Report for Sensitization Workshop on FSM for the project implementing officials under 23 Paurashava Project in Bangladesh (GoB-IDB)

Jointly organized by ITN-BUET and DPHE

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1. Introduction

ITN-BUET is implementing "Scaling City Wide Inclusive Sanitation (CWIS)/FSM in Bangladesh through National Level Capacity Building Program" under the funding support from Bill & Melinda Gates Foundation (BMGF). The major objective of this program is building capacity of Paurashavas and DPHE to implement CWIS/FSM projects successfully in Bangladesh by increasing awareness and knowledge on FSM. The major focus of this capacity building program is to provide capacity building support for DPHE/LGED implemented GoB and Bank funded projects (such as IDB supported 23 Paurasahva project, GoB supported 32 Paurashava project, World Bank supported 30 Paurashava project etc.). As a part of the project activity, ITN-BUET and DPHE jointly organized sensitization workshop on FSM Components for 23 Paurashava project implementing officials in four batches (on 15, 20, 22 & 26 November 2018 respectively) at DPHE Auditorium, DPHE Bhaban (2nd Floor), Kakrail, Dhaka.

2. Objectives

The major objectives of this sensitization workshop are to:

- Orient the project Paurashavas officials including Mayor, and relevant DPHE officials on the project components particularly waste management component
- Sensitize the project Paurashava and DPHE officials on FSM, IRF to implement CWIS
- Share some successful FSM case of our country with Paurashava and DPHE officials to inspire them
- Assess their training needs to develop training materials on FSM

3. Activities

3.1 Participants

Total 23 Paurashava under GoB-IDB funded DPHE project and 19 DPHE district office were the major participants of the sensitization workshops in four batches. The participants of sensitization workshop from the Paurashavas included Mayor, Secretary, Executive Engineer, Conservancy Officer, Accounts Officer, and from DPHE district office Executive Engineer, Assistant Engineer, Sub-Assistant Engineer participated in the event. In addition to 23 project Paurashava, officials from 6 Paurashavas and DPHE district offices (Sherpur, Netrokina, Moulvibazar, Madaripur, Narshingdi and Natore) were invited in workshop in fourth batch to share the challenges they faced to implement FSM, because FSTPs established in these 6 Paurashavas under GoB-ADB project in 2012-2014 became nonfunctional. The following Table presents the participating organizations of sensitization workshop under 23 Paurashava project in four batches. Total list of participants of the workshop is given in Annex-I.

Table: List of Paurashavas and DPHE district offices participated in sensitization workshop

Sl. No.	Name of Paurashava under GoB-IDB funded 23 Paurashava project	DPHE district office
Batch-1	Gobindaganj, Muladi, Alamdanga, Benapole, Monirampur, Ulipur and Madhabdi	Gaibandha, Barisal, Chuadanga, Jessore, Narshingdi and Kurigram
Batch-2	Sherpur, Ghatail, Nabinagar and Boalmari	Bogura, B.Baria, Faridpur and Tangail
Batch-3	Chatkhil, Bashurhat, Belkuchi, Sibganj, Chowmuhani and Pirganj	Noakhali, Dinajpur, Sirajganj, Chapainawabganj,
Batch-4	Dhamrai, Kanaighat, Jagannathpur, Ajmiriganj, Dohar and Shayestaganj	Sylhet, Sunamganj, Dhaka, Habiganj
Sl. No.	**Name of Paurashava under GoB-ADB project**	**DPHE district office**
Batch-4	Sherpur, Netrokona, Moulvibazar, Madaripur, Narshingdi and Natore	Moulvibazar, Lakshmipur, Natore, Jhenaidah, Madaripur,

Figure: Participants are doing registration in the event

3.2 Inaugural session

The inaugural session started with the introduction from the guests and participants. Representatives from the ministry, Additional Secretary, LGD, MoLGRDC; representative from DPHE, Chief Engineer and Additional Chief Engineer; Chairman, FSM Support Cell and Project Director, 23 Paurashava project; Professor, BUET and Director, ITN-BUET were present in the inaugural session of the event as guests.

In the welcome speech, Additional Chief Engineer, DPHE welcomed all the participants and shared the objectives of the workshop. He informed that DPHE faced some challenges and gained some learnings from the first implementation of FSM though GoB-ADB project in 2012. Keeping those in mind, DPHE has designed the 23 Paurashava project. He also thanked ITN-BUET to support for organizing the sensitization workshop for the project officials (both Paurashava & DPHE) for successful implementation of the 23 Paurashava project.

Guests thanked DPHE for consulting with project Paurashavas at the beginning to know the scope, challenges and oppourtunities of this project. They putted emphasis on ensuring safely managed sanitation service to achieve SDG 6.2.

Additional Secretary, LGD putted emphasize on proper management of FS, since it poses significant impact on health and environmental. She informed that government is very committed to achieve SDG by 2030, so a comprehensive and collective effort is essential in this regard. She thanked the participants for their participation and congratulated DPHE and ITN-BUET for taking this initiative. Finally, she declared the inaugural of the Sensitization Workshop.

Chief Engineer, DPHE and chair of the inaugural session told that though the concept of FSM is relatively new for us and many of the south Asia countries, but Bangladesh is committed to achieve SDG. He mentioned that Honorable prime minister has putted her emphasis on FSM on priority basis. He informed that FSM has been included as an integral component of water supply and sanitation project of DPHE and exploring new innovative mechanized technology. He also thanked ITN-BUET and BMFG for taking up this capacity building project. The inaugural session ended with announcement of break for refreshment.

Figure: Guests are delivering their speeches in inaugural session

3.3 Technical session

3.3.1 Project Overview

In the technical session Mr. Shishir Kumar Biswas, Executive Engineer, DPHE gave the project over view in two batches and Mr. Roman Kabir, Executive Engineer, DPHE in another two batches. Both of the presenter presented the list of projects Paurashavas, total costs and major components of the project, activities to be implemented. They explained the waste management components of the GoB-IDB funded 23 Paurashava project, how the project activities and outcomes would be monitored and reported. They also showed a video documentary prepared based on FSM services under DPHE implemented the GoB-ADB project.

Figure: Presentation on project overview

3.3.2 Importance and requirements of CWIS and FSM

Prof. Dr. Md. Mujibur Rahman gave presentation on CWIS and FSM in Bangladesh in three batches, and Prof. Dr. Muhammad Ashraf Ali gave the same presentation in third batch. Both the presenters discussed achievement of Bangladesh in sanitation sector and technologies behind this success. They discussed the present scenario of FSM and its fate and impact on environment and public health. The SDG targets on sanitation and importance and requirements of CWIS discussed. The components of FSM and

challenges in each of the components of FSM and way forward also discussed. Few good examples of FSM case in Bangladesh also presented. The important policy initiative on FSM in Bangladesh, particularly the Institutional and Regulatory Framework for Fecal Sludge Management (IRF-FSM), 2017 and development initiative of National Action Plan (NAP) for IRF-FSM implementation has been presented. They briefly explained the roles and responsibilities defined in IRF-FSM and mentioned some emphasized issues in IRF-FSM such as capacity building, training and research, extensive awareness campaign, technical assistance and funding support, development of relevant standards/ guidelines for emptying, transportation, treatment and disposal; quality control/ standardization of end products in his presentation. Some important steps to be followed during implementation of 23 Paurashava Project was also mentioned in the presentation.

Figure: Presentation and open discussion in technical session

After two presentations, there was an hour-long open discussion. Prof. Dr. Md. Mujibur Rahman, BUET, Prof. Dr. Muhammad Ashraf Ali, Director, ITN-BUET, Mr. Tushar Mohon Sadhu Khan, Addl. Chief Engineer (Planning), DPHE, Robin Raihan Ahmed, SE, Dhaka Circle, DPHE and Project Director and Executive Engineer, 23 Paurashava project presented in the diase during open discussion session. Participants from different Paurashavas including Mayor and DPHE district office and head quarter officials participated in the discussion. Project Director and Executive Engineer, 23 Paurashava project, the panelists and session chair replied their questions.

3.4 Session on financial management of FSM

In the evening, financial management of successful FSM services in Bangladesh were presented. FSM service and its financial model for Lakshmipur, Jhenaidah, Sakhipur, Faridpur Paurashava were presented by the officials of respective Paurashava officials and officials of NGOs working in those Paurashavas. WSUP presented their SWEEP model for emptying and transportation service for FSM in few City Corporation areas, and MAWTS presented their innovation for emptying and transportation of FS. Another innovative toilet technology Biofil presented by the owner of private entrepreneur Biofilcom Bangladesh. There was an open discussion on financial management of FSM followed by the presentation.

