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THE FUTURE OF WATER, SANITATION AND HYGIENE:  
INNOVATION, ADAPTATION AND ENGAGEMENT IN A CHANGING WORLD

**Sustainability of sanitation in rural Bangladesh**

*Dr S. Hanchett, M. H. Khan, Dr L. Krieger & C. Kullmann*

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*This is a report on a study of 53 Bangladesh unions declared “100% sanitized” more than 4.5 years earlier under the auspices of a broad-based national sanitation campaign. Union Chairmen received awards if their populations achieved the goal. Findings were generally positive, with 89.5% of surveyed households using some type of improved latrine (shared or not). A dramatic change in social norms was found. Two-thirds of union chairmen were still working on sanitation. Other achievements were the emergence of private sector latrine parts producers and an increase in latrine pit cleaning services. A significant problem was the unclean condition of 56% of improved household latrines. Other challenges are discussed. Recommendations include: Establish quality standards for latrine parts manufacture; Monitor sanitation coverage in all unions in the future; Offer low-interest loans to poor households for latrine purchases; and Keep local government involved and responsible for continuing rural sanitation improvements.*

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**Introduction**

Bangladesh is well known for its significant innovations and achievements, as policy makers have given high priority to scaling-up sanitation programs over the past decade. Some public education approaches, such as “community-led total sanitation” (CLTS), are considered so successful, that they are being tried in other countries and world regions.

The Bangladesh Government and development partners are planning new efforts to consolidate gains and fill in gaps. The World Bank’s Water and Sanitation Program, therefore, decided that it was a good time to see if the Bangladesh achievements were sustainable. The WSP conceptualized a study and asked The Manoff Group’s three-company team to investigate the Bangladesh experience. We have recently completed this study.

**Literature review: sanitation sustainability and South Asia**

A number of studies have been done on how and why defecation behavior changes in South Asia and elsewhere (Cairncross and Shordt 2004; Arefeen and Kainan 2003). Agreed-upon principles include building awareness of public health principles and engaging the support of local leaders. Care and sensitivity in program implementation is assumed to be important. Appealing to people’s personal status concerns is known to help. A major challenge discussed in the literature is shifting people’s focus outward from individual or household behavior to the realization that community-wide approaches are essential, as fecal-oral disease transmission is a community-level phenomenon. (Cairncross and Shordt 2004; Arefeen and Kainan 2003; Chambers 2009; WaterAid Bangladesh 2008)

There are special challenges in South Asia that may not be as significant elsewhere. Black and Fawcett (2008) describe the whole South Asian region as “faeco-phobic.” Fecal material, even in trace amounts is considered to be spiritually ‘polluting’ by Hindus, Buddhists, and Muslims of the region. Personal ‘purity’ can be destroyed by contact with feces; and in the case of very low castes, engaging in occupations that require contact with feces may affect the spiritual and social status of future generations as well. Human feces management (i.e., sanitation) therefore is socially meaningful behavior. It needs to be regarded, as

Krieger (*n.d.*) suggests, as “praxis,” or behavior that is likely to be “expected, rewarded, punished” and which often “has at least one and often multiple meanings.” The public health sanitation and hygiene framework is thus to some extent in competition with long-standing ‘pollution’ ideas and related behaviors.

Another special feature of South Asia sanitation efforts has been strong involvement of local leaders. In India they are chairmen of village and regional councils known as panchayats; in Bangladesh, chairmen of unions, the union being the lowest tier in the governmental structure (populations around 20,000). Both countries have given cash rewards to localities whose leaders somehow established full sanitation coverage. Previous studies have expressed skepticism about whether such reward systems led to sustainable sanitation changes or not (Sen 2007; Sen and Rajiv 2006)

### **Background: the Bangladesh National Sanitation Campaign (2003-2006)**

In 2003 the Government of Bangladesh launched a National Sanitation Campaign and declared its intent to meet its sanitation-related Millennium Development Goal by 2010 (recently the target date was changed to 2013.) This was an inclusive, broad-based effort. All of the national-level organizations involved in promoting sanitation improvements contributed to planning the campaign. Good ideas were shared widely among governmental and non-governmental agencies. Principal responsibility for achieving the national goal of “100%” sanitation was assigned to the union chairmen, who got gold plaques and cash rewards for union development when their unions were officially declared as “100%”.

