum and Dietvorst (2006) question the assumed relationship between the decentralisation of the provision of Water Sanitation and Hygiene (WASH) services on the one hand and increased transparency and accountability on the other. Bardhan and Mookherjee (2005) also report both positive and negative relationships. But Fisman and Gatti (2000) found indications of a strong negative relationship between more fiscal decentralisation of government expenditures and less corruption.

According to the World Bank, an effective anticorruption strategy needs to address five key elements:

1. Increasing political accountability
2. Strengthening civil society participation
3. Creating a competitive private sector
4. Institutional restraints on power
5. Improving public sector management.

As part of efforts in good governance in the water sector, these elements have been addressed in bilateral and World Bank-supported projects in Kerala. This paper presents the institutional improvement efforts made in transparency, accountability and preventing corruption.

There is a direct link between corruption and accountability. An accepted principal is that if roles and responsibilities are agreed between stakeholders, greater accountability can be created, and so corruption can be substantially minimised. Country surveys on corruption, service delivery surveys, and diagnostic assessments are ways in

which organisations can raise awareness of policy-makers and the general public. The Bangalore and Philippines Report Cards are innovative ways through which the voice of the public is brought to the ear of policy-makers, affecting improvements in service delivery and reduced levels of corruption¹.

Simon Zadek, Task Force member and CEO of the think-tank on Accountability, said:

“Multi-stakeholder partnerships are most effective when they create agreed terms for mutual accountabilities between all the players, from one end of the supply chain – donors and private investors – all the way through to the intended beneficiaries on the ground. Accountability deficits almost certainly spell failure.”

This case study examines and analyses the experiences of the Socio-Economic Unit Foundation (SEUF) while implementing the World Bank-supported water supply project in Sholapur Gram Panchayat (GP) in Palakkad district in Kerala.

Decentralisation, transparency and corruption

Generally it is believed that decentralisation of the WASH sector will curtail corruption to a large extent. However, van Oostrum and Dietvorst (2006) report that in a study of 6,000 households and 200 water supply agencies in Asthana, India, more customers (51%) of decentralised systems paid bribes, especially to falsify bills, than those of centralised systems (41%).

In the 73rd and 74th Constitutional Amendments, the Central Government of India decentralised 29

¹ <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPMENT/EXTPCENGO,,contentMDK:20507680~pagePK:148956~piPK:216618~theSitePK:410306,00.html>

development responsibilities, including those for water supply and sanitation, to local governments (Gram Panchayats). The four states that took the lead in implementation are West Bengal, Karnataka, Andhra Pradesh and Kerala.² The Government of Kerala transferred many development functions to local self-government institutions and paid 35% of its Plan funds directly to the GPs as development grants. Broad guidelines were set for the use of these funds under each sector - with 10% to be spent on sanitation. A participatory planning process through the People's Planning Campaign was launched to ensure proper planning and utilisation of funds, accountability and transparency.

Recognising the need to improve functionality and sustainability of water and sanitation facilities, the Government of India initiated significant sector reforms. In Kerala, the World Bank-supported Jalanidhi project implemented by an autonomous body (the Kerala Rural Water Supply and Sanitation Agency (KRWSA)) has been able to make a remarkable contribution in demonstrating the viability of cost recovery and institutional reforms by developing a new decentralised service delivery model. The approach had the following features:

1. It was a community demand-driven and participatory process.
2. It changed the role of government from direct service delivery to that of facilitator.
3. It featured partial cost-sharing in capital cost and full operation and maintenance cost by the users.

Implementation was ensured through a partnership between KRWSA, district project management units, GPs, Beneficiary Committee (BC) and Beneficiary Groups (BG). Support Organisations (SO), mostly

NGOs recruited through a public process, assisted the GPs and BCs and supported them in planning and implementing the project activities.

The World Bank-supported Jalanidhi community-managed water supply and sanitation projects were piloted in four districts in Kerala from 1999 onwards. The project was later scaled-up to seven districts primarily based on the demand from GPs. This report shows how the community element of this project contributed to a reduction in corruption.

Methodology

To study, document and assess the impact of measures developed by local communities to ensure transparency and prevent corruption in the Jalanidhi project, a community-managed water and sanitation project was selected in Sholapur Gram Panchayat. It was in a remote, poor and marginalised area of Kerala. The project was completed 18 months prior to the selection. This could give insight into the sustainability of the community-managed project after the withdrawal of support organisations from the Panchayat. The willingness and active cooperation of the GP Panchayat and SO was also ensured.

The study combined a literature review and in-depth participatory methods to highlight what measures were taken in the Jalanidhi project to minimise corrupt practises.

Mindful of the need for careful analysis and handling when dealing with sensitive issues of this nature, the study team:

- visited the project area
- interacted with 18 community members (BC members and common users, 12 women, 6 men)

² <http://www.mng.gov.pk/icfd/presentations/10%20-%20India%20Mr.%20Methew%20-%20Panchayati%20Raaj.ppt#256,1,Slide>

- had discussions with BC members and BG office bearers such as the president, secretary, joint secretary, treasurer and the elected representatives
- had discussions with support organisation team leader and team members
- had discussions with Panchayat members and the Panchayat president
- verified records like the minutes book, cash book, account book, agreements and contracts.

Background

Jalanidhi Project - philosophy and approach

Demand-driven approach - Unlike the supply-driven approach hitherto followed, this project was implemented based on the needs of the people. This is why it's called "demand-driven". The Project was introduced only in areas where interested groups of people showed their willingness to participate and were willing to abide by cost-sharing conditions. These groups were then assisted to set up a legal body by registering themselves. Only then could they proceed with the rest of the project planning and implementation. The source selection, technology selection, purchases, contracting and implementation was done by each registered BG with technical help from the SO. As reported, this was to felt to create a sense of ownership.

Cost-sharing – A total of 15% of the capital costs was borne by the beneficiary community. For scheduled castes and tribal communities this was 10%. Of the remaining, the Gram Panchayat bore 10%, while 75% (80%) was borne by the Government through a World Bank loan.

The GP contributed Rs. 2,000 per household to each one without a toilet. This was a combined

contribution for both India's Total Sanitation Programme and the Jalanidhi project. The amount was used to buy material in bulk and pay for transport and masons. The funds covered the construction only up to base level; households paid funds for the superstructure.

Information on technology and superstructure options was shared with the group members. Because the families chose their own superstructures, unit cost varied from Rs. 3,500 to Rs 6,000.

Cost recovery - The BGs meet 100% of the recurring costs of operations and maintenance. This lightens the burden on the state exchequer, helping the Government to utilise this money for other priority needs, like in the health sector.

Integrated approach - The objectives of the project included attaining sustainable supply of safe drinking water, sustainability of source and operations, regularity and adequacy of supply and quality of water. These were met through well-integrated components. The sustainability of the water source was ensured through recharge measures. There was also a mix of sanitation and hygiene promotion and infrastructure construction such as latrines and compost pits. It was envisaged that sustainability would be ensured through community empowerment, capacity building, women empowerment and social mobilisation.

Pro-poor approach - Special efforts were taken in the project design to include the poor and vulnerable while selecting the user groups. As noted above, the project was designed to incorporate beneficiary contributions of 10 and 15% capital costs; this was done either through cash or in kind

- as labour. Intra-group subsidisation and even inter-group subsidisation was permitted at the request of and under the total responsibility of the beneficiary groups. Thrift and credit schemes were promoted in the BGs as "self-help groups" operated by women of that community.

Women development initiatives - Women are the most affected, both directly and indirectly, by poor water supply and sanitation, especially during water shortages. The project made conscious efforts to mainstream the women users in planning and decision-making activities. "Thrift and credit groups" helped households to make payments towards the recurring expenditures of the water supply system. In addition, the project gave groups of women financial assistance and skill development training to start viable micro-enterprises of their choice.

Community empowerment - Capacity building and equipping the community to operate the project was a major way of getting users themselves to plan, design, implement, own and manage the service. This ensured the involvement of the people and also initiated a new community-based approach for meeting any local needs.

Community contracting - Users themselves were fully involved in all the activities. They identified water sources and households without toilets, decided on the technology they wanted to implement, dealt with community contracting and implementation and with the operations and maintenance aspects of the water supply schemes. All contracting of goods, works, and services was done at a user level itself for which adequate training was provided and guidelines were made available.

Utilisation of available resources - Schemes already operational in the project areas were repaired and handed back to user groups. It is hoped that this will be the most efficient way to make use of the investments that was made.

Merging with decentralised planning - The project was put into practice through the Gram Panchayats and the BGs, thereby acknowledging and strengthening the efforts of decentralised planning.

The first (pilot) batch of community projects under the Jananidhi project were implemented in 30 months. The second batch took 24 months.

The study Panchayat and its WASH projects

The existing conditions in the Panchayat are shown in Table 1. All families were below the poverty line

TABLE 1 Panchayat socio economic profile of Sholapur

Details					
1	Name of Panchayat	Sholapur	11	Literacy rate	57%
2	Formation of Panchayat	1963	12	No of houses	5,051
3	District	Palakkad	13	BPL families	3,972
4	Block	Attappadi	14	ST families	2,520
5	Area	150.76 sq.km	15	SC families	287
6	Wards	13	16	Hospitals	5
7	Population	18,977	17	Water supply - number of taps wells	260
8	Male	9,842	18	Rivers	2
9	Female	9,135	19	Number of houses with latrines	1,200
10	Population density	119			

(BPL) or were Scheduled Tribes/Scheduled Caste (ST/SC) households. The 5,051 households shared 260 taps; 273 had a (family) well and 1,200 had a latrine.

Under the Jananidhi project, there were two types of community projects in Sholayur Gram: one in the general category (15% household contribution to the water supply) and another with the tribal population (10% contribution). For this study, the general category was chosen in consultation with the GP and the SO. If the beneficiary group was made up of more than 50% tribals, they are considered as a tribal project. The profile of the two water and sanitation projects implemented in 2004 to 2006 studied are given in Table 2.

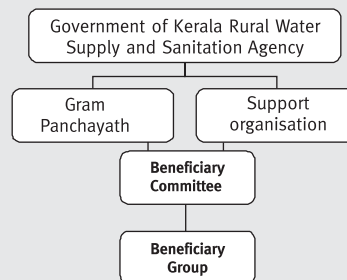
Both projects were started in October 2004 and were completed on 25 August 2005. All households now have a private tap. Before their only water resource was a spring in the forest. Households used HDP hoses to bring water to the village and their houses, but the supply was constantly disrupted by animals or men, when material fell on the line or when there was rain and wind. The source was not protected and so there were often problems with its quality. In the summer months women faced a lot of difficulties, they could hardly get one pot of water. They had to fetch water through the hilly terrain, going to collect it at unusual hours at night or early in the mornings. The sanitation situation was even worse: only nine of the 79 houses had a latrine and women were most affected by the disadvantages this brought.

Stakeholders / institutional linkages

In community-managed projects, people have direct control over key project decisions as well

as the management of investment funds. The aim is that poor people are recognised as human resources and partners in the development process and that their institutions and resources are built upon. Figure 1 shows the institutional set up of the Jananidhi project.

FIGURE 1 Institutional set-up of the Jananidhi project



Under the project the World Bank provided financial assistance to the GP. The GP was the focal point for project activities in its surrounding area. GPs were responsible for:

- seeking assistance with the project following a self-selection process
- preparing the implementation phase proposal during the planning phase
- facilitating project implementation by BGs during the implementation phase.

GPs provided counterpart funding to BGs as a percentage of infrastructures building costs. During the post-implementation phase, GPs monitor the sustainability of scheme operations and ensure that the BGs satisfactorily discharge their Operation and Maintenance (O&M) management function. This includes levying and collecting user charges from the beneficiaries to fully recover the O&M costs. SOs support the GPs, BGs and BCs on a day-to-day basis in planning and implementing the

TABLE 2 Characteristics of the implemented community water and sanitation projects

Particulars	Details WSS1	Details WSS2
Name of "firm"	Subhash kudivella suchithva samithi (Subhash drinking water supply and sanitation committee)	Santhinagar kidivella suchithva samithi (Santhinagar drinking water supply and sanitation committee)
Ward number:	6	8
Support organisation:	Socio Economic Unit Foundation	Socio Economic Unit Foundation
Number of houses in BG:	36	43
Population covered:	125	138
Total expenditure of WS: (TS amount)	3,58,000	7,30,000
Government share	80% - 2,86,000	80% - 5,84,000
Panchayat share	10% - 35,800	10% - 73,000
Beneficiary share	10% - 35,800	10% - 73,000
Capital share of beneficiaries	9,944	16,977
Water per person per day	70 lpcd	70 lpcd
Technology	Gravity flow	Gravity flow
House connections	36	43
O&M costs/hh/month	Rs. 30	Rs. 25
No of latrines	33	36
Chosen technology	Double pit pour flush toilets	Double pit pour flush toilets
Unit construction cost	Rs. 3,500 - 6,000 according to the superstructure households preferred.	Rs. 3,500 - 6,000 according to the superstructure households preferred.
Household contribution	More than 50%	More than 50%

project's activities. They also provide support to BGs during post-implementation to stabilise scheme operations.

The BGs were responsible for:

- planning
- technology selection
- constructing their Rural Water Supply and Sanitation (RWSS) facilities
- providing their part of the capital cost contribution
- managing O&M of the improved facilities
- levying and collecting sufficient user charges.

Representative BCs were set up by each of the participating BGs. Their composition, functions,

method of selecting members, by laws, legal framework and relationship with the GP and KRWSA, were agreed in advance.

The project made vigorous efforts to maximise women's representation and management role in the BCs. The project rules required that membership of BCs would be at least 50% women, and 20% from socially disadvantaged groups. At least one of the top management positions of the BC (president or treasurer) was to be held by a woman.

Both BGs had a nine-member committee: five women and four men. All committee members belonged to Below the Poverty Line (BPL) families.

TABLE 3 Characteristics of BG functionaries in Subhash and Santhinagar BG

Positions in committee	Subhash BG	Education	Santhi-nagar BG	Education
President	Lekshmi	4th std	Papa	4th std
Secretary	John	8th std	Murukan	10th std
Treasurer	Joseph			
Joint secretary	Sarasa	10th std	Papa Radha	5th std 7th std

Women and tribal community representations were both represented. The educational level of at least one member was 10th standard which contributed to the proper minute writing and account keeping of BG (Table 3). They were recognised by other stakeholders and supported through different training. Members had some experiences in community activities. The joint secretary has now become the helper in the Anganwadi and thinks that the training she received on this project helped her get the position.

Table 4 shows the crucial role of BG and SO in a Jalanidhi Project. The involvement of BG in all stages of implementation - from planning implementation and full responsibility for operation and maintenance - made the project transparent.

The roles and responsibilities of stakeholders were clearly laid down in the agreement executed by the four parties involved in the project (Table 5). The terms and conditions for transparency and preventing corruption were clearly stated in the agreement. This included criteria for termination of the agreement. The one main criterion for termination of agreement was mismanagement of funds or materials of the schemes, including if the brand names of materials purchased were different from those agreed.

Preventing corruption in the project

While better political accountability, strengthened civil society participation, a competitive private sector, institutional restraints on power and improved public sector management all have their place, curbing corruption asks for more specific measures than these general categories.

Typical types of corruption in the WASH sector

There are a number of different areas of corruption found among different actors in water and sanitation projects:

1. *By the public sector.* It is not uncommon that in the public sector functionaries must pay for positions and promotions that they want or to avoid being given a so-called “punishment post” in less lucrative departments (e.g. training) or districts. They may then regain the money in their new position/location. Local functionaries such as Panchayat members may pay to get a project allocated to their community/constituency.
2. *By and with the private sector.* In interactions with the private sector, involving commercial enterprises, but also NGOs, this sector may pay bribes for information that help them to prepare competitive bids and/or to win tenders. Private sector players may form cartels with illicit price agreements or agree to take turns in offering the lowest bids. Chosen firms may cut corners by reducing materials and/or work, using lower quality materials than contracted and paid for, and/or not or poorly implementing activities and steps. They may ask for authorising signatures from local functionaries and/or consumers that

TABLE 4 Roles and responsibilities of stakeholders in terms of accountability measures

Stakeholder	Responsibility	Measures for accountability
1. Beneficiary committee	Planning	<ul style="list-style-type: none"> ■ Minutes of BG committee - every discussion point recorded
	Technology selection	<ul style="list-style-type: none"> ■ Awareness of costs facilitated by SO engineers ■ Choice by user groups
	Construction	<ul style="list-style-type: none"> ■ Material purchase through quotations approval by committee after comparative study ■ Exploring the local market and companies for bulk purchases ■ Quality checks ■ ISI specifications
	Capital cost collection	<ul style="list-style-type: none"> ■ Participation of all before construction
	Collection of user charges	<ul style="list-style-type: none"> ■ Monthly collection and bank remittance
	Account keeping BG joint account	<ul style="list-style-type: none"> ■ Accounts shared in meetings ■ Joint bank accounts makes committee responsible ■ Monitoring by SO, DPMU and GP ■ Audit by appointed agencies ■ Social audit
2. Beneficiary group	<ul style="list-style-type: none"> ■ Planning ■ Technology choice ■ Collective decision-making 	<ul style="list-style-type: none"> ■ Collective decisions ensures transparency
3. Gram Panchayat	<ul style="list-style-type: none"> ■ Planning ■ Monitoring ■ Fund flow 	<ul style="list-style-type: none"> ■ 10% Panchayat share makes accountability of the project ■ Close monitoring mechanisms evolved
4. Support organisation	<ul style="list-style-type: none"> ■ Facilitation ■ Engineering and social surveys ■ Plan and estimation ■ Quality checks ■ Monitoring 	<ul style="list-style-type: none"> ■ Capacity building of all stakeholders ■ Sharing of findings in BG meetings ■ Cost reduction and appropriate choice ■ Checklists given to BG/BC ■ Ensuring timely corrections
5. District Programme Management Unit	<ul style="list-style-type: none"> ■ Plan and facilitate implementation ■ Supervise and monitor other stakeholders ■ Technical and financial management support to GP and BC 	<ul style="list-style-type: none"> ■ Technical support to cost effective methods ■ Monthly and timely meetings with partners and monitoring physical and financial progress

TABLE 5 Roles and responsibilities of stakeholders laid down in the project agreement

Stakeholder	Roles and responsibilities
Kerala Rural Water Supply and Sanitation Agency (KRWSSA)	<ul style="list-style-type: none"> ■ The agency (Kerala Rural water supply and sanitation agency) shall make all arrangements for the timely transfer of funds. ■ The agency shall make necessary arrangements to give training to SO/GP/BG. ■ The agency shall appoint a Service Agency (SA) for construction quality checking. ■ The agency shall appoint auditors to look at funds and statements prepared by the GP, the SO and the BGs.
Gram Panchayat (GP)	<ul style="list-style-type: none"> ■ The GP shall facilitate and co-ordinate the implementation of the project in its geographic area. ■ The GP shall fulfil its obligation for cost-sharing in implementing various components of the project. ■ The GP share will be credited to the BG account as per the project norms or as demanded by the agency. ■ The GP shall recognise the BG as the implementing and operating institution and the owners of the assets created /operated /modified under the project. ■ The GP shall provide necessary support and monitor activities of the SO in order to ensure that the project is implemented in accordance with the Community Empowerment Plan (CEP) ■ The GP shall open a separate bank account at a branch of a scheduled bank for transactions relating to implementation of GP level activities. ■ The GP shall maintain separate accounts and make records for verification, scrutiny and audit available. The GP shall rectify the defects, anomalies or deficiencies pointed out immediately.
Beneficiary Committee (BC)	<ul style="list-style-type: none"> ■ The BC (for BG)*, with the help of SO, shall be responsible for ensuring that all activities take place as planned. ■ The BC (for BG) shall be responsible for procurement of materials and their storage under the guidance of SO. ■ BC (for BG) shall maintain the books of accounts as per directions of KRWSSA. ■ The funds shall be deposited in a joint bank account of BG and SO. Cash withdrawal is available for funds only up to Rs. 5,000. Those above Rs. 5,000 should be cheque payments. ■ BC and BG shall be responsible for monitoring the progress of the work, reporting on its implementation and details of the accounts. ■ The BC and BG shall be responsible for the operation and maintenance of the facilities and collection of tariff.
Support organisation (SO)	<ul style="list-style-type: none"> ■ The responsibilities of SO are: the implementation phase, support community strengthening, capacity building of BG and GP, ensure quality of construction, materials, ensuring judicious spending of BG account, timely reporting and constant guidance in implementation.

* Note –
the BG is the general body and for practical administrative /operational purposes the BC is selected and entrusted with tasks

lack information and/or authority to check receipts and completion forms. Those responsible may either keep the resulting gains or share them with fellow firms and/or different functionaries.

3. *By the consumers.* Consumers may pay to obtain facilities, get subsidies for which they are not entitled or which must be shared among more households than funds allow and/or to speed up administration/delivery/construction/repairs (the so-called “speed money”).

Measures to prevent and address corruption

Table 6 shows the indicators and tools used to ensure transparency and accountability, prevent corruption and take action in the Jalanidhi water and sanitation community projects. On the left are the indicators. The right-hand column describes the tools that were used and action taken to resolve problems.

A well-coordinated capacity building programmes at various levels was a crucial component of the project. It involved more than the development of skills: it developed also the attitudes, skills, knowledge and experiences of individuals and how they relate to social environment. Table 7 provides an overview.

From the table it can be observed that the project team met community members more than 20 times for the different training programmes. Additionally, they were contacted by the Support Organization frequently for the development of the project on a day to day basis. This made it possible to have a strong relationship between the different stakeholders in the project. These meetings of different stakeholders largely contributed to the building of confidence and mutual trust.

It was important to support the community by offering training on accounting, O&M and proper sustainability because it makes them responsible for the sustainability of water and sanitation facilities. Contracting procedures, agreements, payment schedules, etc were dealt with in detail giving special care to the possibility of exploitation of the community by outsiders.

The following measures were used to prevent and control corruption in the community.

Measures against corruption at a public and private sector level and with user groups:

- Purchase of materials was as stated in the detailed scheme report which was accepted by the District Programme Management Unit (DPMU).
- If excess payments (between Rs. 1,000 and Rs. 3,000) were required, a sanction was needed from the BG Committee. Payments between Rs. 3,000 and 5,000 in excess needed a sanction by the General Body (BG/GP). Any higher payments required the sanction of the DPMU.
- Minutes for all important decisions and purchases were kept by the BC and management was accounted for by BGs and the GP.
- Comprehensive registers were kept: a muster roll, BG registration, stock register, agreement forms, vouchers and receipts, bank pass book, quotation notices and all received quotations and technical verification notes.
- Guidelines on construction works, purchase of materials and audits, including formats for each, were given through training on procedures. Generally, officials handled these details. The community also knew the procedures and handled some of them too.

TABLE 6 Indicators and tools to enhance transparency and accountability and prevent corruption

<p>Indicators</p> <p>Demand-driven approach</p> <ul style="list-style-type: none"> ■ Willingness of Panchayat to participate in programme. ■ All elected Panchayat (local council) members and administrative staff. Panchayat secretary and staff became aware of process and principles. 	<p>Tools and activities</p> <p>Agreed rules on who will get and pay what</p> <ul style="list-style-type: none"> ■ Committees and NGO staff met many times to discuss the philosophy, principles and strategies of the programme. ■ Panchayat takes Resolution to participate in the programme. Resolution defines contribution pattern and Panchayat to contribute its share.
<p>Communication and mobilisation</p> <ul style="list-style-type: none"> ■ Each family of the problem clusters knows about the project principles. ■ Make sure that all households know the rules. 	<p>Users informed on project concept and locations</p> <ul style="list-style-type: none"> ■ Special Gram Sabha (community assembly) organised to share the project's concepts with community. At least 10% of the voters in the ward need to participate, but in this area the figure was more than this as both water and sanitation was their priority. ■ The group identified problem areas of water scarcity through discussions at various levels. ■ Awareness of the project at a grassroots level was raised through cluster meetings. ■ Panchayat members and the SO rechecked that families knew about the project.
<p>Coverage, access</p> <ul style="list-style-type: none"> ■ All water scarce areas covered and take into consideration that all poor families are informed. 	<p>Equitable access for worst water areas and within these areas also to toilets</p> <ul style="list-style-type: none"> ■ Community members and SO map socio-economic and technical conditions in the water scarcity areas. ■ Since it is a water and sanitation integrated project, they also map the present sanitation situation (who has and doesn't have sanitary toilets). ■ SO organises education classes on hygiene and sanitation to raise awareness of the need for toilets. ■ Beneficiary Group formed in needy areas to manage W&S project. Groups choose Beneficiary Committee (BC) at Panchayat level to manage the project together with the Panchayat members. ■ BGs agree households pay 10% of water supply and investment in labour and the remainder in cash and that all those without sanitary toilets construct one. ■ The poor contribute labour and the BG can exempt the poorest households from cash payments to water. Poor households got a lump-sum Rs. 2,000 for toilet construction enough to build the below-ground part of a double vault pour flush toilet and superstructure at their own cost from a range of options. The map is based on locally agreed poverty criteria to identify poorest households. ■ BGs sign "agree to participate" and register as a society. ■ BC publicly posts list of poorest households for transparency and verification. BC, Panchayat and SO jointly check any protests and adjust list as needed. BC and Panchayat adopt consolidated list.
<p>Contributions agreed, paid and monitored</p> <ul style="list-style-type: none"> ■ Local government pays 10% and beneficiaries 10-15% of water construction costs 75-80% of water investment costs covered from WB support. 	<p>Accountability</p> <ul style="list-style-type: none"> ■ A joint bank account opened by representatives of SO and BG. ■ Joint signatories on bank accounts: one NGO staff member and beneficiary committee. ■ Agreement signed between Panchayat Support Organisation (NGO), Beneficiary Committee and District Project Support Unit. ■ SO checks bank book to see if all parties have paid.

TABLE 6 Indicators and tools to enhance transparency and accountability and prevent corruption

<ul style="list-style-type: none"> ■ For sanitation, BPL/SC/ST households pay for superstructures of their choice. ■ Toilet technology is decided jointly in workshops with male and female household heads. 	<ul style="list-style-type: none"> ■ SO gives accounts training to committee members ■ BC keeps account books, cash book, bank account, and contribution collection register. ■ BG and BC are accountable to member households and GP for proper implementation and management, including delivery of water services and achieving and maintaining 100% sanitation.
<p>Technology choice</p> <ul style="list-style-type: none"> ■ Local specific and cost effective technology selected in joint workshop. ■ Representatives (male and female) of all families informed and involved in decision-making. 	<p>Informed choices with understanding of costs and cost-reduction</p> <ul style="list-style-type: none"> ■ SO introduces different water technologies and discusses the cost of each and quantity water demand. Attendance is kept and SO makes sure that everyone is informed. ■ Technology options for household toilets are discussed, two pit pour flush latrines with superstructure made of grass or coconut leaves was preferred (households pay superstructure, GoK pays Rs. 2,000 up to plinth level). ■ Source of water and distribution system tentatively finalised. ■ SO prepares the feasibility report and cost estimates. ■ Discuss on the cost reduction and capital cost contribution of community. ■ Operation and maintenance cost discussed. ■ Sign "Agree to Do" document.
<p>Public estimates of costs and construction time</p>	<ul style="list-style-type: none"> ■ Model toilets are constructed as part of masons' training to arrive at the cost of plinth level construction. ■ Detailed estimate of water supply is worked out after finalisation of the source and distribution line. This is shared with the community. O&M cost also discussed since this is a community responsibility. Care is taken to reduce the cost at every stage of implementation. ■ Community also contributes labour and work. Labourers are asked to ensure the quality of materials. ■ Construction work is progressed as planned. There's no rise in the price of materials and construction is timetabled.
<p>Finance and construction rules</p> <ul style="list-style-type: none"> ■ Local government, masons, suppliers, families follow project rules for payment, purchase and transport honestly. ■ Construction quality is good. It follows agreed specifications and special procedures which are checked. 	<p>Local tendering controls</p> <ul style="list-style-type: none"> ■ BC seeks at least three tender bids for materials such as sand, cement, pipes, taps, and bricks for the community water supply and the household toilets. ■ BC checks tenders for the least expensive materials of good quality. BC and SO together select and sign winning tender. <p>Quality control</p> <ul style="list-style-type: none"> ■ An exhibition of construction materials is organised so that all suppliers participate and committee members can recommend good quality materials. ■ Materials are returned if they are not to the prescribed standard. They're not paid for and the supplier is not used again or else the programme is stopped. ■ Standard quality ISI mark is needed for all materials, except sand. ■ A construction checklist is shared in BG meetings. It is used by all groups (masons, supervisors, committees, families). The checklist has simple drawings and people are trained in how to use it. Action: If a complaint is valid, repair is made at no cost. Sometimes the mason is not paid or is blacklisted. ■ Voluntary task manager (one member of the BG) is trained on technical aspects and functions. They oversee construction activities on a day-to-day basis. Action is taken as per suggestions of task manager on quality issues.

TABLE 6 Indicators and tools to enhance transparency and accountability and prevent corruption

	<ul style="list-style-type: none"> Final payments of bills are not made until schemes and toilets have been delivered and BG/BC/SO have checked quality of installation and service. There is no guarantee period after completion. <p>Signed receipts</p> <ul style="list-style-type: none"> Before any payment, BC has to sign the receipt. No receipts are signed unless quality of work/materials has been checked by BC. This is needed for all payments <p>Spot checks of BC management</p> <ul style="list-style-type: none"> Spot checks by SO staff (at least once every two months) to check receipts, storehouse, tenders, household receipts, and government records. Action: Problems are referred to local government and action is taken. The programme is stopped if there is dishonesty. <p>Independent audits</p> <ul style="list-style-type: none"> An external audit of accounts is done. Action: Bad audit results are referred to local government staff, NGO and to the public. The programme stops. No money released until situation improves. The finance for the project is also subject to the regular Panchayat audit.
Proven education before construction <ul style="list-style-type: none"> Male and female householders are motivated to sustain improved water supply and sanitation. 	Signatories on household education cards <ul style="list-style-type: none"> Mason and supervisor can not begin construction without first seeing attendance card for education meetings. Also spot checks by supervisor. Action: They must sign attendance card to get payment.
Families pay <ul style="list-style-type: none"> All households in the needy area form the BG. They pay 10% of the capital cost of the water supply and 50% of the toilet investment costs before construction will start. BGs are thereafter fully responsible for all O&M tasks and costs of the water supply. They were informed about this when selecting the technology and agreed to it in the contract. 	Poor families: <ul style="list-style-type: none"> Since the programme is demand responsive, only needy families organise themselves to form the BG, facilitated by SO and Panchayat. The community itself decides on the type of water supply system that will be used so affordable and efficient systems are selected. Since all unskilled labour like trenching is done by the community, they are able to raise their contribution share and lower their cash contribution. Action: No contribution, no construction. The families who are too poor (fewer than 5%) are included by the decisions of the committee.
Capacity building programmes throughout project <ul style="list-style-type: none"> Knowledge on technology for both men and women. Creates a feeling of a sense of ownership. Quality of scheme ensured. Sustainability and proper functioning of scheme. 	Trainings <ul style="list-style-type: none"> BG officials training. Committee for preparing community empowerment plan. Technology choice workshop. Accounts training. Account writing (hands-on training to ensure control).

TABLE 7 Capacity building activities in the project

	Activity	Objective	Period	Participants
1	BG officials training	Role and responsibilities of BG	1	BG members -9 from each BG
2	Capacity building of communities	Community empowerment plan preparation	2	5 BG members
3	Action plan preparation	Action plan	1	BG members
4	Accounts keeping	Proper maintenance of accounts	1	5 office bearers
5	Account writing	Day to day maintenance of records	1	Treasurers
6	Voluntary task manager	Supervision	1	1
7	Micro enterprising	Skill	1	1 / 2 persons
8	Savings development		1	1 / 2 persons
9	Handling of water	Knowledge development	1	1 / 2 persons
10	Mason training	Skill development	1	
11	Liquid waste management	Knowledge and practice	1	
12	Personal hygiene	Knowledge and practice	1	
13	Operation and maintenance	Skills in O&M	2	
14	Monitoring team members	Sustainability aspects and arrangements	1	5

Measures against corruption by the public and private sector:

- Usually over-estimation occurs. Estimation was done based on the actual field situation which avoided over-estimation and related corruption.
- People (men and women) knew and checked technical details and the quality standards of materials during construction of the toilets and of the water supply when unpaid labour was used, including the laying of pipes. A trained voluntary task manager from the BC oversaw construction.
- Quality assurance measures included: using (generally) locally available, ISI marked materials, publishing rates on a notice board, ensuring quotations for all main purchases, extracting guarantees for pipes and pumps, ensuring well-written agreements and scheduling payment of a maximum of 80% on delivery and 20% after construction.
- In other projects, such as by State and Local Government, accounts are handled by officials and contractors alone. In this project treasurers chosen by the BGs handle the funds and have knowledge of the detailed accounting procedures.
- Bank accounting was made transparent, verified by SO and audited by external auditors.
- Contractors were not engaged for the whole work, instead suppliers were contracted specifically, for example, to provide materials or to provide skilled inputs. Even then they were directly supervised by trained BG and SO technical staff members.
- Generally "superchecking" is carried out in other schemes. Here superchecks were made possible by many stakeholders.
- Monitoring committees at Panchayat level and the District Programme Management Unit oversaw progress and monitoring.

Measures against corruption by consumers:

- All beneficiaries were paying for the capital cost as well as the full operation and maintenance costs. Costs were publicly calculated and signed for in the agreement. Construction starts after all payments are made. Poor people must pay 10% of capital cost of the water supply and the superstructure of toilets, others pay 15% of the capital cost of the water supply and 100% latrine costs.
- In householders' workshops and BC meetings, participants reviewed technology options, costs and cost-sharing with technicians. Agreements were signed after consensus.
- BCs with special Task Managers (technically trained volunteers) purchased all materials and made and accounted for all payments to user households and GP.
- Only BPL/ST/SC households qualified for toilet subsidy. No money is given, but households get free construction of a toilet up to plinth level by trained male or female toilet masons. Allocations of subsidies are verified by displaying lists for public review.
- Only BCs can exempt poorest households from cash payments to construction by a joint decision. In the project they were less than 5%. Other members then pay their costs in labour and/or cash. Decisions are documented and accounted for.

People's perceptions on corruption

The beneficiaries of the Subhash and Santhinagar water and sanitation projects interacted with the study team members. The President, Secretary, Treasurer and Joint Secretaries of the two projects and 18 other beneficiaries (six men, 12 women) were

present at the group meeting. The members shared their happiness in establishing a water and sanitation project in their remote village. Up to then they were not aware of water quality problems and diarrhoeal diseases were common in the village. They recalled that a health education programme was conducted in the village only as part of this project.

The community members unanimously agreed that the project has given them an opportunity to unite for a cause that they'd felt a need for for many years. Now they have water supply in their home every morning and evening for regular hours, decided by their committee. They pay the operator charges as per the committee decision and tariffs are collected by the community. The accounts are maintained in a cash and bank account book.

The people said this project was very different from others of the Panchayat : nobody was allowed to commit malpractice in the community. The water and sanitation project was a special project, as no corruption, speed money or any bribes - in cash or kind - occurred according to Joint Secretary Mrs. Radha.

This is quite different from the usual situation:

- **Speed money to cut red tape** Participants talked about four cases of speed money that the very same beneficiaries had given to housing programmes. GP officials took a cut of Rs. 5,000 (14%) from the total of Rs 35,000 to reduce some of the red tape. The participants said speed money is partly a consequence of government bureaucracy. If the source of funding for a community developmental activity is a regular government fund, the community will automatically stick to set procedures or formalities. If community

members are not willing to pay speed money, they may have to spend days together filling out forms correctly. This may mean people miss out on being paid for working days and have to pay travelling expenses. People pay the speed money to avoid these problems. There will be changes only when some extraordinary people are in charge of these functions.

- **Panchayat deals to take cuts of community services** The Sholayur Gram Panchayat itself is notorious for corruption. For example every year they spend 1-2 lakhs for supplying drinking water in lorries to the villagers. In reality this money is not all put into this purpose. Certain adjustments are made between Panchayat members and suppliers.
- **Opposition to outside support and control** Community members further revealed that there had been strong opposition to the presence of the SO in the project. Although the Panchayat Committee agreed in principle, it indirectly argued that there are certain payments to be made for this kind of work which the SO might not be able to meet. The SO took a strong position that they would not do anything outside the law and would only supply their services if the people agreed that they needed the SO's support. A meeting of all opposition leaders was then convened. All participants agreed that the project would be transparent and demand responsive. In the launch workshop and the following mobilisation meeting, preventing corruption and encouraging transparency and capacity building of communities were the main points on the agenda.

The group said that implementation by committee is a weapon against corruption. When a group of

BOX 1

Clean water, clean politics

All BGs said that corruption, which is widespread in state and local governments, has not affected the project. Here are some reasons they give as to why:

1. We have frequent BG meetings during planning and implementation, and this detailed oversight by the community ensures transparency and clean governance.
2. We pay for the water. Because of that, every member is very alert about how the money is being spent.
3. We feel we own the project, it is not a government project, and we take care of what we own.
4. Community contracting in an open transparent manner prevents corruption. GPs often give overly complicated contracts to contractors to facilitate kickbacks. Community contracting prevents this.
5. Big contractors are not interested in our small schemes, so they do not try to use political clout to muscle in.
6. The SO has to sign cheques along with BG office bearers (Only for SC / ST BG). GPs and DPMU have to approve. Unless there is collaboration between all these stakeholders, corruption is likely to be avoided.
7. BGs and SOs are outside the political process, and do not have to extort money for financing election campaigns, as GP members have to.
8. We think BGs are cleaner than GPs. For instance, GPs have to certify poor people as being below the poverty line to get the latrine subsidy. In Agali, villagers say the GP wants a payment of Rs 150 per certification.

people are engaged in this kind of implementation, chances of corruption are greatly reduced. Some reasons are given in Box 1.

Measures employed to prevent corruption - lessons learned

From the above it was learned that corruption is reduced/prevented when:

- The project concepts, philosophy and strategies are known to all BG members.

- Resource and social mapping as participatory activities enrich the knowledge and information of the existing situation and help to plan for the future.
- Information is given to all on quality and quantity of materials needed and purchased.
- People are involved as knowledgeable labourers in the project.
- Community members should be aware how prevention of malpractices reduces the amount they must pay and improves the quality of the work and therefore, the service.
- Disputes/problems were worked out at a grassroots level.
- Funds are channelled through well-laid down processes.
- It is insisted that tenders and quotations accepted through the BC.
- There is a joint bank account system with NGO and BG.
- Technology is chosen by community after thorough discussion on different options.
- Capacity building of different actors for all tasks includes prevention of corruption.
- BG and BC functionaries are accountable to members.
- There are independent audits of financial management.
- Partnership exist between all participating agencies.

Conclusion and recommendations

There is a lot of evidence that corruption has had serious negative impacts on water supply and sanitation projects (see Davis, 2004; Elshorst and O' Leary, 2005). This is likely to have stalled the development of remote and backward areas where marginalised and poor people live. Evidence from

this project shows that participation of the people is necessary to eradicate corruption. It shows that organising a strong social movement at a grassroots level boosts anti-corruption drives. This roots out corruption and improves social values.

We believe that government officials, employees and civil society organisations need to be trained and equipped in maintaining transparency in their field operations. It is worthwhile to note here that the Socio-Economic Unit Foundation had faced mammoth opposition from the line departments and the contractors lobby in Wayanad district (SEUF, 2005) when it implemented the community-managed water supply programmes in the tribal populations. However, the schemes were completed within budget allocations (with no rise in cost) and within the prescribed timeframe.

The next step is for politicians and the bureaucracy to recognise that these programmes are meant for poor and vulnerable people and that all the benefits should reach them. Political parties and the bureaucracy need to support the streamlining of community-managed programmes and the elimination of the evils of corruption in society by not interfering in the process e.g. purchase of materials or transportation, loading etc. This will help to avoid unnecessary delays and maintain quality.

The community management initiatives have given courage and inspiration to poor communities to organise and streamline the process to implement water and sanitation programmes in Kerala. Community contracting has typically lowered construction costs by 15 to 40%. The KWA, on the other hand, adds 22.5% as overhead administrative charges, plus a 10% contractors' margin. Community-managed projects constructed below

estimated amounts result in an increase in the number of schemes in project areas.

Scaling up of community-managed projects is still a problem. However a large-scale project costing US\$ 4,000 million is now being implemented in Kerala.

A special agency for community-managed water supply and sanitation, the presence of a support organisation and capacitated community groups with constant monitoring mechanisms, are generally absent in community development projects. This may be one reason why decentralisation is a good mode to prevent corruption. This project shows that the actions of capacitated civil society as a watchdog is an excellent way to check corruption in community-managed water supply schemes.

Along with the transparency process, similar projects should institutionalise an internal programme review every three months. The objective of the internal review would be to monitor the progress of programme implementation at all levels. All related information should be gathered and a database should build up various programme indicators to compare them with the stated objectives and concepts, allowing corrective measures to be taken wherever necessary. Process monitoring documentation should be given special importance during the internal review. The outcome of the internal review should be shared among all stakeholders and used as part of knowledge management.

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18 "Money down the pan?"

Community level models for financing sanitation in rural Nepal¹

Laia Domenech Pretus and Oliver Jones
WaterAid in Nepal

Abstract

A range of different actors are engaged in promoting sustainable sanitation coverage in Nepal. The lack of knowledge and understanding within the sector of the different approaches to financing sanitation at a community level has prompted this sector review. The document reviews the various financing models used by sanitation programmes in Nepal, which include hardware subsidy, loans and sole support for community awareness.

The research considers the impact of providing diverse levels of financial and material support, and the manner in which resources are targeted and allocated in communities. The broad financing models are reviewed using multi-criteria analysis

looking at social, economic and sustainability dimensions. The paper looks in-depth at the impact of the diversity of financing models on sector efficiency. It also addresses how the sector as a whole can operate more effectively to ensure financial resources are better targeted and coordinated to achieve the ambitious sanitation targets in Nepal.

Introduction

Background

Sanitation is often given low priority at international, state and local levels. In South Asia, more than half of the population has no access to improved sanitation (WHO and UNICEF, 2004).

Nepalese sanitation coverage targets are ambitious, particularly the national goal to achieve 100%

¹ This paper is a summary of a full paper prepared by WaterAid Nepal with financial support from the Asian Development Bank

sanitation coverage by 2017. National sanitation figures are often disputed but are estimated between 20 and 40%. However, what is clear is the gap between the rural and the urban areas: access to improved sanitation in urban areas is almost double that in rural areas (36.9% vs. 19.8%) (NDHS, 2006).

In order to advance sanitation conditions in the country, numerous programmes are launched in Nepal every year. They have common aspirations, but different implementation models. These sometimes results in overlapping and inefficient distribution of available resources.

In view of both low sanitation figures in rural Nepal and a much higher percentage of Nepalese residing in rural areas, achieving total sanitation in rural Nepal in the near future appears to be a very challenging task, requiring compromise and coordination in the sector.

Aims and objectives

Approaches to deliver sanitation are diverse and multi-dimensional. One of the critical areas where it is perceived that the widest range of approaches are being adopted is financing sanitation at the community level. It's also an area of which is currently little known across the sector. Thus, this research centred on the sources and means to finance sanitation in rural Nepal. The main aims of this research are summarised as:

- To deepen the understanding of various approaches to financing of sanitation in rural communities of Nepal.
- To compare the effectiveness of main financing approaches, especially in terms of ensuring sustainable services to the very poor and marginalised.

- To identify the main challenges and barriers created by the diversity in models.
- To make recommendations on national sanitation policy based on research findings.

Methodology

The main approaches to financing sanitation were evaluated by reviewing policies and guidelines put together by main agencies in the sector and the assessment of various case studies, including projects in both the tarai and hills. Case studies were developed through interviews with:

- donor agencies
- national NGOs
- local NGOs
- government bodies and members of the users committee
- group discussion with community people
- household interviews
- child interviews
- community observations

Three dimensions were considered: every project was evaluated from the economic, social and sustainable total sanitation perspective. A Multi Criteria Analysis (MCA) was selected as a suitable decision-making tool to integrate the data belonging to these three dimensions and to obtain a ranking of the models. In this study, seven financing models were included in the multi-criteria framework and each alternative was evaluated through several predefined criteria.

Novel Approach to Imprecise Assessment and Decision Environments (NAIADE) (JRC, 1996) was selected as the appropriate multi criteria model to compare the different financial models studied. An explicit relative weighting of the different alternatives was obtained at the end of the MCA.

This study does not try to look at the total cost of implementing sanitation programmes, instead it focuses on the allocation and distribution of resources at a community level. We have therefore not looked at the administrative costs of designing and implementing sanitation programmes. These would vary depending on the scale and type of organisation implementing the programme.

Key players in the sanitation sector

Sector stakeholders

It is important to understand the dynamic of the sector in Nepal. There are a large number of stakeholders involved in sanitation and hygiene promotion activities. Partnership models and bilateral relationships among donors, government agencies, INGOs, national NGOs and local NGOs are diverse. Some organisations implement programmes unilaterally and others work in a wide range of partnerships, cooperative and contractual relationships with a varying number of parties. This means that financial support for sanitation goes through a wide number of channels, both within and outside official government budget lines.

The Department of Water Supply and Sewerage (DWSS), under the Ministry of Physical Planning and Works (MPPW), is the main government agency responsible for delivering water supply and sanitation services in Nepal. In rural areas of the country, the Ministry of Local Development (MLD) also plays a relevant role.

The two largest programmes of the sector, the Rural Water Supply and Sanitation Fund Development Board Programme-II and the Community-Based Water Supply and Sanitation Project, are run by autonomous governmental institutions, with the

support of the World Bank and the ADB respectively. International development agencies such as DFID, Helvetas, Finnish Development Agency, UNICEF and WHO and INGOs, such as Care, Plan and WaterAid Nepal, are supporting the sanitation sector both through and independently of the government.

Users' committees and local communities are mobilized to be the main implementers, managers and operators of sanitation programmes. Responsibility is bestowed on Local Government Bodies (LGBs) and local communities to play a growing role in coordinating and facilitating sanitation delivery. However, LGBs' role is still very weak in many districts, partially due to the conflict troubling the country since 1996 and the impact this has had at building and retaining capacity at the district level and below.

Geographic distribution of agencies and sanitation programmes

The geographic distribution of agencies and sanitation programmes shows how external assistance is not necessarily higher in the least covered districts (Figure 1). Although sanitation coverage, remoteness and conflict are likely to determine partially the distribution of the sanitation programmes, it is clear that sector investments do not necessarily flow to those areas most in need of support.

The lack of planning, coordination and guidance at a central and local level is probably behind this unequal distribution of available resources. Moreover, it appears that agencies sometimes select their project areas according to accessibility, rather than the lack of water and sanitation coverage.

Overview of main approaches to financing sanitation in rural Nepal

As mentioned above, a wide variety of approaches to financing sanitation at a community level have and are being used across Nepal. Every implementing agency has its own specific policy and interpretation of each model.

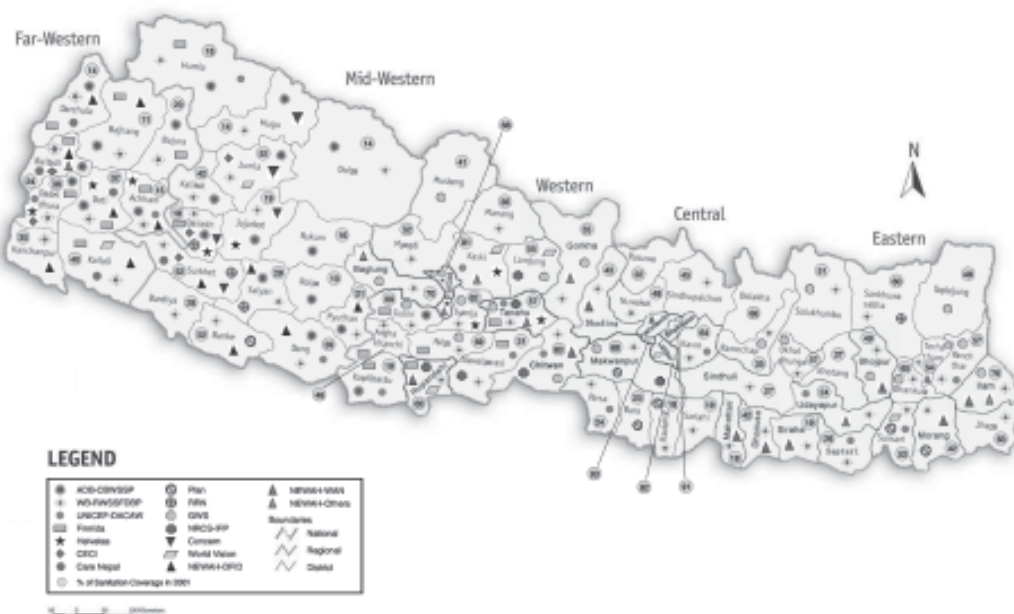
Within this document we have tried to group the wide range of approaches under a number of broad headings to aid understanding and analysis. The main financing models identified include: hardware subsidies, loans, software subsidies (here referred to as community awareness) and rewards. It must

be appreciated that many sanitation programmes incorporate more than one of these components in their approaches. Therefore, the inclusion of the programme in one or another heading was not always obvious.

Hardware subsidies

Traditionally, subsidies have been used by most agencies to support construction of latrines. While everybody accepts the need to provide software subsidies to communities, debate is currently centred on effectiveness and capacity of *hardware* subsidies. The amount and procedure for distributing hardware subsidies to a community has been changing because of lessons learned.

FIGURE 1 Distribution of main agencies of the sanitation sector in rural Nepal



Currently, subsidies are rarely handed in cash to the households, since chances of misuse are too high. Full hardware subsidies to build latrines are also rare nowadays. On the one hand, the cost of the programme increases enormously if all households are to receive full subsidies. On the other hand, grants often stop households from using their own initiative and prevent personal ownership. In the rural areas, it is not rare to find high quality latrines built with grant money that are not in use and fall into disrepair or are used for other purposes, such as storerooms.

In Nepal, there are programmes which still give high subsidies to construct latrines. This is the case of multi-components programmes responding to community demands in order to reduce poverty. Subsidy given in these programmes ranged from NRs. 4,000 to NRs. 10,000 per household.

However, even though many agencies still have a hardware subsidy policy for latrine construction, there's a tendency towards reducing the amount. Today, it is a common practice to **subsidise latrines only up to pan level** or to provide **graded subsidies**.

Some agencies like NEWAH and Helvetas have adopted the graded subsidy approach. In this household cash and labour contribution are graded depending on the category of household well-being, physical ability, technological choice and geographical location (hill/tarai). Moreover, households are requested to deposit a nominal amount in the users' committee bank account in order to create a sense of ownership.

Other organisations such as Rural Reconstruction Nepal (RRN), Community Forest and some Village

Development Committees (VDC) give the so called **"minimum subsidy"** or **"encouraging subsidy"**. This means providing only a few essential, non-local materials to support latrine construction. The remaining materials and required labour are contributed by the community and individual households.

Loans

Taking loans to build latrines is a common practice in Nepal. Money is generally borrowed from

BOX 1 Rural Water Supply and Sanitation Fund Development Board Programme in Jutpani

The ultra poor are unable to take loans

The Fund Board makes available a revolving loan fund for latrine construction, which is calculated by multiplying 25% of the total number of households without latrine by NRs. 2,000.

In Nayatole community (Jutpani), out of 69 households without a latrine, only 14 made use of the revolving loan, 10 households borrowed NRs. 2,000 in a first round and recently, in a second round four further households received NRs. 2,000 to build their latrine. There are still three households in the community without latrines. Yet in the bank account of the users' committee there is NRs. 13,000 still available to be revolved. The three households without latrine are female-headed households, which cannot build a latrine, unless they receive some additional support.

Duplication of approaches creates problems

In addition to the Fund Board, the Bote Society, supported by Nepal Aadiwasi Janajati Sangh, was also promoting latrine construction in Nayatole. Janajati households received hardware subsidy in cash to build their latrines. Duplication of programmes divided the community and reduced participation of Janajati households in the Fund Board Programme.

informal sources, such as relatives or private moneylenders, which can involve very high interest rates. However, today, borrowing from institutional sources is also becoming increasingly popular through saving and credit groups and revolving loans.

The Rural Water Supply and Sanitation Fund Development Board Programme (RWSSFDBP-I), implemented between 1996 and 2003, was the first programme to promote revolving loans to finance sanitation. Currently, besides the Fund Board, several other programmes, such as School Led Total Sanitation and Community-Based Water Supply and Sanitation Programme, incorporate revolving loans to support construction of latrines.

Community awareness

Experience shows that the construction of latrines only, without software activities, so called “latrinisation”, frequently results in poor long-term sustainability of latrines and the lack of use and adoption of safe hygiene practises.

In the long-term, an understanding of the links between sanitation and health is essential. As a result, nowadays most sanitation programmes incorporate hygiene and health education packages. Building an awareness of the convenience, shame and prestige related to sanitation has also been identified as an effective means of stimulating latrine construction within a community.

Some programmes provide only software support, whereas others combine software activities with financial assistance to promote latrine construction. The main organisations relying on software activities

to promote sanitation include Nepal Water for Health (NEWAH), UNICEF, Ghurkha Welfare Scheme (GWS), Plan and Nepal Red Cross Society (NRCS). These organisations are implementing relatively new models such as **School Sanitation and Health Education (SSHE) Programme**, **School Led Total Sanitation (SLTS)** and **Community Led Total Sanitation (CLTS)**.

The above mentioned models firstly create demand and raise awareness within communities and later, they promote hardware construction.

