TRAINING NEEDS ASSESSMENT

WOMEN SELF-HELP GROUPS IN THE O&M OF TREATMENT PLANTS

Sitapur | Khurja | Raebareli | Jaunpur

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Research direction: Subrata Chakraborty

Author: Alka Kumari

Research support: Sarim Ansari, Manish Mishra, Hari Prakash Haihyvanshi and Harsh Yadava

Editor: Yashita Mishra

Design: Ajit Bajaj

Cover design: Ajit Bajaj

Layout: Surender Singh

Production: Rakesh Shrivastava and Gundhar Das

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Maps in this report are indicative and not to scale.

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Centre for Science and Environment
41, Tughlakabad Institutional Area
New Delhi 110 062
Phone: 91-11-40616000
Fax: 91-11-29955879
E-mail: cse@cseindia.org
Website: www.cseindia.org

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1. BACKGROUND AND OBJECTIVE

In 2024, the Government of India launched the AMRUT MITRA initiative, focused towards water management through the engagement of women-led self-help groups (SHGs). The initiative also seeks to support upliftment of their socio-economic status and quality of life.

In Uttar Pradesh, as part of the same initiative, SHGs in four towns—Sitapur, Khurja, Raebareli and Jaunpur—were given the responsibility of operations and maintenance of faecal sludge treatment plants (FSTPs).

The onboarding process indicated that an effective training need assessment document is necessary as the state had no prior experience of putting SHGs in operating the FSTPs. Hence to capacitate the SHGs as per their training needs, training need assessment was carried out and documented.

Each of the cities possess unique challenges and requirements for the operation and maintenance (O&M) of their respective FSTPs, given their city-specific treatment chains comprising different treatment modules. To understand the requirements of the SHGs, CSE undertook a training needs assessment (TNA) study. By identifying the specific training needs of SHG women in these locations, the aim is to develop targeted, tailor-made training programmes that address the gaps in their current knowledge and skills.

This background sets the stage for the detailed analysis and recommendations that follow in the report, highlighting the significance of training SHG women and the specific context of each city.

The objective of conducting this training needs assessment was to understand the gaps in current knowledge of the SHGs against the standard practice followed while operating the treatment plants and document a detailed assessment of the training requirements for SHG women involved in the operation and maintenance of FSTPs. Based on the findings, a targeted training programme that addresses identified gaps can be developed, resulting in enhancement of their technical and operational capabilities.

2. METHODOLOGY

The methodology outlined in this report was developed to conduct a comprehensive training needs assessment for the self-help group women engaged in the operation and maintenance of faecal sludge treatment plants located in Sitapur, Khurja, Raebareli, and Jaunpur. The methodology incorporated conceptualization, questionnaire development, data collection through questionnaires, as well as a detailed analysis of the collected information.

2.1 Conceptualization

The TNA was developed to evaluate the knowledge and capacity of SHG women involved in the operation and maintenance of FSTPs across Sitapur, Khurja, Raebareli and Jaunpur. Given that the state had no prior experience of engaging SHGs in FSTP management, the study aimed to identify training gaps and necessary capacity-building interventions to ensure efficient operations.

2.2 Questionnaire development

To ensure a structured approach to data collection, a questionnaire was designed in three stages:

- **Drafting:** An initial set of questions was developed based on the observations of operation and maintenance of treatment plants, and discussions with SHG women during city visits.
- **Testing:** The draft questionnaire was tested through pilot interactions with SHG members in Raebareli, to understand how they respond to the questions and assess its relevance. During testing, some responses varied, which led to the realization that additional questions could be included to gather more information for the training needs assessment.
- **Finalization:** After incorporating feedback from the testing phase, the questionnaire was refined for comprehensive data collection.

2.3 Data collection

To get a clear understanding of the training needs, CSE team members visited all four cities to collect first-hand information. The data was gathered through two methods: individual interactions with SHG members and focused group discussions (FGDs).

Map 1. Locations of towns having SHG engagement in Uttar Pradesh

Source: CSE

- **Individual interviews:**
  One-on-one interviews were conducted in all four cities with each SHG woman involved in FSTP operations. These conversations were structured around a detailed questionnaire (Annexure A) designed to assess their current knowledge related to FSTP operations and other allied aspects.
- **Focused group discussions (FGDs):**
  FGDs were organized to assess the general awareness around faecal sludge and septage management (FSSM) among the participants. These discussions provided valuable insights into collective knowledge and practices related to FSSM. These discussions provided a platform for participants to share their insights, identify common knowledge gaps and areas that need improvement.

2.4 Key categories of assessment

The questionnaire was designed to evaluate individual-level barriers to understanding FSTP operations, along with the existing knowledge levels of SHG members. Data was gathered through interviews and group discussions to assess their familiarity with plant maintenance and management. The assessment aimed to determine whether respondents had a fundamental knowledge of FSTP functioning and maintenance. It focused on identifying personal challenges, gaps in awareness, and the overall ability of SHGs to manage operations efficiently. To ensure a holistic evaluation, the questionnaire was structured into the following five key categories:

- **General understanding of FSSM:** This section focused on examining the basic awareness of the concept and importance of faecal sludge and septage management among SHG women. A total of three questions were asked in order to assess their foundational knowledge on FSSM**.**
- **Technical skill enhancement**: This section assessed the specific technical skills required for FSTP operation, identifying gaps that need to be addressed. Requirement of technical skill is linked to the availability of the set of modules available in each plant. Questions enquiring about their knowledge on O&M were included. Since the module chain is different across the plants, the number of questions also differed accordingly. The questionnaire was designed to assess the technical aspect of operation and maintenance by including questions that evaluate understanding of both the functioning of modules and their cleaning schedules. Since the module chain differs across plants, the number of questions also varied accordingly:

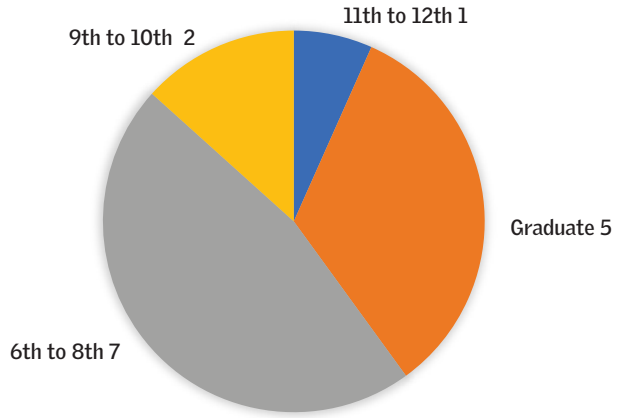
1. Sitapur: 14 questions
2. Jaunpur: 16 questions
3. Raebareli: 20 questions
4. Khurja: 16 questions

- **Health and safety awareness:** This section reviewed current practices related to health and safety, identifying areas for improvement to create a safe working environment. It includes a total of ten questions.
- **Group behavior and interpersonal communication:** This section assessed communication and teamwork skills, aiming to enhance collaborative work and conflict resolution. Ten questions are included in this section as well.
- **Availability of tools and equipment:** This section evaluated the current availability and adequacy of tools and equipment, identifying any additional needs to ensure effective and safe task performance. There are five types of checklists under this section—operation and maintenance equipment, safety equipment (like fire extinguisher), personal protective equipment (PPE) kit, first-aid kit, and additional resources (like ID cards, diary, pen etc.) provided to the supervisor and other group members. (Refer to *Annexure B* for insights related to tools and equipment availability)

2.5 Analysis

This section transitions into a detailed, section-specific analysis mentioned in the questionnaire, focusing on the current level of understanding among SHG women and identifying specific training needs based on the responses gathered during the assessment through focused group discussions and individual interactions.

Figure 2: Group affiliation of SHG members



Source: CSE

These interactions provided valuable insights into individual knowledge levels, operational challenges, and areas requiring targeted training initiatives. The responses were analyzed to identify gaps in technical expertise, health and safety awareness, teamwork, and access to essential tools and equipment. Before diving into a detailed analysis, basic demographic and contextual information was collected, such as their educational background, affiliation to different groups, whether they attended the TNA exercise, etc.

Number of women interviewed

The assessment included a total of 15 women engaged in four cities. Due to severe illness and subsequent hospitalization, one of the women was unable to attend the interview on the day of the training needs assessment in Khurja. (Refer to *Annexure C* for individual group information of SHG women).

- **Educational background:** The educational backgrounds of the participants varied, ranging from no education to graduate, showcasing a diverse spectrum of knowledge and learning needs.
- **Group distribution:**
  - **Same group:** Four participants in Sitapur and two participants in Jaunpur belong to the same self-help group, indicating a cohesive working unit.
  - **Different groups:** Nine participants from different cities are from different SHGs, highlighting a variety of operational dynamics.

[1]**Sitapur:** All women in Sitapur belong to Yes Swayam Sahayata Samooh

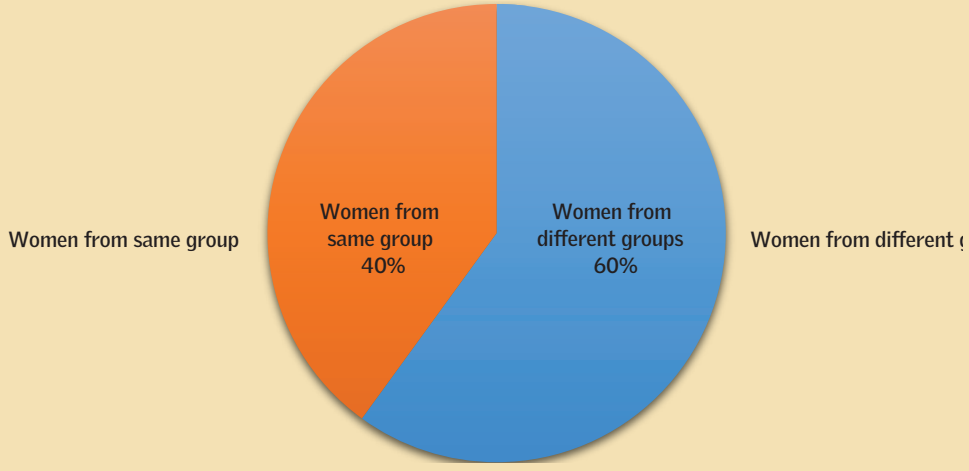
Jaunpur: Two sanitation workers belong to Nirmal Jal Swayam Sahayata Samooh

[2]**Raebareli:** Supervisor belongs to Anshika Mahila Swayam Sahayata Samooh, gardener belongs to Veer Swayam Sahayata Samooh, sanitation worker belongs to Pooja Mahila Swayam Sahayata Samooh and the other sanitation worker belongs to Shree Krishna Swayam Sahayata Samooh.

