

**The WaterAid Bangladesh / VERC
100% Sanitation Approach:**

Cost, Motivation and Sustainability

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List of Abbreviations

BRAC	Bangladesh Rural Advancement Committee
DALY	Disability adjusted life years
DPHE	Department of Public Health Engineering
FGD	Focus group discussion
GBP	Pound Sterling
GoB	Government of Bangladesh
HHQ	Household questionnaire (survey)
NGO	Non-governmental organisation
ORS	Oral rehydration solution
PRA	Participatory rural appraisal
SES	Socio-economic status
Tk	Bangladesh Taka (currency)
USD	United States Dollar
VERC	Village Education Resource Centre
WAB	WaterAid Bangladesh
watsan	Water and sanitation
WHO	World Health Organisation
WSAC	Water and sanitation action committee

Glossary

<i>Mathor</i>	Sweeper / cleaner
<i>Para</i>	Sub-village
<i>Pukka</i>	Proper / durable / first rate [Schott, 2002]
<i>Purdah</i>	(Muslim) segregation of men from women. Often includes wearing a full covering veil while in public [Maqsood, 1994]

Community structures in Bangladesh

~ 56 households	= 1 para
~ 9 paras	= 1 village
~ 25 villages	= 1 union

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Executive Summary

Since March 2000, the WaterAid Bangladesh (WAB) / Village Education Resource Centre (VERC) pioneered 100% Sanitation Approach has achieved complete latrine coverage and, more importantly, an end to open defecation in more than 100 villages¹ in six districts of Bangladesh [Kar, 2003]. The implications of a new and seemingly successful approach to increasing latrine use by all sectors of the community are significant and deserve robust documentation in order that the process may be adapted and replicated elsewhere.

The aim of this study is to examine three aspects of the WAB / VERC 100% Sanitation Approach. Firstly, the process at field level and estimated project cost per family are documented. Secondly, the motivational factors for latrine adoption in successful project areas are explored in order to facilitate learning and transfer. Thirdly, the sustainability aspects of the process, including current monitoring for sustainability and the extent to which behaviour change is maintained, are investigated and the implications of scaling-up the process discussed.

Project cost estimations indicate that at approximately 5GBP per family, the 100% sanitation approach cost is at least 50% less than other approaches. In the paras studied, the success of the approach in achieving an end to open defecation seems to hinge on the availability of a wide choice of “safe” latrine options that suit the financial abilities of different community groups.

Overall, prestige (including positive social pressure) was the strongest motivational factor for latrine adoption. However, motivational factors evolve over time and differences were seen between villages with different geographic and religious characteristics. It is therefore important that field staff are alert to differing aspirations encountered and that the approach remains flexible enough to adapt to changing priorities.

¹ The term “village” is used in Kar (2003), however the actual unit of measurement is para (sub-village community)

1. Introduction

Globally there are 4 billion cases of diarrhoea per year resulting in 2.2 million deaths, mostly of under 5-year-olds [UNICEF, 2000]. Deaths due to diarrhoea constitute between 15-33% of total child deaths under the age of 5 in developing countries - the equivalent of a jumbo jet crashing every 90 minutes [Parry-Jones + Kolsky, 2003], [UNICEF, 2000], Parashar *et al*, 2003]. Diarrhoea morbidity contributes to malnutrition, loss of productivity and days off school.

Figure 1 shows the various transmission routes of faecal-oral diseases such as diarrhoea. The most effective way to curtail transmission is to stop excreta entering the environment in the first place; that is through latrine use and hand-washing after defecation (primary barriers) [Curtis *et al*, 2000], [UNICEF, 2000].

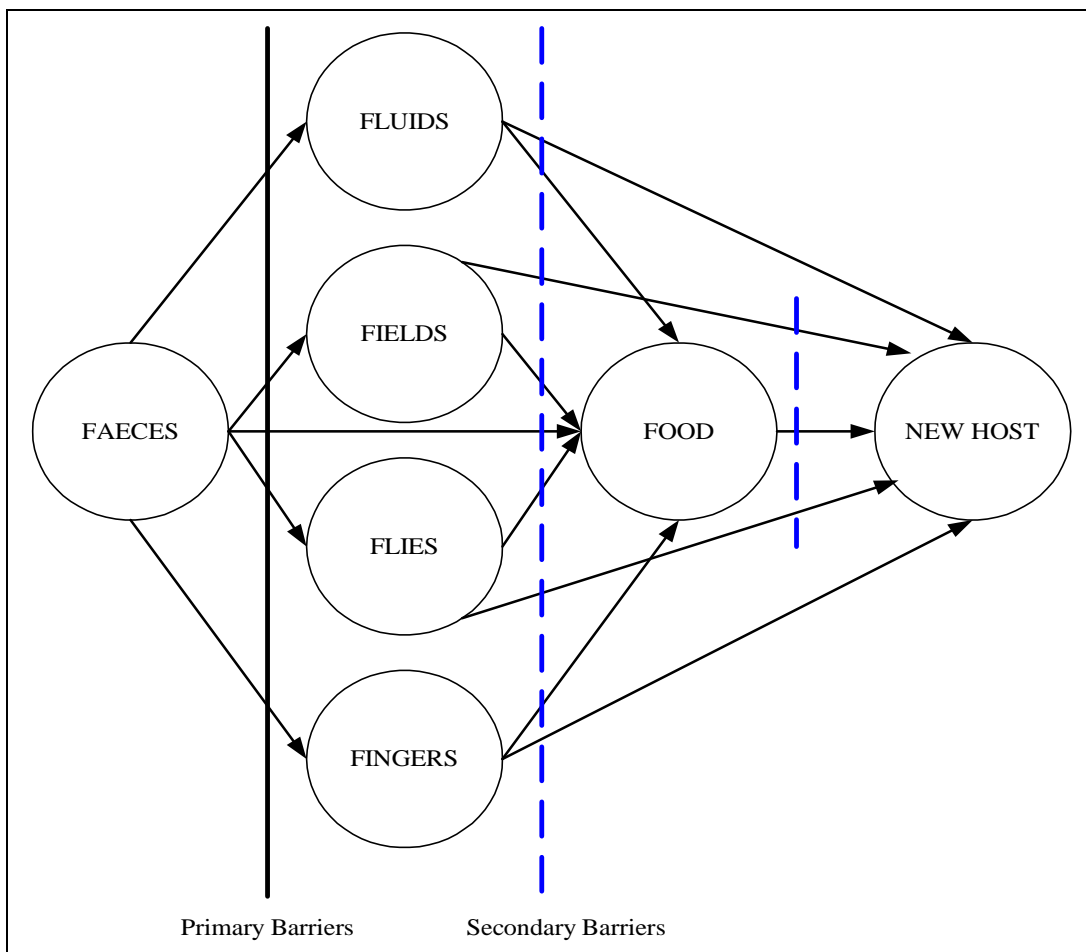


Figure 1. The F-diagram for transmission of faecal-oral diseases [Kawata in DFID, 1998]

Various studies link latrine access to reductions in diarrhoea transmission [Curtis *et al*, 2000], [Mahmud *et al*, 2001]: however, as they are rarely randomised they are susceptible to problems of confounding. Exposure status regarding sanitation is self-determined, and may be affected by other confounding factors such as education, attitude and socio-economic status [Curtis *et al*, 2000]. A recent study in Brazil where sanitation exposure was not determined by individuals themselves but rather by “complex political and administrative” factors, demonstrates that sanitation alone can have a significant impact on diarrhoea [Moraes *et al*, 2003]. The study found that even with no specific hygiene promotion measures, incidence of diarrhoea in children in neighbourhoods with both drains and sewers was less than one third that of children in neighbourhoods with neither [Moraes *et al*, 2003].

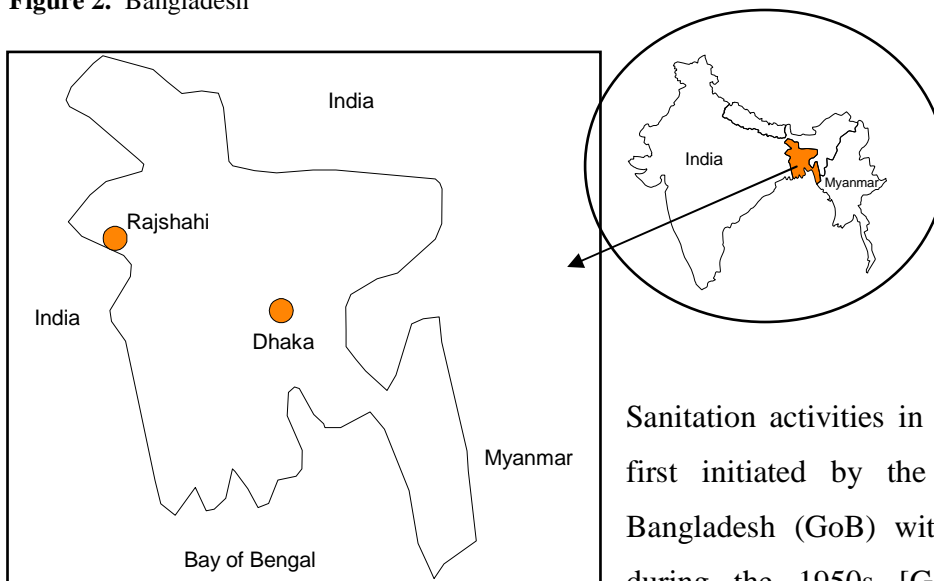
Despite the logical association between environmental contamination with excreta and diarrhoeal disease transmission, excreta disposal is a frequently neglected area, with efforts focussing on water supply [Moraes *et al*, 2003].

Between 1990-2000 approximately 9.3billion GBP was invested globally in water supply, during the same period only 2.3billion GBP was invested in sanitation [UNICEF, 2000]. The same pattern is observed when coverage figures are examined; 82% of the worlds population has access to water supply yet only 60% has access to sanitation facilities [UNICEF, 2000]. In Asia the difference is even more pronounced with 93% having access to water supply and only 48% with access to sanitation [UNICEF, 2000].

Amongst other things, this lack of progress in the sanitation sector could be attributed to a lack of political will and poor policy; sanitation is not a compelling “vote-getter” [UNICEF, 2000], [Shordt + Snel, 2002]. In addition, sanitation projects are complex; ensuring access does not guarantee latrine use by all members of a community and therefore the relationship between sanitation and health is not straightforward [Hunt, 2001]. Moraes *et al* (2003) highlight the need for research into the health benefits of sanitation as key to raising the profile of sanitation.

1.1 Sanitation in Bangladesh

Figure 2. Bangladesh



Sanitation activities in Bangladesh were first initiated by the Government of Bangladesh (GoB) with WHO support during the 1950s [GoB + UNICEF,

2001]. The involvement of NGOs in the sanitation sector began in the 1970s [GoB + UNICEF, 2001]. Despite these prolonged efforts, total sanitation coverage in Bangladesh is still only 53% (44% in rural areas) [DFID, 2001].

