



Sharing Lessons on FSSM Services from CWIS Cities

Workshop Report

4-6th Sept, 2019

Sharing Lessons on Faecal Sludge and Septage Management (FSSM) Services CWIS Cities

Workshop Report

Center for Water and Sanitation

CRDF, CEPT University

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1. Executive Summary

The success of nation-wide ‘Clean India Drive’ or ‘*Swachh Bharat Mission*’ (SBM) has helped to build strong narratives around benefits of improved sanitation and making all cities Open Defecation Free (ODF). However, to move towards “safely managed sanitation” as per target 6.2 of Sustainable Development Goal (SDG) and to attain ODF++ status as per MoHUA protocol, it is necessary to move beyond the current focus of toilet construction and put emphasis on ensuring that all faecal waste is safely collected and treated.

The vision of City-Wide Inclusive Sanitation (CWIS) entails that everyone should benefit from safe sanitation services that are available for all, equitably delivered and financed, and institutions ensure that performance outcomes are incentivized and sustainable. Further, there is a responsible authority who is mandated and supported to pursue these outcomes and targets for reaching the poor and women in an equitable manner.

In this context, Center for Water and Sanitation (C-WAS) of CRDF, CEPT University organized an experience sharing workshop from 4th to 6th September, 2019 at Pune. This workshop aimed to share learnings from the experience of implementing Fecal Sludge and Septage Management (FSSM) in two cities of Maharashtra, where CWIS principles are being practiced. The participants from various government departments, research organizations and private sector agencies representing different states were present at the workshop. The workshop was also attended by representatives from Nepal and Bangladesh. The first two days of the workshop provided an opportunity to learn from the experience of Wai, Sinnar and other CWIS cities. On the third day, a field visit was organized to Wai town to meet the officials of Wai Municipal Council (WMC) followed by demonstration of scheduled desludging and demonstration of the monitoring app. The participants also saw pyrolysis treatment technology and its operations at fecal sludge treatment plant. This workshop provided an opportunity to the participants to deliberate the idea of scheduled desludging and fecal sludge treatment; gender inclusion and affordability; and local and political commitment aligning with the overall CWIS principles.

Key Messages from the Workshop

Implementation of Scheduled Desludging in Wai and Sinnar towns of Maharashtra has demonstrated a safe, sustainable, equitable and affordable approach for managing faecal sludge and septage, aligning with the CWIS principles and SDG 6.2 target.

Use of Performance Linked Annuity Model (PLAM) backed by Escrow Account Mechanisms has played a key role in promoting private sector participation in the FSSM space and

safeguarding them from the payment risks and also safeguarding ULB to pay only against performance.

Innovative Financing mechanism for FSSM has been explored in Wai and Sinnar, wherein Sanitation Tax has been levied on properties against which they are provided scheduled services once in three years as per schedule. As people do not have to pay where they are given these services, we have seen 90% acceptance rate for scheduled services.

Commitment from local government through city level resolutions are the key to success while implementing city-wide FSSM and to ensure that activities are implemented irrespective of change in political and executive wing.

Use of online monitoring systems and mobile based applications such as SaniTab, SaniTrack and SanQ can be explored in other cities for monitoring performance of FSSM services. . This would save time and resources for monitoring of FSSM service.

Mainstreaming gender and inclusivity by involving Self Help Groups (SHGs) and sanitation workers in various aspects like toilet construction, O&M of community toilets, O&M of desludging services, O&M of FSTP, etc across sanitation value chain. The sanitation services in the CWIS cities also emphasize that services should be accessible and affordable to all, including urban poor and low income settlements.

Scaling up learnings from city level at State level in form of policies and guidelines and by providing technical support at state level.



2. Introduction to Citywide Inclusive Sanitation (CWIS)



Presentation link: [Introduction to citywide Inclusive sanitation](#)

Ms. Sakshi Gudwani, Program Officer, Bill and Melinda Gates Foundation (BMGF), introduced the concept of City-Wide Inclusive Sanitation (CWIS) concept and its key principles. In the rapidly urbanizing world, to address the challenge of sanitation, CWIS aims to combine traditional approaches of planning for centralized systems with the non-networked or FSSM interventions ensuring coverage of the service to the most vulnerable user groups.

In this context, **7 principles** of CWIS were introduced which aim to transform the sanitation sector to reach universal access to sustainable sanitation, contributing to better health, economic, and gender equality outcomes for the world's underserved.