This was not the first sanitation campaign in Bangladesh; but it was the first one to reach the majority rural population. People at all levels of society got involved in this effort, which is remembered as a ‘revolution’ (*biplob*) by many whom we interviewed. Some considered it to be a genuine social movement (*jagaron*), like the one that had led up to national independence in 1971. There were rallies. School children monitored their parents’ and their neighbors’ defecation practices. Village police burned down fences surrounding open latrines in some places. Numerous slogans circulated. One of the most dramatic slogans, developed as part of the community-led total sanitation approach, reminded people that if anyone defecates openly, flies will spread feces onto others’ food. So, the message implies, open defecation means that people will be eating each other’s feces. In South Asia -- where cultural notions of ‘purity’ and ‘pollution’ are universal – this is an extremely worrisome, alarming message. It did get people’s attention.

The results of this campaign were dramatic. The country’s rate of latrine use dramatically increased in a very short time. According to the UNICEF-WHO Joint Monitoring Program, open defecation in rural areas decreased from 24% to 8% between 2000 and 2008. This change – which is still going on – is the result of a huge human effort, often involving a lot of inter-personal communication, persuasion, and pressure from small neighborhoods all the way up to the center of the nation’s administrative system.

### **Methodology**

The principal goal of the study was to analyze the current status of sanitation in unions declared officially to be “100%” covered. The study covered only a limited set of “sanitation” issues. The focus was on defecation practices and facilities and related services only. Other sanitation topics, such as hand washing, environmental pollution, and solid waste management, were not investigated in detail.

We investigated sanitation-related practices, facilities, services, and perceptions in 53 unions that had achieved 100 percent latrine coverage 4.5 or more years before the study began. Study unions were mostly selected randomly, but a few were included because they were of special interest. Study unions had been covered by four different types of approach during the sanitation campaign. The campaigns were conducted either by (1) Local government only, (2) NGOs under contract with a GOB-Donor group (Danida or UNICEF plus the Department of Public Health Engineering), (3) NGOs using CLTS methods, or (4) NGOs not emphasizing CLTS methods.

It is important to understand that, whatever the intervention approach, the union chairman, an elected official, was designated as the local campaign leader during the national campaign. Union chairmen had used a variety of strategies to achieve the “100%” goal. Some, for example, refused to offer services (issuance of certificates and so on) to people who did not have latrines. One withheld a portion of student stipends to pay for latrine installation in poor people’s homes. The chairmen manipulated people’s fear of jail or other vaguely defined punishments of people without latrines, though such measures were rarely taken. Social shaming was (and still is) a frequent method of punishing people not using latrines.

We used a combination of quantitative and qualitative research methods in doing the study, which went on for eight months, from October 2009 to May 2010. Survey researchers did 3000 household-level

questionnaire interviews in randomly sampled households of 50 unions. Groups of three to five qualitative researchers did in-depth studies of 15 of the same unions -- plus three others not covered by the household survey. We interviewed latrine users and non-users, latrine producers/sellers, latrine pit cleaners, and children. Data analysis was done using a combination of statistical and anthropological methods.

### Measuring sanitation outcomes

Ways of measuring the Bangladesh sanitation achievement differ between two groups of experts. The government considers a “hygienic” latrine to be one which confines feces, has an intact water-seal or other tight pit closure, and is shared by no more than two households. The most recent (June 2008), official government estimate of “hygienic” latrine coverage in rural areas is 88.2%. (Government of Bangladesh, Sanitation Secretariat 2010) The Joint Monitoring Programme (JMP) of UNICEF and the World Health Organization count “improved” latrines, which confine feces in covered spaces but do not necessarily have tight pit closures. JMP counts only latrines used by single households, not shared ones, as “improved.” The most recent official JMP estimate of “improved” latrine coverage in rural Bangladesh is 52% as of 2008. (WHO-UNICEF 2010) If the 37% shared latrines were included, the total would be 89%.

In this study we counted “improved” latrines, meaning those which confine feces and have some kind of cover over the pit. Unlike the Joint Monitoring Program, however, we did not exclude any shared latrines from our discussion of the “improved” group, which we refer to as **IMP/S** in our report.

