A Keynote Presentation On

SANITATION CHALLENGES IN FLOOD PRONE AREAS OF BANGLADESH AND UPCOMING TECHNOLOGIES TO SOLVE THE PROBLEMS

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Sanitation Situation In Bangladesh

Standard for Sanitation

Basic Sanitation Coverage	Improved Sanitation Coverage	Hygienic Sanitation Coverage
Basic sanitation standard proposed for achieving the government's goal of 100% sanitation coverage by 2013	**Joint Monitoring Program (JMP)- WHO-UNICEF definition**	**National Sanitation Strategy, 2005 definition**
Individual or shared improved latrines of the following types: • **Flushed and pour-flushed toilet/latrines to piped sewer system or septic tank** • **Pit latrines with slab and water seal or lid or flap** • **Pit latrines with slab but no water seal,**	**Individual (no sharing) improved latrines of the following types:** • **Flushed and pour-flushed toilet/latrines to piped sewer system or septic tank** • **Pit latrines with slab and water seal or lid or flap** • **Pit latrines with slab**	**Individual or shared hygienic latrines by maximum two households of the following types:** • **Flushed and pour-flushed toilet/latrines to piped sewer system or septic tank** • **Pit latrines with slab and water seal or lid or flap**

Sanitation Coverage

MICS 2009 reports that The national sanitation coverage according to basic sanitation is 80.4% but is much lower, 54.1% and 51.5%, for improved sanitation and hygienic sanitation, respectively.

Areas	Baseline status in 2003		Percentage of sanitation coverage in 2009		
	Total HH	% HH using hygienic latrines	Basic sanitation	Improved sanitation	Hygienic sanitation
Urban	3,067,761	60.0	86.4	53.5	58.0
City Corps.	1,216,424	69.9	87.6	53.3	60.2
Municipalities	1,851,337	53.1	85.8	54.7	57.5
Rural	18,326,332	28.8	78.9	54.3	49.9
Country	21,394,093	33.2	80.4	54.1	51.5

Sanitation Coverage

Population sharing sanitation facilities

Area	One	Two	Three or more	Missing	Total sharing	Total
Rural	72.4	14.2	12.5	0.9	26.7	100
Urban	61.5	12.0	25.9	0.6	37.9	100
Urban municipality	65.0	14.3	20.0	0.7	34.3	100
Metro city	57.2	9.2	33.0	0.6	42.2	100
City corporation	58.9	9.3	31.2	0.6	40.6	100
Slum	10.3	6.3	82.2	1.2	88.5	100

Source: BBS/UNICEF 2009 Multiple Indicator Cluster Survey (MICS), 2009

Reasons for not having a latrine

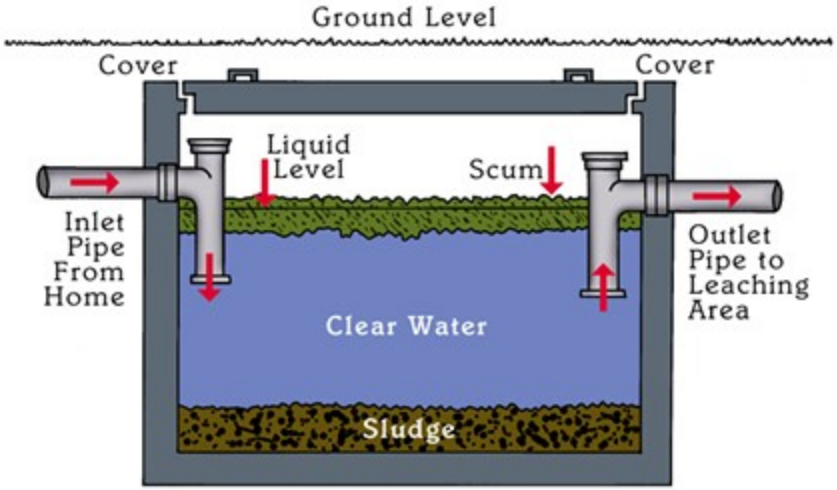
AREA/REGION	NUMBER OF HOUSEHOLDS WITH NO LATRINES	LACK OF MONEY (%)	LACK OF AWARENESS (%)	LACK OF SPACE (%)	PREFERENCE FOR OPEN DEFECATION (%)
RURAL	85,95,626	73	25	10	4
URBAN	3,86,925	80	21	18	3