3.5 TNA session

A session on training need assessment was carried out in groups led by Mr. Alauddin Ahmed, Project Manager, ITN-BUET to know the training needs of Paurashava and DPHE officials for successfully implementing FSM project in their respective areas. Paurashava officials and DPHE district level officials were sited together in a group to assess their training need for implementing FSM. Mr. Alauddin Ahmed discussed the objectives of the TNA and gave an overview about the structured assessment format to be filled-up by the participants. Hard copy of the format was delivered to the participants in each group for their inputs. Mr. Alauddin Ahmed and colleagues of ITN-BUET facilitated the TNA session and clarified, if there was any quarry of the participants during filling up TNA format.

3.6 Closing session

The concluding session of the day long workshop started with taking feedback from the participants. Participants from Paurashava and DPHE gave their feedback and shared their views. Mayors from different Paurashava gave their remarks and expressed their commitment for successful implementation of 23 Paurashava project. Mayors also putted emphasis on capacity development and involvement of permanent staffs of Paurashava during project implementation. Project Director, 23 Paurashava project thanked all the participants for their lively participation and contribution in the workshop. He urged kind support from all the relevant officials of Project Paurashava and DPHE field office for implementing 23 Paurashava project successfully

4. Findings

4.1 General findings

Important findings obtained from open discussion in technical session are as follows:

- Willingness of Mayor is crucial for implementing FSM at Paurashava level
- Vacutug should be different sized accessible to both narrow and wide road
- Appropriate site for constructing FSTP should be selected considering social issues
- Technology for FSTP could be selected discussing with Paurashava
- Paurashava should be involved in implementation of project from the beginning
- Paurashava may follow Public Private Partnership modality for FSM service
- Awareness at community level is very low regarding FSM
- Capacity gaps exists for Paurashava officials to execute the project
- Significant environmental benefits of FSM would be highlighted
- A local advisory committee will be formed in each Paurashava for implementation of project headed by Mayor of Paurashava and Executive Engineer, DPHE as Member Secretary
- DPHE will work closely with Paurashava for implementation of project
- Initially (1-2 years), DPHE will take the responsibility of O&M of FSTP and then will be handed over to Paurashava, they may outsource to private at its mature stage
- Paurashava may start emptying service from the institution or government office first
- Paurashava level awareness campaign on FSM could be started from TLCC meeting

4.2 Findings from TNA

From the TNA session, participants identified the few topics of training/orientation needed for different level officials for implementation of FSM as follows:

- Occupational health and safety of workers
- Training on proper collection and transportation feacal sludge for Vacutug operators
- Community sensitization and awareness
- For the engineers, training on basics of FSM, septic tank design and construction and monitoring.
- Implementation of act/law on design, of septic tank
- Training on various Environmental law
- Operation and maintenance of treatment plant
- Conservation and marketing of produced co-compost
- Tariff and tax allocation and collection

Figure: Participants are filling up TNA format

5. Link with project output and outcome

5.1 Associated investments outputs & indicator progress

This sensitization workshop for 23 Paurashava project officials is progressing following outputs in Results Framework:

- Output 1.2.3: Understanding of elected representatives on FSM issues enhanced
- Output 2.1.1: Capacity gaps/needs are identified for FSM implementation
- Output 2.3.1: Government and development bank projects are implemented by municipalities.

Elected representatives of Paurashava (Mayor, Councillor) participated in the day long sensitization workshop, where the current scenario of FSM, its fate and impact on health and environment, IRF, CWIS, FSM service/operation model etc. discussed and the Mayors became sensitized and they expressed their commitment to implement FSM in their Paurashava and assured all kind of support required for implementation of 23 Paurashava project. In the open discussion, participants from both Paurashava and DPHE district office showed their willingness to be involved with FSM implementation, but they have some capacity/knowledge gaps. In the Training Need Assessment (TNA) session participants identified the list of trainings/orientations needed for FSM implementation. Total 23 Paurashava implementing CWIS/FSM under GoB-IDB funded 23 Paurashava projects have been oriented on FSM and waste management components of project in sensitization workshop in four batches. Additional 6 Paurashavas have also been oriented who were under GoB-ADB funded project implemented by DPHE.

5.2 Impact on outcome

As a result of Output activity 1.2.3, 2.1.1 and 2.3.1, the understanding of elected representatives and officials of Paurashava enhanced and capacity gaps/needs are identified which made the LGI representatives and officials competent to implement CWIS/FSM (Primary Outcome-2) and mainstream the IRF-FSM (Primary Outcome-1).

The sensitization workshop (i) create competent LGI representatives and officials (Intermediate Outcome 1.2), (ii) implement elements of IRF-FSM (Intermediate Outcome 2.1) and municipalities will be capable to develop and implement city sanitation plans with focus on FSM.

6. Challenges

There were some challenges identified from the sensitization workshop as:

- Mayors of all 23 Paurashava could not present in the sensitization workshop because of another prior engagement and personal inabilities but they sent their representatives including Secretary, Executive Engineer, Conservancy Inspector etc.
- FSM was very new for most of the participants of the workshop, so they could not give broad list of trainings needed.

7. Lesson learned

Organizing sensitization workshop, some lesson learned as:

- Local level orientation/awareness campaign involving more stakeholders is needed.
- Some specialized training on different aspects of FSM is essential for different target groups, who will be involve with FSM implementation.

8. Conclusions & recommendations

- Awareness campaign both at community level and through media would be carried out to aware and sensitize the people about FSM
- Different trainings program would be organized for different target groups, who will be involve with FSM implementation
- Materials for training and awareness campaign would be developed
- Learning and sharing of good practice of FSM within or outside the country would be made through exposure visits
- For monitoring the progress of project, monitoring tools would be developed and implemented.

Annexes

Annex-i: List of participants

Batch-1, 15 Nov 2018

Sl. No.	Name	Designation	Organization
1	Md. Moniruzzaman	Executive Engineer	Madhabdi Paurashava
2	Kamrun Nahar	Accounts Officer	Madhabdi Paurashava
3	Md. Tofazzal Hossain	Sub-Assistant Engineer	DPHE, Gabindaganj
4	Md. Rafikul Islam	Sub-Assistant Engineer	DPHE, Alamdanga, Chuadanga
5	Md. Jahangir Hossain	Accounts Officer	Benapole Paurashava
6	AKM Samsuddin	Assistant Engineer	Lakshmipur Paurashava
7	Md. Kamal Hossain	Secretary	Monirumpur Paurashava
8	Md. Sahinur Islam	Cashier	Monirumpur Paurashava
9	Md. Joynul Abedin	Assistant Engineer	DPHE, Muladi, Barisal
10	KAzi Md. Mostofa Jamal	Secretary	Madhabdi Paurashava
11	A.S.M. Al Mamunur Rashed	Sub-Assistant Engineer	DPHE, Kurigram Sadar
12	Mr. Bashir Ahammed	Executive Engineer	DPHE, Narshingdi
13	Monzur Mosharraf	Executive Engineer	DPHE, Jessore
14	Dr. Md. Mujibur Rahman	Professor	BUET
15	Dr. Md. Mujibur Rahman	Director	ITN-BUET
16	Bashir Ahammed	Sub-Assistant Engineer	DPHE
17	Md. Abu Shied Khan	Town Planner	Benapole Paurashava
18	Md. Aminul Islam Chowdhury	Executive Engineer	DPHE, Gaibandha
19	Fahim Hasn Sirajee	Executive Engineer	32 Paurashava project, DPHE
20	Hasan Kadir	Mayor	Alamdanga Paurashava
21	Joy Kumar Biswas	Asst. Accounts Officer	Alamdanga Paurashava
22	Sawkat Ali	Work Assistant	Alamdanga Paurashava
23	Md. Jalal Uddin	Executive Engineer	DPHE, Chuadanga
24	Md. Mosharaf Hossain	Assistant Engineer	Benapole Paurashava
25	Md. Nazrul Islam	Project Director	32 Paurashava project, DPHE
26	Md. Shafiqul Alam	Secretary	Muladi Paurashava
27	Abu Sadat Mohammad Saimon	Accounts Officer	Muladi Paurashava
28	Mr.Sammaddar	Sub-Assistant Engineer	Muladi Paurashava
29	Engr. Md. Shayhan Ali	Executive Engineer	DPHE, Kurigram Sadar
30	Tushar Mohon Shadhu Khan	Addl. Chief Engineer (Planning)	DPHE
31	Md. Saifur Rahman	Superintending Engineer	DPHE
32	A. S. M. Shariful Islam	Assistant Engineer	Gobindaganj Paurashava
33	Bidhan Kumar Saha	Accounts Officer	Gobindaganj Paurashava
34	Kazi Mahmudul Hassan	Mayor	Monirumpur Paurashava
35	Shaikh Sayadul Haque	Assistant Engineer	Monirumpur Paurashava
36	Md. Abdur Rahim	Secretary	Gobindaganj Paurashava
37	Md. Mahbubul Alam	Assistant Engineer	
38	Md. Rakibul Islam	Secretary	Alamdanga Paurashava
39	Shahidul Islam	Advisor	SNV