Two widespread practices account for the differences between our findings and others’. One is water-seal breakage, found in 45% of survey households. The Government of Bangladesh excludes latrines without intact water-seals or other secure pit closure from its “hygienic” category. But the Joint Monitoring Program includes such structures if other conditions are met. The second is latrine sharing, found in 37% of survey households. JMP entirely excludes shared latrines from its “improved” category, and the Government of Bangladesh excludes latrines shared by more than two households from its “hygienic” category.

### Campaign achievements

According to the above definition, 89.5 percent of household latrines were found to be IMP/S in the 50 study unions covered by our household survey (only 2.6 percent of the 3000 surveyed households were found to be practicing open defecation on a routine basis). Fourteen different types of IMP/S latrines were found. The most frequent types (60%) involved some kind of single pit with some type of slab or cover on top. Offset pits (28%), double pits (5%), and septic systems (7%) also were found. Around one-quarter (24%) were observed to have a water source located within five meters of the latrine. Around three percent had attached bathrooms, but the great majority kept latrines at some distance from living quarters. The mean distance between the latrine and a family’s living quarters was 16 meters (the mode was 10 m). A Hindu household in a crowded settlement explained that they kept their latrine eight meters distant from the house and across a village path because of space problems and also to protect the family’s ‘purity’.

As well as disseminating the idea of latrine use, the national campaign resulted in other important changes. One was the growth of mostly-small businesses that produce and sell concrete rings and squat slabs. Entrepreneurs were encouraged at first by NGOs and union chairmen to produce latrine parts needed to reach the “100%” goal. Producers of clay rings, formerly used in water wells, also were pressed into service in areas where clay rings became popular latrine pit liners. Eventually most of the businesses that survived diversified their products, selling other types of concrete items in addition to latrine rings and slabs. Another business that formed or expanded in response to increased demand was latrine pit-emptying.

Demand increased largely because of a dramatic change in social norms. The household latrine stopped being a status symbol of interest only to the elite and came to represent a dignified life style in all sectors of society. As has been reported from India, marriage arrangements routinely now include an inspection of latrine facilities in a prospective bride’s or groom’s home. Women in particular value latrines as a way to maintain purdah behavioral codes and avoid ‘shame’ (lojja).

The study team found the public’s interest in latrine usage to have increased in the vast majority of places visited – but not in all. Whatever their levels of enthusiasm, however, a large majority of villagers demonstrated clear understanding of (a) the characteristics of what they call a ‘health-promoting’ latrine – as one that confines feces -- and (b) the connection between universal latrine use and elimination of diarrheal diseases.

In two-thirds of our study unions we found union chairmen still actively working on sanitation improvement. The remaining one-third were found to be indifferent to sanitation. The two-thirds who

remained committed to this issue had worked for the past few years with minimal support from the central government, which went through a crisis between 2006 and 2008. Those without current NGO support seemed to be more actively taking initiatives to keep their constituents informed, alert, or worried about possible (mostly imaginary) punishments if they did not have household latrines.

### **Challenges to sustainability**

We identified several challenges to sustainability of sanitation improvements in our study unions. Social dynamics affect sustainability. A very important social matter is new house construction associated with joint family division. In the absence of building codes requiring latrines to be included in new houses, some are built without latrines. Another social challenge is posed by internal migration. In most places with large numbers of migrant laborers we found ample evidence of open defecation.

A technical problem is that the facilities in use wear out too easily and need replacement too often. Low-/No-cost, home-made latrines gradually are being replaced with concrete ring-slab sets; but purchasers of concrete parts can choose between low and high quality. Many choose low quality concrete, which is fragile and may not even be reinforced with iron bars. We heard of nine accidents and one death resulting from concrete slab breakage.

Another technical problem is the need to clean the latrine pit. Assuming that others will be hired to do the defiling job, this costs money; and many are concerned about the cost. In a few households here and there, and in at least two whole villages as well, people clean out their own latrine pits. But ‘pollution’ concerns make this a socially risky, almost unthinkable practice in the majority of places.

The most important challenge we found in this study relates to latrine cleanliness. Fifty-six percent of the IMP/S latrines in our household study sample were not clean. Our definition of “unclean” meant either that contents were leaking profusely from the pit, or feces were visible on the pan, floor, or water-seal, or both. An interesting finding was that one-third of the latrines that would be designated as either “unhygienic” by GOB or “unimproved” by JMP were actually “clean” according to our criteria.