Khurja: Supervisor belongs to Anju Swayam Sahayata Samooh, sanitation worker belongs to Mahima Swayam Sahayata Samooh and the other sanitation worker belongs to Divakar Swayam Sahayata Samooh.

Jaunpur: Supervisor belongs to Radha Mahila Swayam Sahayata Samooh and gardener belongs to Gulab Mahila Swayam Sahayata Samooh.

Figure 2: Group affiliation of SHG members



Source: CSE

Section 1: General understanding of the FSSM

This section discusses current knowledge levels of SHG women regarding fundamental concepts related to faecal sludge and septage management (FSSM). Basic questions were included in the assessment to gauge their understanding of FSTP and FSSM, which helped in assessing their specific training needs. The key questions included the areas mentioned below, with corresponding training needs against each area:

1. Understanding of the sanitation value chain: SHG women have very little to no understanding of the sanitation value chain and its components. Only three out of 15 respondents demonstrated partial understanding of the sanitation

value chain, and these were mostly the city supervisors with educational qualifications above class 12. Unlike the supervisor of city Sitapur who was educated till class 8th, the remaining respondents had no understanding of the sanitation value chain.

2. Knowledge of FSTP and its operations: SHG women were unable to articulate what an FSTP entails, indicating a lack of understanding. Nine respondents out of 15 indicated no understanding, while six implied that they have limited knowledge about the operations—they could expand the acronym "FSTP" and specify the capacity of the treatment plant.

3. Treatment capacity of the faecal sludge treatment plants: Most women had minimal knowledge about the concept and relevance of treatment capacity. Only six SHG members were able to explain about the treatment capacity of the plant.

Training needs:

1. Provide comprehensive training on the sanitation value chain, including collection, transportation, treatment, disposal and reuse of faecal sludge and septage.
2. Impart training on FSTP operations, treatment processes, and the function of each module within the treatment plant.
3. Provide basic foundational knowledge on FSTPs and related terminologies.

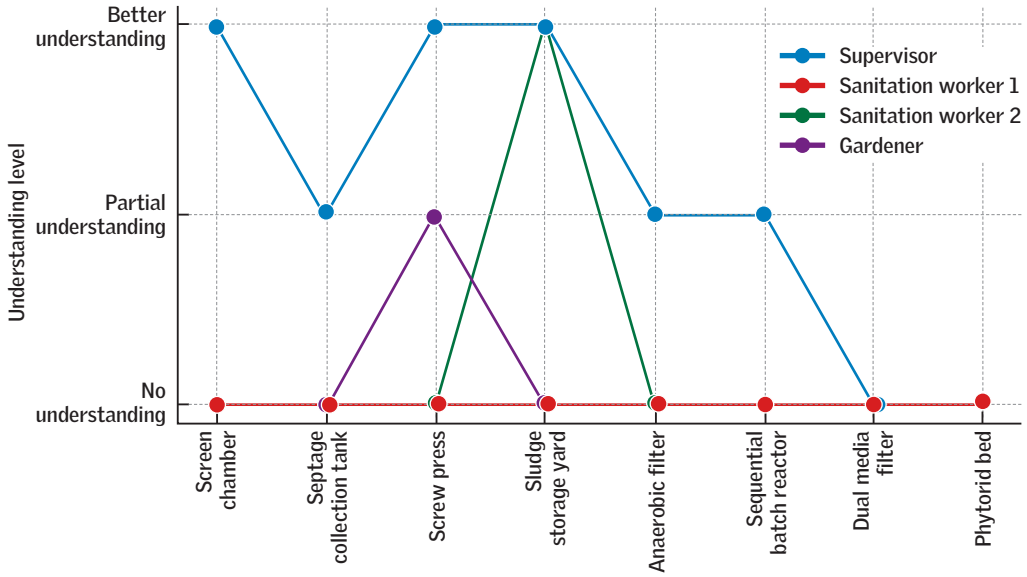
Section 2: Technical skill enhancement

This section highlights the specific technical knowledge and skills required for FSTP operation. It includes an assessment of current knowledge levels of women SHGs about operations of each treatment module and identifies gaps based on interviews. Women SHGs were asked various questions on the functions of the treatment modules and the cleaning schedules in their respective FSTPs. Based on the responses gathered, training needs were identified for all four FSTPs. This analysis will guide the development of a targeted training needs assessment.

This section carries four treatment chains catering to four cities, each having a different set of treatment module. (Refer to *Annexure D* for flow diagrams of treatment chains). A total of 15 SHG members were evaluated, with their roles taken into account to assess understanding of various modules of the treatment chains. The following section covers graphical representation (see *Graph 1, Graph 2, Graph 3, And Graph 4* below) of role-wise knowledge of the SHG members.

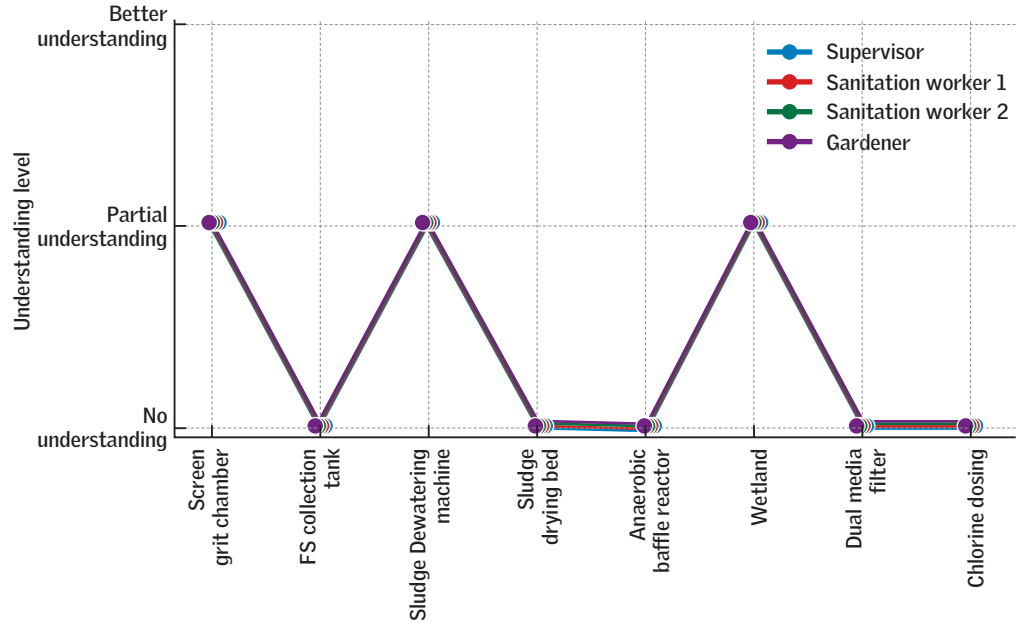
Treatment chain 1: Jaunpur

Graph 1: Understanding levels of different modules across roles



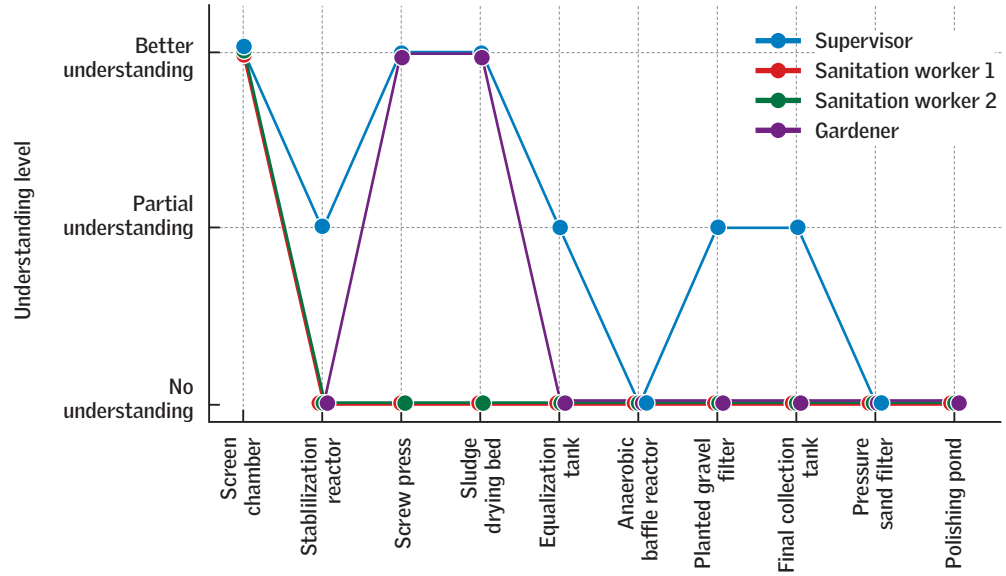
Treatment chain 2: Khurja

Graph 2: Understanding levels of different modules across roles



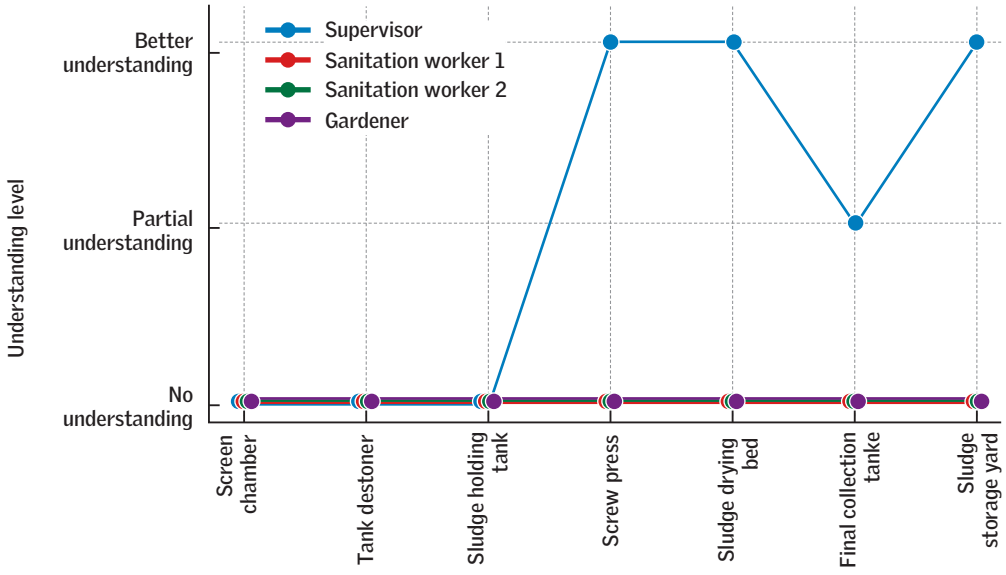
Treatment Chain 3: Raebareli

Graph 3: Understanding levels of different modules across roles



Treatment chain 4: Sitapur

Graph 4: Understanding levels of different modules across roles



Current understanding:

The current understanding of SHGs among women across the four cities was found to vary significantly, primarily due to their diverse educational backgrounds. Supervisors, most of whom had completed education up to the 8th grade or

beyond, exhibited a better grasp of module-specific information. However, in Sitapur, the supervisor was educated below 6th grade, which impacted their understanding. Other individuals demonstrated limited or no knowledge regarding the functioning of the modules, cleaning schedules and operational procedures of specific treatment modules.