1. Everyone in an urban area, including the **urban poor**, benefits from **equitable safe sanitation services**.
2. **Gender and Social Equity** are designed into planning, management and monitoring.
3. **Human waste is safely managed** along the sanitation service chain, starting with **containment**
4. Authorities operate with a **clear, inclusive mandate, performance targets, resources, and accountability**.

5. Authorities deploy a range of **funding, business, and hardware approaches-sewered/non-sewered** – to meet goals.
6. **Comprehensive long-term planning** fosters demand for innovation and is informed by analysis of needs and resources.
7. **Political will and accountability systems** incentivize service improvements in planning, capacity, and leadership.

As a part of the CWIS global initiative, eight cities have been selected across different countries to demonstrate the use and application of these principles in practice. This includes Wai, Warangal, Narsapur and Trichy from India, Khulna from Bangladesh, Dakar from Senegal, Kampala from Uganda, and Lusaka from Zambia.

3. Scaling up FSSM in Maharashtra- State perspective



Presentation link: [Scaling up FSSM in Maharashtra](#)

Mr. Dandegaokar, Mission Director, Swachh Maharashtra Mission Urban (SMMUA), highlighted the success story of Maharashtra for its great performance under the Swachh Bharat Mission (SBM) and on scaling up FSSM strategies for moving towards ODF+/++. He highlighted that Government of Maharashtra (GoM) aims to scale up access to safe and sustainable sanitation to all its urban areas. This will be done by making the whole state ODF++, by improving the entire sanitation value chain from containment to treatment and reuse.

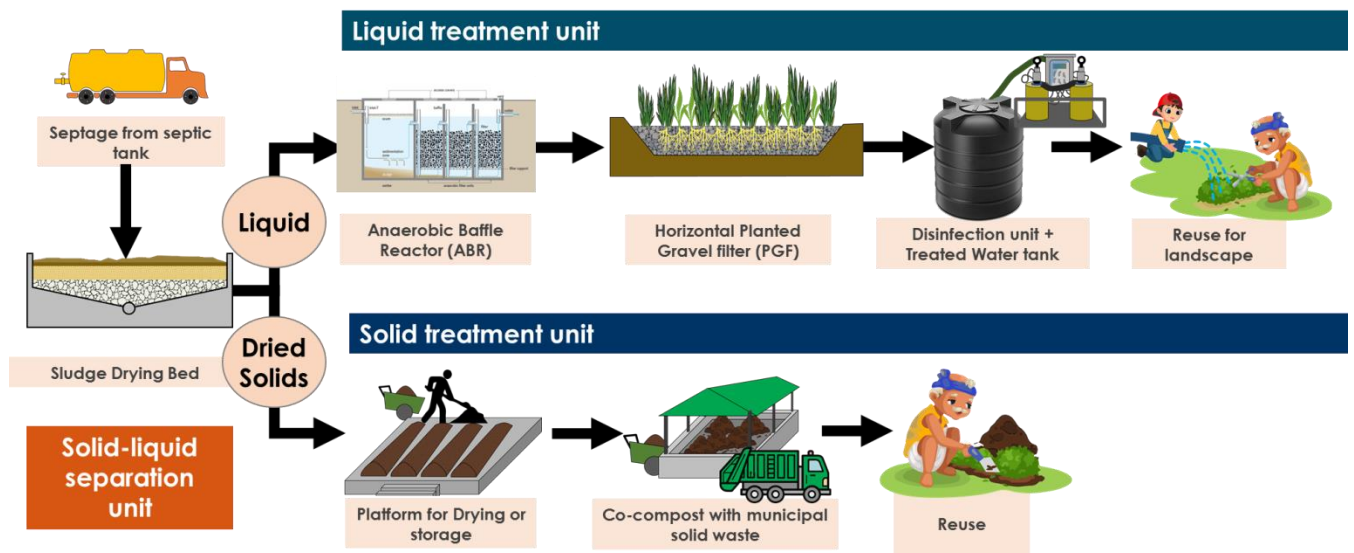
Mr. Aasim Mansuri, Senior program lead at CEPT University gave an overview of journey of Maharashtra from ODF to ODF+ and ODF++. Maharashtra is the second-most populous state in India, and with over 380 cities and 51 million urban populations. It was one of the first states to declare its urban areas as ODF in October 2017. At a very early stage in implementing the Swachh Maharashtra Mission in Urban Areas, it was recognized that making cities ODF is only the first step. The state aims to ensure safe management and treatment of faecal sludge and septage among all its ULBs. For this, Government of Maharashtra with technical support from CEPT University had developed a framework for ODF+ and ODF++ which was later adopted at National level. It has also introduced a sustainability charter consisting of 7 crucial steps to ensure ODF sustainability. One of the step includes moving towards ODF+/++ by ensuring effective collection and adequate treatment of human faecal waste.

