**Terms of Reference**

**for**

**Environmental Assessment for the Implementation of Faecal Sludge Management Plant**

1. **Project Background**

The majority of Bangladeshi living in urban areas relies on on-site sanitation which generates 'faecal sludge' (FS). Particularly in the unplanned urban settlements of rapidly expanding cities, this FS possesses a growing challenge, generating significant public health and environmental risks and impacts. FS is often allowed to accumulate in poorly designed pits and discharged into storm drains and open water bodies, or dumped into waterways, wasteland and insanitary landfill sites. In the national sanitation survey, 2003, it was observed that only 58 per cent households had some form of latrine. It substantiates the WHO/UNICEF Joint Monitoring Programme (JMP)report in 2000 that shows the open defecation rate was about 19 per cent. However, due to special drives of the Government of Bangladesh and development partners, with active engagement of local government institutions, and the communities, sanitation progress has gained momentum with the focus on building different types of low-cost pit latrines. As a result, the open defecation rates have been gradually reduced to 1 per cent (JMP, 2015). The other side of the fact reveals that 5 cubic meter of FS discharge to the open environment equivalents to open defecation of 5000 people per day. Therefore, construction of thousands of pit latrines without considering proper hygienic separation of excreta from human contact and faecal sludge management (FSM) eventually emerged as a second-generation sanitation problem for Bangladesh.

Mymensingh City Corporation covers an area of 21.73 square kilometers. As of 2015, the total number of households is 83,682 with a population of 456,569 (https://en.wikipedia.org/wiki/Mymensingh). Most of the households in Mymensingh City Corporation have access to latrines irrespective of their quality. Due to lack of following standard design of septic tanks and no treatment facilities, 100 percent of faecal sludge is discharged into environment. To ensure safe management of faecal sludge, a co-compost plant was designed jointly by OXFAM and NGO Forum for Public Health and it will be commissionedinMarch 2019 to tackle faecal sludge generated from pit latrines and septic tanks, and solid waste from households exploring sanitation service chain.

* 1. **Rationale**

The purpose of this project is to improve access to safe water, sanitation and hygiene (WASH) by the poor and vulnerable people in both urban areas and extending WASH program with the sustainable Faecal Sludge Management (FSM) in urban areas of Mymensingh City Corporation areas. Environment Impact Assessment (EIA) is designed of the proposed faecal sludge management plant to identify of the public and environmental consequences of project and to prevent environmental deterioration, to avoid construction errors and to forestall economic losses caused by negative side effects.

* 1. **Project components**
		1. **Component A: Establishment of Sustainable Faecal Sludge TreatmentPlant:** This component will finance the construction of Faecal Sludge Management treatment plant. The treatment plant will help in managing faecal sludge safely through co-composting of FS and Solid Waste (SW) in Mymensingh city areas. On the other hand, good decomposition of organic constituents of FS and SW confirms good quality of soil conditioner or compost.
		2. **Component B: Emptying & Transportation of faecal sludge:** This component will focus on emptying and transportation of faecal sludge from different containment system. Liquid FS will be collected from septic tanks and pit latrines by vacutugs owned by City Corporation. The FS will be collected from within the city corporation areas and transported to the co-compost plant. Transportation is a crucial part of a sanitation system to reduce risks of contamination and proper recycling of sludge. Depending on size of the pit and tank, necessary numbers of trips will be made. Weekly 20,000-25,000L of FS will be collected and discharged on the unplanted and planted drying beds in the treatment plant.
		3. **Component C: Pre-treatment at drying beds:** This component will be focused on pre-treatment of collated FS. To ensure the pre-treatment through constructed wetland and planted drying bed with a capacity of maximum 5000L of sludge per bed at a loading depth of about 20cm. These consist different layers of gravel-sand filter media of different thickness and gavel sizes. The benefits of these beds include no requirement and use of power. The drying process will be enhanced by evaporation and solid-liquid separation by gravity percolation of leachate.
		4. **Component D: Effluent treatment system:** The separated liquid part (leachate) of raw FS pre-treated on drying beds further undergone with phytoremediation chamber and followed by a polishing pond. The effluent will be discharged into the environment within the Bangladesh effluent discharge standards. Canna indica, a perennial will be planted out in the constructed wetland to aid further leachate treatment at the constructed wetland.
		5. **Component D: Collection of household solid waste:** Solid Waste will be collected and separated for co-composting. The composting plant handles of solid waste and organic components are segregated during the separation process and the inorganic part will be recycled and used by different industries as required. However, the project has tied with the concept of source separation of SW from households but still it requires manual separation at the plant. This is one of the key challenges of collection of household SW.
		6. **Component E: Co-composting process:** This component will focus on co-composting mixing with FS and SW. The treatment process follows the batch system where a batch of mixed organic waste (mix of FS and SW) will be prepared and aerobically composted separately with intense biological activity from other batches to a final product. The overall performance of the composting process is therefore the combined effect of the activity of individual microorganisms in each batch.
		7. **Component F: Maturity of compost:** The maturity of compost is an important for application purposes; fresh and matured composts are distinguished prior to marketing to apply the compost as soil conditioner.
1. **Objective of the assignment**