Training needs:

1. To ensure effective operation and maintenance across the FSTPs of all four cities, comprehensive hands-on training is essential to ensure that SHG women are well-equipped with knowledge and skills to effectively manage FSSM processes.
2. Training should cover the function of all modules, including the screen chamber; as well as regular cleaning schedules and procedures for all modules, such as the septage collection tank, screw press and sludge storage yard.
3. Periodic refreshers should be provided to maintain and emphasize daily maintenance schedules for treatment modules.

Section 3: Health and safety

This section emphasizes the importance of health and safety of women SHG members while performing FSTP operations, reviewing current practices and identifying areas for improvement. The questionnaire consists of ten number of questions on health and safety covering majorly the areas mentioned below.

Current understanding:

1. **Ensuring a safe work area**: Responses were mixed, indicating some knowledge regarding safe workspace. Six women mentioned starting work and responding to hazards as they arise, while another six said they conduct safety walkthroughs to check for hazards. Three women assumed the workspace was safe without any checks.
2. **Importance of wearing gloves and masks**: Respondents cited multiple reasons, including avoiding slipping, protection against bacteria, and preventing diseases from contact with faecal sludge. Five responses mentioned protection from germs and infections, four said it was to keep body parts clean and safe, two pointed to slip prevention, and four identified all the reasons collectively.
3. **Contact with untreated sludge**: 14 women responded that the area should be washed with soap and water and one woman indicated that she would continue working without any changes.
4. **Chemical spill response**: Responses varied widely—one would evacuate the area, one would inform the supervisor and attempt to neutralize the chemical,

seven would pour water over the chemical, and six would attempt to clean it with a cloth.

5. **Storage of dried sludge**: Eight women reported storing dried sludge in open containers or sealed bags, three used covered containers, and four stored it directly on the ground. Three out of four women were unable to answer the question. Hence, the responses were mixed.
6. **Handling vermin and pests**: Mixed responses were received here as well, with nine women suggesting that they would ignore and continue to work. Five said they inform the supervisor and one mentioned using pest control procedures.
7. **Importance of keeping storage yard clean**: Eight responses included making it look clean and attractive, six with accident prevention and contamination control, and one linked it solely to regulatory compliance.
8. **Availability of safety devices and equipment**: All respondents indicated that not every equipment was available for their use. For example, aprons were available in three cities, helmets in all four cities, and other equipment varied in availability.
9. **Health-related issues:** One of the women out of 15 reported facing skin-related health issues. Rest of the 14 women did not report any health or skin-related issues, which implied that they mostly wear the PPE kits while performing operations.

Training needs:

1. Provide comprehensive training on the importance of conducting safety walkthroughs before starting a shift and systematically identifying and mitigating hazards.
2. Reinforce the importance of wearing gloves and masks for protection against a wide range of hazards, including chemical exposure, physical injuries and contamination.
3. Educate the SHG women about the response procedure for contact with untreated sludge, including immediate washing, disinfecting and reporting the incident to a supervisor.
4. Inform and emphasize on establishing clear protocols for chemical spill response, informing the supervisor, and using appropriate neutralizing agents rather than unsafe methods.
5. Provide training on best practices for storing dried sludge to ensure safety and hygiene, emphasizing the use of sealed and covered containers to prevent contamination.
6. Educate staff on the importance of reporting vermin and pest sightings, and following established pest control procedures to maintain a safe and hygienic environment.

7. Emphasize the critical role of cleanliness in preventing contamination, reducing accident risks, and maintaining operational efficiency.
8. Provide information and knowledge on ensuring all necessary safety devices and equipment are readily available and in good condition, and train staff on their proper use and maintenance.
9. Provide training on personal hygiene practices, and ensure the availability of appropriate protective gear to minimize health risk.

Section 4: Group behavior and interpersonal communication

This section focuses on the importance of effective communication and teamwork, assessing current group dynamics and communication skills. It assesses how SHG women resolve issues, support each other while operating the treatment plants, and the training needs emerged on the basis of responses received.

Current understanding:

1. **Coordination among team members:** It was found that all the women were coordinating well among themselves through daily verbal interactions. Out of 15, nine of them reported that cleaning duties were divided among themselves irrespective of their assigned roles.
2. **Communication with supervisor:** Twelve out of 15 women stated they effectively communicate with their supervisor and have their issues resolved in coordination with the urban local body (ULB) officials. Three participants mentioned facing challenges in this regard.
3. **Team dynamics:** The team dynamics are positive, with members supporting each other and working well together. 13 out of 15 responded that they have verbal discussion on regular basis. Rest of the two women responded that they occasionally communicate in writing with the supervisor.

Training needs:

1. Reinforce and enhance existing coordination practices with team-building exercises and communication workshops to maintain teamwork.
2. Strengthen the existing communication mechanism between women supervisors and ULB officials through structured dialogue sessions and periodic feedback mechanism, ensuring continued efficiency in addressing challenges and requirements.

Section 5: Individual understanding of operations as per designated roles

In this section, the questionnaire was prepared to understand the role-specific training needs of SHG members—supervisors, sanitation workers and gardeners—in the four cities. Their individual knowledge and understanding of their roles form the basis to identify their specific training needs related to operating the treatment plants. Since the supervisors manage the team and oversee the operations of the FSTPs, hence this section includes a more detailed assessment of the operational knowledge of the supervisors, unlike other roles like sanitation workers and gardeners.

1. Supervisor's insight

Enhancing supervisory skills and addressing challenges can lead to better team cohesion and performance, directly impacting the smooth operation and maintenance of FSTPs. The objective of this section is to assess the approach and skills utilized by the supervisor to run the plant efficiently with the support from all the group members. The questionnaire tried to assess how supervisors strategize to ensure effective O&M of the plant, the challenges they face, how they fix those issues with the help from other team members, how they keep a track on measuring productivity of the team members, any mechanisms that are put in place and the kind of record they maintain in order to monitor the activities performed on a daily basis. This section will help us identify the key areas where training would be required regarding supervising the team members, ensuring a productive environment and effective monitoring on daily operations.

The current understanding of supervisors, their operational knowledge as per their roles and their training needs are mentioned below.

Current understanding:

Teamwork and cohesion strategies are crucial for success. In terms of tracking and measuring productivity, two responses indicated there was no mechanism in place, while two others mentioned the mechanism of attendance, which implies that the supervisors have a sense of measuring productivity through maintaining logbooks and registers. The experience with team members was positive across all four responses. Maintaining data and log books was generally not an issue for three respondents, though one faced challenges due to a lack of education. The registers maintained at FSTPs showed inconsistencies, while visitor and desludging records were well-kept by all four cities. Contact with ULB officials presented issues for two respondents, likely due to delayed payments and unavailability of officials.

One respondent from Sitapur faced issues contacting District Urban Development Agency (DUDA) officials owing to limited educational background, while the rest of the respondents did not report any problems.

Training needs:

1. To improve team morale and cohesion, leadership training should be developed.
2. It is essential to implement standardized tracking and productivity measurement tools to ensure efficiency.
3. Continuing to foster a positive team environment is also crucial.
4. Providing training on data and logbook maintenance, especially for those with lower educational backgrounds, will be beneficial. Ensuring consistent record-keeping practices across all modules is important.
5. Communication channels with ULB officials should be improved to promptly resolve issues.
6. Lastly, enhancing communication skills and support for supervisors with lower educational backgrounds is vital for overall team performance in a few cities.

Operational knowledge of supervisors

This subsection evaluates supervisors' operational knowledge and practices, with the goal of identifying gaps in skills and areas for improvement. Providing targeted training can enhance supervisors' capabilities, ensuring that they perform their roles effectively.

1.1 Current understanding:

Four individuals were identified as supervisors, while others had mixed roles, including sanitation workers, gardeners, and operators. All four supervisors have demonstrated an understanding of the technical knowledge required for supervising and maintaining records. However, their strategies for managing technical issues varied, with some having no strategy, others relying on a full-time operator or regular inspections, and some addressing specific issues like a non-working screw press. All four supervisors supported their team members, but there were occupational discrepancies, such as delayed salary cut-offs, lack of tools, resting sheets or beds, submersible pumps, chlorine, and pipes. Identifying these gaps and providing targeted training can help supervisors better manage their responsibilities and support their teams effectively.

Training needs:

1. Clearly define and communicate the roles within the SHGs to ensure that everyone understands their responsibilities.

2. Provide technical training specific to FSTP operations and record-keeping as it is crucial for enhancing the efficiency and effectiveness of the team.
3. Develop standardized procedures for managing technical issues to ensure a consistent approach to problem-solving.
4. Reinforce effective supervisory practices to maintain high standards of performance and support within the team.
5. Address occupational gaps through the provision of necessary resources and support to help overcome challenges and improve overall productivity.

2. Sanitation worker's insight

Recognizing the roles and expertise of sanitation workers is essential for identifying areas where additional training and support can enhance their efficiency. Defining responsibilities clearly and providing focused training can significantly improve their performance, ultimately supporting the long-term sustainability of faecal sludge treatment plants.

This section evaluates the knowledge and operational experience of sanitation workers, examining their specific training needs. It looks at how their roles contribute to effective plant management and the challenges they face in their daily tasks. By understanding these aspects, targeted training programmes can be developed to ensure sanitation workers are equipped with the necessary skills to maintain a productive and well-functioning environment.

Current understanding:

Responses regarding their understanding of work varied, with tasks including machine operations, mixing polymer, screw press operation, and maintaining cleanliness. Their roles at the site included sweeping, mopping, maintaining cleanliness, and operating the plant. They were also involved in tasks such as operating screw press machines, mixing polymer, gardening and other miscellaneous tasks. While six workers reported no operational or communication issues, one mentioned water leakage as a concern. Identifying these areas and providing appropriate training and support can help sanitation workers perform their duties more effectively, ensuring the smooth operation of FSTPs.