40	Shishir Kumaf Biswas	Executive Engineer	DPHE, Dhaka
41	Niranjan Kumar Biswas	Assistant Engineer	DPHE, Dhaka
42	Md. Golam Sharif	Sub-Assistant Engineer	DPHE, Dhaka
43	Md. Abdur Rahman	Mayor	Gobindaganj Paurashava
44	Md. Azizur Rahman	Research Officer	ITN-BUET
45	Md. Taslim Uddin	Executive Engineer	Alamdanga Paurashava
46	Md. Abdul Alim	Office Secretary	ITN-BUET
47	Md. Wazed Ali	Project Director, 23 Paurashava Project	DPHE, Dhaka
48	Md. Khaled Sahabuddin	Executive Engineer	DPHE, Dhaka
49	Roman kabir	Executive Engineer	DPHE, Dhaka
50	Tauhidur Rahman	SPO, (PM FSM)	AID Foundation, Jhenaidah
51	Md. Nur Nabi	Assistant Engineer, 23 Paurashava Project	DPHE
52	Fariha Rahman	Research Associate	ITN-BUET
53	Md. Habibur Rahman	Accounts and Admin Officer	ITN-BUET
54	Md. Mustak Ahmed	Secretary	Jhenaidah Paurashava
55	Sharmistha Debnath	Executive Engineer	DPHE, Dhaka
56	Md. Abu Bakar Siddique	Assistant Engineer, 23 Paurashava Project	DPHE
57	Md. Shahadat Hossain	Sub-Assistant Engineer	23 Paurashava project, DPHE
58	Md. Ashrafuzzaman	Assistant Engineer	DPHE
59	Kibria Alam	SSDO	DPHE
60	Md. Khasru Alam	Sub-Assistant Engineer	DPHE
61	Md. Gulger Ahmed	Assistant Engineer	DPHE
62	Hira Chandan Roy	Sub-Assistant Engineer	DPHE
63	Md. Samsu	SDO	DPHE
64	Md. Ahad	SDO	DPHE
65	Rakib Uddin Ahmed	Sr. IDO	ITN-BUET

Batch-2, 20 Nov 2018

Sl. No.	Name	Designation	Organization
1	Md. Ebrahim Khalil	Sub Assistant Engineer	DPHE, Ukhiya, Cox's Bazar
2	Md. Al Amin	Sub Assistant Engineer	DPHE, Cox's Bazar Sadar
3	Md. Saddam Hossain	Sub Assistant Engineer	DPHE, Ghatail, Tangail
4	Md. Anoweruzzaman	Executive Engineer	DPHE, Bogura
5	Md. Ekram Ullah Chowdhury	Secretary	Boalmari Paurashava
6	Md. Aminul Islam	Sub Assistant Engineer	Boalmari Upazilla, Faridpur
7	Md. Iqbal Hossain	Sub Assistant Engineer	DPHE, Teknaf, Cox's Bazar
8	M. M. Mokbul Hossain	Sub Assistant Engineer	Nabinagar Paurashava
9	Pranab Kumar Bhowmick	Assistant Engineer	Nabinagar Paurashava
10	Mir Abdus Shahid	Superintendent Engineer	DPHE, Dhaka
11	Sarwar Hossain	Proprietor	Biofilcom
12	Md. Mahbubur Rahman	Assistant Engineer	Shakhipur Paurashava
13	MD. Jahid Hossen	Councilor	Shakhipur Paurashava
14	Mahbubur Rahman	Executive Engineer	DPHE, Brahmanbaria
15	Sadanondo Roy	Assistant Engineer	Boalmari Paurashava
16	Md. Shahadat Hossain	Sub Assistant Engineer	DPHE
17	Dr. Md. Mujibur Rahman	Professor	BUET
18	Md. Abdul Mannaf	Project Director, NSP	DPHE
19	Tasnim Tamanna	Executive Engineer	DPHE
20	Suman Kumar Saha	PO	WaterAid Bangladesh
21	Kazi Salma Akter	Social Development Officer	DPHE
22	Taslima Parvin	Social Development Officer	DPHE
23	Md. Sarwar Hossain	Additional Chief Engineer (Water Resource)	DPHE, Dhaka
24	Md. Mahmudul Haque	Assistant Engineer	Ghatail Paurashava
25	A. K. M. Khalequr Rahman	Executive Engineer	DPHE
26	Md. Jamal Uddin	Accounts Officer	Nabinagar Paurashava
27	Md. Rezaul Karim	Accounts Officer	Sherpur Paurashava
28	Md. Mozaffar Hossain Mia	Mayor	Boalmari Paurashava
29	S. M. Shafiul Islam	Secretary	Sherpur Paurashava
30	Md. Benjur Rahman Khan	Secretary	Nabinagar Paurashava
31	Shahidduzaman Khan	Mayor	Ghatail Paurashava
32	Md. Belal uddin	Accounts Officer	Ghatail Paurashava
33	Md. Nurul Islam	Secretary	Ghatail Paurashava
34	Md. Sayeed Uddin	Mayor	Nabinagar Paurashava
35	Shahana Akhter	Social Development Officer	DPHE
36	Md. Shafiqul Alam	Executive Engineer	DPHE. Faridpur
37	Md. Ibn Mayaz Pramanik	Executive Engineer	DPHE, Tangail
38	Md. Muktadir Harun	Social Development Officer	DPHE
39	Md. Abdus Sattar	Mayor	Sherpur Paurashava

40	Md. Humayun Kabir	Sub Assistant Engineer	Sherpur Paurashava
41	Robin Raihan Ahmed	Superintendent Engineer	DPHE
42	Roman Kabir	Executive Engineer	DPHE,Dhaka
43	Md. Azizur Rahman	Research Officer	ITN-BUET
44	Md. Habibur Rahman	Accounts and Admin Officer	ITN-BUET
45	Dr, M. Ashraf Ali	Director	ITN-BUET
46	Fariha Rahman	Research Associate	ITN-BUET
47	Saleema Najenin Siddiqua	Research Officer	ITN-BUET
48	Md. Wazed Ali	Project Director, Urban Water Supply and Sanitation iin 23 Paurashava Project	DPHE
49	Alauddin Ahmed	Project Manager	ITN-BUET
50	Rakib Uddin Ahmed	Information and Documentation Officer	ITN-BUET
51	Md. Nur Nabi	Assistant Engineer	DPHE
52	Suman Kanti Nath	Project Manager	WaterAid Bangladesh
53	Shishir Kumar Biswas	Executive Engineer	DPHE, Dhaka
54	Dilip Sarkar	Sub Assistant Engineer	DPHE
55	Tanzid Ahmed	Sub Assistant Engineer	DPHE
56	Sharmistha Debnath	Executive Engineer	DPHE
57	Shantunu Barua	Assistant Engineer	DPHE
58	Shahana Alam	Assistant Engineer	DPHE
59	Md. Ashrafuzzaman`	Assistant Engineer	DPHE
60	Imran	Assistant Engineer	DPHE
61	Dipak Kumar Sarkar	Assistant Engineer	DPHE, Faridpur
62	Md. Mozammel Haque	Sub Assistant Engineer	DPHE, Sherpur, Bogura
63	Md. Golam Mostofa	Sub Assistant Engineer	DPHE, Dhaka
64	Wahiduzzaman Sarkar	Assistant Engineer	Nabinagar Paurashava
65	Md. Mozahidul Islam	Cashier	DPHE, Ghatail, Tangail

