

**Terms of Reference (TOR)**  
**for**  
**Assessment of Performance of FSM Services in Selected Paurashavas**

**1. GENERAL**

**1.1. Background & Context of the Service**

ITN-BUET, a centre for water supply and waste management of the Bangladesh University of Engineering and Technology, was established in 1996 with a vision to achieve a strong, capable human resource base for sustainable development of water supply and environmental sanitation. ITN-BUET believes that knowledge development through applied research and professional development program constitutes the foundation for human capacity building. ITN-BUET has access to the regional and global resources base for effective transfer and dissemination of information. ITN-BUET works closely with different government agencies, academia and professional bodies to develop human resource and to disseminate knowledge among stakeholders. For more details, please visit: <http://itn.buet.ac.bd/>

ITN-BUET is implementing a project on “Scaling City Wide Inclusive Sanitation (CWIS)/FSM in Bangladesh through National Level Capacity Building Program”. The major objective of this program is building the capacity of Paurashavas and DPHE to implement CWIS/FSM projects successfully in Bangladesh by increasing awareness and knowledge on CWIS and FSM. In this regard, it is important to assess the performance of the FSM services currently being offered in different Paurashavas, including operation of the fecal sludge treatment technologies.

**1.2. Rationale about the work**

Fecal Sludge Management (FSM) has been identified as a major second generation sanitation challenge in the country. Successful implementation of FSM is essential for achievement of the SDG 6.2. People’s perspective on open defecation has changed drastically in the last two decades giving the country ‘open defecation free’ status. However, the management of human sludge is still inadequate posing severe threat to public health and environment. The practice of indiscriminate sludge dumping in open water bodies, and illegal connections to storm drainage have created massive concerns among practitioners and policy makers. Local government institutions (LGIs) and general people are still unaware and lacks knowledge about the proper management of fecal sludge.

Currently, a number of cities are offering FSM services covering entire FSM service chain, including mechanical desludging and fecal sludge treatment services. For some of these cities (e.g., Lakshmipur, Shakhipur), the FSM service is continuing for quite some time. A few technologies, including planted and unplanted drying beds and co-composting are being used for fecal sludge treatment in these cities. In order to make a successful FSM system in cities, the service delivery must include effective monitoring mechanism and build capacity of the human resource engaged in the service delivery. The fecal sludge treatment technologies also need to be contextual considering the geo-spatial, local, economic and social context of the selected municipality. The cities with functional FSM services should establish a system which would be sustainable.

Given the above context, ITN-BUET is seeking proposal from a potential individual researcher/research organization to conduct an action research on “Assessment of Performance of FSM Services in Selected Paurashavas”. The study will primarily focus on technical performance of services based on available data/information.

**1.3. Key research question and specific objectives**

The individual researcher/research organization will address key questions of the action research: How effective is the FSM service being offered in different Paurashavas? How sustainable are the FSM services being offered by LGIs in the Paurashavas?

This should be guided by the following specific research questions/issues:

- 1) What is the sanitation coverage in the city? What percentage of households/holdings are using septic tank system (with or without soakage pit), pit/pour-flush latrines, or other forms of onsite sanitation systems?
- 2) What percentage of households/ holdings in the Paurashava has containments (septic tanks or pits) that could be desludged with mechanical devices? What percentage of households/holdings is discharging fecal waste directly into storm drain or open environment? [based on sample survey]
- 3) How many or what percentage of households/holdings are availing mechanical desludging services? Is the number increasing/decreasing with time? What are the major barriers for rapid increase in the number of people availing mechanical desludging service?
- 4) Who are providing mechanical desludging services? What is the cost associated with this service? What role is the LGI playing in the delivery of this service? What are the barriers in expansion of this service?
- 5) Is there any difficulty in the operation of the mechanical desludging services, such as narrow roads, mechanical faults, high repair cost, health and safety issues, high fuel cost, public resistance?
- 6) Do all sludges collected by mechanical means discharge to the FSTP, and if not, why?
- 7) What treatment system is employed in the FSTP? What factors affected the choice of treatment system? Who funded the installation of the FSTP?
- 8) What is the capacity of the FSTP (meter cube (m<sup>3</sup>) raw sludge per day)? Approximately what fraction of the city/population could be covered by the plant?
- 9) How much fecal sludge does the FSTP receive (daily or monthly)? Is the quantity increasing or decreasing with time? What percentage of the capacity is currently being utilized? Is there any scope for expansion of the plant at its current location?
- 10) Who is operating the FSTP? What manpower is currently engaged in the operation of the FSTP? What are their qualifications/ designations? What role does the LGI playing in the operation of the FSTP?
- 11) What are the main challenges in the operation of the FSTP (including technological, financial, capacity, lack of FS, etc.)?
- 12) What is the cost associated with the operation of the FSTP? How and by whom this cost is met?
- 13) Is there any data on quality of fecal sludge received at the FSTP? (If yes, collect the available data).
- 14) How much liquid effluent (e.g., in m<sup>3</sup> per day) is generated at the FSTP? Is there any data on liquid effluent generated (and eventually discharged) at the FSTP? (If yes, collect the available data.)
- 15) How much dried sludge is produced at the FSTP? If drying of fecal sludge is carried out at the plant, what is currently being done with the dried sludge?
- 16) If co-composting is done, how much compost is produced (per day or per month)? How much solid waste and other components are used in the preparation of compost (per day or per month)? At what price the compost is sold?
- 17) Does the FSTP produce any other wastes (except for liquid wastes)? What and how much waste is produced and how these are disposed?
- 18) What is the opinion of the LGI regarding suitability of the FSM services?
- 19) What are the feedbacks of people about the FSM services offered by the municipality?
- 20) What is the technical and financial capacity of municipality to run the FSM services regularly and effectively? Is there any functional monitoring mechanism? What are the key challenges and way forward for its sustainability in the long run?