Sanitation in CLTS is understood as a public good and not as an individual task and therefore, all community members, including children, work closely together to achieve the common objective of Total Sanitation.

In the CLTS modality, no financial support is provided to the community.

In SSHE and SLTS, schools are used as the main entry point to bring about hygiene and health awareness to communities. The main aims of the SSHE programme are to raise awareness among children of the importance of following proper hygiene and health practices and to ensure basic sanitation in the school through provision of water supply and sanitation facilities (DWSS and UNICEF, 2006-A).

UNICEF have merged both CLTS and SSHE in one single approach. This has developed the SLTS programme in Nepal with encouraging results (DWSS and UNICEF, 2006-B). As in CLTS, the SLTS programme aims to stop open defecation but uses the catchments area of the school, rather than a single community, to define its target area.

BOX 2 SLTS in Shree Sindhu Primary School (NRCS-UNICEF), Byas Municipality, Tanahu.

SLTS was introduced in Shree Sindhu Primary School by the Nepal Red Cross Society, with the financial support of UNICEF, at the end of 2005. In Shree Sindhu Primary School there are 82 students. In its catchments area, there are 112 households, the majority of whom are poor Janajati households.

Prior to programme implementation, 21 households had latrines, but only half of households were using them. The Junior Red Cross Circle (JRCC) and the Sanitation Committee organised numerous activities to mobilize the community and raise sanitation awareness. Members of JRCC used whistling and flags as an effective means to dissuade open defecation.

After 18 months of project activities, all except ten households have built latrines. The catchment area has already been declared an open defecation free zone since all households are using latrines, albeit not their own in a few cases.

NRCS gave NRs. 20,000 to the sanitation committee to be used as a revolving loan in the community/catchment area. Every household which asked for the revolving loans received up to NRs.500, to be repaid within six months with no interest rate. Even though funds to support construction of latrines were made available, most latrines built as a result of the programme are direct pit latrines with very temporary superstructures. During group discussions, community members stated that: "It would be better if some kind of subsidy was provided to the poorest households to build their toilets."

Most of the households stated that "they would like to build a permanent latrine but they lacked sufficient finance".

Rewards

Use of rewards is also gaining popularity as an effective tool to encourage achievement of public

outcomes and construction of quality latrines, without providing any kind of hardware subsidy.

Rewards are common in CLTS and SLTS programmes. In a few districts, LGB used rewards to promote sanitation in their areas of influence. Sometimes rewards are given upon the achievement of a community outcome, like "Open Defecation Free" (ODF) status. In other occasions, LGB honour households which have built a permanent latrine.

Mixed approaches

As mentioned above, at the broadest level the approaches in Nepal can be clustered into three main groups - subsidy, loans and community awareness. However some programmes, although centred around one approach, have included elements of others in their models. Examples of these are:

- CLTS which promotes cross-subsidy
- SLTS which includes some revolving loan support
- Most subsidy approaches which have some level of community awareness.

The **Community-Based Water Supply and Sanitation Programme (CBWSSP)** incorporates key elements of the three main groups. The resulting financial model to promote sanitation is unique and fairly complex. Community awareness is used to encourage households to build their latrines from self-finance. But financial resources are also made available with hardware subsidies for the ultra poor households and revolving loans for the poor and medium income households.

In addition, **Community Led Basic Sanitation for All** (CLBSA) is a new approach developed by NEWAH which incorporates lessons from the organisation's past experience. Implementation of this approach began in 2007 and the model is inspired by CLTS. But unlike CLTS, CLBSA incorporates a Community Fund to support the ultra poor and excluded groups to build latrines, with the provision of certain materials and skilled labour. However funds are transferred to the community at an advanced stage of the programme. The users' committee is encouraged to find alternative ways to support ultra poor households. For example by mobilising their own resources, taking loans from local providers or seeking LGB support. Rewards, both in cash, materials and certificates, are provided to the community as key sanitation outcomes are achieved.

Findings and emerging issues

Economic dimension

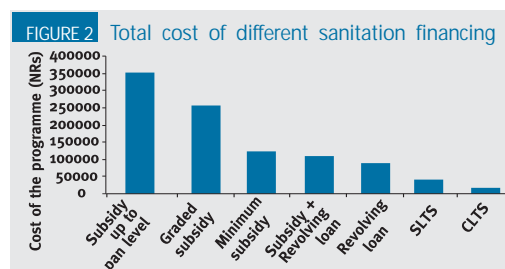
■ Big variation of programme cost

Total cost of sanitation programmes vary enormously depending on the approach adopted. In order to be able to establish comparisons, costs were calculated for an example Nepali community made up of 99 households, with an equal number of medium, poor and ultra poor households (Figure 2). The donor cost at the community level ranged from NRs. 340,000 to NRs. 17,000.²

The time taken to construct sanitation hardware, understood in this study as the project duration, varies considerably between approaches and sanitation programmes in Nepal. It can range from a couple of months in CLTS to 24 months in the RWSSFDBP. Mostly as a result of fixed programme

costs, such as project staff salaries, duration is indirectly related to the cost of the programme.

As expected, the provision of hardware subsidies greatly increased the price of the financing model at a community level. Analysis shows that the cost of sanitation interventions is considerably reduced when the community is effectively mobilized, takes ownership and becomes the main contributor to achieving sanitation outcomes. Financing models only involving software support, such as CLTS, require the least financial resources at a community level. As expected, the cost of models making use of revolving loans is in between cost of subsidised programmes and community awareness based programmes.



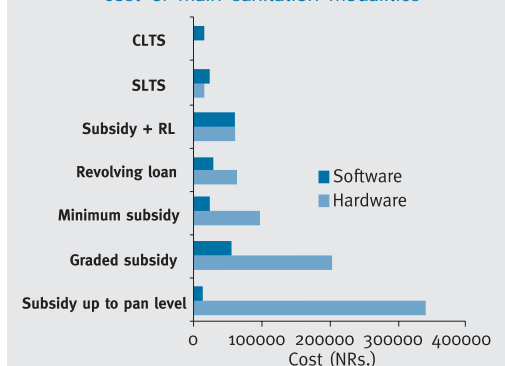
■ Large disparity in hardware cost but minor one in software cost

Balance between software and hardware costs of the main models also varies enormously. Hardware and software costs are calculated only at a community level. That is, the costs borne by the international, national and local agencies were not considered due to difficulties in differentiating the amount spent for a specific project.

In this analysis hardware costs includes materials and labour subsidised by the donor. Software costs

² US\$ 1 = NRs 70

FIGURE 3 Balance between software and hardware cost of main sanitation modalities



includes cost of trainings given to users' committee and community people, IEC materials, salaries for community staff and cash rewards given to committees for sanitation activities.

Most approaches spend more money on hardware than software. While total hardware cost broadly varies among approaches, software cost differences are not that remarkable. Actually, those programmes relying exclusively on software provision do not show higher investments on software activities compared to other models (Figure 3). The broadly similar total costs can be explained by the fact that most programmes have similar software packages and therefore costs, made up of staff salaries and IEC materials.

However what varies between programmes is the emphasis that different approaches place on software and, therefore, the number and type of software activities undertaken. Those programmes with a lot of hardware support use this as the major tool for motivating communities to build latrines. Those without these financial resources

have to place increased importance and stress on effective mobilisation through software activities.

■ Level of community contribution

In all financing models evaluated in this study, some level of community contribution was required to complete latrine construction. In some models, eg subsidy up to pan level, only construction of superstructure was required. In others, the entire latrine was financed by the benefited households, eg the revolving loan approach of SLTS or CLTS. Moreover, the range of technological options promoted and the availability of materials also determines the level of investment required.

The average amount spent by each household to construct latrines showed strong variations, from NRs. 700 in the SLTS implemented by UNICEF to more than NRs. 7,000 in the Fund Board project. The variation in cost of latrines is directly linked to the amount of subsidy provided or funds in the form of credit, made available to a household. It's also linked to the household's ability and desire to invest in sanitation. Poverty, lack of hygiene awareness and hope to receive subsidy from other programmes may be the cause of reduced household investment in latrine construction.

■ Increase in household debt among latrine owners
Unable to meet basic needs, borrowing money from outsiders is becoming a common practise, as well as an increased burden, for many households. Among those households interviewed, which had built a latrine recently, 39.7% had taken some form of loan to achieve this. This compares to only 6.9% of households which had taken a revolving loan from the current sanitation programme. In most cases (96.6%) households borrowed money

from private moneylenders, relatives or saving groups, outside of any mechanism established by the sanitation programme.

In the projects visited, those households taking funds from private moneylenders were paying interest rates ranging from 12 to 36%. Saving groups were also found in most of the villages where sanitation programmes had been implemented. Interest rates offered by saving groups were found to be fairly high, ranging from 24 to 36%. As a result, only in very few cases were households borrowing money from saving groups to build latrines.

Raising income is also crucial to enabling households to take and repay loans to build latrines. Partnerships between sanitation programmes and existing saving groups were not found in any of the project sites visited. They could enable some control on high interest rates, more favourable conditions and in doing so increased access to financing.

Social dimension

■ Additional support for the disadvantaged households

Female headed households, disabled and ultra poor are frequently incapable of building a latrine without assistance. This situation is worsened by the migration pattern found in many areas of Nepal, where males leave their houses to work in urban centres or abroad. Paradoxically, those households requiring and deserving the most support are easily left out of the programmes. This is due to their lower capacity to actively participate in the activities of the programme and their inability to contribute cash or labour to build latrines. Providing affordable latrine options for the poorest

households is essential to enabling them to adopt hygienic sanitation practices. As a result of a lack of latrine options the poor often don't build latrines or they build unhygienic latrines.

Models are becoming increasingly flexible to respond effectively to the needs of disadvantaged households. Pro-poor approaches, eg graded subsidies used by the CBWSSP or CLBSA, give special support to the poor by making additional subsidy available for them.

Cross-subsidy, ie the relatively better off supporting the most disadvantaged households to build their latrines, as promoted by CLTS, is also a valuable and effective form to target the ultra poor and marginalised.

When sanitation is presented as a public good and not as an individual issue, the sanitation programme usually results in enhanced unity among community members. Cross-subsidy brings together community members and therefore, the resulting benefits are far beyond the implementation of the programme. Nevertheless, heterogeneity of communities and caste systems might hinder the successful performance of cross-subsidies.

Sustainable total sanitation dimension

■ Achieving a common sanitation goal

Public health gains from sanitation are maximised only when all community members use hygienic latrines all the time and when open defecation free status is achieved. Only a few financing approaches, such as SLTS and CLTS, promote achievement of open defecation free status in a short period through rewards and awards. Other

financing approaches do not provide any incentives for community level behaviour change but rather subsidise private household infrastructure resulting in partial coverage, with possible achievement of ODF status but only after a number of years.

■ Procurement and availability of materials promotes sustainable sanitation outcomes

In rural villages located far from urban centres and markets, availability of materials may become a significant barrier to build, upgrade or repair latrines. A wide range of initiatives are incorporated in the sanitation programmes to promote availability of materials at a community level. These include a series of latrine designs using available materials, production of certain materials locally, opening sanitation centres or handing over the responsibility of procuring required materials to the users' committee.

Most agencies set up temporary project financed production centres rather than sustainable supply chains through the local private sector. Therefore, the supply side of the sanitation programmes still needs to be improved to ensure sustainable procurement of materials.

Integrated ranking of financing models

The results from the Multi Criteria Analysis are presented in Figure 4. The first index shown in Figure 4 is the strength index (F_+) which orders the different financing alternatives from the best to the least.

The second index is the weakness index (F_-), which orders the alternatives from the least worse to the worst.

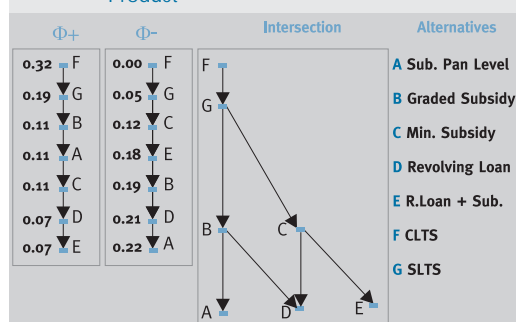
The last graph is obtained from the intersection of both indexes. The ranking of alternatives obtained from the aggregation of the analysed criteria shows CLTS is the model that scores highest against the criteria set. This is followed by SLTS.

CLTS and SLTS involve low cost for the donor and enhanced community contribution and mobilisation. Emphasis on stopping open defecation and presenting sanitation as a public good proved to ensure effective behaviour change and improve community unity in addressing sanitation.

Both models encourage the provision of cross subsidies among community members, in order to address the additional support required by the disadvantaged households. Thus, despite financial support not being provided, the disadvantaged households are targeted through collective community action. In addition, sanitation is looked at from a community outcome perspective, not the number of latrines built.

It should be stressed that for CLTS, and any community awareness approach, to be successful skilled local facilitators are needed for effective

FIGURE 4 Multi criteria Analysis Results with Simple Product



community mobilisation. This may be a barrier to scaling-up such an approach. It needs significant investment in human resource development and training.

Graded subsidy models were proved to deliver sanitation services effectively to all members of a community. They also developed a feeling of ownership, partially due to the obligation to contribute a certain sum to receive the hardware subsidy. However, the cost of these programmes is significantly higher than those approaches which maximise community contribution.

The cost of programmes offering subsidies up to pan level is up to 30 times higher than community led interventions and even though latrine coverage is generally good, latrine usage is not always that encouraging. Approaches making use of revolving loans increase community contribution and have resulted in the construction of quality latrines. However, revolving loans often fail to reach the poorest households, with many low-income households unable to afford to take loans and as a result, Open Defecation Free status is rarely achieved.

The mixed approach adopted by the CBWSSP, promoting self-financed latrines, hardware subsidy and revolving loans simultaneously, is relatively new and has yet to be seen at scale. It was observed that community members were having to wait to receive financial support and consequently, they did not come together well or promptly.

A long-term mission when the three financing tools are simultaneously offered to communities is to achieve the public health outcome of stopping open defecation practices.

Recommendations

Outcome focused interventions ensure sustainable sanitation outcomes

Financing models designed to promote and encourage the achievement of community outcomes, such as Open Defecation Free (ODF) status, are effective in delivering sustainable sanitation coverage in rural communities. Evidence from the field showed that focusing on stopping open defecation, rather than construction of individual latrines, brought about superior use of latrines and therefore, superior health and sanitation benefits to the overall community. From a financing perspective, this means that financial support should reflect this approach. Resources should be targeted at community activities, such as mobilisation and training, and community outcomes, not supporting individual latrine construction but rewarding community sanitation outcomes.

If the whole community is strongly mobilized to achieve the public good of total sanitation, greater involvement and higher contribution, both in cash and kind, from the community is generated. This fosters increased ownership amongst the community, ensuring commitment for everyone to build, use and maintain their latrines in the long term. Financing models that provide rewards and formal recognition of achievements to the entire community, rather than providing upfront support, can be used as valuable motivational tools to achieve sanitation outcomes.

Accessing financial support

Poor and marginalised groups need additional support: Households made up of the very poor, marginalised groups, comprising disabled members

or headed by a female, generally require additional support to build their latrines. Most disadvantaged households lack sufficient financial resources and many also lack the skills to undertake latrine construction. As it has been concluded that sanitation is best addressed at a community level, the identification of those households in need of additional help is an essential part of developing an adequate community strategy to target them and achieve a community sanitation outcome. A participatory process, with mechanisms to increase transparency, needs to be encouraged to ensure successful identification of disadvantaged households and allocation of additional support, whether that is in cash or kind.

When sanitation is understood as a public good, cross subsidies become a natural part of any community plan to achieve ODF status. A graded system of support or subsidies can ensure that everybody in the community can construct a hygienic latrine. Flexibility in latrine options promoted will also enable the poorest households to access sanitation facilities. Pushing a single model, often financially and technically out of reach of the poorest households, can result in some groups being excluded from the process. Following some basic principles, hygienic latrines can be built with minimal financial cost and then improved over time once further resources are available.

Improved access to institutional micro-finance facilities: There is a need to link sanitation programmes with banks and other institutions, such as saving groups, in order to control moneylenders' high interest rates. This will give everybody the opportunity to access a micro-finance facility. Implementation of sanitation programmes together with other poverty alleviation

activities is also to be encouraged. In the same way, linking sanitation programmes with income generating activities is also likely to have a positive effect on sanitation, as enhanced availability of financial resources is likely to be translated into adoption of more hygienic practices.

Increased sector coordination

Reduction in the overlapping of programmes promoting different approaches: There are many agencies working in the sanitation sector in the country, but their distribution around Nepal does not always respond to actual needs. It is not rare to find two agencies working simultaneously in the same area, which may create positive effects, but also negative ones. In fact, the presence of two agencies in the same area usually means that two different financing models are being implemented. High subsidies given in some programmes usually have a disturbing effect on others intending to reduce or eliminate the amount of hardware subsidy granted to every household. Communities obviously prefer to receive high subsidies. Duality and overlapping of approaches is common in rural Nepal and has been proven to reduce effectiveness of programmes. Available financial resources to promote sanitation are scarce and therefore, sector stakeholders should maximise the limited funds and primarily, avoid programme overlapping.

Increased local planning and coordination amongst stakeholders: Coordination of sector stakeholders and proper planning is needed in order to avoid duplication of approaches in one area. The current Rural Water Supply and Sanitation Policy 2004 specifies that "planning will be done in coordination with DDC/VDC to avoid duplication and optimise

the use of limited resources". All organisations implementing sanitation programmes at a community level should seek permission from the District Development Committee (DDC) and VDC to select and implement their programmes. Too frequently, LGBs are not even informed about the implementation of a particular sanitation programme in their area. Communication with LGBs needs to be consolidated and partnership needs to be reinforced. Only a few programmes seek VDC support to implement sanitation activities.

A National Sanitation Programme should be developed: The realities in the field show that there is need for greater harmonisation of financing sanitation models and more efficient distribution of available resources. Surprisingly, discrepancy in approaches between the same donor is also common. For example, DFID has been funding NEWAH and GWS, and the World Bank is funding to Fund Board and PAF and they all implement very different approaches.

At a national level, concerned stakeholders should work jointly to prepare a National Sanitation Programme, so all efforts are concentrated in the same direction. According to the Rural Water Supply and Sanitation National Strategy 2004, a Sectoral Stakeholder Group (SSG) coordinated by the Sanitation Coordination Committee is to be formed to formulate sectoral policy and co-ordinate activities. Thus, the SSG appears to be the most appropriate institution to lead the development of the national programme and seek compromises and conformity from all concerned organisations.

A National Sanitation Programme, although coordinated at the national level, could then be facilitated and overseen at a district level by the

District Water and Sanitation Coordination Committee and a clear district plan. As proven by successful experiences in India and Pakistan, the use of incentives by national government for achieving sanitation outcomes at a district, or even VDC level, is effective in stimulating LGBs to coordinate and focus on sanitation activities.

Conclusion

Numerous agencies are involved in the important task of delivering sanitation services in rural areas of Nepal. The table below sets out the broad approaches that are being implemented currently in Nepal. It represents the wide diversity in approaches and the strength and weakness of each of them.

Hardware subsidies are preferred by most implementing agencies but the provision of heavily subsidised latrines results in limited sustainable sanitation outcomes at a community level in too many cases.

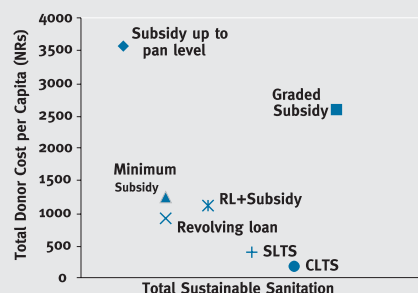
In addition, subsidies have seen cost increase exponentially and local resources are not effectively mobilized. Revolving loans reduce the cost of the intervention to the implementing agencies substantially, but frequently fail to reach the poorest households. They result in debt and take a long time to achieve ODF Status, as they are too often focused on household, not community outcomes.

Financial models that support and promote community sanitation outcomes, such as CLTS and SLTS, have harnessed a very effective strategy to speed up sanitation coverage. They look beyond the individual household latrines and focus resources on encouraging collective action.

TABLE 1 Brief description of main sanitation models

Financing model	Description	Strengths and weaknesses
Hardware subsidy up to pan level	<ul style="list-style-type: none"> ■ Provision of subsidised materials and skilled labour to all households 	<ul style="list-style-type: none"> ■ Inhibits ownership feeling ■ Low level of latrine use ■ High cost for the donor ■ Failure to achieve Community ODF status
Graded subsidy	<ul style="list-style-type: none"> ■ Classification of households in well-being categories ■ Provision of materials and skilled labour upon the payment of a predetermined amount based on the well-being categories ■ Ultra poor households are exempt to payment 	<ul style="list-style-type: none"> ■ Effective in targeting disadvantaged households ■ Ownership is somewhat ensured ■ High cost for the donor ■ Failure to achieve community ODF status
Minimum subsidy	<ul style="list-style-type: none"> ■ Provision of few essential, non-local materials to construct latrines ■ Cross subsidies are sometimes encouraged 	<ul style="list-style-type: none"> ■ Moderate cost for the donor ■ Failure to achieve community ODF status
Revolving loans	<ul style="list-style-type: none"> ■ Community receives a revolving loan fund to be distributed among community members to support latrine construction. The fund is calculated in proportion to the number of households without a latrine ■ Only some households can receive the loan in the first round ■ The fund is revolved until all households have built their latrine 	<ul style="list-style-type: none"> ■ Moderate cost for the donor ■ Ownership feeling is ensured ■ Fails to reach the poorest, ultra poor households are unable to take the revolving loan ■ Long implementation periods ■ Failure to achieve community ODF status
Revolving loans and hardware subsidy	<ul style="list-style-type: none"> ■ Community receives a revolving loan fund to be distributed among community members to support latrine construction. The fund is calculated in proportion to the number of households without a latrine. ■ The ultra poor households receive hardware subsidy to build latrines ■ The rest of the households are expected to build latrines from self-finance 	<ul style="list-style-type: none"> ■ Moderate cost for the donor ■ Disadvantaged households are targeted ■ Disincentives self-initiation latrines ■ Failure to achieve community ODF status
CLTS	<ul style="list-style-type: none"> ■ Community is mobilized to achieve the public good of achieving "Open Defecation Free" status ■ Strong facilitating and ignition process ■ Cross-subsidies are encouraged 	<ul style="list-style-type: none"> ■ Low cost for the donor ■ Promotion of community union and inclusion of disadvantaged households ■ Community ODF status achieved ■ High use of latrines
SLTS	<ul style="list-style-type: none"> ■ School is the entry point of the sanitation programme ■ Community is also mobilized to achieve the public good of achieving "Open Defecation Free" status ■ Cross-subsidies are encouraged ■ Rewards or revolving loan fund is made available to promote the achievement of "ODF Status" 	<ul style="list-style-type: none"> ■ Moderate cost for the donor ■ Promotion of community union and inclusion of disadvantaged households ■ High use of latrines ■ Continuation of the programme in the long-term

FIGURE 5 Total donor cost per capita vs. sustainable sanitation outcomes



Although it is recognised that the context in Nepal is diverse and different approaches may suit specific environments, these last two models, which involve declining subsidies and increasing community contribution, have shown to be the most effective against the socioeconomic and sustainable total sanitation criteria reviewed in this research.

Table 1 provides an overview of the approaches. It does not present the impact of this number of sanitation approaches being implemented in parallel to one another. The financing models each organisation has adopted are diverse and contradictory in their philosophies to achieving sanitation coverage. Despite this they are often implemented alongside each other resulting in conflict between communities and hampering

community initiative and innovation. A more structured approach to the financial support provided to rural communities is required to ensure communities work together to achieve sanitation outcomes, not compete for resources to address individual sanitation needs.

Available financial resources to promote sanitation are limited and therefore, their effective and efficient allocation is crucial to move swiftly towards Total Sanitation in rural Nepal.

One means of increasing coordination in the sector would be for central government to offer incentives to encourage involvement of LGBs in achieving sanitation outcomes, such as “ODF Status”, in their areas of influence. Better planning and coordination, as well as major allocation of resources, are needed to move the country towards Total Sanitation successfully. This would be aided by the joint efforts and increased collaboration of all sector stakeholders, both at the national and local levels.

Thus, the current International Year of Sanitation is a perfect opportunity to bring together all sector stakeholders to develop a credible Sanitation Master Plan and National Sanitation Programme and generate political will from government and donors to raise the required funds to support it.

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19 The reuse of human excreta in Bangladesh

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Abstract

This study was conducted in Bagerhat, Faridpur, and Rajshahi districts of Bangladesh in order to better understand the reuse of human excreta in the country.

The study comprised reviewing literature on the subject, before carrying out empirical observations in February and August 2005. The research included in-depth interviews, key informant interviews, group discussions, transect walks, and direct observation of the ways, systems and purposes of reuse of human excreta.

The study found that human excreta is used: (a) as fertiliser for production of plants particularly by sowing of plants on 'saturated' latrine pits; by mixing human excreta with poultry, animal and other

organic solid waste, including sludge of Bio-gas; and by using wastewater for agriculture and aquaculture (b) for the reproduction of alternative energy through bio-gas plants.

Often, in cases of reuse of human excreta in agriculture, projects seem to be to be informal and based on individual initiatives. Biogas plants are often the outcome of planned intervention and specific projects by the government and NGOs. Bio-gas plant technology is costly and therefore is not affordable for the poor.

Where human excreta is reused, both in agriculture and in the production of bio-gas, some fundamental questions need to be addressed, such as sludge disposal, aspects of environmental pollution, health risks, and agricultural products.

The study found that people reusing excreta are Muslim, Hindu and Christian by religious affiliation, although the literature suggests that Islam discourages contact with human excreta. The reasons people give for reusing excreta are tradition, indigenous knowledge and financial benefits.

This survey presumes that the reuse of human excreta is implemented from the perspective of environmental sanitation. In this process of reuse the key focus should be on 'adoption of scientific procedures' in preparing compost and its safe utilisation. Such safe and hygienic behaviour and handling would promote health and well-being of the population. Institutions engaged in promoting hygiene and sanitation should incorporate reuse of human excreta into their programme.

Given the development situation in Bangladesh, it is expected that the government and non-governmental organisations (NGOs) including private institutions be intensively involved in the reuse of human excreta in producing bio-gas and for composting as well through eco-toilet and household composting plants. The government should adopt a policy for reuse of human excreta, allocate budgets to develop affordable and appropriate

technologies, and provide subsidies to the poorest. NGOs meanwhile can raise awareness of safe and effective utilisation of excreta; provide training to users, caretakers, and private producers; conduct advocacy at national and local level; monitor and facilitate field level operations; and carry out action research to ensure the effectiveness of technologies and approaches in accordance with socio-economic and environmental contexts.

Once simple and affordable designs of bio-gas plant, eco-toilet and composting plant are developed and the community is willing to be involved in the reuse of human excreta, the private sector could be engaged in ensuring the availability of hardware materials and the building skills in the localities.

Introduction

Latrine coverage in Bangladesh has significantly increased during the last ten years, from 28% in 1995 to 65% in 2005. However, this progress has not addressed the issue of total management of environmental sanitation. The management of disposal, treatment, and reuse of human excreta, solid waste management, and wastewater disposal have not been adequately addressed.

Each year, Bangladesh produces seven million metric tons of human faeces and 70 million metric tons of urine (Bangladesh Observer, 15th May 2004).

Much of this is deposited in water bodies and open places, so polluting the water sources, ground water and the environment in general. As a result, a large number of people in Bangladesh suffer from sanitation-related and water-borne diseases and other health problems caused by poor sanitation practices.

The proper management and reuse of human excreta (human faeces and urine) could ensure not only the improvement of environmental conditions in human settlements but also promote the economic and social well-being and health of the population.

Human excreta can be used to generate energy and as fertiliser for agriculture and aquaculture. Reuse of human excreta could make a significant contribution to reducing environmental degradation, eradicating poverty and developing rural areas of Bangladesh.

A lack of access to conventional fuels (gas, oil and coal) means people living in rural areas of Bangladesh are using biomass as a resource for fuel beyond the acceptable limit to meet their household energy needs. In Bangladesh, around 62% of the total national energy requirement is met by biomass fuels. Annually, 40 million tons of biomass fuel, in particular, firewood, agricultural residues, leaves, cattle dung, straw, and rice husk, are used as a source of energy (Kazi, 2002).

Biomass fuel is mainly used in rural areas. About 83% of rural households depend on biomass fuel for cooking. As half of the household income in rural areas would be spent on fuel, women spend long periods of time gathering lower grade biomass fuels from agricultural and animal residues.

However, the use of given biomass as fuel is creating environmental degradation at an alarming rate. For example, the process of organic recycling of the soil is affected severely by the decrease of microbial population and the fertility of the soil. Therefore to improve the efficiency of their agricultural production, farmers are using increased doses of chemical fertiliser. To develop productive harvests, soil must contain at least 3% of organic compound, yet this has decreased to less than 1%, due to gathering of lower grade biomass. This situation is not sustainable.

Cutting trees to meet fuel requirement is leading to further environmental degradation. By 2004, forest areas had been reduced to less than 9% of the total land area of Bangladesh by 2004, when it should be at least 25% of the total land area. The use of lower grade biomass fuel by the rural poor is exposing women to smoke that causes acute respiratory infections, chronic obstructive lung diseases, low birth weight, lung cancers, and eyes problems (Biswas). Reuse of human and animal excreta as an alternative source of energy and fertiliser could greatly contribute to solving these problems.

Reuse of human excreta using safe environmental sanitation approaches would not only improve people's health, but also reduce the problem of accessibility of safe drinking water and sanitation, alleviate poverty, improve the rural economy, relieve women from physical hazards and generally safeguard the environment.

Nevertheless, when reusing human excreta, it is imperative to follow scientific procedures, as excreta contains pathogens – particularly bacteria, viruses,

BOX 1 Benefit of reuse of excreta**Excreta fertilising potential of a family of five adults**

Excreta is to be valued both because of its nutrient content and soil-conditioning and humus-building potential. Based on a daily excreta production of 110g per /person, a family of five adults theoretically produces enough excreta to produce adequate nitrogen and phosphorus to cultivate a rice plot ranging between 40x40 m and 40x50 m in size (Edwards, 1992).

Benefit in use of excreta for aquaculture

Fish cultivated using composting as fish feed (in excreta reuse systems) are of high quality and are equal or even superior in taste and odour to fish cultivated in other ways. Fish fed high-protein natural food cultivated in manure were much leaner, only 6% fat compared to fish raised on high-protein feed pellets and gain with 15 percent and 20% fat respectively (Edwards, 1992).

TABLE 1 Potential of biogas from human waste in Bangladesh

Feed materials	Total population (x10 ⁷)	Waste disposal rate (kg/head/day)	Gas production rate (m ³ /kg)	Amount (x10 ⁶ , m ³ /day)
Human excreta	11.50	0.40	0.07	3.22
Cattle dung	2.42	11.50	0.03	8.35
Poultry manure	13.79	0.18	0.06	1.49

Source: Rahman M H et al ,1996

protozoa, and helminths – which cause serious health problems if not properly treated.

Literature review

To understand the practices related to reuse of human excreta in Bangladesh, it was important to carry out a review of relevant literature. We found that documentation about the reuse of human

excreta in Bangladesh is scanty. Only a few documents are available which just talk about the initiatives taken by agencies in developing bio-gas plants under specific projects.

Current practices

A survey in the late 1980s opined about unintentional excreta reuse in Bangladesh. It found that 'night soil' – a euphemism for excrement – was not added directly to ponds; in fact, ponds were often used for bathing and washing kitchen utensils. However, latrines constructed in ditches behind houses remained almost dry in the summer but filled with flood water during the monsoon. Fish that entered the ditches with floodwater benefited from the eutrophic water, and night soil from the latrines continued to feed fish that grew in the ditches. The fish was harvested towards the end of the monsoon season when the water level had dropped. Consumers were generally reluctant to accept fish harvested in such ditches, however they were unaware of the origin of such fish when the product was bought in the market. (Edwards, 1992). In the last few years, national newspapers of Bangladesh have reported on intentional fish farming using sewage water. Newspapers reported that people are practising large-scale fish cultivation in the lagoon of the sewage treatment plant in Dhaka (Prothom Alo, 9th February 2002 and 29th September 2003). A recent city survey on wastewater irrigation also reported about this practice (Quazi, 2005).

Religious issues

Some literature highlighted difficulties related to the reuse of excreta in Muslim society. They argued that the Islamic culture professes the avoidance of

BOX 2 Health Risk related to reuse of Human excreta

Agriculture

The main health risks to workers who use excreta-related waste for fertilisation or irrigation are faecal-oral infections and soil-transmitted helminths. Where workers come into contact with contaminated surface water, schistosomiasis could also be a problem. Consumers of the crops are at risk of faecal-oral infections and ingested soil-transmitted helminths (Rottier and Ince, 2003).

The health risks of using untreated excreta-related waste for fertiliser should be reduced by minimising the contact between crops and pollution as much as possible (for example, through subsurface irrigation). Excreta-related waste should only be applied before the crops are planted or up to one month before they are harvested.

Aquaculture

Non-bacterial faecal-oral infections, bacterial faecal-oral infections, water-based helminths, and excreta-related insect vectors categories need to be considered as potential sources of infection in excreta-fed aquaculture systems. The intestinal bacteria and viruses of warm-blooded animals do not cause diseases in fish but they may be passively transferred to humans by fish raised in excreta-fed systems. Water-based helminths parasitic to humans may be transmitted by fish which act as worm intermediate hosts, for instance liver flukes. Schistosomiasis, a disease caused by the water-based helminth *Schistosoma*, has a snail intermediate host, and may also spread through excreta-fed ponds. There does not appear to be much risk from the breeding of insect vectors in well-managed excreta-fed ponds. (Edwards, 1992)

Avoidance of using fresh excreta for aquaculture, eating well-cooked fish, snail control, depuration of fish (that is, keeping fish in clean water for a period, prior to harvest) reduces these health risks.

Biogas

Handling excreta and regularly removing the sludge from a biogas plant could be a health risk. The sludge could be heavily contaminated with pathogens and should be handled and disposed with the same care as fresh excreta (Rottier and Ince, 2003).

all contact with human excreta. Excreta and urine, along with semen, corpses and other specified substances, are regarded as spiritual pollutants. Quranic edict and Islamic custom demands that Muslims minimise contact with these substances (Edwards, 1992). It was also reported that the people of Bangladesh, who are predominately Muslim, are reluctant to accept fish harvested in ditches fertilised with excreta. However, it was also quoted that the reuse of treated sewage effluent seems to be perfectly legitimate from the Islamic point of view. The Eminent Scholars of Saudi Arabia expressed unanimous approval of reuse of treated wastewater effluents for all purposes including religious washing (Edwards, 1992).

The reluctant attitude of the people of Bangladesh in reusing human excreta was also mentioned in a study conducted in 2003 (Quazi, 2003). According to the document, people kept silent when the possibility of reuse of human excreta was discussed – they evinced discomfort with the whole idea through their gesture. Those who have a two-pit latrine showed reservation and argued that they were not using two-pits latrine for composting purposes but to increase the longevity of the latrine. Only a small number of respondents said with some hesitation that human excreta can be used as manure if full composting is ensured.

However, this hesitation is not universal. An earlier-conducted study provides a different picture. The majority of the respondents replied affirmatively in favour of using human excreta as manure (DPHE, UNICEF and VHSS, 1995). However, the practice of reuse of human excreta for agriculture was not found in the literature, although the use of wastewater for irrigation was clearly mentioned.

Wastewater in agriculture

Recent surveys in the cities of Rajshahi and Dhaka conducted by the respected City Corporation revealed the use of drainage water in peri-urban areas for irrigation purposes. The survey indicated that approximately 145 and 550 hectares of land are irrigated by untreated waste water in the peri-urban areas of Dhaka and Rajshahi respectively. The common agricultural products grown on waste water are: cauliflower, laos (bottle gourd), sweet pumpkin, paushak (Indian spinach), palongshak (spinach), dantashak (amaranth) potato, tomato, pulse, oil seeds, wheat, paddy, and sugarcane. The survey also found that for several years diluted wastewater was used in nine lagoons/ponds in Pagla sewerage treatment plant (each pond was 1,000 ft by 1,000 ft in size) for aquaculture. Yearly production was 562.5 tons of fish. But since early 2003, the government of Bangladesh has imposed a ban on aquaculture in such lagoons. Still, some aquaculture is being undertaken on a very limited scale. The production is now just 18.75 tons per year, some 3% of past production. The survey also revealed that general customers are not comfortable with the idea of wastewater irrigated products, although it was observed that when they purchased such products from the market, they were not aware of the origin and the methods of cultivation. However, the same survey indicated that farmers who are practising wastewater irrigation are consuming these products (Quazi, 2005). The use of wastewater is also undertaken by NGOs, for example the NGO Prisma is involved in the cultivation of duckweed to feed fish (Skillicorn et al).

Low-cost technology

The practices related to the reuse of human and animal excreta for biogas production as a renewable

energy source are reported in several documents available from the web pages on the project initiatives taken by the Local Government Engineering Department (LGED), Bangladesh Council for Science and Industrial Research (BCSIR) (Renewable Energy Information Network, Rahman, 1998).

In Bangladesh, the first biogas plant was built in 1972 by the Bangladesh Agriculture University (BAU). However, the bio-gas plant based on night soil was only constructed at Faridpur Muslim Mission in early 1990s by LGED.

Since the first introduction in the mid-1990s, more initiatives were taken by various organisations, particularly by LGED and BCSIR. It has been reported that LGED and BCSIR have already installed more than 20,000 biogas plants in the country. Most of the biogas plants are based on cow dung and only a few are on human excreta.

It is worth noting that LGED has successfully constructed human excreta based biogas plants in a number of religious institutions that involved Madrasahs, Islamic missions, orphanages and mosques. One of the aims is to install a biogas plant based on human waste to test the general assumption that reusing human excreta in the Islamic culture is not feasible. The literature review also indicated that a considerable percentage of bio-gas plants are not functioning due to lack of proper use and maintenance by the users.

Objectives of this study

Following the literature review, a study based on field work was undertaken in order to:

- Understand the reuse of human excreta including other organic waste in Bangladesh.

- Determine ways, processes and purposes of reuse of human excreta in the rural areas in Bangladesh.
- Assess the extent to which the reuse of human excreta meets the requirement of environmental sanitation.

Methodology for collection of data at field level

Structured interviews were made by telephone, and recorded, with:

- (i) the 14 regional managers of NGO Forum who cover almost the entire country
- (ii) staff members of national and international agencies engaged in water and sanitation activities
- (iii) consultants who are directly involved in water and sanitation programmes.

These interviews did not provide adequate information about the use of 'saturated'¹ latrine pits and human waste for agriculture. The study had incorporated a few group discussions with local NGOs who are partners of NGO Forum. They provided information about the reuse of human excreta in agriculture as well as the use of saturated pits to grow plants and identified a few places where such practices take place.

Based on these interviews and group discussions, the following three study districts were chosen: Bagerhat, Rajshahi and Faridpur. In total, 18 cases of reuse of human excreta were studied:

- 6 cases of users of saturated latrine pits used for growing plants. This is practised in Doiboyga Kathi, Joka, Nurullahpur villages of Morrelganj Upazila (sub-district), and Paschim Khada village of Sharankholan Upazila under Bagerhat district;

- 4 cases of users of compost containing human excreta for producing vegetables, fruits, nuts, and trees. This is practised in Haldhibunia and Malgazi villages of Mongla Upazila under Bagerhat district and in Bil Mahmudpur village of Sadar Upazila in Faridpur district;
- 8 cases of users of bio-gas plants. This is practised in Dhopagata village of Mohanpur Upazila and Rakkhitpara village of Baghmara Upazila in Rajshahi district

The field study area was restricted given the time and financial constraints.

We observed the selected sample areas in February and August 2005. The basic techniques of observation were: in-depth interviews, key informant interviews, transect-walks and direct observation of the reuse system, the ways it was used and the outcome.

Key research instruments were: interview schedule, check list, audio and visual documentations.

Categories of informants were: Users of reuse of human excreta; senior staff members of institutions working with water and sanitation; social elites; engineers who have constructed the reuse system and are responsible for its monitoring and maintenance; and caretakers.

Field Findings

An increase in reuse of human waste for agricultural production

During our observations, we found that four out of six villages in four upazilas use 'saturated pits' for the production of plants. These villages are Doibogya Kathi, Joka, and Nurullahpur under

¹ The word saturated is used in the article to refer to a state of limited utilization of a system that is completely exhausted

Doibogya Kathi Union of Morrellganj Upazila and Paschim Khada village of Randha Union of Sharankhola Upazila. A total of 367 households in these four villages use saturated pits for the production of plants in a planned way.

The basic reasons expressed for using saturated pits are:

1. based on experience – it was reported that saturated pits are better fertilisers than chemical fertilisers as the efficiency of the fertiliser is sustained over a longer period of time. They measured this by quality and quantity of the plants produced;
2. information from neighbours and acquaintances that saturated pits are better fertilisers as they produce healthier plants and more yield;
3. information from television programs about the effectiveness of latrine pit fertiliser;
4. indigenous knowledge – ancestors believed that latrine pits were better fertilisers and this belief has been transferred from one generation to the next.

The plants that were sowed on the saturated pit are: coconut tree, betel nut, bamboo, mango tree, Chambal (tree), Mitha Alo or Guz Alo (a special kind of vegetable where the bulky root grows in the soil, and small roots appear on the thin and long creepers above ground).

As well as being used in saturated pits, it was found that human excreta is also used in cultivation. In two villages, Haldhi Bunia of Chila union and Malgazi of Chandpai Union under Mongla Upazila, cases were found of human excreta being used as fertiliser.

Human excreta and other organic compost can be used to produce compost. This is done by digging

a hole in which an adequate amount of human excreta is collected from used latrines. The human excreta is kept there for some months, after which other organic waste, such as poultry manure, cow dung, household and kitchen waste and leaves, are added. The composting process takes a few months. The compost can be used in the agricultural field for the production of vegetables, fruits, nuts and trees. Vegetables grown include brinjils, danta, barbiti (a kind of bean), tomatoes, potatoes, cauliflower, cabbage, puishak, lady's finger, and gourd. All the farmers we spoke to were of the opinion that such compost is capable of producing more crops than when using chemical fertiliser, with the products appearing healthier and looking better.

Reuse for biogas production

The reuse of human excreta is not limited to agriculture but can also be used for the production of alternative energy, biogas in particular. The eight cases that were studied provide some understanding about its use and purpose. Biogas plants using human and animal excreta were found in specific projects undertaken by government institutions. We investigated eight biogas plants in the Mahmudpur village of Sadar upazila in Faridpur district, and Dhopagata village of Mohanpur Upazila and Rakkhitpara village of Baghmara Upazila in Rajshahi district. Two plants linked to the community latrines use its excreta for biogas production. The energy generated is used for cooking in a single household.

One community latrine linked to a biogas plant is installed in an Islamic religious institution and reuses waste to provide the energy for cooking meals for orphans. The remaining five biogas plants were built for individual use in these five households.

BOX 3 Cases of used latrine pits for production of plants

In Paschim Khada, Sayeedur Rahman Akkon, a Muslim and a primary school teacher, had constructed a pit latrine in mid 1980 which was saturated in early 1990. Mr Akkon had covered the saturated pit with soil and kept it for a year and in 1992 sowed two bamboo saplings of the thin and short 'Molibansh' variety. Within a few years, these saplings had grown into a bamboo bush of around 10 to 15 feet high and two inches in diameter. From this bush he had collected at least one hundred bamboos, each selling for Tk 30. He had also cultivated a similar type of bamboo on plain land without using any type of fertiliser and had found that the bamboos grown on the latrine pit were thicker in size and the growth of the bush better than that of the bamboo bush cultivated at the plain land. This led him to conclude that plants grown on the saturated pits have better results.

In the village of Joka of Doibogya Kathi union of Morrellganj upazila, Asken Sheikh, a Muslim and a shrimp farmer, had constructed a latrine in 1999 that was saturated in 2003 and sealed with soil. He had constructed another latrine in close proximity. After a year he sowed a coconut sapling on the saturated pit as he had heard that a coconut tree planted on a saturated produces more coconuts than one planted on plain land.

In the village of Joka, Yunus Ali, a Muslim and a peasant, had a small golpata (a type of mangrove) and bamboo business. He constructed a latrine in 2000 which was saturated in 2003, sealed with soil and kept for six months. After that he sowed a sapling of betel leaf in mid 2004 and mango seeds in mid 2005. The betel leaf tree is growing and three mango saplings are visible on the saturated pit surface. He used this saturated pit for growing plants as other people had told him that plants grown on such pits develop better. He also practices disposal of organic household waste in a dug hole and uses the compost as fertiliser.

Another example from Joka is Shujid Kumar Biwas, a Hindu who works as an agricultural labourer, who in season prepares betel nut trees by removing the bark by layers in order to

collect the juice from the tree. His family had constructed a ring pit latrine in 1998 which was saturated in 2002 and sealed with soil. After few months he sowed a coconut sapling. Another pit latrine that was constructed during the same period was saturated in 2000 and sealed with soil. After almost a year, the family sowed a betel nut sapling and a chambal tree sapling. Both have been growing for at least four years. His family chose this practice because of indigenous knowledge that latrine pit are good for growing plants, passed to them by his maternal grand father, Mahendro Nath pal.

In Nurullahpur village, under Doibogya Kathi Union of Morrellganj upazila, Abdul Salam Sheikh, a Muslim and a peasant, built a pit latrine in 2000, which was saturated in 2004. He sealed it with soil and kept it for four months before sowing some root vegetables known locally as Mitya Alo or Gouz Alo, which are characterised by a bulky root growing in the soil, and thin and long creepers above ground where small roots also appear. The life of these root plants is about three years and both the roots grown in the soil and small roots grown on the creepers can be cooked and eaten. He used the saturated pit for planting this particular vegetable after watching a television programme about cultivation of vegetables, Mati O Manus (which means land and human), that the use of a saturated pit is good for growing vegetables. However, his family members were not happy that he had grown vegetables on the pit and have told him they will not eat it. Mr Salam has therefore decided to sell his entire crop in his local market and is expecting that it will provide him with an annual profit of Tk 500.

In Doibogya Kathi village, Kalam Sheikh, a Muslim and an agriculture labourer, sealed his pit latrine in 2003 after it became saturated. After a few months, he sowed bamboo saplings on the saturated pit, which have now been growing for a year and a half. He chose this method because he had heard that saturated pits are very effective for growing plants. His father's brother, Hatyem Sheikh, an agricultural labourer, constructed a latrine in 1997 that was saturated in early 2000 and was sealed with soil. After a few months he sowed a coconut sapling which has been growing for the last five years.

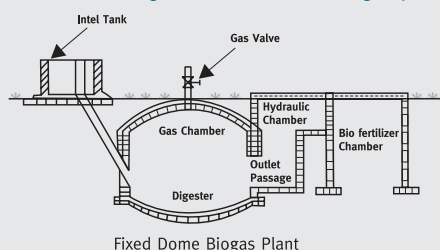
BOX 4 Basic design of the bio-gas technology promoted by government agencies

The introduction of biogas plants in Bangladesh started with the floating dome Indian type plants. Later these were replaced by fixed dome Chinese-type plants. Currently, the majority of the plants are fixed dome household-based biogas plants.

The present fixed biogas plants have an underground cylindrical shaped biogas digester constructed with brick walls and concrete. Depending on the nature of raw materials, inlet connections/tanks with digester vary. The digester is also connected to the outlet tank, which includes a hydraulic chamber, and bio-fertiliser pit. The size of the plant depends on the availability of raw materials and demand for gas. It works according to the principles of constant volume and changing pressure. When the rate of gas production is higher than that of gas consumption, pressure inside the digester rises and expels some digester contents into the outlet compartment. When the consumption is higher than production, pressure inside the digester falls and the expelled materials in the outlet compartment run back to the digester.

Biogas technology employs the technology of anaerobic digestion. It is based on the natural breakdown of organic materials under bacteriological attack in the absence of oxygen, producing a combustible mixture of gas, with up to 70% methane.

FIGURE 1 BCSIR design of a fixed dome biogas plant



Source: BCSIR, Biogas technology (Brochure in Bangla), Biogas Pilot Plant-2nd phase, Dhaka

The study found that cow dung is the main raw material in biogas plants. Although all five household-based biogas plants are linked to the household latrines, human excreta contributes only 10% of the total raw materials, while cow dung provides 90%. Use of cow dung increases with the increased demand for biogas for cooking.

However, all three community-based plants (different to household-based plants) use only human excreta for the production of biogas. The raw materials of these plants are supplied through an inlet pipe from community latrines to the digesters. An extra inlet tank for adding cow dung was constructed during the installation of the plant but were later closed, which indicates that the plants are currently able to supply the desired amount of biogas for cooking.

The use of biogas can reduce the cost of household fuel significantly. The fuel cost for those households using cow dung has decreased to less than half of previous costs, while households using human excreta are paying a very insignificant amount for energy for cooking.

The biogas plant installed at the religious institution provides energy for cooking for one quarter of consumers, meaning fuel costs have reduced by a quarter of the total cost involved.

The study found that residues from biogas plants are generally managed in an unhygienic way, being disposed into the water bodies and open places. An exception has been found in the religious institution. The Arambag Islamic Trust initially decomposes the residues with soil and organic solid wastes. After 10 to 15 days this resulting product is used as fertiliser. A few users of

BOX 5**How human excreta is used in cultivation**

Mr Mohammad Abu Siddique is a Muslim and a labourer from Mongla Harbour. He owns some land within his homestead which he uses for cultivating different types of vegetables – brinjal, green chillies, 'dantashak' (amaranths); and fruits – lemon, papaya, guava, banana, pomegranate, mango, jackfruit, Safeda (Sapota) and jam, a fruit-like blackberry; nuts, date, peanuts, coconuts, betel nuts; and different types of trees – kaorah, and shundari.

When cultivating these crops, he uses compost made from human waste (10%), organic solid waste and poultry manure as fertiliser. He collects human faeces from the latrine that has been used by his family for the previous 12 months and mixes it with other organic waste to produce the compost. Initially, he dug a hole of 2ft deep, and 3-4ft wide. Once the latrine has been used for one year, he stops using it for between one and one and a half months. After this period he collects all the faecal material with the help of a sweeper and carries this material to the hole that is dug to produce the compost.

He preserves the faecal material in the hole for a month and then adds to it other organic waste consisting of poultry manure, kitchen and garden waste, and leaves. All this is mixed together and kept in the hole for another one and a half months to decompose. The hole is covered with wood, banana leaves and palm leaves. He estimates each hole provides him with 40-50 kilograms of compost. After collecting the compost from the hole he processes the soil by digging and mixing the compost with soil, then he sows vegetable seeds and saplings of fruits and trees in it. In August 2005, he used the compost for cultivating brinjals, green chillies and danta in a 3 decimal area and to sow 20 guava saplings. When handling the compost he uses plastic boots and gloves which he owns from his job as a labourer.

He learned about the benefit of such compost from the Agriculture Office at Mongla in 1987 and for last three years since 2003 has used such compost on his land. He adds that the cultivation of these vegetables is particularly good during October-February, and for another three months for certain vegetables.

He gets a satisfactory amount of produce from his field. In August, some plants, particularly brinjal, were bigger in size and better in quality than usually expected at that time of year, with one of his brinjal weighing 800g. He earns in a year Tk 10-12,000 from selling vegetables cultivated on his land. Brinjal alone gave him a profit of Tk 4,500.

Of the 32 guava saplings he sowed, 12 grew into trees, giving him 200 kilograms of guava. He did not sell this, rather it was consumed by him and his family, neighbours and visitors. He has 16 coconut trees which provide him with nearly Tk 10,000 per year from selling the coconuts. His 13 papaya trees give around 20 kgs of papaya which he sells. He noticed that the production of banana and papaya had significantly reduced during the year due to flooding which caused water logging for a long period of time and affected fruit production. He thinks that the use of compost in the production of agricultural outputs provides 60% higher profits than products grown with chemical fertiliser. He is concerned about his main job, labouring at the Mongla harbour, as he says securing work is becoming difficult as the number of ships entering the harbour is continually reducing. As a result, he gets just one duty shift a month which, earning just Tk 450. This is not enough to survive on, so he is devoting more time to agriculture.

Furthermore, Mr Siddique adds that in the villages of Satgaria, Malgazi and Haldibunia, many households use compost consisting of organic waste of any source, with around 100 households using human waste. However about a year ago, a local NGO ran an awareness campaign, called 'miking' because information is relayed by mobile speakers), informing people that the use of human faeces in agricultural food produce is hazardous to their health. This miking resulted in reducing the use of human waste in cultivation.

The use of human excreta and other organic compost is also practised in Malgazi in the Chaddpai Union. We observed three more cases, including Kuldeep Mondol and Biprotip Mondol both of whom are Hindu by religious affiliation, and Maneendra Halder who is a Christian. All three produce compost by using a hole in which human excreta is transferred to from used latrines. The human excreta is kept there for three months, after which other organic waste such as poultry manure, cow dung, household and kitchen waste, leave, is added. It is left to decompose to produce a compost which is later used in agricultural fields for the cultivation of vegetables, fruits, nuts and trees. These three cases also grew a number of different kinds of vegetables, such as barbiti (a kind of bean), tomato, potatoes, cauliflower, cabbage, 'puin-sak' (green leaves), lady's finger, and Lou-bottle-gourd. All the farmers feel that the compost is capable of producing more crops than chemical fertiliser and that the products appeared more healthier and looked better. In the words of Kuldeep Mondol: "Last year I used chemical fertiliser but this year I got more yield by using compost. This year I have got beans and fibrous vegetables double in quantity than last year."