At present, in only 36 cities of the Maharashtra state, a complete or partial Sewage System and Sewage Treatment Plant (STP) exist and are functional. Safe and regular management and treatment of the waste water in these cities is being carried out at the Sewage Treatment Plant

(STP) of the same city. However, the remaining small and medium cities are completely dependent on onsite sanitation system where toilets are connected to pits or septic tanks. In these cities, the pits or septic tanks are emptied only when they are full, often once in 8 to 10 years. The septage is indiscriminately disposed in open lands or water bodies without any treatment. This practice has adverse effect on ground water and surface water, and eventually health of local population.

Therefore, the guidelines for ULBs to implement septage management plans have also been rolled out by the state. For treatment of faecal sludge and septage, the state government of Maharashtra has issued a resolution for setting up independent FSTPs in 311 cities using conventional non-mechanized treatment technology. The treatment includes sludge drying bed with anaerobic baffled reactor and planted gravel filter for treatment of FS. This GR provides mandatory directives to cities for setting up an independent FSTP. Apart from this, state government has also instructed 36 cities in Maharashtra that have a Sewage Treatment plant (STP) to treat their septage at their own STPs. In addition, septage from 32 cities that fall in 20 km buffer will co-treat at nearby STPs. Through these measures, the government of Maharashtra aims to implement these FSTPs by December 2019. The state has also passed government resolutions (GRs) binding all its ULBs to move towards ODF+ / ++ status and provided directives to utilize incentive funds by state government and 50% of 14th FC grants for the sanitation related activities. A number of initiatives of capacity building have been undertaken for training ULBs for becoming ODF+ / ++.

Figure 1: Flow diagram of proposed FSTPs in Maharashtra



4.FSSM Overview of Wai and Sinnar



Presentation link: [CWIS in Wai](#); [FSSM story of Sinnar](#)

Ms. Kranti Waghmare, Engineer, Water supply and Sanitation Department from Wai Municipal Council and Mr. Rakesh Shinde, Assistant Engineer, Sanitation department from Sinnar Municipal Council, presented FSSM journeys of Wai and Sinnar respectively. Wai, a small pilgrim town with 43,000 population, and Sinnar, an industrial town with 75,000 population in Maharashtra have been receiving support from CEPT University since 2013 when their city sanitation plans (CSP) were first prepared. Various initiatives such as toilet subsidy scheme, awareness campaigns, OD spot monitoring, capacity building of masons etc. were undertaken by the two ULBs for becoming ODF. Wai was amongst the first few cities to be declared ODF by the state in year 2016 and Sinnar soon followed in year 2017.

Both Wai and Sinnar Councils had passed general resolutions to implement citywide FSSM plans by involving private sector to undertake a scheduled desludging service at a 3 year cycle, as recommended by National Guidelines in India, and treating the collected faecal waste at a designed treatment site on the government land. These activities are being carried out through involvement of private sector and financed through a sanitation tax and the city government's own funds for capital investments. This becomes a sustainable model as projects are implemented using governments' own funds and local government is only responsible for its operations. A sanitation tax is levied on the citizens, which is lower than what each family earlier paid for emergency desludging.

In Wai, the FSTP based on Pyrolysis technology was funded by a grant from the Bill and Melinda Gates Foundation to a private enterprise. The plan is operated by this enterprise and will be handed over to the local government after two years of operation. In Sinnar, the FSTP is funded by the local government through its own resources. It uses Upflow Anerobic Sludge Blanket

(UASB) technology. The private enterprise was selected through a Build-Operate-Transfer (BOT) contract. In both cities, online monitoring mechanisms have been introduced for both scheduled desludging and the FSTP operations. Both these cities have shown that it is possible to achieve high quality, inclusive and equitable delivery of sanitation services in a sustainable manner.