Training needs:

1. Provide clear job descriptions and training for specific tasks, ensuring that each worker knows their responsibilities and how to perform them efficiently. Clarity in additional responsibilities is crucial as well, and providing appropriate training for these tasks will enable workers to handle them competently.

2. Promptly address specific operational issues to enhance communication within the team and create a more cohesive and productive work environment, ultimately contributing to the overall sustainability of FSTPs.

3. Gardener's insight

Assessing the roles and responsibilities of gardeners is essential for identifying training needs and resource requirements for maintaining the FSTP premises. Providing specific training and resources for gardeners can greatly enhance the maintenance and aesthetic quality of FSTPs, thereby supporting a clean and well-managed environment. This evaluation examines their understanding of their roles at the FSTP premises and their respective training needs.

Current understanding:

Three gardeners identified their primary task as gardening, while one mentioned cleanliness. Frequency of gardening activities varied, with two engaging in gardening once a day, one twice a day, and one once a week. Use of biosolids was inconsistent—two gardeners used it, while the other two did not. Additionally, when asked about the effectiveness of biosolids in promoting plant growth, three were unsure, and one observed some growth. Identifying these insights and providing targeted training and resources will help gardeners perform their duties more effectively, contributing to the overall sustainability and upkeep of FSTPs.

Training needs:

1. Provide specific training for gardening and maintenance tasks, ensuring they have the necessary skills and knowledge.
2. Standardize gardening schedules and practices to ensure consistency and efficiency in their work.
3. Educate gardeners on the benefits and usage of bio-solids to help them utilize this resource effectively.
4. Provide guidance on plant cultivation and growth monitoring, enabling gardeners to maintain a healthy and aesthetically pleasing environment.

Section 6: Other aspects

1. Social acceptance

Social acceptance is essential for ensuring SHG members effectively balance their professional and personal responsibilities while engaging in operations and maintenance (O&M) of treatment plants. Most members receive full family support, though some experience challenges, such as childcare responsibilities and initial skepticism before joining.

By understanding work-hour flexibility, stakeholder perceptions, and household dynamics, targeted training programmes can help strengthen commitment, confidence, and operational efficiency. Addressing these social factors through family engagement, structured training, and workplace support will ensure long-term participation of SHG members in the sector. This section identifies their understanding on managing personal and work life balance which eventually leads to designing the training programme on the basis of their emerging training needs.

Current understanding:

Understanding social acceptance is crucial for assessing how SHG members integrate their work with their personal lives. Out of 15 respondents, 14 reported receiving full support from their families regarding their working hours, while one indicated a non-supportive environment. Although some members experienced negative reactions before joining the job, no adverse family responses were reported after enrollment. One respondent highlighted challenges related to childcare responsibilities affecting her job profile. Awareness of working hours and holidays varied, with most respondents having a general idea. Understanding of the treatment chain was limited among respondents. Family affairs did not significantly impact office hours for the majority. Most respondents anticipated continuing in their current roles for more than five years. Identifying these factors helps in designing training programmes that ensure consistent and committed participation from SHG members.

Training needs:

1. Targeted training needs to be implemented by the DUDA during their regular meetings and engagement sessions.
2. Conduct community meetings and family engagement sessions with SHG members and their families to foster understanding and support. Emphasizing the importance of SHG roles to families can help alleviate initial concerns and gain their backing.
3. Offer strategies to balance family affairs and work responsibilities to minimize any negative impact on office hours.
4. Provide support mechanisms for SHG members with family responsibilities, such as childcare assistance or flexible working hours, to further ensure their commitment.
5. Clearly communicate working hours and holiday entitlements during orientation and through regular updates to prevent confusion and help members plan effectively.
6. Provide comprehensive, module-wise training on the treatment process with

practical demonstrations to improve operational understanding.

7. Develop monitoring tools to track daily performance and encourage long-term commitment and growth within the sanitation sector.

2. Facilities and opportunities

Evaluating the facilities and access to government schemes helps identify areas where SHG members' working conditions can be improved.

Current understanding:

Among 15 respondents, five respondents are beneficiaries of the PM Swanidhi Yojana, three have e-Shram cards, one has an Ayushman card, and two have ration cards. All 15 respondents confirmed the availability of toilets, resting rooms and changing rooms at the FSTP premises. Respondents manage their travel and food independently in all four cities. Water supply was provided by the ULB in one city, while members in other cities managed it themselves. Regarding leave arrangements, eight respondents reported that there is no arrangement for managing leaves. Three respondents mentioned that the ULB is informed about the leaves taken by SHG members, and another three said that the duties are reassigned to one of the women from the existing group, and one supervisor stated that a temporary replacement from another SHG group is arranged. Providing adequate facilities and leveraging government schemes can enhance the overall well-being of SHG members, leading to higher productivity and better maintenance of FSTPs. Addressing these facility-related gaps through training and resource allocation is crucial for the sustainability and smooth operation of FSTPs.

Training needs:

1. Educate SHG members about available government schemes and the processes to access them effectively.
2. Ensure the continued provision and maintenance of sanitation and rest facilities at all FSTP sites.
3. Explore mechanisms to provide organized support for travel, food, and water supply to reduce the burden on SHG members.
4. Establish a formal system for managing leaves to ensure coverage and continuity of operations, preventing disruptions in the workflow.

3. SHG ENGAGEMENT IN FSTP MANAGEMENT: STANDARDS AND CURRENT STATUS

Self-help groups (SHGs) play a key role in managing faecal sludge treatment plants (FSTPs). To ensure effective operations, certain standards must be followed for technical skills, health and safety, maintenance, environmental compliance, and operational efficiency.

This section compares these standards with the current capabilities of SHG members. The findings highlight where additional training and improvements are needed. The table below summarizes the key areas:

Table 1: Standards and current status of SHG members

S. no.	Key area	Standards	Current status of SHG members
1.	Technical proficiency	1. Operators must have a comprehensive understanding of FSTP processes, including mechanical operations, biological treatment, and sludge handling. [Source: National Faecal Sludge and Septage Management (FSSM) Policy, Ministry of Housing and Urban Affairs, Government of India]	1. Majority of the SHG members possess basic knowledge of FSTP operations but require further module specific training to handle technical processes and operations.
		2. Regular training and certification are necessary to keep skills and knowledge updated.	2. There is a need for regular training sessions to enhance technical skills and ensure consistent performance.
2.	Health and safety protocols	1. Adherence to safety standards is paramount. This includes the use of personal protective equipment (PPE), safe handling of hazardous materials, and emergency response protocols. [Source: 1. Occupational Safety, Health and Working Conditions Code, 2020 (OSH code) 2. ISO 14001 and ISO 45001 (Occupational Health and Safety Management System) 3. Selection, installation and maintenance of first-aid fire extinguishers—portable and mobile: Code of Practice (IS 2190:2024)]	1. While some SHG members are aware of health and safety protocols, there is a significant gap in the consistent use of PPE and adherence to safety standards.
		2. Regular health check-ups and vaccinations for operators.	2. Enhanced training and strict enforcement of health and safety protocols are required.

3.	Maintenance procedures	1. Scheduled preventive maintenance to ensure the longevity and efficient functioning of equipment.	1. SHG members have a basic understanding of maintenance procedures but lack comprehensive knowledge of preventive maintenance and record-keeping.
		2. Proper record-keeping of maintenance activities and any repairs conducted.	2. Training on maintenance best practices and record-keeping is essential.
4.	Environmental compliance	1. Operations must comply with local and national environmental regulations, including effluent quality standards and waste disposal guidelines. [Source: Environmental Protection Guidelines, Central Pollution Control Board (CPCB), India]	1. Awareness of environmental regulations and compliance is limited among SHG members.
		2. Regular monitoring and reporting of environmental parameters to ensure compliance.	2. Regular workshops and training sessions on environmental standards and compliance are needed.
5.	Operational efficiency	1. Implementation of standard operating procedures (SOPs) for all routine activities.	1. SOPs are not uniformly implemented across all FSTP operations.
		2. Use of performance indicators to track efficiency and identify areas for improvement.	2. There is a need to develop performance indicators and ensure adherence to SOPs to track operational efficiency.

4. FINDINGS AND RECOMMENDATIONS

The training needs assessment conducted across FSTPs in Sitapur, Khurja, Raebareli, and Jaunpur revealed critical gaps in technical expertise, health and safety practices, and operational efficiency among SHG women managing the facilities. While these women exhibit strong teamwork and communication skills, their limited technical knowledge and inadequate access to resources hinder optimal performance.

Addressing these gaps through targeted training and resource provision will enhance operational effectiveness, promote public health, and safeguard environmental sanitation. The empowerment of SHG women through these initiatives also aligns with broader goals of gender equality and socio-economic development.

Overall, the findings and recommendations underscore the importance of investing in capacity-building and infrastructure to create a sustainable and inclusive framework for faecal sludge management. Key recommendations are summarized below:

1. **Targeted training programmes**
    - Conduct detailed technical training tailored to the specific FSTP modules and processes across all cities.
    - Reinforce learning and keep SHG women updated on treatment modules and their functions (refer to *Standard operating procedure (SOP) for operations and maintenance: chapter 4*).

2. **Health and safety enhancements**
    - Ensure all FSTPs are equipped with first-aid kits and safety equipment.
    - Provide comprehensive training on health and safety protocols, including proper use of PPE, first-aid and emergency preparedness (refer to *Standard operating procedure (SOP) for operations and maintenance: chapter 2 and chapter 5*).

3. **Resource and equipment provision**
    - Develop maintenance schedules for tools and machinery, with regular

inspections and replacements as necessary.
- Ensure tools and equipment availability in cities (refer to *Standard operating procedure (SOP) for operations and maintenance: chapter 3*).

4. **Standardized operational procedures**
   - Develop and disseminate standardized operating manuals for each treatment module (refer to *Standard operating procedure (SOP) for operations and maintenance*).
   - Implement regular maintenance schedules and establish clear documentation practices.

5. **Continuous learning and monitoring**
   - Establish a system for periodic evaluations and feedback to assess training effectiveness.
   - Introduce a continuous data maintenance and record-keeping at the treatment plant (*record-keeping format as per letter number:* एस.एस.एम्. यू/*1025/10732024 by Directorate of urban local bodies).*

6. **Coordination and continuous support**
   - Strengthen collaboration between SHG women, supervisors, and urban local bodies for better coordination and resource support.

By implementing these recommendations, the project can achieve its twin goals of operational excellence and socio-economic empowerment, building a sustainable and inclusive framework for faecal sludge management.

ANNEXURE A: TNA questionnaire

The questionnaire will run during focused group discussion and personal interviews with SHG women.