BOX 6**Household-based bio-gas plants: A few instances of reuse of human and animal excreta**

Gulam Mustafa lives in Dhopagata village, Baghshimaile union of Mohanpur Upazila in Rajshahi district. He works at the Agriculture Extension Directorate, as a block supervisor, and had thought about the possibility of using biogas technology. His nephew was involved with the biogas pilot plant-second phase project of BCSIR as a deputy assistant engineer. He encouraged him to install a biogas plant instead of a septic tank for his building which was under construction. Subsequently, in 2003 he installed a household-based biogas plant for cooking purposes in front of his house, taking advantage of the BCSIR project. The total cost of the plant was Tk 14,000 however, he spent only Tk 6,500 of his own money as Tk 7,500 was given to him from the BCSIR project. The plant occupies one decimal of land, valued at Tk 4,000. The design of the biogas plant is similar to the design promoted by BCSIR.

The digester of the plant is attached to his family latrine through an inlet pipe. The raw materials used by the plant are cow dung (90%) and human excreta (10%) supplied by six people. Each week he adds two bags of cow dung (100kg) to the plant through the inlet tank. As the family does not have any cows they have to purchase cow dung from other people, at a cost of Tk 15 for 100kg. Previously, the family used to spend Tk 400-450 per month on kerosene for cooking. Now that they have the biogas plant the household is spending just Tk 60-80 on kerosene.

Ms Jharna, housewife of the family, said that previously she used to cook with kerosene but was not comfortable doing so as the operation and maintenance of the kerosene oven is difficult. Now she enjoys cooking with biogas and finds it as good as natural gas. She says that the plant produces enough gas to cook three meals a day for her family, which consists of six adult members. When guests visit, she has to add some additional cow dung to the digester. Furthermore, to ensure cost effective utilisation of biogas, they use pressure cookers for cooking.

They family is Muslim and educated and are comfortable with using biogas produced by human and animal excreta for cooking. Until the plant started functioning, Ms Jharna was not very comfortable with the idea of using biogas for cooking. However, after the plant was installed gradually her perceptions started to change as she found no difference between natural gas and the gas available from the plant, especially as it produced no bad smells. Furthermore, the biogas stove is relatively easier to

use than the kerosene stove. However, the family felt that an auto firing oven would help them to avoid the releasing of biogas while lighting the oven. This may be indicative of their 'unconscious' discomfort about the raw materials used. Other members of the family also expressed similar views. To date, there have been no problems with the plant except for some minor issues with the stove which have meant waiting for the project engineers to repair them. They have not been given any training on maintenance of the stoves.

During observations, it was found that plant area was mostly clean, although the sludge tank was covered with bamboo mat and sludge is disposed in a very unhygienic way, into an open space attached to the river. When the issue was raised with Mr Mustafa, he said that the problem would be rectified as he planned to use this sludge as compost for agriculture land owned by his family. At present a small part of the sludge is used for roof gardening.

In the entire Dhopagata village, this was the only biogas plant that reused both cow dung and human waste. However, in Rakkhithpara village, Bagmara upazila, we found four such plants. Like Mustafa's plant, we found that all four disposed of sludge in an unhygienic manner, polluting the surrounding environment. The plants were installed under the BCSIR project and had a similar design.

Of four households in Rakkithpara, only one is using a small portion of the sludge to cultivate patol (a kind of vegetable). It is to be noted that in these plants, no tests were conducted on the quality of sludge of the plants. As a result, the risks to health could not be assessed.

It is important to note that all the biogas users are resourceful. Each has a well-structured house made of bricks and concrete and annual household income ranges between US \$1,300-1,400. Further, all the families are Muslim and no complaints were reported about the plants and use of human and animal excreta as raw materials. One of the users, Abdul Waheed, was a teacher at a religious institution, and finds no reason why he should not use a biogas plant. Indeed, he has constructed a community toilet for his poor neighbours. Their excreta is collected in the digester of his biogas plant as raw material, alongside cow dung. He added that he also uses a pressure cooker for cooking. In both villages, we saw no evidence of the reuse of excreta other than in biogas plant.

household-based biogas plants also use a small part of the residue for roof gardening and in other cultivations. It was observed that the households using biogas energy are relatively resourceful in terms of money. The construction of a biogas plant requires Tk 12-14,000, with 40 sq m of land needed for the installation of the plant.

Therefore, household biogas plants are not feasible for the poor due to high construction costs and the availability of adequate biodegradable material (human waste; cow dung; chicken manure). Biogas is not the sole environmental sanitation solution contributing to poverty alleviation.

On the other hand, the study also found that a biogas plant based on reuse of human excreta inevitably requires a certain amount of excreta that one or two households cannot supply. Therefore, a good number of households have to unite to generate enough raw biodegradable materials for the biogas plant to function properly and to meet the demand of energy of a single household. It was observed that two community latrines had been built to collect the excreta of poor families to power one biogas plant. The produced biogas is being used to power the house of the owner of the latrines and plant. In this manner, affluent households can support the sanitation coverage of the poorest in a community.

The designs of the biogas plants studied are basic fixed dome designs, which are promoted by government institutions; only the number of inlets for the supply of raw materials is varied. No complaints were recorded on the design and the functioning of the plants. However, owners expressed a preference for an auto-firing of the oven to avoid the release of biogas during its

BOX 7 Case study – Use of community latrine for biogas production

Mr Abul Kalam, whose relative was involved with a biogas pilot project, through his initiative in 2004 – has constructed two community latrines for his neighbouring nine poorest families, a total of 31 people. They used to practice open defecation on the bank of the river. Now the majority of them use these toilets.

Mr Kalam also constructed a bio-gas plant based on the BCSIR design. The inlet tank where cow dung was added is now sealed and human excreta is the only raw material used in this plant. The biogas produced from the plant is supplied to his house through a 150 feet gas pipe. His family uses a two-burner stove to cook three meals for the five of them. The total cost of the plant is Tk 15,000 (US\$ 250), half of which had been shared by the BCSIR project. The annual income of the family during the construction of the plant was approximately US\$ 1,400.

Now, Mr Kalam saves nearly Tk 300-400 per month, as he no longer purchases any biomass as fuel. However, when guests visit then they use their traditional oven made of mud fuelled by biomass. His family uses a pressure cooker, having been taught how to use one during a demonstration on using the gas for cooking. The family members are very strict on using a pressure cooker and not the traditional uncovered pot.

This family also are happy with using the biogas plant but like many other people interviewed, they said that they would prefer an auto-firing oven over the present one. Users of the plant haven't received any orientation and training on taking care of the plant and on the use of the plant in a hygienic way.

During observation it was found that the sludge of the plant is disposed in the open place through outlet pipe in a very unhygienic manner and the community latrines were not clean. The owner of the plant informed that in each year 640 kg of sludge of the plant is used on their agricultural land to improve the soil condition and during this study a farm of betel leaf on 2 decimal land was observed where the sludge of the plant was used. However, no testing whatsoever was carried out to have any understanding about the quality of the sludge. In the Dhopaghata one more such type of plant was observed and the condition related to sludge disposal was found to be similar. In Rakkhitpara no biogas plant based on exclusive human excreta was found.

BOX 8

Muslim religious institution is reusing human excreta for generating biogas for cooking and agricultural purposes

The entire village of bil Mahmudpur of Aliabad Union in Faridpur Sadar Upazila did not reuse human excreta, except for a biogas plant constructed by Arambag Atim Khana, established under Arambag Islami Trusts in 1986. Nearly 200 children, most of them orphans, live there. Cooking for this large number of children is a difficult task. For cooking, they used 'bushtech' – a processed material made of wooden dust – and had to spend Tk 20 -22 per month on fuel.

However, in 1999 LGED encouraged the trust to construct a biogas plant for cooking by taking advantage of the huge amount of human excreta generated in the community latrines of the orphanage. In response to a proposal from the LGED a plant was constructed. LGED contributed to the installation costs.

The plant has a 10-inch diameter fixed dome digester. It is connected to two units of toilets which includes six urinals and five lavatories that are regularly used by nearly 200 people, most of them children. The design of the plant is similar to that of BCSIR. The cow dung inlet tank is sealed, as only human excreta is used as raw material for the plant. The produced bio-gas is used for cooking purposes. The amount of biogas produced it is not enough to meet the cooking needs of the entire orphanage population, but the 20 to 25 persons it does cater for saves the orphanage nearly Tk 3,500 per month. Further, the trust has ensured proper management of human excreta.

There were no complaints from the chefs about the reuse of human excreta as a source of energy for cooking. The children too said that they did not feel uncomfortable knowing that food was being cooked by the energy generated from the reuse of human excreta. The caretaker of the plant, Mr Tariquzzaman, and the cooks say that since the installation of the plant they have not experienced any difficulties in operation and also no major repairs have been needed. During observation it was found that the plant area was very clean and sludge disposal is done in a very hygienic manner, with the sludge point covered. A female member of staff is paid to collect the sludge from the plant and dispose it into a hole with all other solid organic waste such as leaf and kitchen waste. After 10 to 15 days this compost, is used for cultivating groundnuts and vegetables in an area of 2.5 acres. Sludge is not used in aquaculture, though the institution has aquaculture. It is to be noted that no preventive hygienic measures are taken in handling the sludge.

lighting. This could be an indicator of their unconscious discomfort about the raw materials. Furthermore, the use of a pressure cooker by almost all of the users may have a similar significance, although it has not been explicitly expressed. All users said that the fire generated by the gas made cooking easier.

The study found that the users were not given the necessary guidance on sanitation and hygiene related to biogas plants. The caretakers of the plants did not have the capacity to manage even a small technical problem, which could be the result of lack of training.

Conclusion

The study found six cases of users of saturated latrine pits who are growing plants, four users of compost consisting of human excreta, producing vegetables, fruits, nuts, tree and eight cases of users of bio-gas plant in nine villages in three districts. This has given an understanding of the way human waste is reused, the purpose of reuse, and its outcome.

We have seen that the reuse of human excreta and the composting of human and animal excreta and other organic waste is being used in cultivating plants, including various kinds of vegetables, fruits, nuts and trees. Overwhelmingly the users expressed their satisfaction about the reuse of excreta in that the products grown on the saturated pit and organic compost are healthier, larger in quantity and size, and have look better. This produce can also provide them with some financial benefits.

Reuse of human excreta has often been encouraged by ancestors who practised it and passed on their indigenous knowledge to the next generation. The

present reusers learned about the benefits of human excreta as fertiliser from mass media, NGOs, government organisations and neighbours.

However, the way human excreta is reused, sludge of bio-gas plants disposed, latrines used, waste collected and mixed for preparing compost, are not convincingly safe. Individual initiatives are exclusive in the case of reuse of human waste for cultivation while governmental support is provided for the construction of bio-gas plant projects.

The reuse of human excreta is often discouraged by Islam – although during the study we found an orphanage which is managed and administrated by the Madrassa (an Islamic religious academic institution), as well as a teacher of Madrassa and many Muslim families all of whom reuse human excreta through bio-gas plant and use urine in agriculture. As this was a limited study, the sample cannot be extrapolated to the entire country. The practice of reusing human excreta for cultivating agricultural products for human consumption exists not only among Muslims but also among Hindus and Christians.

Despite the limited nature of the study, the reuse of human excreta as well as excreta of animal and other organic waste is happening in Bangladesh. However, the way it is used may be 'improper' and 'dangerous' for the health and environment of poor communities. The issue of reuse of human excreta needs to be addressed by the government, non-government organisations and international agencies.

Recommendations

This particular study focussed on a limited area and therefore does not provide an understanding

of the reuse of human excreta for the entire country of Bangladesh. Therefore, the magnitude of reuse of human excreta in the entire country has to be assessed through extensive research. This proposed study should also look at the purposes of reuse of human excreta.

As the study revealed that safe and hygienic utilisation of human excreta was not practised, serious health risks exist for the people managing the re-using processes and for the consumers of the agricultural produces. The same applies to the general environment, which is likely to get heavily contaminated with improperly treated sludge from biogas plants. We recommend government and support agencies consider activities to support capacity building and information sharing related to safe and hygienic waste utilisation. Furthermore the extent of health risks to human beings from all aspects around the reuse of human excreta needs to be fully investigated.

The study also recommends that the government, non-government organisations and private entrepreneurs engaged in sanitation, incorporate reuse of human excreta into their policies and undertake initiatives and activities for safe reuse of excreta.

Given the development situation in Bangladesh, it is expected that the government, non-government organisations, including private institutions, will be intensively involved in the reuse of human excreta. The government should adopt a policy for the reuse of human excreta, allocate a budget to develop affordable and appropriate technologies, and provide subsidies to the poorest communities. NGOs can raise awareness of safe and effective utilisation of excreta, provide training

to users, caretakers, and private producers, conduct advocacy at national and local level, and carry out research to ensure the effectiveness of technologies and approaches in accordance with socio-economic and environmental context and monitor and facilitate field level operations.

Once simple and affordable designs have been developed, and communities are willing to be involved in the reuse of human excreta, the private sector can engage in ensuring the availability of hardware materials, the provision of technical building skills, and the marketing and promotion of the reuse options in their area.

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20 Moving up the sanitation ladder: A participatory study of the drivers of sustainability and progress in Community Led Total Sanitation

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Abstract

This participatory study was conducted in December 2006. It encompasses three different eco-climatic regions of the project operational areas of the Village Education Resource Centre (VERC): Manda, Sitakunda and Lalmohan, where VERC is implementing its innovative CLTS approach. The main purpose of the study was to generate and disseminate learning on the causal background of people following or not following the Sanitation Ladder (SL) and to generate ideas to make the movement more effective.

Under the overall leadership of an international consultant, two national consultants and six VERC staff worked together on the study. They applied a multidisciplinary team approach to conduct

this study, involving participatory methodologies. A total of 136 people (comprising 67 males and 69 females) participated in data generation activities to provide data on 424 family samples. Of these families, 55 were perceived as hardcore poor, 208 as poor, 158 as middle class and seven as rich.

A summary of results shows that:

- *In Manda, some 70% of people who had previously used low cost latrines had gone up the ladder by adopting ring slabs, while the remaining 30% remained using the low cost tin/mokta-made versions they had previously developed.*
- *In Sitakunda around 40% remained using their initial low cost simple pit versions, while 25% had implemented ring-slabs, a further*

25% had adopted offset-pit latrines and the remaining 10% indicated that they use bamboo and shared latrines – so up to 50% had moved up the ladder, and 10% were showing signs of slippage.

- *In the last area, Lalmohan, only 10% had stayed with their initial low cost designs, with 90% moving up the ladder to various types of offset and key hole pit latrines.*

Introduction and objectives

The Village Education Resource Centre (VERC), a national NGO in Bangladesh, with financial and technical support of WaterAid Bangladesh (WAB), has been implementing an approach known as “*Community Led Total Sanitation*” (CLTS). Its headline achievement is that between 2000 and 2006, (when this paper was drafted) CLTS has completely transformed the toilet facilities of no fewer than 700 villages in 32 unions of six districts in Bangladesh. Because of this success, CLTS has not only become part of water-sanitation discourse among development scholars and practitioners, but is also being replicated in other Asian countries.

The *Sanitation Ladder* (SL) concept is central to the CLTS approach. In this instance, sanitation ladder means there has been a gradual progression over time of installation and use of latrines. A community that has reached the lowest steps of the sanitation ladder – by virtue of behaviour conditioning intrinsic in CLTS – would not only sustain its present level, but would move onto the next step of the ladder, without material and financial support.

As the sanitation ladder is so important to the success of CLTS, it is necessary to establish if, and how, people are moving up the ladder. So, the main objectives of this study were:

1. To learn:
 - i. Whether or not this was happening: do people travel up the sanitation ladder, who travels and who does not?
 - ii. What were the causal factors for both behaviours, particularly, what forces helped and/or hindered communities to move up, sustain their position, stagnate or fall down the ladder?
2. To identify what impact these factors have on the overall sustainability of CLTS, particularly what is the sustainability of low-cost latrines?
3. To generate ideas to assist people to move up the ladder more effectively.

CLTS – an introduction¹

Community Led Total Sanitation (CLTS) is a process where, through the activities of entire communities working together, open defecation is adopted and sustained. *Community led* refers to active participation (not elites or elements within it) of the entire community in assessment, planning, implementation, monitoring and evaluation, and decision-making in a sanitation project. *Total sanitation* depicts a desired situation in which all households of the community, social institutions such as mosques and schools, and all public places such as bus-stands and market places, have appropriate sanitation systems. For introductory texts on CLTS see articles by Timothy Claydon (2002) and Kamal Kar (2003).

But while the most important element of CLTS is its intended outcome – that open defecation is

¹ Readers familiar with CLTS may either refresh their knowledge of the concept in this section, or may choose to move on to the next section.

eradicated across the whole village/community – the concept also encompasses the adoption of proper waste disposal practices and access to safe water for all domestic purposes. Furthermore, it includes personal hygiene and environmental cleanliness. So, CLTS clearly goes beyond the installation of latrines and tubewells. It also tackles the more holistic and objective issues of breaking the faecal-oral chain, by encouraging communities to change existing habits and behaviour patterns. The CLTS process teaches them to use and maintain hygienic latrines, wash their hands afterwards, keep food and water covered, use safe water and maintain a clean environment. The success of this approach depends on the participation of every member of the village, and on making people see themselves as a community where every member's behaviour affects the others. The development of a public good, through and upon the behaviour of individuals, is a central plank of CLTS. The approach is an attempt to influence household behaviour so as to make it consistent with community goals of good health and safe water.

Two key assumptions on which CLTS is grounded are empowering *communities to help themselves*, and *a shift from technocratic and financial patronage to participatory approaches*. CLTS embodies a change in approach from training and management to an emphasis on empowering communities and strengthening local institutions.

One of the most noteworthy features of CLTS is the *absence of externally provided household-level subsidies*. Unlike earlier approaches, the process of behaviour change is initiated without external financial support to households. CLTS advocates that financing latrine construction is not an issue; it recognises that total sanitation can only be

achieved if every member of the community participates. The belief and evidence is that communities *can* arrange cross-subsidies to make sanitation facilities accessible to weaker groups if formation of self-help groups and micro-credit schemes are linked as a source of funding; provided that the community is assisted to recognise the public good dimension of private behaviour.

It is believed that subsidies distort incentives and adversely affect the potential of communities to achieve self-reliance – they undermine sustainability. Motivating communities to change sanitation practices rather than the provision of hardware and financial support is the focus of this approach. Households that cannot afford to make the financial investment are not excluded because the community recognises that total sanitation depends on the participation of every community member. So, community members helping other members with the cost of hardware are accepted practice in CLTS – and this form of cross subsidy is not felt to undermine the principle.

The approach recognises that there is a *public good dimension in water and sanitation improvements* to what is generally considered a private good. By creating awareness within communities, *a change in mindset* is achieved. The aim is that the shift from open defecation to fixed-spot defecation is irreversible because, in addition to health benefits, it provides privacy and safety and people are likely to find it difficult to regress to previous practices. The effect of *peer pressure and participatory monitoring systems* of CLTS generates merits towards sustainability, which encourages communities to apply innovative systems to guard against open defecation. These have taken the form of watchmen and children's

groups and the refusal of families to allow their daughters to marry into households without sanitation.

CLTS offers a wide range of hardware options that allows users to choose an appropriate model based on affordability. Local innovations are actively encouraged to expand the range of options available. Members are supported to select the option best suited to their individual needs and budgets. The use of cheaper materials and of range of technology options increases demand, and so a growing number of users are able to enter the market. As a result, no special efforts have to be made to create the supply chain because private producers of pit latrines and related equipment can largely meet the growing demand.

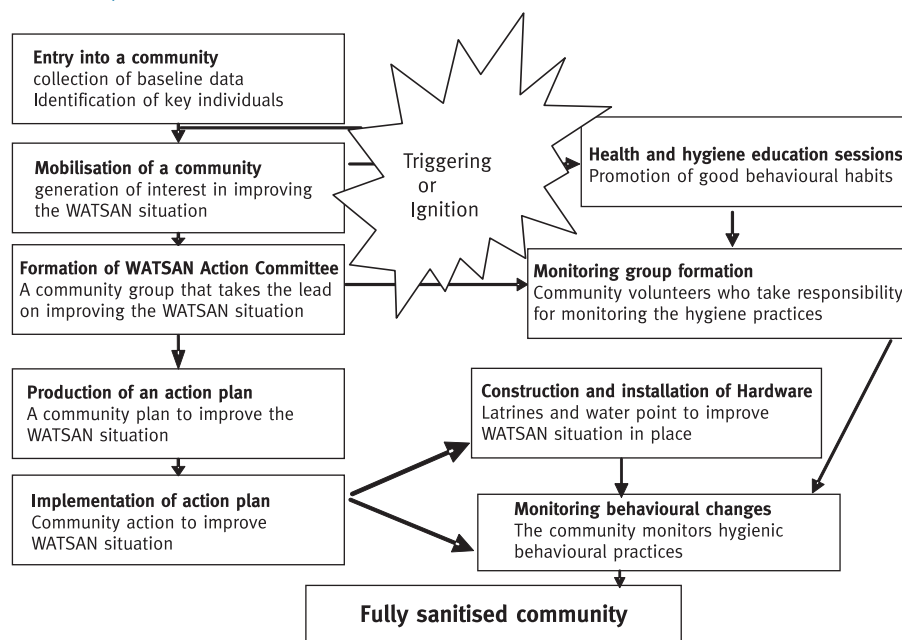
Furthermore, CLTS recognises *that other infrastructure* have an influencing factor for change in sanitation practices. The source and availability of water supply is one such influencing factor, which catalyses demand for household toilets. While sanitation provides the means by which the lessons of hygiene education can be put into practice, and the environment for improved health through changed personal behaviour, both require adequate water for effective use. For example, hand washing after defecation requires sufficient quantity of water, as does flushing after defecation.

The entry point for the CLTS work of WAB-VERC's is through 'igniting' behaviour change in sanitation practices. This is creating awareness in the community of the lack of environmental sanitation and its adverse impact on hygiene and health conditions. Once communities are motivated to change behaviour patterns, they seek to introduce sanitation facilities that ultimately lead to improved

health and self-esteem. The approach starts on getting people to move away from open defecation to fixed-point defecation – even if it is at the bottom of the 'sanitation ladder' – on the assumption that people will move up the ladder of superior options when they can afford them. In CLTS, communities are informed about the ill effects of open defecation practices and how the mismanagement of faeces disposal causes disease. This helps the community to effectively understand the enormity of the problem when its people visit defecation sites to make a collective assessment of the situation and calculate the amount of faeces being deposited in the open. One village may calculate that around 120,000 tons of human excreta are being added annually. When the community visualises this figure in truckloads, they are totally repulsed and motivated to change existing practices. Following this, communities begin to look at ways to improve their current sanitation environment. Individuals are identified to work as catalysts in the community to spread the demand for latrines. The community is made aware that to achieve total sanitation it is necessary that every household adopts hygienic sanitary practices, and behaviour change must be taken up *collectively*.

The approach is based on the belief that communities are capable of dealing with their sanitation problems on their own. Based on this assumption, it emphasises building community structures and total community empowerment rather than the delivery of services and financial support. CLTS facilitates to develop and strengthen community-based institutions. Local committees are formed with representatives from all sections of society including women. Religious leaders and teachers were also involved to create social pressure for change. Action plans were drawn up

FIGURE 1 The CLTS process



and meetings organised to find collective responses and solutions. These committees now monitor behaviour change, and the feedback from monitoring is used to revise action plans to achieve total sanitation.

Methodology

The research work was carried out in December 2006. In order to include different ecological climatic characteristics and settlement patterns the study covered:

- *Sitakunda* area comprises saline-prone coastal and mountainous region. The area is situated along the Asian Highway, linking the capital city with the port city Chittagong – it is predominantly an industrial area.

- *Lalmohon* - a plain saline coastal area, and
- *Manda* as northern non-saline Barind tract water declining zone.

As of September 2006, among nine unions, which have reached a state of full latrine coverage, three were randomly selected, ie Manda, Sitakunda and Lalmohan.

Under the overall leadership of an international consultant, two national consultants and six VERC staff worked together. Some 136 people (50:50 men and women) participated in data generation, providing data on 428 families, which were classified in the following manner. Some 55 families were defined as *hardcore poor*, 208 families as *poor*,

158 families as *middle class* and seven families as *rich*. The definition of the above mentioned four economic categories are stated in Annex 3 of the main report (Saha et al, 2006).

In order to generate simultaneous learning among participating agencies, the study involved a total of 12 facilitators from different disciplinary backgrounds. For each of the districts, a three-member team was formed (of two VERC staff and one local consultant). Each of these teams conducted data generation activities in one of the above three study areas and accomplished intermediary consolidation of the data.

At the outset, to increase shared understanding among facilitators a day-long levelling (drawing a common understanding) workshop was conducted and attended by senior staff of VERC and all study facilitators. The outcomes of this workshop are presented in Annex 2 of the main report (Saha et al, 2006). By conducting a two-day facilitators' workshop, methods and tools for village level PRA and union level multi-stakeholder workshops were developed, field tested and finalised.

In each of the three-sample study areas, data and ideas were solicited at two levels, such as a village and a union. Village level PRA sessions were conducted to generate data on following questions:

- What are the reach/sustainability, upward and downward movements of the village on the SL, analysed by the population categories economy, culture and family structure?
- What forces are contributing towards sustenance and upward movement on the SL by the same categories of population?

- What forces are contributing towards unsustainability and downward movement on the SL?

Tools for village level PRA sessions included (a) models of latrines in use², (b) timeline changes in prevalence and use of latrines by models and family category, (c) timeline major events of sanitation journey in the village, and (d) force-field analysis. Sessions were conducted separately with male and female participants.

On completion of the village level PRA sessions, union level multi-stakeholders workshops were conducted in which community representatives, local government officials, staff of Upazilla level government offices and other civil society representatives participated. The union workshop generated data and ideas on (a) changes in latrine installation and use in the union during the period 2003-2006, (b) driving and resisting forces to changes, and (c) achieving sustainability of the process. To generate and share multiple perspectives in this day-long union workshop, participants were divided into two groups, which were service providers (included local government officials, relevant government agency staff and other civil society actors) and community representatives. The first part of the workshop engaged group exercises while the second part shared the group's outcome through plenary presentation and discussion.

The responsible facilitator's team consolidated generated data and information of each of the study areas. On completion of field data gathering, all facilitators teams met and compiled their findings around study questions through participatory

² See Annex 2 of the main report (Saha et al, 2006) for details of various latrines that the community is using – these vary from the very cheap and relatively unsophisticated, to more expensive, well designed and aesthetically appealing devices.

discussions and reflections. At the end, on 30 December 2006, a presentation session of summary findings was organised in participation with study facilitators and senior staff of VERC.

Impact

A clear picture emerged that, despite regional variations and variations by category of families, communities have made significant upward movement on the sanitation ladder. Initially, people started using simple pit latrines, but now they commonly reported use of more sophisticated and/or expensive models. Without being subsidised, the majority of families invested their own resources to install improved latrines. Reduced suffering and savings arising from a reduced burden of

waterborne diseases were reported as the enabling factor of this investment capacity. For example, participants in Baropai (in the Kushumba union of Manda) calculated that before 2003, an average family would lose Tk 3,950 (around \$60) per year in this way. This has now reduced to Tk 1,340, so reduction of financial losses caused by waterborne diseases is Tk 2,610 (around \$40) per family, per year – a significant amount in Bangladesh.

The key specific finding is that all categories of household have made upward movement on the SL (see Tables 3, 4 and 5), as follows.

1. In general the hardcore poor categories made upward movement in the sanitation ladder and achieved full coverage among them:
 - i. Households in Manda region have better moved towards improved latrine options in comparison with the region of Sitakunda and Lalmohon
 - ii. Households in Lalmohon region have only moved from open defecation to simple-pit latrine, while in Sitakunda around half of hardcore poor families have moved towards improved options, e.g. ring-slab and plastic-pan water-sealed offset latrines.
 - iii. As reported, economic hardships and landlessness are the reasons behind the slow movement up the latrine ladder among the hardcore poor.
 - iv. Affordability for this segment of the population is relatively less because they cannot move towards improved options (*it is reported that improved options are relatively costly*).
2. Within the poor/lower category of families in general the prevalence of latrine models shows upward movement trend:

BOX 1 People's travel on the sanitation ladder – a summary

Despite regional variations and variations by category of families, it is clearly evident that people made significant upward movement in sanitation ladder (SL).

- Poor families (the largest category with 208 from the 424 sample) are the best performers in moving to upper steps of the SL.
- Middle class families are the second largest category (154 of 424 sample families) and represent the second highest performer.
- Hardcore poor (represented by 55 of the 424 sample) are relatively slow mover in SL.
- The seven families identified as rich also moved towards better latrine options.

All categories of families have followed gradual progression principles. Compared with only 22 families (among the 424-strong study sample) that were using hygienic latrines in 2003, all families were using hygienic latrines by the end of 2006. Within three years, most families had invested resources and continued to have better latrine options, accompanied by better personal hygiene and community environmental cleanliness practices.

- i. In Manda, among 135 poor families, 132 have moved towards improved options.
 - ii. In Sitakunda, previously none used sanitary latrine. By 2006, half of the families have travelled to improved versions, while the other half is sticking with its previous options.
 - iii. None of the poor households in Lalmohon used sanitary latrine before 2003. By 2006, all of them have remarkably moved towards improved latrines.
 - iv. The poor represents largest categories of population as defined by the community people. It is also evident that coverage of sanitary latrines and movement towards improved version among the poor in all regions is higher than that of other categories.
3. Middle class families have also made upward movement in sanitation ladder:
 - i. In Manda, all middle class families are using improved latrine options, while before 2003 most families (69) used to use open places for defecation.
 - ii. Different practice patterns of defecation prevailed before 2003 in Sitakunda because all families in the middle class category used to use soil-pit, unhygienic latrine instead of open places. This might have also happened due to the peri-urban context. Now, around 70% families are using improved latrines, while 30% of families are using a simple-pit version.
 - iii. In Lalmohon, the initial coverage was relatively high: particularly among the middle class category (around 45%), which rose to full coverage by 2006.
 4. The category of rich families has been identified by the community people only in

Manda and Lalmohon. In Sitakunda, people perceive that there are no rich families in their village. There is not much regional variation in this particular category of population.

Compared with all other population categories a distinctive difference is noticeable that even before 2003 all rich families used to use sanitary latrines. However, regional variation in terms of movement - towards improved options are as follows:

- i. In Manda, only two families are in this category. Before 2003, they used model-15 (community innovated offset pit latrines (4), which has been presently moved towards model-10 (offset pit latrine).
- ii. In Lalmohon, ten families are in the rich category. Among them only one had initial latrine option, while others used to use improved options even before 2003.

In 2003, of the sample of 424 families, only 22 families used latrines and altogether invested a total of Tk 11,110 at an average of Tk 26.20 across the sample. By the end of 2006, all families used latrines (422 families made direct investment and two poor families shared facilities) while the average investment per family has reached Tk 506.80 (see Table 6).

Of these, 237 families were using model 10 (offset pit latrine) (see Annex 2 of the main report (Saha et al, 2006)) at a cost Tk 427 per unit: the most costly option among nine models being used. This provides a clear indication of movement of families to higher steps on the sanitation ladder. Furthermore, this calculation does not include the investments of superstructure and maintenance. Most respondents added that compared with 2003 they now have better superstructures for their

latrines – these probably would add around Tk 50 to 200 in cost per latrine. This is held to confirm the assumption of CLTS that “subsidy is not an issue for sanitation promotion but collective community participation and benefit linked to the improvement of health”.

Drivers and barriers to movement on the sanitation ladder

It is difficult to differentiate between the forces that drive people to **adopt** CLTS originally from those which subsequently cause them to **rise up** the sanitation ladder. In some cases they are indistinguishable – i.e. the same force that starts the process ensures its continuation – but this need not always be so.

The research to date has made some progress in identifying this process, but it is felt that more work is needed to solidify the initial observations made here.

At this stage, it is felt that there are six factors, which lead to CLTS adoption and which then drive movement up the ladder. These either emerged from the study, or are the view of the authors, and they are covered in the following paragraphs.

All categories of families followed a ‘Gradual Progress Principle’, as members of each category gradually replaced low-cost models with improved models. It appeared that this movement went hand in hand with increasing health awareness, income, and reduction of waterborne diseases. However, it was also found that the middle class families tend to sustain a lower model of latrine for a longer period than other categories of users. It was felt that middle class families would like to have

installed a more sophisticated model but they were not able to do so.

Awareness raising as factor

The study recognises that the fundamental driving force, which triggered people to mobilize and take collective action, is based on the following: the embedded cultural sense that having a latrine dignifies a family; a sense that defecation is very much a private practice that should not be seen by others; that it is matter of prestige, particularly for women; and that they view human excreta as a disgusting thing from which one should steer clear. While assessing any resisting forces, the study tells that there was an embedded cultural sense that latrine use and one’s defecation is so private that it should not be discussed in meetings; that safe, or unsafe, defecation is one’s own business; and that it is not a social responsibility. These feelings initially slowed down the speed of the movement.

It is felt that once this force is ignited in people during the original CLTS community mobilisation, it is extremely unlikely that they will return to open defecation. So, it may not cause people to rise up the ladder but it will ensure that they don’t fall off.

Using health cost savings

As a driving force for change, people said that the immediate observable benefit of reduced waterborne diseases served to fundamentally motivate them to move up the sanitation ladder. It is felt that the improvement in people’s own health (e.g. reduced incidence of diarrhoea) will ensure that they stay on the ladder, while the recognition that productive time, and money which would otherwise have been needed for medicines,

BOX 2 Case study: Nasima's innovation

Nasima Khatun, aged 40, of Mosmoil village under Bagmara Thana of Rajshahi district, said: *"I had severe economic problems and was struggling only for survival together with my husband, kids and two other brother-in-laws because my husband was unemployed. Our family income was very little but demand was high. We were, in fact, fully concerned with how we can earn money, collect food and support our kids for their education, but had no time to think about a good latrine. Moreover, we did not know about the use and importance of using a sanitary latrine."*

Since 2005, Nasima and her son, two daughters and two brother-in-laws have been using an attached toilet within her home. She has made a long journey, from open defecation to using offset pit latrine with ceramic pan. During 2001, VERC workers came to this village and organised a series of discussion sessions with the villagers on the 'excreta' issues. They helped villagers to visualise how villagers eat their own excreta, as most people were used to defecating in open places. They told how rain flushes away human excreta and mixes with nearby water bodies, and thus, comes in to villagers' stomachs when they wash. That discussion helped to create a necessary and common 'humiliation' among villagers about defecation in the open places.

After four to five days of being sensitised by the VERC workers, Nasima constructed a simple soil-pit latrine behind her house. By this time, her husband started to operate a small business, preparing and selling bamboo-made baskets for betel-leaf ('Paan' in local language) marketing. Betel-leaf is a popular agricultural product in this particular area. Her family income started to increase, and in 2002 Nasima decided to buy and

install a ring-slab, water-sealed latrine at her home. She feels her family esteem rose simultaneously with the installation of this sanitary latrine.

Nasima's family continued to use that water-sealed latrine from 2002 until 2005. During this period, her brother-in-laws had grown up and become earning family members. Nasima eventually became part of the economically better-off society of the village. They started thinking of advantages for women and children, comfortable use, good looking household latrine and also how to protect them from spreading of diseases through insects, etc. Finally, Nasima and her family decided to modify their latrine once again. At the end of 2005, Nasima constructed attached, off-set, twin-pit sanitary latrine within her house at a cost of Tk 5,500.

When asked about lessons learnt from her journey, Nasima said that improvement of household facilities such as latrines and tubewells depend on the economic ability, together with willingness of members of the entire family. This is also very much related to social dignity and prestige, which automatically takes place alongside economic development. She believes that her father-in-law died of lower abdominal pain caused by his open defecation. This has made her different from others and keen to change her attitudes and practices towards sanitary latrine. *"Now, common diseases decreased in my family and I can even say that it has stopped among our family members. And this was made possible only due to VERC workers' dedicated efforts; they taught us how to save our lives from excreta,"* added Nasima.

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has been saved, can lead to people choosing to spend more on sanitation hardware when the need arises, and thus rise up the ladder.

Methodological

At the heart of CLTS is the creation of Open Defecation Free (ODF) villages: the concept of "total

sanitation". The concept of self-help – 'no direct subsidy and no service delivery from an external agency' is central to this process: the involvement of the entire community and a multi-stakeholder participation process is judged to be effective in attaining the status of ODF. Within this, local culture and context-oriented multiple creativities and innovations (e.g. *many ways of doing and knowing*)

allowed people to come up with their own ideas and actions, and to implement solutions that suited their needs and resources. It is felt that this in depth awareness creation has led to sustainable outcomes, such as people wishing to retain hygienic behaviours. The fact that whole villages become ODF means that peer pressure is a factor that works against any relapse into old behaviours. It may also contribute to the desire to progress up the ladder.

Another very important methodological driver was to apply a low- to high-gradual progression principle, which enabled people to be engaged at their own capacity in the first instance. Blaming local government officials and line agencies is a common feature among people in Bangladesh. In CLTS, rather than blaming, a positive culture was fostered: encouraging each other by finding and sharing positive aspects created an appreciative discourse and attributes among communities, local government officials and government line agencies. This appreciative discourse successfully transformed negative into positive relationships and enhanced cooperation. This sense of community will also help to ensure that people stay on the ladder, or perhaps climb it to emulate others, by talking with other community members about moving up.

The range of technological choices was another driver. From the start, VERC displayed a range of technologies to community members as a central element of the awareness building process. So, community members will have been fully aware that there were options to implement “better” facilities when the time came to replace their first facility.

Increase in the number of suppliers

A simple explanation for increased suppliers – and a driver for climbing the ladder – is shown in the fact that wherever total village sanitation became embedded, the local private sector saw a market opportunity and they moved in to create a supply of materials and choices for community members. Such an opportunity had not previously been available.

Lessons and recommendations

A view is emerging that low-cost latrines themselves are a medium, and are not necessarily sustainable; instead, they act only as the basis to move up the sanitation ladder. But, it is a very important medium to start with because it obviously provides the framework from which to engage people in the entire process.

It has been pointed out that the outcomes of the process will sustain because individuals and the whole community recognise the benefit of latrine use and hygiene practices. This perception is supported by the fact that, without any external support, people are themselves choosing improved options and taking better care of latrines. Furthermore, people mentioned that local forests and jungles are regularly being reduced and that people are being forced to use latrines for this reason.

Past approaches to water and sanitation did not succeed in making major progress in coverage of latrines, even after a decade of effort (see for example Kar, 2003). In contrast, VERC-WAB’s approach showed its merits by helping to obtain total coverage of households in villages within 12

to 18 months. So, it is necessary for development scholars and practitioners to ask how this process can be made sustainable.

The study points out that the total village sanitation mobilisation process is now in danger of stagnating a little due to a lack of clear direction on 'what next'. Instead of direct service delivery, sustaining the process would require VERC-WAB to be retained as a facilitator to the people's institutions, which emerged in the early stages of CLTS. Many community organisations emerged out of the process and played a gigantic role, yet they could do with some back up during the next stages.

Sustainability of outcome is one issue and sustainability of *process* is another. The study found that successes made in terms of people's movement up the sanitation ladder result from applying processes of both development and social change. So it can be assumed that sustainability comes from sustainability of the *process* at the community level. The study tells that achievement of process and outcome sustainability would depend on the VERC's and the communities' efforts to systematise and institutionalise the processes that emerged in the first stage of CLTS. It is felt that this should include:

- Consolidation of organisational processes and structures that emerged out of the first stage
- Systematisation of Participatory Planning Monitoring Evaluation and Learning (PPMEL) process
- Integration of water resource management, disaster risk reduction as integral components of improved sanitation situation by all stakeholders
- VERC-WAB should retain its present role as facilitator and technical support provider to

community institutions with jointly defined phase out strategy, but then phase-out based on jointly defined exit strategy

- Advocacy towards enforcement of government policies by VERC, WaterAid and other sector advocates
- Conducting a study on gender in CLTS and ensure its integration.

These are spelt out in more detail below.

Consolidation of the organisational process and structure

Representatives of CBOs expressed their concerns about their destination; for example, who will support them in the absence of VERC, how they would be able to continue the process that has already been created, etc. All stakeholder categories that participated in the study expressed their strong desire for the process to be continued. There are huge numbers of CBOs, for example, in Kushumba Union of Manda there are 63 Community Water Sanitation Action Committees (CWSACs). These can be facilitated to act as micro self-help groups based on their own action plans to improve other components included in sanitation. The organisational processes and outcomes that have emerged from the approach need to be consolidated.

Participants engaged in the study recognised the weak implementation of the government policy at local level. Appropriate forms of organisation, which can be linked to the organisational structure of the local government body, thus become important. Among many, a fundamental reason is the absence of processes at the government agency level to make Ward Sanitation Task Forces (WSTF) and Union Sanitation Task Forces (USTF) functional and

active. This shortcoming needs to be addressed by VERC. To establish a consolidated institutional structure from village to union, a representative organisational structure starting from CWSAC to WSTF and USTF has been suggested by the participants of the multi-stakeholders workshop. Local government representatives perceived that it is quite possible to involve two representatives from each of the CWSAC as extended members in a WSTF, and this has started taking place.

Systematisation of Participatory Planning, Monitoring, Evaluation and Learning (PPMEL) process

Institutionalisation of community processes warrants integration of PPMEL processes in community-based organisations. Consolidated community organisational structures rarely function if the PPMEL process is not instituted within it. At present all CWSACs, USTFs and WSTFs have action plans, but no plan for the future continuity of the process they will encounter when VERC withdraws. Including this sustainability dimension requires the systematisation of PPMEL processes at the community-based organisations – an important task for VERC in the years ahead.

Capacity development of community organisations is another important area that needs to be addressed. In a process-oriented approach of development, capacity development of diverse community organisations is not usually high on the agenda, but integration of a process-oriented approach to organisational assessment and action should be an integral part of PPMEL.

Furthermore, this systematisation needs scaling up at the level of VERC's organisational learning. There

are enormous innovations and lessons created by the programme but documentation and sharing of practice-generated learning is inadequate.

Integration of water resource management and disaster risk reduction as integral components

While conducting a study session in the Kushumba Union of Manda, a woman in the community added: *"I have learned that water and safe defecation overlap"*. She explained that a hygienic latrine and its proper maintenance requires extra water supply per family. Depletion of both surface and ground water is a global issue. Bangladesh has some **15.6 million** rural households; if each household requires a gallon of extra water per day then significant pressure is placed upon water (and other natural) resources. This concern increases the importance of integrating water resource conservation and management as an integral part of water and sanitation programme. Natural hazard multiplied by vulnerability and divided by existing capacity determines a community's degree of exposure to the risks of disaster. The study shows that people's attainment of a higher step on the sanitation ladder was adversely affected by various natural hazards; particularly by heavy rainfall in the Lalmohon of Bhola districts.

With relentless collective effort, people have established latrines in their families as basic physical infrastructure of sanitation. However, if disaster risk reduction is not factored in, the whole process when exposed to hazard events may jeopardise achievements, as was the case for Lamohon. As a learning NGO, one of VERC's organisational strategies is to develop an innovative approach in the field of development. Relevant to its

organisational strategy, VERC can facilitate a community led water-sanitation project that integrates water resource conservation, sanitation, and disaster risk reduction as interlocking components.

VERC retains its role as facilitator and technical support provider to community institutions

The success of VERC-WAB's total village sanitation approach also influences policy. When VERC-WAB initiated this approach in 2003 it did not attract much attention. After three years of 'total village sanitation', the discourse not only entered into many national and international NGOs, but also into that of the Government of Bangladesh to the extent that it is implementing a national total village sanitation approach³. If VERC was to shift from a facilitating role to a direct implementing role it would mean going backwards. There is no denying that people need water-sanitation hardware support but this should not go by an operational strategy that drives out the community's role as implementer and VERC's role as facilitator.

Historical experiences tell us that better functionality and use of water-sanitation hardware unavoidably depend upon the intensity of software. Furthermore, the ongoing total village sanitation programme of VERC itself put forward a concrete example that software can act as the independent variable to improve the water and sanitation situation. Any discussion of future actions must place the provision of software support higher than considerations of hardware.

Enabling policy environment

It was mentioned earlier that the Government of Bangladesh is preparing for the implementation of its total village sanitation policy. Participants engaged in the study commonly expressed their observations of weakness in enforcing government policy. Participants held the view that while principles and processes of government policy look great written on paper, they are not implemented. So, VERC needs to play an advocacy role to create the necessary environment in which policy is translated into practice. Policy awareness creation among the community, monitoring of policy compliance and reporting are examples of such advocacy strategies.

Conducting a separate study on "gender in CLTS" and being deliberate to integrate this critical dimension

In a male dominated society, where men control economic resources, it is important that WAB-VERC conducts a separate study on the role of gender in CLTS. This is particularly crucial to see whether CLTS has generated positive effects towards changing the traditional role of males and females in water and sanitation. Furthermore, in a demand-driven approach in which community capacity to mobilize services from the market is a main factor in the sustainability of process and impacts, then the access of and control by women of economic resources is fundamental. Such a study should also look at the participation of women in the growth of supply chains to meet the growing demand for sanitation hardware generated by CLTS. Based on the study findings, WAB-VERC can be more

³ The Government of Bangladesh has prepared a paper for discussion entitled 'Country Strategy Paper for Community Led Total Sanitation' prepared by Arun Arya, Senior Sector Adviser, Unit for Policy Implementation (UPI) Local Government Division.

deliberate and focused on integrating gender dimensions in CLTS and other programmes.

VERC phase-out based on jointly defined phase out strategy

Participants and stakeholders involved in the study commonly held their views that VERC should continue its involvement until communities and their organisations have been able to run the process by themselves. Regarding the 'question of phasing out,' most participants responded that VERC should decide and phase out, based on jointly prepared phase-out plans. The study team recognises that the proposal of study participants is absolutely grounded on the principle of participation, and in which both people and VERC should move by reciprocal accountability – a very

fundamental essence of participation. Furthermore, people's proposal of developing area specific, joint phase-out plans makes sense because the capacity of different communities and their organisation in each operational area should not be assumed to be the same. Location/area-specific, joint phase-out planning thus appears to be the correct response.

Further Study

In addition to these observations, it is felt that further clarification of the specific drivers of progress up the ladder is required, especially to help to differentiate between those that led to people being motivated to adopt CLTS initially, and those that were part of the choice to move up the ladder when the time came to do so (or to standstill, or indeed to fall off).

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Annex 1

TABLE 1 Study participants

Manda			Sitakunda			Lalmohon		
Male	Female	Total	Male	Female	Total	Male	Female	Total
21	17	38	21	43	64	36	14	50

TABLE 2 Study coverage of families by region and category of population

Population category	Manda	Sitakunda	Lalmohon	Total
Landless/floating (hardcore poor)	48	2	5	55
Poor/lower class	135	48	25	208
Middleclass	84	30	40	154
Rich	2	0	5	7
Total:	269	80	75	424

TABLE 3 Pattern of latrine use and regional variations by category of population

Population Category	Changes in Latrine use Pattern					
	Manda		Sitakund		Lalmohon	
	2003	2006	2003	2006	2003	2006
Landless/floating (hardcore poor)	Low coverage 3F out of 48F (45F used open defecation, 3F used simple-pit)	Coverage 100% (22F use model-10, 17F use model-13, 6F use model-15 and 3F use model-5)	Coverage 0% (all 2F used open defecation)	Coverage 100% (2F shared)	Coverage 0% (All 5F used open defecation)	Coverage 100% All (5F) use general simple pit (model-1)
Poor /lower class	Very low coverage 3 out of 135 (132 used open defecation, 2F used model-15, 1F use model-1)	Coverage 100% (104F use model-10, 10F use model-13, 7F use model-8, 8F use model-5, 6F use model-15)	Coverage 0% (all 48F used open defecation)	Coverage 100% (22F use model-1, 14F use model 8, 10F use model-5, 1F use model 2, 1F shared)	Coverage 0% (All 25F used open defecation)	Coverage 100% (10F use model-10, 15F model-13)
Middle class	Low coverage 13 out of 82Fs used simple pit (69 families used open defecation)	Coverage 100% (83F use model-10 and 1F use model-8)	Coverage 0% (all 30F used unhygienic soil-pit)	Coverage 100% (10F use general simple-pit Model 1, 4F use model 8, 12F use model 5, 4 F use model 29)	Coverage 45% (7F used model-7, 10F used model-10)	Coverage 100% (22F use model 7, 18F use model-10)
Rich	Coverage 100% (2 families used model-15)	Coverage 100% (2 families shifted towards model-10 from model-15)			Coverage 100% (1F used model-1, 5F used model-7 and 4F used model-10)	Coverage 100% (5F use model-5 and 5F use model-7)

Note: for information on the models referred to here see Annex 2 of the main report (Saha et al, 2006)

TABLE 4 Gradual progress in the movement of latrine installation by time period

	Naogaon	Sitakunda	Bhola
2001-2006	70% latrines shifted towards ring-slab; 30% remains tin/motka latrines, but continuing to shift; Improved superstructures;	More that 40% families use simple-pit latrines; 25% use ring-slab, (25%) have moved toward offset-pit latrines and others (10%) use bamboo and shared latrines	Most (around 90%) coverage with model-10, 7 and 13, while others (10%) use simple pit latrines; Shift continuing among other than floating/hardcore poor and poor families
2002-2005	Full coverage by 2003, but among which 70% use motka/PVC bent pipe and simple pit latrines; Major shift to low-cost motka latrine from simple-pit took place; Underdeveloped superstructure and basement;	Major shift happened towards simple-pit latrine (model-1) from soil-pit/tree-latrine; Among middleclass families a shift was made towards ring-slab & offset-pit from simple-pit latrines; Massive latrine installation started during 2004	80% latrines were shifted towards offset-pit latrine (model-5 & 10) and plastic pan water-sealed offset latrines from plastic-pan simple pit latrine; Remaining families (20%) continue to use plastic-pan simple pit latrine; Superstructure improved as a whole
Baseline 2001	Existence of few sanitary latrines (water-seals broken); Most people used open defecation;	Most (around 75%) families used to use soil-pit/tree-latrine; Remaining (around 25%) families used brick-constructed open bottom latrines; Almost none used to hygienic use of latrines	27 families had latrines with different options, while 53 families used open defecation; Simple-pit was prevalent option and others were keyhole-pit and plastic-pan water-sealed offset pit latrines

TABLE 5 Gradual progress in the movement of latrine use by time period

	Naogaon	Sitakunda	Bhola
2001-2006	All people consistently use sanitary latrines; Cleanliness of latrines are maintained; Childs also use sanitary latrines	Everybody use sandal in latrine and wash hands after defecation; all latrines are properly maintained	No human excreta found here and there; All people properly use sanitary latrines including children
2002-2005	People started gradually to maintain cleanliness of latrine and personal hygiene; By 2003-04 all families started to use sanitary latrines	People in general sensitised on oral-faecal diseases by the staff and community leaders; Gradually increased the number of proper latrine users and reach 100% by the year 2004	Collective actions taken first for covering all latrines; Hygiene behaviour practices are ensured among all people at least after 1 year of full latrine coverage
Baseline 2001	People did not properly use latrines	Most people used to use home-based soil-pit latrine without maintaining hygiene; No open defecation probably because of living in urban settings	Hardly 5% of community people used to use latrine properly; Remaining 95% families did not know and aware about importance of proper latrine use

TABLE 6 Comparison of investment in latrine utilisation between 2003 and 2006
(424 family samples covered by the study)

Latrine model/ option	Cost per unit excluding superstructure In Tk (lower to higher cost option)	During 2003		During 2006	
		Number in use by number of families	Investment in Tk	Number in use by number of families	Investment in Tk
Model 1: General home made latrine	125	1	125	37	4,625
Model 13: Community innovated offset pit latrine (2) :	130	-	-	42	5,460
Model 2: Homemade latrine with bamboo lining	245	-	-	1	245
Model- 5: Offset pit homemade latrine	194	-	-	38	7,372
Model 15: Community innovated offset pit latrine (4):	265	4	980	10	2,650
Model-7: VERC keyhole pit latrine	395	7	2,765	27	10,665
Model 8: Water seal latrine	420	-	-	26	10,920
Model 29: Community innovated offset pit latrine (18):	339	-	-	4	1,356
Model 10: Offset pit latrine	724	10	7,240	237	171,588
Families sharing others latrines	-	-	-	2	-
Total		22	11,110	424	

Average investment per family in the year 2003 was $\text{TK } 11,110 \div 424 \text{ families} = \text{TK. } 26.20$

Average investment per family in the year 2006 was $\text{TK } 214,881 \div 424 \text{ families} = \text{TK } 506.80$

Total investment increase: $\text{TK } 203,771$

Average increase of investment per family: $\text{TK } 203,771 \div 424 \text{ families} = \text{TK } 480.59$

Average increase of investment per family in %: $100 \div 26.20 \times 506.80 = 1,934.35\%$

A background image showing two young children, a girl and a boy, smiling at the camera. They are wearing school uniforms. The girl is on the left, and the boy is on the right. They are standing in front of a wall with some posters. The image is faded and serves as a background for the text.

Hygiene promotion

Hygiene promotion

21. Menstrual hygiene: Breaking the silence

– R AHMED AND K YESMIN

22. Journey towards changing behaviour: Evolution of hygiene education in Bangladesh

– R AHMED

23. Assessment of hygiene communication plan in the aftermath of the 2005 earthquake in Pakistan

– F KHAN, R T SYED, D CASELLA AND R VERKERK

24. Creating user-friendly water and sanitation services for the disabled: The experience of WaterAid Nepal and its partners

– A PRADHAN AND O JONES

21 Menstrual hygiene: Breaking the silence

Rokeya Ahmed and Kabita Yesmin
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Abstract

Despite major developments in the hygiene and sanitation sector in recent years, the menstrual requirements of women and adolescent girls have been ignored. Overcoming this gap is vital. Menstruation is normal and natural, but many women suffer and die because of widespread ignorance and shame.