#### **1.4. Target Area**

The target area covers Lakshmipur, Shakhipur and Faridpur Paurashavas in Bangladesh.

#### **1.5. Duration of the Service**

The Service shall be carried out tentatively from **6 November 2019 to 5 March 2020**.

## **2. WORKS TO BE PERFORMED**

### **2.1. Scope of work**

The individual researcher/research organization will conduct the study in three Paurashavas – Lakshmipur, Shakhipur and Faridpur, where FSM services including treatment of fecal sludge are operational. The scope of work of the assignment is as follows:

#### **a. Desk review:**

- i. A comprehensive analysis of the overall FSM situation in Bangladesh, with particular focus on the cities where services are being offered.
- ii. Review of literature on fecal sludge treatment technologies, particularly focusing on technologies being implemented in Bangladesh.

#### **b. In-depth interview and KIIs:**

- i. Ministries and agencies such as Ministry of Local Government, Rural Development and Co-operatives, LGI leadership, Department of Public Health Engineering, Local Government Engineering Department and any other relevant agencies
- ii. Development partners and banks such as World Bank, Asian Development Bank, Islamic Development Bank and others who supported the initiatives in the selected Paurashavas
- iii. People involved in the FSM service delivery, including relevant LGI officials, emptying service providers, FSTP operators
- iv. Academic institutions
- v. International and local NGOs implementing FSM projects in Bangladesh.

#### **c. Field work:**

- i. The individual researcher/research organization will conduct field survey and KIIs in three Paurashavas, where FSM services are operational, and where different technologies are being used for treatment of fecal sludge.
- ii. Collection of information on all elements of FSM service delivery, including desludging, transportation, quantity and quality of raw sludge, characteristics of effluent, dried sludge, treatment products (e.g., compost), and characteristics of liquid effluent.

### **2.2. Expected Outcome of the research**

The individual researcher/research organization should consider the following expected outcome while conducting the research. In case of any deviance from the following expected outcomes while conducting research and/or analysis, the individual researcher/research organization will come up with adequate explanation for adjustment:

- Performance and coverage of the FSM services being offered at each of the three Paurashavas, including present coverage, trend of coverage (both emptying and treatment), quality of desludging service, and performance of treatment plant, sustainability of service.
- **Necessity of guiding documents** for establishing emptying services, treatment technologies, end use and service mechanism for effective FSM service chain.
- **Identification of end use options** of treated effluent and dried sludge.

### 2.3. Methodology

The individual researcher/research organization must use a suitable method of data collection, sampling and interviews/FGDs. The individual researcher/research organization is expected to contact the targeted Paurashavas and DPHE (where appropriate) directly for data/sample collection and other information. The questionnaire and/or any other information collection methods for the field survey and interviews must be shared with ITN-BUET for prior approval.

### 2.4. Outputs/ deliverables

- a. An indicative work plan, detailed methodology and a Table of Content (TOC) for final report should be submitted within 7 working days after the award is confirmed. After receiving the ToC, ITN-BUET will approve that within next 7 working days.
- b. A verbal and written presentation of the findings (after first draft of the report)
- c. All the raw findings and analysis and evidence of data collection process
- d. Final narrative report with agreed format with presentation

### 2.5. Reports and Materials to be submitted

The major reports/materials to be submitted as the outputs of the Service are as seen in the next table.

