



Faecal Sludge and Septage Management in Maharashtra

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Maharashtra is the second-most urbanized state in India with its residents accounting for nearly 10% of India's population. The state of Maharashtra is having about 60 million urban population residing in 394 Urban Local Bodies. After the state became ODF, the government of Maharashtra (GoM) had issued a 7-point sustainability charter in 2017 that included focus on ODF-Sustainability and ensuring effective collection and treatment of human faecal waste in all cities. Urban Development Department (UDD), GoM adopted systematic approach to move towards ODF+ /++ in October 2017 in time bound manner through state wide faecal sludge and septage management (FSSM) plan. The state setup a Technical support unit (TSU) housed under UDD to support for these activities.

1.1. Systematic approach for building faecal waste treatment infrastructure

The Government of Maharashtra (GoM) has adopted systematic approach to implement city wide FSM plans across the full sanitation service chain in the ULBs. The UDD, Government of Maharashtra has a Memorandum of Understanding (MoU) with Bill & Melinda Gates Foundation (BMGF) for support to Swachh Maharashtra Mission. Under this MoU, state has established technical support unit (TSU) in partnership with CWAS, CEPT University for delivery of effective sanitation services across urban areas in Maharashtra with a focus on FSSM solutions. The TSU provides guidance and support in implementation of FSSM plans in the cities of Maharashtra. Post declaration of ODF sustainability charter in 2017, Government of Maharashtra initiated developing statewide strategy on faecal waste management and treatment i.e. moving towards ODF++ cities.

1.2. A two-pronged approach for state wide FSSM strategy

The state took two-pronged approach towards state wide FSSM strategy: a) co-treatment of faecal sludge at own or nearby STPs and b) setting up independent FSTP at city level for faecal sludge treatment. All ULBs were classified into 3 categories, a) ULBs with functional sewerage treatment plant (STP), b) ULBs that can do FS co-treatment to nearby ULB's STPs and c) remaining ULBs with independent Faecal sludge treatment plant (FSTP).

a. Co-treatment of faecal sludge at own or nearby STPs

ULBs having a functional sewerage treatment plants (STP) but do not have full coverage of sewerage coverage can treat septage collected from onsite systems in their own STPs. In addition to this, UDD identified potential ULBs that can do co-treatment of their septage at nearby ULB's STP that are

¹ The note is prepared by Center for Water and Sanitation (CWAS), CRDF, CEPT University in consultation with Swachh Maharashtra Mission for Urban Areas (SMMUA), Urban Development Department (UDD), Government of Maharashtra.

located within 20 km of radius from existing STPs. So, Government decided to adopt a co-treatment strategy for the potential ULBs that can treat FS either at own STP or nearby STP. Government has issued the government resolution (GR) on co-treatment of faecal waste to own or nearby STPs (GR: SMU-2018 /Cr No. 351/UD-34 on 15th December, 2018²). Standard MoU agreement was developed to institutionalize the co-treatment process.

b. Setting up independent FSTPs

Single window approval and fast track implementation

UDD decided to set up the independent FSTPs in all remaining 300+ ULBs which are entirely dependent on onsite sanitation systems and where there are no plans for sewerage project in near future. All the ULBs that are dependent on on-site sanitation system have been identified for setting up the independent FSTPs in Urban Maharashtra. UDD through its technical support unit (TSU), had facilitated in preparing detailed project reports (DPRs) for FSTPs in Maharashtra which were vetted by NEERI. Five different sizes of FSTPs were developed based on population size of ULBs of Maharashtra. Maharashtra Jeevan Pradhikaran (MJP), a technical nodal agency of Government of Maharashtra for water and sanitation sector, had issued a state wide technical sanctioned for FSTPs for on-site sanitation dependent ULBs.

State wide administrative approval was provided by UDD to all these ULBs to use the 14th Finance Commission grants for implementation of faecal sludge treatment plant (FSTP) vide government resolution no. SMMUA – 2019 / Circular No. 124 / UD - 34, dated 8th Nov, 2019³. A standardised tender document with model work order template was developed for ULBs to fast track the implementation of FSTPs at scale in stipulated time frame. This GR also indicates that the FSTP shall have to co-locate with the existing solid waste management (SWM) site.

A single window approval for implementation of FSTPs at state level helped ULBs to curtail the complex and lengthy approval process. Pre-approved technical design, structural and hydraulic design templates of FSTP helped ULBs to fast track implementation of FS treatment facilities. Mandatory compliance of third party technical audit through the empanelled engineering/polytechnic college ensured quality assurance and quality control of implementation of FSTPs.

Adoption of cost effective and less mechanised technology for setting up faecal sludge treatment facilities

UDD decided to implement a cost effective and non-mechanised treatment technology for FSTP construction. It involves five major treatment modules: namely 1) Screening Chamber, 2) Sludge Drying Beds (SDB), 3) Anaerobic Baffled Reactor (ABR) 4), Horizontal Planted Gravel Filter (PGF), and

² Government resolution No: SMU-2018 /Cr No. 351/UD-34 on 15th December, 2018 - [Link](#)

³ Government resolution No: SMM – 2019 / Circular No. 124 / UD - 34, dated 8th Nov, 2019 – [Link](#)

5) Disinfection unit. The facilities have a gravity flow-based system, where septage collected through vacuum emptier trucks is discharged to screening chamber from where it flows to different units by gravity (SDB -> ABR -> PGF -> Disinfection Unit -> Reuse/Discharge to environment). Treated wastewater can be reused for landscaping/ tree plantation and dried sludge can be used with existing co-located vermi-composting plant.