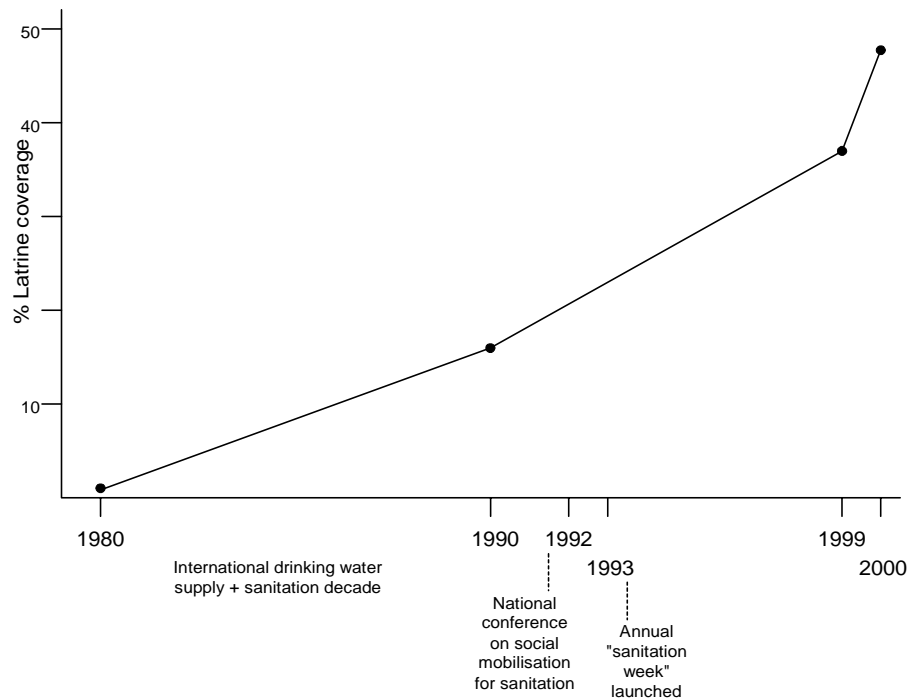
Figure 3 shows estimated rural sanitation coverage in Bangladesh from the start of the International Drinking Water Supply and Sanitation Decade to present day. Intensive social mobilisation, low-cost latrine options and political commitment led to an improvement in sanitation coverage during the 1990s [Luong, 1995]. However, open defecation is still practised by over one quarter of the rural population [Bibby *et al*, 2002] [Hanchett, 2000b].

In Bangladesh, 15% of all deaths [Galway, 2000] and nearly 6million DALYs² per year are attributable to diarrhoeal disease [Bibby *et al*, 2002]. Diarrhoea mortality trends for Bangladesh have slightly decreased in recent years, probably due to deaths being prevented by ORS use³ [GoB + UNICEF, 2001]. However, continually increasing diarrhoea morbidity rates emphasise the need for prevention rather than cure [GoB + UNICEF, 2001].

² DALY (disability adjusted life years), combine years of life lost due to premature death and years of life lived with disability.

³ ORS, which has undergone intense promotion and marketing, is widely used throughout Bangladesh to treat diarrhoea.

Figure 3. Improvements in sanitation coverage in rural Bangladesh 1980-2000
(data from [GoB+UNICEF, 2001])



2. WAB / VERC 100% Sanitation Approach

WaterAid has been operational in Bangladesh since 1986 and implements projects through various partner organisations such as the Village Education Resource Centre (VERC). VERC is a non-governmental organisation established in 1977, operating across Bangladesh. Their activities include development of education materials, participatory action research, capacity building of the poor, water supply and sanitation, health and hygiene promotion [VERC, 2002].



Figure 4. Signboard announcing that “No-one in this village defecates in the open”

The approach of motivating and supporting communities to achieve 100% sanitation using their own resourcefulness was incorporated into the ongoing VERC watsan projects during 2000 [VERC, 2003]. As of March 2003, the process had been initiated in 433 paras of which 82 had been announced 100% sanitised [VERC, 2003]. VERC assumes the role of facilitator, working with communities to identify the need for improvement, plan solutions and implement action. The goal of the approach is to create paras, villages and ultimately unions which are “100% sanitised” with little or no external subsidy.

Sanitation can be defined in a number of different ways; the World Bank (2003) defines it as “maintaining clean, hygienic conditions that help prevent disease through services such as garbage collection and wastewater disposal”; GoB + UNICEF (2001) as “a system for promoting sanitary (healthy) conditions”; and for DFID (2001) sanitation “encompasses all aspects of personal, household and public excreta and waste disposal (on-site and waterborne) and cleanliness”. Box 1 lists the 12 criteria for 100% sanitation as defined by VERC. However, it is after the cessation of open-defecation alone that the village announces itself 100% sanitised and receives a signboard declaring that no-one defecates in the open (figure 4). Figure 5 outlines the 100% sanitation process.

Box 1. Critical features for a 100% sanitised village [from VERC, 2002b]

1. 100% use of hygienic latrines i.e. no open defecation or open / hanging latrine use.
2. Effective handwashing after defecation and before taking or handling food.
3. Food and water covered.
4. Good personal hygiene practices.
5. Latrines well managed.
6. Using sandals when defecating.
7. Clean courtyards and roadsides.
8. Garbage disposal in a fixed place and dung disposed of in a hygienic way.
9. Safe water use for all domestic purposes.
10. Water points well managed.
11. Hygienic waste water disposal.
12. No spitting in public places

The 100% sanitation approach puts the onus on making “safe” latrines from locally available low-cost materials rather than adhering to a specific standard latrine design. Three specific criteria need to be fulfilled for a latrine to be deemed “safe” [VERC, 2003b]:-

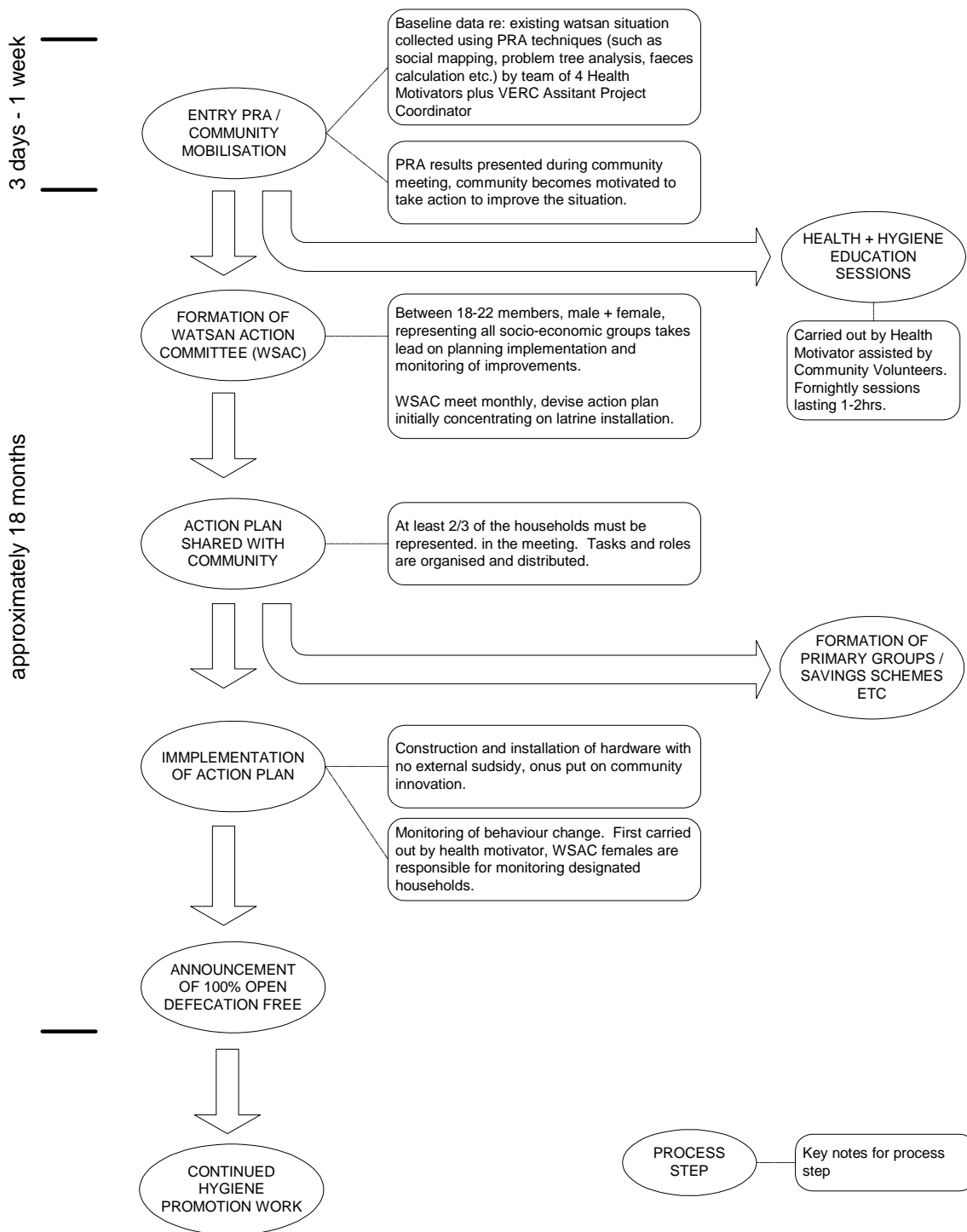
1. No faeces visible – to ensure that they are removed from human (and animal) contact.
2. No odour – as this may affect use of the latrines [Hunt, 2001].
3. No flies or insects – as this could also affect use and transmit disease [Hunt, 2001].

Previously suggested criteria for good sanitation are listed in table 1 for comparison.

Wagner + Lanoix (1958)	Marais (1961)	Government of China
❖ No contamination of surface soil, springs and wells, surface water	❖ Should be cheap	❖ Free from flies
❖ No access to flies / animals	❖ Should not be communal	❖ Free from odour
❖ Minimum handling of fresh excreta	❖ Uses little / no water	❖ Free from maggots
❖ Free of smells and unsightly conditions	❖ Operates despite misuse	
❖ Simple + inexpensive in construction + operation	❖ Requires little supervision	
	❖ Does not use soakaways	
	❖ Disposes of all wastewater	
	❖ Treats wastewater with little danger to users	
	❖ Uses no mechanical equipment	

Table 1. Previously suggested criteria for good sanitation [Pickford, 1995]

Figure 5. VERC 100% Sanitation Process (adapted from VERC 2002b)



2.1 Field level implementation

The village level facilitators of the 100% sanitation process are the health motivators. Each motivator receives a minimum of 42 days training (as shown in table 2), which is considered essential to the success and sustainability of the approach [Hossain Y (VERC), 2003 – personal communication]. There are currently four health motivators employed by VERC in each union working intensively in 4-5 paras at one time, although more will be required when the approach is scaled-up.

Training	Days	Training	Days
Basic PRA training	10	Child-to-child approach	7
Motivational techniques	3	Basic health + hygiene	5
Facilitation skills	3	Participatory hygiene promotion tools	2
Participatory planning, implementation + evaluation	7	Training of Trainers– participatory training methodologies	5

Table 2. Basic training package for VERC health motivators

A flexible team of community volunteers work alongside the health motivators. They are dynamic individuals identified from the communities during the initial entry PRA. Community volunteers receive no formal training and a nominal salary of Tk500 (~5GBP) per month.

Health motivators visit project paras on a frequent basis (2-3 times per week) between the entry PRA and the time when a para is announced 100% sanitised. From VERC records in Naogaon and Rashahi districts, the period between entry PRA and announcement of 100% sanitation is approximately 18 months. After this, follow-up visits (carried out 3-4 times per month) address other hygiene and water issues. Support is continued in the village until the health motivators feel that the WSAC has developed their own plan for sustainability and monitoring (which usually takes up to one year).

2.2 Comparing the 100% approach to other approaches

A key difference between the WAB/VERC 100% sanitation approach and other approaches to sanitation is that the end point of the process is measured as a complete end to open defecation rather than in terms of latrine coverage. A high degree of latrine use

as well as high coverage is essential for health benefits to be realised [Cairncross, 1992]. In addition, communities are mobilised to persuade neighbouring villages to do the same. In this way, the faecal-oral transmission of diarrhoeal disease is cut in both the domestic (household and yard) and public (streets, fields, places of work etc.) domains [Cairncross *et al*, 1996]. The health benefits of sanitation should be magnified as access to latrines is ensured on a community scale rather than a household scale [Moraes *et al*, 2003].