5. Scheduled desludging experience in Wai and Sinnar



Presentation links: [Scheduled desludging experience of Wai and Sinnar](#); [Perspective of a private desludging enterprise on scheduled desludging](#); [Monitoring FSSM service chain](#)

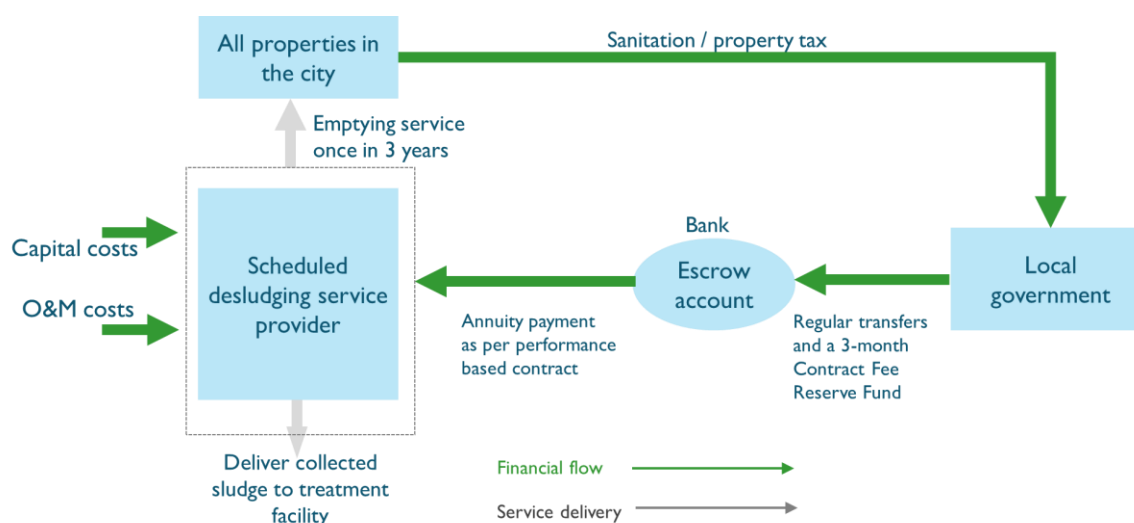
5.1. Scheduled desludging model of Wai and Sinnar

Mr. Aasim Mansuri, Senior program lead at CEPT University explained the scheduled desludging model of Wai and Sinnar. Both these cities realized the high prospect of regular desludging service at a predetermined cycle of 3 years. Both cities rolled out a ‘performance-based contract’, payments under this are made against the outputs. The capital cost of the truck and operational and maintenance (Opex) cost of the desludging service will be mobilized by the private enterprise. This will be repaid back by the local government using performance linked annuity payments. Performance is assessed in terms of number of septic tanks emptied. Wai became the first city in India to implement scheduled desludging service. It was started on May 30, 2018, in Wai, and on March 27, 2019 in Sinnar (Source: Mehta M, Mehta D and Yadav U (2019) Citywide Inclusive Sanitation Through Scheduled Desludging Services: Emerging Experience From India. *Front. Environ. Sci.* 7:188. doi: 10.3389/fenvs.2019.00188).

A Performance Linked Annuity Model (PLAM) has been used to ensure service quality (see figure 2). Both cities have levied a sanitation tax to ensure that adequate funds are available for contract fees of the private agency for desludging services and operation and maintenance of FSTPs. Property owners pay an annual sanitation tax to the local government as a part of their property tax bills, as against current system of paying a charge/fee at the time of receiving any desludging service. The risk of late payment raised by private enterprises was mitigated through an escrow account mechanism. Escrow account is a tripartite agreement between the local government (LG), private sector and bank. The LG has kept 3 months of contract fee payment

as a Contract Fees Reserve Fund (CRPF) to safe guard against any delays in the payment to the private sector. The operator's performance is also assessed for compliance of safety standards (disposal at the FSTP, signing of desludging forms, use of protective equipment, etc.) and quality of service (no spillage of faecal sludge, no damage to septic tanks, etc.).