Batch-3, 22 Nov 2018

Sl. No.	Name	Designation	Organization
1	Md. Saifur Rahman	Chief Engineer	DPHE
2	Robin Raihan Ahmed	Superintendent Engineer	DPHE
3	Sharmistha Debnath	Executive Engineer	DPHE
4	Rakib Uddin Ahmed	Information and Documentation Officer	ITN-BUET
5	Saleema Najenin Siddiqua	Research Officer	ITN-BUET
6	Md. Abdus Sattar	Executive Engineer	Bashurhat Paurasava
7	Md. Wali Ullah	Assistant Engineer	DPHE, Chatkhail, Noakhali
8	Md. Mizanur Rahman	Secretary	Belkuchi Paurashava
9	Md. Faruk Hossain	Sub Assistan Engineer	DPHE, Chatkhail, Noakhali
10	Md. Murad Hossain	Executive Engineer	DPHE, Dinajpur
11	Palash Chandra Das	Executive Engineer	DPHE, Noakhali
12	Md. Nurul Afsar	Water Super	Chowmuhuni Paurashava
13	Md. Waris Kabir	Accounts Officer	Belkuchi Paurashava
14	Md. Mozibur Rahman	Sub Assistan Engineer	Shibganj Paurashava
15	Md. Mobarak Hossain	Secretary	Shibganj Paurashava
16	Md. Abdul Kuddus	Accounts Officer	Shibganj Paurashava
17	Khan Muhammad Golam Rabbani	Project Manager, UGIIP-3	DPHE
18	Amit Kumar Sarkar	Assistant Engineer	DPHE, Rajshahi
19	Md. Sarwar Jahan	Sub Assistan Engineer	Godagari Paurashava
20	Md. Maeenuddin	Accounts Officer	Basurhat Paurashava
21	Md. Shahjahan Miah	Chief Executive Officer	Faridpur Paurashava
22	Md. Nuruzzaman	Assistant Engineer	Birganj Paurashava
23	Md. Mehedi Hasan	Panel Mayor	Birganj Paurashava
24	Md. Abdul Hanif Sardar	Secretary	Birganj Paurashava
25	Md. Wazed Ali	Accounts Officer	Birganj Paurashava
26	Md. Humayun Kabir	Sub Assistan Engineer	DPHE, Birganj, Dinajpur
27	Md. Abdur Razzak	Assistant Engineer	Belkichi Paurashava, Sirajganj
28	Md. Delaw Hossain	Assistant Engineer	Chatkhil Paurashava, Noakhali
29	Abdul Motaleb	Accounts Officer	Chatkhil Paurashava, Noakhali
30	Md. Babul Akter	Sub Assistant Engineer	DPHE, Shibganj, Chapainawabganj
31	Dipok Kumar Sarkar	Executive Engineer	DPHE, Chapainawabganj
32	Md. Tabibur Rahman Talukder	Executive Engineer	DPHE, Sirajganj
33	Alamin	Sub Assistant Engineer	DPHE, Belkuchi, Sirajganj
34	Mayen Uddin	Sub Assistant Engineer	DPHE, Companyganj, Noakhali
35	Md. Alamgir Hossain	Executive Engineer & Deputy Proejct Director, NSP	DPHE
36	Md. Enamul Haque	S. I.	Godagari Paurashava, Rajshahi
37	Md. Helal Uddin	Accounts Officer	Godagari Paurashava, Rajshahi

38	Md. Shamsul Haque Bhuiyaan	Project Director, Thana Sadar and Growth Center Project	DPHE
39	Kazi Salma Akter	Social Development Officer	DPHE
40	Md. Halim Ullah	Secretary	Basurhat Paurashava
41	Ehte Shamsul Rassel Khan	Project Drector, WASH Project	DPHE
42	Md. Shahidul Haq	Estimator	DPHE, Rajshahi
43	Dr. M. Ashraf Ali	Director	ITN-BUET
44	Dr. Md. Mujibur Rahman	Professor	BUET/UAP
45	Md. Wazed Ali	Project Director, 23 Paurashava project	DPHE
46	Robin Raihan Ahmed	Superintending Engineer	DPHE
47	Mohammadullah Patwary	Mayor	Chatkhil Paurashava, Noakhali
48	Md. Altaf Hossain Munshi	Secretary	Chatkhil Paurashava, Noakhali
49	Uttam Kumar Saha	Strategic Lead	Practical Action Bangladesh
50	A. R. M. Azri Md. Kabirul Haque	Mayor	Shibganj Paurashava
51	Shishir Kumar Biswas	Executive Engineer	DPHE
52	Begum Ashanoor Biswas	Mayor	Belkuchi Paurashava
53	Roman Kabir	Executive Engineer	DPHE
54	Md. Abu Bakar Siddique	Assistant Engineer	DPHE
55	Md. Azizur Rahman	Research Officer	ITN-BUET
56	Fariha Rahman	Research Associate	ITN-BUET
57	Mahmudur Rashid Mazumdar	Executive Engineer	DPHE, Narayanganj
58	Sultan Mahmud	Executive Engineer	DPHE
59	A. K. M. Humayun Kabir	Assistant Engineer	DPHE
60	Md. Rafiqul Islam	Sub Assistan Engineer	DPHE, Chatkhil
61	Jahangiir Alam	Assistant Engineer	Basurhat Paurashava
62	Akhil Chandra	Assistant Engineer	DPHE
63	Abdul Gaffar	Assistant Engineer	DPHE
64	Md. Golam Kibria	Social Development Officer	DPHE
65	Kazi Salma Akter	Social Development Officer	DPHE

Batch-4, 26 Nov 2018

Sl. No.	Name	Designation	Organization
1	Md. Mubarak Hossain	Secretary	Jagannathpur Paurashava
2	Md. Rezaul Karim	Assistant Engineer	Sherpur Paurashava
3	Md. Robiul Alam	Sub Assistant Engineer	Azmiriganj Upazilla, Sylhet
4	Md. Sujan Sarker	Sub Assistant Engineer	Kanaighat Paurashava
5	Shamima Aktar	Town Planner	Dhamrai Paurashava, Dhaka
6	Nripendro Chandra Sarker	Assistant Engineer	Netrokona Paurashava
7	Md. Deluar Hossain	Surveyor	Dhamrai Paurashava, Dhaka
8	Jatish Gwoshami	Sub Assistant Engineer	Jagannathpur Paurashava
9	Md. Nazem uddin	Mayor	Kanaighat Paurashava
10	Sharif Hussain	Sub Assistant Engineer	Kanaighat Paurashava
11	Md. Abul Kashem	Executive Engineer	DPHE, Sunamganj
12	Sohrab Uddin Ahmed	Executive Engineer	DPHE, Maulovibazar
13	Md. Nasrullah	Executive Engineer	DPHE, Lakhsmipur
14	Syed Nakibur Rahman	Assistant Engineer	Maulovibazar Paurashava
15	Md. Monir Uddin Ahmed	Assistant Engineer	Kanaighat Paurashava
16	Farzana Begum Sumi	Accounts Officer	Kanaighat Paurashava
17	Md. Abdur Rab Sarkar	Sub Assistant Engineer	DPHE, Jagganathpur, Sunamganj
18	Md, Mashiur Rahman Talukder	Executive Engineer	DPHE, Sylhet
19	Md. Alamgir Mia	Executive Engineer	DPHE, Natore
20	Marshal tito	Sub Assistant Engineer	Madaripur Paurashava
21	Md. Hedaetul Islam	Assistant Engineer	Azmiriganj Paurashava
22	Bidhan Chandra dey	Superintendent Engineer	DPHE
23	Mehedi Hasan	Sub Assistant Engineer	Dohar Paurashava
24	Md. Mashiur Rahman	Executive Engineer	Dohar Paurashava
25	Chandana Rani Sarker	Secretary	Dhamrai Paurashava, Dhaka
26	Md. Nur e Alam Siddique	Secretary	Azmiriganj Paurashava
27	Md. Ataur Rahman	Assistant Engineer	Narshingdi Paurashava
28	Shishir Kumar Biswas	Executive Engineer	DPHE, Dhaka
29	Md. Shamiur Rahman	Sub Assistant Engineer	DPHE, Dhamrai
30	Md. Atiqul Khalid	Urban Planner	Dohar Paurashava
31	Md. Lutfar Rahman Akanda	Accounts Officer	Dohar Paurashava
32	Ranjit Chandra Sheel	Cashier	Jagannathpur Paurashava
33	Md. Foyezul Islam Suman	Executive Engineer	DPHE
34	Umapad Podder	Executive Engineer	DPHE, Jhenaidah
35	Golam Kabir	Mayor	Dhamrai Paurashava, Dhaka
36	Md. Al Amin	Estimator	DPHE, Madaripur
37	Md. Rezwan Hossain	Assistant Engineer	DPHE
38	Md. Masuduzzaman Masuk	Panel Mayor	Shayestaganj Paurashava
39	Md. Sirajul Islam	Executive Engineer	Shayestaganj Paurashava
40	Mubarak Shah	Accounts Officer	Shayestaganj Paurashava
41	Md. Ataur Rahman	A. O.	Shayestaganj Paurashava
42	Md. Abdur Razzak	Sub Assistant Engineer	DPHE, Habiganj

43	Roman Kabir	Executive Engineer	DPHE, Dhaka
44	Md. Abu Bakar Siddique	Assistant Engineer	DPHE
45	Alauddin Ahmed	Project Manager	ITN-BUET
46	Md. Azizur Rahman	Research Officer	ITN-BUET
47	Md. Golam Faruqe	Administrator	Ajmiriganj Paurashava
48	Saleema Najenin Siddiqua	Research Officer	ITN-BUET
49	Fariha Rahman	Research Associate	ITN-BUET
50	Dr. M. Ashraf Ali	Director	ITN-BUET
51	Md. Wazed Ali	Project Director, 23 Paurashava Project	DPHE
52	Robin Raihan Ahmed	Superintendent Engineer	DPHE
53	M. Abdul Alim	Office Secretary	ITN-BUET
54	Martin Ronald Pramanik	Manager (PSM)	MAWTS
55	Abdus Shaheen	Country Programme Manager	WSUP
56	Habibur Rahman	Sanitation Lead	WSUP
57	Md. Saifur Rahman	Chief Engineer	DPHE
58	Md. Habibur Rahman	Accounts and Admin Officer	ITN-BUET
59	Rakib Uddin Ahmed	Sr. IDO	ITN-BUET
60	Sharmistha Debnath	Executive Engineer	DPHE
61	Dilip Sarkar	Sub Assistant Engineer	DPHE
62	Mahmudul Humayun	Staff Officer, Chief Engineer	DPHE
63	Md. Shahadat Hossain	Sub Assistant Engineer	DPHE
64	Hira Chandra Roy		DPHE
65	Md. Nasir		DPHE

