

Terms of Reference for Research Project

TITLE: A comprehensive study on decentralized wastewater management systems.

1. BACKGROUND

1.1 Centralized systems are usually planned, designed and operated by government agencies that collect and treat large volumes of wastewater for entire communities. On the other hand, decentralized wastewater management (DWM) systems treat wastewater of individual houses, apartment blocks or small communities close to their origin.

1.2 Various government initiatives in India aim to improve sanitation facilities, and decentralized wastewater management (DWM) systems are sometimes part of these initiatives. National Water Policy, 2012 is such initiative that incentivizes the decentralized sewage treatment plants, recycling and reuse of treated water.

1.3 In order to take a holistic view of decentralized wastewater management systems, the Drinking Water Supply, Wastewater and Stormwater Systems and Services Sectional Committee, SSD 14, has decided to conduct a detailed study on the design, installation, operation and maintenance, and waste disposal of the system.

1.4 The project aim is to prepare an analytical report on best management practices adopted by concerned service providers.

2. OBJECTIVE

The primary objective of the project is collection of information, data, and evidence from primary and secondary sources related to the design, installation, operation and maintenance, and waste disposal in the DWM systems.

3. SCOPE

3.1 Undertake comprehensive study of existing literature including standards, regulations, reference materials, case studies and SoPs related to the design, installation, operation and maintenance, and waste disposal in the DWM systems.

3.2 Comparative analysis of information and data collected as per **3.1**.

3.3 Conduct a study to develop a framework on the management of DWM, based on information, data and evidences collected on the following:

- a) Planning aspect (including technical, social, environmental and regulatory aspects);
- b) Installation practices;
- c) Operation and maintenance requirements (including sludge and effluent management, and overloading protection);
- d) Safety requirements;
- e) Identification and of key performance indicators;

- f) Cleaning and disinfection;
- g) Identification of testing methods;
- h) Protection guide and instructions; and
- i) Rapid response mechanisms.

3.4 Conduct visits as per clause **4** (d).

4. METHODOLOGY

The research project will follow a structured methodology that includes, but not limited to, the following:

- a) Prepare a preliminary report and structured questionnaires in consultation with BIS/TC through the review conducted as per **3.1** and submit the report to BIS/TC.
- b) Collection of feedback through the circulation of structured questionnaires (to be finalized in consultation with BIS) to obtain relevant information/data from at least **fifty** experts in context with **3.3**.
- c) Conduct interviews with at least **five** experts/auditors and have focus point discussions on important aspects as mentioned under para **3.3**.
- d) Conduct field visits at industries engaged in the design, construction, execution, operation and maintenance of decentralized wastewater systems (at least **three** manufacturers, **three** water utilities of different states, and **three** users such as hotels, shopping complexes, residential areas and other) in the country and collect information/data as covered under **3.3** above. After identification of water utilities to be visited, take prior consent of BIS before proceeding further.
- e) Focused discussions with experts to analyze and comparative analysis of the information/data collected.
- f) Prepare a study report on the basis of findings and data collected as covered in scope (para **3**).

5. DELIVERABLES

5.1 An analytical report containing information and data as mentioned in Scope (para **3**) along with appended evidence containing statements, questionnaires, details of interviews, the outcome of consultation with experts and data collected during literature review and visits.

5.2 Hard and soft copies of the report shall be submitted within the timeframe as mentioned at para **6**.

6. TIMELINE AND METHOD OF PROGRESS REVIEW

6.1 The time frame for completing the study and submitting the report is **5** months from the date of the project award.

6.2 Stage wise timelines are given below:

Stage	Time from date of award of research project	Progress of work
Stage 1	Within 45 days	Completion of review of literature and preparation of sampling plan
Stage 2	46-90 days	Completion of field visit, expert interviews, focus point discussion
Stage 3	91-120 days	Submission of draft research report to BIS for evaluations and recommendations by TC.
Stage 4	121-150 days	Submission of final report

The researcher taking up the project shall clear all doubts on provisions of research including ToR and BIS guidelines before acceptance before acceptance of award of project.

6.3 In case of delay in submission of report at any stage, the justification shall be given awardee for consideration by the Sectional Committee.

7 BIS SUPPORT

BIS will provide access to the latest available editions of Indian standards and/or international standards relevant to the project, on request.

8. NODAL PERSON

Nodal Person:

Smt. Priyanka Singh, Sc B/SSD &

Member Secretary, SSD 14

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