Source: GoB, 2005

Forms of Sanitation in Bangladesh

TYPE OF SANITATION	% URBAN	% RURAL
FLUSH - TO PIPED SEWER SYSTEM	8.5	0.2
FLUSH - TO SEPTIC TANK	29.8	9
FLUSH - TO PIT LATRINE	7.6	5.5
FLUSH - DO NOT KNOW WHERE	0.6	0
FLUSH - SOMEWHERE ELSE	12.9	0.6
PIT LATRINE WITH SLAB	14.1	22
PIT LATRINE WITHOUT SLAB	19.5	42.3
HANGING TOILET/LATRINE	5.1	11.1
BUCKET LATRINE	0.1	0.1
NO FACILITY, BUSH, FIELD	1.7	9.1

Source: JMP, 2010 and Uddin, 2011


Ground Level
Cover
Cover
Liquid Level
Scum
Inlet Pipe From Home
Outlet Pipe to Leaching Area
Clear Water
Sludge

Septic Tank

Flood, Poor Sanitation & Diseases: Nexus

Floods in Bangladesh

- Floods are an annual phenomena; regular river floods affect 20% of the country, increasing up to 68% in extreme years.

- The floods of 1988, 1998 and 2004 were particularly catastrophic, resulting in large-scale destruction and loss of lives.

- Approximately 37%, 43%, 52% and 68% of the country is inundated with floods of return periods of 10, 20, 50 and 100 years respectively (MPO, 1986)

Floods in Bangladesh

Four types of flooding occur in Bangladesh

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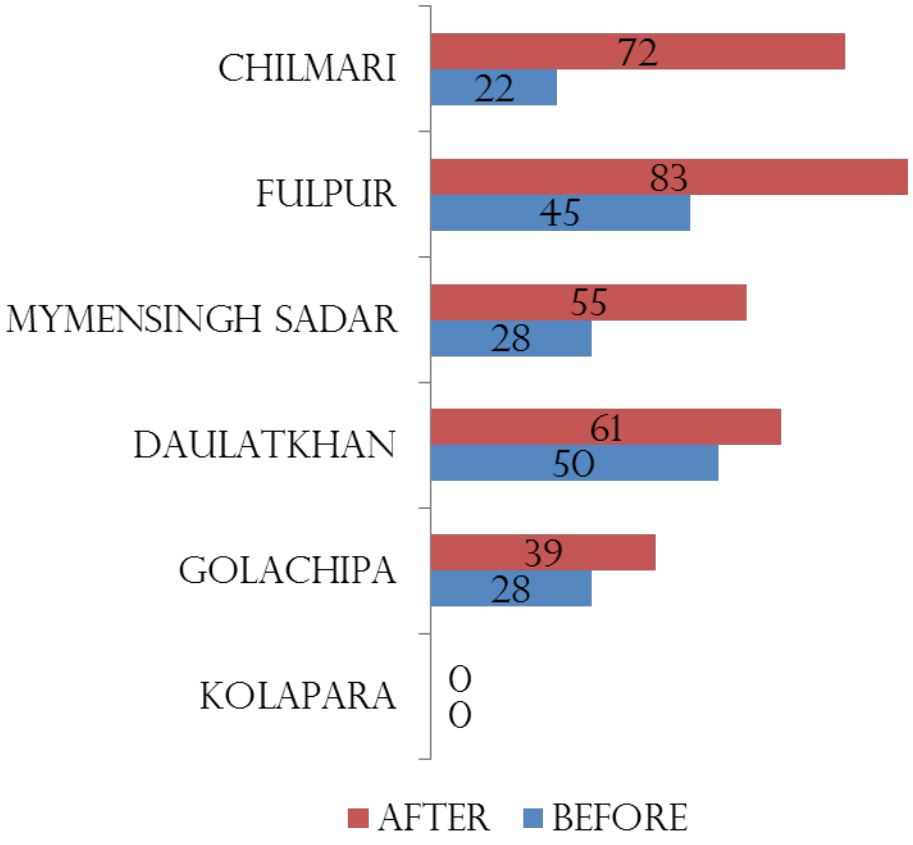
- Flash floods caused by overflowing of hilly rivers in eastern and northern Bangladesh (in April-May and September-November).

