

**INTRODUCING ECOLOGICAL SANITATION IN EMERGENCY:
SOME LESSONS LEARNED FROM A PILOT PROJECT BANGLADESH**

(SIDR cyclone affected area)

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Abstract:

The following study explores the development of ecological sanitation (EcoSan) within the emergency context of a coastal village in Bangladesh. The study will focus on how MultiTask (a Bangladeshi CBO) and Terre des hommes introduced ecological sanitation into an emergency context (rehabilitation after a cyclone) where the VIP, Pour flush latrines were not adequate according to the environmental context. The assessment of the process which led the agency to this choice of sanitation and the first reactions of the users are two elements which form part of a wider reflexion on the use of ecological sanitation in emergency. It was assumed that to ensure the sustainability of the sanitation practices, it is essential to carefully associate socio-cultural settings and technical prerequisites. Field work showed that in an initial stage beneficiaries adopted the eco-toilets because they offer comfort and safety. Furthermore beneficiaries need time to appreciate the environmental health and economic benefits of this form of sanitation. Therefore starting a project of ecological sanitation in an emergency situation implies that the agency can develop programmes to follow the appropriation of the technology by the beneficiaries.

Keywords: Ecological sanitation, Emergency, hygiene promotion, Operation and maintenance, Terre des hommes

INTRODUCTION

After a flood or a cyclone like the ones which devastated the south of Bangladesh in November 2007, cooperation agencies working in the sanitation sector are used to applying a classical solution. For many years, these agencies were building simple pit latrines¹. Recently, some stakeholders noticing the environmental weaknesses of those forms of sanitation launched a project based on a different approach¹. The development of ecological sanitation in developing countries in a stable context makes this group of technologies of potential interest for use in emergencies.

An urine diversion toilet project was launched in 2008 by the INGO Terre des homes foundation following the cyclone SIDR. In partnership with a local partner, Multi-Tasks, the project aims to provide sustainable sanitation to 100 households in two coastal villages of Bangladesh.

¹ (Münch et al. 2006).

This presentation will begin with a brief overview of the SIDR context. A section follows on how ecological sanitation has been promoted and introduced in the area alongside more familiar technologies such as pit or ring-slab latrines. A section follows on how the urine diversion toilet system we use has clarified problem areas and allowed us to reconsider aspects of the programme. Key lessons on why dry toilets seem to be valued over other alternatives will be documented. Finally, the paper will highlight some of the greatest threats we perceive that can undermine ecological sanitation both for the emergency context in Bangladesh and beyond.

METHODS

Field work took place in Bangladesh from the 25th of May to the 7th of July 2009. The main objectives of this study were to assess the relevance of ecological sanitation in an emergency setting and to assess the reaction of a rural population towards the implementation of urine diverted toilets.

The methodology for the study has been defined following an important literature review. This review focused on the challenges of ecological sanitation in emergencies, and on the challenges of ecological sanitation in the rural socio-cultural context. During the field work two main strategies were combined:

▲ Interviews with key-informants involved in the field of sanitation, and specialists of socio-cultural aspects in the Barisal division.

▲ A case study of the use of Urine Diversion Toilet (UDT) in the village of Padma and Ruhita in the Barguna district in the Barisal division. This case study included observation, 28 household questionnaires from the beneficiaries (up to 100), six focus group discussions and interviews of seven local key informants (religious leaders, political leaders, sweeper, technical staff).

RESULTS AND DISCUSSION

Context of sanitation and ecological sanitation in Bangladesh

Access to sanitation represents an essential objective of the different governments of Bangladesh. They fixed the target of achieving 100% sanitation coverage for the whole country by 2010² but the figures given are contradictory. UNICEF claims 36 % of the whole population in Bangladesh were using improved sanitation in 2006³. The government gave a figure of 60% coverage for the whole country².