The overall objective of this assignment is to define Environmental Impact for the construction and operation of the above mentioned project and recommend appropriate mitigation and management measures in the project area. The individual environmental consultant would be contracted to carry out environmental screening/assessment i.e. Environmental Impact Assessment along with Environmental Management Plan (EMP) following Environment Conservation Rules 1997 Environmental and Social Safeguard Policy. The major scope of work given the proposed assignment as below:

1. **Policy, legal, and administrative framework:**This section describes the relevant national, and international regulations and standards governing environmental quality, health and safety aspects, endangered species, and land use controls.
2. **Description of the Project:** This section of the report will need to provide information on the following:
3. Nature and Scope of the project
4. Need for the project (in the context of the overall power generation scenario)
5. Location and site description (using maps to show the project and site location, and any specific environmental attributes in and around the location)
6. Technical description of key project components (including equipment/ machinery description, and its specific location at the site using maps/ drawings)
7. Proposed schedule for project implementation
8. **Description of Environmental Baseline:** The baseline description collection should take into account the existing and proposed developments in the area so that cumulative impacts can be assessed. Based on the field visit, baseline data needs to be collected from secondary and primary sources to describe the baseline conditions.
9. **Physical Environment:** This includes information on topography, geology/ seismology, soil type, soil quality, climate and meteorology, natural gradient and drainage pattern and ambient noise levels.
10. **Water Quality and Quantity:** This will include the water quality of the project sites (e.g., Temperature, pH, EC, DO, BOD, TSS, TDS, and Alkalinity etc.). The water includes used by the prospective users as well as existing surface water to be affected during construction and after period.
11. **Fisheries:** There may be fishing in the adjacent water bodies of the proposed project sites which may get disrupted by the intake and discharge of water; and there may be dredging to be undertaken to take the silt for filling-up the site which is currently swampy. Hence, the nature and scale of fisheries will need to be assessed.
12. **Flora and Fauna:** Available flora and fauna of importance, especially any endangered species, sensitive habitats, and species of commercial importance will be carefully monitored and calculated.
13. **Description of potential environmental impacts and mitigation measures:** Identify all potential impacts the project would incur during pre-construction, construction, and operational phases of the project with focus on the following:
14. Potential noise levels
15. Potential interactions of project activities on physical and biological environment
16. Impact on neighboring ecology
17. Water quantity and effluent and ambient water quality
18. Impacts on fisheries resources and other aquatic flora and fauna
19. Land-use changes and soil quality degradation
20. Human health risk and wellbeing of the local community

Using an impact matrix, the scale of impacts should be screened initially. Assess the impacts brought about by the project related activities on the baseline environment. Distinguish between positive and negative impacts, direct and indirect impacts, including impacts from possible accidents, and short and long-term impacts, which are unavoidable or irreversible. Characterize the cause and effects of impacts and the synergistic effect of multiple impacts on the environment and the local community. Characterize the impacts in terms of nature (eg. reversible, irreversible), scale (eg. local, regional), and duration (eg. short-, medium-, long-term).Suggest mitigation measures to reduce and offset identified impacts. For all identified impacts, explain how the project plans to mitigate the adverse impact from the pre-construction stage onwards. In addition, explain how the project plans to offset or compensate for adverse effects and for positive enhancement of environmental quality.

1. **Determine Cumulative Environmental Impacts:** Considering the existing environment and the proposed development in the area determine the tentative impact on environmental quality. This may need the resources to undertake some modeling of air quality, and projection of water use and effluent discharges.
2. **Analysis of Alternatives:** Compare feasible alternatives to the proposed project site, technology, design, and operation including the without-project scenario in terms of potential environmental impacts and the feasibility of mitigating the impacts. State the basis of selecting a particular alternative.
3. **Environmental Management Plan:** Develop an EMP that consists a set of monitoring and institutional measures and mitigation steps to be taken during different stages of the project (pre-construction, construction, and operation) to mitigate the adverse environmental impacts, offset them, or reduce them to acceptable levels. The EMP should identify and summarize all anticipated significant adverse impacts, and describe with technical details each mitigation measures. Furthermore, the EMP should contain clear and agreed allocation of responsibility amongst project proponents and government agencies for implementation of the mitigation measures as well as their oversight and monitoring. The EMP should propose cost-effective mitigation measures, the cost of which should be a part of the project cost.Given that a number of mitigation measures would need to be taken by the contractors during construction, erection, or maintenance stages, it is important to ensure that the EMP is integrated with the bid documents for procurement of contractor services. This is essential to ensure the implementation of mitigation measures. As per the minimum standards of DoE, Environment and Development Policy, environmental considerations are incorporated into monitoring, evaluation and reporting systems by

a) identifying positive environmental outcomes and how they have been achieved.

b) collecting information on any negative environmental impacts of interventions and how they have been/will be addressed.

c) ensuring project/program reports document any positive or negative environmental impacts/outcomes and how they have been achieved/addressed.

