

Dry toilet: unlocking potentials in sanitation in difficult areas of Bangladesh



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Bangladesh Context and Background

Sanitation for all by 2013

Coverage : 81% (GoB); 56% (JMP)

Sustainability (pit latrine)

Urban Areas: dispose at water bodies

Water Scarce & hilly areas: Break water seal

High water table : GW contamination

Flood prone/Haoa areas: install latrine pit every year



Evolution of Dry-toilet by Practical Action BD

2006 : Urban Slums in Faridpur

2007-10: Peri-urban Area in Gazipur

2010-11:

Action Research on Ecological Sanitation in difficult areas in Bangladesh

Funded by



Purpose and Scope

Try-out the feasibility of eco-toilet in 4 types of geo-hydrological difficult areas, characterised by:

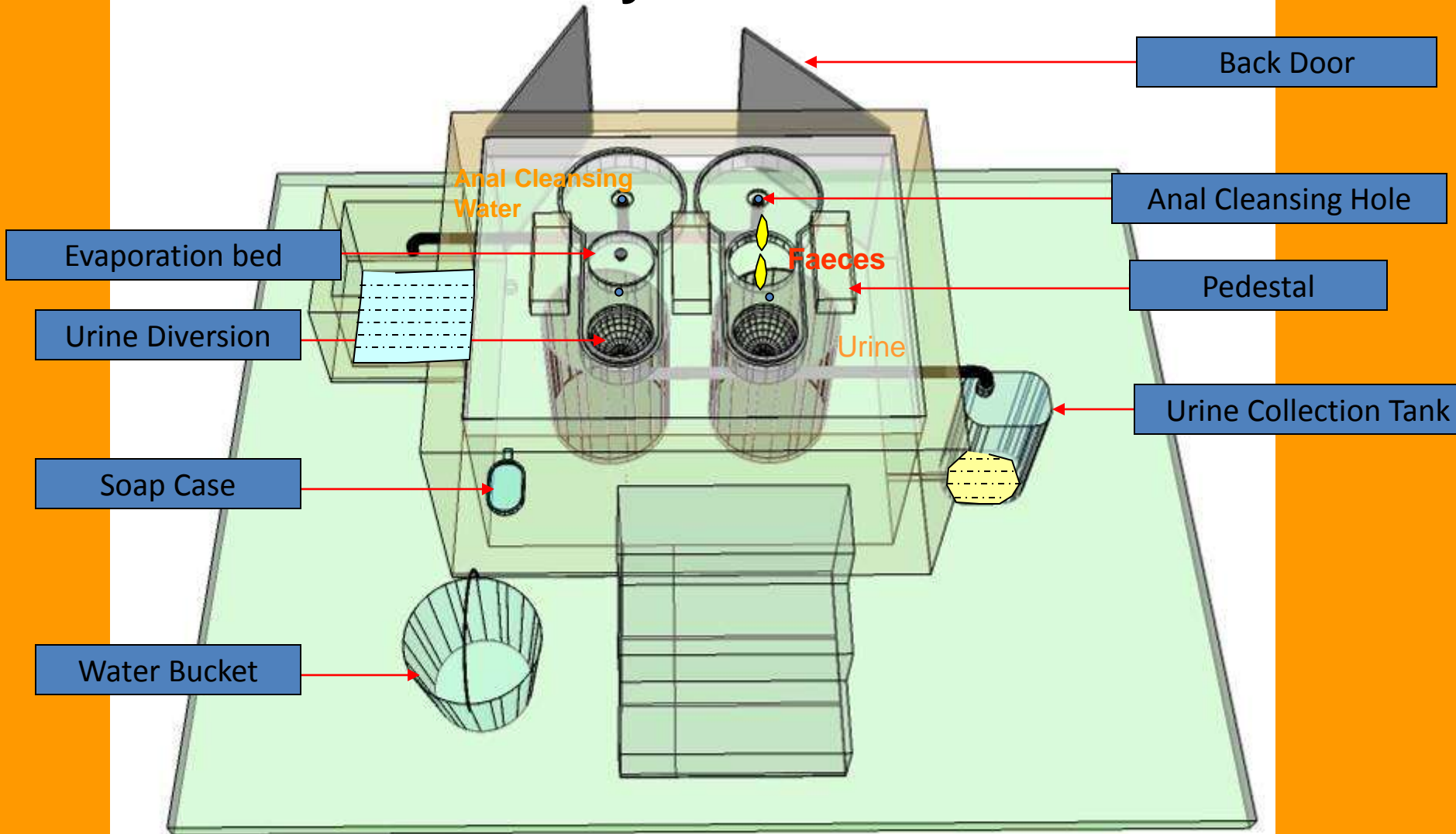


1. water scarcity areas(hilly & Barind)
2. flood prone areas ;
3. urban slums and
4. heavily water logged areas

Design and Construction

- Implemented through a consortium (SPACE, BASA, CC)
- 11 low-cost, user-friendly options developed with provisional approval from DPHE (costing US\$70-US\$290).
- Users were free to choose options (affordability);
- 107 latrines piloted in difficult areas with cost sharing ranging from 10% to 40% depending on income level;
- The users, local masons, community leaders, PS & DPHE staff were trained on construction, use, and O&M;
- Developed entrepreneurship in plastic fiber ecopan making;