Annex-ii: Presentation on CWIS and FSM in Bangladesh

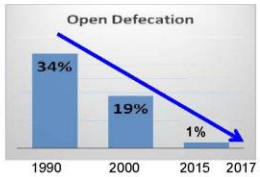
CWIS and FSM in Bangladesh

Orientation Workshop
23 Paurashava Town Project Implemented by DPHE
Funded by IsDB and GoB

Dr. Md. Mujibur Rahman *and*
Dr. Muhammad Ashraf Ali
Professor of Civil Engineering, BUET

DPHE Bhaban
26 November 2018

Achievement in Sanitation Coverage in Bangladesh



Rapid increase in sanitation **coverage** was achieved through use of **on-site sanitation facilities:**

- **Pour-flush latrines, and**
- **Septic tank system**

About 156 of 160 million in Bangladesh uses OSS

Sanitation and Wastewater Management for Achieving SDG 6.2

Target 6.2: By 2030, to achieve access to **adequate** and **equitable** sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

"**adequate**" implies a **system which hygienically separates excreta from human contact as well as safe reuse/ treatment of excreta in situ, or transport to a treatment plant**.

The major focus shift from MDG to SDG regarding sanitation is:
from **access** to
'**safely managed sanitation services**',

which is not possible without effective fecal sludge and wastewater management.

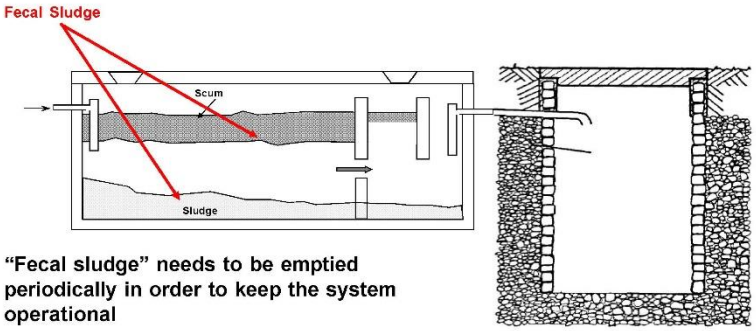
Safely Managed Sanitation

Safely Managed Sanitation:

Use of improved sanitation facilities where excreta are safely disposed in situ or transported and treated off-site.

Septic Tank System

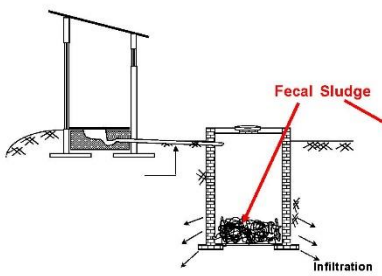
Major Option in All Urban Areas (including some Slums)

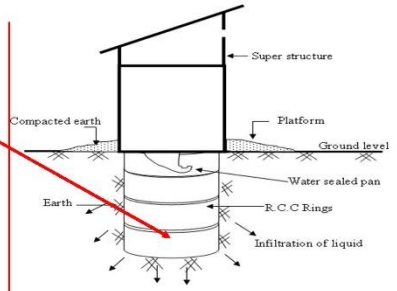


"Fecal sludge" needs to be emptied periodically in order to keep the system operational

Pour Flush Sanitation

(Rural areas; Urban slum/low-income communities)



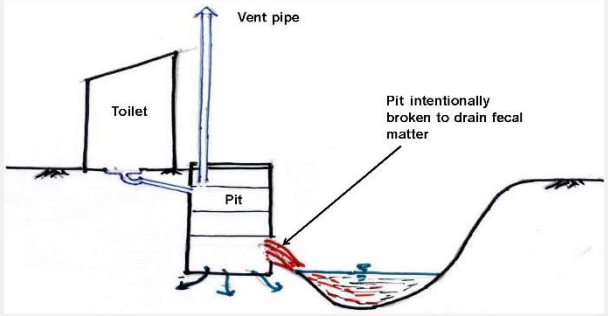


Fecal sludge needs to be emptied periodically in order to keep the toilets operational

Fate of Fecal Sludge

- In the **absence of proper emptying services**, the pit/septic tank-contents are often **drained into the surrounding low-lying areas, or into storm drainage system**.

Pit latrines directly draining into lowlands



Fecal sludge discharged into open drains

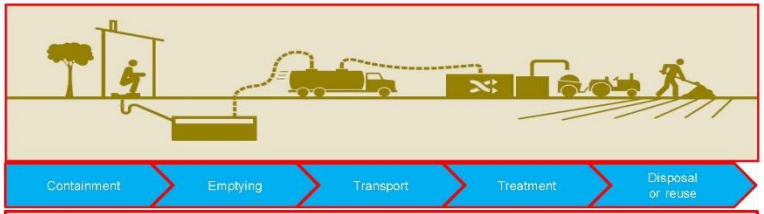
Toilets of buildings discharging into open drain

Good toilet | Discharging into open drains

Sanitation Not safely managed

Septic tanks/ pits are mostly emptied manually using buckets and discharged into nearby open drain

Fecal Sludge Management System

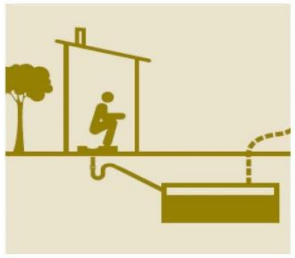


- **FSM for safely managed sanitation.**
- FSM deals with the management of sludge from OSS facilities while wastewater management deals with sewered or non-sewered sanitation

Shift in Global Thinking Re Sustainable Sanitation

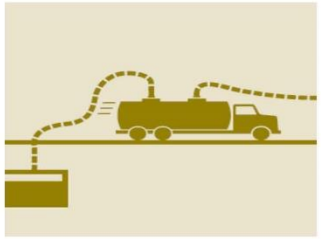
- OSS **no more temporary** solution; with effective FSM in place OSS could be effective, long term, sustainable solution
- 5.0 m3 untreated FS into environment is equivalent to about 5000 people practicing OD;
- Cost of FSM technologies could be **5 times less expensive** than conventional sewer based solutions
- FSM based OSS can result **in immediate environmental improvement** as **it does not have to wait for huge Capex to be arranged** , which is required for sewer based solutions

FSM: Challenges related to Containment



- Most human faeces are not contained safely
- Pit latrines and 'septic tanks' do not function effectively
- Faecal sludge finds its way directly into the environment
- Need to ensure safe containment of onsite sanitation by setting and **enforcing building and emptying regulations**

FSM: Challenges related to Emptying and Transportation



- **Access** to OSS facility
- Appropriate **collection system** (vehicle, safety issues)
- Often sludge does not reach official dumping site due to indiscriminate dumping of sludge
- Existing services: informal and outside public sector control

Mechanical Desludging Available in Some Areas, But Emptied Sludge is Typically Discharged into Open Environment

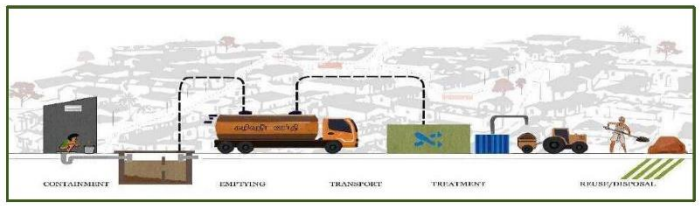
Courtesy: SNV, Bangladesh; KCC

FSM: Challenges related to Treatment and Disposal

- Only a small % is being treated due to lack of dedicated facilities
- Land for treatment
- Quality assurance of treated FS for enduse
- Appropriate sludge treatment plants are needed to ensure a complete and effective sanitation value chain

- Institutional roles and responsibilities important to face all the above challenges

Need to address entire sanitation chain



- Containment quality
- Public toilet and institutional toilet management
- Financing
- Desludging equipment and vehicles
- Occupational health
- Service and business model
- Selection of right treatment
- Reuse of by products

JANICKI OMNI PROCESSOR (JOP) TECHNOLOGY

PATENTED TECHNOLOGY DESIGNED FOR CITY LEVEL USE, PRODUCES USABLE OUTPUTS

JOP TECHNOLOGY TO BE ADAPTED BY THREE DIFFERENT COMMERCIAL PARTNERS

Learn More:

- **Janicki Bioenergy:** https://www.janickibioenergy.com/janicki-omni-processor/how-it-works/
- **Ankur Scientific:** https://www.ankurscientific.com/
- **CRRC:** http://www.crrcgc.cc/en

Current JOP Version 2 characteristics – varies by commercial partner adaptations

- Population served: ~ 300k-400k people *(v2 size)*
- Kills all pathogens; no harmful emissions
- Produces:
  - Electricity: 300 kW (250 kW net)
  - Dry sterile ash (fertilizer)
  - Distilled / potable water: 80,000 liter/day

[redacted]

FSM Initiatives in Bangladesh

Emptying/Collection of Fecal Sludge

Mechanical emptying service was first introduced in Dhaka by **DSK** in the year 2000, with support from **DWASA** and **Water Aid,** using a vacuum tanker (**vacutugs**).