Although no formal records of earlier hygiene interventions in the study paras were obtained during the course of the study, the participants in the mothers FGDs and various key informants were asked about their previous experiences.

In all the villages some sort of previous exposure to health and hygiene messages had occurred whether it be from NGOs such as BRAC or the Grameen Bank, government schemes or the doctor. Information obtained from the television, mainly pertaining to handwashing with soap, was mentioned many times (radio to a lesser extent). One mother in Middlepara suggested that because many families had a TV now, it was a good medium for information dissemination.

When comparing with their previous experiences, villagers felt that the strength of the VERC approach was the amount of time that the VERC motivators spent in the para on a regular basis:- "...[*others projects*] didn't really spend any time here..." (Middlepara), "...[*other projects*] didn't do it regularly, they didn't visit very often." (Dighipara). Also a perceived strength of the VERC approach was the prioritisation of latrines and the practical advice on offer as opposed to other approaches which tended to list too many instructions:- "...they came and said "cover food, don't use open toilets..." (Roypara) "...we didn't see the importance because we heard so many things." (Dighipara).

This quality of relationship between the VERC health motivators and the para population built up over time during repeated visits is a major factor in the success of the project; its implications for the possible scaling up of the approach are discussed in section 8.

3. Methods

3.1 Study village selection

The VERC 100% sanitation approach is currently underway in three divisions of Bangladesh:- Rajshahi, Barishal and Chittagong. Time and logistical constraints dictated that only Rajshahi division, in which 3 of the 6 project districts are located, could be visited. Two days were required in each study village making it possible to visit four villages in total.

As one of the study objectives was to compare “older” project villages with “newer” ones, two separate districts were chosen:- Rajshahi district which has mainly old and mid-range villages and Naogaon district which has mainly newer project villages.

The project operates at para (sub-village) level. Paras were therefore considered as appropriate units of study. Paras announced 100% sanitised during 2001 were defined as being “older” and those announced during 2003 as being “newer” (and are referred to as such throughout this report). Within selected districts, paras were grouped according to announcement date and selected using simple random sampling [Kirkwood, 1988] (see annex 1 para lists).

3.2 Data collection

A combination of methods was used to explore cost, motivational factors and sustainability of latrine adoption in the study villages. These methods are summarised in table 3.

For project cost estimation, project staff interviews and discussions were used in conjunction with information obtained from household surveys. Motivational factors were explored during mothers focus group discussions (FGDs) and contrasted with etic⁴ (or outsider) points of view obtained from project staff and review of published and grey literature. Sustainability issues were investigated using mothers FGDs, household

⁴ Etic – outsider, in this study defined as those people who do not live in the study villages (e.g. project staff, researchers etc).

Emic – insider, in this study defined as those people who live in the village.

surveys and project staff discussions. Background information was collected from various informal group discussions, key informant semi-structured interviews and literature.

	Cost	Motivational Factors	Sustainability Issues
Household survey	✓		✓
Mothers FGD (1 per para)		✓	✓
Project staff interviews + discussions	✓	✓	✓
Literature review		✓	

Table 3. Summary of data collection techniques

3.2.1 Household questionnaires

Systematic sampling [Kirkwood, 1988] was used to identify households within the selected project villages for a questionnaire survey regarding extent and type of latrine coverage, sustainability and cost to households.

Households within the study villages were selected by starting at a random point, systematically counting the houses and carrying out interviews at every 5th house to give a 20% sample. In the case of homesteads (a number of households positioned together in one compound), a household was counted if it had a separate entrance and the occupants cooked separately. Interviews were carried out with male or female adult household members (63.5% of respondents were women). VERC health motivators from different project areas who had experience in using questionnaires carried out the household surveys.

In order to minimise sampling error to within +/- 5%, it is normally necessary to have a sample size of approximately 100 in each group (i.e. 100 “older” and 100 “newer” villages) [Bolt, 2001]. However, time did not permit this and the information sought was neither a rare outcome nor considered to be subject to much sampling error. Questions (and observations) were kept as simple and objective as possible to ensure reliability of the information gathered. Questions pertaining to behaviours (e.g. use of latrines) were avoided in the household questionnaire because the tendency to positively report on family behaviour patterns limits the usefulness of such information [Bolt, 2001]. The household questionnaire can be found in annex 2.

3.2.2 Focus group discussions with mothers groups

Focus group discussions are used to bring together a small group of individuals with similar backgrounds or experiences in order to explore a specific topic [Almedom *et al*, 1997].

One focus group discussion (FGD) was carried out in each of the 4 study villages. The focus group members were recruited opportunistically, that is, 7-10 mothers available at the time of entry into the village were invited to participate. The groups tended to reflect the mix of Hindu and Muslim present in the villages although this was not specifically controlled. As far as possible only women from lower and lower middle socio-economic status (SES) groups were invited to the FGDs in order to promote uninhibited exchange of ideas. On the occasions that members of higher SES groups were present, special attention was given to ensuring that poorer participants were equally involved in the discussion. Female members of the village WSAC were purposely excluded from the mothers FGDs.

Box 2 gives the FGD discussion guide used by the facilitator. The questions were not rigidly adhered to, rather the guide was used to ensure that all areas of interest were covered and to prevent the discussion waning. Each FGD lasted 1-1½ hours, in Roypara the discussion time was limited by the participants having prior arrangements.

The aim of the FGDs was to get an emic perspective on the 100% Sanitation approach; how the process worked on a general and personal level, how it compares to previous experiences of hygiene promotion, what were the motivational factors behind the behaviour change and what the participants envisage for the future.

Data obtained from FGDs may not reflect the distribution of views within the whole community and a herding effect may be observed [Bolt, 2001], [Almedom *et al*, 1997]. These limitations were acknowledged but since the information sought was of an exploratory nature, focus group discussions were chosen as they can generate “large amounts of material in a relatively short time” [Boot + Cairncross, 1993]. [Almedom *et al*, 1997].

An experienced female facilitator conducted the focus group discussions. VERC project staff were not involved in the FGDs as it was felt that this could bias the views aired. One potential limitation is that the FGD note-keeper and translator were both male, however this did not appear to hinder the discussion and they left the group before the facilitator introduced sensitive topics such as menstruation.

Box 2. Topics covered during Mothers Focus Group Discussion

- ❖ How did the 100% sanitation idea get started in the village?
- ❖ What types of latrines do people have?
- ❖ Why do people choose certain latrines over others?
- ❖ Does everyone have access to a latrine?
- ❖ Who in the family decides what sort of latrine to have?
- ❖ What happens if people have no space for a latrine?
- ❖ What happens if people don't have enough money for a latrine?
- ❖ Why do people use the latrines?
- ❖ What happens with children's faeces?
- ❖ What happens when the latrines fill up?
- ❖ Is it the same for people with no land / no money?
- ❖ Think back to when the project started – what were the things that encouraged people to dig latrines?
- ❖ What affected whether people changed their behaviour?
- ❖ Were certain behaviours easier to change than others?
- ❖ Did certain groups of people change more easily than others? Why?
- ❖ Have any mothers ever discussed the 100% sanitation process with others? (in other villages?)
- ❖ By what means did mothers encourage others?
- ❖ If you were asked to convince a different village to become 100% sanitised how would you do it?
- ❖ Are there any things that you would get them to do differently than in your village?
- ❖ Could you share with us some of the benefits of living in this village now?
- ❖ Are there benefits you wouldn't have expected before the project started?
- ❖ Are there benefits particular to women?

Developed from Ferron *et al* (2000), Almedom *et al* (1997), Boot + Cairncross (1993)

For the analysis of the FGD data, all significant comments made by the mothers (noted during the FGD) were entered into Excel and then coded for different themes (for example, if the comment pertained to motivation then it was coded “moti” and then coded to a sub-theme within motivation such as “prestige” or “health” etc). Following on from this the information was filtered (using Excel) and the number of times a particular

theme came up during the discussion quantified as a percentage of all substantial comments made. This method was not intended to generate data suitable for significance testing⁵ but rather to give a simple comparison of predominant themes within and across different study paras.

3.2.3 Other methods used

Immediately prior to the household surveys and FGDs, a transect walk and mixed group discussion involving the general population and members of the WSAC took place in order to get a feel for existing structures particular to the village in question and identify interesting key informants.

Semi-structured interviews with key informants such as “rural sanitation engineers”, small businesses, older villagers and adolescents were carried out on an ad hoc basis to obtain different perspectives on the 100% sanitation approach.

⁵ Limitations of this methodology are discussed in section 6.2

4. Sampling Results

Description of study paras

The paras selected for the study are shown in table 4.

PARA	VILLAGE	DISTRICT	NUMBER OF HOUSEHOLDS	ANNOUNCING DATE (100%)	TIMEFRAME (entry PRA to 100%)
Dighipara	Syedur	Rajshahi	74	Dec '01	16months
Roypara	Mochmoil	Rajshahi	41	Aug '01	18months
Southpara	Chawk Shyamrai	Naogaon	46	Apr '03	18months
Middlepara	Barapoi	Naogaon	99	May '03	16months

Table 4. Study paras selected using simple random sampling

By chance during the selection process for each category (“older” and “newer”) one roadside and one rural village was selected:- Roypara and Middlepara are situated beside roads and Dighipara and Southpara are not accessible by road.

The populations of the selected villages are mainly engaged in agriculture with some small enterprise such as van-pulling. Villagers are of mixed religion (Hindu and Muslim), the majority being Muslim with the notable exception of Dighipara. Although poverty is widespread in all the villages, Southpara is particularly poor according to VERC PRA records.

Access to other environmental health facilities in the different villages was similar; in household questionnaires all respondents reported using tubewell water for drinking purposes, in both the “older” project villages the available tubewells were in better condition (more recently constructed, better drainage etc) than in the “newer” project villages.

5. Cost

5.1 Cost results

5.1.1 Cost to families

One of the main purposes in carrying out a systematic household survey was to obtain information regarding the amount of money that villagers were spending on constructing latrines in all areas of the village. The cost to the family of installing and maintaining a latrine is a fundamental part of the decision whether to adopt a latrine in the first place; even if there is a demand, if they are not affordable construction will not take place [Shordt + Snel, 2002], [Hunt, 2001]. In her study in Bangladesh, Hanchett (2000) found that not being able to afford a latrine was one of the most frequently cited arguments against the use of sanitary latrines.

The minimum, maximum and median costs of latrines (including any paid labour for construction) are given in table 5 and the sizable spread illustrated in figure 6.

As part of the household survey, the range of materials used for construction of the latrines was documented. Materials ranged from those specifically designed for latrine construction such as plastic pans, cement rings and slabs, to improvised materials such as tin sheeting, tin drums, gas pipes and flexible polythene pipe.