An awareness-building programme from WaterAid Bangladesh (WAB) helped put the issue on the development agenda. Menstrual awareness and management is now incorporated in all WAB and its partners' sanitation and hygiene programmes.

Introduction

The objective of most environmental health programmes in developing countries is to reduce deaths caused by exposure to disease. Priority areas include water supply and sanitation, solid waste management and hygiene education. Better excreta disposal facilities benefit men, women, girls and boys. They offer privacy, convenience and safety. But most sanitation programmes do not mention the needs of women and adolescent girls who use latrines to manage menstruation. It's a need that has been excluded from latrine design/construction and hygiene education packages. Even reproductive and preventive health programmes in developing countries often do not address the issue.

Menstruation is a natural process that occurs monthly in healthy adolescent girls and premenopausal adult women. Girls begin to menstruate usually between the ages of nine and 12. During her lifetime, a woman will manage menstruation on an average of 3,000 days.

Menstruation affects women's social life:

- A Hindu woman abstains from worship and cooking and stays away from her family as

her touch is considered impure during this time.

- Jewish tradition regards a woman as ritually impure during menstruation. Anyone or anything she touches becomes impure as well. Even her breath, spit, footprints, voice and nail clippings can be considered impure.
- Under Islamic law, a menstruating woman is not allowed to pray, fast or have sex. She is not allowed to touch the Koran unless it is a translation.

Women and girls in poor countries can't afford sanitary pads or tampons, which would normally be changed around four times a day during menstruation. Instead, the vast majority of women and girls in Bangladesh use rags. These are usually torn from old saris and known as 'nekra'. Rags are washed quickly (with a small clay pot or plastic tub of water called 'bodna') inside the latrine and used several times. There is no private place to change and clean the rags and often no safe water and soap to wash them properly. Even in their homes, a culture of shame forces women to find well-hidden places to dry the rags. These places are often damp, dark and unhealthy.

This practice is responsible for a significant proportion of illness and infection associated with

female reproductive health. Rags that are unclean cause urinary and vaginal infection. Very often serious infections are left untreated. This situation is common in urban slums and rural Bangladesh.

WaterAid Bangladesh initiative

WaterAid has been working in partnership with non governmental organisations in Bangladesh's water and sanitation sector since 1986. During 1999 and 2000 WAB and its rural partner VERC, developed and piloted an integrated, empowering and participatory approach to achieve 100% sanitation coverage. This was done in collaboration with communities in rural areas. It has become known as Community Led Total Sanitation (CLTS).

Simultaneously WAB's urban partner Dushtha Shasthya Kendra (DSK) and six other WAB partners implemented a similar programme in the slums of Dhaka city. These were significant steps forward, particularly as they ensured community participation in developing sustainable and effective hygiene and sanitation programmes.

Yet they failed to include the issues related to menstrual hygiene and management. This exclusion was undoubtedly due to the prevailing culture of shame, which created silence. Sometimes marginalised groups such as women and the poorest struggled to articulate demand. They require support, confidence and an enabling environment in order to make their voices heard. Often the social elite dominate the process if it isn't carefully facilitated.

From 2001-2002 the WAB programme team and its partners designed a larger water and sanitation programme to support both the rural and urban poor. WAB wanted to include menstrual hygiene and management into the programme, but, at first,

BOX 1

Shahana's story

Shahana, an 11 year old girl, lived in a remote village in the Sariatpur district in Bangladesh. She was a grade IV student. She used rags for managing her menstrual blood. One day after school she came home, changed the soaked rag, washed and dried it under a bean tree for reuse. A harmful insect settled on the rag. Without noticing the insect, she used this rag the next day. Unfortunately the insect entered her body through the vagina. She felt a serious stomach pain and was taken to hospital. A week later, she died.

found it difficult to talk about this with colleagues. Even the women were embarrassed to discuss the subject. It took almost a year to ease the discomfort and bring about open discussion.

Eventually it was agreed that it was important to incorporate menstrual hygiene and management into the Advancing Sustainable Environmental Health (ASEH) programme, which is funded by the Department for International Development (DFID). The objective was incorporated into the project memorandum. It is written in the Logical Framework ('logframe') as an 'Objectively Verifiable Indicator' (OVI). Writing this into the programme framework meant something had to be done to act upon the problem.

So, having decided that more understanding was needed about the beliefs and practice of menstrual hygiene and management, WAB and its partners carried out a baseline study in the slums of Dhaka city in early 2005.

The study found:

- 95% of women and 90% of adolescent girls use rags during menstruation.
- 40% of women change their rags only once a day while 75% of adolescent girls change three times
- 60% of women wash the rags in unsaved water
- 90% of women and 70% of adolescent wash the rags with only water
- 95% of women and 80% of adolescent girls reuse the rags
- The majority of women and adolescent girls dry the rags in dirty and dark places.

It found that causes of unhygienic practices were:

- Lack of awareness
- Lack of safe water and sanitation facilities for washing rags

- Lack of drying areas due to social unacceptability
- Sanitary pads are too expensive
- No separate toilets for women/girls at community and school level
- Toilets are not designed appropriately to change or wash the pads
- No space and facility at household toilets
- Women and adolescent girls don't share the problems with others; in some cases this culture of shame leads to serious reproductive health problems.

As a result of poor practice, women and adolescent girls face the following health problems:

- Scabies in vaginal area
- Urinal infections
- Abnormal pains
- Complications during pregnancy

Both male and female staff from WAB and its partners attended workshops to share the baseline findings. Female colleagues from different parts of the country shared their personal experience without hesitation. A colleague from one partner organisation shared Shahana's story (see box 1).

By coming to understand the suffering of women and girls, workshop participants became committed to addressing the problems. They developed a detailed action plan including strategies to increase awareness of women and girls in communities and schools. The group also decided it was necessary to be culture friendly, considering the different contexts in areas of Bangladesh.

The issue was discussed later with all WAB and partners' staff, through training programmes, workshops and focus group discussions. Finally, female frontline staff were given the responsibility

of discussing the issue in-depth with adolescent girls and women in the villages, slums and schools. (Cultural issues make it impossible for men to discuss this issue with women and adolescent girls.)

The discussion includes:

- Unhygienic practice (using cards with pictures to explain specific points)
- Negative impact on health due to unhygienic practice
- Hygienic practice: how rags should be washed, dried and stored; proper disposal of sanitary pads with demonstration (using a doll and picture cards); how to use pads and how to make low-cost home-made sanitary pads. In one area of Bangladesh, many tribal women/girls don't use anything
- Counselling for overcoming cultural barriers, especially embarrassment.

In late 2005, discussions began with the community on menstrual hygiene. In the first year WAB and its partners used existing materials from partner organisation NGO Forum to initiate the discussion. But in 2007, WAB developed a new set of materials which included picture cards, a pocket book and doll. They focused on adolescent girls since existing materials on this were limited.

The discussions helped raise awareness among different members of the community. So, for example, the subject was included in school teachers' training, under the school hygiene education programme, and in CBO Training (training of community leaders). Discussion sessions with school management committees and local government bodies aimed to break the silence, build awareness, and obtain support for implementation activities at different levels including household, community and education institutes. They were asked to take further

responsibility by including the issue in latrine construction and hygiene education beyond Advancing Sustainable Environmental Health (ASEH).

Latrine design and construction

Under the successful CLTS method, financial support for building household latrines in rural areas is not provided. Instead, partners' field staff motivate communities to construct latrines at their own expense. Now, they also encourage the community - including the male CBO leaders - to build women-friendly latrines. These include the additional space that is required for washing and drying their pads; a platform for washing may cost an extra Tk 50 to 70 (45-55p).

WAB provides financial support for the construction of toilet blocks in public places, such as markets, educational institutions and in urban slums. In all WAB-supported toilet blocks there are separate male and female facilities. In the new design, the female toilet is one to two feet wider than the male toilet. There is a one foot square raised platform and water facilities which allow the washing of rags, and a hanger to dry them. The wider female latrine also means children can accompany mothers if required, and sick or disabled people can receive help from others. It costs around Tk 500 (£4.50) more than a normal latrine. Disposal facilities are also provided.

Initially WAB-supported separate chambers in community toilets for menstrual management, but discovered that women prefer the arrangement inside the latrine rather than separate.

Outcomes

Experience is limited to date, but shows that this project has:

- Broken the silence and traditional thinking. Male and female discuss this openly without hesitation.

- Been incorporated in hygiene education packages and school sanitation programmes of WAB partners.
- Led to different designs of women-friendly toilets being developed and piloted.
- Led to Information, Education and Communication (IEC) materials being developed and made available for building awareness.

In September 2007 DSK conducted a sample survey in six slum communities of Dhaka city. In these communities they had facilitated discussion and provided safe water supply and latrines with menstrual management facilities before September 2006. They identified 100 women and girls through random sampling and found 89 percent of them wash their rags with soap and clean water and 50 percent dry them in the sun. A year before, the figure had been just 2%. Most of the women

already knew that it was important to dry rags in the sunshine, but in slums, it is difficult to get the appropriate space.

The existence of women-friendly toilets in slums, rural markets and schools symbolises the recognition of an important practical need of women and girls. This leads to empowered women and girls being able to share their problems in the development forum.

Conclusion

This brief report shows what has been achieved in a very short time to overcome the wall of silence that surrounds the issue of menstrual hygiene. There remains much to be done. But in setting this out, the authors envisage that it can form the basis for awareness building among all those active in the sanitation arena.

BOX 2 Kiron's story

I am **Kiron Prova Chakma** and am 32 years old. I live in Kharickung Muk para village about 8 km from the Rangamati district town.

I used to wear torn cloths for absorbing the menstrual discharges. I changed them once a day. I felt pain in my abdomen and became very sick and tired but didn't go to the doctor because I was shy. I washed the cloths and kept them in a secret place to use again. I learned from my elders to keep it secret from males. Even with other women we did not talk about it.

In October 2006, sister Dulari, the health motivator of Green Hill sat with all the women of the villages. After introducing herself she started talking with us about the hygienic management of menstrual periods. Initially, we were very surprised to talk openly about this matter. But when she helped us to understand that it is a normal process that occurs in the female body, just like defecation or urination, we started talking.

It was difficult to get the adolescent girls involved at the beginning of the discussion. But Dulari built up a relationship with them so quickly that, later, they all attended the session.

After we shared our experiences we realised that we are letting our own body be infected by harmful diseases. How unsafe we are! I have learnt three important things:

1. We should use soft and clean cloths for managing menstruation.
2. We should wash cloths with soap and dry them directly under the sun (to make them germ free).
3. We should preserve the cloths in a dry and clean place to use again.

I am very proud to say that I have changed my own practice and also have started advising other girls and women on what I have learned about menstrual hygiene. I also tell them that they shouldn't feel too shy to talk about this matter.

22 Journey towards changing behaviour: Evolution of hygiene education in Bangladesh

Rokeya Ahmed
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Abstract

Historically, sanitation received a lower priority in Bangladesh than safe water supply until it was realised that progress was dependent upon considering sanitation and hygiene issues. First attempts to promote hygiene were conducted in a traditional way: by telling communities - especially women - what to do and trusting that behavioural change would follow. Largely it didn't. So hygiene education was changed to hygiene promotion and a series of methods evolved that were participatory in nature and designed to encourage sustainable hygiene behaviour change by the community. In this paper, these processes are detailed along with the major agencies involved.

Introduction

Bangladesh is a small country of 148,000 square kilometres. With a population of 150 million people (World Infozone, 2007), it has by some distance the highest population density of any country in the world¹ of more than 1,000 per square kilometre (Third World Institute, 2003). The leading causes of child death are related to diarrhoea, malnutrition, vaccine-preventable diseases and respiratory infections. Like other developing countries in Asia, a large section of the people is illiterate and uninformed about basic health and hygiene. For cultural reasons, most women – particularly in rural areas – are largely confined to their homes and neighbourhoods.

The perceptions and practices of hygiene are frequently related with cultural values and religious perspectives. Cultural and religious views of society often define the perception of hygiene with the ideas of 'purity' and 'pollution'. Purification is often required for religious activities like saying prayers and worship, rather than for living a healthy life. As a result, people – and especially children – suffer from chronic malnutrition and repeated

¹ Of all countries except city states or small island states

episodes of preventable diseases such as diarrhoea. Effective ways of promoting good hygiene are essential for reducing the high toll of sickness and death, their impacts on people's lives, and on the domestic and national economies.

However, while the progress made in the field of sanitation has received some attention in the literature, the changing methods used in hygiene promotion have been varied and have not always been fully documented. So, the purpose of this paper is to bring together the key attributes of different methods to allow a process of analysis of their various strengths and weaknesses to emerge through consideration and discussion.

The paper therefore focuses on descriptions of various hygiene promotion programmatic approaches. In each case the steps to carry out the work have been documented in some detail. The highlights of each main process used in Bangladesh are provided in the main body of text, with some commentary (but no hard evidence) on effectiveness. The details of participatory elements within the key processes are provided in Annexes 1 to 3. In a fourth Annex, some of the tools used in these participatory processes are highlighted.

The following hygiene promotion processes are set out in the remainder of this document:

- In Section 4: CARE's SAFER approach
- In Section 5: WaterAid Bangladesh's IPE Approach
- In Section 6: A summary of other approaches:
 - UNICEF's SHEWA-B
 - NGO Phulki's Child to Child method
 - NGO Forum's networking for scale
 - DPHE DANIDA's work
 - The Plan/Dhaka Ahsania Mission DISHARI approach,

- some commentary on the roles of other key actors, including the government's Department of Public Health Engineering (DPHE).

In the final section, some commentary and general observations are given on the status of current efforts in the sector. In this way, the paper provides a reference document of the basics of the main hygiene promotion processes used in the country in the last two decades, but also provides a degree of analysis and commentary on the processes employed and the stage that has been reached.

Hygiene education – a traditional teaching process

Since independence in 1971, the Government of Bangladesh (GoB) has been implementing water supply and sanitation programmes. Large scale, national level programmes are implemented by the DPHE within the Ministry of Local Government, Rural Development and Cooperatives (MLGRDC). Apart from these, public utility service agencies and NGOs also implement water and sanitation programmes.

The first DPHE national level project received support from UNICEF, with funds also coming from various donors, mainly from Denmark and Switzerland. In its early years, all efforts were on the provision of safe water through the installation of tubewells with handpumps. Latrine construction and hygiene education received less attention, so expected health benefits did not result. It was realised that provision of handpumps alone is not enough to meet the challenges. In the 1980s, the view emerged that safe water, safe excreta disposal and improved hygiene must go hand in hand, and therefore an integrated approach was developed in the mid-1980s. This included latrine construction and hygiene education, which aims to educate and make people aware that prevention of water and

excreta-related diseases is best achieved through the widespread adoption of safe hygiene practices.

So hygiene education is a comparatively new term, though it is part of health education, which is concerned with the prevention of disease related to water and sanitation (Boot, 1995). Health education is a widely used term in preventive medicine directed to promote healthy lifestyles. Historically, or traditionally, health professionals would define health education as a *one-way* approach – a sort of information dissemination. Like health education, hygiene education relied on the techniques of formal education under which most professionals have been trained. This model of education is basically a one-way, teacher dominated delivery system. In some cases, the approach used by the education worker to work with communities would not be based on the principles of community development, i.e. respect, dialogue and negotiation with community members. In this model, information is passed from the 'expert' to the 'learner' or 'pupil'. This kind of approach has the comparative advantage that relatively few staff members are needed and it generally costs less time and money. The assumption was that people being told what they should do by hygiene educators will then proceed to follow those instructions, resulting in improved health for the individual.

This traditional method represents a generalised approach to promoting hygiene, which was designed for mass audience coverage. In other words, it is an approach, which uses the same educational material for all audiences despite cultural differences, or differences in norms or beliefs that may exist within Bangladesh. As is often the case, educational materials are pre-packaged and the information describing healthy behaviour is standardised. After a three-year

pilot phase, the integrated approach was reviewed in 1989 and it was found that general health messages do not work, even when they are disseminated through person to person (Boot, 1995).

One of the main problems with this model is that achievement is often reduced to meeting quantitative targets related to exposure to the message, or ability to recall facts. These targets indicate coverage (e.g. number of school children informed) but do not indicate the resulting behavioural changes. Field workers often cite the fact that many recipients of hygiene education in Bangladesh can recite the information they have received as proof of programme success, and there was an assumption that by having the information, individuals will then take steps to improve their health, but this generally didn't happen (Jahan, 2006).

The fact that this sort of approach does not work in practice, has led practitioners in Bangladesh to seek to adopt more culturally aware, and more participatory methods of engaging with the community in hygiene awareness development. In a way, this process mirrors (and indeed is part of) the progress made in sanitation: the recognition of a need to move from supply-driven hardware provision to demand-driven hygiene promotion.

Social Mobilisation for Sanitation

The Government of Bangladesh, with assistance from UNICEF, launched a national programme in late-1992 called "Social Mobilisation for Sanitation (SOCMOB)" with the intent of using the dynamism of social mobilisation by involving people from various social strata in the efforts of promoting sanitation coverage (Ahmed and Mujibud Rahman, 2000). NGO Forum for Drinking Water Supply and

Sanitation implemented the project from April 1993 to March 1996 in three phases through its NGO partners in 20 diarrhoea-prone *thanas* (sub-districts) of five administrative divisions of Bangladesh. The project covered advocacy, social mobilisation and programme communication. Social mobilisation involves the creation of a social movement of a particular programme by mobilising all kinds of allies at national, regional and community level. Social mobilisation is the glue that binds advocacy activities to more plan- and behaviour-oriented communication activities (Boot, 1995). As a result of the SOCMOB project, latrine coverage increased up to 93% in intervention areas, about 60% were clean. Although the number of people washing their hands before eating and after defecation increased, the actual practice of washing hands remains unchanged. The message was clear, but little effort was given towards training on how to wash hand properly (Habitat International Coalition et al, 1998).

An innovative approach: CARE SAFER

The SAFER (Sanitation and Family Education Resource) approach, well known to many water and sanitation professionals, evolved over a period of ten years. CARE Bangladesh first started its water and sanitation work after a devastating cyclone in 1991 in Chittagong Division's coastal area. The Water, Sanitation and Hygiene (WASH) project focused primarily on provision of tubewells and latrines, and on rehabilitation of cyclone-damaged water or sanitation facilities. After learning from the WASH experience that people did not always make proper use of such facilities, CARE started SAFE (Sanitation and Family Education), a follow-on hygiene education project in the same region, in 1993. SAFE tested two models of community hygiene education for behaviour change: (1) "single-channel" and (2) "multi-channel" models.

In model 1, groups made up of hand tubewell caretakers, their spouses, and other users were the primary recipients of hygiene education. Model 2 used similar techniques, but with diverse populations, including children and all-male groups at tea stalls or markets. When it was proven during the SAFE period that the second model was the more effective of the two (Care, 2008), the SAFER programme (1995 to 2001) was based on the "multi-channel" approach. An experimental, process-oriented style with an unusual degree of flexibility has been given to achieve SAFE and SAFER objectives. Like SAFE, SAFER is designed as a "software-only" project, building demand for water and sanitation improvements but almost never providing any physical facilities, or "hardware." These facilities were provided by other local sources.

The SAFER behaviour change model is distinctive in its simplicity, its emphasis on sanitation and diarrhoea prevention, and its communication style. There are three sections in the standard SAFER communication model: (1) sanitation and hygiene, (2) safe water, and (3) diarrhoea prevention and management. Each section includes a few clear and simple messages, presented visually in flash cards, in games, in pop-style songs, stories, or participatory action learning exercises.

In SAFER, community people are always actively engaged in their own learning process. They handle the materials and explain the messages in their own words. The SAFER communication technique minimises lecturing by the expert; and distinctive types of on-the-floor, semi-circular seating arrangements also encourage audience participation.

Community assessment through using PRA (Participatory Rural Appraisal) tools and techniques,

focus group discussion, key informant interviews, structured site observations, and other qualitative methods were used. These assessment methods were the basis of content development for problem identification, analysis and action planning as well as being used for monitoring and evaluation. The qualitative assessments allow community members and field workers to examine problems and define solutions that fit into existing community norms and practices (Hanchett et al., 2001).

BOX 1 Stories used in the SAFER programme

Two stories that are most popular and widely used are 'Fairies and Devils' and 'Bhulu-Pushi': each told with their own set of flash cards. They are detailed in Annex 1. Another story oriented to mothers is '*Brish: Kamon Ache*' ('How Is Brish?'). This is a gripping narrative of a marriage followed by an anxious period when the bride has trouble conceiving. After the birth of a much-wanted baby boy everyone is happy again, but the mother does not follow the recommended hygiene practices, and her baby gets diarrhoea and dies.

The model is based on recognition that each situation is different and requires methods that are appropriate to a particular community. The practical and sequential components of the model include the following:

- Discussions on establishing the links between behaviour change and personal benefits such as health benefits or financial savings
- Acquisition of knowledge and skills through participation
- Development of locally appropriate solutions through joint partnerships with the community taking into consideration the local values, beliefs and practices
- Continuous adaptation of changes by the community
- Work on a series of small steps to behaviour change that are manageable, achievable and result in recognisable health benefits.

Using this approach, facilitators or field workers, serve as partners of community change rather than as teachers who impose pre-determined solutions. This method yields the best results when it employs the participation of those affected. The participatory technique is consistent with the elements underlying the concept of "critical health literacy" (Jahan, 2006). The essence of development is to empower people to take charge of their own health and to foster a spirit of self-reliance.

This cycle proved an effective way to understand current beliefs and to learn about how actual behaviours deviated from ideal ones. The result was an "incremental approach to improving hygiene behaviour," which differed in its simplicity from the prevailing intervention methods.

The range of SAFER hygiene behaviour change activities is aimed at promoting the sustained adoption of a full set of 13 basic behaviours that are most likely to prevent diarrhoea under Bangladeshi conditions:

1. Hygienic latrine (pit or water-seal) use by all family members;
2. Fixed-place defecation by young children (ages 3-5);
3. Safe disposal of children's faeces;
4. Keeping courtyard and other public areas clean, and free of faecal matter;
5. Six crucial times of hand washing (always with soap or ash): after defecation, before serving/cooking food, before feeding children, before eating, after cleaning an infant's bottom and after disposing of children's faeces;

6. Covering cooked food;
7. Drinking 'safe' (pathogen-free) water only;
8. Never priming the hand tubewell pump with pond water;
9. Domestic water management;
10. Keeping the water collection vessel clean;
11. Covering the water collection vessel when going to and from the tubewell;
12. Pouring water out of the drinking water vessel rather than dipping a cup into it;
13. Diarrhoea prevention and management: all the above practices, plus continuing breastfeeding and normal feeding during a child's diarrhoea episode and preparation of oral saline solution.

This basic set of hygiene practices is promoted in many different ways (See Annex 1). The main materials are as follows:

- The "flash card": an A4-size colour drawing laminated in plastic used as the basic material by all programmes;
- Transect walks with people to open defecation sites and discuss the bad smells and environmental pollution, especially pollution of water sources;

- A series of popular children's games ("Snakes and Ladders," or "*Ludtli*") and stories (Box 1), all accompanied by visual materials;
- A wide assortment of locally available materials and processes to mimic the spread of faeces across living areas and compounds (see Annex 1).

As men seldom attended the sessions, the women suggested having separate sessions for them at their habitual meeting places. This proved to be an excellent way to help male members become aware of hygiene issues (Annex 1).

WaterAid Bangladesh: The IPE approach

The programme approach of WaterAid Bangladesh is known as IPEA-SWESHP, which stands for Integrated, Participatory and Empowering approaches to Safe Water, Environmental Sanitation and Hygiene Promotion (referred to here as the "IPE approach" for brevity). This combined learning and practices from the SAFER method described in the previous section and those from SARAR²

² SARAR is a participatory education and training method for working with stakeholders at different levels to use their creative capacity for problem solving and planning. The concept was developed in field based training of rural extension workers in Indonesia, India, and the Philippines in the early 1970s and in Latin America toward the end of the decade. The method has been used extensively in the development activities of various UN agencies, including UNDP and UNICEF, and by many NGOs to implement adult education, agriculture, water and sanitation and HIV AIDS programmes. The acronym SARAR stands for S - Self-esteem: a sense of self worth as a valuable resource for development; A - Associative strength: the capacity to define and work towards a common vision through mutual respect, trust and collaboration effort; R - Resourcefulness: the capacity to visualise a new solution to a problem against all odds, and the willingness to be challenged and take risks; A - Action Planning: combining critical thinking and creativity to come up with new, effective, and reality based plans in which each participant has a useful and fulfilling role; and R - Responsibility: for follow-through until the commitments made are fully discharged and hoped for benefits are achieved. It is used to (1) generate community awareness and commitment to address development problems; (2) engage stakeholders in planning, problem solving and evaluation (3) Build stakeholder capacity to assess, prioritise, create, plan, organise and evaluate development (4) empower people to take initiative and responsibility for decision making and (5) create awareness of and helping train staff in the use of participatory approaches. The method incorporates the participants' own life experiences, local perspectives, feelings, values and relevant social data in development projects and encourages innovative thinking. It also encourages participants to learn from local experience rather than from external experts. SARAR replaces 'top-down' approaches to development with a facilitation approach and help communities take more control over their own development by involving women and non-literate people in development planning and decision making.

and PHAST³. WaterAid Bangladesh (WAB) feels that IPEA-SWESHP offers a more flexible and effective approach than its predecessors such as SAFER, because it (1) integrates 'hygiene behaviour change' activities into a broader social development context, which engages the whole community to consider water, sanitation and hygiene as a common public health issue and (2) promotes the use of hardware facilities (water and sanitation) by all of the people at household and community level (bazaar, bus stop, school, etc).

The IPE approach is based on *three* principles:

- **Integration:** safe water supply, environmental sanitation and hygiene promotion are addressed simultaneously;
- **Participation:** The whole community, including the hardcore poor, are actively involved in project planning, implementation, monitoring and evaluation. Individuals in the community are trained to become trainers; the community determines the best water supply and sanitation infrastructure option and hygiene promotion education inputs are facilitated;
- **Empowerment:** People's capacities, skills and indigenous knowledge are recognised and valued.

Support is provided in the form of capacity building to strengthen the ability of individuals who emerge as leaders to work as agents of change

within the community. Communities act as facilitating agents in their neighbouring areas. Empowered communities increase their confidence to analyse and voice their needs constructively to local government agencies or other development programmes.

The approach forms the basis of Community Led Total Sanitation (CLTS). Village Education Resource Centre (VERC), a rural partner of WaterAid, piloted the CLTS/ full sanitation approach in 1999-2000, following the key principles of the IPE Approach, in response to the poor impact of previous attempts to improve sanitation (Ahmed, 2006).

The CLTS approach is based on the assumption that, once the issues have been understood, communities have the commitment and ability to overcome their water and sanitation problems themselves. Field staff members assist communities in drawing up a behaviour-focused working definition of full sanitation (Box 2), through which communities come to recognise that in the area of water and sanitation, the behaviour of an individual has a direct impact on the health and wellbeing of others. Community mobilisation is triggered and the community plans and implements sustainable solutions that meet their own needs.

All partners of WaterAid Bangladesh use the IPE Approach in the rural and urban context as a 'toolkit' for implementation programme activities,

³ PHAST – Participatory (P) Hygiene (H) and (A) Sanitation (S) Transformation (T) – is an innovative approach to promoting hygiene, sanitation and community management of water sanitation facilities. It is an adaptation of SARAR's methodology of participatory learning. It allows communities to assess their condition on their own and to build confidence to undertake actions to improve their situations. It promotes health awareness and understanding which, in turn leads to environmental and behaviour improvements. The whole process is participatory, and the community develops their own plan of action to improve their sanitation conditions. It relies both on the training of extension workers and on the development of graphic materials. UNDP, World Bank- Regional Water and Sanitation group- East Africa and WHO jointly developed and tested this approach in Africa in 1993. A basic principle is the recognition and affirmation of people's inborn abilities. The PHAST initiative puts these principles in to operation at community level in implementation of water, sanitation and hygiene education programmes.

BOX2**CLTS: more than open defecation free communities**

A working definition of full sanitation as defined and used in the VERC/WAB programme (VERC, 2002):

- No open defecation or open/hanging latrine use
- Effective hand washing after defecation and before eating / taking or handling food
- Food and water are covered
- Good personal hygienic practices, such as brushing teeth and trimming nails
- Latrines are well managed
- Sandals are worn when defecating
- Clean courtyards and roadsides
- Garbage is disposed of in a fixed place, such as a pit
- Safe water use for all domestic purposes
- Water points are well managed
- Waste water is disposed of down drains or in a fixed place
- No spitting in public places

while considering the context of their specific target communities, and following five main steps (see Annex 2 for details):

Step 1: Baseline information collection

Step 2: Problem identification and analysis

Step 3: Formation Action Committees and planning hygiene promotion intervention

Step 4: Promoting behavioural change

Step 5: Monitoring and evaluation including participatory monitoring by the community

Other approaches

UNICEF: SHEWA-B

UNICEF has been supporting water, sanitation programmes in Bangladesh since independence. From the mid-1980s onwards, it has included hygiene education as an integral part of its water and sanitation programme with the Government of Bangladesh. In January 2007, UNICEF and the

DPHE, on behalf of the Government of the People's Republic of Bangladesh, launched their new programme named "Sanitation, Hygiene Education and Water Supply Programme in Bangladesh (SHEWA-B)" with financial support from DFID to ensure adequate sanitation and safe water supply in un-served and under-served areas, particularly for the poorest and with a special focus on women and children. Hygiene education and community mobilisation are implemented by appointing local NGOs. UNICEF has already piloted the following process in some communities:

- **Community Hygiene Promoters:** The local NGO appoints Community Hygiene Promoters (CHP) for community mobilisation and hygiene promotion. Each CHP is responsible for a "Ward" (around two/three villages, maximum 500 households);
- **Participatory baseline:** Like CARE's SAFER and WaterAid Bangladesh's IPE approaches, at the beginning the community situation is analysed using PRA and other participatory tools and techniques to understand the present situation, e.g. through facilitating a transect walk with representatives of 20-50 households to assess the WATSAN situation of that area. During the transect walk the community people look for evidence of open defecation, hand washing practices, types and condition of latrines, types and condition of water sources (platform, drainage system), water collection practice and use of unsafe water (e.g. arsenic contaminated and pond water) for drinking, cooking and food preparation;
- **Review, social mapping and action planning:** After the transect walk the CHP assists the participants to think through the implications of poor hand washing, unsafe water options

and its use and open defecation, particularly the risks to their health, self respect, comfort, safety and privacy. After the transect walk the community people also draw a cluster/village/ward map with special focus on the hygiene, sanitation and water situation. After the community situation analysis, a Community Action Plan (CAP) is developed by the community mentioning its problems and how they will be solved. The CAP includes a timeframe and names of the people who will be responsible for specific tasks.

The CHP helps the group work, focusing on the following 11 behaviour changes:

1. No open defecation;
2. All household members older than five years, including poorest household members, use their own or shared latrines (one latrine for maximum two households);
3. All the latrine users use sandals in the latrine;
4. Faeces of children younger than five are disposed of in a hygienic latrine or buried in a hole;
5. Household members keep the latrine clean and make soap/ash and water available at or nearby the latrine;
6. Households in flood prone areas construct and use raised latrines;
7. Households reinstall latrine after flood, if necessary;
8. All members practicing hand washing with both hands and soap before preparing food, feeding children and eating and with soap or ash after defecation, cleaning baby's bottom;
9. All households always cover food;
10. Households keep their drinking water stored in a clean and covered container;
11. Use of safe water sources, such as a tubewell, ringwell, and rainwater for washing raw fruits and vegetables.

Each CHP visits each household once every two months to observe hygiene practices of households (good and bad) and maintains a book/record on observations, discussions on key hygiene practices (UNICEF, 2007). Based on the observations and discussions, the CHPs conduct hygiene promotion sessions with different local forums (details in Annex 3):

- Courtyard meetings;
- Facilitation sessions with men in tea stall/ grocery shops at ward level;
- Focus Group Discussions (FGD) on menstrual hygiene;
- Group meetings with working people, e.g. day labourers.

Phulki Child to Child

Phulki is a NGO that has been working since 1991. Phulki introduced the Child-to-Child (CTC) approach for hygiene education in Bangladesh. The assumption behind the approach is that children have the will, skill and motivation to learn and educate one another. A group of 10 children of 8-11 years of age are selected and trained on primary and preventive health care, e.g. nutrition, immunisation, personal hygiene, pure drinking water, use of watertight sanitary latrine, child rights and gender issues. Each of them is assigned the task to pass the learning on to 10 of his/her brothers/sisters or friends and also parents, neighbours. Thus, the messages of a better life are transmitted among these children in their own language, but in a direct way.

WaterAid Bangladesh has been providing financial support to Phulki since 1998 to implement a water, sanitation and hygiene promotion programme in the slums of Dhaka city through the CTC approach, to establish a resource and training centre for providing capacity building support to WAB's other partners to incorporate the CTC approach in their water sanitation programmes, and to scale up the approach in the sector.

The child leaders (a batch of 10 children) first receive training from field trainers on a particular topic and then they disseminate what they have learned among 100 children, parents and neighbours (10 each). After dissemination of the message(s), the child leaders also visit their friends' houses to ensure the practice of the new behaviour. Once per month the field trainers also sit with the friends/brothers/sisters of the child leaders and participate in the household visits. Now and then, the leaders organise a cultural programme (drama, songs) in the community to strengthen the promotion by the children. Occasionally, the child leaders and their friends observe community cleaning day (where all children participate to clean the community). Phulki developed different materials to train the child leaders and also use these materials to help child leaders to disseminate their learning among their friends/brothers and sisters as follows:

- **Flash cards** on personal hygiene (picture of dirty girls and boys and picture of clean girls and boys), garbage collection (how the slum children can collect garbage by taking safety measures), water pollution (how water is being polluted at source and also while carrying and preserving) purification of water (different cost effective ways of water

purification), causes of diarrhoea disease (picture and description of all different causes) and treatment (making saline);

- **Games** (Ludo, Charki);
- **Rhymes**;
- **Scripts** for drama;
- **Stories** for role-plays.

NGO Forum for Drinking Water Supply and Sanitation

The NGO Forum for Drinking Water Supply and Sanitation (NGOF) has been working in Bangladesh since 1982 to ensure the basic needs of safe potable water, sound sanitation practices and maintenance of personal hygiene for the distressed population. Their mission is to initiate a radical change in the depressing water supply and sanitation situation in the most densely populated country in the world. NGO Forum is a networking organisation. They themselves don't implement programmes; rather, they coordinate more than 600 local non-governmental organisations. NGOF developed many materials for hygiene promotion, such as:

- **Flip charts** (e.g. on the use and proper maintenance of latrines);
- **Posters** (e.g. on hand washing, effects of open defecation, disease transmission routes);
- **Leaflets** (e.g. how to construct different types of hygienic latrines, use and maintenance of the water seal, ways of a healthy life);
- **Flash cards** (e.g. on personal hygiene, menstrual hygiene);
- **Booklets** for school sanitation programmes, training manual and guidelines to orient local government representatives and religious leaders;

- **Rhymes, stories and a video** on arsenic contamination of drinking water.

The Forum provides training support to field workers of NGOs (mainly small and medium size NGOs) on how to facilitate hygiene promotion sessions using different materials. Any organisation can purchase their materials and can also receive training from them.

NGO Forum's partners mainly facilitate regular sessions on sanitation and hygiene in women's groups through courtyard meetings (using flash cards, leaflet and flip charts), men's groups through tea stall sessions (using posters and leaflets) and children groups through the Child-to-Child approach. With the collaboration of partners they also organise periodic rallies, seminars and local training programmes for mass coverage, mainly using leaflets and posters. NGO Forum also broadcasts programmes on TV and radio.

DPHE-DANIDA Water Supply and Sanitation Project

An intensive hygiene promotion programme is undertaken under the DPHE-DANIDA Water Supply and Sanitation Project. It is conducted through household visits, courtyard meetings, community meetings, school and tea stall sessions, video shows, popular theatre shows, children's rallies, miking (rally with messages and slogans spread through a (hand) loudspeaker, International Health Day campaigns, etc. by the staff of partner NGOs. Different kinds of IEC (Information, Education, Communication) materials are distributed for mass dissemination of standard messages, on, for example, *ludu*, *pussles*, stickers, pocket notebook, calendars, poster and display boards.

DISHARI

The Decentralised Total Sanitation Project (DISHARI) of the Dhaka Ahsania Mission (DAM) started in March 2004, with funding from Plan Bangladesh, WaterAid Bangladesh, and the Water and Sanitation Programme (WSP) of the World Bank. The aim is to develop an **Upazilla-based total sanitation model** steered by the local government (Union Parishad) and with the participation of local departments of the government, NGOs and communities. DISHARI is implemented along the lines of the CLTS approach. The NGO first organised and facilitated a five-day residential workshop with local government representatives to motivate them and build their capacity for pursuing full sanitation in their community. Then, with the active participation of the local government representatives, the NGO's facilitators organise and motivate the community people and help them to form action committees in different tiers:

- a *Union Task Force* at Union level (the lowest level of local government, covering about 10 to 15 villages with around 4000 households);
- a *Ward Task Force* covering around ten *paras* (clusters/hamlets); a union consists of nine wards;
- a *Para Action Committee* in each Para (cluster/hamlet) which represents some 50-80 families.

Seven to ten men, women and adolescent boys and girls are the members of the Para Action Committees. These committees mainly take the leading role in improving hygiene practices in their own community. Instead of facilitating regular courtyard sessions with different groups, the members of the Para Action Committee (often in the presence of the DISHARI worker or local

government representatives) gather people of the cluster and discuss one particular issue, using PRA and other participatory techniques such as:

- **Body mapping:** In a drawing of a human body, villagers mark different body parts with symbols for the various diseases, including those related to sanitation, hygiene and water that affects these parts;
- **Latrine or water source visits:** First, the group visits three to four latrines or water sources for structured and unstructured *observations*; then the members discuss the *good and bad practices* from their observations, identify the behaviour required to change, and develop the *action plan* for behavioural change, mentioning the timeframe and responsibilities
- **Participatory monitoring:** After two to four weeks, the Action Committee repeats the same activities to review progress and plan/encourage further action;
- **Food hygiene:** In a plate of food (any kind of snack) the facilitator (who may be one of the trained community members) mixes a hair, a leg of a fly, a dead mosquito or a drop of spit with the food and offers the plate to the others to eat. When the people refuse to eat the dirty food, the facilitator initiates a discussion on how they are eating these types of dirty food (even worse than these) without knowing. The participants identify the causes and effect of their present practices and develop an action plan for change;
- **Hand washing:** Soap, a jug of water and two bowls are used as material. The facilitator invites a person (mainly children) to wash their hands first with only water in one bowl and the second time to wash their hands with soap and water in another bowl. Then the facilitator asks if he or she can drink the dirty

water of the second bowl. When a negative response is given, the facilitator initiates the discussion on how every day we are eating the dirt that has come off the hands washed with soap along with our food, to create a commitment for the improved practice. In Bangladesh, people generally wash their hands with only water before eating food;

- **Drama, role-play and demonstrations** of bad and good behaviours performed by the community people themselves, and showing the impact on people's health and livelihoods.

As DAM is the partner of WaterAid Bangladesh, it sometimes uses also the tools and techniques from the WAB hygiene promotion guidebook.

Para Action Committee members work voluntarily without remuneration. They are trained under DISHARI to facilitate hygiene promotion activities and sessions with groups of fellow villagers. In the preliminary stage, DISHARI workers help them by facilitating through demonstrations. The local government representatives are also aware of good and bad hygiene and sanitation, and support the participatory activities and local action plans through community visits and speeches in different community meetings.

Department of Public Health and Engineering (DPHE)

DPHE is the national lead agency for water supply and sanitation, facilitating both the rural and urban sub-sectors. Most of the senior staff members of DPHE have a technical (civil engineering) background. In the donor-funded project of DPHE, the hygiene promotion part is being implemented

by appointing NGOs. Training of these NGOs is being provided by recruiting other NGOs or at a private training institute. DPHE's training division mainly designs and coordinates those parts of the training programme that focus on issues related to technology and financial management. DPHE staff themselves have recognised that with access to physical facilities communities need to be aware of hygiene through hygiene promotion. But DPHE does not have any staff in the training division with the expertise required to recruit capable NGOs for training on and implementation support to community hygiene promotion. Recently, and with the financial support of the DPHE-UNICEF project, DPHE recruited a small number of staff in a separate division with a background in social development, but they are comparatively junior in position.

Other sector actors

The *Bangladesh Rural Advancement Committee* (BRAC) is the largest NGO in Bangladesh. It recently received funds from the Dutch government to implement a large-scale water and sanitation programme. BRAC is a well-reported organisation for the capacity building of NGO professionals in the areas of micro finance, informal education, primary health care, etc. However, its experiences with the implementation of integrated water, sanitation and hygiene education programmes is limited. BRAC is comparatively new to the area of hygiene promotion and its intervention is still in the design phase. Given its developmental experience, however, it is expected that BRAC's engagement will add value in the near future.

Plan Bangladesh provides financial support to different NGOs for implementation of the integrated water, sanitation and hygiene promotion

programme. But Plan Bangladesh did not develop any hygiene promotion activities and also does not provide training support on hygiene education to its partners.

Conclusions

Shift to hygiene promotion: In Bangladesh, most of the key actors in the water and sanitation sector now use the term "hygiene promotion," which emphasises overall behaviour change instead of "hygiene education," which focuses on disseminating information about new/improved behaviours. In the CLTS approach, safe sanitation, water supply and hygiene are being looked at from the point of view of promoting a wide range of safe practices, which is wider than facilitation of hygiene education sessions on some key behaviour.

Shared learning through partnerships and training: The original CLTS approach goes beyond ending open defecation and also gives more emphasis on empowering the community to understand the effects of unhygienic behaviour and building commitment and skills to gradually shift the whole community towards the whole range of hygienic practices. After CARE SAFER and the CLTS experience of WaterAid Bangladesh and VERC, and also after WAB's urban partners' experience in implementation of an integrated programme in slums, most of the sector actors have now developed or reviewed their programme from the experience of these two innovations, either through direct partnership or by receiving capacity building support.

CARE SAFER, for example, had a partnership with the WATSAN Partnership Project (funded by SDC) and UNICEF. WaterAid Bangladesh supported its 27 partner NGOs, including NGO Forum, Phulki and

Dishari and also provided training support to World Vision Bangladesh, DPHE-DANIDA Coastal Belt project, DPHE-WHO project, ICDDR, BD, TDH-Italy and Local Partnerships for Urban Poverty Alleviation UNDP/UN-Habitat/LGED/Project.

Hygiene promotion programmes in different sector agencies: At present, UNICEF (in partnership with DPHE and NGOs), WaterAid Bangladesh (in partnership with local NGOs), DANIDA Coastal Belt Project (in partnership with DPHE, NGOs), BRAC and NGO Forum are implementing major water and sanitation programmes in Bangladesh with a special focus on hygiene promotion. Most of the actors have developed their own materials, which follow participatory processes and have similarities. Generally the renowned organisations in Bangladesh don't want to implement a programme following another organisation's approach and materials. To enrich the approach, the main stakeholders coordinate among themselves and contribute to each other's programme. They even

sometimes receive capacity building support from each other. But after receiving training/orientation from expert organisations, most of the time the recipient organisations blend the approaches with their own approach, rather than following it exactly. There are even examples of redesigning materials on the same topics with minor changes.

Time for assessments of costs and effectiveness: Due to the above reasons, a good number of approaches and materials have been developed for hygiene promotion in the last ten years and are available in the sector. Therefore, it is now a good time for the programmes to see how effectively the interventions have changed behaviours and created community capacities for sustained action, how well improved behaviours are sustained and new issues taken up, and at which costs these outcomes are being achieved. This will enable us to show what progress has so far been made and where further improvements are possible.

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Annex 1 Participatory Methods in SAFER

The various types of participatory extension methods used by SAFER are as follows (Jahan, 2006):

- **Courtyard sessions** These are participatory and lively small group discussion sessions mainly using flash cards facilitated by field workers with mostly 15 to 25 women, although men are also invited to attend. Participatory learning techniques and other interactive training methods are used. Participants themselves shared their experience. At the end of each session, participants describe what they would do differently to improve their hygiene behaviour and overall community health;
- **Child-to-child communication sessions** Field workers conduct sessions to encourage children to play interactive games that incorporate the links between good hygiene behaviours and improved health. The programme is based on indigenous games, poems, stories identified from within the community and adapted to serve an educational purpose. The children recite rhymes and play games with hygiene/health messages. They are the main artists in role-play. Child leaders monitor the hygiene practice in their own family and also at their friends and neighbours;
- **Tea stall sessions** Men play an important role in decision-making in Bangladesh. For example, they are responsible for the decisions to purchase and install hardware (latrines and tubewells). They also exercise considerable influence on the shaping of society norms, which affect the freedom of movement of field workers and the opportunities for women to gather in a place and discuss hygiene behaviour. Although courtyard

sessions were meant for women and men, in practice only two or three men tended to attend. The sessions were being conducted during the day when men were busy working. Even the few men who did come lost interest, assuming that these sessions were really only for women and the men themselves did not need any health education. At this point, the community members suggested that hygiene sessions should be conducted at public places like teashops and clubs where men gather when they are not working. This was a highly successful initiative to reach male community members and help them see the relationships between expected hygiene practices and good health.

- **Sessions with key opinion/community leaders** For wider dissemination of information, key opinion leaders were identified by community members through focus group discussions and community mapping. This was done by using the most common Participatory Rural Appraisal (PRA) methods of Robert Chambers and others. Community members identified key opinion leaders as those people in the community to whom they turned to for advice and guidance but were not necessarily official leaders. This group included teashop owners, school teachers, hawkers (travelling sales-women and men), village doctors and volunteer social workers. These key opinion leaders were not expected to be outreach workers but rather people to turn to for sound information and meaningful advice.

The basic messages are communicated in many different ways. The main materials are as follows:

- **Flash cards.** The “flash card”, an A4-size colour drawing laminated in plastic is the

basic material used by all programmes. The artwork is field-tested before being finalised, to ensure acceptability to audiences. Different sets of flash cards are used for different populations. Many developed during the SAFE project are still in use; others were developed by SAFER. In addition to flash cards, the SAFE and SAFER projects have developed an inventory of popular children's games ("Snakes and Ladders," or "*Ludt!*") and stories, all accompanied by visual materials. Two stories that are most popular and widely used are 'Fairies and Devils' and 'Bhulu-Pushi', each with its own set of flash cards (Hanchett et al., 2001);

- **Stories and role-play.** In the 'Fairies and Devils' story, children are praised by an angelic 'fairy' when they do the right things: using hygienic latrines, washing hands with soap after defecation and before eating, encouraging very young siblings to use fixed places for defecation, and so on. They are threatened by a scary devil, however, when they defecate in a courtyard, wash their bottoms in a household pond, eat without washing their hands, or prime a hand tubewell pump with pond water;
- 'Bhulu-Pushi' is the story of a dog (Bhulu) having all the wrong habits and a cat (Pushi) having all the right ones. Children act out these characters in role-play sessions, dramatically emphasising the final scenes in which the dog is attacked with severe diarrhoea.
- Another story oriented to mothers is '*Brisht; Kamon Ache*' ('How Is Brisht?'). This is a gripping narrative of a marriage followed by an anxious period when the bride has trouble conceiving. After the birth of a much-wanted

baby boy everyone is happy again, but the mother does not follow the recommended hygiene practices, and her baby gets diarrhoea and dies. This story is universally considered to be very moving, and staff and villagers often cry when heard it is told (Hanchett et al., 2001);

- **Small model:** A simple model of a village, complete with water flowing between hanging latrines, canals, ponds, and tubewells, is used to start off discussions in all male tea stall sessions (Hanchett et al., 2001);
- **Locally available materials:** Other communication devices use a wide assortment of locally available materials such as rocks, dishes, sand, water, and colour, coloured mud, or courtyard floors spread with turmeric (the yellow turmeric represents human faeces). When a skipping rope is distributed to people or when they are asked to move a toy chicken or dog around the coloured mud or floors spread with turmeric, they begin to see how faeces can spread;
- **Transect walk:** Taking people to open defecation sites and discussing the negative effects such as bad smells and environmental pollution is also a persuasive sanitation promotion technique.

Behaviour based monitoring system

Field Trainers use checklists to conduct daily checks (through observations and interviews) on local impact indicators (Hanchett et al., 2001). Field staff and Field Trainers use questionnaires to conduct full sample surveys of working area households every six months. This activity is carried out by staff other than those who do the work. Field staff and Field Trainers conduct the surveys in each

other's areas. Household monitoring is done only in households including children younger than five. Information on knowledge and personal hygiene behaviour (such as hand washing) is based on reported practices, not on direct observations.

Adolescent groups are formed and trained. Adolescent monitors (aged between 10 to 19) assist in the six-monthly survey by doing checklist-guided observations in some of the same households covered by surveys. This was an experimental monitoring activity in model sites only. There are differences between the adolescents' behavioural counts and those of official monitors. It is not known whether these differences result from the different techniques used by adolescents and others, or whether they result from adolescents' less developed observational skills. The adolescents just observe; they do not ask any direct questions. They observe whether people

use latrines or not, whether they wash hands with soap, whether children use "fixed place" or not - whether ash or soap is used after defecation and whether children defecate here and there. They observe both male and female behaviour.

Each six-monthly monitoring survey follows the completion of one community hygiene education cycle. The cycle, as mentioned, consists of sections on (1) sanitation and hygiene, (2) safe water, and (3) diarrhoea prevention and management, with two months given to each. Then the six-monthly monitoring is conducted, with data analysed as soon as possible by hand, and then with computers. Once the data has been analysed, simple pictorial charts are prepared for presentation to people in each working area. These charts show in clear terms the progress so far toward reaching local behaviour-change goals. They are presented in various ways to people in the working areas: in Union Parishad council or committee meetings.

Annex 2 Detailed participatory steps in IPEA SWESHP

Steps 1 and 2: Baseline information collection, problem identification and analysis

The purpose of collecting baseline information is three-fold:

- To identify good local hygiene behaviour which need to be supported and built on;
- To identify the risk or problematic hygiene behaviour that actually exists;
- To use this information to determine those areas which hygiene education efforts need be focus on.

Mainly PRA tools are being used to get the 'baseline' information as follows:

- Health/transect walk;
- Social/village mapping;
- Wealth ranking;
- Focus group discussion;
- Venn diagram.

Health /transect walk

Prior to the baseline, the facilitators introduce the project/organisation including the objective of their involvement with the community and also build friendly relations (rapport building) with the community people. After rapport building, the facilitator requests the villagers to gather in one particular place for a health walk. The facilitators must ensure the participation of all categories of people (poor, non poor, men, women, adolescent, children) in the health walk. The community people walk with in village surroundings and observe following:

- water sources of village (safe, unsafe, functional, non-functional, location)

- sanitary conditions (number of hygienic and unhygienic latrines, open defecation areas);
- house premises with special focus on garbage and waste water disposal and management;
- ways and means of disposal of animal wastes;
- general village activities –general daily work/ routine, etc.;
- public facilities such as schools, shops, health centre, market and religious places;
- Water and sanitation facilities in schools, markets and religious places.

Social /village cluster map

After the transect walk the participants transfer their observation into a village map. The process is as follows:

- First mark the location of the village in the ground/a big brown paper;
- First mark one main thing of the village (e.g. main road connecting the village/school/ religious place and then the village roads/ river located within the village. All the houses and their types (made in brick/C-sheet/ bamboo/leaves, for different types , different marking signs/colour pens are used);
- Local infrastructure such as school, post office, health centre, religious places, local government office (can be marked by given appropriate symbols or using different colours), etc.
- The various drinking water sources; their location, status (functioning or non- functioning) including waste water disposal;
- Houses having latrines (mark hygienic or unhygienic using different symbol and colour) and whether they are used;

- Mark houses without latrine;
- Location of community latrine and their use (if any);
- Areas used for open defecation – indicating the areas used by men, women, children separately;
- The houses indicated in the map are to be numbered;
- The number of members in each house are to be indicated (number of adults and children: male and female).

Faeces calculation

The community calculates the amount of faeces that pile up in the community every day due to open defecation, then estimate the total amount per week, month, year, etc.

Cause-effect analysis

The facilitator helps the community draw a diagram to analyse the effects of bad hygiene behaviour by seeing how the faeces/germs enter our body and cause disease.

Body mapping

The community people (preferably)/facilitator draw a human body on a poster paper for acquiring information on common diseases in a particular community. On the different organs (e.g. hand, leg, mouth, etc.) the community people draw the symbols for different common diseases and analyse the cause of these diseases and ways to overcome them.

Seasonality trend analysis

The community analyses the availability/crisis of safe water in different seasons and the effects of

using unsafe water in particular seasons (dry season, rainy season, during floods) also the trend of diseases in the different seasons.