1. General information

1. Name:
2. Self-help group (SHG) name:
3. Date of joining:
4. Contact number:
5. Email address:
6. Area of residence/city:
7. Your monthly salary:
8. Your husband/father's occupation:
9. Your family annual income:
10. Individual passbook/joint passbook

11. Educational qualification:

Educational qualification	6–8	9–10	11–12	Graduate	Post-graduate
Check box					

12. Ability to read and write

Languages	Read	Write	Speak
Hindi			
English			
Any other			

13. Current role as per AMRUT contract

Position	Supervisor	Gardener	Sanitation worker
Check box			

2. Group behavior and interpersonal communication

1. **What are the tasks that you perform?**
   a) Cleaning
   b) Supervising and coordinating
   c) Gardening
   d) Other, please mention_____

1. **Do you have any challenges in communicating effectively with supervisor of the group?**
   a) Yes
   b) No
   c) If Yes, please specify_____

2. **How effectively do you feel you are able to communicate and coordinate with supervisor on maintaining the plant?**
   a) Very effectively
   b) Effectively
   c) Somewhat effectively
   d) Not effectively

3. **Do you discuss about your challenges in the plant with your supervisor and do they get resolved?**
   a) Yes
   b) No

4. **Do your challenges reach the officials of the ULB by your supervisor?**
   a) Yes
   b) No

5. **How do you ensure clear and effective communication with your team members?**
   a) Regular team meetings
   b) Written instructions
   c) Verbal instructions
   d) Formal/informal
   e) Other, please specify _____

6. **How long have you been involved in the maintenance activities of the faecal sludge treatment plant?**

a) Less than one month
b) One month to six months
c) Six months to one year
d) More than a year

7. **What do you find most challenging about your role in maintaining the plant?**
   a) Technical issues
   b) Communication challenges
   c) Coordination with stakeholders
   d) Other, please specify_____

8. **How often do you encounter issues or problems with the plant? Can you give examples of these issues?**
   Please specify _____
   _____

9. **How do you currently approach troubleshooting and problem-solving when issues arise at the plant?**

   Please specify _____
   _____

10. **What do you hope to gain from additional training in the operation and maintenance of the faecal sludge treatment plant?**
    Please specify _____
    _____

11. **Can you provide examples of specific challenges you have faced in managing your team and how you have overcome them.**
    Please specify _____
    _____

3. Health and safety

1. **Why is it important to wear gloves and boots while working at the FSTP?**
   a) To protect against harmful bacteria and chemicals
   b) To keep your hands and feet clean
   c) To prevent slipping
   d) All of the above
   e) Do not know

2. What should you do if you come into contact with untreated faecal sludge?
a) Continue working
b) Wash the area with soap and water immediately
c) Wait until the end of the day to clean up
d) Apply a bandage

3. In case of a chemical spill, what is the first action you should take?
a) Clean it up with a cloth
b) Evacuate the area and inform the supervisor
c) Pour water over it
d) Try to neutralize the chemical with another substance

4. How can you ensure that the work area is safe before starting your shift?
a) Conduct a safety walkthrough to check for hazards
b) Ask a colleague if it is safe
c) Assume it is safe if there were no incidents the day before
d) Start working and deal with hazards as they come

5. How should dried sludge be stored to ensure safety and hygiene?
a) In open containers
b) In sealed bags or covered containers
c) On the ground
d) In liquid form
e) All of the above

6. What should you do if you notice pests or vermin in the storage yard?
a) Ignore them
b) Inform the supervisor and follow pest control procedures
c) Try to catch them
d) Use pesticides without any precautions

7. Why is it important to keep the storage yard clean and orderly?
a) To prevent accidents and contamination
b) To make it look attractive
c) To save space
d) To comply with regulations only

8. Did you get any safety device or equipment for operations?
a) Gloves
b) Apron

c) Safety shoes
d) Helmet
e) All of the above

9. Are there any safety concerns or protocols that you think should be emphasized in training for maintaining the plant, at any module?
a) Yes
b) No

10. Do you face any health-related issue like skin diseases?
a) Yes
b) No
c) If Yes, please specify_____

4. Observation checklist

List of equipment (Source: Standard operating procedure)
The following equipment should be available in the FSSM premises for performing various O&M activities.

Table 2: List of equipment and description

S. no.	Equipment name	Image	Description	Available at site: Yes/No
A.	**O&M equipment**			
1.	Bucket		To carry waste	
2.	Trowel		To remove solid waste, civil work, removal of grit, etc.	
3.	Wheelbarrow		To carry dried sludge	
4.	Shovel		For maintenance inside the treatment systems	
5.	Garden scissors		For gardening work	

6.	Wooden pole		For sludge measurement	
7.	Fishnet mesh		For scum removal at settling-cum-thickening tank (STT) and anaerobic baffled reactor (ABR)	
8.	Measuring tape		For measurement purposes	
9.	Broom		For cleaning	
10.	Ladder		To get into the system for deep cleaning	
11.	Torch		To see in dark areas	
12.	Rake		To clean the screens	
13.	Plastic sheet		For any maintenance work	
14.	Pressure washer		To clean the premises, outlet registers at sludge drying beds (SDBs), planted gravel filter (PGF), pressure wash the filter materials at PGF, SDB and anaerobic filter (AF), etc.	
15.	Dewatering pump		To de-water any water logging	

16.	Dustbin		To collect hazardous waste	
17.	Electric tester		For electrical work	
B.	**Safety equipment**			
1.	Fire extinguisher		To doze the fire in case of any fire emergency	
2.	First-aid kit		To treat the wounded person	
3.	Insulating mat		To prevent electrical shock	
C.	**Personal protective equipment**			
1.	Mechanical resistant gloves		For hand protection	
2.	Shoes (safety shoe/ gumboots)		For protecting the legs	
3.	Goggles		For eye-protection	
4.	Apron or full-body clothes		To protect the body	
5.	Mask		To protect from pollution and allergens	
6.	Helmet		To protect a person from head injury	

If first-aid kit is available, please fill the checklist below:

(Source: MoHUA (2018) "Standard operating procedure for cleaning of sewers and septic tank")

Particulars	Yes	No
Small sterilized dressings		
Medium size sterilized dressings		
Large size sterilized dressings		
Bottle (30 milliliters) containing a two percent alcoholic iodine solution		
Snake-bite lancet		
Bottle of potassium permanganate crystals		
A pair of scissors		
Bottle containing 100 tablets (each containing 5 grams of aspirin		
Burn ointment		
Bottle of suitable surgical antiseptic solution		

Additional things provided to the supervisor and other group members:

S. no.	Particulars	Available at site: Yes /No		
		Supervisor	Sanitation workers	Gardener
1.	ID card			
2.	Bag			
3.	Diary			
4.	Pen			
5.	Sanitizer			

5. Facilities and opportunities

1. **Have you been a beneficiary of any government scheme, other than AMRUT MITRA?**
   a) Yes
   b) No
   c) If yes, please specify_____

2. **Have you been provided with additional facilities at the FSTP premises? Mark them in the table below:**

Particulars	Yes	No
Resting room or changing room for women SHGs		
Fan facility in the room		
Clean and orderly room		
Toilet facility		
Soap or hand wash in the toilet		
Hand towel		
Dustbin		

3. **What kind of arrangement do you have for your travel, food and water requirements? Does the ULB provide anything among them?**

Particulars	Personal	Urban local body (ULB)
Travel assistance		
Food provisions		
Water supply		
Any other		

4. **What is the arrangement that you have in case someone takes a leave from your official working hours?**
   a) No arrangement
   b) A guest women from other SHG joins
   c) One of the women from existing group performs her duties
   d) ULB is informed about leaves taken by the SHG woman

6. Social acceptance

1. **How does your family feel about your working hours in the sanitation sector?**

   a) They are fully supportive
   b) They have some concerns
   c) They are not supportive
   d) Not applicable/I prefer not to say

2. **What family-related issues could impact your working hours?**
   a) Childcare responsibilities
   b) Caring for elderly family members
   c) Family health issues
   d) No family-related issues impact my work

3. **Are you aware of your working hours and the number of holidays you are entitled to annually?**
   a) Yes, I am fully aware
   b) I have a general idea
   c) I am not sure
   d) I have no knowledge about this

4. **Have you experienced any negative reactions from your family due to your job?**

a) Often
b) Sometimes
c) Rarely
d) Never

5. Do you believe that family matters might influence your job hours?
a) Yes, significantly
b) Possibly, to some extent
c) Unlikely
d) Not at all

6. How long do you envision continuing in your current role within the sanitation sector?
a) Less than a month
b) Less than six months
c) One to three years
d) More than five years

7. Additional questions

1. What type of training delivery method do you find most effective?
a) Workshops
b) On-site training
c) Online modules
d) Reading material
e) Placards
f) Other, please specify _____

2. Have you attended any training previously on basic understanding on FSSM?
a) Yes
b) No

If yes, then answer the following:

2.1 What was the mode of the training?
a) Offline
b) Online
c) Other, please specify

2.2 How was the training? Did you like some specific part of the training?
a) Basic FSSM session

b) Roles and responsibility session
c) Safety and precautions
d) Delivery
e) The activity

2.3 What is it that you want, to be repeated in the training?

a) Basic FSSM session
b) Roles and responsibility session
c) Safety and precautions
d) Delivery
e) The activity

3. **Are there specific health and safety measures that you feel you need further training on?**
   Please specify_____

4. **What is it that you did not like about the training?**
   Please specify _____

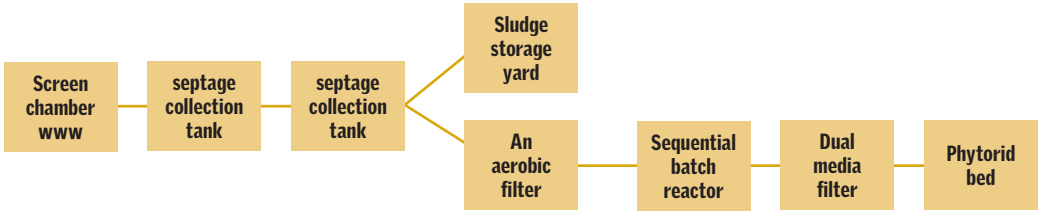
5. **What specific training or support do you believe would help you excel in your role within the organization?**
   a) Technical training
   b) Health and safety training
   c) Communication workshops
   d) All of the above