	Median cost GBP	Min Cost GBP	Max cost GBP
Roypara	2.98	0.16	8.51
Dighipara	4.26	0.64	106.38
Middlepara	6.12	0.16	265.96
Southpara	0.64	0.16	58.51

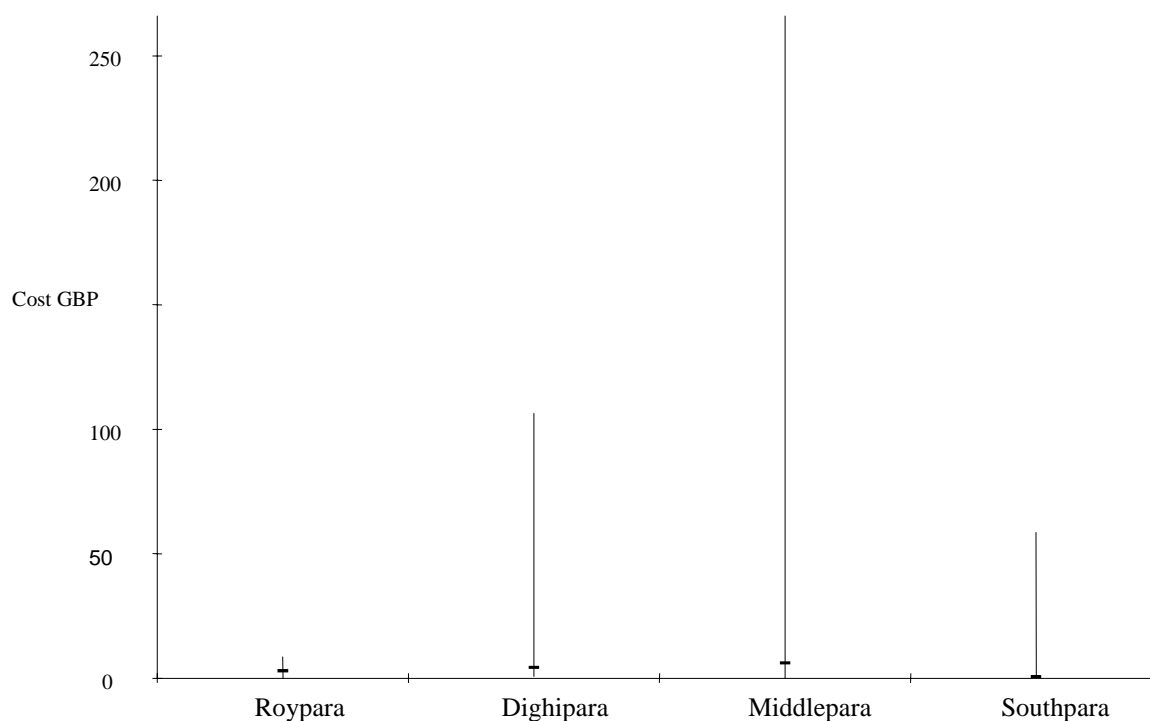
Table 5. Latrine costs (1GBP ~ Tk94)

Southpara was considered to be the poorest para visited which is borne out by it having the lowest median cost of latrines, just 0.64GBP, and a noticeably lower proportion of prefabricated latrine materials used compared to the other villages.

Although none of the households interviewed in Dighipara had Tk15 latrines⁶ (0.16GBP), discussions with the WSAC and other key informants confirmed that they did exist in the para.

The extreme outlier in Middlepara was a very wealthy woman who had spent Tk25,000 (266GBP) on a complete latrine / bathroom system.

Figure 6. Cost spread of latrines in each study para (median and range shown)



5.1.2 Project cost estimation

Information necessary to make an estimate of project cost was collected from both senior and field level VERC staff. Information from the lists of 100% sanitised villages in Rajshahi and Naogaon districts was used to determine the average length of intervention per para (18.4 months between entry PRA and announcing 100% sanitation). The following assumptions were made:-

⁶ A Tk15 latrine model has been innovated using tin sheet and flexible plastic pipe and is proving extremely popular with poorer families (see figure 7).

- ❖ That each health motivator can be responsible for 5 para at a time.
- ❖ That salaries and other costs remain constant over the projected 4 years.
- ❖ That there is no loss of staff over the projected 4 years.
- ❖ Support staff costs are not included.

Using this information, to achieve a 100% sanitised Union within four years (timeframe deemed reasonable) would require 16 health motivators and cost an estimated 5GBP per household. (See annex 3 for spreadsheet calculations of this estimate).

5.2 Cost discussion



Figure 7. The “Tk15 latrine”



Figure 8. “Tk15 latrine” workshop model (with inventor)

Latrine design should be dictated by how much a consumer is willing to pay for it [Cairncross + Feachem, 1993]. Cost is one of the design features of latrines that will appeal to different members of a society with diverse reasons for installing and using a latrine [Jenkins, 1999]. When the cost of the latrines came up during mothers FGDs, in each village the consensus was that latrines were chosen according to the financial capacity of the family.

The wide range of amounts spent on latrines in each village illustrates one apparent reason for the success of the approach; that the emphasis is put on meeting the set of criteria for a “safe” latrine rather than conforming to a particular model. For example,

the model shown in figures 7 and 8 adheres to the three criteria for a “safe latrine” (as used by VERC) in that it is odour free, no insects can access the pit and no faeces can be seen; yet at Tk15 (0.16GBP) it is very low cost.

Subsidised latrine projects in Bangladesh typically offer a Tk500 model at the subsidised price of Tk200 [Hossain Y (VERC), 2003 – personal communication]. This subsidised price is still a fairly large sum for extremely poor families and since the bush can be used for free, even those families that technically have the *ability* to pay may see the expense as something of a luxury. This could explain why subsidised latrine projects do not “have the desired results in terms of mass provision for vulnerable families” [Shordt and Snel, 2002].

One of the concerns raised regarding the approach was that it reinforces the rich-poor divide by having different latrine types according to means. However, the latrines installed have to meet a “safe” standard with regards to disease transmission; therefore benefits in terms of health improvements will be equally distributed across socio-economic groups. Hunt (2001) suggests that the pattern of *use* of sanitation facilities is more important than technology type and Moraes *et al* (2003) found that incidence of diarrhoea was not significantly affected by type of toilet (flush versus pit latrine).

A lack of disposable income⁷ is an inhibitor to latrine construction. For example in rural Benin, difficulty in accumulating or saving enough cash at one time in order to invest in a latrine was identified as a constraint to latrine adoption [Jenkins, 1999]. In the WAB/VERC project villages this seems to be less of a barrier as, in addition to the availability of extremely low cost models, Bangladeshi communities are generally *au fait* with savings and credit schemes. All paras visited had some sort of safety net in place for the very poor. In Roypara the chairman of the WSAC had arranged with a local shopkeeper to give credit on latrine materials to named poor families in the village. In Dighipara the 15 poorest families were involved in a Tk5 per month savings scheme and in the two “newer” project villages land had been donated free of charge⁸ and help given

⁷ Disposable income – Personal income actually available for spending [Black, 2002]

⁸ Hanchett (2000) mentions prestige and avoidance of embarrassment caused by ones relatives openly defecating as a motivation for land donation.

with the costs by neighbours concerned that their own efforts would be of no value if others were still practising open defecation.

5.2.1 Cost compared to other programmes

Although comparing costs of latrines over place and time is often of limited value due to differences in latrine design, cost of materials and temporal value of labour [Pickford, 1995], a crude attempt is made in table 6 to compare the cost of the latrines in the 100% sanitation project areas with other published latrine costs. The 100% sanitation approach per household cost shown is the average amount spent by the family (3.5GBP) added to the estimated project cost per family from section 5.1.2 (5GBP).

Although the comparison is rather superficial it is possible to tentatively suggest that the cost per family of the 100% sanitation approach is 50% lower than the cheapest alternative.

Location	Source	Inclusion	Cost [GBP] / household
100% sanitation – Bangladesh (2003)		Av cost to family + programme cost	8.50
World Bank – Kerala, India (1989-1995)	[Kurup in IRC, 2003]	Cost of latrine only*	47.54
NGO project – Kerala, India (1989-1995)	[Kurup in IRC, 2003]	Cost of latrine only*	27.17
Kerala, India (1994)	[Shordt in IRC, 2003]	Per capita subsidy (cost to project) x 5 (av p / household)	25.47
Pit latrine construction – Asia (1990-2000)	[UNICEF, 2000]	Average construction cost of simple pit latrine	16.25
Pour-flush construction – Asia (1990-2000)	[UNICEF, 2000]	Average construction cost of pour-flush latrine	31.25

Table 6. Crude comparison of latrine costs.

To allow for comparison all costs are shown in GBP.

(Exchange rates: 1GBP = 73.62 IndianR, 1GBP = 1.35USD)

* Undefined whether this is manufacturing cost or cost to consumer

6. Motivational Factors

6.1 Mothers FGD motivation results

An understanding of the factors that are generating demand in successful project areas is required for the effective transfer of the process. Basic thematic analysis as described in section 3.2.2 was used to examine the content of notes taken during the mothers FGDs relating to motivational factors for latrine construction and continued use. Motivational factors identified fell into one of the following 5 themes⁹:-

1. Prestige factors
 - ❖ Improving status and others' perceptions of family status
 - ❖ "Developing" / becoming more modern
 - ❖ Social pressure
2. Practical factors
 - ❖ Improvement of daily life
 - ❖ Facilitating greater efficiency and timesaving
 - ❖ Money savings
3. Well-being factors
 - ❖ Religious well-being (maintaining purdah)
 - ❖ Psychological well-being (avoiding embarrassment)
4. Aesthetic factors
 - ❖ Removal of offensive odours, sights and flies
5. Health factors
 - ❖ Prevention of infectious disease
 - ❖ Physical safety

6.1.1 Health related motivational factors

According to Cairncross and Feachem (1983) and UNICEF (2000), the prospect of health improvement is generally not enough to motivate latrine use. This was confirmed during the FGDs when personal and family health was the least frequently cited reason for constructing and using a latrine (of all reasons cited only 11% pertained to health). Where health was mentioned as a motivational factor, it included improvement in terms of physical safety of shifting from hanging latrines as well as diminishing levels of diarrhoea and dysentery affecting village children.

⁹ With the exception of 4% of comments which did not relate to any categories and were dissimilar to one another.

Box 3. UNICEF Global Water Supply and Sanitation Assessment, 2000

“Candid personal reflection, even by health sector professionals, often reveals that health is a less intense motivator for sanitation than dignity, convenience and social status.”

6.1.2 Aesthetics related motivational factors

“Before, during the rainy season everything smelt disgusting...”, “If there is a bad odour you feel nauseous...” are typical examples of the aesthetics related motivational factors for latrine construction expressed by FGD participants. Overall approximately 16% of motivational factors given could be categorised as being aesthetics related, however it was more frequently cited as a reason in “older” project villages.

6.1.3 Well-being related motivational factors

The third most frequent category of motivational factors was that relating to well-being (20%). Perhaps unsurprisingly, the primary well-being concern expressed was anxiety at being seen defecating by others, mainly men. Having a latrine allowed women privacy (especially during menstruation) and helped them maintain purdah.

Another frequently mentioned motivation was the presence of leeches in the bush encountered whilst defecating:- “all over the bushes are leeches, we don’t have to worry about that now [that we use latrines]” (Southpara). Leeches were included in the well-being category as the mothers seemed to emphasise the concept of having leeches on them as being disturbing rather than having any adverse health effect such as causing infection.

6.1.4 Practical motivational factors

Practical factors was overall the second most important category of motivations expressed by the FGD participants, with 24% being categorised in this group (in the “older” villages it was the most important). Practical reasons given fell into two groups: either that in general having latrines “makes life much easier...” (Middlepara), or that what motivated construction was the fact that the VERC approach addressed the practical issues of how to construct latrines *within their means*.

On a personal level, the mothers like the latrines better than open defecation as they benefit from not having to go outside at night or in the rain as well as the fact that their time is freed up if they no longer have to walk far away from the house to find a safe place to defecate.

On a village level the timesaving (as well as aesthetic) benefit of being able to collect wood more easily was expressed; previously problems were encountered because defecation occurred in the wooded areas from which fuel wood was collected: "...it's really important for collecting fuel wood, everyone benefits from being able to find clean wood" (Dighipara).

6.1.5 Prestige related motivational factors

Prestige related factors seem to be the most important motivation in terms of frequency with which this theme came up during FGDs (25%), particularly in the "newer" project villages.

Having a latrine provoked envy among friends and relatives "...they wish they could live here.." was what one woman said of relatives from another village (Dighipara). Largely in Dighipara using a latrine was seen as development; an improvement on the situation of parents and grandparents. Being "more modern" came across strongly, one mother likened her parents generation's lack of latrines to their lack of machines to husk grain, an indication of their under-development.