This technology is the simple in execution and easy to understand for both private contractor and ULB officials. Construction material and required human resources are easily procured from local areas.

Figure 1: Process flow diagram of the FSTP technology

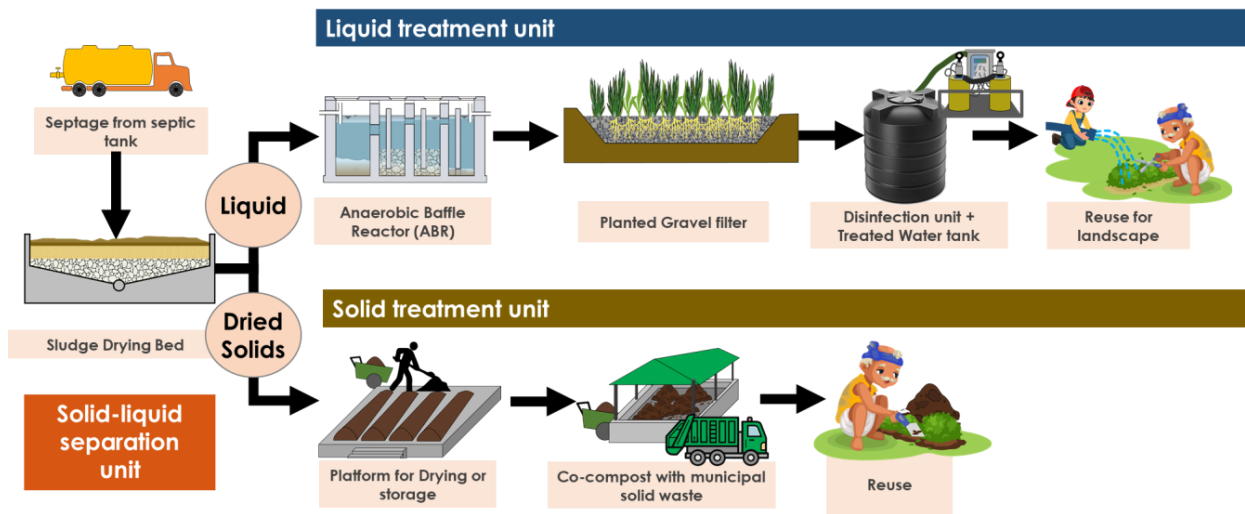


Figure 2: Photos of Operational FSTPs in Maharashtra



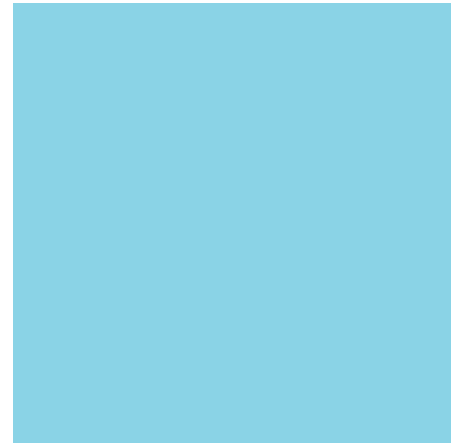
1.3. Sustained FSM service provision at scale

A set of guidelines on FSTP Operation and Maintenance, standard operating procedures for desludging operations and model service level agreements have been developed to ensure sustained and safe sanitation service delivery in ULBs. State wide training workshops were conducted on implementation of FSM plan. Also, a state level monitoring system and quality assurance framework has been established for monitoring FSM implementation in the state.

Most of the operational FSTPs are being operated by ULBs by assigning dedicated sanitation staffs. Most of the FSTPs are using treated water for gardening on FSTP site. The dried sludge is used either as manure in the gardening or mixed with compost from solid waste. Efforts are made to engage self-help groups (SHGs) for the operation and maintenance of FSTP.

1.4. Institutionalise FSSM service delivery

The UDD, GoM developed various guidelines for septage management, and conducted regular capacity building programmes for all ULBs to implement city wide FSSM plan. UDD conducts regular review meetings to track the progress at city, district, division and state levels. A state wide monitoring system and dashboard is developed to track the implementation of FSSM plan. A series of field visits and on-call assistance is being provided by technical experts to guide the ULB officials during the implementation and operation of FSTPs. Maharashtra is also developing a strategy on convergence of NULM and SBM for improved sanitation service delivery with participation of SHGs in operation and maintenance activities.



CENTER FOR WATER AND SANITATION

The Center for Water and Sanitation (CWAS) is a part of CEPT Research and Development Foundation (CRDF) at CEPT University. CWAS undertakes action-research, implementation support, capacity building and advocacy in the field of urban water and sanitation. Acting as a thought catalyst and facilitator, CWAS works closely with all levels of governments - national, state and local to support them in delivering water and sanitation services in an efficient, effective and equitable manner.