### **Factors associated with positive or negative outcomes**

Latrine Cleanliness. Several factors were statistically significant contributors to latrine cleanliness<sup>1</sup>:

- Having a roof, vent pipe, and/or intact water seal;
- Having a convenient water source;
- Non-sharing or fewer people sharing a latrine;
- Proximity to living spaces; and
- Existence of a follow-up program.

IMP/S Latrine Use. A **different group of factors** was statistically associated with having an improved latrine. Some of the factors were:

- High income (very strongly associated)
- Being a female-headed household (very strongly associated)
- Remembering local activities associated with the national campaign (strongly associated)
- Having a follow-up program (strongly associated)
- Having been visited by someone advising latrine use (strongly associated)
- CLTS program approach (strongly associated)<sup>2</sup>

Having received a free latrine from the union council did not have a statistically significant effect; nor did membership in a micro-credit NGO group. Poor people getting remittances from abroad are likely to use their extra income to install latrines because of social pressures to do so and a wish to enhance family dignity.

Open Defecation (observed by the in-depth team as a major problem in a few unions) was linked to a variety of factors. Some of them were:

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<sup>1</sup> Strongly associated = P value of 0.05 or less; very strongly associated = P value of 0.00

<sup>2</sup> Households in CLTS program areas are not significantly different from others in terms of household wealth rank.

- Weak institutional support for latrine use by local government
- Influx of large numbers of agricultural laborers or homeless (“floating”) people
- Failure of latrine sharing arrangements
- Natural and environmental factors contributing to open defecation were
  - Normal floods
  - Flash floods
  - Rain (if there is no roof on the latrine enclosure)-Rodents
- Some men’s wish to avoid ‘polluting’ contact with menstrual blood in household latrines shared with female relatives

### Comparing approaches to sanitation promotion

A long time had elapsed since the sanitation campaign in study unions, making it almost impossible to assess the impact of any specific approach. Furthermore, there had been considerable exchange of ideas and approaches between organizations during the campaign. Nonetheless, we were able to identify a few statistically significant differences among unions covered by different types of approaches.

One difference was in the use of IMP/S latrines – shared or not shared. Unions covered by CLTS programs had higher percentages of IMP/S latrine use than others. This probably indicates that the approach was relatively successful in reaching and persuading many sectors of society to install latrines. Substantial rates of latrine sharing among higher income households were found only in CLTS and Local Government-only areas.

Another interesting difference is in cleanliness. Unions covered by Local Government-only programs had significantly<sup>3</sup> higher percentages of clean latrines than others. The reasons for this finding are not clear.

Although open defecation was found at very low rates, it did occur. Households without any latrines and routinely defecating out in open spaces were found most frequently in non-CLTS NGO approach areas. The explanation may be in the weaker capacity of the traditional NGO to cover a full union and the tendency of some union chairmen to delegate responsibility for local sanitation promotion to strong NGO partners. Occasional defecation by people living in houses with IMP/S latrines was most frequently found in CLTS areas. In the CLTS case, open defecation frequency probably is related to high over-all rates of latrine sharing.

### Conclusions

The findings of this study definitely show that the 2003-2006 sanitation campaign achieved its goal of getting rural households to adopt latrine use. This was, however, just a “latrinization” campaign. A broader view of sanitation, especially hygiene and latrine maintenance, is needed in the future.

The strong involvement of locally elected leaders supported by a broad group of volunteers, including a great many women and children, was the key to the success and sustainability of this effort. Keeping elected officials involved will be critical to maintenance of gains in the long-term. Continued monitoring of facilities and their cleanliness is necessary to future progress. This should be a union council responsibility.

The study also has shown, then, that social and governance factors are at least as important as technical ones, perhaps more so, in scaling-up and sustaining sanitation improvements. Engineering challenges do not necessarily impede making sanitation improvements where there is strong individual, family, and political will. The problem of cleanliness shows, however, that building and using latrines in itself cannot guarantee improved public health outcomes if hygienic maintenance is neglected. We have found “sustainability.” But the question remains: Is this enough?