- Rain floods caused by drainage congestion and heavy rains.

- Monsoon floods caused by major rivers usually in the monsoon (during June-September).

- Coastal floods caused by storm surges.

Percentage of open defecation practices during and after flood

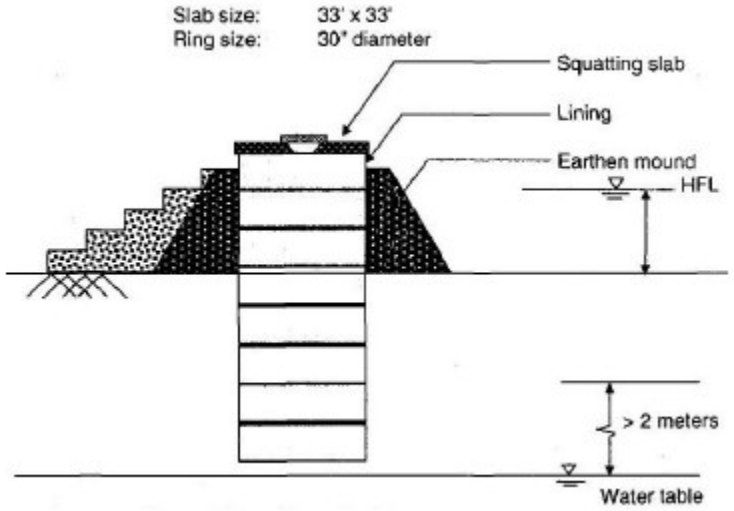


Source: Mamun, 2008

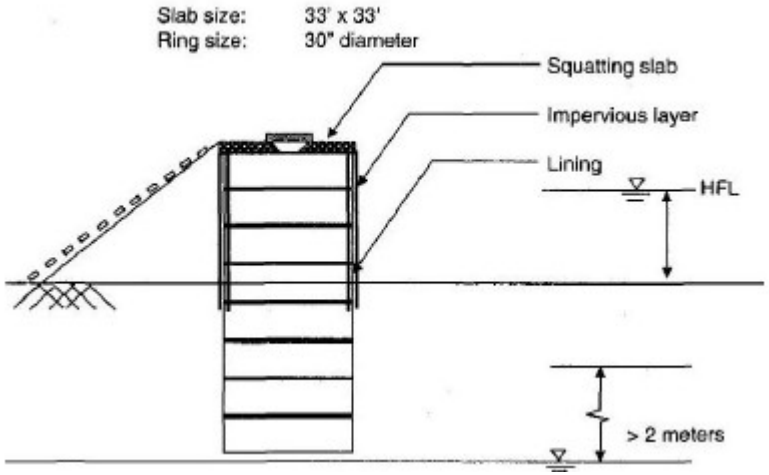
Source: Uddin, 2011