Figure 2: Performance linked annuity model for scheduled desludging services



About 6-7 septic tanks are now desludged daily in Wai and Sinnar as compared to 7-8 per month through demand based desludging earlier. The acceptance rate of the service has been more than 90%. Households now pay sanitation tax as a part of property tax instead of heavy user charges for desludging (Source: Mehta M, Mehta D and Yadav U (2019) Citywide Inclusive Sanitation through Scheduled Desludging Services: Emerging Experience From India. *Front. Environ. Sci.* 7:188. doi: 10.3389/fenvs.2019.00188).

The benefits of scheduled desludging are in the form of equitable and affordable service delivery, as per the CWIS principles. It is inclusive as it covers all households including the non-slum and slum dwellers at much affordable prices (INR 60/- in Wai and INR 300/- in Sinnar) linked to property tax. It also provides services to non-residential properties such as office, schools, health centres etc.

During the discussions, there were questions raised to understand database requirement to plan for scheduled desludging and defining targets. It was explained that the onsite sanitation database was prepared using SaniTab app where each household was surveyed individually in Wai to understand built typology, IHHL coverage, septic tank locations, sizes etc. In Sinnar, latest property tax survey data was utilized. The Wai and Sinnar experience shows that planning for scheduled desludging does not necessarily require extensive primary surveys as ULB's existing database such as property tax data can be used.

Implementation of Scheduled Desludging in Wai and Sinnar towns of Maharashtra has demonstrated a safe, sustainable, equitable and affordable approach for managing faecal sludge and septage, aligning with the CWIS principles and SDG 6.2 target.

5.2. Perspective of a private desludging enterprise on scheduled desludging

Mr. Pramod Mungi, Operations manager from Sumeet Facilities Pvt. Ltd., shared their experience of implementing scheduled desludging service in Wai and Sinnar. Sumeet Facilities became the first company in India to be awarded the contract for scheduled desludging in two cities. The contract has clauses that address most concerns of any private player involved in the desludging business. For example, timely payments are assured by escrow account which channelizes the monthly payment, and sanitation tax ensures revenue to the government. The fixed targets and route plans help in ensuring optimal usage of fuel and time. Overall, it's a win-win situation for both ULB and the private player as the standards of the service (including the safety standards) are ensured by the ULB and citizens get timely service.

On being asked about the challenges faced in implementing scheduled desludging, Mr. Mungi gave examples of a few operational issues when the 3000 litres capacity suction truck was unable to enter the narrow lanes and hence, a small vehicle of 600 litres capacity was brought by Sumeet Facilities. Also, the sealed covers of household septic tanks was another challenge that required masons to first break the cover in many households. To resolve this issue, Wai local government supported by providing their masons at subsidized rates. The awareness generation experience was also shared when a survey team was appointed by Sumeet group, and pamphlets were distributed citywide while undertaking door to door awareness.

5.3. Monitoring of scheduled desludging services in Wai & Sinnar

Mr. Dhruv Bhavsar, Senior program lead from CEPT University explained the importance of having smart monitoring mechanisms to ensure efficiency and sustainability of FSSM operations. Wai and Sinnar are successfully demonstrating the use of mobile based applications like SaniTab, SaniTrack and SanQ, which are customizable and available in vernacular languages for ease of access.

SaniTab is a mobile application for digital sanitation survey. It can be used as a citywide digital data collection tool to capture household / property level data. In Wai, it has been used to do a baseline assessment of toilets across the city and currently it is being used to create a detailed database of all septic tanks desludged in the city. The collected data can be viewed in the form

of processed charts, tables and maps on online dashboards for informed decision making. SaniTab was initially just an online data collection and assessment tool, but is now also functioning as a monitoring app that can be linked to a real time dashboard. It is also available on Google Play Store free of cost.

SaniTrack is a system for tracking scheduled desludging services which eliminates paper based reporting formats and moves to on screen signatures and receipts along with real time and geo-tagged information on dashboards. SaniTrack is a GIS-GPS based online monitoring system to track collection and safe transport of septage from household to the treatment facility. It consists of a mobile app-based module for desludging operators for day-to-day scheduling and then recording details of each desludging with acknowledgement by household respondent through signature on the mobile app. Along with signatures, geo-location and timestamp is captured automatically and the operator will also be able to collect data about type of property, sludge volume, household details, etc. It will also capture the safe unloading of collected septage at the FSTP through similar acknowledgement. A centralized web portal also allows registration of new households, desludging service operators/contractors, etc. This MIS then displays the information on a web map as well as allows the administrator to download the information in pre-configured formats. This system has a field vetted base map of the city where households are mapped and linked to property tax numbers thus allowing it to be a transparent process. In addition, the suction trucks being provided by the desludger are also fitted with GPS trackers to further ensure safe collection and unloading of septage.