Dry Toilet

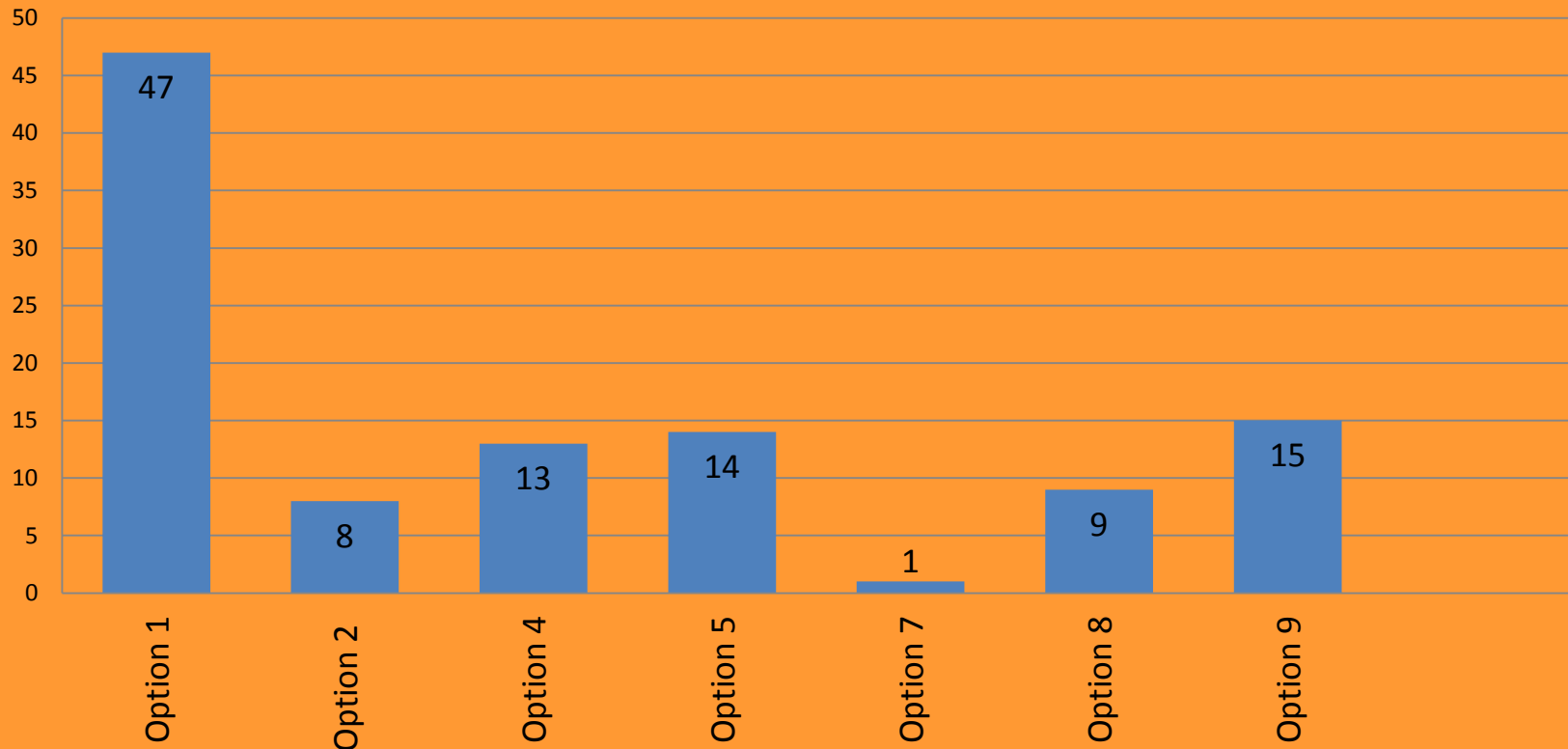


Design and Construction: OPTION DEVELOPED

Opt.	Description	Hilly	Barind Tract	Flood Prone	Slum	Haor
01	Fixed Chamber with Plastic Fibre Pan	✓	✓	✓	✓	✓
02	Movable Plastic Drum with Plastic Fibre Pan (Single Pan)	✓	✓		✓	
03	Movable Plastic Drum with High Commode (Single Pan)	✓	✓			
04	Fixed Chamber with Modified Eco Pan	✓	✓	✓	✓	✓
05	Fixed Chamber with Traditional EcoPan	✓	✓	✓		✓
06	Movable Plastic Drum with Traditional EcoPan	✓	✓			
07	Elevated Movable Plastic Drum with RCC Column			✓		✓
08	Single Pit Urine Diversion Toilet	✓	✓		✓	
09	Twin Pit Urine Diversion Toilet	✓	✓	✓	✓	✓
10	Waste Concern Model with Urine Diversion Pan	✓	✓	✓	✓	✓
11	Community Based Urine Diversion Toilet with Biogas Plant	✓	✓	✓	✓	✓
<i>Suitable option depending on site conditions</i>		10	10	7	7	7

Design and Construction: option demonstrated

Number of toilet options demonstrated



TESTING & MONITORING

Pathogen test of dry faeces (by IEDCR) and nutrient analysis of urine (by the Dept. of Soil Water & Environment, DU)

- The colour and odour of the compost are more or less acceptable;
- No pathogenic organism identified in bacteriological examination;