In June 2009, a national workshop called “Ecological Sanitation: issues and prospects” was held in Dhaka involving NGOs and representatives from the government. The minister of environment said that the government is ready to encourage this kind of environmentally friendly toilet but he also warns of potential resistance from the users. In 2009, less than 500 ecological toilets seem to be built in Bangladesh if we refer to the national consortium on ecological sanitation. The few publications on ecological sanitation in Bangladesh state the economical opportunity that this concept represents for many poor farmers in the country⁴. Actors involved in ecological sanitation request more institutional support and work to develop more affordable technologies. In comparison with neighboured countries such as India or Nepal, the concept of

² Source National Sanitation Secretariat 2005

³ UNICEF 2009

⁴ Hiroto et al. 2006

ecological sanitation is currently less developed in Bangladesh probably due to some local socio-cultural settings.

Context flooding and cyclone in Barisal area

Areas of South Bangladesh face climatic and geologic conditions that lead to floods, a high water table and cyclones. Most of the floods occur during the monsoon, which is between June and September; at this time rivers have their peak flow due to the combined snow melt from the Himalayas⁵. Deforestation, management of upstream dam's such as Faraka's dam in India, agriculture and, climate change are all factors that can increase the probability and the amplitude of floods⁵.

All these factors are part of the context of Barisal division; occurrence of cyclone is another key element to characterize the area. On Thursday 15th November 2007, the first storms of what was to become Cyclone SIDR hit the southern coastline of Bangladesh. The cyclone gathered strength that evening and into the morning of Friday 16th November, reaching up to 240 kph and bringing with it driving rain. Many families lost children, relatives, houses, and also cultivable land

Two years after SIDR, it is difficult to qualify the relief situation. Are we in a post emergency situation or in a constant succession of rehabilitation phases? The violent storm Ayla which occurred at the end of May 2009 reminded the unstable aspect of the situation to all stakeholders. Looking only at sanitation, many ring slab toilets were flooded and winds damaged superstructures and slabs. Therefore some principles usually applied in emergency or post emergency phases are seriously challenged in the study area. Selection of technologies, choice of appropriate construction materials and, campaigns of awareness and hygiene education need to be adapted to the specific local context.

Adapting the sanitation technology to the local context

Traditionally in the area, the common options for sanitation are raised pit latrine, hanging latrine and ring slab latrines. In the studied area, none of them answer the health and environmental objectives of safe sanitation.

Floods constitute an environmental health risk for sanitation⁶ Pit latrines can overflow during a flood, and can fail to contain the excreta. During and after floods, an increase of diarrhoea cases has been noticed in low socio-economic status households⁷. Contamination of surface water and also lack of access to the latrine during the flood are the two major consequences of flooded latrines⁶.

In areas where the high water table is high and in flood prone areas, different technical solutions are suggested for implementation of sanitation:

- Raised pit, also called “step latrine”⁸
- Ventilated double pit latrine⁹
- Sand enveloped raised pit latrine⁵

⁵ Muhammad & Ali 2007

⁶ Kazi & Rahman 1999

⁷ Hashizume et al. 2008

⁸ Franceys et al. 1992, Kazi & Rahman 1999

⁹ Franceys et al. 1992

But after the cyclone SIDR and the floods which followed, simple observation of the situation showed that none of these three listed systems succeeded in their basic function of containing excreta. Ecological sanitation is therefore considered as a new solution. Some ecological toilets are well adapted for areas with high water table and frequent flooding¹⁰.

Including the socio cultural context

Developing ecological sanitation in the Bangladeshi context represents a technical and also socio cultural challenge. Bangladesh can be qualified as a faecophobic culture using the terminology explained by Warner. This faecophobic culture might in part be influenced by religion¹¹. In Pakistan, a context similar to the one in Bangladesh, a study showed the issues of ecological sanitation in a rural area. According to the study, the majority of villagers preferred water based latrines and refuse contact with faeces¹². But for many specialists this doesn't mean that ecological sanitation cannot be tested and developed in Muslim context. The potential social barriers that may stop the development of ecological sanitation are often just preconceived ideas¹³. Some mental barriers can also be overcome by the high standard of comfort reached as showed by an ecological sanitation project in Palestine¹⁴.