This service is still continuing. Emptied sludge is discharged in DWASA sewer network.

Emptying and Collection of FS

Emptying/Collection of FS

Mechanized Gulper
Capacity: 60 Liters/min

Motorized Gulper
Capacity: 90 Liters/min

Vacutug Mark II
Capacity: 120 Liters/Min

Transportation of Fecal Sludge

Transport by manually driven vehicle

Mechanized Transporter (Mounted on Tri-Wheeler Diesel Engine Driven Vehicle); Capacity: 1000 Liters

Mechanized transport of fecal sludge

Transportation of Fecal Sludge

Vacutug Mounted on Pickup
Capacity: 250 Liters/Min

Vacutug with a capacity of 2000 Liters

Truck-mounted Vacutug

Treatment Technologies Implemented in Bangladesh

1. DPHE designed and implemented FSTP at Paurashava level (2007-2013)
2. Water Aid supported FSTP at Shakhipur, Tangail (2015)
3. SNV supported FSTP at KCC (2016)
4. SNV supported FSTP at Jhenaidah Paurashava (2016)
5. Practical Action supported FSTP at Faridpur (2016)
6. SNV-Waste Concern supported FSTP at Kushtia Paurashava (since 2012).
7. Practical Action supported FSTP at Satkhira
8. Others/ongoing/upcoming: WSUP supported FSM services in Dhaka, Rangpur, Barisal; Water Aid supported FSM activities in Chittagong.

Fecal Sludge Treatment Plant at Shakhipur Paurashava, Tangail

FS Treatment Plant at Rajbandh, Khulna City Corporation

Fecal Sludge Treatment Plant at Jhenaidah Paurashava

City Scale Fecal Sludge Treatment Plant in Faridpur

Co-Composting of Solid Waste and Fecal Sludge at Kushtia Paurashava

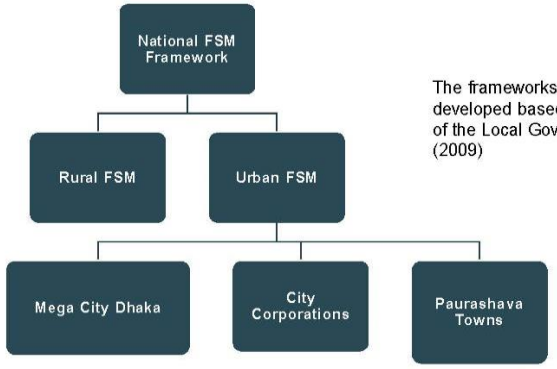
Fecal Sludge Treatment in Satkhira

Courtesy: Practical Action Bangladesh

IMPORTANT POLICY INITIATIVE ON FSM IN BANGLADESH

- Recognizing the importance of FSM, the MoLGRD&C, Government of Bangladesh,
- initiated consultations involving all stakeholders
- that eventually led to the development of the "Institutional and Regulatory Framework (IRF) for FSM in Bangladesh",
- which has been approved by the government.

FSM Framework for Bangladesh



The frameworks have been developed based on provisions of the Local Government Acts (2009)

Why Institutional and Regulatory Framework (IRF)?

- Clearly assigns responsibility of FSM to specific institutions based on existing laws, policies and strategies.
- Identifies specific related activities to be carried out by concerned institutions.

With this IRF in place,

- Overlapping of responsibilities of institutions would be avoided.
- Stakeholders coordination would be ensured
- Environmental, financial and social sustainability would be attained

Outline of Each Framework

Chapter 1: Context

Chapter 2: Objectives and Scope of FSM Framework

Chapter 3: Participating Institutions

Chapter 4: Distribution of Institutional Roles and Responsibilities

Chapter 5: Financial Aspects of FSM Service Chain

Chapter 3: Participating Institutions

(a) **Ministries:** to endorse FSM framework; secure funding; technical support through respective line agencies (DPHE, LGED, WASAs); ensure enforcement of laws/ regulations; initiate inclusive planning and implementation of FSM; and monitoring through NFWSS.

Ministry of LGRD&C: Lead Ministry

12 Other Ministries

Chapter 3: Participating Institutions ....

(b) **Local Government Authorities:**

DNCC and DSCC: Primary responsibilities for Dhaka

City Corporations: Primary responsibility for CC areas

Paurashavas: Primary responsibility for Paurashava towns.

Union Parishad: Main responsibility for rural areas; Upazila Parishad will play supporting role

DPHE, LGED, WASAs: will play supporting role and provide technical assistance

Chapter 3: Participating Institutions ....

(c) **Institutions for Capacity Building**: e.g., Ministries and line agencies; academic/research institutions, development partners, I/NGOs, private sector.

(d) **Institutions for Awareness Building**: e.g., Ministries and line agencies; development partners, I/NGOs, CBOs, print/electronic/social media; private sector.

The Lead institutions may outsource specific activities to private organizations or may go for partnership with appropriate institutions for achieving certain goals

Chapter 4: Distribution of Institutional Roles and Responsibilities

4.2.3 Fecal sludge collection and transport

- Focus on hygienic collection/emptying of fecal sludge, without adverse impacts on environment and public health, especially **heath and safety** of emptiers.
- Ensuring mechanical desludging and use of safety/ protective gears; **integrating traditional pit emptier community** in FSM services.
- Ensuring **proper transportation** of collected fecal sludge to treatment/ disposal site.
- Involvement of **private sector** in FSM services.
- Fixing of **fees for collection and transport** of fecal sludge.
- Development of **database of sanitation facilities** and service recipients.

Chapter 4: Distribution of Institutional Roles and Responsibilities

4.2.4 Fecal sludge treatment, disposal and reuse

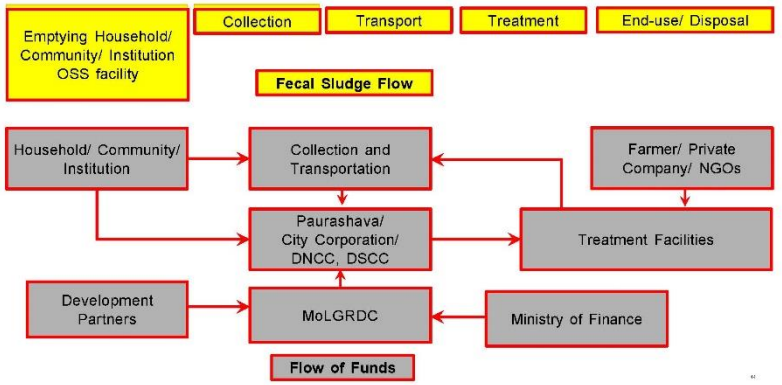
- Emphasis on **development of FS treatment facilities** in collaboration with DPHE, LGED, WASAs, Private Sector.
- **Interim facility** (e.g., pits/ trenches) for disposal of fecal sludge before treatment facilities are built.
- Collaboration/ coordination with DoE, IEDCR, DAE for **environmental compliance, and quality assurance** and marketing of end products.
- Involvement of **private sector** in FS treatment.

Chapter 4: Distribution of Institutional Roles and Responsibilities

Section 4.3: "Environmental Police" for Field Compliance

- Ensuring **environmental compliance**.
- Initiative for developing "**environmental police**".

Chapter 5: Financial Aspects of FSM Service Chain



IRF Emphasizes on the following areas:

- **Capacity Building, Training and Research**
- **Extensive awareness campaign**
- **Technical Assistance and Funding Support**
- Development of **relevant standards/ guidelines** for emptying, transportation, treatment and disposal; quality control/ standardization of end products

Important Steps for 23 Paurashava Project

- Plan for the whole city/town; implement in phases
- Plan for entire service chain; not just for i.e., emptying and disposal
- Community demand through awareness campaign and stakeholders' consultations,
- Assessing the existing situation, e.g., OSS facilities, emptying
- Analyzing options to overcome the problems involving concerned stakeholders, and
- Reviewing existing policies and strategies
- Technological options assessment,
- Paurashava capacity needs assessment, and
- Assumptions and risk assessments

Important considerations

- access to OSS facilities,
- FS volume estimation for determining collection, transportation and treatment requirements,
- identifying cost-effective FS transport routes, and
- identifying appropriate FS treatment sites.