Social pressure to adopt latrines is included in the prestige related category because, certainly amongst the mothers participating in the FGDs, any social pressure felt was a kind of self-imposed desire to keep up with the neighbours (or as Hanchett (2000) terms it "positive social pressure") rather than an outside, coercive "negative" social pressure. Box 4 gives two examples. Only in Dighipara were WSAC social penalties¹⁰ or enforcements even mentioned, and then only in passing.

Note: While the preceding sections have dissected the FGDs in terms of household level motivation to adopt latrines, it should be noted that during the FGD and key informant

¹⁰ There has been broad interest in the "social penalties" used in the approach to motivate compliance with the no open defecation rule. For example, marking faeces with a flag bearing the offender's name, issuing fines or publicly naming open-defecators.

interviews in both “newer” project villages an important motivational turning point for the village as a whole was the fact that the neighbouring village of Gaihana had achieved 100% sanitised status even though the intervention in Gaihana had started *after* their village.

Box 4. Positive social pressure in Southpara

“...Firstly my husband stopped me from digging a hole, he told me we didn’t need one. So then I tried to persuade him but he didn’t listen. The ladies from the WSAC tried to help me but they also couldn’t convince him... Then I told him that I was ashamed to be in this situation [without a latrine when others had them] so I would have to leave and return to my father’s house... I blackmailed him in this way and within one day he had made me a latrine”

“*[Whether to use a latrine or not]*...It’s like the way you wear a sari... you know how to wear it and if someone does it differently at first you wonder... but then you find out that lots of other people are wearing it like that... soon everyone wears it this new way.”

6.1.6 Comparison of motivational factors in “older” and “newer” paras

Percentages obtained from simply counting the frequency with which themes occurred in the FGDs in “newer” and “older” project villages are compared in table 7. Although any conclusions drawn are somewhat limited by only having two paras in each category and the numbers in question being fairly small, it seems that whereas practical motivational factors are the most important in the “older” villages, in “newer” villages prestige is a slightly more important motive for latrine adoption. Health related motivational factors were more frequently cited in “newer” villages.

	Health		Practical		Well-being		Prestige		Aesthetic	
	N		N		N		N		N	
Overall	6	11%	13	24%	11	20%	14	25%	8	15%
“Older” villages	2	8%	7	27%	6	23%	6	23%	5	19%
“Newer” villages	3	13%	5	21%	5	21%	8	33%	3	13%

Table 7. Motivational factor frequencies from mothers FGDs in “older” and “newer” project villages

Within the categories there were slight differences; for example, potential money-saving from reduced medical bills was only brought up as a motivational factor in the “newer” project villages although it was unclear whether this was because the populations of the

“older” villages find this not to be the case or because money-saving is one of the selling points of the approach to new villages. Additionally, the prestige factors in “older” villages focused on becoming more developed whereas for the “newer” villages prestige factors centred on improving the status of the family.

6.1.7 Comparison of motivational factors in roadside / rural and Hindu / Muslim paras

Results obtained from examining the motivational factors according to whether the para in question was situated by the road or in a more rural area as well as according to the predominant religion of the para are shown in table 8.

The well-being category contained all references to religious privacy (purdah) being maintained; it is therefore not surprising that the category as a whole was given greater relative importance in the predominantly Muslim villages. This was also the case in household interviews; the possibility to maintain purdah was a strong satisfaction reason given in predominantly Muslim villages but was rarely mentioned in the predominantly Hindu village.

Whereas prestige related motivational factors prevail across religious differences, they seem to have much greater relative importance in rural rather than roadside locations. The two roadside paras were denser in terms of space between houses which could account for why well-being factors, such as avoiding being seen, were given higher relative importance.

	Health		Practical		Well-being		Prestige		Aesthetic	
	N		N		N		N		N	
Roadside (N=2)	5	17%	7	23%	8	27%	5	17%	5	17%
Rural (N=2)	1	3%	6	18%	3	9%	17	52%	3	9%
Muslim (N=3)	6	14%	8	19%	10	23%	13	30%	6	14%
Hindu (N=1)	0	0%	5	36%	1	7%	6	43%	2	14%

Table 8. Motivational factors in roadside / rural and Muslim /Hindu paras

6.2 Mothers FGD motivation discussion

6.2.1 Limitations

There are limitations to the results that can be drawn from the mothers FGDs regarding motivational factors for latrine adoption. Firstly, there were some motivational factors that could overlap into more than one category. In these cases the statement in question was discussed with the Bengali translator and the FGD facilitator in order to decipher what the nuance was before assigning it to a category. Also, it was sometimes difficult to differentiate the subtle difference between factors that motivated latrine construction and reasons for satisfaction with a latrine post-construction.

The data collection technique used meant that information was filtered during translation and note-taking, consequently some comments may be omitted from the analysis. Categorisation of motivational factors by the author and subsequent calculation of frequencies may not give a completely true picture¹¹, but can hopefully provide a useful guide to the relative importance of motivational factors.

Finally, motivational factors “can only be recorded as reported” [Curtis *et al*, 2003]; participants may attempt to give rational explanations for their actions which they hope will sound sensible and may not report underlying reasons which they feel may be perceived to be irrational.

6.2.2 Motivational factors

Although the principal goal of most sanitation projects is to improve the health status of beneficiaries, to the consumer, health benefits are certainly not the only motive for latrine construction [Cairncross, 1992]. The results of the mothers FGDs show that there are a range of factors that operate alone or in combination to motivate latrine adoption.

Overall prestige (including positive social pressure) was found to be the strongest motivating factor for latrine adoption. Prestige was also found to be the most frequently expressed motivation in a study of latrine adoption in rural Benin [Jenkins, 1999], however in the Benin study the prestige motivator was observed predominantly in men.

¹¹ For example frequency may be affected by the breadth of the category in question.

As in the Benin study, projecting an image of wealth by having a latrine and being able to offer guests and relatives greater comfort were perceived to be important: “Before, I faced many problems when town people came to my home... it was so embarrassing to show them the bush and say please go over there!” (Southpara).

Practical issues, also frequently cited during FGDs, came in two forms; firstly, substantial timesaving and convenience advantages are associated with having a latrine and secondly, the approach dealt practically with barriers to latrine construction such as cost and land.

Hierarchy within Bangladeshi society dictates that higher status families expect to have access to better amenities than lower status families [Hanchett, 2000]. That the approach offers a broad range of latrines allows 100% sanitation to be achieved without upsetting this *status quo*.

The more frequent citing of aesthetic motivational factors in “older” villages may be due to the initial push in the very first pilot villages involving meetings being held in village defecation spots “with everyone’s hands covering their noses” [Kar, 2003], whereas the “newer” villages may be relatively more motivated by the word-of-mouth success of other villages. Similarly, health related motivational factors may have been more frequently cited in “newer” villages because topics covered in the recent health and hygiene education sessions are fresher in the minds of mothers.

It can be concluded from these results that it is important for field staff to be alert to the (sometimes subtle) differences in the aspirations associated with latrine adoption in different communities. For example, being aware that whilst health is important to communities, it is the prestige associated with having a latrine that will motivate a change in behaviour, could play a significant role in designing a sanitation intervention.

If Health Motivators from all over the country (or region) are to be trained together, adaptations should be made to account for these differences, for example by working in smaller groups dealing with similar communities, rather than having a one size fits all training. The existence of different motivational factors across different areas and for different religious groups has important implications for the transfer of the process within and outside Bangladesh.

6.3 Motivation from an etic point of view

To examine the outsiders point of view of how the 100% sanitation approach motivates communities to adopt latrines, relevant literature and key informant interviews were used. Literature published regarding the approach included Kar (2003) and two documents published by VERC (2002b, 2003). During key informant interviews, health motivators were asked to postulate on what they considered to be the principal motivational factors in the 100% sanitised communities with which they have worked.

In the following table, the darkness of the block indicates the relative importance attached to that motivational factor by the various sources¹². The final row shows the findings from the mothers FGDs to allow comparison.

	Health	Social pressure*	Prestige	Practical	Well-being	Aesthetics	Affordable options
Kar, 2003							
VERC, 2002b + 2003							
VERC Male Health Motivators							
VERC Female Health Motivators							
<i>Mothers FGD results</i>							**

Table 9. Motivational factors from an etic point of view.

* Imposed social pressure such as fines or night patrols

** Affordability of options was not considered as a separate category in the FGD analysis

Kar (2003) emphasises the importance of community pressure in the form of penalties imposed on individuals that do not adhere to the “no open defecation” rule and the shame that the community as a whole feels during the entry PRA. Although the health motivators interviewed did allude to this kind of negative social pressure it was not identified as a key motivational factor. Similarly, it was only once mentioned during FGDs with village mothers indicating that perhaps, for women at least, this aspect of the approach is not the key to the observed behaviour change.

¹² Emphasis was assessed by objective review of each document by the author. It should be noted that interpretation and conclusions drawn are the authors own.

Both VERC documents (2002b, 2003) and the Health Motivators prioritised the role of health and an understanding of the link between latrines and good health as a key motivation, perhaps a reflection of what “ought” to motivate rather than what actually does motivate latrine use.

The importance of prestige related motivational factors in latrine adoption was cited by Kar (2003) and by the health motivators. However, neither the literature nor the health motivators seemed to appreciate the importance of practical issues such as time-saving as a drive for latrine adoption.

The limits to the precision with which outsiders pinpoint exactly what motivates communities’ collective behaviour change is significant. Having a clear understanding of consumer motivation or factors that generate demand is essential in the design and targeting of latrine promotion ventures [Jenkins, 1999] and should be obtained through thorough and ongoing formative research [Curtis + Kanki, 1998].

7. Sustainability

7.1 Sustainability results

Sustainability is “ensuring that a project has long term feasibility and that the outputs will continue functioning once the agency has left” [GoB + UNICEF, 2001]. Sustainability questions specifically addressed during field visits included:- Is non-open defecation maintained in the village? Are full latrines replaced and if so, is there evidence of movement up the sanitation ladder? The answers were sought from mothers FGDs, the household surveys and observation as well as discussion with key informants.

7.1.1 Regarding the presence or absence of open defecation

Visits to the study paras were not pre-arranged with the population in the hope that the everyday situation could be observed. In “older” villages there was no evidence of open defecation in the para itself or in surrounding bamboo gardens and wooded areas¹³. Both paras selected for the study were of the first villages in which the project was piloted and as such receive frequent visits from various organisations both governmental and non-governmental. During interactions with various key informants this was highlighted as something of which the para population is very proud¹⁴. The limited timeframe of the field work meant that it was not possible to visit less frequently visited “older” villages to see if the same level of vigilance is maintained.

In both “newer” paras there was evidence of open defecation although certainly not on the scale of non-project villages (single example in each para). This slight deviation in the “newer” villages was an indication of the gradual nature of total population behaviour change (in both cases the excrement was blamed on hard-to-control children) as well as the WSAC being in its infancy and having not yet developed a fully organised system of action. It is the view of the VERC health motivators that this intermediate period was also seen in the “older” villages immediately after 100% sanitation status was announced and they are confident that the situation will improve in time.

¹³ This was also found to be the case by a larger study conducted as part of an economic evaluation of WAB activities [WaterAid + DFID, 2003]

¹⁴ Also mentioned by Kar (2003) as an incentive to keep the village clean and presentable for visitors who could drop by at any time.