8. Questions on treatment chain (module-wise questions)

1. **What is the treatment chain in your FSTP?**
   i) Screen chamber> Septage collection tank> Screw press> Sludge storage yard>Anaerobic filter>Sequential batch reactor>Dual media filter>Phytorid bed
   ii) Screen+Gritchamber>Faecalsludgecollectiontank>Sludgede-watering machine>Sludge drying beds with bio-composting>Anaerobic baffle reactor>Wetland>Dual media filter> Chlorine dosing
   iii) Screen chamber>Settling-cum-thickening tank>Stabilization reactor>Screw press>Equalization tank>Sludge drying bed>Anaerobic baffled reactor>Planted gravel filter>Collection tank > Pressure sand filter >Polishing pond

iv) Screen chamber>Tank destoner >Sludge holding tank>Screw press>Constructed wetlands>Sludge drying beds>Final collection tank>Sludge storage yard

8.1 Questions for first treatment chain:



A. Screen chamber

1. What is the primary function of the screen chamber in the wastewater treatment process?

a) To remove large particles and debris
b) To aerate the wastewater
c) To add chemicals for treatment
d) To pump water to the next stage

2. According to standard practices, how often should the screen chamber be cleaned?

a) Once a week
b) Every 30 days
c) Once every six months
d) Only when visible debris is present

3. How often is the screen chamber currently cleaned at your facility?

a) Once a week
b) Every 30 days
c) Once every six months
d) Only when visible debris is present

B. Septage collection tank

1. The septage collection tank is essential because it:

a) Stores septage for further treatment
b) Treats septage chemically
c) Separates septage into layers
d) Recycles septage back to the community

2. The best practice for cleaning the septage collection tank is:

a) After every use
b) Once a month
c) Every three to six months
d) Annually

3. The current cleaning schedule for the septage collection tank at your site is:

a) After every use
b) Once a month
c) Every three to six months
d) Annually

A. Screw press

1. The screw press in the wastewater treatment process is used to:

a) Compress and dewater sludge
b) Mix chemicals into the sludge
c) Heat the sludge for treatment
d) Transfer sludge to different tanks

2. Standard maintenance for a screw press includes:

a) Daily inspections and cleaning
b) Weekly lubrication and adjustments
c) Monthly cleaning and part replacement
d) Quarterly comprehensive servicing

3. Currently, the screw press is maintained:

a) Daily
b) Weekly
c) Monthly
d) Quarterly

B. Sludge storage yard

1. What is the purpose of a dried sludge storage yard in an FSTP?

a) To store fresh sludge
b) To store sludge that has been dried and treated
c) To store equipment
d) To dispose of waste water

2. How is the sludge from the storage yard disposed of or utilized?

a) Landfill
b) Incineration
c) Composting
d) All of the above

4. How dried sludge is stored in sludge storage yard?

a) In open containers
b) In sealed bags or covered containers
c) On the ground
d) In liquid form

C. Anaerobic filter

1. An anaerobic filter is important in the treatment process because it:

a) Filters out chemical contaminants
b) Removes pathogens from wastewater
c) Breaks down organic matter without oxygen
d) Adds oxygen to the wastewater

2. The anaerobic filter should be cleaned:

a) Every day
b) Every week
c) Every month
d) As needed, based on performance

3. The anaerobic filter at your facility is cleaned:

a) Every day
b) Every week
c) Every month
d) As needed, based on performance

D. Sequential batch reactor

1. A sequential batch reactor is used because it:

a) Allows for continuous flow treatment
b) Treats wastewater in batches for better control
c) Requires less space than other treatment methods
d) Is cheaper to operate than other methods

2. Typically, a sequential batch reactor operates on cycles of:

a) Six to eight hours
b) 12–24 hours

c) Two to three days
d) A week

3. The operation cycle for the sequential batch reactor at your site is:
a) Six to eight hours
b) 12–24 hours
c) Two to three days
d) A week

G. Dual media filter

1. The dual media filter contributes to wastewater treatment by:
a) Removing suspended solids
b) Disinfecting the water
c) Adjusting the pH level
d) Introducing beneficial bacteria

2. The dual media filter should be backwashed:
a) After every 1000 gallons treated
b) Once a week
c) Monthly
d) When the pressure drop reaches a set point

3. The current backwashing schedule for the dual media filter at your facility is:
a) After every 1000 gallons treated
b) Once a week
c) Monthly
d) When the pressure drop reaches a set point

A. Phytorid bed

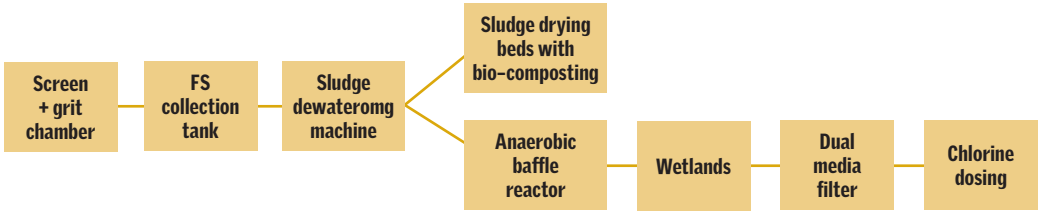
1. What is the primary purpose of a phytorid bed in wastewater treatment?
a) To provide a habitat for aquatic plants
b) To remove heavy metals from the water
c) To enhance oxygenation of the water
d) To remove contaminants using plant roots

2. When maintaining a phytorid bed, which of the following practices should be followed?
a) Regularly prune the plants to encourage growth
b) Add chemical fertilizers to enhance nutrient uptake

c) Remove accumulated sludge and debris from the bed
d) Increase the water flow rate to improve treatment efficiency

3. Which method is commonly used to clean the gravel media in a phytorid bed?
a) Vacuuming the surface of the gravel
b) Flushing the bed with high-pressure water
c) Adding beneficial microorganisms to the bed
d) Replacing the entire gravel layer periodically

8.2 Questions for second treatment chain:



A. Screen-grit chamber

1. The screen-grit chamber is used to:
a) Remove large solids and grit
b) Aerate the wastewater
c) Separate oils and grease
d) Settle out sand and grit

2. According to best practices, the Screen-Grit Chamber should be cleaned:
a) Every day
b) Once a week
c) Every 30 days
d) Only when visible debris is present

3. How often is the screen-grit chamber currently cleaned at your facility?
a) Every day
b) Once a week
c) Every 30 days
d) Only when visible debris is present

B. FS Collection Tank

1. The FS collection tank's function in the treatment process is to:
a) Remove stones and heavy particles
b) Store sludge before treatment

c) Treat water chemically
d) Recycle treated water

2. The FS collection tank should be inspected and cleaned:
a) After every use
b) Once a month
c) Every three to six months
d) Annually

3. The current maintenance schedule for the FS collection tank at your site is:
a) After every use
b) Once a month
c) Every three to six months
d) Annually

C. Sludge de-watering machine

1. The sludge de-watering machine is used in the sludge treatment process to:
a) Compress and dewater sludge
b) Mix chemicals into the sludge
c) Heat the sludge for treatment
d) Transfer sludge to different tanks

2. Standard maintenance for a sludge de-watering machine includes:
a) Daily inspections and cleaning
b) Weekly lubrication and adjustments
c) Monthly cleaning and part replacement
d) Quarterly comprehensive servicing

3. Currently, the sludge de-watering machine is maintained:
a) Daily
b) Weekly
c) Monthly
d) Quarterly

D. Sludge drying bed with bio-composting

1. What is the temperature at which sludge constituting biosolids is typically composted?
a) 55 degrees Celsius

b) 45 degrees Celsius
c) 65 degrees Celsius
d) 75 degrees Celsius

2. How long is the sludge constituting biosolids typically subjected to composting during the process?
a) Five days
b) Ten days
c) 15 days
d) Not sure

3. Which of the following methods involves drying sewage sludge by direct or indirect contact with hot gases to reduce its moisture content?
a) Composting
b) Drying
c) Trickling filter treatment
d) Sludge drying bed

E. Anaerobic baffled reactor

1. An anaerobic baffled reactor is important in the treatment process because it:
a) Filters out chemical contaminants
b) Removes pathogens from wastewater
c) Breaks down organic matter without oxygen
d) Adds oxygen to the wastewater

2. The anaerobic baffle reactor should be cleaned:
a) Every day
b) Every week
c) Every two to three years
d) As needed, based on performance

3. The anaerobic baffle reactor at your facility is cleaned:
a) Every day
b) Every week
c) Every two to three years
d) As needed, based on performance

F. Wetlands

1. Wetlands contribute to wastewater treatment by:
a) Removing suspended solids

b) Plant roots and substrate remove the larger particles
c) Adjusting the pH level
d) Introducing beneficial bacteria

2. Wetlands should be maintained:
a) Every day
b) Once a week
c) Monthly
d) When weed removal and replanting is required

3. The current maintenance practice for the Wetlands at your facility is:
a) Every day
b) Once a week
c) Monthly
d) When the pressure drop reaches a set point

E. Dual media filter

1. The dual media filter contributes to wastewater treatment by:
a) Removing suspended solids
b) Disinfecting the water
c) Adjusting the pH level
d) Introducing beneficial bacteria

2. The dual media filter should be backwashed:
a) After every 1000 gallons treated
b) Once a week
c) Monthly
d) When the flow or water pressure drop

3. The current backwashing schedule for the dual media filter at your facility is:
A) After every 1000 gallons treated
B) Once a week
C) Monthly
D) When the flow or water pressure drop

H. Chlorine dosing

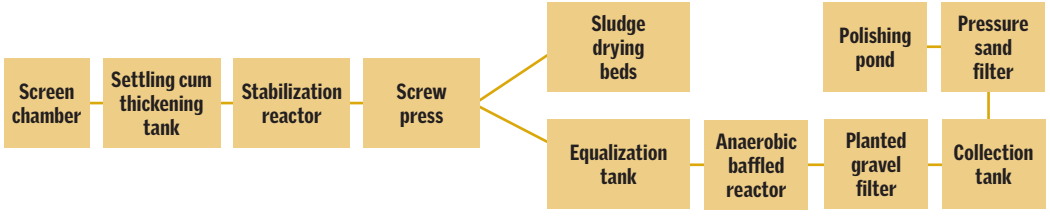
1. Chlorine dosing in the treatment process is used to:
a) Remove large solids and grit

b) Aerate the wastewater
c) Disinfect and kill pathogens
d) Settle out sand and grit

2. Chlorine dosing systems should be inspected and cleaned:
a) Every day
b) Once every six months
c) Monthly
d) Annually

3. The current maintenance schedule for the chlorine dosing system at your facility is:
a) Every day
b) Once every six months
c) Monthly
d) Annually

8.3 Questions for third treatment chain:



A. Screen chamber

1. The screen chamber in the wastewater treatment process is used to:
A) Remove large solids and debris
B) Aerate the wastewater
C) Separate oils and grease
D) Settle out sand and grit