Upcoming technologies to solve the sanitation problems in Bangladesh

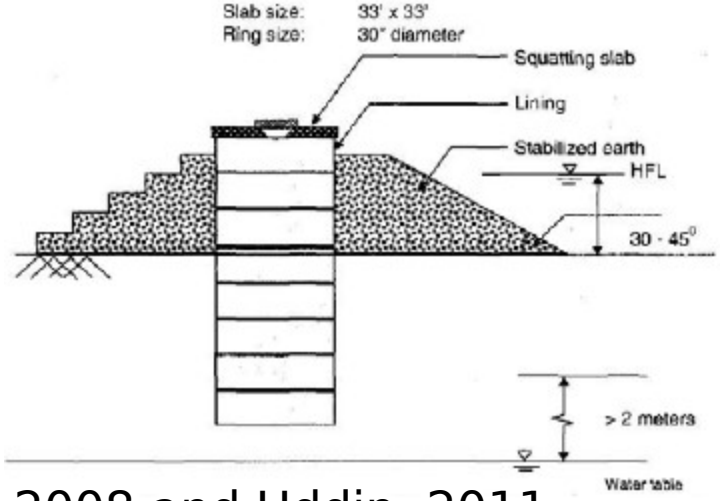
Mound Latrine



Step Latrine

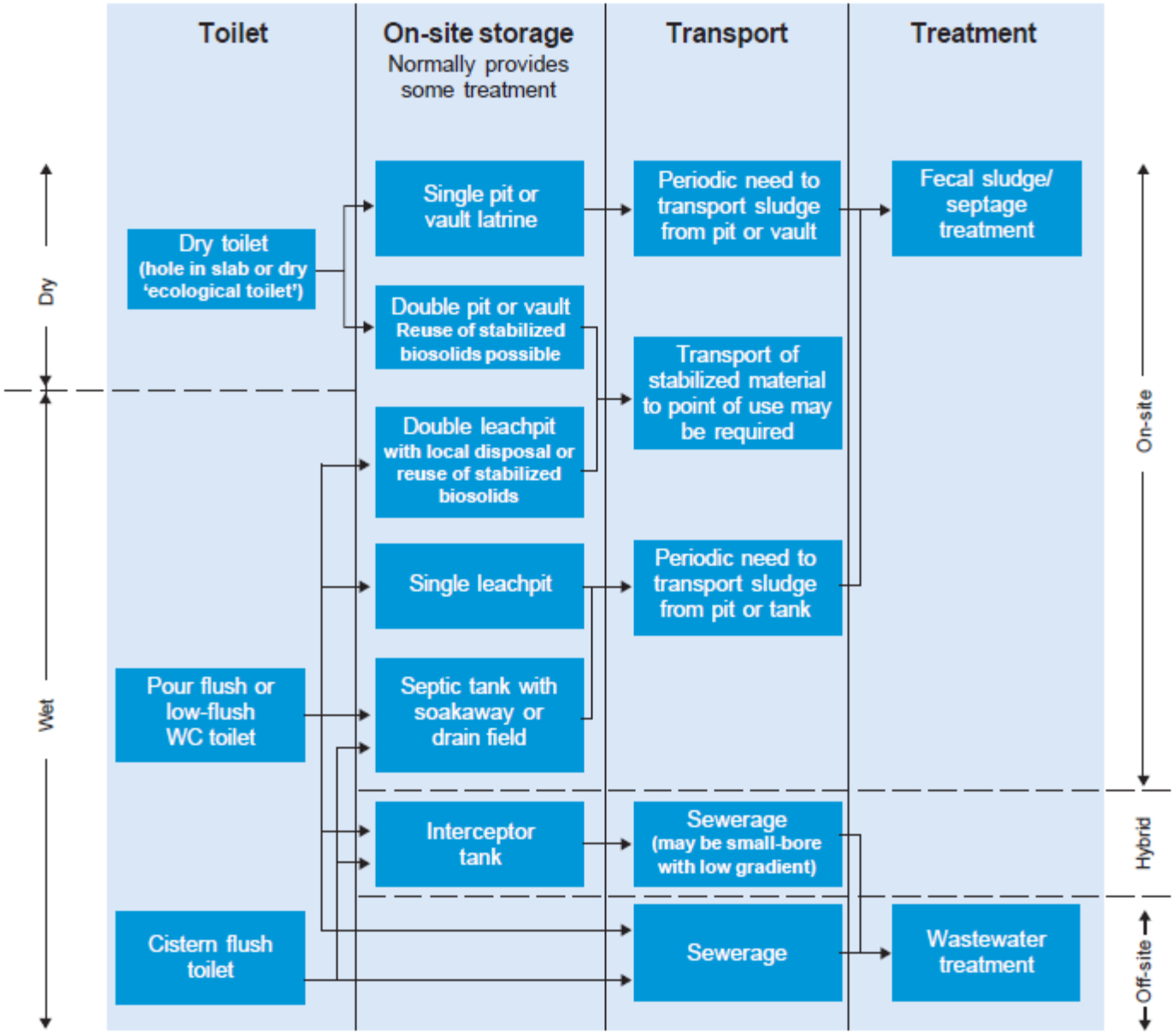


Earth stabilized Raised Pit Latrine



Source: Kazi, 2003; Mamun, 2008 and Uddin, 2011

Basic Sanitation Options



Source: WSP, Government of India, 2008