Economic categorisation/wealth ranking

The participants categorised all households as *rich*, *relatively well off*, *middle class*, *lower middleclass poor*, or *hardcore/extreme poor* using simple agreed indicators (not only financial, but also family size/ composition, living conditions, health status etc.) and mark houses according to these categorisations with a different colour or symbol in the map, so as to understand individual household's capacities to spend/contribute to water and sanitation, identify the poor and extreme poor households to ensure any service provision "first" for them, and also give special priority to their inclusion in the community-based organisation. This exercise also helps to mobilize resources from rich and middle class families to the poor and ultra poor. Common indicators used for categorisation include (but are not necessarily limited to) type of occupation; income; tenancy; household assets (TV and freezer, land, schooling, etc); purchasing capacity for rice, meat, fish, and vegetables; number of meals taken per day, marital status, health status, etc.

Internal/external relationships

Community members also analysed their relations with the different service delivery organisations by drawing Venn diagrams. Venn diagrams have been drawn separately for the following aspects:

- People representing the village by a symbol or a marking;
- The institutions that the people feel are important; according to their importance they make the circle bigger or smaller;

- Then people show the accessibility of these important institutions by keeping these circles nearer or further away from the village according to their accessibility.

Step 3: Formation action committees and planning hygiene promotion intervention

After all the exercises, the community people present their findings in the larger community group. After the presentation, they reach the agreement that they themselves will take action to overcome the situation. Usually a Watsan/village/slum development committee is been formed. After formation of the committee a Community Action Plan is developed which mainly incorporate the following:

- Blocking the spread of diseases by installation/ repair/upgrade of cost effective, environment and user-friendly latrine and water options;
- Promotion of improved hygiene behaviour.

The CAP includes the timeframe and name of the people/sub group who will be responsible for specific tasks. Different sub-committees/groups are being formed such as women groups, children groups, adolescent groups, engineering group.

Step 4: Promoting the behavioural change

The promotional activities during baseline information collection, problem identification and analysis (step 1 and 2) using different participatory tools and techniques, ignite community people to change and practice hygienic behaviour. The success of the whole approach depends on the promotion of improved hygienic behaviour during step 1 and 2. As proof of the change, the community creates safe sanitation and water facilities and simultaneously take action for improved personal

hygiene, which is the paradigm shift from the traditional hygiene education method to promotion of improved practices. For a continuation of community people's enthusiasm, and to develop an in-depth understanding on different hygiene behaviour-related issues, WaterAid Bangladesh partner NGOs facilitate hygiene promotion activities for two years on personal hygiene practices, family hygiene and also community hygiene on the following issues:

Personal hygiene

Hand washing with cleansing agent (ash or soap) before/after

- defecation
- eating
- handling food
- feeding young children
- handling children's faeces and washing bottom

Sanitation

- use of hygienic latrine
- using sandals in latrine

Personal hygiene

- cutting nails and keeping them clean
- wearing clean clothes
- taking baths regularly

Menstrual hygiene

- menstruation is a normal phenomenon of growing up
- using clean material
- changing material as frequently as necessary
- washing the material so it stays clean
- drying it in sunlight
- storing it after proper drying in a clean and safe place for future use

- bathing and keeping clean
- eating nutritious food
- carrying out normal activities as much as possible
- no need for any social exclusion

Food hygiene

- avoiding eating stale or rotten food

Family hygiene

Safe water use

- safe sources of water
- using safe water from safe source for drinking, and cleaning mouth and dishes
- keeping water pots covered during transfer and preservation

Sanitation

- use of hygienic latrine by all members of the family
- regular maintenance of latrines
- disposal of young children's faeces in the latrine

Food hygiene

- keeping all raw and cooked food covered
- not eating any raw food (fruits, uncooked vegetables) without washing with safe water
- keeping food safe from the reach of pets/ household animals; on a raised place [stoop/ hanger/rack or shelves]

Environmental sanitation

Solid wastes:

- safe disposal of household refuse in a specified place
- dumping organic waste together to produce fertiliser

- household animals to be kept in a specified place, if possible a little away from the house
- keeping home surrounds clean and free from bushes to have more sunlight in the house

Liquid wastes:

- waste water must not accumulate near (within six feet of) the water source
- waste water can be used for rearing vegetable gardens/fish
- part of the water used maybe used for recharging the water table through use of soak pits

Community hygiene

- protecting community surface water sources from getting contaminated (allowing only cleaning of dishes, washing and bathing of people)
- preventing animals entry or washing in the water source
- preventing erection of hanging latrines beside the water sources
- encouraging use of appropriate/alternative water source in arsenic-prone areas

Arsenic contamination

- a toxic element found in shallow underground aquifer
- causes many harmful diseases
- remedy: prevent by avoiding the drinking of arsenic contaminated water

Personnel

Field workers (a field workers is responsible for two to three villages) with the support of

community volunteers (WaterAid partners recruit volunteers in each community) mobilize the community and facilitate the sessions. Field workers are mainly simple graduates (14th class) and volunteers have seventh to ninth grade education. Field workers receive more than two weeks training and community volunteers receive three to five days training. In most NGOs the community volunteers are part-time paid workers.

Duration

Hygiene promotion lasts for two years and the key topics are discussed in monthly sessions with the help of participatory methods and material in the first six to nine months. Simultaneously, the field workers and CVs visit the households and community places to provide follow-up and mentoring support for behavioural change. This continues for two years and the field workers maintain records of their observation. The frequency and number of sessions are flexible.

Participants

WaterAid's partners and trained community members facilitate hygiene promotion activities among different groups of people using different channels, as follows:

- Female groups (usually a group consists of 20 women); mainly courtyard sessions using flash cards and other local materials;
- Adolescent girls group; courtyard sessions, household-based discussion, focus group discussion using flash cards, poster leaflet and other local materials;
- Children group (school/community-based); discussion session using flash cards and poster, debate, drawing, role play, rally, rhymes, storybooks;
- Male groups: community-based evening session/courtyard meeting, tea stall session, market based session/discussion, focus group discussion using flash cards, poster leaflet and other local materials;
- Apart from the above-mentioned activities, the partners also organise rally, workshop, seminar, and fair, and other cultural activities to raise awareness among people including local government representatives, teachers, and religious leaders.

Materials

In addition to local materials such as real live objects (eg bowl, water and soap, storage pots and different types of dippers) and village materials for PRA, WaterAid has developed 50 flash cards on:

- hand washing;
- sanitation ladder (pictures of unhygienic latrines and also different model of hygienic latrine);
- diagram of faecal oral contamination;
- examples of hygienic and unhygienic environment (picture of unhygienic community and another picture of hygienic community);
- solid and liquid waste disposal;
- menstrual hygiene (picture on washing the used rag by soap, drying under sunlight, storing in a clean and safe place for future use, disposal of sanitary napkin);
- division of labour to reduce women and girls' workload and involve men and boys in Watsan related work (picture of current practice, women and girls carrying the water, cleaning the latrine, washing the cooking utensils and cleaning the children bottom and also picture on same topic where both men, women, boys and girls are sharing the responsibilities);

- water safety (from source to consumption).

Apart from flash cards, storybooks, rhymes, poster, leaflet, songs, quiz, games and documentary films have been developed. For the demonstration of hand washing a bowl, soap, a jug of water is used. In menstrual hygiene sessions a doll, a piece of cloth, and a homemade sanitary napkin (cotton wool folded inside a clean piece of cloth, adolescent girls can make sanitary napkin to use at school by using cotton wool that is available in the local market at a reasonable price).

Step 5: Monitoring and evaluation

Community-based participatory monitoring plays a vital role in the ASEH working area to increase community involvement in the changing process of their hygiene behaviour. The community is responsible for planning and implementation of actions for behavioural change. The field workers only support them for implementation community plans. So the community themselves monitor the change, a process called 'participatory monitoring'. During preparation of the action plan to implement Watsan-related hardware and software activities, the CBOs select monitoring groups to monitor the implementation of ongoing activities as well as health- and hygiene-related practices.

The monitoring groups monitor the hygienic practices through observation and dialogue at household level and then document it on a monitoring sheet. Usually, this is done on a large sheet of brown paper with a picture of key hygiene behaviour and a table for marking the practice status of different families. For recording the information community people

generally used symbols such as "✓" or "X" (one for 'yes' and one for 'no'), which make the system user-friendly (even illiterate people can keep the record) and time convenient. In the monthly meeting the CBOs review all followed-up activities that were monitored by monitoring groups. Normally one person (mainly women) in each monitoring group takes responsibility for monitoring 10 to 12 neighbouring households.

The field workers also visit households to monitor the change and verify the result of community monitoring.

Apart from field workers the senior staff members of partner organisations and WAB also visit the community in every quarter to monitor the progress.

Evaluation is also carried out by appointing an external agency, mainly to identify the success, learning and challenges.

Alternative:

Ask participants to think up other group activities for those that arrive at one of the four squares, including an activity that has to do with sanitation or hygiene.

Story with a gap

Objectives: (1) To assist the community in planning and involve individuals in a critical analysis of their own situation (2) To encourage goal setting and ultimately behaviour change.

Time: 1 hour

Tool: Two large formats laminated illustration showing the same community before and often improvement in water supply, sanitation and hygiene

Process:

Step 1:

Introduce the exercise to the participants.

Step 2:

Show them the picture of the before scene and ask them to describe what they see. Then show them the after scene and ask them again to describe what they see. Ask them to identify poor hygiene, sanitation and water use practices in the first picture. Point out any they have missed, and clarify any misconceptions they have.

Step 3:

In groups, ask participants to create a story from their own experiences as to what happened between the two pictures.

Step 4:

Report back on the story and discuss the problem using the discussion points below:

- Do these stories relate to current events in this community?
- What has caused the problems in the first picture?
- What do you think this slum/village did to solve its problem?
- Does your community have any of these problems?
- What steps are necessary? What steps are necessary at household level? At community level?

Annex 3 Details of UNICEF SHEWA-B approach

The CHP carries out the following activities for hygiene promotion⁴:

Household visits

Each CHP cover around 500 households and visit each household bi-monthly (once every two months). They observe hygiene practices of households (good and bad) and maintain a logbook/record on observations and discussions on key hygiene practices. Observation areas are:

- Dispose of children's excreta
- Cleanliness of latrines, courtyards and surroundings
- Absence of open defecation
- Use of sandals when entering the latrine
- Hand washing practices at critical times (before eating, feeding children and preparing food and after defecation, cleaning baby's bottom and cleaning baby's faeces)
- Soap/ash/water available in or nearby the latrine
- Dispose of solid waste in a fixed place
- Safe collection of water from an arsenic-safe source (rinse inside and outside the pitcher/ kolshi), safe transport (cover the kolshi from water point) and safe storage of water (cover kolshi at home and keep the kolshi at a higher place away from the ground)
- Drainage system for disposal of waste water (cleanliness of drainage, clearing of drains away from the water point, no waterlogging) and status of water point platforms
- Gender roles in water collection, latrine cleaning, disposal and cleaning of children's excreta.

Based on the observations, the CHPs conduct hygiene education using different local forum as follows:

Courtyard meeting

Periodic courtyard sessions are being arranged with 15-20 neighbouring households in each cluster at least six times a year at different times, to suit men, women, children, adolescent boys and girls from different socio-economic groups (rich, middle, poor, poorest). Participants visit their own households in a group before the meeting to assess the hygienic situation then discuss the findings. Based on observations and discussions, people make a plan on hygiene improvement and sanitation (individual or group ones as they like) and follow it up in each meeting. If necessary, they can add new activities in the plan or delete activities that are already done. The CHP encourage participants/households to monitor/follow up on the situation by themselves as a group in each meeting and check that it is done, and if not, to find out why.

The CHP introduces a sanitation or hygiene topic. The group discusses one key hygiene practice elaborately in one session, using relevant communication materials/tools (for men and/or women and/or children and/or in a mixed group). The CHPs provide information on arsenic and emergencies, particularly on flood management. S/he discusses and demonstrates hand washing to or by participants and explains its health implications using flash cards, jug/bowl, soap and towel or with local materials as appropriate.

⁴ Source: Terms of reference for field agencies for implementation the activities in Upazilas under "Sanitation, Hygiene Education and Water Supply Programme in Bangladesh (SHEWA-B)"; WES Section, UNICEF Bangladesh, 2007

The CHPs create a link between the households visit and courtyard meeting (and share household visit findings in the courtyard meeting in a way that encourages the participants to improve their hygiene practice) and also disseminate other messages as requested by the community (EPI, nutrition, avian flue, child rights, birth and death registration, dowry, reproductive health). Occasionally he/she invites health and family planning workers, religious leaders, elderly people, Gram Sarkar and women UP member into the courtyard meeting to motivate the community people. He/she invites private latrine producer or mason, clay potters (where available) as a resource person in the courtyard meeting on latrine construction discussions as appropriate.

In courtyard meetings, the CHPs also discuss gender roles in water collection, latrine cleaning, disposal and cleaning of children's excreta to encourage boys and men to take part in these activities. Three flash cards and pictures for three piles sorting are available to assist with discussions on these topics. She/he develop monitoring chart/ tools on behavioural changes in consultation with the participants of the courtyard meeting and also, from time to time, update cluster/ward map, and discuss progress.

Facilitation sessions in tea stall/grocery shop at ward level

The CHP conduct tea stall/grocery shop session on hand washing including demonstration (soap, bowl, jug, and towel) and discuss maintenance of food hygiene in the tea stall itself. Visit existing grocery shops and encourage shop owners to stock hygiene items such as soap, dettol, sandals,

nail clippers, bleaching powder, latrine brush, liquid latrine cleaning agent, sanitary napkin, plastic pan, mosquito net, etc.

Focus group discussion on menstrual hygiene

The CHP organise separate courtyard meetings with adolescent girls and young women on hygiene and sanitation (open defecation) particularly management of menstrual hygiene once every two months. The meetings include a demonstration on how to use rags and pads. She shares information and ensures that adolescent girls practice appropriate menstrual hygiene (use clean rag/ sanitary napkin, wash used rag with soap and adequate water, dry in sunlight and store in a clean place for future use. During menstruation, clean genitals frequently with safe water only to prevent itching and infection in genital). Also inform that cotton, disposable sanitary napkins must be buried after use, and not thrown down water seal latrines otherwise the system will be blocked.

Conduct group meetings with working people

The CHP identify opportunities to hold group meetings with people at their work (men and/or women) such as:

- Brick field workers;
- Rice huskers;
- Agricultural field labourers (motivate them to cover excreta with soil after defecation during working in the field if latrine is not available);
- Road Maintenance Programme members (motivate households to allow RMP members to share their latrines during work time).

Annex 4 Descriptions of different participatory tools

In Bangladesh, the following visual participatory tools (but mainly flash cards) are being used by different organisations to assist courtyard sessions, focus group discussions and tea stall sessions. CARE SAFER and WaterAid Bangladesh primarily developed these tools in the 1990s, but other organisations latterly developed their tools and materials, especially flash cards based on these ideas (Safi, 2001).

Below is a description of various tools, their learning objectives and process of use for tools widely used in Bangladesh. At the end, some suggestions are given for alternative uses, to encourage variety and creativity. Facilitators, groups and community members can be encouraged to come up with their own ideas on this.

Three-pile sorting game

Objective: Understanding of good and bad hygiene practices, action for good hygiene practices.

Tool: Set of 24 to 30 coloured, laminated illustrated cards showing good and bad hygiene practices. Alternatively, own local drawings (see below)

Time: 1 hour

Process:

Step 1:

Give out the sets of three-pile sorting drawings, and three heading cards, one with the word “good”, another with the word “bad” and third with the word “in-between” (symbols to represent these qualities could be used instead of the words).

Step 2:

Ask the participants to sort the drawings into three piles:

Good: those you think show activities that are good for health

Bad: those you think show activities that are bad for health

In-between: those you think show activities that are neither good nor bad for human health, or which you are not sure about.

Step 3:

After 20-30 minutes, ask the participants to explain their selections and why they made these choices.

Start a discussion on the way the participants have sorted the drawings to give participants a chance to share what they know with the rest of the group. As the facilitator, clarify any misconceptions about disease transmission routes, and encourage the group to think carefully about their choices, moving cards from one pile to another if necessary. The group may realise that it has gaps in its knowledge and look for ways to fill them.

Step 4:

Ask the group to consider and discuss common behaviour within its own community. Ask the group to consider whether this behaviour is similar to any of the good and bad practices it has identified.

Step 5:

At this stage, or in a later session, the group may start to discuss ways of eliminating the bad practices it has identified in its community. Encourage this discussion and ensure that the group keep a record of suggestions made.

Step 6:

Discuss any of the practices and why it is identified as a bad practice. Discuss how the bad practice is causing problems in the community and how participants can eliminate it and encourage others to eliminate it.

Step 7:

Discuss any of the good practices and why it is identified as a good practice. Discuss how participants can encourage other people to use this good practice.

In large groups: if two or more sets of three-pile sorting drawings are available (eg photocopies in plastic slips), and the group of participants is large, the group can be split into two or more sub-groups. Each sub-group then carries out the exercise, and the facilitator encourages a debate between groups on why they made their choices.

This exercise is also useful as a baseline survey tool, to assess people's understanding of disease transmission routes and hygiene practices, and to make an inventory of good and bad practices, etc.

Faecal oral disease transmission game

Objective: How faeces spread, how to stop faecal oral transmission

Tool: Set of laminated, coloured, illustrated cards showing possible transmission routes of faecal contamination (feet, hands, drinking water, food, eating utensils, etc.). Alternatively, adults, adolescents and children enjoy making their own drawings of the different items involved in transmitting faeces/germs from a sick to a healthy person (eg by linking pieces of string or twigs)

Alternative:

Participants that feel confident enough to draw enjoy making drawings of the local good and bad conditions, practices and participation and decision-making situations with felt-tipped pens on half-A4 sheets. Sorting is then done twice: firstly on good and bad habits/situations (two rows), and secondly on good habits/situations that already/do not yet exist and bad ones that exist no more and that are still present (the end is four rows). The group then chooses their priorities from the not yet practised good behaviour and the still practised bad behaviour that they want to change first (eg order rows by priority or choose three top priorities and prioritise these). They then make a plan on how improvements can be made, who will do what, when and how, and how outcomes will be monitored, documented and shared.

and then discuss in the usual way where and how routes can be blocked.

Time: 1 hour

Process:

Step 1:

After exchanging greetings give the set of cards to the group using:

"One drawing shows a person defecating openly. Another shows a person's mouth. (Show the drawings). Please use the rest of the drawings to try and create a diagram to show different ways in which faecal matter might enter the mouth. You can draw arrows between the different drawings to show the ways that this might happen."

Step 2:

When the participants have made their diagram, ask them to show and explain it. Respond to any questions raised and clarify any misconceptions.

Step 3:

Now facilitate a discussion to help the participants use their new knowledge to examine their own situation. Stimulate discussion for people to identify:

- The transmission routes in the community
- The problem areas and hygiene behaviours that are putting people at risk.

Step 4:

Facilitate a discussion on how they can block the transmission routes. Before doing this I like to ask the group to identify at which points the different groups in their community are most at risk (eg

male and female farmers/land labourer in fields, babies/infants crawling in yard, etc). After the blocking I go into what different actors/groups can do to block their specific risks, and what the responsibilities are of mothers, fathers, older siblings etc to ensure that different risks are blocked. This usually brings in the gender angle very nicely and naturally without tensions).

Promotion of hand washing practice (three-pile sorting)

Tool: Set of 21 coloured, laminated illustrated cards showing different hand washing situations, including four different cards of hand-washing materials. (Sets of photocopies in plastic slips allow local groups to keep their own materials and replay the exercise with others)

Objectives:

- Assist the community people to identify the importance of hand washing in different situations and promote them to develop the hand washing habit

Alternative:

Deal out the drawings to several people, including some poorer men/women (so more participate). Do not explain anything, just ask them to place the pictures or drawings on the ground. Then ask the group to discuss what they see and discuss/ask questions on cards that are not clear. If needed, encourage other people in the group to explain rather than give the answer yourself, to encourage knowledge sharing and building self-confidence and ownership. Then ask them to put the open defecation drawing on one side and the drawing of the mouth on the other side. When people make their own sets of drawings, the advantage is that they can keep the material and play the game with others.

Since drawing takes time, it is also possible to make photocopies and give all groups their own sets, which they can keep. School children like to colour black and white copies. If funds allow, each drawing can be kept clean and neat during storage and use by placing it in its own loose, thin plastic folder (pocket). The children's leader is responsible for keeping the drawings in their pocket so that they can play the game repeatedly with friends, parents and neighbours, etc. This also goes for copied drawings of the sanitation ladder. Youth groups in Sri Lanka loved to organise courtyard sessions with them as part of CLTS (pers. com. C. Sijbesma)

Alternative:

1. Two sub-groups that already know the activity compete on how fast they can lay a good diagram. Each group chooses a name first, e.g. two animals, two famous sports stars or clubs, etc. The 'losers' then visit the 'winners' and vice-versa to spot errors.

A group that is familiar with the diagram lays it out on the ground. In sub-groups, they then think up a story based on a risk of their choice. Each sub-group tells, or acts, the story to the others. At the end participants vote for the story/play they liked best. Finally they discuss the particular risk from each story/play, whether it still occurs in the community and in the participants' households, why, what can be done, who can do what (women, men, adolescent boys, girls, children, etc), and how to monitor change etc.

- Explain to the community people how to wash hands properly and promote them to develop good hand washing habits
- Assist the community people to select effective hand-washing materials and inspire them to use hand-washing materials.

Time: 45 minutes

Step 1:

After informal introduction, show pictures and discuss with participants when hand washing is essential, hand-washing materials and proper hand washing method.

Step 2:

Ask participants the following questions and let them get involved in a group discussion:

- When do we think hand washing is essential?
- Why is hand washing important?
- Do you think hand washing is always important?

Step 3:

Give the participants the *hand washing event* cards and ask them to lay them out on a cloth/floor/on soil, etc. Give them time to look at the cards, pick them up, discuss, ask clarifications from each other, etc.

When they have finished seeing the cards, ask the group to sort them into three groups: group 1: very important, group 2: less important, group 3: not needed. Ask the participants to give explanations and to correct each other as they sort cards into groups (known as horizontal learning).

Step 4:

Show pictures of *hand-washing materials* and ask participants to sort them according to effectiveness and give explanations as they select hand-washing materials.

Step 5:

Ask participants to explain, demonstrate or role-play the *process of hand washing*. After listening to some of them, show the two hand washing cards on which hands they wash. Ask them which one they think is more effective and why. Ask a volunteer to show the proper way of washing hands in the absence of soap. Invite the group to comment on what they see.

Step 6:

Discuss *when* hand washing is essential, *what materials* will be used for hand washing, and *how* to wash hands.

Step 7:

Discuss with participants how we can develop the *hand-washing habit* among ourselves and encourage others to develop this habit. Which groups may not easily develop the hand washing habit and why? What could be done?

Step 8:

(With women, men, children, etc): What roles can wives/mothers play in proper hand washing? How can husbands/fathers, older brothers and sisters, and friends help?

Encourage everybody to participate in the discussion and give thanks for participation.

Sanitation ladder game

Objective: The objective of this exercise can be two-fold: (1) to help communities determine where they are in terms of hygiene behaviour in general and sanitation practice in particular, assisting them and health workers to reach a consensus on the direction and steps needed for making progress in sanitation. (2) To help individual households without a toilet, or those wishing to improve their toilet, to see what options there are, learn about the pros and cons of each option (including costs and scope for using local materials) and make an informed choice on what they want and can afford. The activity should also stress the fact that a simple latrine that is sanitary (isolates faeces) is as good as an expensive latrine, and that hand-washing materials must be available (and used) at a latrine.

Tool: A series of laminated illustrated cards, showing various sanitation practices and facilities.

Having a set of A4 photocopies with plastic slips allows groups to keep their own set and repeat the game with others.

Alternative:

Ask the group to bring the materials that people locally use to wash hands in different ways. Ask the group to form two sub-groups. Ask the first group to demonstrate or role-play a locally common way of hand washing, which they think is wrong. Ask the other group to comment afterwards. (They may comment on the how, with what, who, and when). Now ask the second group to demonstrate/role play the way in which they think that hand washing is best done. At the end start a discussion asking what they learned about hand washing, good and bad? The how, with what, when and who? Then as before: who practices and who has problems, and why? What can be done? How to monitor, etc.

Time: 1 hour

Process for objective 1:

Step 1:

Introduce the exercise. Give the participants the pictures depicting the various methods of excreta disposal.

Step 2:

Ask them to sort the pictures out into “steps” on a ladder according to improvements in sanitation practices. Participants usually take 15- 20 minutes for this.

Step 3:

When the groups have completed this task, ask the group to explain its sanitation ladder.

Step 4:

Encourage the group to divide the defecation practices into acceptable and unacceptable behaviour, based on whether they result in isolation of faeces (place at the bottom of the ladder) and what is the ideal behaviour at the top.

Step 5:

After the presentation, encourage a group discussion covering:

- In general, at which step is the community?
- Which practices are bad and which are good for sanitation?
- Why have people not moved from one step to the other along the ladder?
- Why are people not constructing latrines?
- What does it mean for our community when some have no (good) latrines?
- Is it necessary to move directly from open defecation to the construction of latrines?

- Are there any other steps we can take to improve sanitation practices, and why?
- What to do about people who are unable to build a sanitary latrine?

At the end, facilitate a discussion with the participants on what they have learned during the activity, including what could have been better.

Process for objective 1:

Step 1:

Welcome the participants and mention the subject of the meeting. Give a few pictures to several participants making sure that they do not go only to the 'elite' in mixed groups. Ask them to spread the pictures on the floor. Ask the participants to look at and handle the pictures and to discuss them among themselves. Clarify questions if directly asked.

Step 2:

Ask the group to sort the pictures out into "steps" on a ladder according to improvements in sanitation practices. Participants usually take 15-20 minutes for this work.

Step 3:

When the groups have completed this task, ask the group to explain its sanitation ladder.

Step 4:

Encourage individual participants to reflect on where their household is on the ladder and if they would like to improve. Encourage them to discuss the pros and cons of the models, e.g. on costs, availability of materials, options for using local materials, ease of use, including by children, the elderly and the disabled, ease of maintenance, water demand, composting, etc. Stress that there

is no need to start with a costlier model if one cannot afford that and that any model can be improved over time. Encourage knowledge sharing, and new ideas on local material use and designs, and help for those unable to construct. It may even be possible to go and visit different models in the community to learn more on costs, materials, pros and cons.

Step 5:

Ask those interested in building/improving toilets to remain and later discuss implementation, e.g. to buy material and transport in bulk for reduced costs and stronger claims when goods are inferior/damaged on delivery. Ask for feedback on the exercise and discuss possibilities for participants to become facilitators of others, using their own (copied) picture set. When others have left, arrange follow-up actions with the two groups.

Let's grow the habit of hand washing

Objective: Participants understand the need for hand washing through a happy atmosphere and encouragement of habit forming.

Tool: Snake and ladder game

Time: One hour

Process:

Step 1:

After exchanging greetings let the participants choose four people to play the game

Step 2:

The game will start when '1' comes on top of the (Sakka). Ask participants to discuss each picture

When the Sakka falls on the following squares we will do the following activity:

Square	Activity
13	If children are present they will stand up with two hands crossed. When it is stated '1' they will close their hand and when it is stated '2' they will open their hand. After doing this twice all will clap and sit.
20	We will sing a song together
34	She/He will get another chance to throw the (Sakka). This is to encourage him/her to save money so that he can buy soap
48	We will say, lets wash our hands and legs with soap and go home.

at the bottom end of the ladder and the mouth of the snake:

- What is seen in the picture?
- Is it a good or a bad practice? Why?
- Why do we need to practice this habit?
- Let's reward him/her for this good practice.
Let's clap as s/he goes up the ladder OR:
- Let's cry for his/her bad practice as she/he goes down the ladder.

At the end of the game following question might be asked:

- For which practices one gets ladder?
- For which practices does a snake bite?
- Which habits will we develop within ourselves and how can we encourage other people in the community to develop these habits?

Alternative:

1. Ask the group for two volunteers, one to draw the good community and the other the bad one with felt-tipped pens. The group as a whole guides the drawers on what they draw. The facilitator can bring up things such as forestation, source protection, water access and distribution, leakages, etc to be added. Then the process is as above, or she/he facilitates a direct discussion about the differences: what, why, to what effects and what can be done.
2. The same as above, but individual participants draw houses, school, mosque, clinic, etc on small slips of paper and stick these onto two large sheets of paper. They then divide into two groups and one group draws in the bad environment and the other the good one. The process is then the same, as mentioned above.

23 Assessment of hygiene communication plan in the aftermath of the 2005 earthquake in Pakistan

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Abstract

The devastating earthquake on 8 October 2005 caused the immediate death of more than 70,000 people with injury and displacement to millions more. UNICEF played a major role to ensure provision of safe water and sanitation, within which a comprehensive communication plan was formulated and implemented. The plan aimed to create awareness and motivation on water and sanitation related diseases and their prevention. Multiple channels were used to convey specific messages, adapted as much as possible to a response phase. The assessment considered the effectiveness of the various initiatives and made recommendations on activities to be continued in future; activities not to be pursued further for lacking effectiveness; and those activities to be continued with some adjustments, based on the lessons learnt for future emergencies.

Background

The devastating earthquake of 8 October 2005 caused the immediate death of more than 70,000 people, injured some 80,000 more and severely affected the lives of more than three million. Many people became homeless and displaced, essential infrastructure such as roads and water schemes got damaged, and public (health) services were disrupted.

The local, national and international community each responded to the earthquake within their capacity and with distinguished constraints and opportunities. Once the scale and impact were known in the rest of the country, donations were generous and various professionals from elsewhere in Pakistan moved to the area to assist – often on a voluntary basis. A mountainous area of nearly 30,000 square km, with vast and various needs among the many affected men, women and children, was rapidly becoming largely inaccessible as winter approached.

UNICEF assisted (and financially supported) implementing partners in a number of emergency

relief and rehabilitation projects to provide safe water and sanitation in the affected areas. In conjunction and collaboration with relevant Government of Pakistan line-ministries and other sector clusters, a comprehensive communication plan was formulated and implemented, aiming to create awareness and motivation on water and sanitation related diseases and prevention. Multiple channels were used to convey specific messages, adapted as much as possible to a response phase.

UNICEF commissioned this assessment to assess the hygiene promotion activities and products it supported in the aftermath of the earthquake. The assessment was intended to provide an impression of the effectiveness and possible success of the various hygiene related activities and products, subsequently assuming a potential for impact. Additionally, the assessment method and results were considered a sector-wide learning opportunity through documenting of the specific response – particularly emphasising the hygiene promotion products and communication channels used. The assessment was conducted between December 2006 and March 2007; as the response activities being assessed took place between the date when the earthquake struck and March 2006, this assessment was carried out about one year later.

The multi-disciplinary team assessment comprised IRC International Water and Sanitation Centre¹, an INGO based in Delft, Netherlands, and staff² at North West Development Associates (NWDA), a Pakistan based development assistance consulting firm.

The paper explains the assessment objectives, framework and constraints, followed by pre- and post earthquake scenarios to help understand UNICEF's programme response. The paper then

presents key findings for products, services and channels used for hygiene promotion, followed by conclusions and recommendations.

Assessment methodology

Assessment objectives

To evaluate on the ground all approaches for hygiene promotion supported by UNICEF:

- focusing in particular on the programme communication and participatory hygiene promotion and transformation activities
- identifying on the basis of evidence gathered, which activities are working and consequently should continue or be strengthened
- which activities are not working and should consequently be discontinued, and
- to make evidence-based recommendations as to how the various aspects of hygiene promotion can be better integrated into an effective approach to change key hygiene behaviours.

A final objective of the assessment was to contribute learning and knowledge sharing to the emergency water supply and sanitation sector. This would include: participatory methods for assessing effective hygiene promotion and communication activities in post-emergency settings, which focus on greater planning and investments efficiency, through the development and implementation of more appropriate, relevant, coherent, achievable and effective efforts from the outset.

Scope of the assessment

The assessment report was based on the qualitative and quantitative data collection and assessment methods described in this section. It had the following boundaries:

¹ <http://www.irc.nl>

² <http://www.nwda.org.pk>

- The hygiene promotion activities and products assessed were those listed in UNICEF's Earthquake Relief & Rehabilitation Communication Plan.
- The assessment period ran from the earthquake on 8 October 2005 until 31 March 2006, when the majority of the Internally Displaced Persons (IDP) camps formally closed. Therefore, only those hygiene promotion activities developed and/or implemented before the IDP camps emptied could be assessed.
- The area assessed covered four main affected districts: Bagh and Muzaffarabad, Azad Jammu Kashmir Province (AJK), and Battagram and Mansehra, North Western Frontier Province (NWFP).
- It was not within the remit of the assessment to evaluate the overall emergency response programme or to provide judgements on its quality.
- A lack of baseline data on health indicators and incidence of disease, combined with the dispersion of IDP camp residents to their villages of origin after 31 March 2006. It was beyond the scope of the assessment budget and timeframe to assess the direct health impact resulting from UNICEF's hygiene promotion and communication programme.

Limitations of the assessment

The following limitations will have influenced the validity of the assessment results:

- The sample size for the ground survey was influenced by time and budget constraints
- The timing of the assessment – almost one year after closure of the IDP camps – made it a challenge to trace key informants and IDPs.

Staff turnover in emergencies proved to be almost total, leaving the ground survey reliant on the memory of IDPs at times of high stress following disaster.

- The existence of different phases in emergency response is acknowledged, however, it remains difficult to construct a 'scene' some ten months after an emergency intervention and to interpret effectiveness of certain approaches. What may now seem illogical may well have been the best choice considering the circumstances in the immediate aftermath of the earthquake.
- A number of key programme documents providing specific dates and figures were not available to the assessment team.

While recognising the impact of these limitations on the validity of the findings, stakeholder meetings with UNICEF staff and partners involved in implementing the communication plan, as well as representatives of local government and end-users, resulted in the validation of the overall findings; while providing some contradictions and dissenting views. Based on these meetings, the assessment team believed that the risk to the findings' validity was low to moderate.

Assessment methodology

The ground survey sample size was primarily dictated by the available time and budget for the assessment and was not statistically significant. However, the use of non-probability sampling methods, such as availability and purposive samples in the affected areas, do allow for conclusions and recommendations. These are based on cross checking (triangulation) of findings and different stakeholders' views, and perceptions gathered

through various data collection methods and multi-stakeholder meetings, where initial findings were cross checked for validity.

Data collection methods comprised *semi-structured key stakeholder interviews, impromptu small group discussions, structured observations, and focus group discussions*, conducted with end users of the hygiene promotion products and services, and using a selection of ordinal scored scenarios adapted from the Qualitative Participatory Assessment (QPA)³ methodology. Hard copies of printed Information, Education, Communication (IEC) materials, developed under the auspices of the UNICEF programme, were gathered and rated to assess whether end-users were familiar with the IEC products, understood the messages being promoted and could conduct the promoted behaviours. Also, six *assessment questionnaire formats* guided the data collection. Following the orientation visit to three of the four districts, the formats were further adjusted to the local situation. *A review of project documentation* was conducted to obtain a better understanding of the situation during the first months of the emergency response.

Assessment framework

To enable the success of various hygiene promotion activities (ie, messages, products, services and channels) to be assessed, the assessment team developed an appraisal framework to assess each activity for appropriateness, relevance, coherence, achievability and effectiveness. The analysis and reporting is based on this set of criteria. It reflects how the individual communication campaign

components measured up in light of findings from key stakeholder interviews, end-users' views expressed in focus group discussions and findings from the literature reviews: including official project reports and communications.

Finally, though not the main focus of the study, a number of cross-cutting variables were considered for their impact on the communication campaign components and their relative success. These included:

- Financial-administrative issues
- Technical support and expertise
- Coordination
- Logistics
- Monitoring and evaluation

Setting the scene

Pre-earthquake

The population of the hilly and mountainous areas of AJK and NWFP is not homogeneous in regards to origin and language, although they have a certain isolation and remoteness in common. It is a relatively conservative Muslim area, particularly in NWFP, and cultural behaviour and perceptions are deeply rooted. Informal institutions – such as religious leaders, village elders and landowners – are strong and influential. Women are the custodians of life, but advocating gender issues in NWFP (and AJK) is very sensitive.

Before the earthquake, latrine coverage in AJK and NWFP was 25-30% and access to safe drinking water 65-70% (Ahmad et al, 2006; Personal communication Director, LG&RDD). Latrine coverage in rural areas is assumed to be less than the average

³ Ordinal scoring of descriptive categories or scenarios (ie, each score represents a given scenario or situation on the ground) are used for participatory assessment purposes in the Qualitative Participatory Assessment (QPA) and Methodology for Participatory Assessments (MPA) methodologies which IRC and its partners have developed and applied in a range of different settings.

TABLE 1 Elaboration of key appraisal criteria

Appropriateness	<ul style="list-style-type: none"> ● Familiarity with channel, product, service (before the earthquake) ● In line with culture, tradition, religion and language (hence preferred and/or accepted) ● Affordable and/or accessible to user/target group
Relevance	<ul style="list-style-type: none"> ● Needs-based (based on evidence/assessment) ● Specific (tailor-made, targeted to a specific group and/or phase)
Coherence	<ul style="list-style-type: none"> ● In line with programme objectives (ie, with reference to core corporate commitments of UNICEF for emergencies and WASH) ● In conjunction and simultaneously with hardware/software component ● In collaboration/coordination with key stakeholders (ie, line-departments and UN clusters)
Achievable	<ul style="list-style-type: none"> ● Realistic in regards to general programme planning ● Timing ● Logistically achievable ● Expertise/background key staff/IPs (HR quality) ● Human resources (HR quantity) ● Access (to target group)
Effectiveness	<ul style="list-style-type: none"> ● Community feedback on effective use of channels, products and/or services: ● Do people recall channels used for hygiene messages ● Do people recall hygiene messages ● Do people still use products, or have they used them ● Anecdotal: Have people changed hygiene behaviour ● What is the access to services; eg latrines, water supply O&M, health facility

coverage. Simple dry pit latrines are not a widely used latrine option as water is used for ablutions and anal cleansing - a practice that does not go well with pit latrines. Besides, the hilly terrain most often does not allow easy pit digging and hence, latrine (wherever present) are those which not only allow use of water but possibility of a prolonged use such as pour flush, twin-pit leaching latrines etc. latrines. Interestingly, there is no word for sanitation in Urdu; health and cleanliness is the closest approximation.

The local government department had a programme on rural water supply, with only a minor sanitation component. Hygiene education and promotion was not adequately addressed. This was due to lack of adequate capacities regarding manpower and unavailability of channels of mass communication in parts of affected areas, because the mountainous terrain makes communication and access difficult. So, after the earthquake, when people arrived in the IDP camps, their knowledge and/or practices of safe hygiene were quite low - this was particularly the case for those from the more remote and rural areas. Additionally, the challenge of promoting safe hygiene behaviour was further compounded by the loss of capable staff and the relatively low capacity of agencies due to prior isolation, in particular that of AJK province. Interviewed stakeholders said that, as a result, and in the immediate aftermath of the earthquake, neither the agencies nor the beneficiaries were prepared for the promotion of safe hygiene behaviours in a rapid and coherent manner.

Earthquake

In addition to the human casualties, suffering and displacement, the earthquake caused an almost complete collapse of health services and vast

damage to water and sanitation systems in the 4,000-plus villages and small towns that were affected. Outbreak of diseases and even epidemics were anticipated, as highlighted in the initial Earthquake Relief & Rehabilitation Communication Plan⁴, reproduced below:

- Diarrhoea, dysentery and measles – in the early months of camp settlement
- Scabies and neo-natal tetanus – poor hygiene and limited water availability
- Respiratory diseases and TB – common among IDPs
- Malaria – living in the open
- Anaemia and other nutritional deficiencies – limited food supplies
- (Psychological) trauma, hypothermia, flu, gastroenteritis and other infections

Specific disease trends do show some peaks in the months after the earthquake, possibly indicating some (minor) outbreaks (MOH/WHO, 2006): jaundice, scabies, Acute Respiratory Illness (ARI), watery diarrhoea and acute watery diarrhoea. Eventually, it was concluded that no major outbreak or epidemic occurred in the affected area during the year after the earthquake and that disease patterns may have remained within endemic trends.

Different phases can be distinguished after the earthquake's immediate impact. Phase one of The Earthquake Relief & Rehabilitation Communication Plan looked ahead and described three phases, ending on 31 March 2006. When the communication plan was revised for phase two, the benefit of hindsight was used to revise the phasing – now ending on 30 June 2006. Phasing for activities were described in different ways in the time since the earthquake. This report uses phasing based on general characteristics of the emergency response:

1. Impact to emergency – October 2005
2. Emergency to stabilisation – November and December 2005
3. Stabilisation to recovery – January to June 2006
4. Recovery to rehabilitation – July 2006 to June 2008

1) First phase: Impact to emergency (October 2005)

This, as would be expected, was the most chaotic phase, with the onset of a two-week rescue operation. Hereafter, (international) organisations started arriving and the response slowly unfolded. But during this stage, there was confusion, oversight or a lack of information. Access and supply problems were a great constraint, with not enough equipment and material and no electricity. The priority was shelter, food and general survival. No significant specific hygiene promotion activities were carried out in the first month after the earthquake, because “people did not even have a tent”. Generally, people found it very hard to recall and talk about the first month as they were highly traumatised and had spent the time fighting for survival.

Regular country programmes were halted as staff and supplies were diverted to the response activities. A rapid appraisal was carried out in mid-October 2005, looking specifically at communication constraints and opportunities.

2) Second phase: Emergency to stabilisation (November – December 2005)

In this phase, rescue teams were replaced by (international) emergency organisations that rapidly grew in number and diversity. The priority was provision of shelter material and non-food items as the approaching winter was regarded as

⁴ UNICEF developed this plan soon after the earthquake, as required by its obligations under its core corporate commitments to emergencies, to allow for a systematic fuller response at different levels.

the main threat. Coordination mechanisms were established, but it appears that it took until the end of December to establish clarity regarding who was actually doing what. More than 150 IDP camps were established, many of them in a spontaneous manner on unfavourable locations, which were difficult to access and service. The camps ranged from a few tents to 5,000 people. Camp management was generally weak and lacked specific expertise and capacity. This also applied to hygiene promotion, which was started merely as an add on to the provision of water and sanitation hardware, but which, by then were being accelerated. General camp hygiene conditions were poor and a need emerged to promote the proper use of latrines, particularly as they started to be used as washing facilities. Implementation of the communication plan commenced; boy scouts became an important instrument in the hygiene promotion campaign, Ministry of Health (MoH) hygiene education teams carried out a range of activities, FM radio stations were used or even set up, IEC material was distributed, etc. Some hygiene messages were spread well before they were supported and facilitated by the distribution of the required supplies, eg soap, hygiene kits, household filtration means and latrine slabs. Apart from initial batches of soap, those distributions only became significant after mid-December.

3) Third phase: Stabilisation to recovery (January to June 2006)

IDPs became more accustomed to camp life, while more and more villages became less accessible due to the (rather mild) winter. The earthquake response evolved into one of the largest logistical exercises for some of the emergency organisations. In February, it was announced that the IDP camps,

with a total caseload of 84,000 people (Personal communication UNICEF Hub Muzaffarabad), were to be closed by 31 March 2006. In April, many camps emptied while service provision shifted from camps to villages. For many organisations, their six-month emergency funding expired before the time camps needed to close. As a consequence, camp hygiene promotion activities were merely stopped and organisations left or shifted focus. In the camps with a residual caseload, the hygiene situation deteriorated rapidly – to the extent that it triggered an international emergency organisation to commission an internal evaluation of their water and sanitation response.

The first phase of the communication plan ended and a second phase ensued. IEC material was reviewed in January 2006 and a second batch of more locally adapted material was developed, including stickers, leaflets and posters. An ambitious ‘Rahbar’ programme started (see below), involving the boy scouts, and germ glow shows⁵ were introduced in the camps. UNICEF-supported radio shows stopped broadcasting, just when a specific TV programme started. However, by then camps were closing and distributions halted. Therefore, a number of planned activities under phase two of the communication plan did not materialise.

4) Fourth phase: Recovery to rehabilitation (July 2006 – June 2008)

The assessment took place in the phase that emphasises rehabilitation of water supply schemes. Water and sanitation at schools and in communities are a second and third component – in that sequence and with similar (budget) priority. Some camps still exist or were re-established after the flash flooding in August 2006, but the emphasis is

⁵ Basically an ultraviolet lamp reflecting dirt, etc, in paler-coloured hands when seen under the lamp, signifying the fact that hands can still be dirty and carrying germs even if they apparently look clean, and hence the need for regular hand washing

clearly on the villages. Caseload of IDPs in camps was 33,000 in January 2007.

Stakeholders

Figure 1 maps the range of stakeholders involved in the Hygiene Promotion Communication Campaign, adapted from the perspective of the Household Centred Approach to sanitation. If the campaign's aim was understood to be improved hygiene behaviours of women, men and children in IDP camp and village households, the outlying spheres and their relevant actors and processes (including individuals, agencies, and policy/strategy frameworks) can be understood as the enabling environment for realising this aim.

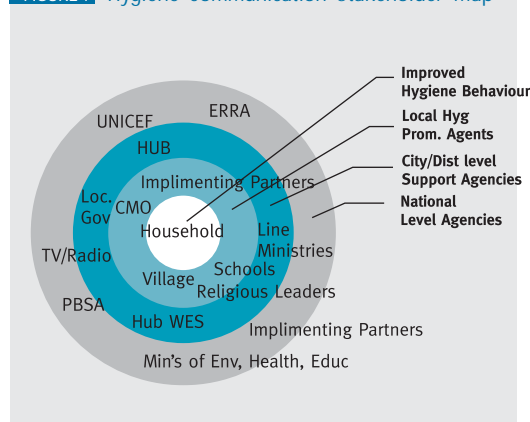
Coordination

UNICEF had a presence in the affected area before the earthquake and hence a good relationship with authorities. After the earthquake, an inter-sectoral

Emergency Relief & Rehabilitation Communication Committee was formed to plan and execute programme communication support, involving key ministries such as health, environment, social welfare and international partners. An Emergency Relief & Rehabilitation Communication Centre was set up in the Health Education Cell at the Ministry of Health.

As part of UNICEF's global mandate⁶ to lead the water and sanitation sector cluster of agencies working in emergencies, it established a water and sanitation cluster in both NWFP and AJK. Hygiene was part of the health cluster, shared by the World Health Organisation (WHO). Water and sanitation cluster meetings were often filled with quantitative updates or technical discussions: dedicated time for hygiene promotion was scarce. Eventually, hygiene sub-clusters were established. In Muzaffarabad they turned out to be beneficial, but in Mansehra they proved to be a dead end. Hygiene sub-cluster meetings in Battagram only started in May 2006. The UNICEF emergency response team had separate funding and staffing to the country programme. All UNICEF hubs fell under the emergency team, while the provincial offices remained responsible for the country programme. The emergency programme will be shifted to the UNICEF country programme in 2008.

FIGURE 1 Hygiene communication stakeholder map



Findings

Messages

The Earthquake Relief & Rehabilitation Communication Plan, drafted in October 2005, shaped the strategy for communication and promotion of hygiene messages in the immediate

⁶ In 2006, as part of UN reforms the Inter Agency Standing Committee IASC designated UNICEF to lead the inter agency cluster working group on water and sanitation in emergencies. The cluster working group includes among others WHO, Oxfam, IFRCs, The International Committee of The Red Cross, The IRC, and WFP.

aftermath of the earthquake. The messages disseminated in phase one were based on earlier emergency response efforts and needs, as well as results of a rapid three-day assessment in mid-October. Key messages disseminated were:

- Public defecation promotes the spreading of diseases such as diarrhoea, jaundice and cholera.
- Every household should construct a low-cost latrine for prevention of diseases and to save family members the inconvenience of defecating in the open.
- Hand washing could save many lives.
- If you don't wash your hands after using the toilet, they become a superhighway for transmitting microbes from one person to another. Make habit of washing your hands every time.
- Faeces contain billions of virus and bacteria. They are the number one public enemy in spreading diseases. Persuade everyone to defecate only in latrines. If latrines are not available, the faeces should be covered with earth.
- Diarrhoea can be prevented through use of safe water, toilets and regular washing of hands with soap and water, especially after toilet use and before touching food and feeding children (UNICEF, 2005).

Notable omissions from the above are personal hygiene behaviours such as face washing, which also contributes to lower incidence of ARI and spread of infectious eye diseases.

Products

UNICEF distributed a range of personal and household hygiene products to support improved

hygiene behaviours, doing so through implementing partners, including Local Government & Rural Development Department (LG&RDD). Soap bar distribution, from existing stocks in UNICEF Pakistan warehouses began in affected areas during the second week of November. In the second week of December 2005, hygiene kits and latrine slabs were first received and distributed by the UNICEF Hub Offices. In mid-December, radios and water purification units began to be distributed in bulk in the four districts.

Distribution of soap for personal and clothes washing was conducted in support of the hygiene messages being promoted and in response to peoples' needs for basic hygiene products. The Pakistan Boy Scouts Association, with UNICEF, distributed 100,000 bars of soap (provided by Unilever) and another 1.5 million bars (purchased by UNICEF) among IDP camps and villages. To further stimulate attention and awareness, soap was used as prizes in waste collection campaigns (PBSA, 2006).

Soap bar distribution was a highly appropriate and relevant component of the Hygiene Promotion Communication Campaign. People were familiar with use of soap – even those unable to afford soap were generally familiar with its uses. The availability of soap three weeks after the earthquake meant that the promoted behaviours could actually be carried out by end-users. Key informant interviews in shops near IDP camps revealed that demand was felt to have increased by up to 50% in the past year.

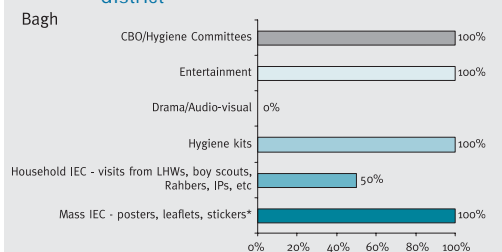
UNICEF-supplied **hygiene kits** included washing and bathing soaps, toothbrushes, toothpaste, a nail cutter, women's sanitary cloths, towels, combs,

small water container and mug. The distribution of these kits is an example of a highly relevant product. Issues around appropriateness of some kit contents were, however, raised during key stakeholder interviews. Key 'appropriateness' problems were:

- Inclusion of 'western'-design feminine hygiene products (eg, sanitary cloths and underpants) not commonly or traditionally used by these women
- Distribution of the hygiene kits by male team members preventing women from being able to collect the kits; and
- Lengthy three-month lead times from order to delivery of hygiene kits to the Hub Offices resulted in distribution delays to end-users.

While this component of the communication campaign was relevant in terms of fulfilling the

FIGURE 2 FGD with children: Recall of hygiene promotion campaign components, Bagh district



basic personal hygiene and public health needed for improved sanitation to control open defecation in the IDP camps, the promoted latrine technology, simple pit latrines, were neither familiar nor in demand by end-users across the board. Other qualitative and quantitative information provides evidence that the following problems were also

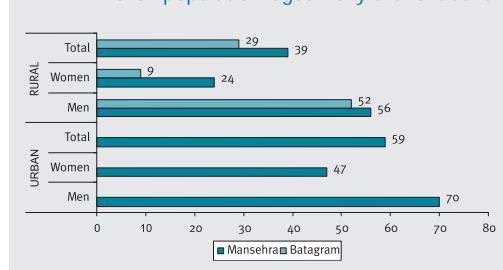
associated with latrines, their construction, use and maintenance in general:

- Poor quality superstructures that could not withstand extreme weather conditions across seasons
- Lack of sense of ownership of latrines (especially for maintenance and cleaning)
- Delays in delivery of latrine slabs
- Preference among users is for pour flush latrines
- Use of water for cleansing led to latrines filling too quickly and no specific education on proper use of pit latrines in the community; and
- Insufficient development of capacity among end-users for future latrine relocating and new construction.

Despite these shortcomings, achievements were also noted such as IDPs taking latrine slabs with them, and continued latrine use, on return to their villages.

The first UNICEF-supplied **radio sets** were distributed by mid-December 2005. The purpose of distributing radios was to disseminate health education and hygiene messages (including hygiene promotion) and information on available services. In affected districts, with relatively low literacy

FIGURE 3 Adult literacy-NWFP, 2004-2005
% of population aged 15 yrs and above



rates, particularly among women and in rural areas, radio was popular before the earthquake: rendering radio transmissions and programmes an appropriate medium of communication (see Figure 3 for NWFP – rates are generally higher for AJK) (GoP, 2006).

Results indicate that before the earthquake, radio programmes were among the top five traditional sources of hygiene information for women and men. Roughly 81% of households had radios before 8 October 2005 and although more than half were destroyed, a snapshot survey by Internews found listenership increased from 28% two weeks after the earthquake to 70% by February 2006 (Internews Network, 2006). Figure 4 shows a slight variation between women's and men's traditional hygiene information sources.

Limitations to the effectiveness of the radio distribution component of the Communication Campaign included issues around quality of the radios provided by UNICEF and the range of the

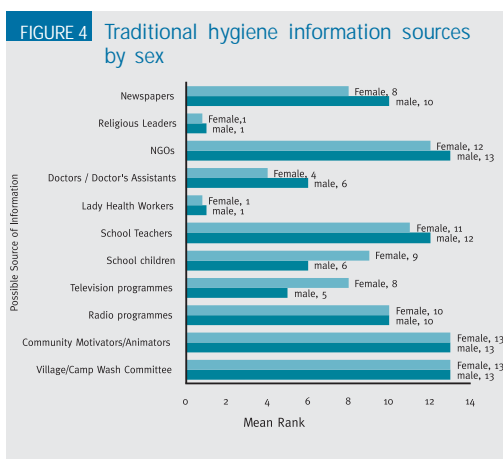
FM frequency in the affected areas. The use of FM radio transmission versus AM is addressed in further detail in the section on channels, below.