**Table 1: Output with the Tentative Date and Format (Due Date as Tentative)**

Sl.	Output	Due Date (Tentative)	Format
1.	Indicative work plan	Indicative work plan with ToC: 13 November 2019 Verbal and written presentation: 20 November 2019	Hard & electronic copy
2.	Draft report	Draft output: 20 December 2019  Final output: 15 January 2020	Electronic copy (Data Sheets) Hard copies of Questionnaires and Proof Data
3.	Final Report	Draft output: 10 February 2020 Final output with presentation: 6 March 2020	Hard & electronic copy

### 2.6. Regular Coordination

The research team shall communicate with ITN-BUET as and when required, in order to maintain close communication, according to the schedule of the Service and work volumes at certain points. ITN-BUET will provide feedbacks as required. ITN-BUET will also consult matters of concern with DPHE, as and when required, for facilitating the field work and data collection.

### 3. TEAM COMPOSITION

Position	Qualification and experience
Principal Researcher	<ul style="list-style-type: none"> <li>• PhD or Post-graduate in Civil Engineering, Environmental Engineering/Science or related field</li> <li>• The Principal Researcher must have demonstrable experience in completing similar research; have a thorough understanding about the context of fecal sludge treatment technologies in Bangladesh with clear understanding about the issues related to the FSM service chain. The Principal Researcher must have at least 7 years of national and international experience in the relevant field</li> <li>• The Principal Researcher should have significant professional background and track record Water, Sanitation and Hygiene (WASH) sector including FSM for at least 5 years</li> <li>• A demonstrated sensitivity and understanding of local culture and work practices</li> <li>• Have a demonstrated ability to produce report in time meeting deadlines and to live up to the expected quality standards.</li> <li>• Strong experience in conceptualizing and implementing verification studies within the context of Bangladesh</li> <li>• Excellent analytical, communication and reporting skills.</li> </ul>
Research Associate	<ul style="list-style-type: none"> <li>• Post-graduation degree in in Civil Engineering, Environmental Engineering/Science or related field</li> <li>• Minimum 3 years of experience in WASH sector</li> <li>• Having 5 years' professional experience of data management in similar type of assignment.</li> </ul>
Other team member	<ul style="list-style-type: none"> <li>• Research Assistant(s), as per necessity</li> <li>• Enumerator(s), as per necessity</li> <li>• Other(s)...</li> </ul>

### 4. WORK SCHEDULE

The deadline for report submission will be FOUR MONTHS (max. 90 working days) from the day of signing the assignment. A tentative timeframe is added in the table below.

The following Table presents the work plan of the Service by stages.

**Table 3: Work Plan of the Service (Time Frame as Tentative days)**

Sl. No.	Activities to be Performed	Time Frame (Tentative days)
1.	Reviewing relevant documents	10
2.	Necessary survey tools development	15
3.	Collection of field data, analysis, as needed in consultation with ITN-BUET	10
4.	Final field data collection and Interviews	25
5.	Reporting (following given structure) with presentation	15
6.	Comment/suggestion address and final consultation	15
7.	Editing (language, coherence and data consistency)	10
8.	<b>Total</b>	<b>90</b>

## **5. SUBMISSION OF PROPOSAL**

For submission of Proposal, two copies (one original and one duplicated) have to be submitted. Proposals shall include but not limited to:

### **5.1. Technical proposal**

The technical proposal should include (i) brief explanation about the individual researcher/research organization with particular emphasis on previous experience in this kind of work; (ii) understanding of the TOR and the task to be accomplished including methodology; (iii) profile of the key persons to be involved in undertaking the assignment; (iv) work plan with a proposed time line suggesting approximate dates for field visits, their duration, and research team members.

*Please use the following formatting in the submitted proposal: Font type- Arial, size- 10, Single space, Margin- 1 inch in all sides.*

### **5.2. Financial Proposal**

The financial proposal should provide cost estimates for services rendered including daily consultancy fees accommodation and living costs; transport cost; stationeries, and supplies needed for data collection; enrichment workshop, etc. The financial proposal shall be exclusive of IT, VAT and all other direct and indirect tax, as applicable. The financial proposal must be submitted separately.

### **5.3. General Information about individual researcher/research organization**

#### **5.3.1. Administrative and legal issues of the research organization:**

- Year of Registration
- Updated income Tax clearance certificates (2018-2019)
- Updated Trade license (2018-2019)
- VAT and other certificates e.g. incorporation (if required).

#### **5.3.2. Experience of the individual researcher/research organization**

- Number of years of experience in professional areas of similar type of activity
- Number of similar type of surveys in last 5 years with evidence.

#### **5.3.3. Financial Soundness of the individual researcher/research organization**

- Audit and Accounts Records (Audit report last 3 years)
- Average Annual Turnover of last 3 years (in BDT lac)
- Relevant document for individual researcher

#### **5.3.4. Key Professionals' Qualifications**

- CV of key research team members as per Annex 1 of the ToR

#### **5.3.5. Two References (only for individual researcher)**

**The Proposal should be sent to:** ITN-BUET, ARI-ITN Building (4<sup>th</sup> Floor), Bangladesh University of Engineering and Technology (BUET), Dhaka 1000, Bangladesh, with the subject line "Assessment of Performance of FSM Services in Selected Paurashavas".