There were discussions about whether the GPS mounted suction trucks should be integrated with the SaniTrack or not, as they share a common purpose of monitoring collection and disposal of septage. At FSTP sites in both Wai and Sinnar, an online water quality monitoring system, SanQ, has been installed. It measures effluent quality (pH, BOD, COD, TSS and Nitrates) at every pre-defined time interval. The usage of SaniTab and SanQ applications was demonstrated during the field visit on the last day of the workshop.

6. Panel Discussion: Possibilities of taking up Scheduled Desludging in TSU states and CWIS Cities



The objective of the panel discussion was to share experiences and have an insight on the possibilities of taking up scheduled desludging as being adopted by the cities in Maharashtra, in the context of other states and countries.

The session was moderated by Ms. Sakshi Gudwani, BMGF, and the panel included Bhawna Prakash from Ernst & Young, Odisha; Anjali Sherpa from Nepal; Neela Priya from ASCI, Telangana; Parameshwar from IIHS, Tamil Nadu and Saief Manzoor-Al-Islam from Practical Action, Bangladesh.

Ms. Bhawna Prakash, Director, Ernst & Young, provided an overview of Odisha where the state has decided that out of 114 Urban Local Bodies (ULBs), 95% will implement decentralized strategies for managing faecal sludge, while the remaining cities will have centralized sewerage systems. All these ULBs have passed resolutions for enforcement of FSSM activities at the city level. However, decisions in terms of institutional structure and financing are more centralized at the state level where the government has rolled out policies, strategies, regulations and standard operating procedures (SOPs) for guiding cities to implement FSSM. Also, Government of Odisha has provided capital expenditure for conveyance and treatment of faecal sludge and septage. About 208 suction vehicles have been procured by the state in the last 3 years and have been distributed to the ULBs. The existing practice is demand based desludging through

three models-a) trucks owned and operated by the government; b) trucks owned by the government but operated by private sector and; c) trucks owned and operated by the private sector. It was also discussed how scheduled desludging model could help in resolving the current issues of last mile connectivity and management and monitoring challenges faced by local governments in Odisha. It was suggested that some elements of scheduled desludging such as fixed charge or tax, scheduling for particular zones, and monitoring aspects could be explored in Odisha.

Ms. Anjali Sherpa from Nepal, talked about the current sanitation situation in Nepal and the priority objectives of the Government of Nepal that emphasize on making the country Open Defecation Free (ODF). As a result, Nepal will soon be declared 'ODF', which will motivate its cities to further address issues across the FSSM value chain. Discussions are being carried out at the policy level. There have been a couple of pilot initiatives involving participation from private sector and NGOs in some of the cities to operate public and community toilets. However, desludging system is mostly informal and demand based with unsafe disposal. Thus, the biggest challenge is to formalize these systems through capacity building at the local level. As FSSM is at an initial stage in Nepal, scheduled desludging cannot be achieved in a short duration due to multiple barriers such as variations in type of containment systems (mostly there are pits, holding tanks and a few septic tanks) and; lack of institutional and regulatory framework including ordinances and standards. The local governments need to regulate activities and ensure that households are constructing septic tanks correctly. With the right kind of institutional arrangements and awareness among people, scheduled desludging can be tried out in the long run. Besides, faecal sludge treatment is a major challenge as most of the cities do not have a treatment facility resulting in its unsafe disposal. Thus, there is an urgent need for treatment options in the cities.

Ms. Neela Priya, Sanitation & Knowledge Management Expert from ASCI gave Telangana's perspective on faecal sludge treatment and conveyance. The State Government has mandated Faecal Sludge Treatment Plant (FSTP) for all the ULBs which do not have treatment system, and co-treatment for those ULBs that already have STP. Overall the conveyance system is demand-driven in the state. In case of large and medium sized cities like Hyderabad and Warangal, there are multiple private desludging operators present due to very high dependency on on-site systems-Hyderabad and Warangal have 75 and 10 private desludging operators respectively. Hence, the market is very vibrant. Scheduled desludging similar to Wai and Sinnar may disrupt such a vibrant market, as there will be a monopoly. Thus, scheduled desludging model with multiple zoning and multiple private players could be explored, or else demand desludging with strengthened monitoring can continue.