2. According to best practices, the screen channels should be cleaned:
A) Daily
B) Weekly
C) Monthly
D) Quarterly

3. How often are the screen channels currently cleaned at your facility?
A) Daily
B) Weekly

C) Monthly
D) Quarterly

B. Stabilization reactor

1. The stabilization reactor is important in the treatment process because it:

A) Allows for the chemical treatment of sludge
B) Provides temporary storage of sludge
C) Aerates the sludge
D) Removes pathogens from the sludge

2. Typically, the stabilization reactor should be emptied and cleaned:

A) Daily
B) Weekly
C) Monthly
D) Every six months

3. The operation schedule for the stabilization reactor at your site is:

A) Daily
B) Weekly
C) Monthly
D) Every six months

C. Screw press

1. The screw press is used in the sludge treatment process to:

A) Compress and dewater sludge
B) Mix chemicals into the sludge
C) Heat the sludge for treatment
D) Transfer sludge to different tanks

2. Standard maintenance for a screw press includes:

A) Daily inspections and cleaning
B) Weekly lubrication and adjustments
C) Monthly cleaning and part replacement
D) Quarterly comprehensive servicing

3. Currently, the screw press is maintained:

A) Daily
B) Weekly
C) Monthly
D) Quarterly

D. Sludge drying bed

1. Sludge drying beds are used because they:

A) Allow for continuous flow treatment
B) Treat wastewater in batches for better control
C) Provide natural treatment and dewatering of sludge
D) Are cheaper to operate than other methods

2. Typically, sludge drying beds should be:

A) Planted with new vegetation annually
B) Inspected weekly for clogging
C) Cleaned after each batch of sludge is treated
D) Left undisturbed to allow natural processes

3. The operation schedule for the sludge drying beds at your site is:

A) Planted with new vegetation annually
B) Inspected weekly for clogging
C) Cleaned after each batch of sludge is treated
D) Left undisturbed to allow natural processes

E. Equalization tank

1. The equalization tank's role in the treatment process is to:

A) Collect the final treated water
B) Store chemicals for treatment
C) Hold sludge before disposal
D) controls hydraulic velocity/flow rate

2. The equalization tank should be cleaned:

A) Daily
B) Once a week
C) Monthly
D) When the pressure drop reaches a set point

3. The current cleaning schedule for the equalization tank at your facility is:

A) Daily
B) Once a week
C) Monthly
D) When the pressure drop reaches a set point

F. Anaerobic baffled reactor

1. An anaerobic baffled reactor is important in the treatment process because it:

A) Filters out chemical contaminants
B) Removes pathogens from wastewater
C) Breaks down organic matter without oxygen
D) Adds oxygen to the wastewater

2. The anaerobic baffled reactor should be cleaned:

A) Every day
B) Every week
C) Every two to three years
D) As needed, based on performance

3. The anaerobic baffled reactor at your facility is cleaned:

A) Every day
B) Every week
C) Every two to three years
D) As needed, based on performance

G. Planted gravel filter

1. What is the primary purpose of a planted gravel filter?

A) To remove suspended solids from wastewater
B) To provide oxygen to aquatic plants
C) To encourage the growth of nitrifying bacteria
D) To filter out viruses and bacteria

2. How often should you clean a planted gravel filter?

A) Weekly
B) Monthly
C) Annually
D) Only when water quality deteriorates significantly

3. How often do you clean a planted gravel filter?

A) Weekly
B) Monthly
C) Annually
D) Only when water quality deteriorates significantly

H. Collection tank

1. What is the primary purpose of a collection tank constructed after a planted gravel filter?

A) To provide additional oxygen to the water
B) To remove excess nutrients from the substrate
C) To collect filtered water before it returns to the main tank
D) To house aquatic plants that thrive in low-light conditions

2. How often should you clean the collection tank?

A) Weekly
B) Monthly
C) Annually
D) As needed based on water quality and accumulation of debris

3. During cleaning, which part of the collection tank should be checked and maintained?

A) The substrate layer
B) The water intake source
C) The output pipes
D) The decorative elements (rocks, driftwood, etc.)

I. Pressure sand filter

1. The pressure sand filter contributes to wastewater treatment by:

A) Removing suspended solids
B) Disinfecting the water
C) Adjusting the pH level
D) Introducing beneficial bacteria

2. The Pressure sand filter should be backwashed:

A) Daily
B) Once a week
C) Monthly
D) When the pressure drops

3. The current backwashing schedule for the pressure sand filter at your facility is:

A) Daily
B) Once a week
C) Monthly
D) When the pressure drops

A. Polishing pond

1. Polishing ponds are used in wastewater treatment to:

A) Remove additional BOD, solids and faecal coliform
B) Provide a habitat for wildlife
C) Store excess wastewater
D) Generate renewable energy

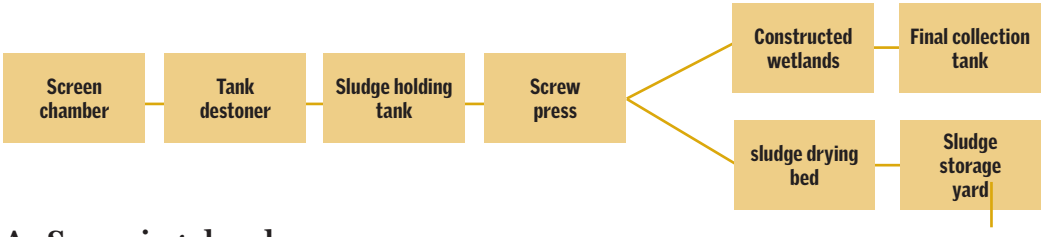
2. Typically, polishing ponds should be:

A) Inspected daily for leaks
B) Cleaned and turned monthly
C) Checked for compliance annually
D) Maintained as needed based on volume

3. The operation schedule for the polishing ponds at your site is:

A) Inspected daily for leaks
B) Cleaned and turned monthly
C) Checked for compliance annually
D) Maintained as needed based on volume

8.4 Questions for fourth treatment chain:



A. Screening chamber

1. The screening chamber is primarily used to:

A) Remove large solids and debris
B) Aerate the wastewater
C) Separate oils and grease
D) Settle out sand and grit

2. According to best practices, the screening chamber should be cleaned:

A) Every day
B) Once a week
C) Every 30 days
D) Only when visible debris is present

3. How often is the screening chamber currently cleaned at your facility?

A) Every day
B) Once a week
C) Every 30 days
D) Only when visible debris is present

B. Tank destoner

1. The tank destoner's function in the treatment process is to:

A) Remove stones and heavy particles
B) Store sludge before treatment
C) Treat water chemically
D) Recycle treated water

2. The tank destoner should be inspected and cleaned:

A) After every use
B) Once a month
C) Every three to six months
D) Annually

3. The current maintenance schedule for the tank destoner at your site is:

A) After every use
B) Once a month
C) Every three to six months
D) Annually

C. Sludge holding tank

1. The sludge holding tank is important because it:

A) Allows for the chemical treatment of sludge
B) Provides temporary storage of sludge
C) Aerates the sludge
D) Removes pathogens from the sludge

2. Typically, the sludge holding tank should be emptied and cleaned:

A) Daily
B) Weekly
C) Monthly
D) Every six months

3. The operation schedule for the sludge holding tank at your site is:

A) Daily
B) Weekly

C) Monthly
D) Every six months

D. Screw press

1. The screw press is used in the sludge treatment process to:
A) Compress and de-water sludge
B) Mix chemicals into the sludge
C) Heat the sludge for treatment
D) Transfer sludge to different tanks

2. Standard maintenance for a screw press includes:
A) Daily inspections and cleaning
B) Weekly lubrication and adjustments
C) Monthly cleaning and part replacement
D) Quarterly comprehensive servicing

3. Currently, the screw press is maintained:
A) Daily
B) Weekly
C) Monthly
D) Quarterly

E. Sludge drying bed

1. Sludge drying beds are used because they:
A) Allow for continuous flow treatment
B) Treat wastewater in batches for better control
C) Provide natural treatment and dewatering of sludge
D) Are cheaper to operate than other methods

2. Typically, sludge drying beds should be:
A) Planted with new vegetation annually
B) Inspected weekly for clogging
C) Cleaned after each batch of sludge is treated
D) Left undisturbed to allow natural processes

3. The operation schedule for sludge drying beds at your site is:
A) Planted with new vegetation annually
B) Inspected weekly for clogging
C) Cleaned after each batch of sludge is treated
D) Left undisturbed to allow natural processes

F. Final collection tank

1. The final collection tank's role in the treatment process is to:

A) Collect the final treated water
B) Store chemicals for treatment
C) Hold sludge before disposal
D) Separate oils and grease from water

2. The final collection tank should be cleaned:

A) Daily
B) Once a week
C) Monthly
D) When the pressure drop reaches a set point

3. The current cleaning schedule for the final collection tank at your facility is:

A) Daily
B) Once a week
C) Monthly
D) When the pressure drop reaches a set point

G. Sludge storage yard

1. The sludge storage yard is primarily used for:

A) Temporary storage of treated sludge
B) Long-term storage of untreated sludge
C) Composting of sludge
D) Chemical treatment of sludge

2. The sludge storage yard should be:

A) Inspected daily for leaks
B) Cleaned and turned monthly
C) Checked for compliance annually
D) Maintained as needed based on volume

3. The current maintenance practice for the sludge storage yard at your site is:

A) Inspected daily for leaks
B) Cleaned and turned monthly
C) Checked for compliance annually
D) Maintained as needed based on volume

9. Supervisor

1. **What strategies do you employ to build and maintain team morale and cohesion within a team setting?**
   a) Regular team check-ins and team-building activities
   b) Providing clear communication channels and guidelines
   c) Encouraging collaboration and mutual support
   d) All of the above

2. **How do you track and measure the productivity and performance of your team members (e.g., attendance sheets, etc.)?**
   a) Regular performance evaluations
   b) Monitoring task completion and deadlines
   c) Using attendance records
   d) All of the above

3. **How is your experience with the team members?**
   a) Positive
   b) Neutral
   c) Challenging
   d) Not applicable

4. **Do you face any difficulty in maintaining the data and log books at FSTP?**
   a) Yes
   b) No
   c) If Yes, please specify _____
   _____

5. **Tick mark the types of registers maintained at the FSTP:**

S. no.	Registers for record-keeping	Availability: Yes	Availability: No
1.	Attendance register		
2.	Desludging register		
3.	Record-keeping for cleaning modules		
4.	Visitors register		
5.	Any other		