Some projects developed in Bangladesh for more than 5 years show that beneficiaries overcome any of these supposed socio-cultural difficulties¹⁵. But the fact that less than 500 ecological toilets have been developed in the country also shows that special care has to be given to training and awareness.

The intervention of Tdh

Motivated by the local context, the agency decided to implement 100 urine diversion toilets (UDT). The toilet had to be ecologically sound but also resistant to any future climatic events. Experimenting with UDT in other emergencies settings, some NGOs used pre-fabricated diversion pans¹⁶. Similar choices haven't been made considering the occurrence of climate related incidents. The diversion pans were cast in situ and all structures were built in concrete. These choices explain the high cost of this facility, around 40 000 BDT (580 US\$). The toilets were fully subsidized by the NGO but, beneficiaries were asked to provide manpower during construction.

Durability of construction was an important aspect, as the sustainable use of these toilets was the key element of the project. Therefore technical and social prerequisites need to support each other. Understanding the socio-cultural settings allowed the technical team to strengthen the acceptability of the new facility. The UDT system requires a separation of excreta and liquid material. Because Bangladeshi's traditionally use water for anal cleansing, the diversion pan was designed as followed:

- Two large holes used alternatively every year, or when the chamber is full, are dedicated to defecation.

¹⁰ Calvert 2003, Sijbesma 2008

¹¹ Warner 2000

¹² Nawab et al. 2006

¹³ Sijbesma 2008

¹⁴ Winblad 2002

¹⁵ Hiroto et al. 2006

¹⁶ Münch et al. 2006

- One smaller hole located between the two defecation holes receives washed water and urine. As population is not ready to handle urine, the choice has been made to collect the two liquids together and to infiltrate them into the soil. Handling of urine is not an activity known in the area.

The difficulty of selecting the direction of the pan and of the toilet is another good example of the balance that must be found between social and technical aspects. Latrine and pan layout should as follows, combine the overlapping needs:

- Vault, iron cover and the vent pipes to face south to receive the sun rays and favour the drying process of excreta
- The pan not to be aligned in the direction east-west (facing Mecca, Islamic believe).

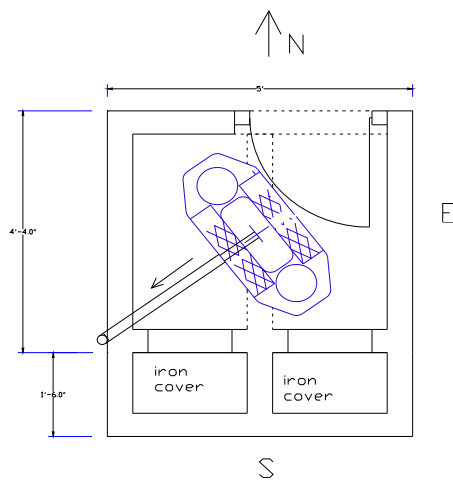


Figure-1: Latrine pan orientation

In parallel with the construction phase, social work was an important need. The main objective of these social activities was the involvement of people in the construction, and training of beneficiaries in the efficient use of this new form of sanitation. Part of the training was also to show the main interest of this type of sanitation to the users themselves. Their interests are double: health and economic. Choices have been made to progressively integrate the reuse of excreta during the programme. The economic aspects (reuse of excreta) will support the health and environmental motivations. Similar choices have been made by other agencies in similar settings.

Values of Ecological sanitation

The storm Ayla which occurred in May 2009 was a good indicator of the need to develop UDT in the area. Observation of 21 toilets after this storm show that 17 of them were not presenting any smells. In four cases, flies were observed around the doors of the vaults. The doors were damaged by the heavy winds. Following this storm, some new doors are being designed to reduce these impacts. However most of the UDT were usable after the Ayla event, which was not the case for most of the traditional latrines.

After two months of use and considering a sample of 28 households, 21 households were using the sanitation regularly. Most of the people not using the facility said that they preferred to wait until the end of the rainy season.