7.1.2 Sanitation ladder / progressive latrine improvements

Improvements in sanitation systems (or lack of systems) generally occur incrementally rather than in a single leap [Cairncross + Feachem, 1993]. What is promoted in the 100% sanitation approach is the move from undesirable defecation practice (open defecation or hanging latrines) to an enhanced yet affordable sanitation option according to the means of the household. In this way excreta will be removed from the domestic environment creating a primary barrier to the faecal-oral route of disease transmission [Curtis *et al*, 2000]. Low-cost sanitation options in particular encourage those who are uncertain about changing their habits onto the bottom rung of the sanitation ladder with minimal cost [Hanchett, 2000]. In due course it is hoped that the household in question will choose to further upgrade their latrine¹⁵ as and when they have the means to do so.

	ROYPARA		DIGHIPARA		MIDDLEPARA	
	N		N		N	
Pit has filled before	2	25%	7	47%	10	50%
Full pit emptied	1	50%	2	29%	2	20%
Full pit replaced	1	50%	5	71%	8	80%
Full pit returned to open defecation	0	0%	0	0%	0	0%
Have changed pit due to flooding	5	63%	2	13%	0	0%
Have changed pit through choice before full	0	0%	1	7%	1	5%
Replacement latrine is less expensive*	0	0%	0	0%	2	22%
Replacement latrine is more expensive*	6	100%	6	75%	7	78%
Replacement latrine is same cost*	0	0%	2	25%	0	0%

Table 10. HHQ results – replacement and emptying of latrines (Southpara N/A as no latrines yet replaced)
* Of latrines replaced for any reason

To gauge whether movement up this “sanitation ladder” is occurring, villagers were asked, during the household survey, whether they had ever had to, or had chosen to, replace their latrine for any reason (e.g. because the latrine was destroyed by flooding,

¹⁵ For example from a somewhat temporary structure to a “*pukka*” (more durable) one.

had filled up etc). If the latrine had been replaced, the participant was asked whether the replacement latrine was more or less expensive than the previous one. The assumption was made that a more expensive latrine was synonymous with (and therefore a good proxy for) an improved latrine, indicating progression up the sanitation ladder. The results are shown in table 10.

From the results, albeit for a small sample of households, it seems that the approach leads to sustainable changes in latrine use behaviour. If this were not the case one would expect to see a greater proportion of the population either not replacing full latrines at all or replacing them with the bare minimum required.

Also collected during household surveys and potentially pertinent to the issue of sustainability is the position of the latrine relative to the house. The householders' latrines were classified as attached to the house, within the homestead¹⁶ or external to the property. Half the latrines in Roypara and approximately one quarter of the latrines in Dighipara and Middlepara are actually attached to (or inside) the household. Overall, most latrines were positioned within the homestead where they could be accessed easily during the night and therefore improving the chances that they would be used by all on all occasions. This contrasted with a previous study in Bangladesh which found it to be rare to find latrines inside or even near to the house in rural areas as they were considered unclean [Hanchett, 2000], perhaps an indication of a greater acceptance of latrines in general. The information is summarised in table 11.

	ROYPARA		DIGHIPARA		MIDDLEPARA		SOUTHPARA	
	N		N		N		N	
# HH surveyed	8		15		20		9	
HH with access to latrine	8	100%	15	100%	20	100%	9	100%
Latrine attached to house	4	50%	4	27%	5	25%	0	0%
Latrine in homestead	3	38%	11	73%	14	70%	8	89%
Latrine external	1	13%	0	0%	1	5%	1	11%

Table 11. HHQ results - position of latrines in relation to the house

¹⁶ A homestead is a compound of households that is usually occupied by an extended family but the different households do not cook together.

7.1.3 Mothers groups perceptions on sustainability

Regarding sustainability, the participants in the mothers FGD seemed very positive that the progress that had been made would not falter once the VERC health motivators withdrew: “..other people sometimes ask us why we use latrines, we tell them that everything is in a much better state now, that is why we will never go back to the garden” (Dighipara) “...it will even improve in the future” (Middlepara).

The mothers spoke with authority about the options available to them when the latrines fill up, indicating that they had obviously given some thought to the matter. Concerning whether they were going to (or had already) empty or simply replace the latrine the views were equally split, although presumably it is the more expensive latrines that will be emptied; at between Tk150-300 (1.60-3.20GBP) plus 3Kg rice, the cost of emptying exceeds that of the low-cost latrines themselves.

To empty latrines, the local *mathor* (sweeper / cleaner) is called from the market. A hole is dug near to the latrine and the pit contents emptied into it by hand, sometimes pouring in kerosene first to reduce the smell. The hole is then covered over and the latrine restored to use. There are two concerns regarding the manual emptying of pits: first, there are serious health implications in handling fresh faeces [Hunt, 2001], [Cairncross + Feachem, 1993], [Pickford, 1995]. Second is the multifaceted issue of it usually being lower classes that engage in such activities which potentially reinforce class subjugation [Cairncross, 1992], a complex discussion which is beyond the scope of this paper.

7.2 Sustainability discussion

UNICEF (2000) includes the following factors amongst its criteria for sustainability of water and sanitation projects:-

1. Community participation at all stages of the project. The adoption of sanitation facilities involves sensitive issues associated with strong cultural preferences, therefore maximum involvement of the community is vital [Shordt + Snel, 2002].
2. Political commitment.

3. Intersectoral co-ordination, collaboration and co-operation. At national level, and also at local level which is often harder to achieve [Cairncross, 1992].
4. Adequate institutional frameworks.
5. Use of appropriate technologies.

Regarding hardware in sanitation projects, low cost and low subsidy per household are two important factors for sustainability [IRC, 2003]. It is generally held that demand driven approaches to sanitation are both more effective and more sustainable than supply driven approaches [Cairncross, 1992]. The 100% sanitation approach is demand driven in that programmatic inputs focus on creating demand and assisting the community to meet those demands through innovation rather than providing subsidised hardware. Sustainability of behavioural change in sanitation projects, although essential, is infrequently measured [Bolt, 2001].

Sustainability issues of the 100% sanitation approach will be considered on two levels in the following sections; firstly field level sustainability (and monitoring for sustainability), and then briefly local government involvement.

7.2.1 Field level sustainability and monitoring for sustainability

From section 7.1 it seems that there are positive signs that, at village level, the 100% sanitation approach leads to sustainable sanitation behaviour change. The initial PRA process involving all sections of the community and the focus on appropriate, locally available technologies should have positive implications for sustainability [UNICEF, 2000], [DFID, 1998]. Additionally, the availability of more than one latrine option and opportunity for upgrading or choosing level of service has been found to enhance sustainability of projects [Saywell + Hunt, 1999], [DFID, 1998], [Cairncross, 1992].

The lack of time to visit a larger number of project villages was again a limitation to the study; further studies in a wider range of “older” villages would clarify whether change is maintained in the absence of frequent visitors.

Currently behavioural change is first monitored using community monitoring charts by the VERC health motivators but is then quickly handed over to the WSAC [VERC, 2002b]. That behaviour is monitored as well as coverage is encouraging; to further

increase sustainability more focus could be put onto collection, analysis and interpretation by the whole community rather than just the WSAC [UNICEF, 2000].

It seems that field-level monitoring and sustainability information is not systematically gathered and collated by VERC at district level; if it were, it could provide either compelling evidence of the success of the approach or useful guidance on how to improve the process, as well as encouragement for those engaged in monitoring.

The VERC health motivators identified a need for strong WSACs as important to the sustainability of the project. They recommended further training of the committee members (who currently only receive leadership training and basic health and hygiene education [VERC, 2002b]) to equip them to plan and implement their own follow up agenda after the VERC intervention finishes. Realisation of this ideal would require a strong system of supportive supervision and time-consuming training and capacity building [Kar, 2003].

7.2.2 Local government involvement

The local government structure in Bangladesh is based on administrative areas as laid out in figure 9. Bibby *et al* (2002) report an acute co-ordination gap between these government departments; an issue for sustainability which relies on good co-ordination, collaboration and co-operation [UNICEF, 2000].

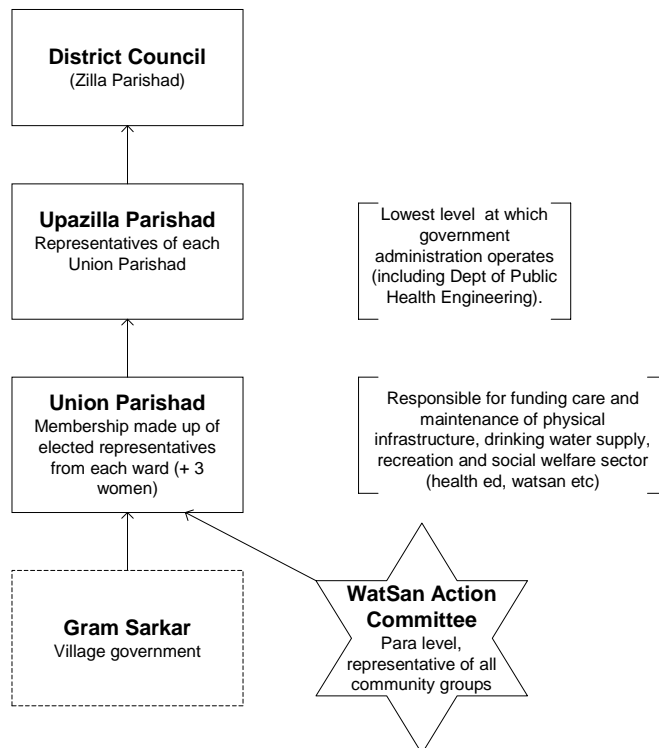
Formal and informal power structures need to be identified and taken into account [DFID, 1998] and their role established in order to ensure sustainability [Shordt, 2003]. Responsibility for health and environmental sanitation in Bangladesh is multi-sectoral led by, amongst others, the Department of Public Health Engineering (DPHE) [GoB + UNICEF, 2001]. Cairncross (1992), however, suggests that it is preferable for this responsibility to fall to an individual body, and that careful consideration should be given to identifying an appropriate agency for the task.

Involvement of local government bodies is a vital aspect in the long term sustainability of the 100% sanitation approach [VERC, 2003]. Senior VERC staff believe that since each union parishad has a mandatory water and sanitation component, their involvement and support of the 100% sanitation approach should be viewed as an important sustainability

indicator. They are confident that the GoB will support the 100% sanitation approach: “...the chain is there for spread and key people are already convinced that the approach can be replicated and can be affordable...” [Hossain Y (VERC), 2003 – personal communication], and as such are advocating it at national policy level in conjunction with donor agencies [VERC, 2003].

WaterAid Bangladesh Research, Learning and Documentation team are currently carrying out a study to explore local government perceptions of the 100% sanitation approach and identify potential mechanisms for support and co-ordination of the approach at Upazilla level.

Figure 9. Local government structure Bangladesh
(Adapted from Leowinata (2001) and VERC staff discussions)



In conclusion the nature of the 100% sanitation approach directs it towards sustainability with a strong focus on community participation, the use of appropriate technology and a responsive institutional framework. Attention is now turning to recruiting government support and commitment to further enhance the prospects for sustainability as defined in section 7.2.

8. Conclusions and Recommendations

8.1 General issues and further research

In the paras studied the VERC 100% sanitation approach seems successful in sustainably ending open defecation by ensuring hygienic latrine adoption by all members of the community. The key to the success seems to be the wide choice of “safe” latrine options available to suit the financial abilities of different community groups and the philosophy that, since total sanitation is the only acceptable end point of the process, safety nets need to be in place to ensure that even the poorest of the poor can access latrines.

Locally innovated latrine designs ensure that standards of acceptability are maintained at a cost that the consumer is willing to pay. Project cost estimations seem to indicate that the 100% sanitation approach is at least 50% cheaper than others.

Overall prestige and a desire to “keep up with the neighbours” was the strongest motivational factor for latrine adoption. However, motivational factors seem to be evolving over time and differences were seen between villages with different geographic and religious characteristics. It is therefore important that field staff are alert to differing aspirations encountered and that the approach remains flexible enough to adapt to changing priorities.