An Important Approach for Sustainability

- Involvement of Paurashavas is extremely important from the very beginning of the project – from inception, through consultations, planning, demand assessment, design, capacity building, implementation, operation, to monitoring and evaluation
- This would help Paurashavas own and successfully operate the FSM system

Thank You

Annex-iii: Introduction of FSM and waste management components under 23 Paurashava project

Introducing Waste Management System
under
Urban Water Supply and Sanitation in 23 Pourashavas project in Bangladesh (GoB-IDB)

by

SHISHIR KUMAR BISWAS/ROMAN KABIR
Executive Engineer
Department of Public Health Engineering (DPHE)

1

Brief Description of the Project

Project Location:

The project will cover 23 Pourashava having no piped water supply from 6 administrative divisions and a cumulative target population of 1 million.

Project Cost: 9917.347 million BDT

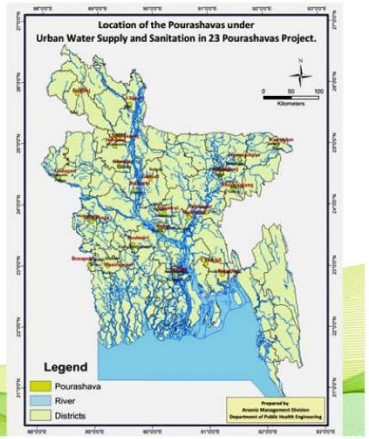
Development Partner: Islamic Development Bank

Objectives of the Project:

- **To introduce piped water supply system in the project pourashavas.**
- **To develop sanitation system in these pourashavs.**
- **To improve the capacity of pourashavas on O&M of water supply and sanitation.**

Project Locations

Division	District	Pourashava
Barisal	Barisal	Muladi
Khulna	Chuadanga	Alamdanga
	Jessore	Monirampur
	Jessore	Benapole
Dhaka	Dhaka	Dohar
	Dhaka	Dhamrai
	Narsingdi	Madhabdi
	Faridpur	Boalmari
	Tangail	Ghatail
Chittagong	Brahmanbaria	Nabinagar
	Noakhali	Bashurhat
	Noakhali	Chatkhil
Rajshahi	Bogura	Sherpur
	ChapaiNawabganj	Shibganj
	Rajshahi	Godagari
	Sirajganj	Belkuchi
Rangpur	Dinajpur	Birganj
	Kurigram	Ullipur
	Ga ibandha	Gobindaganj
Sylhet	Sylhet	Kanaighat
	Habiganj	Ajmiriganj
	Habiganj	Shayestaganj
	Sunamganj	Jogannathpur



Project Components

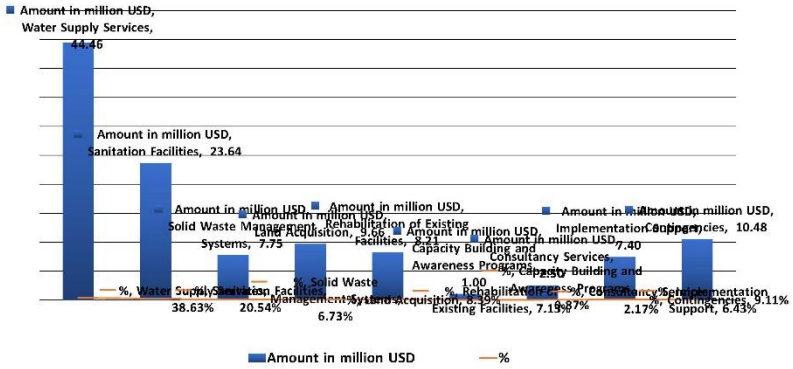
- ❑ **Water supply service**
- ❑ **Sanitation facilities**
- ❑ **Faecal Sludge Management**
- ❑ **Solid Waste Management**
- ❑ **Drainage facilities**
- ❑ **Rehabilitation of existing facilities,**
- ❑ **Capacity building &**
- ❑ **Awareness programs**

Project Components for waste management

Paurashava	Public Toilets (Nos.)	Community Latrine (Nos.)	Primary Drain (km.)	Solid Waste Composting System (Nos.)	Sludge Treatment Plant (Nos.)	Communal Bin (Nos.)	Solid Waste Sorting Shed (Nos.)	Desludging Truck (Nos.)	Truck (3 ton capacity) (Nos.)
Alamdanga	5	26	5.27	1	1	30	1	2	2
Chatkhil	10	20	15.71	1	1	35	1	2	2
Dohar	5	38	0.00	1	1	45	1	2	2
Godagari	5	26	9.26	1	1	48	1	2	2
Kanaighat	5	16	7.21	1	1	18	1	2	2
Madhabdi	5	21	0.00	1	1	19	1	2	2
Monirampur	5	16	0.00	1	1	40	1	2	2
Muladi	5	17	0.00	1	1	18	1	2	2
Nabinagar	5	28	0.00	1	1	48	1	2	2
Shayestaganj	10	18	5.73	1	1	36	1	2	2
Shibganj	10	27	9.37	1	1	48	1	2	2
Ajmiriganj	3	7	0.00	1	1	10	1	2	2

Paurashava	Public Toilets (Nos.)	Community Latrine (Nos.)	Primary Drain (km.)	Solid Waste Composting System (Nos.)	Sludge Treatment Plant (Nos.)	Communal Bin (Nos.)	Solid Waste Sorting Shed (Nos.)	Desludging Truck (Nos.)	Truck (3 ton capacity) (Nos.)
Bashurhat	5	14	4.45	1	1	14	1	2	2
Benapole	7	20	12.20	1	1	19	1	2	2
Belkuchi	6	15	0.00	1	1	43	1	2	2
Birganj	5	9	4.12	1	1	10	1	2	2
Dhamrai	12	37	4.05	1	1	38	1	2	2
Sherpur	5	15	2.70	1	1	19	1	2	2
Ullipur	8	24	0.00	1	1	29	1	2	2
Gobindaganj	7	20	4.09	1	1	24	1	2	2
Boalmari	5	10	0.00	1	1	19	1	2	2
Ghatail	5	18	0.00	1	1	30	1	1	2
Jogannathpur	6	15	8.03	1	1	36	1	2	2

Componentwise Project Cost



Sanitation facilities

Public toilets will be installed in public places such as market, bus terminal, ship port, rail station, stadium, city centre, office building, upazila complex etc. On the other hand, community latrines will be located near the following:

- Cluster of poor households having no proper sanitation facilities.
- Poor households having no space for installation of individual latrines.
- Slum areas
- Labor sheds near industrial establishments.

Solid Waste Management

The key objective of the system is to minimize the adverse environmental effects caused by the indiscriminate disposal of solid waste.

The major activities associated with the management of solid waste from the point of generation to the point of final disposal can be grouped into six functional elements:

- Waste generation
- Onsite handling and generation
- Collection
- Transfer and transport
- Processing and recovery
- Final disposal

Capacity building & Awareness programs

- Prepare Information, Education and Communication (IEC) Materials and arrange motivational activities for different groups
- Conduct orientation meetings for the representatives of the Pourashavas and community leaders.
- Promote sanitation awareness and acceptance of the need to protect the environment by correct excreta disposal.
- Advertise hygienic sanitation practices through posters and stickers on bill boards and at public offices, markets and schools.
- Develop training module, manual and arrange training for different components including local and foreign learning visit.

