

Terms of Reference (ToR)

For

Assessment on the processing and uses of biomass (plants) produced in the planted drying beds of the fecal sludge treatment plants

Location: FSTP I, II in Ukhiya & FSTP III in Teknaf, Cox's Bazar

1. Background

WASH (Water, Sanitation and Hygiene) is one of the important lifesavings supports that have been continuing for the refugee communities since the first day of refugee settlements at Cox's Bazar in 1990. UNHCR is the first responder for this operation where a number of implementing partners are involved to do this. The emergency lifesaving WASH supports has been intensified during the largest humanitarian crisis on 2017. Access to WASH services for the diversified refuge communities was the main motto of this emergency response. During the transitional period i.e. shifting the emergency to post emergency period in the early 2019.

For fecal sludge management different agencies have been constructing fecal sludge treatment plant (FSTP). Many FSTP is now being operated in which planted drying beds are found. Plants are used in the drying bed mainly to reduce nutrients value of the sludge effluents. Most common plants are Canna Indica and Pakchung grass. These plants have the capacity to survive in the solid sludge or more specifically in the planted drying bed. There are several reasons for removing this biomass such as when the plants reach their life limit or may be trimming to remove the bushes. As these biomass is a part of the fecal sludge treatment plant we need to come up with some idea on how to use this biomass to get byproduct or making sure that this biomass is not creating any hazard to the environment rather inputting some value in the other sectors like agriculture. Considering the background there is a requirement for the assessment on the biomass of the planted drying bed.

2. Objective

The objective of this consultancy is to conduct a detailed assessment of the processing and uses of the biomass (plants) in the planted drying beds. Specific objectives include:

- To assess the quality and quantity of the biomass produced in the FSTPs (03 FSTP).
- To evaluate the processing techniques and potential applications of biomass generated in the planted drying bed of FSTPs
- Economic value assessment of this FSM byproduct.
- To recommend the most appropriate solution to process the biomass produced in the FSTPs aligning with this context.

- To develop a guideline and standard operating procedure (SOP) to use and manage the byproducts.

3. Scope of Work

From this assessment the probable management mechanism of the biomass producing in the fecal sludge treatment plant can be established. The stakeholder will be able to select possible way of dealing with the biomass that is applicable for their respective field and add value to the FSM system. This biomass can be linked with other sector after the assessment for example agriculture, poultry farming feed etc. Also this study will help us to understand the nutrients value of the biomass as well as help us identifying future aspect of this biomass. The assessment will encompass the following key areas:

- Examination of biomass processing methods employed within the planted drying bed.
- Analysis of the quality and quantity of biomass produced.
- Identification of potential uses for the biomass, including but not limited to:
 - ✓ Soil amendment for agricultural purposes.
 - ✓ Suitability of the PDB biomass as fuel source/energy generation.
 - ✓ Composting material for organic waste management
 - ✓ Food value assessment for cattle

4. Methodology

The assessment will involve a combination of desk research, field visits, stakeholder consultations, and data analysis. The methodology will include:

- Site visits to FSTPs to observe the planted drying bed operations and assess the quality and quantity of the biomass in the planted drying beds.
- Analysis of biomass samples (lab test and others) to determine relevant parameters as well as find out practical solutions to deal with the biomass without creating any environmental hazards.
- Determination of suitability for different applications of biomass processing.
- Cost-benefit analysis of biomass utilization options.
- Environmental impact assessment using appropriate methodologies.
- Interviews and discussions with key stakeholders, including plant operators, local authorities, and potential biomass users.

5. Deliverables

The following deliverables are expected from the assessment:

- Detailed report outlining the findings of the assessment, including an overview of biomass production, processing methods, potential uses, various lab test reports and analysis, economic analysis, and environmental considerations.
- Recommendations for optimizing biomass processing and utilization practices align with the context.
- Presentation on the overall findings of the assessment.
- Presentation of findings to relevant stakeholders, including FSTP management, local authorities, and community representatives.
- A standard operating procedure (SOP) for biomass management.

6. Timeline

The consultancy is expected to be completed within 20th of June, 2024 including the final report submission.

7. Budget

A detailed budget including the breakdowns of each activities like sampling, lab test analysis, consultancy fees, vat & tax and any other relevant expenses, will be provided by the consultant in the budget proposal.

8. Minimum Qualifications and Expertise

The consultant should possess the following qualifications and expertise:

- Expertise in environmental engineering, sanitation engineering, waste management, biomass utilization or a related field.
- Familiarity with international standards, guidelines, and best practices related to fecal sludge management.
- Strong analytical and report writing skills, with the ability to communicate complex technical information in a clear and accessible manner.
- Previous experience with similar assessments in sanitation or wastewater treatment is desirable.
- Fluency in Bangla & English is required.

9. Reporting and Supervision

The consultant will report directly to Mr. Ataur Rahman (Project Coordinator, NGO FORUM), with oversight from the UNHCR WASH team. Regular progress updates and consultations will be scheduled throughout the duration of the consultancy.

10. Evaluation Criteria

Proposals will be evaluated based on the following criteria:

- ✓ Demonstration experience of similar type of assessment.
- ✓ Clarity and feasibility of the proposed methodology and work plan.
- ✓ Qualifications and experience of the consultant and key personnel.
- ✓ Cost-effectiveness of the budget proposal.
- ✓ Ability to meet the objectives and deliverables within the specified timeline.

11. Submission of Proposals:

Interested consultants should submit their proposals, including a detailed technical and financial proposal, CVs of key personnel, and relevant supporting documents within the deadline.

12. Confidentiality

All information obtained during the assessment process shall be treated as confidential and used solely for the purpose of this project.

13. Amendments

NGO FORUM will reserves the right to amend the terms of this ToR or cancel the consultancy at any time prior to the signing of a contract without incurring any liability.