To further ensure sustainability of the approach at field level, current monitoring practice could be extended to include greater community participation; current monitoring concerns primarily the WSAC. A system by which this information can be systematically gathered and collated at district level would also solidify process learning and growth.

The fact that the primary activities of the 100% sanitation approach focus on latrine adoption put it in a strong position to contribute to the “evidence of health benefits of sanitation” that is required to advocate greater investment in the sanitation sector [Moraes *et al*, 2003]. Literature on the approach [WaterAid + DFID, 2003] and anecdotal evidence from communities visited shows that since becoming 100% sanitised cases of diarrhoeal disease have dropped and other social and economic benefits have been

experienced¹⁷. These claims are important and deserve robust investigation and documentation.

Other potential research directions include investigating the life of the available sanitation options and examining the latrine acquisition curve [Cairncross, 1992] in different communities to provide useful insight into when / where extra support is required.

8.2 Issues for scaling up the approach

Issues for the scaling up of the approach within Bangladesh itself are discussed. Following on from this, issues for adoption of the approach outside Bangladesh are considered.

Effective scaling up of small scale pilot projects is often a difficult process [Shordt, 2003]. Whereas co-ordination and management is usually easy on a small scale, during scaling up superior organisation is required to ensure that chains of supervision are clear and the project remains responsive to “local needs and initiatives” [Cairncross, 1992].

The quality of field staff was found to be of great importance to the success of the project and a concerted effort will have to be made to preserve this during scaling up. To achieve desired coverage, a far greater number of high quality health motivators will need to be recruited, trained and supervised, which may make maintaining the sense of personal motivation and dedication characteristic of the approach difficult. Senior VERC staff expressed concern that other organisations that are replicating the approach are not fully “buying-in” to the importance of field staff quality and are already cutting down training, which is seen as fundamental to the success of the project, from 42 to 10 days.

Another potential issue for scaling up is that the approach cannot be time-bound and as such may be difficult for government, donors and other organisations to commit to [Hossain Y (VERC), 2003 – personal communication].

¹⁷ The health impact of the 100% sanitation approach, which is reportedly a 99% reduction in diarrhoea, dysentery and various stomach ailments [WaterAid + DFID, 2003], was beyond the scope of this study, which was intended to focus on the process itself and motivations for behavioural change.

Whereas the crux of the 100% sanitation approach is to end open defecation, donors and other organisations have a tendency to focus on the number of latrines produced [Saywell + Hunt, 1999]. Such fundamental differences will need to be addressed if successful scaling up of the approach is to be achieved.

Finally, before the 100% sanitation approach can be transferred externally, many questions pertaining to situational differences need to be addressed. It has already been ascertained that motivational factors vary according to circumstance. Examples of other issues that could affect the process are: rural communities in Bangladesh seem to occur in clusters; would the motivation to stop open defecation apply equally to more dispersed populations? Or, is the practice of providing social safety nets and the prestige associated with donating your own land to the poorest members of a community particular to Bangladesh?

While there are elements unique to the Bangladesh context which contribute to the success of the approach, the flexibility to local needs and demands upon which the approach is built should mean that with careful planning it could be successfully transferred to other contexts.

References

- Almedom A, Blumenthal U and Manderson L (1997) *Hygiene evaluation procedures: approaches and methods for assessing water- and sanitation-related hygiene practices*. International Nutrition Foundation for Developing Countries.
- Bibby S, Colin J, Hoque B and Hunt C (2002) *Bangladesh environmental health scoping study*. WELL Task no. 628. WEDC, Loughborough and LSHTM, London
- Black (2002) *Oxford dictionary of economics (2nd edition)*. Oxford University Press, Oxford.
- Bolt E (2001) Sustainability of changes in hygiene behaviour. Report of the first international workshop, International Water and Sanitation Centre, Delft, Netherlands, February 2001.
- Boot M and Cairncross S (1993) *Actions speak: the study of hygiene behaviour in water and sanitation projects*. IRC International Water and Sanitation Centre, Netherlands and London School of Hygiene and Tropical Medicine, London.
- Cairncross S (1992) *Sanitation and water supply: practical lessons from the decade*. Water and sanitation discussion paper 9. UNDP / World Bank Water and Sanitation Programme, Washington DC.
- Cairncross S, Blumenthal U, Kolsky P, Moraes L and Tayeh A (1996) The public and domestic domains in the transmission of disease, *Tropical Medicine and International Health* **1**(1): 27-34
- Cairncross S and Feachem R (1993) *Environmental health engineering in the tropics: an introductory text*, 2nd ed. John Wiley & sons, Chichester.
- Curtis V, Biran A, Deverell K, Hughes C, Bellamy K and Drasar B (2003) Hygiene in the home: relating bugs and behaviour, *Social Science and Medicine* **57**: 657-672.
- Curtis V, Cairncross S and Yonli R (2000) Domestic hygiene and diarrhoea – pinpointing the problem, *Tropical Medicine and International Health* **5**(1): 22-32.

Annex 1. Rajshahi Division, Rajshahi and Naogaon Districts, 100% Sanitised Para Information [VERC]

RAJSHAHI DISTRICT PARAS - from which those announced 100% sanitised during 2001 were used

	PARA	VILLAGE	UNION	THANA	DISTRICT	PRA DATE	ANNOUNCE DATE	# months PRA to 100%	# HH
1	Purba Para	Khardakour	Shuvadanga	Bagmara	Rajshahi	01/06/2000	01/08/2002	26	
2	Sheikhpara	Mochmoil	Shuvadanga	Bagmara	Rajshahi	01/03/2000	01/08/2001	17	
3	Modhyapara	Mochmoil	Shuvadanga	Bagmara	Rajshahi	01/05/2000	01/05/2001	12	
4	Kuthi/Banglapara	Mochmoil	Shuvadanga	Bagmara	Rajshahi	01/08/2000	01/08/2002	24	
5	Shankarpai	Shankarpai	Shuvadanga	Bagmara	Rajshahi	01/03/2000	01/08/2001	17	
6	Dara Para	Jahanabad	Jahanabad	Mohanpur	Rajshahi	01/01/2001			
7	Dighipara	Syedur	Shuvadanga	Bagmara	Rajshahi	01/08/2000	01/12/2001	16	72
8	Roypara	Mochmoil	Shuvadanga	Bagmara	Rajshahi	01/02/2000	01/08/2001	18	41
9	Shahpara	Mochmoil	Shuvadanga	Bagmara	Rajshahi	01/08/2000	01/11/2002	27	
10	Paschim Para	Khardakour	Shuvadanga	Bagmara	Rajshahi	01/07/2000	01/11/2002	28	
11	Dhadhir Khaira	Dhadhir Khaira	Shuvadanga	Bagmara	Rajshahi	01/08/2000	01/11/2002	27	
12	Narayon para	Narayon Para	Shuvadanga	Bagmara	Rajshahi	01/05/2000	01/03/2003	34	
13	Madhyapara	Pikepara	Shuvadanga	Bagmara	Rajshahi	01/03/2002	01/03/2003	12	
14	Khondokarpara	Panishail	Shuvadanga	Bagmara	Rajshahi	01/03/2002	01/03/2003	12	
15	Madhyapara	Sayedpur	Shuvadanga	Bagmara	Rajshahi	01/09/2000	01/03/2003	30	

NAOGAON DISTRICT PARAS - from which those announced 100% sanitised during 2003 were used

16	Choukiderpara	Nurullabad	Nurullabad	Manda	Naogaon	01/10/2000			
17	Karigorpara	Hazi Gobindapur	Kushumba	Manda	Naogaon	01/12/2000			
18	Hindu Para	Hazi Gobindapur	Kushumba	Manda	Naogaon	01/10/2001			
19	Dodala	Dodala	Varsho	Manda	Naogaon	01/04/2000			
20	Bagdewanpara	Hazi Gobindapur	Kushumba	Manda	Naogaon	01/04/2000			
21	South Para	Boro Belaldaha	Kushumba	Manda	Naogaon	01/01/2002			
22	East Para	Shamuk Khol	Kushumba	Manda	Naogaon	01/08/2002	01/10/2002	2	
23	Danga Para	Gayhana	Kushumba	Manda	Naogaon	01/12/2000			

Annex 2. Household Questionnaire
(English version)

Male
Female
Position _____

- Q1.** How many people are in this house? Male # _____
Female # _____
- Q2.** Do you have access to a latrine? Yes No
- Q3.** Where is the latrine located? Attached In the External
To house homestead
[Please estimate time _____ min]
- Q4.** What materials is it made from? Rope Bamboo Plastic pan Brick Pitcher
Plastic sheet Mud Cement
Other _____

- Q5.** What is the surface of the platform made of? Wood Cement Brick
Bamboo Mud
Other _____

- Q6.** Who chose the type? Self Spouse Other _____
Jointly with _____ *(please fill)*
- Q7.** Who built it? Self Spouse Family member Friend
Paid labour VERC team Other _____
- Q8.** How much did it cost? Pit _____ (TK) Platform _____ (TK) Superstructure _____ (TK)
- Q9.** Are you satisfied with the latrine? Yes No
- Q10.** Who is responsible for the maintenance of the latrine? Self Spouse Son
Daughter Whole family Domestic worker
Other _____
- Q11.** Has the latrine filled up? Yes No
(if yes – go to question 12, if no go to question 14)
- Q12.** Did you replace it? Yes No N/A

Annex 3. Project Cost Calculations

FIXED COSTS

PER PARTICIPANT TRAINING COSTS - basic HM training package

	Unit	# Units	Unit cost (Tk)	Total (Tk)	Total (GBP)
Travel (for all 8 trainings)	training	8	650	5,200	
Accommodation	Day	42	50	2,100	
Food	Day	42	130	5,460	
Total				12,760	138.7
Total per union				204,160	2,219.1

PER TRAINING JOINT COSTS

	Unit	# Units	Unit cost (Tk)	Total (Tk)	Total (GBP)
Logistics	Day	42	1,000	42,000	
Field excercises	Lump	1	51,000	51,000	
Handouts / manuals	Lump	1	42,000	42,000	
Trainers (4 people)	pers/day	168	1,400	235,200	
Venue (NA VERCs own)	Lump	1	0	0	
Total				370,200	4,023.9
Total per participant				8,814	95.8
Total per union				141,029	1,532.9

HEALTH MOTIVATOR PACKAGE / UNION

	Unit	# Units	Unit cost (Tk)	Total (Tk)	Total (GBP)
Motorbike and helmet	pce	16	100,000	1,600,000	
Hygiene promotion tools pack	set	16	4,000	64,000	
Total				1,664,000	18,087.0

Per Union Grand Total (Fixed)

21,839.0

RECURRENT COSTS / YEAR

	Unit	# Units	Unit cost (Tk)	Total (Tk)	Total (GBP)
Health motivators salaries	pers/yr	16	48,000	768,000	
Stationary per year	pers/yr	16	2,400	38,400	

Annex 4. Further examples of emic perspectives of cost, motivational factors and sustainability

(additional to those cited in the text)