Ecosan : The UPCOMING Technology of total sanitation in Bangladesh

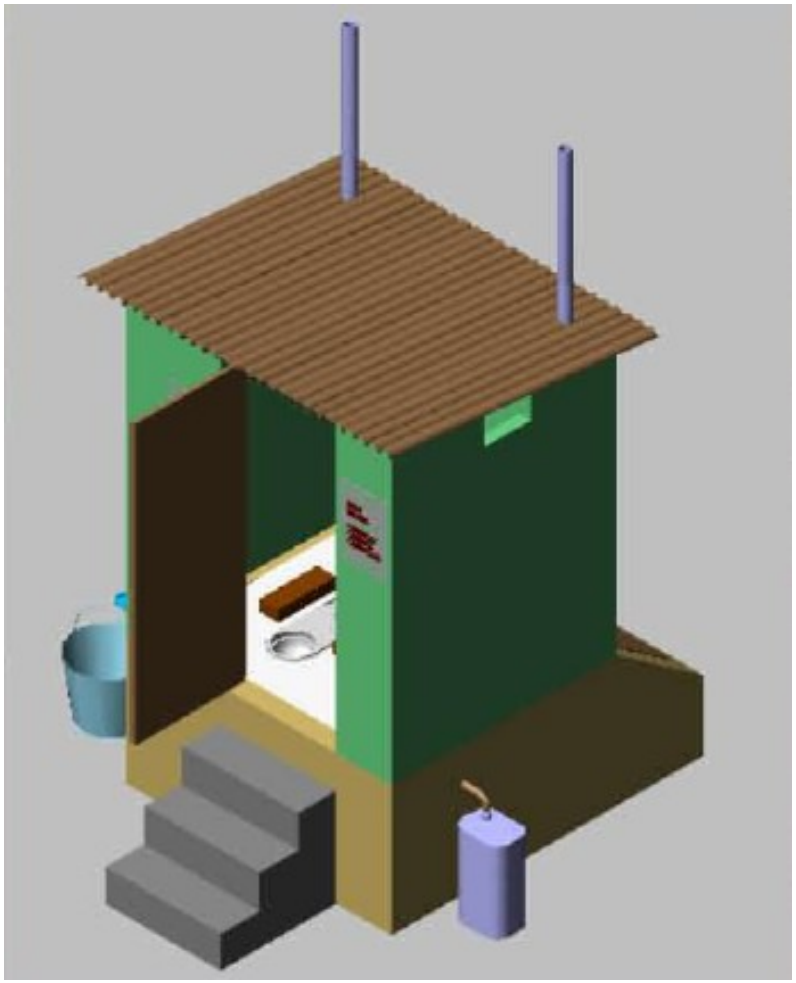
Ecosan approaches considered human excreta as a resource. It is based on three fundamental aspects:

- rendering human excreta safe,
- preventing pollution rather than attempting to control it after pollution, and
- using the safe products of sanitized human excreta for agricultural purposes.