The proposal must reach the above mentioned address **on or before 5:00 pm on 28 October 2019.** Shortlisted applicants will be invited for an interview.

## 6. COST ESTIMATES

The Maximum Estimated Cost for this contract is **BDT 17,00,000.00 (Seventeen lacs)**. The summary of Cost Estimates would be as follows:

	<b>Percentage</b>
<b>1. Remuneration of Consultant(s):</b> 1.1 Principal Researcher 1.2 Research Associate 1.3 Other(s) (if any)	<b>60%</b>
<b>2. Reimbursable Expenses:</b> 2.1 Per Diem Allowance 2.2 Travel 2.3 Equipment 2.4 Seminars, Workshops & Training 2.5 Studies, Surveys & Reports 2.6 Miscellaneous	<b>40%</b>

## 7. PAYMENT MODALITIES

The payments would be on output basis. The time line is tentatively set under the condition that the contracted working schedule begins on 6 November 2019. Dates in the column of Time Line is applicable only when the individual researcher/research organization achieved to deliver the Outputs as noted in Table 1 and Table 3.

<b>Sl. No.</b>	<b>Key Deliverables</b>	<b>Time Line (Tentative)</b>	<b>Payment Modality</b>
1.	Output 1: Indicative Work plan	20 November 2019	20% of the total contract amount
2.	Output 2: Zero Draft Report	15 January 2020	30% of the total contract amount
3.	Output 3: Final Report after acceptance of Draft Final Report by ITN-BUET and approval of eligible cost.	6 March 2020	50% of the total contract amount

## 8. SELECTION CRITERIA

The Proposal will be evaluated based on the following criteria:

<b>Selection Criteria</b>	<b>Scores</b>
1. Quality of the detailed proposal /Methodology & Work plan (main proposal max. 10 pages)	40
2. Principal Researcher's Qualifications (Competency and experience) and availability during study period	20
3. Team Composition and experience	10
4. National Level Participation	10
5. Financial proposal (max. 3 pages)	5

6. Updated valid Trade license/Tax/VAT registration Certificate etc. (as applicable)	5
7. Interview	10
<b>Total</b>	<b>100</b>

## 9. Confidentiality

The individual researcher/research organization will not, either during the term of this agreement or thereafter, except in the proper course of his/her/their duties, disclose any information concerning of any affairs of the assignment, which may come to his/her/their knowledge during the course of time. All documents developed for the contracted works will be treated as ITN-BUET's property and restricted for public use unless decided by ITN-BUET. The contracted individual researcher/research organization will submit all original documents and materials to ITN-BUET office in physical and soft (where applicable) formats. The individual researcher/research organization shall comply with the Anti-Fraud, Anti-Bribery, and Anti-Corruption policies of the country of Bangladesh. Any violation /deviation in complying the above will result-in termination of contract.

## 10. Terms and Conditions

- 10.1. All publications and presentations must be properly branded according to project branding and in consultation with ITN-BUET
- 10.2. ITN-BUET reserves the right to accept or reject any proposal without giving any verbal and /or written rationale.
- 10.3. The individual researcher/research organization will be contracted by ITN-BUET under consultancy contract. The ToR is subject to update and modifications as per need.
- 10.4. ITN-BUET reserves the right to monitor the quality and progress of the work during the assignment.
- 10.5. ITN-BUET will not be liable for any unwanted incidence occurred during the field activities.

Annex 1

**Experience of individual researcher/research organization**

**Organisational profile**

[Provide here a brief description (maximum two pages)]

**Principal Researcher's Experience** (Major Work Undertaken that best Illustrates Qualifications)

[using the format below, provide information on each assignment for which individual researcher/research organization and/or Principal Researcher were legally contracted for carrying out consulting services similar to the ones requested under this assignment. Please use separate table for organisation and Principal researcher for research organisations]

Assignment name:		Approx. value of the Contract (BDT. Lacs)
Country: Location within country:		Duration of assignment (months):
Name of Client: Address:		Total No. of staff-month of the assignment:
Start date (Month/Year)	Completion date (Month/Year)	Approx. value of services provided by your organization under the contract (BDT. Lacs):
Name of Joint Venture/Associated Consultants, if any:		No. of Staff-Months of Key professional staff provided by Joint Venture/Associated Consultants:
Name of senior professional staff (Principal Researcher, Team Leader, Coordinator, etc.) Involved and Functions Performed:		
Narrative description of Project: (Not more than 200 words)		
Description of actual services provided: (Not more than 150 words)		