The quality of the radios distributed by UNICEF was poor. UNICEF-distributed radios were, in some instances, even returned to UNICEF due to non functioning (Intra-office Communication, Mansehra Hub Warehouse, Abbotabad, January 2007). Where functional, the battery operated radio sets proved to have a lifespan of around three weeks and no batteries were provided. In contrast, household observations found durable quality radio sets distributed by UNHCR still present, functioning and included other useful implements such as compass and flashlight.

Household Water purification and storage

Products to support the treatment and purification of water for drinking included **Nerox emergency water filters**, **Utility Bags for water storage**, **water purification tablets** and **PUR sachets**. In the context of UNICEF's response to the emergency, over 50,000 Nerox filters were donated by Norway, about 27,000 families received the filters while seven million water purification tablets and six million PUR sachets were distributed among the affected population through CBOs, NGOs and LG&RDD (Ahmad et al, 2006). In general terms, means for household water purification are highly appropriate products for distribution, and in the quantities realised by UNICEF and its partners, in response to a major disaster.

Of equal importance is the accompanying hygiene promotion and awareness raising; an integral part of this awareness raising relates to safe handling and storage of water. Communication campaign



components that sought to address this aspect of hygiene practices took place in the form of trainings for camp or village WatSan committees, demonstrations by boy scouts, IPs, etc. These are commented on separately below.

Despite these efforts, household surveys at the time of this study found that safe water handling and storage practices differed greatly across districts, as evidenced by Figures 5 and 6 below. While not a reflection on the success of the UNICEF-supported awareness raising and skills building activities alone, these results provide a snapshot of households' current safe water handling and storage practices. People affected by the earthquake didn't adopt or sustain all behaviours they may have been exposed to in the post earthquake setting. Of particular concern are the relatively low rates of visible hand soap near food preparation areas.

Finally, a key area identified for improvement is the English language printed on the Nerox filter kits in an area where, as seen above, literacy rates are not high and English is neither the mother tongue, nor the local lingua franca of the majority of the population.

FIGURE 5 Water/hygiene in household/tent, Mansehra district

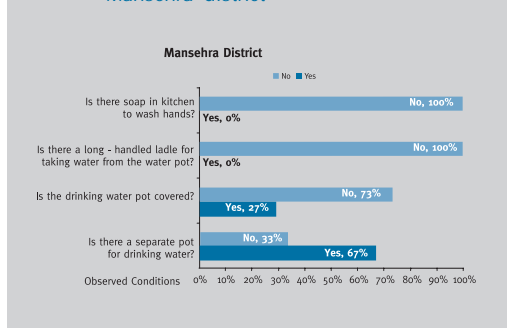
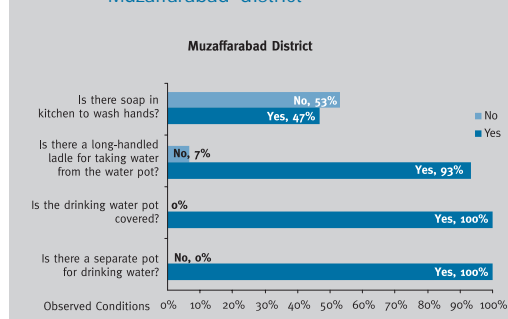


FIGURE 6 Water hygiene in household / tent, Muzaffarabad district



Activities/Services

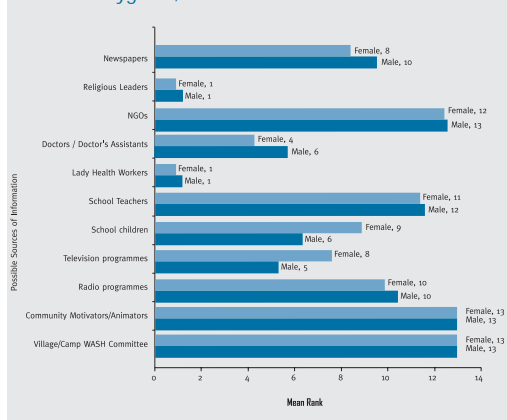
Pakistan Boy Scouts Association

Within a week of 8 October 2005, the Pakistan Boy Scouts Association (PBSA), drawing on their existing programme resources, initiated an emergency response campaign, dispatching boy scouts from across the nation to the affected areas, to assist in the rescue efforts and with crowd control efforts.

PBSA had a known presence in much of the affected area before the earthquake and in particular in areas closer to urban settlements. Key stakeholder interviews have indicated that the boy scouts provided invaluable assistance with their rescue efforts.

This exposure to, and familiarity with, PBSA meant that the scouts had access to households in more conservative areas where traditional culture and faith-based practices do not permit women to leave the home or interact with men outside the family. As a means for conveying hygiene promotion messages, PBSA proved to be an appropriate and effective channel. In support of this statement, assessment results from all four districts in Figure 7 indicate that among the most important traditional sources of hygiene information are community

FIGURE 7 Traditional sources of information about hygiene, combined district results



motivators and school children – a neat combination of the defining characteristics of boy scouts.

Particularly effective were the tent-to-tent visits by boy scouts to disseminate hygiene promotion materials. The post earthquake collaboration with UNICEF - building on past cooperation on other programmes in the country – sought to benefit from PBSA's profile, which was achieved by playing an active role in the rescue phase and their ability to access all community members.

Additionally, the wall-chalking component of the campaign and tent-to-tent dissemination of hygiene messages were particularly memorable to focus group discussion participants in this study.

Identified weaknesses in the activities and services connected with the collaboration between UNICEF and PBSA relate mainly to cross cutting issues such as logistics, coordination and programme coherence.

Each district had four scout patrols each consisting of eight scouts (between 16-18 years old). In total

1,197 scouts were deployed during three months, excluding field coordinators.

Each base camp was equipped with one minibus for transporting scouts to villages and camps to conduct hygiene promotion activities. This was a limiting factor in the amount of time a scout patrol could spend in each location, hence the observation of one key stakeholder that "...wall paintings and putting up banners were 15 minute activities, then [the boy scouts] were gone again. This was not seen as a very practical help..." (Project Manager, Implementing Partner Organisation, Muzaffarabad, January 2007).

Other mitigating factors in the effectiveness of PBSA activities concerned logistics and timelines of payment disbursements as per signed agreements. This included late or non-delivery of agreed supplies, eg IEC materials for Rahbers (see below) to distribute, visibility clothing and gear, and programme management tools such as computers and printers.

Lady Health Workers

One recommendation of the mid-October 2005 rapid assessment was to reach out to households and communities with health and hygiene messages through Lady Health Workers (LHW). Their tasks included mobilising health committees and arranging community gatherings. Interpersonal communication between LHWs and those affected was intended to raise awareness of health and hygiene, as well as provide information to households.

Though the LHW concept is coherent with the programme approach in its emphasis on interpersonal communication, and appropriate given the programme's established presence (70,000 registered LHWs in Pakistan), relatively

little information could be gathered on the effectiveness of the LHW programme. This may reflect in the finding that in terms of traditional sources of information about hygiene LHWs did not rank high in any of the four districts.

Rahber Programme

The Rahber Programme was a partnership between the Ministry of Environment, Ministry of Health, UNICEF, WHO, National Volunteer Movement (NVM), Pakistan Boy Scouts Association, National Rural Support Programme, National Commission for Human Development, Muslim Aid, Al-Rahman Trust and Pakistan Girl Guides Association. In Urdu, 'rahber' means 'one who shows the 'path', or 'guide'.

With support from UNICEF, NVM provided overall support and facilitation, while the boy scouts were responsible for overall coordination and implementation in allocated areas. Other partners implemented the programme in other allocated areas.

The MoU was signed on 20 January, 2006 and under the six-month programme, teams of three *Rahbers*, aged 12 and older, were assigned 10-15 family tents in both organised and spontaneous camps, which they would visit daily to carry out interpersonal communication for hygiene, sanitation, safe water, better health and children's protection issues. Rahbers were also to organise camp cleanliness drives. Orientation programmes were to be provided along with visibility and information materials to support their efforts.

Orientation meetings held with UNICEF in Islamabad, and the orientation sessions with camp and tent Rahbers, were effective in establishing a common understanding and core competencies for the planned activities. Additional training for camp

and tent Rahbers, along with distribution of Rahber field manuals were planned.

Despite these effective preparatory and coordination efforts, similar to the PBSA programme, the Rahber programme faced limitations in terms of delays in payments, late delivery of visibility clothing, protective gear and IEC materials (arrived at the end of the project) hampering Rahbers ability to gain access to households due to lack of identification as official community mobilizers. Key stakeholder interviews with Camp Management Organisation representatives also indicate that the Rahber programme was not consistently implemented in the four districts surveyed. Figure 9 below illustrates the Rahber programme was non-existent in Bagh district with similar results for Muzaffarabad.

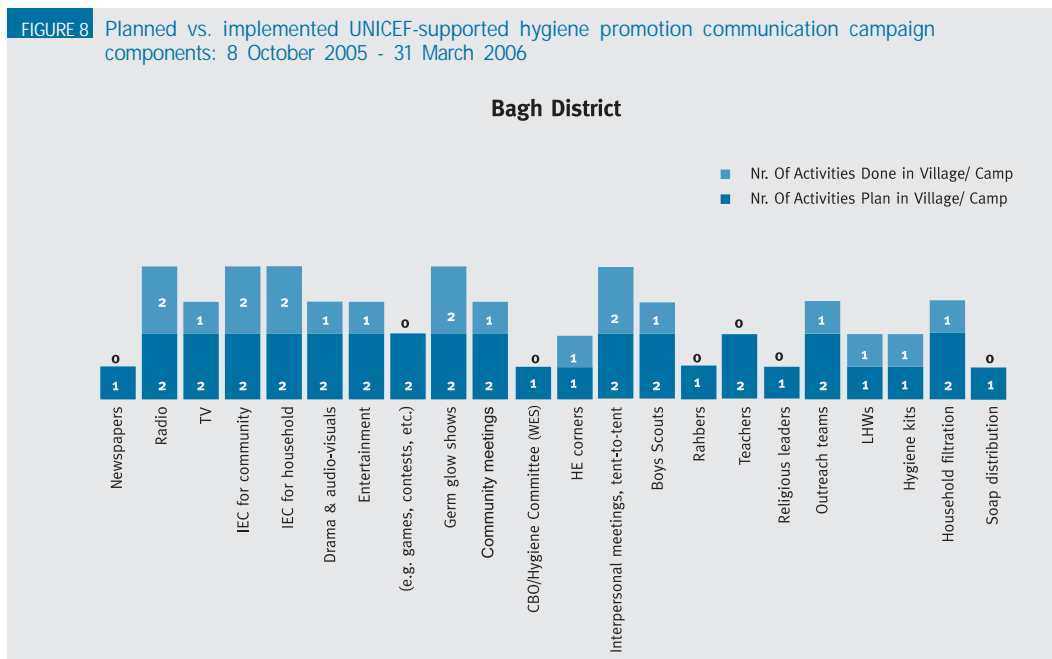
Finally, though conceived with a timeframe for implementation up until June 2006, the programme suffered when camps officially closed on the 31 March 2006 and trained Rahbers were dispersed or returned to their places of origin.

Health Education Corners (HEC)

Health Education Corners (HEC) were established in relief health facilities and major relief camps in each of the affected districts (MOH/UNICEF, 2005). Similar to the Lady Health Worker programme, relatively little evidence on the relevance or effectiveness of the health corners could be traced, apart from the fact that the planned HEC were implemented in the four districts surveyed.

The potential of HEC was high given the evidence presented previously about people's preference for interpersonal communication channels. Efforts to carry out the activity over a longer period with

FIGURE 8 Planned vs. implemented UNICEF-supported hygiene promotion communication campaign components: 8 October 2005 - 31 March 2006



corresponding monitoring of effectiveness and outreach would have benefited the programme as an appropriate and coherent activity that had strong links among sectors (Health and WES). However, commenting on the effectiveness of the activity is not possible, given the low recall among end-users about HECs and the relative dearth of information to trace them ten-months after the closure of IDP camps.

Information, Education and Communication Materials

UNICEF-supported Information, Education and Communication (IEC) materials were developed, produced and disseminated as part of the various programme components such as the PBSA, Rahber

TABLE 2 Overview of mass and household level IEC materials

Mass	<ul style="list-style-type: none"> ● Health and hygiene message posters and stickers ● MEENA Poster series on hygiene ● 'Let Life Smile Again' slogans and banners ● Mosque hangings ● Wall chalkings
Household	<ul style="list-style-type: none"> ● 'Let Life Smile Again' poster stickers and leaflets ● Prayer cards with Quran quotes on personal hygiene behaviours these quotes were specifically designed for mosques, they were not part of HH material ● MEENA Special Protection Package

and other activities. Household level, as well as mass communication, IEC materials were developed and include:

The IEC materials were developed to disseminate a wide range of relevant messages. The materials were appropriate for most, though not all, districts as they were printed in Urdu. Although, phase one materials – largely text-based – were less relevant and effective in areas with high illiteracy levels.

A second round of printed materials was based on images and messages adapted for the IDP camp setting. However, these were less relevant in Battagram where socio-cultural patterns and practices differ from the other districts. Depiction of local customs, language and images from Battagram would have made the IEC materials more acceptable and relevant in that setting (Personal communication, UNICEF Project staff, Battagram, January 2007).

Despite the appropriate and coherent idea behind adaptation of the images and messages to the IDP camp setting, the decision to close IDP camps by 31 March 2005 was taken while the second batch of IEC materials were being produced. Though attention had shifted to the repatriation process, Hub Office staff reported arrival of batch two materials occurred without advanced notice. This, coupled with low levels of demand from Implementing Partners (IPs) for the materials, limited their potential effectiveness. This disconnect between national and hub levels of programme activity impacted on the effectiveness of the potentially worthwhile IEC activities.

Camp hygiene committees and cleaning campaigns

NGOs and IPs active in the IDP camps promoted the establishment of camp committees, which were

formed as a means of coordinating and mobilising community members around general issues, and hygiene promotion information in particular. These efforts were met with varying success across location and different end users.

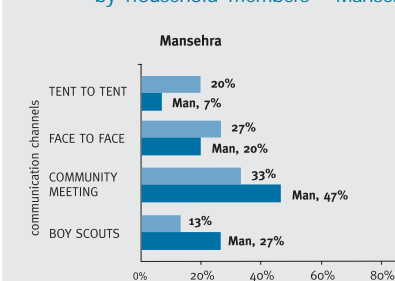
Channels

Interpersonal communication

Results from the FGD with women and men regarding recall of interpersonal communication channels indicated in most cases that these channels – including tent-to-tent, face-to-face, community meetings, and specific programmes such as the boy scouts – varied across the districts and by gender. Community meetings were well remembered by men in particular while women's recall of tent-to-tent/face-to-face visits was stronger.

Where hygiene products were distributed through interpersonal channels, it was found that dissemination of corresponding information was practical as the messages about clothes- and hand-washing, water purification, oral rehydration, treatment, etc were matched with the required hardware to conduct the promoted behaviour.

FIGURE 9 Hygiene communication channels recalled by household members - Mansehra district



Implementing partners

IPs provided hardware for drinking water supply and latrine construction along with hygiene kits, jerry cans, aqua tabs, buckets and other supplies to support the hygienic behaviours being promoted.

Capacity development efforts of IPs resulted in the formation of CBOs & Hygiene sub-committees, as well as training for the members on hygiene promotion communication. Support was also provided for community level demonstrations on use of Nerox filters, hand washing, etc.

Key stakeholder interviews, with more than 15 IP representatives across all four districts, also highlighted a number of cross-cutting areas for improvement such as coordination, capacity development and logistics. In particular, not all IP staff received orientation on use of materials - either from UNICEF or from their own organisation. Another example related to coordination is that strategies for implementation varied across IPs. This lack of uniformity in selecting IPs and their proposed strategies may have stemmed from a general dearth of qualified staff and agencies in affected areas. Finally, even where monitoring was an agreed IP activity, it was not conducted regularly or in a timely manner so that necessary adjustments to programming, based on monitoring findings, could be implemented.

Religious leaders

Traditionally religious leaders were not a leading source of information about hygiene for men and women. However, the concept of involvement of religious leaders in promotion of hygiene/health messages existed before the earthquake and a curriculum – based on those messages that correspond to the Quran – had been developed.

Though this channel started only at the end of March 2006, and was not universally mobilized across the four districts, religious leaders did play a positive role in hygiene promotion in Mansehra and Battagram districts. Hub Office staff in those areas expressed that they now regard them as trained resource for future emergencies. As with the collaboration with IPs, monitoring of the effectiveness and impact of the capacity building was weak.

Entertainment

Entertainment events were largely reported as appropriate and effective means of communicating hygiene promotion messages. Planned entertainment events including Germ Glow shows, drama, and films were held in each district and considered welcome diversions to the circumstances for audiences. Additionally, messages packaged in entertainment channels were well received. Thus, in terms of appropriateness, relevance and coherence, entertainment activities performed well.

However, in terms of effectiveness, issues surrounding sufficient numbers of Germ Glow machines (1 per district), the fragile and easily damaged components of the Germ Glow machines and inability to quickly or easily go to scale with entertainment programmes such as drama, film, etc, did crop up. This said, children's recall of entertainment events across the districts is quite high.

Newspapers

Advertisements disseminating key messages about gastroenteritis, malaria, tuberculosis, immunisation, nutrition, maternal health and disaster related stress, water, environment, sanitation and child protection first appeared in newspapers on 3 November 2005. In the 14-day campaign, seven different ads appeared twice in seven newspapers.

Though the timeliness of these messages was appropriate, appropriateness and relevance of this channel, expressed in terms of newspaper readership in affected areas, are low; with only 21% of people (not disaggregated by gender or age) – surveyed by Internews – reported as relying on newspapers as a main source of information by the end of October 2005 (Internews, 2006).

Key informant interviews with shopkeepers during the field study indicated that supply of newspapers – even local newspapers are mostly printed in Rawalpindi and Islamabad – was problematic for between six and eight weeks after the earthquake.

Additionally, as a traditional channel for hygiene messages, newspapers did not feature among the top five sources in the districts surveyed. However, information gathered from newspapers by those who do read them is shared through mouth-to-mouth channels during daily gatherings of male and female social groups. Despite this secondary channel, end-users expressed that advertisements are usually skipped over during reading.

Radio

Radio was popular, especially in rural areas, before the earthquake – although FM coverage was not available in the rural areas of NWFP and in AJK because FM broadcasting licenses were not easily obtained. In response to the disaster, and in light of the relative popularity of radio, ten temporary non-commercial licenses were issued.

Broadcasting was supported through the wide distribution of radios by many organisations in the affected areas, making it possible for people to access the newly established stations. As noted in the findings on distribution of radio sets, listener

coverage had reached up to 70% in IDP camps and villages by February 2006.

Stations that collaborated with UNICEF to provide hygiene promotion information included: FM 100; FM 105; University of Punjab FM 104 and Sachal, though the latter was not recalled by assessment respondents. In Abbotabad, Radio Buraq had a contract for 36 programmes to broadcast. Broadcasting from these stations started between 10 December 2005 and 1 January 2006.

Radio, as a communication channel, can therefore be said to be an appropriate and relevant choice in the emergency response. Constraining factors to the effectiveness and coherence of the use of the channel included: the limited reach of the FM frequency in remote areas, unforthcoming support in terms of expertise from UNICEF in programme content development, delays in payments for services, and the fact that programming was conducted primarily in Urdu, rather than in the various languages represented in the diverse targeted areas.

Finally, considering the popularity of radios as a channel of information and entertainment, the relatively short duration of programming (dissemination of hygiene promotion messages via various stations took place between 10 of December 2005 and the third week of March 2006) was an opportunity missed. Messages about hygiene behaviours in this setting – ie their villages of origin – could have served to reinforce those disseminated while the displaced persons were still living in the IDP camps.

TV

Traditionally speaking, TV was not a major source of hygiene information before the earthquake.

Though about 52% of the population in the affected area had televisions, they were virtually all destroyed by the earthquake (Internews, 2006). As a channel for hygiene promotion communication, TV was not among the most appropriate or relevant options in the immediate aftermath.

The TV-based initiative of MoH, UNICEF and Atv - an Islamabad-based 'free to air' television network - to develop and transmit 30 weekly programmes on relevant health and hygiene topics commenced on 1 April 2006. The activity was also intended to facilitate the IDP repatriation process. Programmes, featuring prominent celebrities and public figures conducting entertainment events about health and hygiene issues with affected people, were taped live in different camps. Viewer call-ins to the programme were possible and popular with calls and letters from around the country.

Finally, key stakeholder interviews indicated that the effectiveness, relevance and coherence of use of this channel were compromised due to the following factors:

- lack of baseline information gathering about the target audience (including information on the availability of TVs in the affected areas)
- lack of impact monitoring for making improvements and adjustments to programming
- lack of agreed support from UNICEF in identifying hygiene experts as per the cooperation agreement
- delays in reaching cooperation agreements and processing of payments
- non-provision of agreed equipment for mobile TV recording units
- lack of programming in a variety of local languages, not only Urdu.

Pakistan Earthquake Relief & Rehabilitation Communication website

The campaign website – www.pakquakecommunication.org/site/ – became active on 5 December 2005 (and was still available when this paper was being produced). Stemming from UNICEF's mandate to lead the WES Cluster, the site provides information and knowledge management services primarily for the collaborating agencies involved in the emergency response, relief and rehabilitation efforts.

As a proxy indicator for the effectiveness of the website, the number of site visitors – a total of 2,070 by February 2007 – is low given the overall number of everyone involved. What was not possible to trace during the assessment period was the spread of hits over time (eg were site visits concentrated in the first months after the earthquake), specific pages that received most hits, and who, and from which agencies, were the most/least frequent site visitors?

Conclusions and recommendations

Based on the findings detailed above, a number of main conclusions and recommendations can be drawn with specific attention to UNICEF's Hygiene Promotion Communication Campaign.

Generally speaking, it can be concluded that while messages were pertinent and diverse, and significant efforts were made to equip end-users with the required information and products to practice safe hygiene behaviours, the strategy and response developed suffered from a lack of a clear communication link between the WES Cluster activities at national and hub levels. This disconnect between actors at different levels resulted in delays in activities, delays in development and distribution

of products, different approaches being developed locally without material or concept support and reduced effectiveness of overall programme objectives.

Messages

The hygiene promotion messages selected were based on previous experience with response to humanitarian crises and outcomes of the rapid assessment conducted from 15 – 17 October 2005 that intended to appraise the availability, reach and access of media and potential communication channels.

While highly relevant messages about safe water, sanitation and personal hygiene behaviours, and practices were among those disseminated; messages such as those regarding malaria and handling of snake bites – of less relevance in a mountainous region with winter approaching – were included as standard elements of the communication campaign in the first phase of the emergency.

Messages about the importance of face washing to reduce incidence of ARI and eye infections (particular among children) were missing amongst those detailed in phase one of the Earthquake Relief & Rehabilitation Communication Plan.

Recommendations

- Conduct **rapid pre-testing of messages** for dissemination with various stakeholders from the affected area to ensure appropriateness. This includes cross-checking with local languages (eg no word for 'sanitation' in Urdu, 'health and cleanliness is closest approximation'), relevance to diverse populations and community members, and potential effectiveness of messages.

- Focus on a **limited number of practical, simple, 'do-able' messages** that are context specific in the impact and emergency phases to ensure relevance. As more means/services will be in place in later phases, conducting promoted behaviours will become more realistic.
- Consult WHO/national data on **seasonal disease patterns** for the affected area, as part of a rapid assessment and during implementation. In an area where the Health Information System is not functioning optimally, or where a large part of it has been disrupted due to the earthquake, a substitute system needs to be used.

Products

The products distributed were generally found to be appropriate and relevant in the given context. However, constraining factors in achieving optimal results were poor product quality and delays in product delivery. Additionally, information and skills sharing between IPs and end-users on appropriate product use was inconsistent.

Recommendations

- Make **instructions for use of products** quickly available in all relevant local languages. Also take into consideration that a large part of the population is illiterate, so also provide visuals.
- Set and adhere to **minimum quality standards of different products** that are locally purchased and commonly required in emergency response.

Hygiene promotion activities and services

The emphasis given to activities based on interpersonal contact to disseminate hygiene

products and promote safe hygiene behaviours, was regarded a great strength and one of the successes of the Hygiene promotion communication campaign. The various activities of the boy scouts, Rahbers and religious leaders were not only relevant in terms of their familiarity as traditional sources of information, but also in line with a preference for face-to-face interaction as a motivating factor in adopting new behaviours. On the other hand, a key factor in success is the 'repetition rate' of delivering the same message, through different channels.

Cross cutting issues that impacted on the efficiency of the activities/services include:

- insufficient coordination between hub and national level actors regarding the campaign strategy and components
- minimal involvement of IPs in WES Cluster Hub Coordination meetings and
- delays in processing time of project cooperation agreements and payments.

The above led to delays in implementation and may indicate disconnect between local and national programme operations, hampering realisation of the campaign's potential for greater effectiveness. Even at the local level, a lack of coordination between other ongoing local activities and the activities of PBSA meant that promising initiatives such as the Rahber programme were not as successful as they could have been.

Recommendations

- **Baseline information gathering** to identify needs and existing practices of end users, including appropriate personal hygiene products in the given context (by gender, culture, ethnicity, etc). Consider facilitating the **development of a simplified method,**

fundamentally based on PHAST, which can be used by various organisations to determine essential baseline information in the early phases of an emergency response. Emphasise and create **greater programme coherency** in terms of provision of corresponding software (hygiene awareness raising) and hardware (provision of supplies and facilities to conduct hygienic behaviours) *simultaneously*.

- As UN Cluster Head for WES, advocate for **integrated programming**; where hygiene, sanitation and water go together, carried out through a public health lens.
- **Build in, and observe agreed time frames** for monitoring, reporting, evaluation and payment for IPs in project cooperation agreements.
- **Ensure the timely provision of agreed support** in LoU and MoU such as identifying experts, defining programming topics and supplying technical equipment.
- **Revise monitoring protocols and formats** for emergency WES-related activities implemented by IPs. The protocol and formats should include qualitative feedback from IPs (and beneficiaries) about project impacts, effectiveness, etc.

Channels

Among the most relevant, appropriate and effective channels for communicating hygiene messages in the aftermath of the South Asia earthquake were (FM) radio, interpersonal communication and entertainment events. People could access these channels because they were available through distributed products (though radios were of questionable quality), various face-to-face initiatives and through events organised for different groups in camps at various times.

Newspapers and television were less relevant and appropriate in the immediate aftermath of the earthquake, as the affected areas did not have much access to newspapers.

Recommendations

- To reach more and different population groups, radio (and television) programming should be conducted in **other relevant local languages** in addition to Urdu.
- **Involve existing informal institutions** – eg religious leaders, village heads, land owners and teachers – as quickly as possible and in a coherent manner as they potentially serve as important information channels. Strong links with *informal* institutions in communities are needed, also in non-emergency times.
- **Maintain emphasis on interpersonal communication** activities and face-to-face outreach to access difficult to reach groups; eg remote, dispersed, handicapped.
- **Use hygiene products as channels** by clearly displaying hygiene promotion messages on the products distributed. Names and/or logos of agencies are often printed on materials of all types.
- An under-used **channel** is that of **mass distribution** itself. Mass distributions often target all registered households, hence present an opportunity to disseminate a certain message or to conduct a rapid 'baseline' assessment.
- **Avoid limiting the radio programming concepts in the MoU with IPs.** Clauses in MoUs prevented promotion of messages in programmes funded by other donors, as though UNICEF wanted to have the exclusive rights to the concept and/or channel. Instead, the concept should be further developed, as many radio channels as possible should be encouraged to buy in.
- **Monitor** the use of audio, visual and digital channels and integrate this into project cooperation agreements.
- Explore the use of **AM radio frequency**, which has greater reach in remote areas, provided that the radios distributed are of reasonable quality to avoid wasting funding on non-functioning supplies, and help avoid frustration among survivors and emergency relief workers.

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24 Creating user-friendly water and sanitation services for the disabled: The experience of WaterAid Nepal and its partners

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WaterAid in Nepal

Abstract

Traditional attempts to increase coverage of basic services such as water and sanitation have marginalised or excluded the needs of disabled people. This is despite the fact that some 10% of the Nepali population, including one in six poor people, can be considered to have some kind of impairment. This paper reviews the social, technical, financial and policy barriers to meeting the needs of disabled people. It considers the consequences of this neglect on health, dignity and economic and social exclusion, and especially the impact on women. The experiences of WaterAid Nepal and its partners in supporting differently-able people without access to water and sanitation are set out and solutions to overcome the barriers are put forward. The

document concludes by recommending improved coordination and collaboration in the sector to increase focus on and improve delivery of water and sanitation services to disabled people.

Background

WaterAid Nepal (WAN) has been working in the water and sanitation sector since its establishment in 1987. It has supported more than 800 rural and 100 urban communities in accessing water and sanitation services. WAN has included a Gender and Social Inclusion Approach within its water and sanitation projects to ensure the active participation and inclusion of people of different economic and social status.

People facing disability are a part of every community throughout the world. Assessments have clearly shown a correlation between the poorest section of society and disability, with the prevalence of impairments found to be highest amongst the poorest section of society. With one out of every

six poor people likely to have some form of impairment, almost every poor family is likely to contain a person with a physical impairment. It is estimated that there are about 2.4 to 2.5 million people living with impairments in Nepal, which is about 10% of the total population.

This document has adopted the so-called “social model of disability” in its analysis, in which disability is considered the responsibility of the whole of society. In this model it is understood that people with impairments, such as physical impairments that limit their activity, are disabled because of the social and economic environment in which they live, which does not allow them to engage in society in the same ways as other people.

Poverty and disability are intrinsically linked, with disability being both a cause and effect of poverty. The poorest sections of society are more likely to have poor nutrition, limited health services, environmental pollution, unsafe water, and poor hygiene and sanitation, all of which place people at increased risk of some form of impairment. A very prominent example of this is polio, which is caused by a water-borne virus, and is a major cause of physical impairments. In most developing countries those people living with a specific impairment are more likely to be unable to access adequate healthcare and treatment, and as a result are disabled. They find themselves excluded from education and employment, and are thereby trapped in the vicious circle of poverty.

Addressing the needs of the physically impaired

The Government of Nepal believes that the Millennium Development Target (MDT) for water is on track but the statistics used to demonstrate

this ignore issues such as the reliability and safety of sources. Nepalese sanitation coverage targets are ambitious, particularly the national goal to achieve 100% sanitation coverage by 2017, and there is little dispute that sanitation targets are still far away. Access to water and sanitation services is a fundamental right of all people whatever their gender, physical ability, economic status or age. Therefore all water and sanitation programmes need to address the needs of all sections of society, including those living with impairments. Although the MDTs can mostly be achieved through the provision of water and sanitation to more privileged groups, in WAN's opinion the true success of the MDTs will not just be providing services to people, but reaching out to the poorest, marginalised and most vulnerable sections of society.

Reducing the disability of people living with impairments through addressing their needs in accessing basic water and sanitation services has been long overlooked, resulting in their continued isolation, poor health and poverty. Although some specialist agencies have taken initiatives to address these groups' concerns over water and sanitation needs, there is much to be done to include them in water and sanitation activities and ensure they have adequate access. Clearly, there is an urgent need to build awareness and knowledge in this area for every development practice.

Disabilities among people are diverse, as is their nature and impact on people's daily lives. People with impairments can be defined as those with no or limited physical, sensory (vision or hearing) or cognitive (learning) functionality, as a result of which they face reduced opportunities to participate in family and community activities. Elderly people,

pregnant women and children may also have specific impairments and resulting needs when accessing water and sanitation services, but do not consider themselves disabled. There is, then, a need for a broader perspective on access to water and sanitation, which also includes people who do not identify themselves as disabled but have varying abilities – “differently able”.

There is no question that innovative designs using local materials, a little extra cost, and simple considerations can aid disabled people to take care of their personal hygiene needs independently. Since 2004, WAN and its partners have been engaged in developing appropriate tools and technologies to build awareness on these issues, to ensure active participation of disabled people in the water and sanitation sector and to increase their access to water and sanitation services. WAN's experiences to date have shown that increased access to user-friendly water and sanitation services has resulted in improved health and hygiene among disabled people, their family and their community. In fact we are sure that the provision of these basic services to differently-abled people has had greater positive impact on their lives than the provision of services to able-bodied people.

Barriers that impede the use of water and sanitation services by disabled people

In Nepal, especially in remote rural areas, where professional medical support and equipment is often difficult to access, little can be done to cure or improve the psychological or mental conditions of physically-impaired people. However, a little consideration while constructing basic services, such as water and sanitation facilities, can have a huge impact on the lives of physically-impaired people

and reduce the disability they face in daily life. Barriers disabled people face when accessing water and sanitation services can be broadly classified into social and technical barriers. In addition to these, the lack of implementation of existing disability policies and financial difficulties within families and communities also create major hindrances in meeting the water and sanitation needs of the physically-impaired.

Social barriers

Disabled people face social stigmas and exclusion resulting from limited knowledge and understanding of the causes of their impairments and resulting disabilities. In Nepal, people often associate disability from birth with activities in a previous life. Those who have little contact or experience of interacting with people with impairments often have the most negative perception of them. As a result disabled people may be prevented from using public water and sanitation services for fear of “contamination” of water or “dirtying” the facility. Negative attitudes are also held by families who perceive a disabled person within their family as a financial and social burden.

Social stigmas often result in disabled people facing limited access to education, as due to their impairment there is a perception that they do not need or will not benefit from education. We have seen evidence that this has a negative impact on their ability and opportunities to participate and influence crucial decisions concerning their basic rights, such as those related to the design and provision of water and sanitation services. Even the seemingly ordinary custom of where possible building a latrine some distance from the house

makes it difficult for the physically-impaired to use the facility.

Technical barriers

Lack of knowledge about available water and sanitation infrastructure designs and technology has a direct impact on disabled people's access to water and sanitation services and also raises safety issues. For example, the steep and terraced terrain of the hills and mountainous regions of Nepal means physically-impaired people find it hard to move without help, and support tools such as wheelchairs are redundant. The natural environment and a lack of proper planning mean the approach paths to water and sanitation services are often slippery, narrow or uneven, making it hard to pass, especially for people using a wheelchair. The lack of support or handrails makes accessing water and sanitation services hazardous for the physically-impaired. Often the height of the wall surrounding a well or a tap also determines whether a physically-impaired person can use it.

This is especially true in public water and sanitation facilities, which do not consider the wide range of users trying access these services. For example, most schools do not have toilets that are friendly to the physically-impaired, which discourages children with different impairments from attending school and hinders their ability to pursue higher studies, often compounding their marginalisation within society. Lack of knowledge of designs and available technology often results in latrines and water points being built without consideration for different users' needs.

Financial barriers

Financial difficulties within families and communities hinder water and sanitation access in general, and

especially for those households who have to make additional investments to ensure access. Even though it often costs only marginally extra to ensure that services are disabled-friendly, it is generally the last in the list of priorities for families and communities that are already financially challenged. The low income of many people in Nepal and the competing expenditure demands within a household mean few resources are allocated to sanitation. When a poor family has to choose between food and sanitation, the latter receives low or no priority. For the poorest of the poor, incurring extra expense for a disabled member of the household is often out of the question.

Although with sufficient technical knowledge low-cost options are possible, our experience shows that all too often without external support or cost-sharing options, modifying water and sanitation services is too great a financial burden on families with disabled members. Even when technical knowledge is present, the financial burden is often further compounded by a lack of locally available and affordable materials, especially in remote hill communities, to construct and maintain appropriate infrastructure. Imported materials and technologies are often too expensive, difficult for communities to access and in the long run unsustainable.

There is a common misconception that making services accessible to people with a variety of different needs is costly. The increased benefits to carers, and society as a whole, of a wide range of people having independent access to water and sanitation services are also often overlooked. Despite sanitation's public benefits and society's overall responsibility to address disability amongst its members, limited resources are allocated at the community level to meet disabled people's needs and thus ensure universal water and sanitation access. Without providing user-friendly

latrines for differently-able people, achieving open defecation free status in a community is not possible. If sanitation outcomes are to be achieved at a community level then inclusion and investment in all groups is essential.

Barriers created due to lack of implementation of existing disability policies

The right to equality is enshrined in Article 13 of Part 3 of the current Interim Constitution of Nepal, which stipulates that everybody is deemed equal before the law. Based on the concept of equity, the article allows special provisions for the protection and promotion of the rights of marginalised groups, women and differently-able people.

Under Chapter 4, Article 26 proposes special provisions with regard to health, education and social security for the protection and development of disabled people. Many acts, like the Child Act 1991, the Disabled Protection Welfare Act 1982 and the Disabled Protection and Welfare Regulation 1994, have been put in place to safeguard the interests of disabled people. Though appropriate policies are in place, often they are not implemented, leaving disabled people unable to use their fundamental rights. As a result, people living with disabilities do not have equal access to public services – a right that is guaranteed by the Universal Declaration of Human Rights.

Major consequences of the barriers

Health risks

There is a direct link between health and access to water and sanitation services. Unsafe water can carry numerous serious diseases, including cholera and typhoid, but the most common are diarrhoea

and worms. In Nepal, diarrhoeal diseases result in 33,000 preventable deaths each year, of which 28,000 are children (DFID, 1998). In Asia, the promotion and adoption of safe sanitation and proper hygiene practices are recognised as having a significant impact on health.

Impairments, especially physical ones, can both increase a person's susceptibility to disease and make maintaining appropriate levels of hygiene more difficult. For example, a physically-impaired person who moves by crawling runs a high risk of obtaining infections in their hands. The negative impact on health and hygiene of not washing one's hands at critical times is well recognised; for disabled people whose access to water is limited, maintaining such a habit is close to impossible. Our experience has shown us that in times of high water scarcity, when less water is available and the time taken to collect it is considerable, the water requirements of the disabled are not prioritised. This is because people perceive their inactivity results in less need for washing and drinking water. This perception is of course wrong and can have a considerable negative impact on both hygiene and health.

The lack of a latrine or an inappropriately-designed latrine can place increased stress on a physically-impaired person's body. Although many physically-impaired people's bodies compensate for their impairment with strength in other parts of their body, additional stress while collecting water or defecating can have a significant impact on their ability to perform these or other tasks in the future. In addition, the chances of a disabled person obtaining infections are much higher when using latrines that are not suitably designed for them. It is well recognised that to ensure positive health

impacts the practice of open defecation must stop in the whole community. One household or individual who continues to defecate in the open continues to place the whole community at risk of disease. It is therefore in the health interests of the whole community to ensure that differently-able people have access to and use sanitation facilities, to ensure that they do not pollute the environment and shared water sources.

Lost opportunities and deteriorating self-dignity

In this context, by lost opportunities we are referring mostly to the inability of disabled people, as well as their families, to make financial gains and social progress. Public facilities like schools, hospitals and government offices still lack water and sanitation services that address the needs to differently-able people and this has a direct impact on these people's opportunity to make progress in life. Disabled children, especially girls, are excluded from attending school because of a lack of appropriate latrine facilities. This is also the case for adults in places of work where inappropriate water and sanitation facilities hinder their access to these basic rights, meaning fewer disabled people are present in the workforce.

"Most restrooms in almost all offices, including those in government offices, are not friendly to physically-impaired people. Most of the restrooms are made for physically fit people only. Even the Health Ministry, which disseminates messages to people to build toilets, has not been sensitive towards making physically-impaired friendly toilets. None of the rest rooms among 12 in the Ministry are physically challenged-friendly." (Rijal, 2005)

Relying on a carer to use sanitation facilities adds to the burden of disabled people's families in terms

of time and resources. In such situations, it is not only the disabled person who loses opportunities for progress but also the carer, usually a family member. Having to rely on others to maintain personal hygiene, mostly a very private matter, results in the development of low self-esteem. On the other hand, if disabled-friendly water and sanitation services are available the increased independence leads to increased dignity and self-reliance for disabled people. We have witnessed that increased independence can empower a person to take more challenges and rely less on others.

We consider that the economic costs of excluding differently-able people from sanitation far outweigh the costs of including them. The costs of exclusion are borne not only by the family, but also by the whole community, in terms of lost economic and social opportunities.

Additional burden on women

The challenges faced by differently-able women and girls are even greater than those of differently-able men. Girls are required to play a much more significant role in day to day household management, such as fetching water and firewood, looking after domestic animals and cooking. The very psychical nature of many of these tasks makes it impossible for girls with impairments to perform them; a girl's inability to perform these tasks increases her social exclusion within her household and the community. As part of their household responsibility, women are normally given the responsibility of caring for a disabled family member, presenting them with additional workload. The daily household management demands placed on women often reduces their ability to engage in education or livelihood activities, and the additional time spent on care-giving tasks further reduces this.

In addition, in Nepalese culture girls are expected to marry and leave their home to live with their husbands; however, disabled women find it hard to marry, forcing them to stay in their home and increasing the perceived burden on their family.

Water and sanitation services for the differently-able: experiences and solutions

Generally, discussions about inclusion in the water and sanitation sector focus on the needs of women, children and disadvantaged groups only. Without incorporating a disability perspective, a significant number of those most vulnerable to poverty will remain excluded. This is often a result of the lack of specific knowledge and skills in this area. However, to ensure that the water and sanitation sector is truly inclusive, all projects and programmes must address the needs of the disabled in their policy, planning, implementation and management.

A commitment is required from all sector actors that physically-impaired people must be supported in gaining equal access to water and sanitation services. To achieve this, in the most part, requires simple considerations only: for example, adding a set of handrails in squatting latrines or lowering the height of a tap. The inclusion of differently-able people within a community should be viewed in terms of the opportunities created for them to be involved in and benefit from community activities, such as a water and sanitation project. An essential part of addressing water and sanitation services is to take into consideration the needs of the differently-able and their families.

In April 2004, WAN supported one of its partners, Nepal Water for Health (NEWAH), to carry out a study on “Making Latrines User Friendly for Everyone: An Exploratory Research Study on the

Discomfort faced by Pregnant Women, Elderly, Overweight, Sick and Disabled People when Using Squat Latrines”. This aimed to explore the difficulties faced by physically-impaired people in using latrines and to find out how latrine-designs can be improved and made more suitable. As recommended by the study, NEWAH implemented “Sanitation Access for Disabled People Project” in eight Village Development Committees of Baglung district. This was done in partnership with a local NGO, Gaja Youth Club (GYC), which has for some time been working to address disability issues in the district. Some of the key objectives of the project were to train local social mobilizers and increase knowledge and awareness; to provide user-friendly sanitation facilities to differently-able people; to enable sustainable hygiene practices amongst disabled people and their family members; and to evaluate changes in health and sanitation behaviour through the project.

The implementation of various user-friendly water and sanitation services, including the initial work in Baglung, raised the following key considerations for ensuring the needs of differently-able people are addressed in accessing water and sanitation services:

Coordination among implementing agencies and influencing policy

Close coordination of planning, designing and implementing among all the agencies working in the sector, focusing on the issue of disability, creates more effective solutions to addressing the barriers faced by differently-able people in accessing water and sanitation. Bringing together agencies that possess different skills can ensure that the comparative advantages of the organisations are capitalised on and can enable each agency to play a complementary role, avoiding duplication and

building greater levels of synergy. In the past, such coordination has also led to better impact by sharing lessons learnt, replicating good practices and increasing resource mobilisation opportunities. Above all, a uniform voice creates awareness for bringing about positive change in the sector.

NEWAH has been working in water and sanitation issues for 15 years, during which time it has implemented over 1,000 Water, Hygiene and Sanitation (WHS) projects across Nepal. As NEWAH has focused more on the inclusion of marginalised and excluded groups in its approach, as well as ensuring total sanitation coverage in communities, the needs of disabled people have increasingly been brought to their attention. Gaaja Youth Club (GYC), based in Baglung District, is a local NGO working with disabled people. It had been involved in medical support, economic development and the provision of material support for artificial legs, crutches and wheelchairs for disabled people since its establishment in 1994. GYC was striving to provide sanitation facilities to the disabled people in the district; however, they lacked the skill, technological know-how and funding.

NEWAH and Gaaja Youth Club came together in 2005, bringing their specific areas of knowledge, to implement a pilot sanitation programme, "Sanitation Access to Disabled (SAD)", targeting people who were not able to use conventional latrine models. The SAD programme initially targeted 51 disabled people with the aim of developing and piloting sanitation technologies and also improving the health and hygiene status of the disabled people. NEWAH and Gaaja Youth Club also worked closely with Disabled Support Committees and Self Help Groups at the Village Development Committee (VDC) and municipal level,

mentioned below, to implement the project and ensure longer term support.

The outcome of the pilot programme was the development and testing of a number of technologies to increase disabled people's access to sanitation facilities. In addition NEWAH and GYC became more confident in methods of addressing disabled people's sanitation needs. Following two district level workshops, involving disabled people, their families and other stakeholders, a District Disabled Support Committee (DDSC) has been formed, under the leadership of the District Development Committee (DDC), to coordinate, plan and share the aims and outcomes of programmes targeting disabled people in the district. This, along with other advocacy activities, has increased the sensitivity of the DDC, concerned VDCs, local NGOs and other stakeholders to the needs of disabled people in development interventions. The DDSC now aims to support activities that will increase sanitation access for the remaining disabled people in the district.

In addition in Baglung, there are currently 12 Disabled Support Groups at VDC level and two Self Help Groups in Baglung municipality. These Civil Society-led Organisations (CSOs) comprise nine to 13 members, representing disabled people, their family members, teachers, social leaders, health post staff and female community health volunteers. The main functions of these organisations are to mobilize funds for the welfare of disabled people and coordinate with other district-based organisations to ensure support to disabled people. NEWAH and GYC have encouraged these organisations to network with each other and link up with the District Disabled Support Committee, and they now meet monthly.

The network of government bodies and civil society groups at district and VDC levels has enabled best practices and lessons learnt during various projects to be shared with decision makers, organisations representing the disabled and other concerned agencies for more effective water and sanitation provision to differently-able people. WAN's experience has shown that multi-stakeholder workshops and talk programmes have been successful in creating awareness of disability issues. In addition, increased sensitivity and media coverage of disability has proved an effective means of increasing awareness among the public and influencing national policy and programmes. Finally, as mentioned early on in this document, though appropriate policies are in place in Nepal, often they are not implemented, leaving disabled people unable to use their fundamental rights. Increased awareness and monitoring of policy for addressing disability in the provision of services is still required.

Use of appropriate technology

WAN and its partners' key principles regarding appropriate technologies – cost effective, easy to operate, widely available, low maintenance – are even more imperative when developing water and sanitation solutions to address the barriers and needs of differently-able people. Despite available expertise and a number of good resources, our experience shows that in too many cases implementing agencies have not adopted a disability-friendly perspective when constructing water pumps, taps and latrines. This is true of government, private sector and aid agencies. As a result, the designs are not suitable for differently-able people to use.

The key principles set out in "Water Supply and Sanitation for disabled people: a Resource Book"

produced by WEDC in 2004 are universally applicable and a useful reference when considering technical designs.

Although the WEDC Resource Book provides many simple, low-cost technology options, which are clearly illustrated, our experience shows that it is not sufficient just to introduce tried and tested technologies. The challenge lies in adapting these technologies to meet specific needs of different users, as well as sufficiently addressing the challenges posed by a specific terrain and providing culturally appropriate designs and solutions. Consulting with the users and basing decisions on their views and considerations has been fundamental in meeting this challenge. A case in point is the pilot project carried out in Baglung where efforts have been made to address the needs of the disabled in all school projects.

Based on training programmes that were carried out by WAN's local partner, NEWAH, two types of supports for the physically-impaired were devised to build latrines – one was made from a metal frame and the other used a wooden chair with arms. Both types included a plastic seat and cover, attached with nuts and bolts, over a central hole. The metal-framed seat without arms is more appropriate for those people with strong upper bodies but without the use of their legs, whereas the arms on the wooden chair help those with upper body paralysis or people who cannot control the movement of their limbs. The arms of the chair can be either on one side or both sides, depending on the person's requirement.

Technologies have proved to be readily adopted and maintained when easily available local materials are used in their construction. The use

of local materials involves the individual in the procurement and development of the solution, increasing ownership and reducing costs. In addition, we have found that the use of locally available materials also leads to better maintenance and upkeep, increasing the sustainability of these solutions. Involving users in the process of designing water and sanitation facilities and setting up local facilities for the sale and supply of construction materials to ensure continued availability are other considerations that encourage the use and acceptability of locally available and appropriate technology.

Where even conventional latrine materials and accessories are not available at the village or even district levels, user-friendly options for disabled people are even more of a challenge to access. The District Disabled Support Committee has harnessed the skills of grill and furniture workshops, based in the district headquarters, and developed an effective supply chain for a variety of accessories for adopting water and sanitation infrastructure to suit the needs of disabled people. Our experience has shown that training local businesses on existing user-friendly technologies and the needs of disabled users is very effective, not only increasing the availability of appropriate skills and materials, but also encouraging local innovation.

Completing the supply chain linking manufacturers with possible outlets for their goods, such as local shopkeepers, has proved successful and also enabled materials to be more widely available. To ensure continued production and distribution of materials and technologies, a workable, sustainable business model needs to be in place. However, initial incentives can act as a good catalyst to start the process. For example, the

hands-on training of local labourers in Baglung for building accessible water and sanitation services has not only helped build local capacity but also

BOX 1 Guiding principles for planning and design of user friendly water and sanitation services

a. Accessibility: Water and sanitation facilities should be accessible to all people, including those with disabilities, elderly people, pregnant women and children. Limitations faced by the differently-able like physical discomfort – unable to walk without aid or unable to squat – and psychological problems – fear of falling without support rails – are some of the issues to be considered.

b. Access: People with disability should, without assistance, approach, enter, pass to and from, and make use of water and sanitation facilities without undue difficulties. Barriers in the natural environment like a steep terraced landscape or slippery and uneven path should also be considered. The cultural practice of locating latrines further from the residence may be a challenge for the differently-able.

c. Usability: Water and sanitation facilities should be built in such a way that everyone can use them. It is not sufficient to provide water tanks or water pumps when the height of the tap is beyond the reach of different users or additional help is required to operate the water pump. Water is commonly stored in traditional storage pots which are large and heavy. Provision of taps and even platforms for the storage pots at an appropriate height would ensure minimum physical stress when lifting full water containers.

d. Safety: Water and sanitation facilities should be built in such a way that everyone can move about without undue hazard to life and health. The safety of slippery surfaces, such as on toilet floors or paths, can be improved by providing supports rails or finishing with a slightly rough surface for those with poor balance. Where squatting latrines are preferred, handles or rails for balance while squatting and getting up are minor additions that go a long way enabling safe access to water and sanitation services for the disabled. Latrines with wide doors and with simpler locking systems can be used by all.

ensured maintenance and custom designing of the water and sanitation infrastructure.

Financing mechanisms

The financial costs of water and sanitation services can have a significant impact on their successful implementation, functionality, usage, reach and sustainability. The modification or adaptation of water and sanitation infrastructure designs can add an increased financial burden. As mentioned above, households with disabled members are often among the poorest in society, especially when it is the head of the household who is disabled. Appropriate financing mechanisms need to be developed to ensure that the services are affordable to the poorest section of community. These should also foster ownership.

If addressing disability is viewed as the responsibility of the whole community, the financial cost of adapting infrastructure to make it inclusive needs to be borne by all. As mentioned above, with the public benefits of water and, especially, sanitation services, it would seem logical for the whole community to invest in ensuring access for all. One member of the community continuing to practice open defecation, due to inappropriate infrastructure, could mean the whole community continues to suffer from disease and illness.

The balance between external and internal service support is crucial to ensure appropriate services can be built and at the same time the community maintains ownership. Financing water and sanitation services, and specifically those modified to ensure access for differently-able people, requires a community resource plan. This should identify the level of financial and non-financial

BOX 2

Samjhana Kisan is a 14 year old girl from a disadvantaged and poor family in ward three of Baglung municipality. Her parents work as daily-waged labourers and she is the oldest among five children in the family. She is mentally impaired, has limb problems and cannot speak, walk or stand by herself.

Samjhana's parents built a latrine and bathroom in the yard some years back on their own. The latrine had a squatting pan and Samjhana had to rest her hands on the wet latrine floor while using it. Her parents had not considered her requirement while constructing the latrine and were also unaware of the technology available for the disabled. NEWAH provided her a wooden commode with arms at both sides and a support at the back, which was designed with her specific her needs in mind. It used local materials and the skills of a carpenter in the community. Samjhana can now comfortably use the commode and her mother's fear that she might fall off the chair is put to rest as it has support from three sides. The family are also happy knowing that alternations and repairs to the commode can be made relatively easily.

inputs needed, and decide how stakeholders, both internal and external, can contribute these, based on their specific situation and needs.

There are various models for sharing costs: between the funding agency and the community, the government and a household, even public and private partnership. In one example from a project WAN supported, the cost of the facility was charged based on the need of the family. For those who already had a latrine, only the cost of the commode was charged; the family paid for the construction. This practice was widely appreciated. In one village people even took out loans to construct disability-friendly latrines which could be used by the entire family.

In Baglung, the District Disabled Support Committee has established a fund of NRs. 75,000. The fund has come from the DDC (NRs. 25,000), Save the Children – Norway (NRs. 15,000) and VDCs (NRs. 2,000). Groups or individuals can access the fund to support sanitation activities for disabled people. VDCs who have contributed to this fund have become increasingly aware of this issue and are now working with the VDC-based Disabled Support Groups. They have demonstrated their commitment to addressing disabled access to basic services, such as water and sanitation, in their VDCs by establishing VDC Disabled Support Funds. The VDCs have raised these funds, also targeted at the welfare of disabled people, through donations, cultural shows and other local initiatives. These funds are generally disbursed to disabled people for income generation activities, at a minimal interest rate, but have also enabled the construction of user-friendly water and sanitation services.