There are two basic concepts of Ecosan technologies; **COMPOSTING** and **DEHYDRATING**.

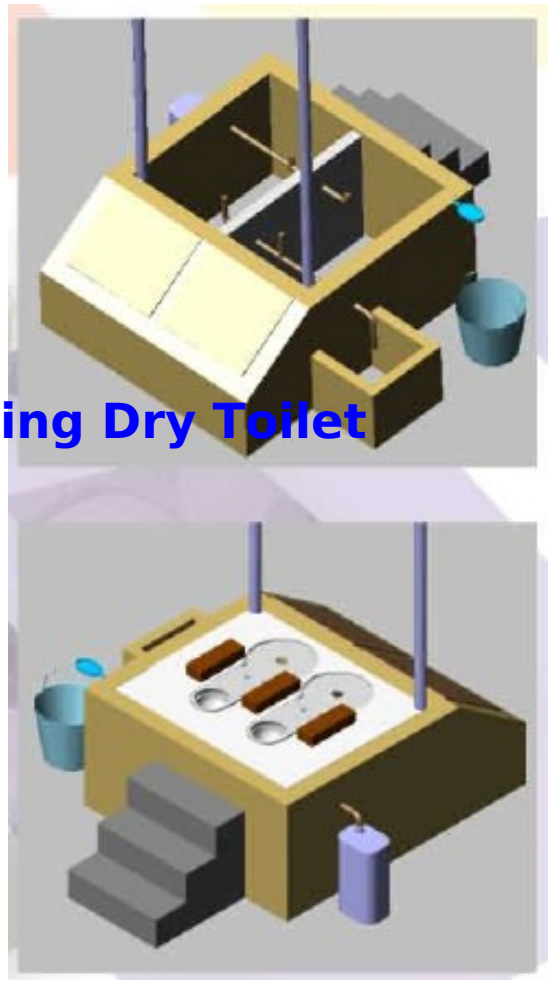
Selection of technology is depends on climate, social-cultural demand, technical capability, agriculture etc.

Ecosan Technologies for rural Bangladesh



UDDT

Urine Diverting Dry Toilet



Experiences on sanitation in flood-prone areas from different organizations

ORGANIZATION NAME	EXPERIENCES
OXFAM GB	According to the experts from Oxfam GB, raised latrine is the most suitable technology for flood-prone areas of Bangladesh. UDDTs are also suitable in this regard, but people want modified low cost technology of UDDT with local material.
SPACE	SPACE has a very good experience of implementing UDDT in flood-prone areas. Experts from SPACE recommended UDDT as the best technology for flood-prone areas.
CONCERN UNIVERSAL	Experts from this organization recommend considering flood before implementing any watsan facilities in flood-prone areas. According to them, highest flood level should consider as plinth level during construction of any watsan facility.
	Practical action conducted a research on UDDT. According to the experts of Practical Action, UDDT is the most suitable option for disaster prone areas in

Source: Uddin, 2011

Cost of different component of BARD designed UDDT

COMPONENTS	COST (BDT)
FOUNDATION	1593
FECES CHAMBER	3266
R C C SLAB	4582
SIDE WALL FOR TOILET	4239
ROOF AND DOOR	3200
STAIR	983
EVAPORATION BET & URINE CONTAINER	525
TOTAL	18,388

Source: Uddin, 2011

Source: Practical Action, 2011

UDDT as a suitable Technology for flood-prone areas

- Average height of toilet is 0.69 m above ground which is higher than average highest flood level of 0.31 m
- Feces chamber of UDDT is water tight
- UDDT users are using urine and feces

Ecosan Technologies for urban Bangladesh

Trenching

E

Drying bed

Ecosan Technologies for urban Bangladesh

Excreta Matters

Thanks to All