Topic	Sub-topic	Illustrative examples
Cost		“Most of us have offset pits but she [<i>points</i>] has a direct pit as it's less expensive”. (D/moth)
		“We choose the type accordingly with our ability.” (M/moth)
		“A few latrines cost 2000tk but most are between 15-85tk”. (R/mix)
		“...even 15tk toilets can be kept clean”. (R/mix)
Motivation	Prestige	“...we feel like we are doing so much better than our elders”. (D/moth)
		“[<i>Previously</i>] when we visited many places, especially the town, we saw everyone over there doing it [<i>washing hands / using latrines etc</i>]...” (M/moth)
		“If we keep it up our village will become famous”. (S/moth)
		“People see you have a latrine so they think you must have money”. (S/moth)
	Practical	“[<i>Having a latrine</i>] is good for us [<i>women</i>] as you can be quick as we have to get back to cook”. (R/moth)
		“You can't work efficiently when you have to go so far from the house to defecate”. (D/mix)
		“It was so hard for us [<i>women</i>], we had to wait till night fell and sometimes we had to make a hole to use but now we have our own toilet”. (D/moth)
		“..there is more space for houses now the wooded areas are cleaner”. (R/mix)
	Well-being	“Women feel much happier not having to go outside, men don't see us”. (M/moth)
		“We benefit more than men [<i>from latrines</i>] as we can't just go anywhere. We feel shy so we don't want to go in

		the bush”, (R/moth)
		“We don't have to go outside now... when we went outside leeches were coming but now we have solved this problem”. (D/mix)
		“Outside we feel embarrassed when people come and so we had to wait which makes you feel ill in your stomach”. (D/mix)
	Aesthetic	“If there is an odour you feel nauseous, it makes you have diarrhoea”. (R/moth)
		“Everything is cleaner”. (S/moth)
	Health	“We gave the latrines a go because we want to keep the environment clean and we had heard that if we use latrines then our children will have less diarrhoea and dysentery.” (Southpara mixed)
Sustainability	General	“I am sure that even the children will not go back to using the bushes”. (S/moth)
		“This is a continuous process - it won't end with [VERC] leaving”. (S/moth)
		“[<i>even if VERC no longer come</i>] this is our village we have to clean it up”. (R/moth)
		“In the future we will have to take steps to maintain the system or else the whole thing will be meaningless, even if [VERC] stop coming, we have a duty to do it ourselves”. (M/mix)
	Sanitation ladder	“Before I had a pit, at first.. But now I have a water seal as it is better”. (D/moth)
		“When it fills I will think about a <i>pukka</i> latrine”. (D/moth)
		“At the moment it is low cost, with the blessings of the almighty we will be able to do it <i>pukka</i> ”. (M/moth)
		“I would like one day to make it attached”. (M/moth)
		“We are happy with the latrines so in the future we will make them better”. (S/moth)
	Once the latrines fill up	“When mine is full I shall just move the slab and plant a tree over it”. (D/moth)
		“When the latrine filled I just covered it with mud and made a new one”. (M/moth)

“...not only covering, you can empty them too...you make 2 holes and when one is full it will run into the other”.
(M/mix)

“The latrines don't need replacing - when it fills up we can get it emptied”. (D/mix)

“..or you can hire the *Mathor* to clean them, it costs 120tk + 1 x soap + 1kg of rice”. (R/mix)

“Mine filled up but the *Mathor* from the bazaar came to clean it up. He made a ole by the latrine and just emptied it in. It cost 50tk per man, there were 3 of them”.
(D/moth)

“If it needed emptying we would call the *Mathor*. It costs 100-300tk depending on the type and we also have to give rice, 1kg per head”. (M/moth)

Social safety-nets

It was a joint [*community*] decision, previously the poorer did not have a chance but the whole community is motivated.” (R/moth)

“People with no land share latrines with people with land.” (M/moth)

“We give money if someone can't afford... we lend it to them”. (M/moth)

“People with no land are given a small amount of land for latrines”. (R/mix)

“I introduced the poor families to a shopkeeper and asked him to give credit to them”. (R/mix)

“If someone defecates outside then it is a shame for the whole village so we make a collection to help [*them construct a latrine*].” (D/mix)

“There are only 2 houses with absolutely no land so 2 other villagers gave them some space for latrines, they didn't take anything from them, everyone helped with the cost”. (S/mix)

Fuel and maintenance per year	pers/yr	16	7,200	115,200
Community volunteers "salaries"	pers/yr	16	6,000	96,000
Total			1,017,600	11,060.9

50

PROJECT COST ESTIMATIONS

- 1) Each para takes 18.4 months of intensive HM intervention
- 2) Assume that if HMs want to visit as frequently as during pilot project, each HM will be able to have 5 para at a time
- 3) Therefore 80 para completed each year and a half
- 4) One union would take 4 years

# HH per para (average from list)	56
# para per village (VERC staff)	9
# para per union	225
# HH per union	12,600

	Unit	# Units	Unit Cost	Total GBP
Recurrent costs	year	4	11,061	44,243
One off cost	lump	1	21,839	21,839

Total cost per 100% sanitised Union **66,082**

Total project cost per HH **5 GBP**

Assumptions

- 1) That each of 16 health motivators can be responsible for 5 para at a time.
- 2) That salaries and other costs remain constant over the projected 4 years.
- 3) That there is no loss of staff over the projected 4 years.
- 4) Support staff costs are not included.

Exchange rate~ 1GBP:Tk92

Q13. What did you replace with? Same type More expensive type
Less expensive type N/A

Q14. Did you ever change the latrine before it filled up? Yes No
(if yes go to question 15, if no go to question 16)

Q15. What did you replace with? Same type More expensive type
Less expensive type N/A

Q16. Where do you collect drinking water from normally?

1.Pond 2.River 3.Canal 4.Red 5. Green 6.Deep 7.Hand dug well
tubewell tubewell tubewell

Other _____

Q17. Do you usually treat the water in any way after collection? Yes No

(If yes) How? _____ N/A

Q18. How many minutes walk is it to the source? Less than 2-10 11-30 More than 30
(please estimate) 2 minutes minutes minutes minutes

HOUSEHOLD OBSERVATION – where possible
- Please tick as appropriate

	Yes	No	Not seen
1. Water is present in the latrine for cleansing /handwashing			
2. The latrine is “safe”			
3. The latrine is well maintained			
4. Water vessels are covered			
5. Food is stored hygienically			
6. Utensils are stored hygienically			
7. Floors and courtyard are swept			

24	South Para	Kushumba	Kushumba	Manda	Naogaon	01/07/2002			
25	Maddhapara	Kirtali	Kushumba	Manda	Naogaon	01/08/2002			
26	South Para	Kirtali	Kushumba	Manda	Naogaon	01/01/2001			
27	Middlepara	Chawick Kushumba	Kushumba	Manda	Naogaon	01/09/2001			
28	Kabirajpara	Chawick Kanu	Kushumba	Manda	Naogaon	01/07/2002			
29	Khapara	Barapai	Kushumba	Manda	Naogaon	01/10/2001			
30	West para	Barapai	Kushumba	Manda	Naogaon	01/03/2002	01/02/2003	11	73
31	Dewanpara	Kushumba	Kushumba	Manda	Naogaon	01/03/2001	01/05/2003	26	
32	Masterpara	Barapai	Kushumba	Manda	Naogaon	01/10/2002	01/03/2003	5	53
33	Bagpukur	Kirtali	Kushumba	Manda	Naogaon	01/11/2002	01/04/2003	5	18
34	Mandalpara	Hazi Gobindapur	Kushumba	Manda	Naogaon	01/01/2001	01/02/2003	25	63
35	Paramanikpara	Shamuk Khol		Manda		01/01/2001	01/04/2003	27	34
36	South Para	Chawk Shyamrai		Manda		01/10/2001	01/04/2003	18	46
37	Dewanpara	Barapai		Manda		01/04/2003	01/04/2003	0	40
38	Sonarpara	Chawk Shyamrai		Manda		01/06/2002	01/05/2003	11	48
39	Middlepara	Barapai		Manda		01/01/2002	01/05/2003	16	99
40	Dhawabadelpara	Barapai		Manda			01/05/2003		48
41	Pukurpara	Chhoto Beladaha		Manda		01/10/2001	01/05/2003	19	100
42	Chawk Kusumba	Chawk Kusumba		Manda		01/10/2000	01/05/2003	31	48

- Curtis V and Kanki B (1998) *Happy, healthy and hygienic: how to set up a hygiene promotion programme*. Unicef, New York + LSHTM, London.
- DFID (1998) *Guidance manual on water supply and sanitation programmes*. WELL, London / Loughborough.
- DFID (2001) *Addressing the water crisis – healthier and more productive lives for poor people*. Strategy paper. DFID, London.
- Ferron S, Morgan J and O'Reilly M (2000) *Hygiene promotion: a practical manual for relief and development*. Intermediate Technology Publications, London.
- Government of Bangladesh and Unicef (2001) Environmental sanitation, hygiene and water supply in rural areas of Bangladesh: Inception report. Prepared by DPHE Bangladesh and Unicef Bangladesh.
- Hanchett S (2000) *Rural water sharing, sanitation and hygiene: the social aspect*. WELL Task no. 483 + 534. WEDC, Loughborough and LSHTM, London.
- Hanchett S (2000b) *Rural water sharing, sanitation and hygiene: the social aspect*. [draft executive summary].
- Hunt C (2001) *How safe is safe?: a concise review of the health impacts of water supply, sanitation and hygiene*. WELL Task no. 509. WEDC, Loughborough and LSHTM, London.
- IRC International Water and Sanitation Centre (2003) *Criteria for successful sanitation programmes in low income areas in the south*, <http://www.irc.nl/themes/sanitation/improving.html> (accessed 06/02/2003)
- Jenkins M (1999) Sanitation promotion in developing countries: why the latrines of Benin are few and far between. PhD dissertation. University of California, Davis.
- Kar K (2003) *Subsidy or self respect? Participatory total community sanitation in Bangladesh*. IDS Working Paper 184. Institute of Development Studies, Brighton.
- Kirkwood B (1988) *Essentials of medical statistics*. Blackwell Science, Oxford.
- Leowinata S (2001) *Rural institutions study: Bangladesh (part I)*. WELL Task no. 522. WEDC, Loughborough and LSHTM, London.

- Luong T (1995) *Sanitation and hygiene, Bangladesh's action*. Paper presented at the WEDC Conference on Sustainability of Water and Sanitation Systems, Kampala, 1995.
- Mahmud M, Hossain M, Huang D, Habib M and Dupont H (2001) Sociodemographic, environmental and clinical risk factors for developing persistent diarrhoea among infants in a rural community of Egypt, *Journal of Health, Population and Nutrition* **19**(4): 313-319.
- Maqsood R (1994) *World faiths: Islam*. Hodder and Stoughton, London.
- Moraes L, Cancio J, Cairncross S and Huttly S (2003) Impact of drainage and sewerage on diarrhoea in poor urban areas in Salvador, Brazil [*forthcoming paper*]
- Parashar U, Bresee J and Glass R (2003) The global burden of diarrhoeal disease in children, *Bulletin of the World Health Organisation* **81**(4): 236.
- Parry-Jones S and Kolsky P (revised Cairncross S) (2003) *Some global statistics for water and sanitation related disease*. WELL fact sheet. WELL, WEDC Loughborough and LSHTM London.
- Pickford J (1995) *Low-cost sanitation: a survey of practical experience*. Intermediate Technology, London.
- Saywell D and Hunt C (1999) *Sanitation programmes revisited*. WELL Task no. 161. WEDC, Loughborough and LSHTM, London.
- Schott B (2002) *Schott's original miscellany*. Bloomsbury, London.
- Shordt K (2003) *Improving sanitation programming*. International Water and Sanitation Centre, <http://www.irc.nl/themes/sanitation/improving.html> (accessed 06/02/2003)
- Shordt K and Snel M (2002) Building institutional capacity for sanitation, *Waterlines* **20**(3): 23-26.
- Unicef (2000) *Global water supply and sanitation assessment 2000 report*. Unicef, New York.
- VERC (2002a) Village Education Resource Centre Annual Report 2002. VERC, Bangladesh.

VERC (2002b) *Shifting millions from open defecation to hygienic latrines*. VERC, Bangladesh.

VERC (2003) *People initiated 100% sanitation approach: summary and progress*. VERC, Bangladesh.

World Bank (2003) <http://www.worldbank.org/html/schools/glossary.htm#> (accessed 23/08/03).