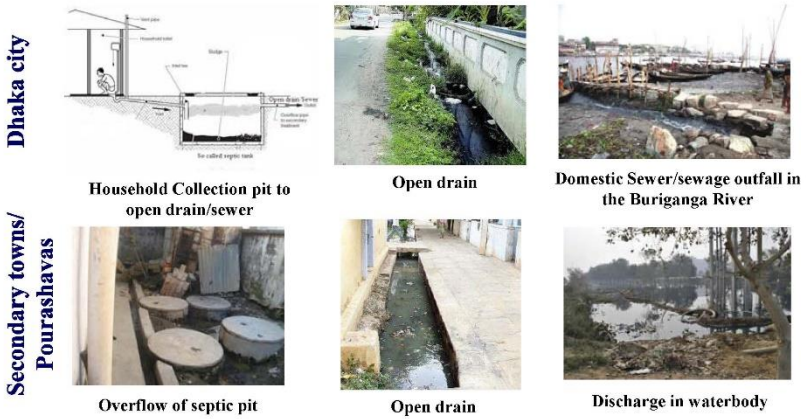
Faecal Sludge Management (FSM)

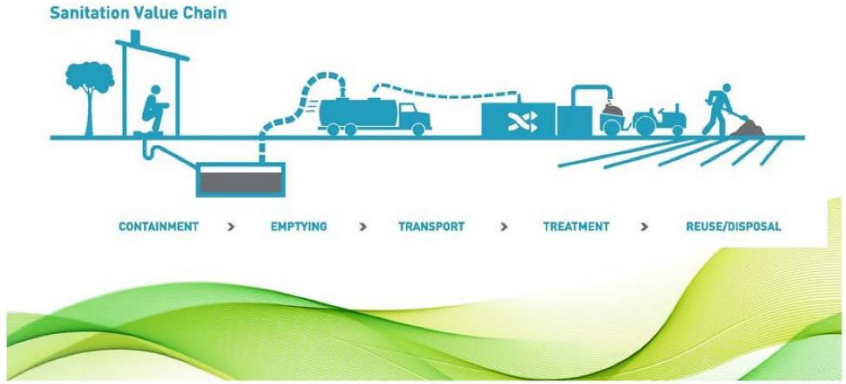
Faecal Sludge

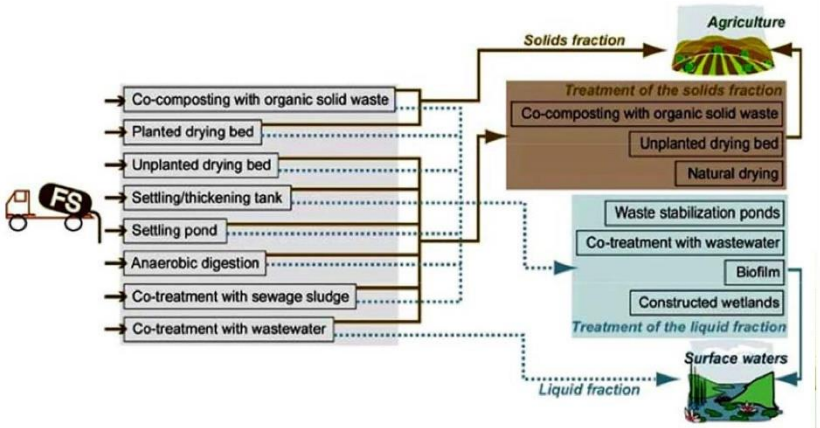
- Faecal Sludge is the general term for the raw (or partially digested) slurry or solid that results from the storage of blackwater or excreta.
- The composition of faecal sludge varies significantly depending on the location, the water content, and the storage.
- The composition will determine the type of treatment that is possible and the end-use possibilities.

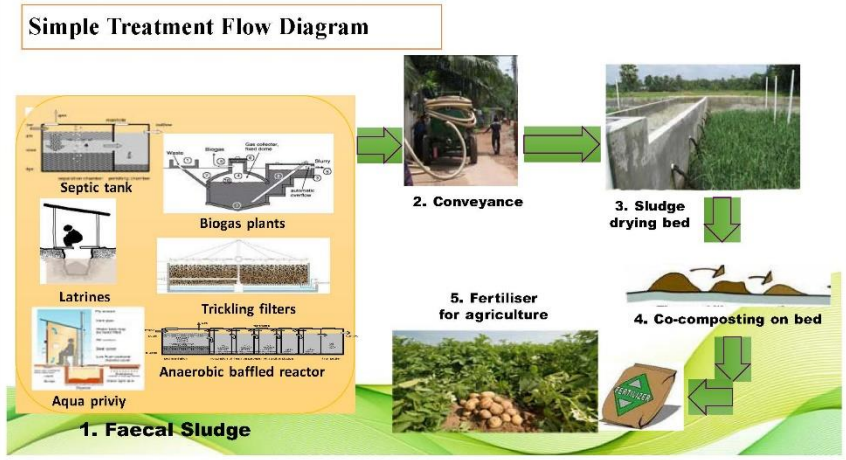
EXISTING FS DISPOSAL PRACTICE IN POURASHAVAS

- On-site sanitation practice is prevailing in the Pourashavas
- Domestic wastewater generally pretreated in septic tanks
- Emptying of Sludge from Septic Tanks is done manually by employing private laborers
- Those disposed of at places of convenience i.e. in drains, in dug holes, or open land without any treatment.


Dhaka city
Household Collection pit to open drain/sewer
Open drain
Domestic Sewer/sewage outfall in the Buriganga River
Secondary towns/ Pourashavas
Overflow of septic pit
Open drain
Discharge in waterbody


Sanitation Value Chain
CONTAINMENT
EMPTYING
TRANSPORT
TREATMENT
REUSE/DISPOSAL


FS
Co-composting with organic solid waste
Planted drying bed
Unplanted drying bed
Settling/thickening tank
Settling pond
Anaerobic digestion
Co-treatment with sewage sludge
Co-treatment with wastewater
Solids fraction
Agriculture
Treatment of the solids fraction
Co-composting with organic solid waste
Unplanted drying bed
Natural drying
Waste stabilization ponds
Co-treatment with wastewater
Biofilm
Constructed wetlands
Treatment of the liquid fraction
Surface waters
Liquid fraction


Simple Treatment Flow Diagram
Septic tank
Biogas plants
Latrines
Trickling filters
Anaerobic baffled reactor
Aqua privy
1. Faecal Sludge
2. Conveyance
3. Sludge drying bed
4. Co-composting on bed
5. Fertiliser for agriculture

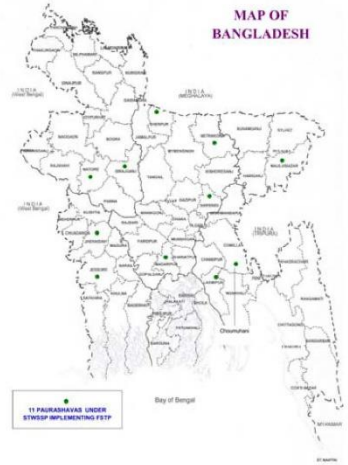
Various Sludge Treatment System

Background of DPHE activities on FSM

- DPHE 1st initiative to implement FSM under "Secondary Towns Water Supply and Sanitation Sector (GoB-ADB) Project", Duration from 2006 to June 2014
- Components:
  - Septic Tank Sludge Removal Equipment
  - Sludge Management (Disposal & Treatment)
- Design of FSTP: by DPHE considering Sludge drying bed (reed bed system)
- Vaccum Tanker: Designed and fabricated by MAWTS locally
- 1st construction in Lakshmipur Pourashava with trial run in December 2012.

Background of DPHE activities on FSM

- The second plant constructed in Jhenaidah Pourashava.
- Motivational meetings and workshops arranged for the Mayors and influenced to provide land for the FSTP.
- Finally FSTP had been constructed in 11 Pourashava out of 16 Project Pourashavas and delivered 26 Vaccum Tankers for emptying, collection and transportation of faecal sludge with training to the operators.
- Pourashavas started operation of FSTP with their own organizational setup.



1. Lakshmimipur
2. Jessore
3. Jhenaidah
4. Narsingdi
5. Netrokona
6. Sherpur
7. Moulvibaar
8. Sirajganj
9. Natore
10. Madaripur
11. Chowmuhani

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Lakshmipur Pourashava: Present status

- Running from 2013 through the own staffs of Pourashava
- Pourashavas are emptying 3-5 nos of septic tanks each week
- More that 900 septic tanks are emptied by the Pourashava and the volume of black water is around 4,500 m^3 .
- One an average 48,000 BDT are collected for providing the services in each month.
- The expenditure is around 25000 BDT in each month.
- Around 14,85,000 BDT has been collected in 5 years.
- The illegal connection is completely prohibited and when come to knowledge of illegal connections the problems are solved with the help of mobile court.

Reed bed at Lakshmipur Pourashava

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Sludge collection from septic tank with vagutug at Lakshmipur Pourashava

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Sludge disposing from vagutug at Lakshmipur Pourashava

24

Sludge disposing from vagutug at Lakshmipur Pourashava

25

Treated water from Faecal sludge treatment plant at Lakshmipur Pourashava

26

Sludge disposing from vagutug at Jhenaidah Pourashava

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Faecal Sludge Treatment Plant at Jessore Pourashava

Faecal Sludge Treatment Plant at Narsingdi Pourashava

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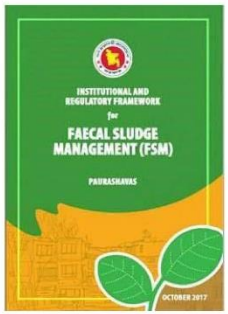
Targets and Way forward for FSM



Honorable Prime Minister Sheikh Hasina- ""We will have to take steps to address three issues – ensuring safe water supply, sewerage treatment, and waste management – in an integrated way"

SDG 6.2: by 2030, achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

Implementation of IRF for FSM in all aspects throughout the country.

THANK YOU

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