In case of others, please specify _____

6. **Do you face any issues in developing contact with ULB officials?**
   a) Yes

b) No
c) If Yes, please specify_____

9.1 Operational knowledge-based questions (for supervisors only)

7. What is your current role in the self-help group involved in the operation and maintenance of the FSTPs?
a) Supervisor
b) Sanitation worker
c) Gardener
d) Other, please specify _____

8. What specific skills, knowledge, and abilities do you believe are necessary for effectively supervising and maintaining records for the FSTPs?
a) Technical knowledge
b) Communication skills
c) Problem-solving abilities
d) All of the above

9. How do you currently notify and manage technical issues with the plant?
a) Regular inspections
b) Reporting system
c) Emergency protocols
d) Other, please specify _____

10. How familiar are you with the technical operations of the FSTP?
a) Familiar
b) Somewhat familiar
c) Not familiar

11. Do you face any difficulties in maintaining the functionality of the FSTP on a day-to-day basis?
a) Yes
b) No

12. How do you supervise and support the other women, gardener, and sanitation staff within the group?
a) Regular discussion
b) Training sessions
c) Providing resources

d) All of the above
e) Other, please specify_____+_____

13. What challenges do you face in maintaining cleanliness aspects within the FSTPs?
a) Waste management
b) Odor control
c) Equipment maintenance
d) Other, please specify_____

14. What specific occupational discrepancies or gaps do you believe exist within the group, and how do you think they can be eliminated?
a) Lack of coordination
b) Communication gaps
c) Role clarity
d) Other, please specify_____

15. How do you feel your capacity to do new or different work is currently being utilized within the group?
a) Fully utilized
b) Partially utilized
c) Underutilized
d) Not applicable

10. Gardener

1. How many times a day do you get involved in gardening of the FSTP premises?
a) Once a day
b) Twice a day
c) More than twice a day
d) Not involved in gardening

2. Do you use the bio-solid which is being prepared in the treatment plant?
a) No
b) Yes, please specify where is it used _____

3. Do you see any potential growth in the plants being grown or cultivated in the FSTP premises?
a) Yes, significant growth
b) Some growth

c) No noticeable growth
d) Not sure

11. Sanitation staff

1. What is your understanding of your work?
a) Maintaining cleanliness
b) Waste disposal
c) Other, please specify ___

2. What roles do you play at the site?

a) Cleaning restrooms
b) Collecting waste
c) Sweeping and mopping
d) Others, please specify ___

3. Do you get involved in additional work other than maintaining cleanliness at the premises of FSTP?

a) No
b) Yes, please specify_____

4. Do you face any operational issues or communication-related issues with other team members?

a) No
b) Yes, please specify _____

ANNEXURE B: Availability of tools and equipment

This part assesses the current tools and equipment available to the SHGs and identifies any additional tools and equipment that might be required. The questionnaire carried a checklist of tools and equipment that are required at the FSTP and during the visits to the four cities, all required equipment were checked and the women SHGs were asked about their utility and requirements. Their current understanding and their utilization of those tools for plant management was assessed. Their training needs in regards with availability of safety tools and equipment was also observed.

Current understanding

Not all cities have been provided with all the necessary tools and equipment required for effective FSTP operations. Furthermore, none of the four cities had a first-aid kit available on-site. Regular maintenance and timely replacement of tools and equipment are crucial for operational efficiency and safety. It is essential to ensure that all FSTP locations are equipped with essential safety equipment such as gloves, masks, boots, goggles and protective clothing. Additionally, staff must be proficient in using the tools and equipment available to them, which highlights the need for comprehensive tool usage training.

Training needs

To enhance the effectiveness of FSTP operations, it is essential to conduct a comprehensive assessment of each city's current inventory of tools and equipment, identify gaps, and ensure the procurement of essential items to facilitate smooth operations. Prioritizing the provision of first-aid kits in all FSTP locations is crucial, along with training the staff on basic first-aid procedures and inculcating the importance of having a first-aid kit readily accessible in case of emergencies. Developing a maintenance schedule and replacement policy for tools and equipment will ensure operational efficiency and safety. Training staff on routine maintenance practices and the process for reporting and replacing damaged or worn-out items is equally important. Conducting training sessions on the proper use and maintenance of safety equipment will emphasize the importance of using safety gear to protect against potential hazards in the workplace. Developing and implementing an emergency-preparedness plan, which includes the availability of emergency tools and equipment, will ensure readiness for emergencies. Training

staff on emergency response procedures and the use of emergency equipment is vital. Lastly, providing training for staff on the correct usage of various tools and equipment will ensure that all personnel are confident and skilled in operating the equipment necessary for their tasks. These measures will contribute to the overall safety, efficiency, and sustainability of FSTP operations.

ANNEXURE C: Individual information

Roles	SHG name	City name
Supervisor	Anshika Mahila Swayam Sahayata Samooh	Raebareli
Gardener	Veer Swayam Sahayata Samooh	
Sanitation worker	Pooja Mahila Swayam Sahayata Samooh	
Sanitation worker	Shree Krishna Swayam Sahayata Samooh	
Supervisor	Yes Swayam Sahayata Samooh	Sitapur
Sanitation worker	Yes Swayam Sahayata Samooh	
Sanitation worker	Yes Swayam Sahayata Samooh	
Operator	Yes Swayam Sahayata Samooh	
Supervisor	Anju Swayam Sahayata Samooh	Khurja
Sanitation worker	Mahima Swayam Sahayata Samooh	
Sanitation worker	Divakar Swayam Sahayata Samooh	
Supervisor	Radha Mahila Swayam Sahayata Samooh	Jaunpur
Sanitation worker	Nirmal Jal Swayam Sahayata Samooh	
Sanitation worker	Nirmal Jal Mahila Swayam Sahayata Samooh	
Gardener	Gulab Mahila Swayam Sahayata Samooh	

ANNEXURE D: Treatment chains

Figure 3: Treatment chain 1

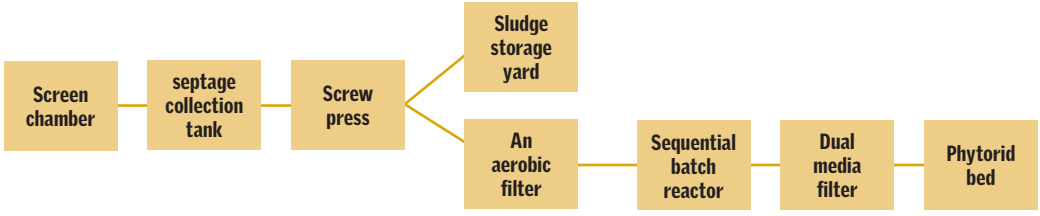


Figure 4: Treatment chain 2

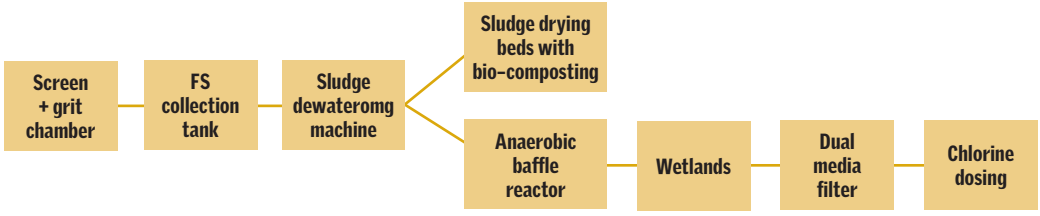


Figure 5: Treatment chain 3

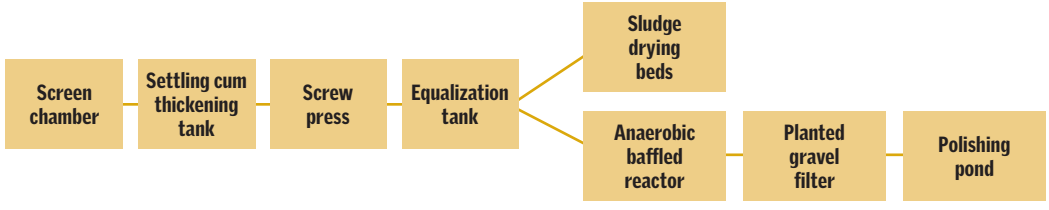
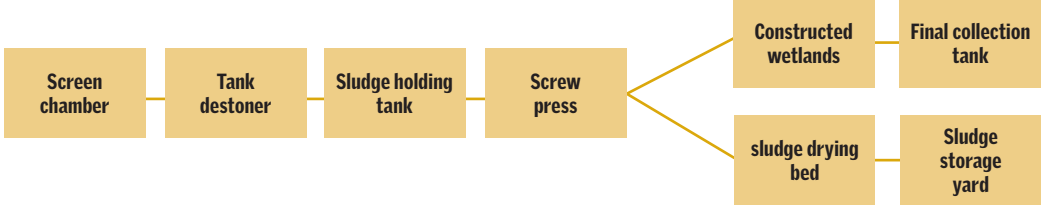


Figure 6: Treatment chain 4



ANNEXURE E: Glimpses of TNA Sessions

Glimpses of the TNA sessions conducted in Sitapur, Khurja, Raebareli and Jaunpur have been showcased below.

Figure 12: Individual interaction with SHGs in Sitapur

Figure 13: SHG women group in Sitapur

Figure 14: Individual interview session of an SHG woman in Jaunpur

Figure 15: SHG women group in Jaunpur

Figure 16: Individual interview session of an SHG woman in Khurja

Figure 17: SHG women group in Khurja

Figure 18: SHG women group in Raebareli

Figure 19: SHG women interaction in Raebareli

This report has been developed to assist trainers who wish to conduct a training needs assessment (TNA) for Self-Help Groups (SHGs), specifically focusing on women operating and maintaining faecal sludge treatment plants (FSTPs).

In Uttar Pradesh, under the AMRUT MITRA initiative, four women were engaged in Sitapur, Khurja, Jaunpur, and Raebareli to manage these treatment plants. The report provides findings and recommendations based on personal interviews and focused group discussions conducted with the women SHGs during visits to these FSTPs. These interactions helped identify their existing knowledge, challenges, and areas for skill development, offering structured insights to shape relevant capacity-building programmes.

Additionally, this report includes the questionnaire used during the assessment across the four cities, serving as a reference for trainers. By leveraging these findings and tools, trainers can design comprehensive training interventions that enhance technical expertise, operational efficiency, and leadership skills, ensuring the women's effective participation in faecal sludge and septage management.

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062
Phone: 91-11-40616000 **Fax:** 91-11-29955879
E-mail: cse@cseindia.org **Website:** www.cseindia.org