One of the objectives of the study was to know if people will be disturbed by having to move during defecation for achieving anal cleansing. During focus group discussions, participants explained that the benefit of safety and comfort were more important than a so little constraint. All of the informants made clear that they needed less than four days to get used to this toilet including the movement after defecation. Looking at religious issues raised in other studies, a teacher from the Madrassa indicates that the UDT does not contradict Muslim practices. Some concerns have also been raised by some households about the orientation of the pan. Despite the work of the technician, the difference between the west which is the direction for praying and the north west which is the direction of the pan was not understood by all. Additional awareness campaigns and training sessions should clarify this issue.

The following chart shows why UDT is appreciated by the beneficiaries .The aspects most often listed by the focus group participants are on the top of the chart.



Table 1 Benefits of UDT from a beneficiary point of view

Motivations from the agency implementing the project and from the beneficiaries using the toilets are not exactly the same. Therefore the Tdh should also build its awareness campaign on the positive aspects perceived by the users. Comfort and privacy are important drivers for sanitation in general and for ecological sanitation in particular, mostly amongst the women.

Threats for development of ecological sanitation in Bangladesh in emergency context and beyond

Although most of the households are using the new facility, it seems that not all the members of the households are using the UDT. Some parents preferred their smaller children to use other form of sanitation as they are not sure that they will respect the system. Household also often refuse the guest to use the toilet giving the reason that they didn't receive the training and that they will spoil the composting system. More awareness and demonstration are needed to show how to make the use of UDT universal.

The households who benefited from the UDT represented less than 10 % of the total population of the village. Some beneficiaries noted that the effort they are making to protect their

environment will have little benefit, because not all members of the community participate. Then promoting ecological sanitation only through environmental benefits might not be a sufficient drive for change for the local population.

Actually in Bangladesh, the agency develops awareness of the importance of the economic benefits made by the reuse of the dried excreta as compost. Dr Masudul Hoq Chowdhury, the joint director of the Bangladesh Academy for rural development, explained the importance of a close and constant follow-up and support of the beneficiaries. Because the economic benefits of ecological sanitation cannot be seen for two or three years, constant support is needed to maintain the level of motivation. When introducing ecological sanitation to a new area, trial periods need to be set up to ensure that the system is adopted by the population¹⁷. This follow up will also ensure that the reuse of excreta, done informally before by certain household, will be achieved in a more hygienic way.

In a context of emergency, the reuse of excreta is not often perceived as a priority by the planners. However according to the observations and discussions on the field, the economic potential of this reuse appears as the main guaranty for a sustainable use. This include daily maintenance and safe disposal. Therefore planners should ensure that the beneficiaries will receive appropriate support during the first two to three years. This support can be done by developing partnerships with local agencies or government involved in the health or agriculture sector.

CONCLUSION :

Terre des hommes Lausanne implemented 100 urine diversion toilets with a local partner in two coastal villages of Bangladesh. The context of the project is characterised by three main aspects:

- A high occurrence of flooding and cyclones that leads to a situation of constant rehabilitation.
- Geological, climatic and hydrological parameters that make traditional methods of sanitation unsafe for health and the environment.
- A socio cultural context where the reuse of excreta and sanitation in general are taboo and often misunderstood.

By combining an adapted technology and an efficient awareness campaign Tdh introduced a sustainable sanitation system respecting environmental issues and cultural background. The involvement of local partners helped the main agency to understand the potential threats to the project and develop appropriate responses to them. This will also guarantee the essential follow-up of the project after the post-emergency phase. The main issue in developing an ecological sanitation project in an emergency situation is to gain the understanding and the involvement of the local population. To ensure sustainable practise, people need to get convinced of the environmental and economic benefits of the UDT. Understanding these benefits, they will be able to integrate ecological sanitation into their habits including daily use of the facilities and appropriate and regular maintenance.

Ecological sanitation can only be developed in an emergency situation if the organisation implementing the project has the capacity to follow and support the users for a sufficient time.

¹⁷ Holden et al. 2003

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