Concerns about ‘pollution’ were overcome to a surprising extent, as shown by the fact that such large percentages of households *had* latrines on site. This cultural issue, however, may partly explain the high rates of latrine uncleanness that we observed. It also may account for the fact that latrines tend to be installed rather far away from living spaces.

Our study concludes with four principal recommendations:

- Monitor sanitation coverage in all unions.
- Establish quality standards for latrine parts manufacture.

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<sup>3</sup> Chi-square  $p < 0.02$

- Offer low-interest loans to poor households for the purpose of latrine purchase.
- Above all, keep local government involved and responsible for sanitation.

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## References

- Arefeen, H.K.S. and Kainan A, (2003) *Final Report of Perceptions of Hygiene Study*. Dhaka, Bangladesh: UNICEF.
- Black M. and Fawcett B., (2008) *The Last Taboo; Opening the Door on the Global Sanitation Crisis*. London: Earthscan.
- Cairncross S., and Shordt K., (2004) 'It Does Last! Some Findings from a Multi-country Study of Hygiene Sustainability'. *Waterlines* 22:4-7.
- Chambers R., (2009) 'Going to Scale with Community-led Total Sanitation: Reflections on Experience, Issues and Ways Forward'. *Practice Paper* (University of Sussex, Institute of Development Studies), Vol. 2009, No. 1.
- Government of Bangladesh, (2010) *Bangladesh Sanitation Data as on June 2008*. National Sanitation Secretariat, Internet source: [www.sanitation-bd.org/2008/report\\_country\\_June\\_2008\\_php](http://www.sanitation-bd.org/2008/report_country_June_2008_php).
- Hanchett S., and Shamsun Nahar B., (2004) 'Gender Issues in Bangladesh Sanitation Programs'. In *Proceedings of South Asian Conference on Sanitation (SACOSAN) 2003*. Dhaka: Water and Sanitation Program South Asia, with technical assistance from ITN Centre, Bangladesh University of Engineering and Technology.
- Krieger, Laurie (n.d.) *Notes for an Indonesian Behavior Change Communications Curriculum*. Washington, DC: The Manoff Group.
- The Manoff Group (2010) *The Bangladesh Sanitation Revolution: It Takes a Country; Assessment of the Sustainability of Sanitation Behaviors, Facilities, and Programs Using Community-wide Open Defecation Free Approaches*. Report submitted to the World Bank Water and Sanitation Program by The Manoff Group, Planning Alternatives for Change LLC, and Pathways Consulting Services Ltd. Washington, DC: The Manoff Group.
- Sen S., (2007) *A Study on Performance of Rural Sanitation Implementation Approaches in Bangladesh*. Dhaka: Study prepared by Mitra Associates for the World Bank Water and Sanitation Program, South Asia (draft ms.).
- Sen S, and Rajiv K.R., (2006) *Study of Best Practices in Rural Sanitation in India; Working Toward "An Open Defecation Free (ODF) Rural India*. Dhaka: World Bank Water and Sanitation Program (draft).
- WaterAid Bangladesh, (2008) *Sustainability and Equity Aspects of Total Sanitation Programmes in Three Countries; Bangladesh Country Study Findings*. Dhaka (draft)
- WHO-UNICEF, (2010) *Estimates for the Use of Improved Sanitation Facilities; Joint Monitoring Programme for Water Supply and Sanitation, Updated March 2010; Bangladesh*. Internet source: [www.wssinfo.org/resources/documents.html?type=country\\_files](http://www.wssinfo.org/resources/documents.html?type=country_files)
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## Contact details

Suzanne Hanchett  
P.O. Box 94859,  
Pasadena,  
CA 91109,  
USA  
Tel: 1-626-791-5147/1-917-345-31397  
Fax: 1-626-791-5147  
Email: [shanchett@igc.org](mailto:shanchett@igc.org)  
www: [www.planningalternatives.com](http://www.planningalternatives.com)

Mohidul Hoque Khan  
Pathways Consulting Services Ltd.,  
3/12, Block-F, Lalmatia,  
Dhaka-1207,  
Bangladesh  
Tel: 880-2-815-0141  
Fax: 880-2-914-1177  
Email: [mohidk@gmail.com](mailto:mohidk@gmail.com)  
www: <http://www.planningalternatives.com/pcsl/>

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