- Parasitological examination revealed that, if compost is not properly dried out, at least one type of parasite infectious to human health in each specimen; and
- Nutrient value of compost excreta reveals existence of arsenic and cadmium are not at harmful level.

5. MAJOR CHALLENGES

- Construction cost????
- Proper handling/use of urine & composted faeces
- Land scarcity in urban slum;
- Urination during menstruation;
- Promotion of local Materials
- Limited time for follow-up and monitoring.

Recommendation

- Potential to expand, especially in areas where conventional technologies are difficult;
- Some of pilot areas can be used as demonstration centres and knowledge hubs for replication;
- Continue development, testing and monitoring are essential.

7. Photo gallery: Innovation (small but beautiful and effective)

Eco Plastic Fiber Pan



Pan Cover Handle



Urine Diversion Pan

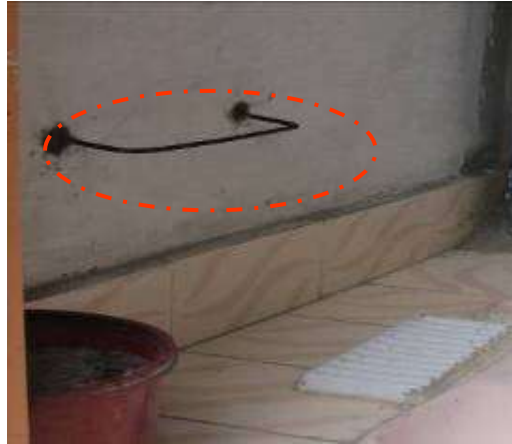


Pre cast slab with Eco-pan



Ventilation and light facilities

Photo gallery:



Structural adjustment in the evaporation bed for menstrual hygiene management issue: still there is room for improvement



Photo gallery

Pictorial chart for use & maintenance



Hand washing device



THANK YOU