1. **Beneficiary Engagement:** In order to ensure that all relevant issues have been covered by the EA, it is essential to consult potentially community people and other relevant stakeholders (such as NGOs from the area) early in the EA process, so that their views and concerns about environmental issues can be addressed to the extent possible.
2. **Expected Deliverable**

The consultant/firm is expected to produce a comprehensive study report with in-depth description, information, assessment and analysis of the Environmental impact in the targeted project areas of City Corporation areas. The deliverables of the assignment will be as follows:

* The final report addressing all objectives as specified on the ToR and incorporating comments from the concerned in the final version of the report.
* Potential Environmental impacts
* Management Responses to potentiel Environnemental degradation
* Environnemental management plan
* Mitigation strategy and recommandation
1. **Duration**

Given that some of the data should be available from EA studies for the existing and proposed plants in the vicinity of the site, there may not be much primary data collection required. It is estimated that the assignment will be completed within 10 weeks of signing the contract.

1. **Reporting**

The consultants will report to NGO Forum for Public Health. They should provide an inception report after one week outlining the details of their work program. After completion of the assignment the consultant will provide final EIA report. It should be ensured that the EA also satisfies the DoE’s requirements.

1. **Qualifications**

The Consultant/firm should have at least the following qualification:

* Master’s degree/ Ph.D. in Environmental Sciences/Engineering/Environmental Earth Sciences or equivalent fields having at least 10 years’ experience in the related field;
* Strong technical background in environmental sciences and management;
* Sufficient knowledge in development partners assisted projects specific policies and procedures on environmental safeguards especially experience on preparation of environmental screening and assessment related to similar types of study (FSM, Waste to Organic) will be preferred.
* Minimum 4 years working experience, particularly in impact assessments, environmental management, and leading/supervising environmental safeguard management;
* Qualifications of the consultant to have previous experiences in providing reports to DoE/ experience in projects in compliance with DoE requirements
* Report writing skill in English will be desired
1. **Guideline for Proposal Submission**

The proposal (duly signed) should be comprised with the following sections and given page limit. Proposal should be submitted to ***NGO Forum for Public Health, 4/6, Block-E, Lalmatia, Dhaka-1207*** duly signed by mentioning ***“Environmental Assessment for the Implementation of Faecal Sludge Management Plant” in*** the subject line **by 27January 2018 within 17:00 hrs.**

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| --- | --- |
| **Topic** | **Maximum Page Limit** |
| **Technical Proposal** |
| Cover Page  | 1 Page |
| Content of the Report | 2 page |
| Table of Content | 1 Page |
| Understanding of the Assignment *(Without copying from the ToR content)* | 3 Page |
| Proposed Methodology and experience in leading similar evaluation work | 3 Pages |
| Work Schedule  | 1 Page |
| Any other relevant information (if required)  | 3 Pages |
| **Financial Proposal** |
| Budget detailing out* Consultancy days and fees
* Travel and accommodation
* Any other expenditure (please mention nature of expenditure)
* 15% VAT and 10% TAX
* The Consultant should submit his/her CV along with a copy of valid TIN certificate.
* Total amount in BDT
 |

1. **Evaluation Process**

In response to the invitation, the consultant / consulting firm will have to submit a technical proposal as per the **‘Terms of Reference’** and a financial proposal. The selection committee will evaluate both the technical and financial proposal of the consultants / firms based on set out evaluation criteria as below-

|  |  |
| --- | --- |
| **Basic Selection Criteria** | **Weight** |
| 1. **Technical Proposal**
 | **60** |
| Expertise of the firm/organization |  |
| Understanding of the ToR | 10 |
| Proposed Methodology and experience in leading similar evaluation work | 30 |
| Management structure and qualifications of key personnel | 10 |
| Team composition | 10 |
| 1. **Financial Proposal**
 | **40** |
| **Total** | **100** |

The Consultant must submit the following documents along with Technical & Financial Proposal

* 2-page profile highlighting consultant’s related assignment completed with client names, contract persons and mobile numbers;
* Updated TIN certificate and any other relevant document(s), (if necessary);