Ensuring participation of disabled and the differently-able

It has been long recognised that participation is a crucial aspect of ensuring that services are appropriate for those that they are designed for and to generate a feeling of ownership. The representation and active participation of differently-able people in any community committee or group that designs, constructs, manages and operates a water and sanitation scheme has proved to be an essential component in getting their voice heard. Another approach that has proved successful is the forming of a grievance committee. Although this is not yet a core part of our approach, it has helped people air their concerns over the needs of specific groups not being addressed.

The mobility of disabled people often restricts their ability to attend community meetings and participate fully in the process. This creates barriers in receiving the voices, views, and considerations of the physically-impaired in key decision-making processes. Without their participation, it is impossible to ensure that the needs of disabled people are properly reflected in any planned activities. Their input in the planning process will also guarantee that changes don't have to be made to accommodate their needs at a later stage, which often results in unnecessary additional cost.

In the true spirit of representation disabled people should be given a platform and space to articulate their own needs rather than have others make decisions or assumptions on their behalf. These factors need to be carefully considered and taken into account, which could mean holding the meeting close to or in the house of the physically-impaired person, or ensuring that their views are represented by a family member or friend. NEWAH has integrated household-based health education into its health promotion approach, ensuring that resources are available to provide health education classes directly to the houses of those families with disabled members.

Water and sanitation professionals often lack specific knowledge and skills for addressing the needs of differently-able people. They should consult with organisations representing the disabled while building water and sanitation services to incorporate their perspective and experience. For example, while engineers have design knowledge and skills, they may not always be aware of the needs of differently-able people. On the

other hand, those with specific needs, although having a clear understanding of their disabilities, may not know about engineering solutions that could help them.

A tool that has proven to be effective is undertaking an accessibility audit at the same time as surveying water and sanitation services to identify the specific issues and needs of differently-able members of the community. These surveys have been used to capture information not only on the access needs of the disabled but also on the level of awareness among the general population regarding the challenges faced by disabled people. This kind of awareness among the general population is highly important in breaking down barriers and preconceptions around this issue. With careful consideration, it is not difficult to ensure inclusion in design, implementation, operation and management.

Addressing social stigma and changing attitudes towards disability

In a society where stigmas are attached to people with impairments and the resulting disabilities are often considered a burden, increased understanding around the issue of disability, and where responsibility for addressing it lies, is critical. Our experience has shown that having the ability to take care of themselves has had a positive impact on the self-esteem of disabled people, and also the attitude of others towards them. Infrastructure that enables all people, irrespective of their ability or impairments, to independently access water and sanitation services has led to an increase in the self-respect and self-reliance of disabled people. In addition, this helps families to save time and effort, thereby releasing time for income-generating activities as well as household chores.

Increasing the voice of disabled people through their engagement in planning and implementing water and sanitation activities has also proved to be very empowering. It not only gives people living with impairments increased confidence to express themselves in public arenas, but also shows other members of the community what value and positive contribution they can make to community development. It may not be possible to meet the individual needs and demands of everyone – meeting some needs may be beyond the scope of a specific water and sanitation project. Nevertheless increased information, awareness and thought on the part of implementing agencies could make the difference for a disabled person between being included and excluded from a service.

Conclusion

When the phrase “services for all” is used, it is often not backed up with a thorough analysis of its implications. Different groups have a wide variety of needs, and social, financial and institutional barriers must be overcome to address these needs and ensure everyone can access water and sanitation services. Within rural Nepal, disability is a significant issue with many people experiencing impairments, of all natures, due to poor healthcare, accidents, armed conflict, old age and many other factors. The needs and voices of the disabled have long been ignored, and the responsibility for the barriers that result in disability and increase their exclusion given to the individual, not society.

Traditional water and sanitation project approaches have inadvertently excluded disabled and differently-able people. This further increases inequity and makes achieving community water and sanitation outcomes, such as an open

BOX 3

Hari Bahadur Sapkota, a resident of Maalika VDC, Banglung, Nepal, is 52. He has been physically-impaired by paralysis in both his legs. He had been married three times but all his wives abandoned him. He told us that one of the main reasons his wives left him was that they could not share his plate for meals as he used to crawl and rest his hand on the latrine while defecating. As a result his wives considered him to be unclean. With no visible solution, they left him. However, with the installation of a commode in this latrine, which allows him to sit more comfortably while defecating, as well as keeping his hands away from the pan, Mr Sapkota is no longer considered dirty. In fact, due to his increased hygiene practices, he has been entrusted with the responsibility of cooking for his entire family, while other members earn an income.

defecation free environment, impossible. Increased sensitivity and awareness of the causes and impact of disability in designing and implementing water and sanitation projects can result in more inclusive outcomes, which benefit the whole of society, with relatively little extra cost. From a social perspective increased participation, for example through establishing grievance committees and undertaking accessibility audits, will increase awareness of the needs of those living with impairments and the community nature of disability. Technical innovations to address the specific needs of different individuals in a wide range of environments can be more easily stimulated with

increased knowledge of the barriers they face. Simple technical solutions, such as railings and commodes, which address the real and specific barriers to water and sanitation access, have a significant impact on the disabilities people face.

Within Nepal there is expertise and experience in both the disability and water and sanitation sectors which can be leveraged to increase awareness, improve approaches and ultimately improve the delivery of services to disabled people. There is also a responsibility for stakeholders working in this area to place increased pressure to ensure that the government honours existing commitments and policies in relation to disability. In addition, they should support the government in developing effective policies and capturing knowledge, share experiences and promote best practice towards achieving water and sanitation services for all disabled people in Nepal.

The water and sanitation sector should strengthen its focus on access for differently-able people. WAN recommends that, building on the successful ongoing collaborations in Baglung Districts and other areas of Nepal, formal stakeholders groups made up of relevant government agencies, NGOs, disabled people's organisations and other interested civil society groups are established to look into addressing the main barriers outlined in this paper.

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General

25 Sanitation and hygiene in South Asia: Progress and challenges

Summary paper of the South Asian Sanitation & Hygiene Practitioners' Workshop organised by IRC, WaterAid and BRAC in Rajendrapur, Bangladesh, 29-31 January 2008

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Abstract

In January 2008, sanitation and hygiene improvement practitioners in South Asia got together in Rajendrapur, Bangladesh to discuss progress in improving sanitation and hygiene. This summary paper focuses on household sanitation. School sanitation has been purposely left out as an area deserving systematic review on its own. The paper gives an overview of what has been achieved in South Asia and what has not, or insufficiently, been addressed. It also identifies four suggested areas for regional cooperation. The overall aim is not only achieving the MDG target of halving the number of people without a sanitary toilet, but also to achieve universal use and basic hygiene, and well-sustained facilities and programmes. Fulfilling these aims requires

large-scale, cost-effective approaches and validated outcomes.

Considerable progress has been made in ten subject areas, although there is room for more: policy development, low-cost solutions, user choice, decentralisation, mapping poverty areas, funding of demand creation, motivating users, local production and supply, phasing out ineffective subsidies, and going beyond numbers to healthy practices. Ten other subject areas are still overlooked or under-developed: diversification between and within households, cost-effective promotion, targeting remaining subsidies with equity, upgrading toilets over time, environmental safety, scope for dry toilets, sanitation in urban slums, short-term versus long-term programmes, sustainability of

facilities and programmes, and organisational and human capacities - especially at the crucial intermediate level.

To move forward, participants proposed to cooperate as a Community of Practice in advocacy and in four areas of action research: assessing and enhancing cost-effective promotion and delivery, common indicators to validate successes, safer management of the sanitation chain in urban areas and action research on citizen's voices, stakeholders' responsiveness and funds accountability. Surprisingly, enlarging human and institutional capacities for effective large programmes did not emerge as a priority subject.

Introduction

In 1990, the baseline year of the WHO/UNICEF Joint Monitoring Programme on Water and Sanitation, global access to improved sanitation was 49%. Some 12 years later, at the midpoint of the MDG period in 2002, this had grown by 9% to 58%¹. So, to reach the target of 75% coverage, growth over the succeeding 13 years must reach 26%; almost treble that of the preceding half and clearly a huge challenge. In 1990, South Asia had a coverage level of 20%, the lowest of all world regions. In 2002, it had surpassed Sub-Saharan Africa as the worst-off region (36%) by just 1%. In absolute numbers, however, the largest number of people without safe sanitation still live in South Asia: 938,502,000 – more than twice the

437,224,000 people who remain unserved in Sub-Saharan Africa.

Rapid coverage in the remaining years is widely desirable, but it must also be effective. The ultimate aim is after all, not only construction, but also hygienic use by all, and that the remaining unserved *and* all households newly formed after 2015 also acquire safe sanitation. Only then will open defecation end forever and will the toilets themselves not become new health hazards. With these outcomes and targets in mind for the remaining eight years, the focus of this paper is on what has been learned so far on sanitation in South Asia and which issues are still unresolved or unrecognised. The aims are to encourage discussions, select key topics for further work and lay the basis for the establishment and directions of a Community of Practice, increase cooperation and harmonisation of verifiable approaches, and to reduce wasteful duplication and competition.

In order to do this, the report is structured as follows:

- Section 2 contains the main factors that have emerged as being integral to success in southern Asian programmes and policy in recent years: what has been learned?
- Section 3 describes the areas where further consideration is needed: what is unresolved?
- Finally, section 4 summarises the future challenges and opportunities for cooperation: where can we make the greatest difference?

Sanitation and hygiene in South Asia: areas of progress

In this section the most important parameters on which consensus has been developing in South Asia are reviewed. These can be considered as

¹ http://www.who.int/water_sanitation_health/monitoring/jmp2005annexes.pdf

ten areas of progress. Accepting that these might not be exclusive, they are listed and then covered in the text which follows:

- 1 – Political will is required
- 2 – Priority is given to onsite sanitation
- 3 – Low-cost models can increase coverage – at what cost to sustainability?
- 4 – Government has a role, at different levels, and must perform it
- 5 – Mapping conditions across poor urban areas triggers action
- 6 – Effective IEC is required for sustainable hygiene/sanitation behaviour change
- 7 – Effective motivation is based on the desires of users, not the desires of agencies
- 8 – The belief, and evidence, that direct household subsidy is unhelpful is gaining acceptance
- 9 – An active local private sector is required
- 10 – What to measure – installations or behavioural impact?

Political interest, policies and strategies

Politically, there has long been little interest in sanitation and hygiene, at least in part because they are female rather than male priorities. Few countries have a specific sanitation policy that is distinct for rural areas, towns and the urban poor. Combined policies are dominated by domestic water supply. Government expenditure on sanitation has also been low, although amounts may be less important than ways of spending (see sections below on *Funding IEC to create demand; Motivating factors of users, not agencies; and Phasing out of direct subsidies*).

In Bangladesh, work on water supply started in 1935. Safe sanitation came 19 years later. Government outlays dropped from the first to the fourth FYP and only sharply increased during the fifth, but mostly for arsenic mitigation in water supply. Overall, government expenditure remained on a flat line (Kabir, undated). Bangladesh needs three times the current outlay of Tk 8.3 billion per year on sanitation to meet its national target². In India, central budget allocations to the water sector started in 1951. A national rural water supply programme began in 1972. A rural sanitation programme came 13 years later. India's outlay for the sector grew from 1.8% to 4% in the first to the eighth FYP, but the funds went mostly to water. In the eighth plan, the budget for water supply was 96%, for sanitation 4% (Kolsky et al, 1999, HoC, 2000). In Nepal, 70% of the national budget for the sector in 2000-2015 will go to one water supply scheme (Melamchi). The estimated shortfall for sanitation is US \$6 million per year (WaterAid, 2004). Between 2002 and 2005, Pakistan's annual budget for water and sanitation was 0.1% of GDP and again it was mostly for water (GoP, 2006). Sri Lanka had the highest sanitation coverage in the region in 1990: 69%. It has reportedly grown to 91% in 2004. However, the tsunami on 26 December 2004 destroyed an estimated 60,000 household toilets. The estimated costs of emergency sanitation and rebuilding toilets are US \$4.4 million³, and fund allocation is threatened by the growth in military expenditures, doubling from US \$69 billion in 2006 to US \$139 billion in 2007.

The region's reluctance in taking up improved sanitation is not uncommon. The working group

² http://www.financialexpress-bd.com/index3.asp?cnd=6/13 2007§ion_id=1&newsid=64035&spcl=no

³ <http://www.irc.nl/page/16188>

TABLE 1 Barriers to progress in sanitation

1. Lack of political will
2. Low prestige and recognition
3. Poor policy at all levels
4. Poor institutional framework
5. Inadequate and poorly used resources
6. Inappropriate approaches
7. Failure to admit disadvantages of conventional sewerage
8. Neglect of consumer preferences
9. Ineffective promotion and low public awareness
10. Women and children's needs are considered last
11. Little effective demand
12. Cultural taboos and beliefs

Source: Simpson-Hébert and Wood, 1997

on sanitation of the Water Supply and Sanitation Collaborative Council (WSSCC) identified as many as 12 reasons (Table 1). The list mirrors the experience of countries in the north (Box 1).

This situation is gradually improving. It has become more widely known that improved sanitation and hygiene have a greater health impact than a safe water supply (Cairncross and Valdmanis, 2006) and governments are becoming more sensitive to the need for better sanitation for reasons of human dignity, environmental cleanliness and poverty alleviation.

Both Bangladesh and India formulated new national sanitation strategies and campaigns with earmarked funding (Box 2 and 3), although both do not pay specific attention to the urban poor.

Nepal approved a national sanitation policy in 1994 and formulated national guidelines in 2005. It is, however, not explicit on onsite toilets, which is the most common form of improved sanitation,

BOX 1 Low priority for improved sanitation in the Netherlands

The low status and priority of improved sanitation is not restricted to the developing world. It took till the mid-1900s before each municipality and council in the Netherlands had accepted their responsibilities for public health and the quality of the environment. While domestic water supply was accepted as a public responsibility starting with the village pump, the disposal of human excreta, solid waste and waste water were considered private responsibilities only and the subject of public bans, not services and programmes. In 1481, the city of Amsterdam introduced its first law on waste disposal, but this only forbade the citizens to throw domestic waste into the canals. A law of 1497 stated that “every young woman, or who else is in charge, will clean the street in front of the house each Saturday and on the evenings before holy days” (Sijbesma, 1994: 6). For the municipalities human waste was especially a source of profit. At the end of the 19th century, the income from human excreta in the city of Groningen was 50,000 guilders per year (Noort, 1990), 1.3 million Euro today. Bucket toilets were in use in poor urban areas until after World War II.

Political willingness to address poor sanitation began to increase when the public, which resented the bad smell and dirty environment, joined hands with the public health inspectors which the central government appointed from 1865 onwards. The inspectors’ aim was to reduce the incidence of infectious diseases related to poor sanitation and hygiene, such as dysentery, diarrhoea, cholera and typhoid. The time of action coincided also with wider societal changes, especially an improved level of education, the emergence of voluntary organisations for the development of the lower classes such as public libraries and credit and loan societies, improved communications and the rise of the women's movement (Verdoorn, 1965). Change nevertheless took a long time in some areas. In the city of Delft it took until 1975 before everyone had replaced their bucket latrine with a sanitary toilet.

BOX 2 Bangladesh 'Sanitation for all by 2010'

The Bangladesh national sanitation campaign 'Sanitation for all by 2010' builds on Community Led Total Sanitation (see Box 4), but has its own characteristics:

- A baseline study in 2003 showed the national coverage of sanitary latrines to be 33%
- Growth started at 1% in 1971 to about 37% in 1998, but stagnated around 40% and then dropped
- The lowest level of local government, the Upazillas (sub-districts) implements the programme. Bangladesh has six divisions, 64 districts, 472 Upazillas and 4,451 Unions. A union has about 25 villages and c. 13,000 households. One village may consist of 5-15 sub villages, each with c. 50-60 households
- 20% of the Upazilla Annual Development Programme (ADP) Grant is earmarked for sanitation
- 25% of the funds can be spent on motivation and mobilisation and 75% on hardware
- At national level, TV spots, cinema films and October as Sanitation Month are used to motivate latrine installation
- A standard toilet (concrete slab, concrete or plastic pan, three rings) costs some Tk 380 (US \$6)
- Private entrepreneurs and PHED supported Village Sanitation Centres, the latter mostly at Upazilla and union level, sell parts/full toilets
- Upazilla Parishad members can give free toilets to the hardcore poor (land and homeless – where can they put toilets? – daily labourers, disabled and non-earning heads of households). Estimates are that one in three without a toilet qualify, or one in five of the total population. The total sanctioned budget for free toilets is Tk 50 crores (500 million) or US \$7.3 million
- Chairmen of totally open defecation free unions get a reward for their area; outstanding chairmen got overseas study tours as personal reward
- Coordination is by the sanitation secretariat in the Department of Public Health Engineering, a National Task Force headed by the secretary, local government division and sanitation committees at Upazilla, union and ward levels.

Sources: Government of Bangladesh, 2005; Kar and Bongarts, 2006; Jong, 2005; Rahman and Gosh, 2006

BOX 3 India: Total Sanitation Campaign (TSC)

Key characteristics of India's Total Sanitation Campaign (for the rural population only) are:

- Offering a broader range of technologies and technology improvisations with reference to customer preferences, construction materials and capacities
- Developing back-up services such as sanitation production centres (PC) and rural sanitary marts (RSM) with trained masons
- Stressing software, including intensive Information, Education and Communication (IEC) campaigns
- Dovetailing funds from GOI and state programmes aimed for rural development
- Fostering broader participation including NGOs, civil society organisations and CBOs
- Target group: especially Below Poverty Line (BPL) households
- Districts can submit plans with 5% preparation, (100% central finance), 15% IEC, 5% alternative delivery mechanisms, and 5% overhead costs (all with 80% central, 20% state finance), 60% hardware costs household toilets (60% central/20% state/20% user), 10% school systems (60%/30%/10%)
- Subsidy and subsidy sharing is GoI/State/Household 60/20/20% for underground parts @ Rs 625 (US \$13 in 2001, users to pay all upper parts) and 30/30/40% for underground parts @ Rs 1,000 (US \$21). Subsidy is to be gradually and progressively phased out
- Open Defecation Free communities, blocks and districts can go for prize money
- Pilots in 115+ districts had increased to 200 districts by the end 2002 (one district = circa two million people). India has 593 districts, of which 578 are rural

Sources: GoI, 2001, Shordt, 2006

except that subsidies are to be phased out. Institutionally two national agencies are still both responsible for sanitation⁴.

Sri Lanka formulated a new policy in 2001, but it addresses both rural water supply and sanitation. Both are made demand-responsive, that is, people and communities install the technologies and service levels that they want and can install and sustain. Users can form Community Based Organisations (CBOs) to plan, implement, finance and manage schemes and so can *Pradesiya Sahas* or village councils, the lowest government level. Targets for total coverage have been set for 2025.⁵

Pakistan published a national sanitation policy in 2006. Communities, housing societies and investors from the private sector are to build and finance toilets, lane sewers and collection sewers in settlements with over 1,000 people and local governments the trunk sewers. In smaller communities, promoters from different agencies, e.g. Ministry of Health, NGOs or Local Government are to promote households to build their own sanitary toilets. Successful agencies are then to become the capacity builders for other actors, such as government officials, elected representatives, community activists and *Tehsil* (sub-district) Management Administration staff who should replicate the approach in other areas (GoP, 2006).

Priority to onsite sanitation

Quite an achievement in South Asia is the high acceptability of onsite solutions in rural and urban areas. Virtually from the start, individual household pour flush toilets – direct one pit or off-set two pits – were the promoted options in Bangladesh, India, Nepal and Sri Lanka. In the same period Pakistan experimented successfully with low-cost community-built and financed primary sewerage as the recommended solution for all communities with more than 1,000 people. Examples of successful shallow sewerage projects in this book come from Karachi (Welle and Wicken, Chapter 8), Faisalabad (Haider, Chapter 3) and Quetta (Qutub et al, Chapter 4). The latter case also presents the sustainability and impacts of the service four years after completion. Technically the service is working well and impacts are excellent, but there is some local lack of upkeep and the institutions in which users organised themselves for action have not continued to function.

In spite of this innovative outlook, the initial onsite models were still too expensive to be affordable for the poor. In Bangladesh, the subsidy helped to create initial demand, but the promoted toilet model was still too expensive for 80% of the population. Installation began to increase when the local private sector noted the demand and came with cheaper parts and lower transport costs.

⁴ Focal point is the National Sanitation Cell in the Department of Water Supply and Sanitation (DWSS). This falls under the Ministry of Physical Planning and Works (MPPW). The cell is assisted by a National Steering Committee for Sanitation Action. Implementation is under the Ministry of Local Government (MLD), however. This ministry has (often inactive) District Water and Sanitation Committees attached to the District Development Committees, and Village Water and Sanitation Committees under the Village Development Committees (VDCs). The latter are the lowest level implementers. Technical assistance comes from the District Technical Office under MLD (Tayler and Scott, 2005).

⁵ <http://www.cosi.org.lk/page/418>

In India, the government and UN agencies jointly adopted the double vault pour flush model (originally an urban model) as the country-wide standard for rural toilets, an imposed choice although without attention to the urban poor that

was too costly for most. Other shortcomings besides the still-too-high cost were the emphasis on technology, the lack of effective promotion, programme implementation by state engineering agencies without organisational interest, career

BOX 4 Community Led Total Sanitation (CLTS) approaches

The CLTS approach was started by VERC and WaterAid in rural Bangladesh. CLTS focuses not on toilets, but on the shameful and unacceptability of open defecation and stresses community responsibility and social pressure to end this practice. To this end, external facilitators first organise a transect walk to all open defecation sites. In a public session people then calculate the load of human excreta thus deposited over increasing periods of time. The actions usually lead to a rejection of open defecation and a commitment to become Open Defecation Free (ODF). Facilitators and local volunteers then encourage households to build and use the kind of toilets they want and can pay for, no matter how simple or temporary. Social pressure helps everyone to conform.

The approach became popular in a short time because of quick results. However, a number of reservations have also emerged: (1) there are no agreed minimal procedures with quality criteria to avoid shortcuts that threaten proper design and implementation of CLTS; (2) participation is sometimes coerced, e.g. officials or leaders impose high fines on non-participants; (3) local support to those with financial or physical problem (e.g. the elderly, the disabled, single mothers) is not a systematic part of the approach; (4) results of *any* large programme, including CLTS need independent validation. Verification in two Indian districts with 9,746 Indian Gram Panchayats applying for a national ODF award found that only 46% were actually eligible. For Bangladesh, Rahman and Gosh report a national coverage increase (so not only from CLTS) from 44% to 79%, ranging from an extra 11% in cities to an extra 29% in rural areas in less than two years, but reports

from BRAC (Chapter 12, this book) and NGO (Juel, 2007) and as yet unpublished UNICEF data state that coverage with use is much lower; (5) especially lowest cost toilets may have a low durability as noted e.g. by Pretus and Jones (Chapter 18 of this book) and be hard to keep clean, which has also gender implications – although Shayamal et al in Chapter 20 of this book indicate that poor people improve toilets over time, there is no fully representative research on this subject so far; (6) low-cost is relative: the average promotion cost reported by VERC was UK £8 per household⁶ (US \$16), equal to e.g. BRAC's toilet subsidy for the poor. The difference is that the amount that formerly went to toilet subsidies now goes to creating demand and achieving toilet construction and use by the whole village; (7) health benefits depend also on toilet hygiene and other good habits such as effective hand washing, safe drawing and storage of drinking water and safe disposal of excreta of babies and infants. The original CLTS approach covered also other hygiene behaviours and is quite intensive and long term: each neighbourhood may get a total of 200+ facilitator visits (see section on *Institutional and human capacity*); (8) long-term monitoring can show to what extent families sustain toilets and ODF practices and communities sustain management of good sanitation and hygiene. New programmes have cut many corners for quick, but incomplete and short-term results – agreed minimum CLTS standards are needed.

Sources: Galway, 2000; Halim et al, 2002; Jain, 2007; Kar, 2003; Kar and Pasteur, 2005; Kar and Bongarts, 2006; Huda, this book, Chapter 11; Khisro et al, this book, Chapter 15)

⁶ Allan (2003) gives £5 per household as the average cost for achieving an EDF Union

opportunities and specific capabilities for sanitation and supply-driven construction goals, and environmental risks (see also the Section on *Validating claimed successes*). As a result, many toilets were unused or used for other purposes (see also the Section on *Phasing out direct household subsidy*).

Acceptance of low-cost models

Successful pioneers showed that households installed low-cost toilets without subsidy when they could choose a model that they want and can afford. From 1990, Ramakrishna Mission Lokasiksha Parishad (RKMLP) in Midinapure, West Bengal, offered a choice of 12 models costing one-tenth to one-sixth of the standard twin-pit pour flush model with brick superstructure (Kolsky et al, 1999). As part of CLTS (Box 4), VERC documented over 31 designs, many developed by villagers, with unit costs starting at US \$1.27 (the famous Tk 15 model, see Allan, 2003, Kar and Bongars, 2006 and Huda, 2008 - this book, Chapter 11).

The community-managed rural and peri-urban sanitation programme in Kerala offered no choices, but local committee members helped find local materials and negotiated the best price-quality ratio from the local private sector. This lowest local cost design then became the local construction standard. Unit costs were two-thirds that of the government programme and half that of the World Bank. If households could not afford a full model, they used temporary materials for the outhouse or made the second pit only when the first one was full (Kurup et al, 1996 and Box 5).

Within programmes, only WaterAid India and VERC seem to use standard criteria to judge if toilets

are sanitary, such as minimum depth, protection against flies, absence of bad smell (VERC only) and absence of visible excreta. There seem to be no generally adopted standards against which to judge the quality and degree of durability of the installed models, one of the points for validation of claimed successes advocated in Section on *Validating claimed successes*.

Shift to decentralised planning and implementation

One major constraint to improved sanitation is that for a long time it has been seen as a private household issue only. Supporting improved sanitation is now accepted as part of the responsibilities and authority of local governments, especially in rural areas. Local governments in Bangladesh and India also get devolution of funds under the national programme. Going beyond roles, responsibilities and financial resources to processes and development of support capacities is much rarer. As far as could be found there are no documented procedures for local organisation, participation, promotion and management of large-scale sanitation programmes apart from those documented in NGO-based programmes of CLTS (Halim et al, 2002; Kar, 2003) and Panchayat-managed sanitation in Kerala (Box 5).

Moreover, although NGOs are increasingly recognised as support organisations to local governments, the same engineering departments such as the Department of Public Health Engineering in Bangladesh, the Public Health Engineering Departments in India and the Department of Local Infrastructure in Nepal, have remained line agencies for decentralised sanitation programmes. Within the engineering departments,

BOX 5 Panchayat-managed sanitation in Kerala

In 1991, 5.5 million households in Kerala had no sanitary latrine. Of them, 85% were poor. The state sanitation programme was not popular and could not close the gap. With bilateral support from Denmark and the Netherlands, the NGO Socio-Economic Units Foundation (SEU-F) tested three new strategies: NGO implemented, Panchayat implemented and local institutions. An independent evaluation showed that Panchayat management had the best match of cost and results. Central were participatory planning and management with gender balance, training of women latrine masons and monitoring for coverage and use. Latrine construction was only step nine to 11 in a 13-step cycle. A seven-member ward committee (a ward has about 500 people) with at least three women mapped local conditions, promoted toilets, chose families needing subsidy with public accounting for choice, collected and accounted for household payments, organised hygiene education (three compulsory sessions) and consolidated the construction list with the Panchayat council. The councils contributed financially and provided a technical supervisor. They helped committee members assess local private sector material and prices, make bulk acquisitions, contract masons and check construction. Special measures helped enhance transparency and prevent corruption. Between 1992 and 1997, external latrine subsidies fell from 80% to 15%. Subsidies for the poor were increasingly financed from a mix of Panchayat funds and voluntary contributions from local charities and neighbours. Contracts with the Panchayats defined the unit cost from a locally built test-toilet, Panchayat and household financing, the parties' responsibilities, the donor share, the fund flow, payment arrangements and accountability. Project duration was open-ended until all had a latrine. Costs were 33-50% lower than in other programmes and included 6-9% overheads for administrative and social support, against 20% overheads elsewhere. After construction, ward committee members visited each toilet three times at increasing time intervals to check cleanliness, operation and use by all. Internal research showed an average of 96% proper use, but excreta disposal of children under five and hand washing could still be improved.

Overall results were encouraging. In five years, 1.4 million people gained access to a sanitary latrine. Training and groupwork of over 1,200 women masons built the women's self-

confidence and skills, doubled their income and enhanced their status and self-respect. The training centre became the autonomous Jeevapoorna Women Mason's Society and expanded training to five districts. When people in the neighbouring Panchayats saw the progress and quality of the toilets, they put pressure on their local governments to change from state-managed to Panchayat-managed interventions. In 1997, five of the 14 District Panchayats launched their own programme for total sanitation. In 1998, this became the state wide programme of 'Clean Kerala' reaching out to all 990 Panchayats.

In the same year of 1998, the People's Planning Campaign took place, in which women and men in all Panchayats formulated their development priorities. Special training for women increased their participation and helped identify 1,793 sanitation projects with a total estimated cost of Rs 303 million (US \$450,000). To meet the priorities, the state government devolved 35-40% of its annual plan funds to the Panchayats between 1997 and 2000. A sanitation taskforce formulated a new sanitation strategy. It reduced the state subsidy, allowed households to choose their own models and authorised local governments, ward committees and neighbourhood committees to plan, implement and manage projects. SEUF was a taskforce member and provided training.

During the first three years, Panchayats and households built 413,000 latrines, over three times the 125,000 latrines built during the eighth FYP. The underlying people's plan is under threat, however. A different party in power lowered plan funds to Panchayats by 16.4% and granted Rs 25,0000 to each MP to spend as s/he liked in his/her constituency. It increased the influence of government officials on the taskforce and abolished the positions of block and district coordinator, held predominantly by representatives from civic society. Regulations which ensured women's representation were disbanded, except for so-called "women's projects". Women's self-help groups could no longer receive plan funds if they had members who worked ten days per month or more as agricultural labourers. The new rule put an abrupt end to many existing groups and to the formation of new ones. The effect of these new policy diversions and hindrances on the state sanitation programme is yet to be evaluated.

Source: Kurup et al, 1996; Shordt, 2006b; Sijbesma, 2006

engineering staff and managers (who are engineers as well) have little incentive to become low-cost sanitation specialists and replace some engineering staff by social experts in sanitation to support rural Panchayats and the urban poor. Nor are there indications that the education and career criteria of engineers have changed to reflect progress made in community planning and management of sanitation programmes. While bureaucrats want Gran Panchayats to take up sanitation under new decentralised and demand-responsive sanitation policies, Panchayats lack interests and capacities for effective sanitation programmes (Kumar and Kumar, Chapter 16 in this book).

Mapping of conditions of the urban poor

Environmental conditions in the living areas of the urban poor are appalling. The illegal nature of many of these settlements has given the municipalities an excuse for actions ranging from turning a blind eye to expulsing the people and flattening their houses. There are now initiatives by NGOs in India, Nepal and Pakistan to identify all legal, semi-legal and illegal settlements in metropolitan areas and map the conditions of water supply, drainage, excreta, waste water and solid waste management, and road paving (and sometimes lighting). In Nepal, the Centre for Integrated Urban Development (CIUD) prepares urban profiles and poverty maps using a combination of GIS and other IT based techniques and social surveys. GIS also helped achieve credibility for community sewerage plans in Faisalabad, the fourth city in Pakistan (Haider, Chapter 3 in his book). In four cities in Madhya Pradesh, WaterAid India and partner NGOs have mapped all 'poverty pockets'. In Karachi, local male youths trained by OPP in basic mapping techniques

(including computerisation) have by now mapped the excreta, waste water disposal and drainage conditions in 60% of all informal settlements, an example followed by other NGOs in at least cities and two of the four provinces (Welle and Wicken, 2008, Chapter 8).

The unit cost of such mapping techniques is not yet widely reported. In Nepal, CIUD invested Rs 50-60 per household (US \$0.7-0.84). The resulting hard and valid information shows up the real scope of the problem. It has been a means to exert pressure on the authorities, initiate community actions and bring about partnerships between communities, NGOs and municipal governments for accountable and measurable improvement of environmental sanitation. The mapping also provided a means to prioritise the worst areas for action in a transparent manner (Dabrase et al 2007; UN-HABITAT and CIUD, 2005; UN-HABITAT et al, undated; Outub et al, 2008, Chapter 4 in this book).

Funding IEC to create demand

A major challenge for meeting sanitation goals is that toilet demands are often low or hidden. Demands are low in areas where people still have open space, vegetation provides privacy or other demands have a higher priority. Rural and urban women often have a higher need and demand, but lack opportunities to express them and influence to see them met. Hence, stimulating household motivation in a gender-specific way to want, build and use toilets is usually needed.

To raise awareness and motivate demand, toilet programmes have increasingly added an Information, Education and Communication (IEC)

component. In Bangladesh, social mobilisation with IEC was piloted in the rural water and sanitation programme in 1986 and expanded country-wide in 1995. The quality of the approaches varied a lot, raising questions about “avoiding [...] coercing in latrine building, [...] ensuring the sustainability of achievements, and involving health workers, imams and other local leaders in promoting sanitation” (Boot, 1995:9). Information on costs of promotion, absolute and as a proportion of hardware or overall costs is not included. Most activities “just consist of telling people what to do, with or without the help of flipchart or other visual material” [p.28]. Except for the Sanitation and Family Education (SAFE) project and the Intensive Sanitation and Hygiene Promotion Programme, results were not measured (Boot, 1995).

In 2000, the Bangladesh rural social mobilisation programme was evaluated. The report only gives information on results; it is silent on the cost of social mobilisation and its proportion of the total costs. All respondents were subject to some motivation, the men mostly through mass media messages, and the women through home visits by health and family planning workers. Impacts were related to income: toilet ownership (49% on average) became 100% only for households earning Tk 5,000+/month. Without baseline and with a long intervention (since 1988) it is not possible to say what difference social mobilisation has made, but about half of the owners had built a toilet only in the last phase (1997-99). Overall, over two-thirds had built their toilet without subsidy. Reported toilet use was, however, only 28% and excreta of infants were put in the latrine in less than half of the families. Training to raise toilet demand by a special Hygiene Awareness

and Product Information Campaign (HAPIC) was very conventional, using health benefits for motivation and little or no attention to technical and financial issues, durability, use and child defecation (House of Consultants, 2000).

Outdated one-way spreading of general messages began to disappear in Bangladesh when the SAFER project showed that a mix of different and flexible methods with different groups (including also children and all-male groups at tea stalls and markets) was more effective. PRA methods such as those used in CLTS (see e.g. Huda, this book, Chapter 11 and Saha et al, this book chapter 6) and promotion through schools (Khan et al, Chapter 14 and Adhikari and Shrestha, Chapter 9) also proved very effective for sanitation and hygiene promotion in communities. Recent programmes increasingly use participatory methods (e.g. PRA, PHAST) and to some extent share training. However, most do not want to use materials and methods that do not carry their own stamp and acronym, even when this means investing considerable funds to make only minor changes (Ahmed, this book, Chapter 22).

In India, UNICEF implemented a social mobilisation strategy in its (mainly rural) programme with the Indian Government since 1985. The budget for sector support increased steadily from less than US \$2 million in 1975 to US \$10 million in 1995, and the shares for sanitation and IEC grew from respectively 1% and 8% in 1985 to 9% and 22% in 1995. The methodology combines mass information for awareness raising with home visits by paid promoters for conviction and use. An international evaluation found that promotion of health and hygiene is now seen as the most important subject area, but that much work is remaining to build

capacities and develop effective programmes. Home visiting is very labour intensive, and promotion of good practices is done from the health perspective of the agencies with little attention to what really motivates the different types of users and little adjustment of methods and messages to the different interests and information channels of the respective target groups (Kolsky et al, 1999). An indicative evaluation (Baldwin et al, 2004) showed that in the majority of villages information reached poor women and men. However, the benchmark on information access was met or surpassed in only one third of

the visited communities: group scores of women and men clustered in the lowest two categories (Figure 1). Figure 2 below shows that attitudes and behaviour of the promoters varied a lot: while in up to half of the communities they seldom visited the poor and at best gave one-way information, the other half was much more pro-poor, communicative and gender conscious. As a result, poor people in over half of the villages knew nothing of various latrine options. Information on the range of options and their costs and financing had reached poor men *and* women in only 20% of the villages. It is likely that better or worse quality

FIGURE 1 Access to WASH information, Child Environment programme, in 117 Indian villages

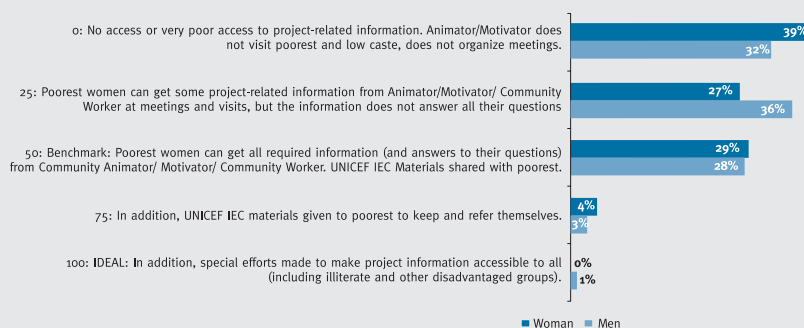
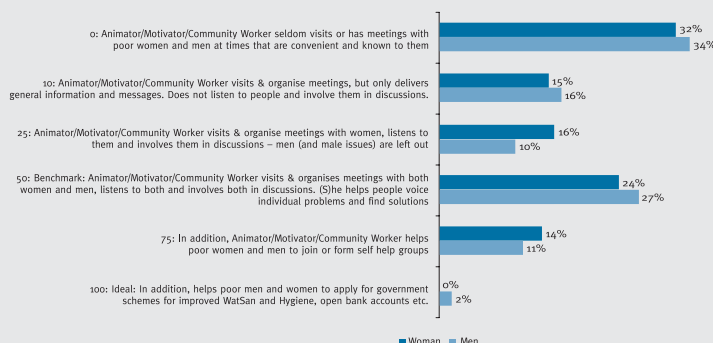


FIGURE 2 Attitudes of promoters to gender equality and equality of the poor, in 117 Indian villages



IEC is significantly related to better or worse results, but this could not be established here, because of lack of representation of the too small sample.

Since 2001, Indian national (rural) programme guidelines include an allocation of 15% of state programme costs to IEC, with shared financing between central and state governments of 80% and 20% (Gol, 2001). However, as shown above, and by Kumar and Kumar (Chapter 16 in this book), more funds for IEC do not automatically lead to good results. This depends also on the quality of implementation, including the training and human resource management of the promoters. There is a clear need of evidence-based guidance for good quality programmes which can come from cost-effectiveness (action) studies, as discussed in the Section on *Assessing and enhancing cost-effective promotion and delivery* below.

Motivating factors of users, not agencies

While programme agencies have promoted toilets on their (long-term) health benefits, users generally have other, more immediate reasons for installing and using toilets. More convenience, dignity, privacy and status are now recognised as having a greater relevance for users than health. In the CLTS approach, a combination of disgust over the dirt and stench of open defecation areas, and the frequent ingestion of particles of human excreta via the six F's (faeces, fingers, flies, fluid (water), food and fields), the incredibly high loads of human faeces gathering at people's living environments and water sources and the indignity of having to excrete in public have proven to be effective stimuli for improving sanitation from the 'bottom up' (Huda, Chapter 11 in this book, ; Khisro et al, this book, Chapter 15).

Research in Africa has shown even more varied patterns of why people build toilets. In Dosso, in rural Niger, owners gave 36 reasons for installation; health was only one and scored very low on the priority list (Sijbesma and Koutou, 1995). A study in rural Benin found three groups of reasons, with decreasing importance: (1) prestige (2) well-being, covering health, but also safety from accidents, various types of animals, robbers and sorcery, as well as convenience and comfort, cleanliness and privacy and (3) special situational factors, such as physical restrictions due to old age or illness, charging higher housing rents and religious requirements (Jenkins and Curtis, 2005). Allan (2003) has similar findings from four Bangladesh villages, although the classification differs somewhat. She also found that health benefits were the least frequently cited.

In these studies, economic benefits are not recognised as a category by itself, but such benefits do play a role. In rural and peri-urban areas in Kerala, male owners mentioned the increased value of their house (Kurup et al, 1996). For women, long distances to sanitation sites may mean less time for income-generating and cost-reducing work. In Bangladesh, cost savings from reduced disease helped finance further upgrading of toilets (Huda, this book, Chapter 11). In densely settled Java, the decrease of public land and the wish to avoid conflicts with private landowners also increased walking distances and productive time losses from open defecation by men. Various types of double vault toilets have further benefits of the economic value of human waste and avoidance of pit emptying costs.

The situation is still more complex, because reasons for demand are not the same for every user

category. Slowly, different sub-sets are emerging with reasons, as well as barriers, which vary by sex, age, class, occupation and type of settlement (Allan, 2003; Jenkins and Curtis, 2005). Asian men, for example, value privacy for their womenfolk rather than for themselves, reflecting higher privacy demands and greater safety risks for women and girls than for men. This may also explain why toilet *use* is greater for women and adolescent girls than for children and men (Gol, 2003). Reasons for using potties for children and safe disposal of their excreta are hardly researched.

Reasons *not* to construct and use toilets also vary, showing several weaknesses in promotion (Baldwin et al, 2004): (1) economic: not able to pay; assuming high costs and not aware of lower-cost models, possibilities of staged construction and smaller designs in case of limited space; need to pay basic investment in lump sum; more water needed, with more collection work and time; a fear of rapid filling up of pits reducing the economic life of the investment (“I eat one kilogram of rice twice a day, there are five members in my family – this small pit will be full in three months’ time”, pp 9) and losing one’s BPL status if one has a toilet; (2) convenience and comfort: women’s fear of being seen (e.g. through windows or under doors); confined space restricts defecation; loss of mobility and socialisation from visits to defecation areas; no more open air; sharing between relatives of either sex (3) health: no awareness of health risks from open defecation, fear of safety for children, and (4) negative reputation of toilets from poor design or construction, such as bad smell, flooding and slab collapse.

Other emerging demand factors (undistinguished for rural and urban poverty areas) are that *men* value especially status (of owning a toilet, but not

necessarily also using it), that *women* go more for convenience and comfort (which means not only having, but also using a toilet), that *younger* and *more educated* people value toilets as part of a modern lifestyle and better family health, people with a *higher level occupation* or *tied to the house*, e.g. shopkeepers have a greater toilet demand than *farmers* who can use their land for defecation; and demand is also higher among families in *dense settlements* and areas with *less vegetation*, and that both the powerless and the powerful are influenced by *peer pressure* (Baldwin et al 2004; Jenkins and Cairncross, 2002; House of Consultants, 2000; Jenkins and Curtis, 2005; Kurup et al, 1996). The above studies show that ‘one set serves all’ does not work and that a high degree of fine-tuning of messages, senders, channels and tools for different groups in different settings is needed, as well as a good system for feedback from each of these groups.

Phasing out direct household subsidy

The national rural sanitation programmes of Bangladesh and India both opted for promoting only one standard toilet model. When many households did not want to install this toilet because they could not afford it or deemed it too costly, the programmes introduced a subsidy. In India this was 80% and originally went to everyone, irrespective of their socio-economic status. Later, the subsidy was restricted to Below Poverty Line (BPL) households only. Recent new models such as dry latrines are also installed with subsidies of 60% (greater Kathmandu, Nepal) to almost 80% (Tamil Nadu, India) to make them more attractive and affordable. Toilets with community-managed sewers were installed with subsidy in Quetta due to the common practice of subsidisation and

pressure by politicians (Qutub et al, Chapter 4), whereas in Faisalabad no subsidy was given (Haider, Chapter 3).

There is growing evidence that blanket subsidies to large groups of people are not the most effective solution to ensure total sanitation (Kar, 2003, Smet, 2007, Swann et al 2007; Haider, this book, Chapter 3; Shayamal et al, this book, Chapter 20, and section on *Shift to decentralised planning and implementation* above):

- Many toilets are installed without subsidy if none is available
- Subsidy keeps prices artificially high
- Over-designed models are kept intact. Toilets installed by Jal Nigam and PSP in Uttar Pradesh, India, for example, were over dimensioned and had metal doors, plastered and whitewashed inside and out and scroll-work windows, and were a lot better than the huts poor families lived in
- Subsidies benefit the less/least deserving as they learn about their availability first and know the ropes to get allocations. Few programmes had transparent selection criteria, used participatory methods to select the most eligible households and publicly accounted for the selection
- The amounts available for subsidy are seldom enough to serve all eligible households
- Those not served wait for new subsidies
- Subsidies are kept going by politicians and bureaucrats who benefit because they give them votes and allows them to control, and sometimes manipulate, large funds
- Communities continue to live in a stage of technocratic and financial patronage.

In Nepal, Pretus and Jones (Chapter 18 in this book) found that the community-level programme investment costs for full coverage in a typical village ranged from NRS 17,000 (US\$ 243) for the high subsidy programmes to NRS 340,000 (US\$ 4,857) in a promotion-only programme. These costs were however exclusive of above-village investment costs for e.g. training and supply chain development.

The provision of household subsidy does not ensure that toilets are used once built, or used as intended (or that all household members are consistent users). The governments of the Indian states of Andhra Pradesh, Maharashtra and Himachal Pradesh achieved a reported construction of respectively 2.95 million, 1.6 million and 0.3 million household toilets through subsidy driven latrine programmes. However, random evaluations revealed non-use or use for other purposes such as storage of 50%, 47% and 70% respectively (Ganju et al, 2007). Reported non-use of toilets built under the national Indian programme was 50% (Gol, 2003). In Maharashtra, a total sanitation campaign replaced the initial state programme with household subsidies after a visit to the CLTS programme in Bangladesh (on CLTS, see e.g. Huda, Chapter 11, Khisro et al, Chapter 15 and Saha et al, Chapter 6, all in this book). Instead of individual subsidies, ODF (Open Defecation Free) villages can sometimes get a financial state award which they can use for development purposes (Adhikari and Shrestha – this book, Chapter 9; Ganguly – this book Chapter 10; Kar and Pasteur, 2005).

Nor does abolition of household subsidies mean that sanitation programmes become cheaper. More

investments are, however, possible to train workers on creating demand, helping to establish local supply lines and to assist communities and groups to plan and carry out their own sanitation programme. This includes providing *internal community support* to the least able families in the form of land, materials and/or labour. Successful community-managed sanitation programmes have accounts of how approaching sanitation as a community issue has stimulated solidarity between the 'haves' and the 'have nots' in communities (see e.g. Huda, Chapter 11, Khisro et al, Chapter 15, Kumar and Kumar, Chapter 16, and Pretus and Jones, Chapter 18, all in this book), but there is no systematic evidence on its spread and results; most information is anecdotal and this would clearly be an area to investigate as part of success validation and cost-effectiveness assessments.

The wide evidence that even the poorest families build toilets with their own means, given the right stimuli, models and access to local resources and credit facilities, is supported in this book (see Adhikari and Shrestha, Chapter 9, Haider, Chapter 3, Huda, Chapter 11; Khan et al Chapter 14, Khisro et al, Chapter 15, Pretus and Jones, Chapter 18 and Shayamal et al, Chapter 20, all in this book). Nevertheless, the debate on the need for some external subsidy for the extreme poor continues. An important reason given is that without some external support, the poorest people build the least durable models and are then the group that must most frequently rebuild toilets after collapse from monsoon rains or disasters (Pretus and Jones, Chapter 18 in this book). The hardcore poor were also the category that was slowest in moving up the sanitation ladder to more durable and easy to

clean models (Saha et al, this book, Chapter 6). Moreover, previous government programmes such as in India have sometimes created the conviction that a sanitary latrine must have a ceramic pan, P-trap and soil pipe as a minimum standard. A further problem is not so much the subsidy itself, but the large amounts of subsidy given by other programmes, which has spoilt the market (Kalimuthu, Chapter 13, Pretus and Jones, Chapter 18 and Qutub et al, Chapter 4, all in this book). Furthermore, the extremely poor tend to be excluded from sanitation programmes because the greater stress on cost recovery makes NGOs go for 'creaming off' the less poor communities. For poor people it is harder to continue investments as their income varies with the availability of work and they are more often already indebted. Finally, gaining inner community solidarity is harder when the differences between poor, poorest and ultra poor are relatively small.

NGOs such as WaterAid, Plan International, NEWAH and BRAC, and the Indian and Bangladesh national programmes therefore preserve a limited subsidy for the worst off, the so-called hardcore poor, (Ahmed, 2006; Kabir et al, Chapter 12; Kalimuthu, Chapter 13, and Pretus and Jones, Chapter 18, all in this book). BRAC research found further that the Government's budgeting for a standard percentage of hardcore poor in each district did not reflect the ground reality of large inter- and inner district differences in hardcore poverty. Lack of valid data and inflexible budgets subsequently led to considerable inequalities in government support for the poorest, inequalities that BRAC evens out from its programme funds (Kabir, pers.com). From these observations it may be concluded that

depending on local conditions, the target groups, sources of funding, size, transparency and accountability are more essential than the subsidy as such.

Local production and supply to meet demand

An important part of the sanitation strategy in the region has been the development of the private sector. Small enterprises produce and/or distribute parts such as slabs, pans, etc, and also install full toilets. In Pakistan, the absence of local supply is a limiting factor for community-managed rural sanitation (Khisro et al, this book, Chapter 15). In Bangladesh, UNICEF and the Department of Public Health Engineering (DPHE) established some 900 production centres and 3,000 'sanitary marts' (yards and shops). They sell all materials for toilet self-construction at subsidised prices, although the actual numbers fluctuate with demand. NGOs also sponsor some 625-900 production centres. Centres were mainly found at Thana headquarters and over 2,000 unions do not have suppliers (Galway, 2000; PAC, 2006).

When the commercial private sector saw a market for latrines emerging they responded by selling simpler and cheaper models, which became very popular. In 1999, Rahmatullah and Ikin reported that there were some 4,500 latrine producers in Bangladesh, of which over half were in the private sector (Fröhlich, 1999). Robinson and Paul (2000) give a total of 3,000. The estimated sales value grew from US \$1.5 million to US \$4.4 million in three years (PAC, 2006). With so many more private outlets selling parts cheaper and closer to people, the subsidised centres became overstocked. In 1993

DPHE cut their production and in 1996 UNICEF stopped supplying cement. However, DPHE still employs some 2,000 sanitation entrepreneurs (Galway, 2000). It is not known how many would survive on their own. A study by NGOF revealed that micro enterprises can hardly sustain on latrine parts only; they need to diversify their production (J. Verhagen, pers.com.)

The Indian Government and UNICEF copied the approach in India, financing local groups such as women's groups to set up production centres and village entrepreneurs to open sanitation markets and shops. The entrepreneurs get training and a starting-up credit which they have to pay back. The first Rural Sanitary Marts (RSM) were set up in Allahabad, UP in early 1990. The idea was so attractive that it was scaled up before it had been properly tested and was adopted as the standard approach in all sanitation programmes in which UNICEF-India was involved. Expansion was much slower than in Bangladesh. According to Kolsky et al (1999) there were about 450 RSMs in various states in India in 1998, but this number is probably higher, as Uttar Pradesh had 309 RSMs (Mendiratta, 2000) and Midnapure, West Bengal 330 (Jacob, undated). However, as RSMs are not always created in response to growing demands, it is doubtful how many are profitable. Consolidated data on RSM performance, nor a rigorous external evaluation were found.

Whether RSMs are profitable depends on their prices and minimum annual sales. Under the total sanitation campaign, each block can establish one RSM (usually started by an NGO, CBO or the Panchayat). The Government will provide a maximum Rs 3.5 lakh (US \$88,844) for the

construction of a shed/showroom, acquisition of equipment, training of masons and motivators, promotion campaign materials and a salary of Rs 750 per month (US \$19) for two years. Cost-sharing is 80% central government and 20% state government. An RSM will break even when it constructs around 1,000 toilets in a year, e.g. 700 toilets with squatting plates and 300 other toilets (Gupta et al, 2005). However, it is unclear if these sales would also cover the costs of the salaries. No data was found on the sustainability and profit of RSMs in the TSC.

An important aspect of local production and construction is the number of poor women who get work and an income from improving village sanitation. East Midinapure in West Bengal for example has 25 RSMs, which employ over 300 female masons (Cheruvari, 2006). In the state of Kerala, at least 1,200 poor women were trained as toilet masons in local enterprise groups (Sijbesma, 2006).

From numerical to behavioural results

A significant shift occurring in the region is the reporting on sanitation behaviour, especially the shift from numbers of toilets to ODF communities. However, ODF needs verification, including the hygiene of the installed toilets (especially those shared by many such as in schools) because many soiled toilets, filled with flies, still constitute a high health hazard. In the programme in Maharashtra, an independent agency (AFPRO) verified the ODF status of communities that had applied for the financial award for this achievement and found the claims to be partly correct (Jain, 2007), but whether these villages also sustained their status after outside inspection visits took place is not clear.

Conventional monitoring of financial and physical progress without attention to actual use and ODF status impacts still continues, for example, in the national sanitation programmes in Bangladesh and Pakistan (Rahman and Gosh, 2006, Khan and Javed, 2007, Khisro et al, this book Chapter 15). In the programme in Kerala, latrine use and hand washing were monitored by the NGO (Kurup et al, 1996), but there is no evidence that the state level has continued this. As far as is known, no independent assessment has either been done of the ODF status of CLTS programme villages. VERC, for example, was not systematically monitoring and collating field data at district level (Allan, 2003).

To be effective, good hygiene and sanitation must become lifelong habits. Data on longer term practices such as improvement or decreased toilet use and hand washing over time are still rare. The workshop had two papers on this subject. VERC's study of the sanitation ladder included also movements up and down the hygiene ladder between 2001 and 2006. The small sample had qualitative data showing that hygiene did indeed improve over time (Saha et al, Chapter 6 in this book). A study in Kerala showed that votes from men and women on consistent latrine use and hand washing after defecation differed significantly (94% and 71% by women, 59% and 48% by men). The older the hygiene programme (one to nine years), the less women reported positive habits, but the drop was quite small. Nine years after the programme, 80% of the women still always used a latrine. For the men there was no significant reduction in practices over time (Zacharia and Shordt, 2004). Safe defecation by children is still a neglected area (Khisro et al, Chapter 15 in this book).

Areas that need to be developed

Ten areas that are undeveloped, or which have been overlooked, are presented. These are:

- 1 Households are diversified, not uniform
- 2 Assessing cost-effectiveness of promotion
- 3 Targeting subsidies with equity
- 4 Upgrading toilets
- 5 Developing environmentally safe solutions
- 6 Programming for dry toilets
- 7 Improved sanitation in urban slums
- 8 Going for short- or long-term programmes
- 9 Sustainability of facilities and programmes
- 10 Institutional and human capacities

Diversified households

All reviewed sanitation programmes in South Asia focus on the household as the lowest level of decision-making on toilet design, installation, financing and use. Yet there are important differences both within and between households that are not presently addressed. Within households, men and women have different interests in and priorities for latrines. Women and adolescent girls have a higher latrine demand than men, because they face more restrictions and hardships, such as long distances to find privacy, the necessity to go out under the cover of darkness and cut down eating and drinking during the day to lessen daytime defecation and urination, harassment and safety hazards during walks to common defecation areas and the stench and dirt of these areas. They also need toilets suitable to observe menstrual hygiene (Ahmed and Yesmin, Chapter 21 in this book).

Men have fewer problems and are motivated by other benefits, e.g. the higher status from a toilet to the house and the provision of privacy and safety to their women folk, a higher house value and increased income from less illness and work losses, and lower expenditures on transport and treatment in case of illness.

There are also differences between groups of households, which related to differences in socio-economic status, and occupational and physical conditions. With latrines, for example, business people do not have to leave their premises or no longer risk losing income. Landowners, small subsistence farmers and labourers on the other hand can already defecate on the land they own or work in, while those defecating without such ties increasingly risk social conflicts (Kar, 2003). This means that different occupational groups have different reasons and urgency to want to have and use toilets and are also interested in different models and locations. While a middle class business couple may go for a convenient and high status toilet with bathroom inside the house, landowners and users may go for the lowest cost Arbor toilet (NWP et al, 2006) on the land, or for the cat method in the field and a pit latrine in the home yard.

The same diversification goes for communication channels and materials. Printed media and materials reach men and the better off more easily than women and the poor, with their lower literacy. Men and women also use different communication channels and are interested in different sanitation aspects. Nor can poor and young women and men freely mix and react in group meetings, even when

both sexes have their own meetings (Sijbesma, 1998). Communication strategies should therefore be gender specific.

Cost-effective promotion

Another aspect that is underestimated and underdeveloped is on effective (including more cost-effective) promotion programmes of improved sanitation and hygiene practices. From general research it is known that effective promotion uses a mix of mass information and personal contacts for conviction, both based on formative studies. In contacts, it is important that the facilitators do not impose, but help participants evaluate existing practices and identify and decide on improvements. Alternatively, communities can be facilitated to do their own participatory assessment and planning and implementation of hygiene action plans.

South Asia has few studies on effective hygiene promotion. In Bangladesh, Boot (1995) reviewed eight programmes. She found a conspicuous absence of the Ministry of Health and a superficial and haphazard delivery by its staff. Lack of good planning based on baseline data, no participation, untested messages, little or no monitoring and doubtful programme sustainability are other findings. In the mid-1990s, CARE Bangladesh implemented the Sanitation And Family Education (SAFE) project in 19 villages in two unions in almost 37,000 households. Contents were based on locally specific good and risky habits. In one union, small group discussions with women and men were used, in the other children and leaders were also involved. After one year, both approaches showed significant reported and observed differences with the control

area, but the two approaches did not show very different results (CARE, 2007). A participatory and integrated approach with male and female local promoters, PRA, action plans and involvement of local government showed considerable improvements in latrine building, reduction of open defecation, availability of water and soap and good hand washing practices, but without details on ways of measurement and costs of promotion (Alam and Huque, 2006). Unique is the early work of Hoque and Briend (1991) on the effectiveness of promoting hand washing with ash or mud instead of (often unaffordable) soap. While washing with water was as ineffective as not washing at all, washing with soap-substitutes effectively removed faecal bacterial. The sample was small, however (20 women).

In India, WSP reviewed three large hygiene promotion programmes (564-1,100 villages each). The first two used mass information with interpersonal contacts of the didactic type and the third participatory methods. The third was said to have had better results, but without giving evidence (WSP, 2000). A six-country study on the sustainability of improved hygiene after promotion had ended included a programme in Kerala and Nepal (Shordt and Cairncross, 2004). The research was carried out by the implementing agencies, one to four years (and in part of Kerala up to nine years) after ending the hygiene promotion. Using four different ways to measure the impacts of hygiene promotion on hygiene practices, the researchers proved that good hygiene promotion is significant correlated with the use of toilets and proper hand washing at critical times. They also showed that behaviour had hardly deteriorated over time. Differences in access to water and duration of

promotion did not affect these findings. When promotion efforts are intense and have a strong focus on reaching both men and women and the poor, then differences from women's education level, the socio-economic status of the communities and the differences in hygiene practices between women and men also became less important.

Only a few small studies of cost-effectiveness of sanitation and hygiene promotion programmes have been carried out in South Asia. A study in one intervention and one control city in Kerala, Bangladesh and Sri Lanka showed that a gender-sensitive participatory approach resulted in total access and use of toilets in the Bangladesh case and increases to 91% and 89% in the sites in Kerala and Sri Lanka; with no, or minimal, improvement in the control sites. Safe disposal of children's stools, quality of constructed toilets, toilet hygiene and segregation and composting of household waste also increased significantly. Overall, the interventions were over 30% cheaper than the compared government programmes (IRC and partners, 2006).

In Mirzapur, Bangladesh, the 1990 cost of hygiene promotion per person was US \$3.60. Results were that 90% had installed toilets and 98% reported use of these toilets by adults. Observed cleanliness was 73%, against 2% in the control area. Ash often replaced mud for hand washing and was found in 62% of the visited households, but in only 1% of the control sample (Aziz et al, 1990). In a 1994 study, however, Hoque et al found only 38% clean and working toilets. As neither study reports on how cleanliness was measured – observed (smears of) excreta or muddiness? – it is not possible to establish the validity of this information. Safe faeces

disposal of children remained a weak point in both cases (Aziz et al, 1990; Hoque, 1994). Alwis (2006) reports on effectiveness measurements with quantified participatory methods followed by hygiene promotion through children in a district in Sri Lanka, but impact data are not yet present and information on development and recurrent costs is missing.

Allan (2003) gives a cost of US \$1.50 per capita for achieving total toilet coverage and use through CLTS by WaterAid Bangladesh and VERC. This is at least half that of the cost per installed toilet by other sanitation programmes, but does not take into account that the average toilet in the CLTS is of a lower quality (though sufficient to meet its purpose) than the toilets with which they are compared (e.g. single versus double pit and low versus high durability of outhouses). Furthermore, her evidence comes from a study in a non representative sample of four out of 100 villages. Clearly, there is an urgent need for more research on the effectiveness and cost of different hygiene and sanitation promotion approaches in larger and more representative study samples.

The effects for gender and the poor deserve more attention in future studies. Under the given gender relations, toilets may increase women's and girls' workloads of water collection and cleaning, especially in poor households with a lower access to water supply. Also women's opportunities to become consultants (Khan et al, Chapter 14) and who do the work on digging (Khisro et al, this book, Chapter 15) are areas of attention. VERC is planning to study gender in its CLTS programme (Shayamal et al, Chapter 20 in this book).

Targeting subsidies with equity, transparency and accountability

In the section on *Phasing out direct household subsidy* above, it was shown that subsidies only make sense if they are not unsustainably high, are targeted to the ultra poor and evidence is available of their actual reach and use as intended. Tested mechanisms exist, but they seem not to be widely used so far. One is to display a list of local families, which the local elected sanitation committee (rather than a politician) have chosen to get a subsidised toilet and then investigate any complaint lodged by the local community. This was done in the Panchayat-managed sanitation programme in Kerala (Shordt, 2006b) but may have disappeared now that the programme has been scaled up to the whole state.

Another mechanism is to use PRA welfare classification to determine the characteristics of the worst-off and make a stratified social map which includes these households (Box 6 and Ahmed – this book, Chapter 22). Latrine subsidies and loans for the own contribution then go to the locally worst-off households and are recorded in the map along with the latrines when these have been built and have been proven to be used for excreta disposal. Because poverty is so locally-specific, targeting is best done at the lowest level and in a participatory and transparent manner that can be and is publicly accounted for (Ahmed – this book, Chapter 22).

Upgrading toilets over time

The principle of demand responsive sanitation (DRS) is that users install the toilets that they want and can afford. Through this approach, households install a range of toilets, from a very basic pit latrine of lowest cost, built in the yard

BOX 6 Targeting and accounting for toilet subsidies to the ultra-poor

The characteristics of a very poor family in urban and rural areas in different parts of a country can be quite different. Country or state wide poverty criteria are therefore only crude instruments for allocating toilet subsidies and have a doubtful validity. PRA tools and techniques help in identifying and using locally specific poverty indicators. They make it possible to ensure and provide evidence that toilet subsidies benefit only the poorest households in each community. The following is a typical procedure:

To determine the local indicators of poverty, the facilitators invite a gathering of community members to form three sub-groups. Each group then makes a drawing of a typical household: one very fortunate in life, one very unfortunate in life and one in-between household. (If so wanted, a fourth drawing of an ultra unfortunate household can be added). The facilitator then asks the groups to present their drawings and explain the indicators that they used. The other groups can comment and add to the indicators if they want. After completing, the group calculates the number of households in each category. The facilitator asks the plenary group to draw a map of the community, giving each house the agreed colour or shape of its welfare category. The group then draws in the houses with a (sanitary) latrine. The very/most unfortunate households without (sanitary) toilet qualify for a subsidy. The map is publicly displayed and each household given a toilet subsidy is registered in it.

with free material to a fully equipped and tiled bathroom inside the house. Included in the concept is that households may initially build a lower cost model which they grade up over time, e.g. adding a permanent roof, replacing curtains or screens with doors and cementing and tiling floors and walls. Actively promoting upgrading and giving examples of models and costs can help more

people build easier-to-clean, more durable and more attractive multi-purpose sanitation facilities.

To what extent and how people upgrade toilets is only recently being documented. A study in four CLTS villages in Bangladesh showed that upgrading happened when families replaced their old pit latrine by a new one (Allan, 2003). A more recent study with 428 households that installed toilets in three different locations between 2001 and 2006 taught that in all socio-economic categories (hardcore poor, poor, middle class and better off) families had followed a 'gradual progress principle' of slowly replacing low-cost models with improved models. The movement was best in poor households, followed by the middle class. Hardcore poor had the slowest climb (Saha et al, this book Chapter 6). As for each category, actual numbers of households that moved upward from model to model have not been given, it cannot be determined which were the easiest and hardest steps for each group.

Environmentally safe solutions

A lot of experience has been gained with low-cost onsite toilets. There are, however, specific environmental problems that have not yet been resolved: programmes in rocky and dry areas, areas with high watertables (see e.g. Khisro et al, Chapter 15 in this book), flooding and easy pit collapse, and safe emptying and end-disposal of uncomposted sludge. In high watertable areas, pits can only go down to the highest point of the variable watertable to avoid filling with water. Moreover, excreta that dissolve into water will pollute the watertable from which drinking water may be drawn, e.g. by handpumps. The same problems can affect septic tanks.

A bacteriological sample survey of groundwater in Goa, India showed that the E-coli load was 1,000 times the permissible drinking water limit, while in Kerala 90% of the shallow domestic wells were bacteriologically contaminated (WSP, 2005). In areas where disinfected drinking water is distributed under 24 hours pressure and at close distance, there may be no serious problem, but this is different when contaminated shallow groundwater layers can enter the piped system, are the main source of drinking water, or are the major fall-back resource in case of longer lasting breakdowns of piped systems. Safe end-disposal is also a weak and costly aspect of the system of primary and secondary sewerage under the partnerships between slums, municipalities and NGOs in urban Pakistan (Qutub et al, this book Chapter 4).

In high groundwater areas, the common solution has been to raise the soil and build the pit latrine into the mound. Disadvantages are that this increases the cost and does not solve the pollution and backflow problems from the moment the surface gets flooded. In these conditions, there is a growing appreciation of the alternative of dry toilets (See also the next section).

Inevitably, every toilet pit in use gets eventually filled up. There must be millions of such pits in the region. In spite of this, emptying full latrine pits is a remarkably blind spot of sanitary toilet programmes. Owners who have space usually abandon the full pit, dig a new pit, and cover the old one with soil. This happens especially when it is easy to dismantle and rebuild the superstructure or to build a new one. Alternatively, the owners themselves or a hired latrine pit emptier may dig a second pit and empty the contents of the latrine pit into this hole, or dispose the raw sewage

untreated in the nearest surface water or a nearby ditch. A variation is to connect the new and the old pit with an overflow (Kar and Pasteur, 2005).

Probably because of the stigma involved there is a lack of systematic data on who empty full pits, at what costs to whom, what happens to the sludge, and what negative and positive effects accrue to different types of people. In India the central government banned scavenging in 1993, yet it still prevalent in 21 states. The government estimate of scavengers is 60,000; NGOs give an estimate of 1.5 million. Some 90-95% of them are women, earning sometimes as little as Rs 1 per household per day plus some food. Pit emptying may earn as little at Rs 30 to 50 (80 dollar cents to US \$1.26) per pit (Therese Mahon, pers.com.). In Chittagong, in Bangladesh, the fee for emptying one pit fell from Tk 200 (US \$3.64) to Tk 100, indicating a higher demand and more private sector competition, but this data is based on one respondent only (PAC, 2006).

The same lack of information exists for the emptying of double vault pour flush and dry toilets. Theoretically, the owners will take out and sell or use the composted contents of the first pit when the second pit gets filled up, but the work may also be done by the informal private sector. Information about the scope and economic importance is, however, totally lacking. Emptying full toilets may constitute a significant income generating activity for poor people, including women, if the social stigma is counteracted by proper tools, protective clothing and a well-paying job (Eales, 2005).

Mechanical emptying which is suitable and affordable in densely settled slums is healthier and

socially more acceptable. The first experiences with two Vacutugs (suction pumps with reservoirs and pipes mounted on a small diesel-propelled cart or hung behind a small truck) in Dhaka showed that so far the service can not even cover all recurrent cost (Rashid, unpublished paper). Financial viability may however improve with a proper business plan with effective marketing and optimisation of the logistics and management of service delivery.

Scope for dry toilets

A typical low-cost dry toilet has a cement slab over two containers, each with its own squatting hole for the disposal of faeces, and a third hole in the middle for urination and cleansing. The urine and water are directed straight to the outside of the outhouse, where they can be used as urine: water mixture of 1:5 to fertilise trees, bushes and plants (Rajbhandari, Chapter 5 in this book). The excreta are deposited during about three months, after which the user family covers the hole and shifts to using the second excreta disposal opening. After another three months (the exact time depends on local conditions), the first load has composted and, taken out, can be used for gardening.

Dry toilets have two advantages in high watertable areas: the containers for the dry excreta are built above ground and dry excreta compost quickly, the exact time depending on temperature, people's diet and operation (e.g. mixing with ash). Dry toilets have a lower volume of still dangerous faeces (in terms of bacteria and worm eggs) than a wet mixture of faeces and urine, and the dry conditions speed up the killing off of the germs. In floods, much less raw excreta have a risk of floating out than when the area has single or double pit toilets,

so that contamination of land and groundwater is less severe. As far as is known, different germ loads during floods have not yet been calculated.

While fertilising with human excreta has a long tradition in China and Vietnam, such use is often not considered acceptable in other cultures. Yet Quazi (2006) and Quazi and Islam (this book, Chapter 19) found that despite the Koran's edict and Islamic culture of minimising contact with human excreta, farmers in Bangladesh grow trees and plants on full latrine pits and mix human and animal excreta and kitchen waste to increase the amount of free manure.

Dry toilets need relatively more space and are relatively expensive, but are still competitive to other models, such as the double vault pour flush toilet and septic tank. In peri-urban Kathmandu, Nepal, a dry toilet with a complete superstructure cost the equivalent of US \$230 (Rajbhandari, this book, Chapter 5). In Tamil Nadu, the direct unit cost was Rs 7,000-8,500 or US \$178-217 (Kumar and Gopalan, 2007). Investment costs of INR 3,500 (a cut of 44%(!) through cooperation of an NGO and a women's group, Calvert 1997) and INR 2,400 (Mara, 2005) are also mentioned. Making investment cost comparisons is difficult, since currency conversion, cost-increases over time, subsidies and design lives are disturbing factors (Smet, 2007).

In Chapter 5, Rajbhandari shows that in peri-urban Nepal, the underground part of the double vault eco-toilet costs the same as a single vault pour flush toilet and is cheaper than the double vault pour flush latrine, but both are still expensive for a poor household. Only the simple direct pit latrine is relatively cheap, at one third of the cost of the

eco-toilet. However, if the value of the urine and compost as fertiliser are deducted, the cost of the eco-toilet earns itself back in a period of five years. A country-level study of latrine costs gave still higher unit costs for a dry toilet (NRS 14,285 or US \$285 instead of US \$230), almost 2,000 Nepalese rupees more than the double vault pour flush toilet. However, when the costs of treatment are included, the unit costs of Ecosan toilets (NRS 14,285) are still much lower than those of septic tanks (NRS 18,786) or flush toilets with conventional treatment (NRS 21,550) or reedbed filter treatment, which at NRS 29,360 or US \$459 per household is the most costly option.

The estimated recurrent costs of a new community-managed reedbed filter in Sunga, Nepal, is only NRS 625 per household, however, and will drop to NRS 125 per household when operated at full capacity. This amount does not include the cost of the water supply for flushing. The capital costs of the system was NRS 12,500 per household, which equals the capital cost of double vault pour flush toilets and eco-toilets (Tuladhar et al, Chapter 7 in this book), so for urban settlements with no space and productivity demands for eco-toilets this may be a good alternative to conventional sewerage systems as well as dry and wet onsite double vault toilets.

Ecosan toilets were found especially suited to areas with peri-urban agriculture where water is scarce or relatively costly, soil fertility and productivity declining and artificial fertilisers expensive (Nepal imports them from India). Nevertheless, so far only 517 eco toilets have reportedly been installed over a period of five years. Positive outcomes are that year round use by all family members is high (93%)

and that 98% of the users and 89% of their neighbours support the technology (Rajbahandari, Chapter 5 in this book).

The big upfront investment is a serious drawback, as the system becomes affordable when the value of the fertilisers is deducted (Kvarnström et al, 2006; Rajbahandari, the book, Chapter 5). Links of sales to credit, a common practice of small entrepreneurs selling toilets/toilet parts in Bangladesh, may make a difference. The first sanitary mart for eco-toilets opened in Trivandrum rural district (Kumar and Gopalan, 2007), but information on range of models, prices, sales and credit facilities could not yet be found. In Nepal, links with a credit scheme and building off of the 60% subsidy are now planned.

There is a high need to experiment with a range of cheap to more expensive models, especially in areas with a good potential for dry toilets, such as areas with high watertables and frequent flooding, rocky soils, a lack of water for flushing, a market for natural fertiliser (such as peri-urban communities with market gardening), poor quality soil and high fertiliser prices, and areas where pit emptying is costly. In the greater Kathmandu case, where dense urban settlement makes mechanical emptying of pits costly and sometimes impossible due to lack of access, husbands earlier forbade their wives and daughters to use the pit latrines for fear of filling up. They now encourage them to use the dry toilets to maximise outputs. Very simple dry latrine models may include single pit latrines with shiftable superstructures which householders use only for stool disposal, and a bucket or other receptacle urinate in and wash over. When the pits get full, the households build new ones, shift the

superstructures, cover the old pits with soil and either empty them after the contents have composted, or – when space is not a constraint – simply plant a tree in the old pits for timber, firewood or fruits (Smet, 2007). The reported lowest cost of this model is only US \$2-5 (NWP et al, 2006).

Safe sanitation in urban slums

Urban growth in South Asia is high. It happens not only in mega cities but also in medium size cities and towns. Such centres are seldom equipped for dealing with sanitation for large numbers of poor people. Authors at the South Asian workshop presented four types of solutions: (1) partnerships between municipalities, NGOs and communities enabling slum households to install onsite toilets (mostly pour flush, but in Nepal also dry composting toilets) usually still with a subsidy, or a combination of a subsidy and loan (Ahmed, 2006; Rajbahandari, this book Chapter 5); (2) NGOs helping households in dense and poor urban settlements to build a row of communal toilets, also called toilet clusters, of which one series is for men and the other for women and children; (3) partnerships to establish community-managed sanitation blocks: small buildings with separate toilets, bathing facilities and water supply (and sometimes also laundry provisions) for women and children on one site and for men on the other site (occasionally, both groups have separate buildings) and (4) partnerships between slum communities, local NGOs and municipalities to install shallow sewers financed by poor households and linked to the city mains, a model mainly followed in Pakistan (Qutub et al, this book Chapter 4; Welle and Wicken, this book Chapter 8). Not covered

are other alternatives, such as community-managed shallow sewerage using baffle reactors. However, not enough data was available for this workshop to make a comparison between these various options.

A lack of space, legal status and social cohesion often limits the possibilities for individual household toilets in low-income urban settlements. So, many programmes focus on community-managed communal provisions. However, it may be possible to have community led sanitation programmes for private provisions in locations such as CLTS in locations where space for settlement is made available and people are allowed to settle. This is clearly an area for experimentation when municipalities want to reduce unplanned urban growth, but are themselves not in the position to start site-and-service schemes.

Municipal service, sanitation blocks have been unsuccessful, because of their bad hygienic conditions, bad smell, inconvenient locations and harassments and safety risks for women and girls. As one of the first organisations the Indian Sulabh Saushalaya Sansthan (SSS) began to build and operate commercial sanitation blocks with toilets, washing and bathing facilities and a paid operator and cleaner. SSS paid two workers from the user payments to keep the provisions clean and in good working order. These pay-and-use blocks have especially been a success when sited close to places visited by many people with a good payment capacity, such as stations and markets. About one third of them make a profit, which SSS uses to cross-subsidise the others (Sulabh, pers. com). An early study showed that especially poor, but earning men used the blocks. For women and

children their accessibility was much lower, even though use by children was free. Reasons were that the blocks were not centrally located in the slum areas at close walking distances and could not be used after dark (Vijayendra in Sijbesma, 1981). How this is now and which blocks can be sustained without co-financing from other funds is not clear.

Because of the poor service of municipal toilets and the cost of commercially operated sanitation blocks, several NGOs have built (or convinced municipalities to build) user-managed sanitation blocks. Sometimes the blocks are only for women and children, sometimes one section is for women and children and one for men. Occasionally, blocks have special toilets for children (Khandaker and Badrunnessa, 2006). Adaptations for the disabled and for menstrual provisions also sometimes exist (Ahmed and Yesmin, Chapter 21; Ahsan et al, Chapter 2). Whether the blocks are designed and located together with the future users or by the NGO and/or municipality is not always clear. A local group (often a women's self-help group) runs the sanitation block on a household subscription and/or pay-and-use basis. The aim is usually to provide a basic sanitation and hygiene service on a cost covering basis and if possible as a small private enterprise.

In Dhaka and Chittagong, NGOs give rent-free loans at a value ranging from US \$ of c. GBP £2,778 (US \$5,600) to build a water supply and sanitation block consisting of up to 12 toilets (six for women, six for men), two urinals (for men), a septic tank and an underground water reservoir with one or two handpumps on top for hand washing, bathing and laundry. The design is for 500 users per day,

but a study showed that the number of users ranged from 430 to 717 per day. A smaller facility for some 150 users per day consists of a row of five toilets with a septic tank or sewerage connection but no water supply⁷. An eight-woman committee runs the service, sets the tariffs, cleans, arranges for repairs and collects and manages the payments. A five-man committee assists in negotiation and security during construction and operation. Alternatives are to install or share private toilets against payment. Monthly payment is Tk 30-40 per household per month. In some cases, payment is according to household size and/or per visit (and types of use?) (Hanchett et al, 2003). Ahsan et al (Chapter 2 in this book) found that out of 49 communal provisions in four cities, all but one met the design standard of maximally 50 users per toilet. Operation and management is by a hierarchy of local committees. They allocate a weighed tariff for repaying the construction loan. To arrive at the full investment fee, the total construction cost is divided by the number of user households. The committees define four types of households: better-off, intermediate, poor and hardcore poor. Better-off households must pay the investment share in full in a number of monthly instalments agreed on between the managing committee and the NGO. Hardcore poor may pay as little as 5%. The difference is made up by WaterAid Bangladesh. There is, however, no information on the O&M tariffs, payment experiences and degree of and variation in coverage of recurrent costs.

Research by WaterAid in Trichi (India) and Dhaka and Chittagong showed that paying back the construction cost is only possible in a few cases and that a considerable part (two-thirds in Trichi, where charges include electricity) could also not

cover the monthly running costs. The blocks did meet a considerable demand: in the Bangladesh, 35% (incl. 37% very poor) still used unsanitary toilets (mainly slabs over drains or water bodies) against almost 50% in the control area. Open defecation was limited in these dense urban settlements, but this may only be for adults, and not for children below the age of ten. Ahsan et al report in Chapter 2 that in a quarter of the communal toilets, users never dispose any infant excreta, but based on statements from users and operators in another one third, *all* infant stools are brought to the latrine. This seems very high and may stem from socially desirable rather than true answers, so a more thorough investigation is indicated.

Although sanitation blocks are probably the most realistic solution for low-income and densely settled urban communities, and paid group or community management of the blocks the best management options, there are quite a number of issues that need further investigation and decision making. The first issue is that of the best mix of service level: how to choose the kind of location, size and type of facility to meet the needs and demands of all people in the 'sanitation catchment area' in such a way as to become fully sustainable and make an end to unsanitary sanitation? The right mix of size, design and financing (including the share of the municipality) has clearly not been found. The second issue is that of equity. User households differ in their payment capacities and in the degree of benefits: those who live close can use the facilities more easily and need to queue less. There was no differentiation of O&M tariffs, however, although some committees allow the very poor to pay less. In gender division of work and

⁷ A block with eight cubicles (three for women, three for men and one each side for children) without further facilities was cheaper, ranging from US \$2,900 to US \$3,750 (Khandaker and Badrunnessa, 2006).

benefits, information varies. While Ahsan et al (Chapter 2, this document) reports a balance (as many facilities maintained by women and by men, or both), women do most of the work as volunteers. Nor do poor women sit on committees: they cannot afford to take time off from income generating work. A third issue is that of adjustment to special user needs. As mentioned, it is not clear to what extent users take part in decisions on designs and locations. Use by children has been reported (Ahsan et al, Chapter 2 in this book), but the methods (unsystematic interviews of users and operators) are too general for reliable data.

The papers in this workshop brought out the importance that women participate in adjusting designs for use by children and during menstruation and if designs and locations are suited for disabled people (Ahmad and Yesmin, Chapter 21, Ahsan et al, Chapter 2; Pradhan et al, Chapter 24). Jones et al (2002) remark that because many Bangladeshi believe that impairments are contagious or as a punishment, disabled people may be prevented from sharing latrine facilities. Focus group discussions reported by Ahmed did not bring out such exclusion, but such practices may not be reported unless specifically investigated. Having a toilet at home clearly benefits very poor people with a handicap in particular (Ahmed, 2006). A first action by NEWAH and WaterAid in Nepal revealed the barriers, implications and possible actions and strategies to adjust sanitation and water supply facilities to the needs of the handicapped (Pradhan et al, this book, Chapter 24)

In Pakistan, the major approach to urban sanitation for the poor is community-managed piped sewerage projects. Low-income households are helped to form lane organisations and finance,

manage and maintain sanitary latrines in their homes, underground sewerage lines in the lanes and secondary sewers in their settlements. The government is responsible for providing main sewers and treatment plants. A basic requirement of this option is that households have the space to install a pour flush toilet that connects into the sewer. NGOs, with the Orangi Pilot Project Research and Training Institute (OPP-RTI) as pioneer/trainer, provide social and technical guidance to both community and government, facilitating partnerships.

The *direct* costs of shallow, community-managed sewerage are relatively low. Haider (Chapter 3 in this book) reports that participating households pay a total investment cost of US \$40 for a simple pour flush toilet and its share of a lane sewer and a collector sewer. Taking an average value of 51 Pakistan Rupees for 1 US dollar during the project period, the investment cost for a pour flush toilet and lane sewer in Quetta was US \$28-56 per participating household (Qutub et al, Chapter 4 in this book). However, this cost neither includes the cost of the community motivation and organisation nor the cost of the secondary sewers and end treatment. In the Quetta programme, the direct investments by the user households were only 18% of the costs for the investments at the community level. The costs of secondary sewers and treatment are still additional.

The approach has so far been extended to 279 settlements in Karachi and 13 other cities, covering a population of more than two million. The Orangi and Baldia projects are extensively documented. Bakhteari and Wegelin documented the Baldia project in 1992. On the Orangi project, the IRC Documentation Centre alone has more than 55

documents. The project also has its own website with quarterly reports (<http://www.oppinstitutions.org/>). The Orangi project in particular has been acclaimed as an example of how the poor can transform their environment with mainly local means, although the British House of Commons (2007) criticised its limited engagement with government, which it said hampers scaling up. On which data this observation is based is not clear, however, since as far as could be ascertained, no independent evaluations have been carried out of the current status and strategies of community sewerage programs. This is further addressed in Sections on *Validating claimed successes* and *Safe end-disposal*.

Short-term limited or long-term comprehensive?

Research on health benefits has shown that the greatest impact on diarrhoeal disease (highly prevalent in the tropics and the second highest cause of death of children under five) comes from a wide adoption of three key practices: clean sanitary toilets used by all, hand washing by all with soap or soap alternatives at four critical times, and safe storage and drawing of clean drinking water. (WHO, 1993). Thus, it does make sense to address each of these practices through social marketing.

In contrast to IEC (Information, Education and Communication) campaigns, which focus on the information that agencies want to be transferred, social marketing begins with what the consumers want and for which reasons (Scott, 2005). Shorlt (2006a) reports how such a campaign in Bangladesh failed for lack of adequate attention to social marketing requirements. UNICEF and DPHE, and

some NGOs now give training, materials and access to credit to private entrepreneurs to enhance their sales of toilets/toilet parts. Limitations not yet solved are that small providers can only do low-cost research and development, and that when they develop innovations they cannot be patented (Robinson and Paul, 2000). WaterAid India and its partners also use social marketing of toilets to increase local demand, installation and use, which had better results than the original IEC approach. Household subsidies still constitute one third of the investments, but will be phased out (WSP/WAI, 2000). A literature review and formative research identified that a key area of research required is how small business may be supported to improve their overall delivery of sanitation facilities (Budds et al, 2002).

Other products/practices promoted through social marketing are hygiene kits for delivering babies leading to significantly more hand washing with soap and reduced infections in Nepal promoted by the NGO PATH (PATH, 2007) and hand washing with soap promoted by the commercial private sector of Hindustan Lever, a daughter company of Unilever. The company has partnered with existing micro-credit programmes to help poor rural women set up small scale businesses that promote and sell the company's products. Hindustan Lever provides training and local marketing support including a tool to show how soap cleans hands better than water alone. The Shakti project started in Andhra Pradesh in 2000 and has since expanded to 12 other Indian states and to Sri Lanka and Bangladesh (GPH, 2005).

Promotion of key hygiene changes has to be realistic. In four urban slums, householders could not always attend sessions or practice the messages

(Ahsan et al, this book, Chapter 2). In post earthquake Pakistan, combining the provision of key hygiene goods with social marketing through a mix of mutually reinforcing radio and interpersonal messages had a crucial positive effect on hygiene in emergency condition. Rapid assessment of local risks (respiratory and eye infections in children rather than malaria) would have improved the effectiveness even more (Khan et al, this book, Chapter 23).

CLTS campaigns share with social marketing that they focus on one key indicator – a total absence of open defecation – and the reasons why different groups of people want to achieve this goal. At the same time, effective CLTS programmes have not stopped at an ODF status – they went on to improve other essential behavioural aspects such as toilet maintenance and hygiene. These programmes see an ODF status as a necessary, but insufficient condition to good environmental sanitation and hygiene and therefore have longer intervention times and aim at more comprehensive capacity building to plan, realise and sustain wider sanitation and hygiene improvements (Huda, Chapter 11; Khisro et al, Chapter 15; Saha et al, Chapter 6; Zacharia and Shordt, 2004). The relative costs and effectiveness of the approaches have however not been investigated.

Although social marketing is promising, there is thus a lack of quantitative evidence over time on the overall risk reducing impacts of these approaches, both alone and in comparison with approaches that are more comprehensive. The latter types of programmes aim at building the capacities of communities to investigate, analyse and effectively and lastingly reduce and eliminate the

whole range of risky conditions and practices. Studies on the costs and effectiveness of both approaches would aim at the sustained adoption of improved practices and the benefits for poor people's livelihoods.

Sustainability of facilities and programmes

Achieving the MDGs for sanitation and – in time – freedom of open defecation only make sense if (1) existing households continue to use, empty and (re)build sanitary toilets and (2) newly formed households also build, use and sustain such provisions. There is a surprising lack of information on what happens on both points after promotion programmes have ended or moved to new communities. Smet (2007) mentions one study in Tanzania where households did not build any more VIP latrines after the project and its subsidy had ended. Allan (2003) found that at the end of a toilet's life, households replaced the low-cost toilets they had built with their own resources with the same or better models. However, this study was limited to four villages with a specific situation. As pilots, they received an intensive programme and frequent visits from interested outsiders. A recent study by VERC gives more evidence of sustaining sanitation and hygiene (Shayamal et al, Chapter 20 in this book). Plans for monitoring sustained habits are under development for CLTS in Madan district in Pakistan (Khisro et al, Chapter 15 in this book). A six-country study, of which two in South Asia, studied latrine presence, use and hygiene (Shordt and Cairncross, 2004) and not whether over time existing toilets had been replaced and new households had built new ones. More longitudinal studies on toilet adoption and use and revisits to representative samples of

communities, which have been proven to be open defecation free, are urgently needed to fill this gap of insight in effective promotion strategies.

Institutional and human capacities

Throughout the region, sanitation is one of the development areas that have shifted from a centrally managed, supply driven approach to a decentralised development responsibility of local governments. Organisational and human capacities that will determine the performance and results occur at three levels:

1. *Lowest (local) government level.* The lowest level government – such as the elected Local Government Councils have many tasks: assess local situations, review results and decide on the areas for improvement, plan action plans with participation of local men and women, form (water and) sanitation committees and/ or CBOs dealing with sanitation (such as Women Self Help Groups), assist and supervise the work of these committees/CBOs, e.g. in promotion, mobilisation, financing and management, account for support to the worst-off households, monitor results (including quality of work, abandonment of open defecation and adoption of improved hygiene), account for programme performance, including financing and financial management, solve problems at the lowest level and alert and gain support at higher level for issues that cannot be solved locally;
2. *Intermediate level support (often the districts).* This level provides the immediate support services for implementation at scale, such as recruiting support organisations (NGOs/CBOs/private enterprises) and/or allocating government staff which allocate

government resources; facilitate community interventions; provide training; facilitate supply and functioning of material and service providers; give technical support and advice, monitor conditions, intervention programmes and results, and compile and consolidate the district data, not just during specific programmes, but as part of overall district development;

3. *Higher level government* at provincial or state and national level. The highest levels are generally expected to create the enabling environment for the lower levels to function well, such as formulating the policies and strategies and the legal and regulatory framework, providing institutional set-up, education and research and giving financial support.

In this review, most information and lessons learned relate to overall policies and strategies on the one hand, and improvement activities and results on the ground on the other hand. Policy and strategy papers gave only general descriptions of the organisational set up and human resources development. Very little information was found on the resources and capabilities at intermediate level, such as numbers and types of technical and social support staff, capacity building of this staff and the members of community organisations and local governments, quality of promotion of sanitation and hygiene, attention to gender and social equity throughout capacity building and programme implementation, the budgets and actual expenditures on the different types of support and the in-house and independent monitoring and evaluation.

Some data on numbers and types of staff for CLTS in Madan district, Pakistan can be found in Khisro

et al (this book Chapter 15). The only really detailed data on intermediate level support concern the CLTS programme of VERC and WaterAid in Bangladesh (Allan, 2003). From the intermediate level, each *Union Parishad* (UP), the lowest level of local government, gets four NGO motivators^a. Each one works with six villages, but within them work intensively with four to five *paras* for 18 months, paying over 150 visits. This is followed by a period of 12 months during which they visit three to four times per month. Overall, a *para* may thus get close to 200 visits over a period of 2.5 years. Each motivator further forms a flexible team of Community Volunteers (CVs) which they identify during the first PRA activities. CVs visit homes, monitor progress and generally keep the momentum going for a stipendium of Tk 500 (then equal to US \$10) per day. The best CVs (now 19, sex not reported) become paid consultants at the same fee to introduce CLTS in other districts (Kar, 2003; Kar and Bongarts, 2006). Community motivators get 42 days training (Table 3) which goes beyond ending open defecation. Starting in 2000, VERC's programme was covering 433 *paras* (48 villages) by March 2003, of which 82% were open defecation free (Allan, 2003).

One important aspect of building local management capacity that is only recently being added relates to increasing programme transparency and integrity to ensure that all funds serve the intended purpose and quality of construction is not compromised. In Chapter 17 of this book, Mathew et al set out how this is being done in one particular rural sanitation programme.

Particularly challenging for the intermediate level is the preservation of sufficient quality when

programmes are scaled up: the involvement of enough community motivators, the completeness and quality of their training, the intensity and quality of their work with the communities, adequate resources for coordination, supervision and support, and ease of access to materials, trained masons and affordable solutions in environmentally difficult conditions. Implementation of the CLTS movement has reportedly spread to about 1,000 UPs out of a total of 4,470, although it is not clear where CLTS ends and the national campaign starts. It is unrealistic to assume that the above-reported thorough training and intensive approach that underlie good quality results can be scaled up to national levels. Other implementers have, for example, already reduced the motivators' training to ten days (Allan, 2003) and some UP officials have told community leaders to have all toilets constructed by a given date or household offenders will face fines of up to Tk 2,000 (US \$32) (Kar and Bongarts, 2006).

TABLE 2 Training of community motivators for CLTS programme, VERC/WaterAid Bangladesh

Subjects	No. of days	Subjects	No. of days
Basic PRA methods	10	Child-to-child learning	7
Motivational techniques	3	Health and hygiene	5
Facilitation	3	Participatory hyg. prom. tools	2
Participatory planning, implementation, monitoring	7	Training through participatory methods	5
Subtotal (1)	23	Subtotal (2)	19
		Total (23 + 19)	42

^aOne UP consists of about 25 villages. Each village has from five to over 15 sub-villages or *paras*. One *para* = 50-60 households, 1 village = around 500 households, 1 union = around 12,600 households (Allan, 2003).

The question is what are realistic planning figures for such programmes? Reportedly, the combined CLTS and national programmes have led to high coverage figures for sanitary toilets in Bangladesh. Rahman and Gosh (2006) report that from December 2004 (national baseline) to June 2006, latrine coverage has doubled from 39% to 78% in rural areas, increased by 20% to 84% in the 288 municipalities and increased in the two cities by 11% to 84%. Official estimates for the first two categories are even higher: 84% and 88%. There are, however, no independent sample data underpinning these government figures⁹ and no information on how the results were achieved, to what the extent the toilets are durable and hygienically used, if they have ended open defecation and if community capacities for sustainability have been built. To be sustainable over time, it is likely that sanitation programmes need longer term commitment and at intermediate level, enough support staff with strong facilitation skills and training, job performance criteria that go beyond numbers and sufficient career opportunities for social and technical staff to specialise in all aspects of sanitation and hygiene.

Further steps forward

The preceding sections contain an overview of the progress that has been made to achieve improved sanitation and hygiene in South Asia. On ten content areas considerable progress has been achieved, although issues for further work remain. Another ten subjects concern areas where major progress is still to be made. The papers that were presented at the workshop provide new data and insights in many of these areas. Information and discussions are both likely to influence the future

work of the workshop participants and their organisations.

A specific question discussed was whether there is a need to cooperate in advancing specific subject areas, and if so, on which subjects and how cooperation would take place. The following four areas emerged as action research priorities for regional cooperation: (1) assessing and enhancing cost-effective promotion and delivery; (2) agreement on indicators of effects and impacts as a condition to validate promising approaches (3) assessing and improving end-disposal of excreta and (4) action research on citizens voices and accountability, addressing access to information as well as roles/responsibilities of different stakeholders, government responsiveness and transparency of funds for sanitation and hygiene promotion. Practitioners formed sub-groups, which will take each subject forward. Arrangements were also made for cooperation in advocacy work on sanitation and hygiene in the South Asian region.

Assessing and enhancing cost-effective promotion and delivery

Promising programmes are currently carried out to make whole districts and cities in South Asia open-defecation free. At the same time, no good field studies could be found that assess the effectiveness and the full costs (i.e. to agencies, communities and households) of these programmes. It is therefore proposed that a group of participating partners will together design and implement an evaluation or action research project to do an ex-post evaluation of some district or city-wide sanitation campaigns. Alternatively, the

⁹ The government estimate is based on the household latrine coverage and distribution of sanitation subsidies. However, the definition of sanitation as well as reliability of the coverage are issues that are now being addressed by the government through an independent committee set up recently. Source: Muhammad Abdus Sabur and Dr Syed Ishteaque Ali Jinnah (WaterAid), Challenges in our sanitation sector, Daily Star, 19 Nov 2007, <http://www.thedailystar.net/story.php?nid=12146>

measurement of costs and behavioural effects could be included in an action programme to make a district or city open defecation free.

For research, each partner would investigate the approach, costs and effectiveness to achieve freedom from open defecation in, say, one rural district or one municipality with the help of a common research design. The districts or municipalities would be representative for the situation in at least a large part of the country or state(s) concerned. Investigations would focus on the resources, costs and results of the approaches and include as many of the issues identified in the workshop as important for effectiveness, sustainability and equity of improved sanitation.

Validating claimed successes

Experiences in parts of India (e.g. Midinapure, Maharashtra) and Bangladesh (CLTS) show that with effective promotion, community-managed action and easy access to low-cost designs and material, almost all households will build improved toilets without direct subsidy. Yet independent evaluations of the approaches are extremely scarce. Despite its early success, no evaluation could be found of patterns of use and upkeep of the Midinapure toilets. The same goes for claims that the CLTS approach has made whole districts open defecation-free. Evaluation of two ODF-districts in Maharashtra by AFPRO showed incorrect claims in 10% of the village in one district and 57% in the second (Jain, 2007).

Making exaggerated claims about the success of programmes, and seeking to promote approaches as being the (single) way forward, actually do a disservice to the people that these programmes

are aiming to serve. Independently-led, participatory evaluations would be very useful to learn if and why large programmes have been successful in some areas more than others. Workshop participants from areas with such programmes might get together to work out an agreed methodology and proposal for the rapid assessment of such alleged successes, preferably in a learning approach with the actors.

The participants identified the development of common indicators to provide sound evidence for attributing development impacts of sanitation and hygiene programmes (e.g. on health, education, livelihoods, empowerment etc.) as a key aspect to better measure outcomes and impacts of sanitation and hygiene programmes. Stress was placed on including safe disposal of children's faeces as an important indicator of programme effectiveness.

Assessing safe end-disposal of excreta and possible alternatives

A last neglected subject area requiring more data and insight is what happens to human excreta from toilets that are filled up and what alternatives are used for safe disposal. In the South Asian region, millions of improved household toilets have been built with either a single or a double pit. Very little is known about what happens when these toilets are full: who empties them (if at all), at which costs and what is done with the raw and composted excreta. Especially in densely populated areas, fewer and fewer households will have the possibility to construct a new toilet and cover over the full pit. In due course they may use the excreta productively by planting a timber or fruit

tree in that spot. Hygienic and safe emptying and end-disposal of excreta becomes extremely important.

This review has taught that cash costs of pit emptying and end-disposal of excreta are not included in the costing of domestic toilets. Yet these costs can be higher than those of the toilet itself (Allan, 2003). Nor could any information be traced on safe and socially acceptable pit emptying and end-disposal programmes, except some information that because of the greater demand, sweepers can earn more even at a unit cost reduced from Tk 200 (US \$3.64) to Tk 100. One sweeper, who covers three to four villages in Chittagong district by bicycle and earns more than US \$260 per month, plans to buy a mobile phone so that customers can reach him more easily (PAC, 2006). A project in Mirzapur trained 12 women to empty pits, paying the then local unskilled wage rate of T 60 (then US \$2) per day. A team of three took three to four hours per pit, at a unit cost of then T 120. This was far less than the T 1,000 of professional sweepers from the local hospital (Aziz et al, 1990). However, no data on sustainability are available.

Mechanically filled vacuum tanks, which put an end to manual pit emptying and can be used more easily in areas that are difficult to reach, are now used in a few low-income urban areas including in Dhaka (Scott and Reed, 2006). The NGO Shubashati is testing it for UN-Habitat in Kushtia Municipality. The Gulper, a handpump to empty latrines, is under

testing in Cambodia. Socially more acceptable and economically profitable ways of pit-emptying and disposal are an important development area in urban sanitation. The cost-effectiveness of such ways should be compared with alternative ways of disposal that do not require sludge collection and disposal, such as dry toilets and community-managed mini-sewerage systems with onsite treatment of black and grey water ¹⁰.

The workshop participants identified the following specific sub-topics for action research on safe end-disposal: (a) costs of the urban sanitation chain, (b) modification of septic tanks for 'self-treatment', (c) faecal sludge management, composting and biogas options, (d) cost-benefits of eco-sanitation (e) public-private partnerships on motorised pit emptying with safe end-disposal, and (f) safety guidelines for low-tech manual pit emptying.

Citizens voices and accountability for actions

As a final topic, the participants identified citizen demands and responsiveness to these demands as key areas for action research. Sub-topics identified were how and to what extent do different citizen groups get access to information, the roles and responsibilities of different stakeholders on providing effective sanitation and hygiene promotion services, responsiveness of the government and other stakeholders to citizen demands, and transparency on the use of funds for sanitation and hygiene promotion.

¹⁰ The system consist of a number of paid house connections shared by one or more families from which the sewage flows via individual manholes to an series of baffle reactors (a kind of inter-connected septic tanks). The solids of the sullage sediment in these tanks, while the increasingly clear blackwater moves from tank to tank to drain ultimately into a field or the local drainage system. The tanks are preceded by a grease trap to catch the grease from e.g. the disposal of cooking oil. A community-employed operator cleans the grease trap and deals with any blockages.

Enhancing institutional and human capacity for scaling up cost-effective sanitation

Going to scale on demand responsive sanitation and hygiene is not possible without supportive organisations and staff with the right mix of skills, attitudes and management systems. This review indicates that especially government agencies at the intermediate (district) level lack the required human and organisational capabilities. It would therefore be very useful to undertake more actions and do more research in these specific subject areas.

More actions should focus especially on better training and management of participatory promotion of improved sanitation and hygiene at the supportive level(s). Judging from the problems with scaling up CLTS/TSC with quality, there is a dire need for short, low-cost and field-tested capacity building and support programmes for participatory sanitation and hygiene promotion based on the methods and techniques already in use in the region, in particular PRA and PHAST.

New research might focus especially on *with whom* and *how* to scale up (quickly), but with effective HRD. Regarding the *with whom*, there are as far as could be found no investigations of the socio-psychological and socio-organisational factors which distinguish successful sanitation promoters and business(wo)men from their less successful colleagues. The same goes for the *how to* of capacity building. Can programmes select government workers for personal qualities, develop the right types of attitudes and skills and sustained them effectively on a large scale and in a short time, or will that kind of staff and staff capacity only flourish in relatively small NGO programmes?

Surprisingly, actions for and research on building and using support capacity on community sanitation and hygiene improvements at the intermediate level did *not* emerge as a priority area. It may be that for this subject to emerge as a subject in its own right needs more documentation, exchange of experiences and attention as part of research of field programmes.

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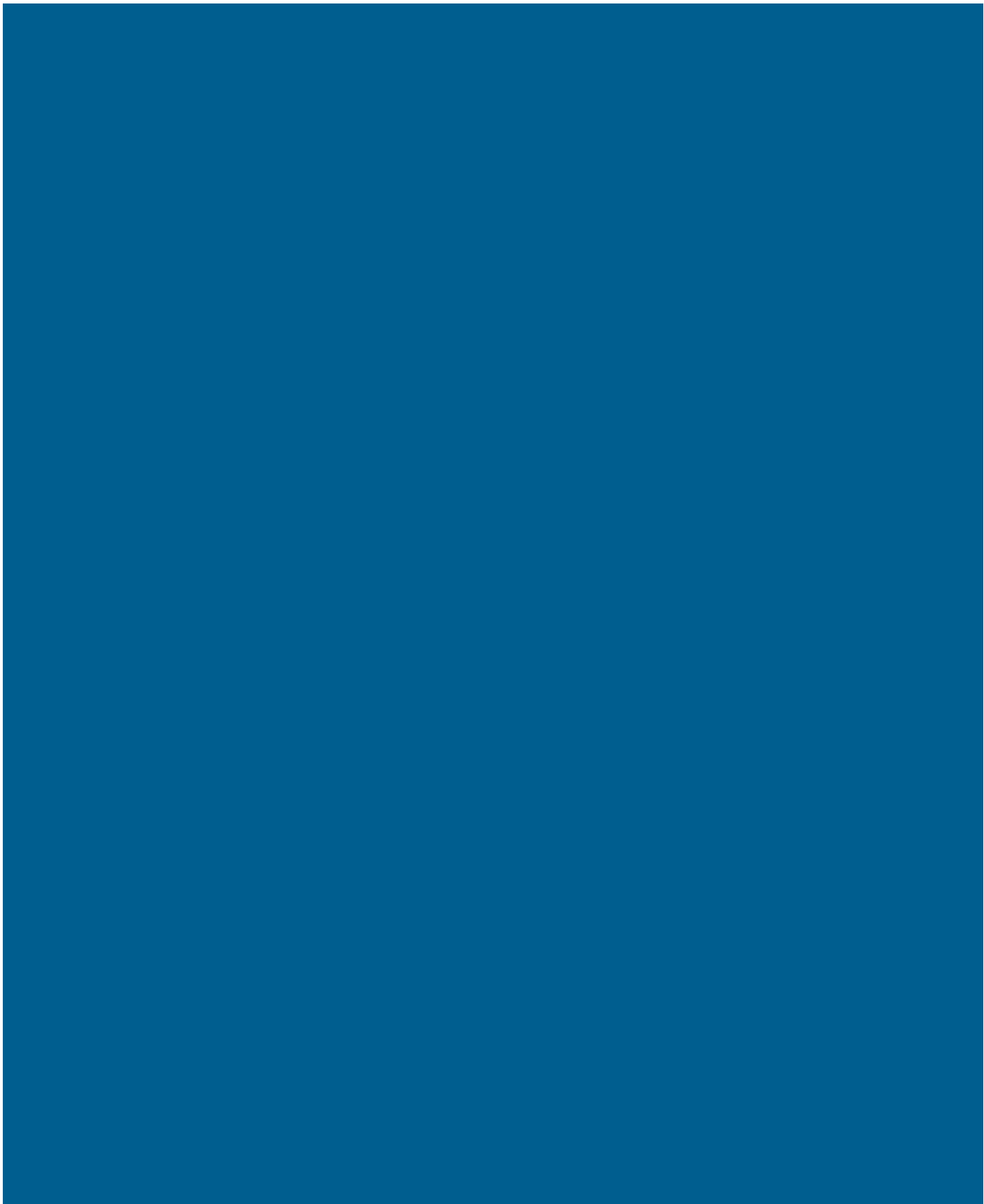
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The Joint Monitoring Programme estimates that there are over 900 million people in South Asia without access to hygienic sanitary facilities. Though progress is being made in some areas, it is not benefiting the poorest of the poor. With half of the world's chronic poor living in South Asia, finding solutions that work for the poorest is of utmost importance. In many places across the region, good practices have been developed and successfully implemented. However, as learning in the sector has been poor these practices are not being implemented at a scale needed to reach universal access to sanitation.

A group of 53 sanitation and hygiene promotion practitioners met in Bangladesh from 29 to 31 January 2008 to mark the start of the International Year of Sanitation (IYS) by sharing and learning from their peers. Each attending organisation had written a case study on their work and came to the workshop to form a Community of Practice for sharing these experiences, reflecting on the challenges in the region and identifying ways to work together.

This publication comprises:

- an overview of the workshop discussions, the messages that emerged and plans for further joint working
- 23 case studies written by practitioners from the region for the workshop
- a concluding paper that takes stock of progress in South Asia and identifies areas where more work remains to be done



WaterAid and IRC support End Water Poverty-
the international campaign calling for sanitation and water for all.