Mr. Parameshwar, Team Leader - CWIS from IIHS provided an overview of treatment scenario and desludging market in the state of Tamil Nadu where there are 15 Municipal Corporations,

124 Municipalities and 561 Town Panchayats. They are planning for co-treatment at STPs and /or FSTPS through clustering Municipalities and Town Panchayats. About 60 FSTPs in the state are already under construction and additional 22 FSTPs are expected to be sanctioned soon. Household desludging service is demand driven throughout the state provided by private players only, as the ULB trucks desludged only the public properties or community toilets/public toilets. Desludging charges are not very high (INR 1200 per 5000L septic tank) as compared to other states hence, demand based system is working well. It was felt that scheduled desludging in such a context may disturb the market dynamics as “it is like putting your hand inside a honey-comb”.

Mr. Saief Manzoor-Al-Islam, Technical Coordinator from Practical Action, Bangladesh gave an overview of the existing sanitation scenario of Bangladesh after being declared ODF in year 2015. At present, entire country is dependent on on-site sanitation systems except 20% part of Dhaka which is covered by sewer network. Also, most of the untreated septage is disposed in the rivers or open areas. To tackle this situation, Bangladesh government started revising the National Sanitation Plan and formed an institutional framework for FSM. Soon, a National Action Plan for FSM is expected. Most desludging operators are a part of large informal sector that is gradually being formalized now through licensing mechanisms. Also, the government has recently started standardizing the FSTP technologies. Scheduled desludging along with sanitation tax linked to property tax model can be implemented in some of the small towns of Bangladesh. For this, legislative decisions should be taken for collection of tax. Also, suction trucks in Bangladesh are generally imported from India as there are no domestic manufacturers. Hence, operation and maintenance of these trucks involve high costs.

8. FSTP Treatment Technology and Monitoring in Wai and Sinnar



Presentation link: [Wai pyrolysis FSTP](#); [Sinnar UASB FSTP](#)

Mr. Rajkiran, Manager – Production Engineering from Tide Technocrats Pvt. Ltd., Bangalore, explained the treatment technology of 70 KLD capacity Faecal Sludge Treatment Plant (FSTP) in Wai. This was set up with the funding supported by Bill and Melinda Gates Foundation on land provided by Wai Council. It uses a thermal treatment process. Pyrolysis of septage with a limited oxygen supply destroys all pathogens present in excreta, and provides fast volume and mass reduction. There is a usable end product in the form of biochar, which can provide soil enrichment when used with compost. Another output in the form of treated wastewater is used for activities such as FSTP landscaping, vehicle cleaning etc. There was discussion regarding the reuse potential of biochar and treated wastewater for resource recovery. It was highlighted that reuse options have been explored in Wai presently however 100% recovery will require further efforts.

The Sinnar FSTP technology experience was shared by Mr. Umesh Panse, Proprietor from Panse Consultants, who was selected through a competitive bidding process by Sinnar Municipal Council to Design, Build, Operate and Transfer (DBOT) with 3 years O&M. The capital funding was provided by Sinnar Municipal Council through 14th FC funds. These funds are provided to local government by the Central Finance Commission which is a constitutional body formed every 5 years. Sinnar FSTP works on Upflow Anaerobic Sludge Blanket (UASB) technology. The end products i.e. the dried sludge in the form of manure and treated wastewater are used for plantation and horticulture purpose on site. Additionally, biogas in small quantity is also produced for which, SMC plans to float a separate tender for the power generator at the site

during the second phase. The primary benefit of this technology is that it is designed to reduce BOD levels to 30mg/L which is ideal for activities like irrigation. As the technology offers tertiary treatment, this BOD level can further be reduced to 10 mg/L at minimal cost implications. Other advantages include: a) low capex and opex requirement; b) low energy consumption as compared to many other FSTP technologies. During the discussions, participants agreed and appreciated the cost benefits of UASB technology when compared with functional FSTPs in other cities of India.

In both Wai and Sinnar, two types of monitoring systems are installed at FSTP sites – Radio Frequency Identification (RFID) for tracking desludging vehicle entry-exit and; Water Quality Monitoring System (WQMS) for assessing real time updates on parameters such as pH, BOD, COD, TSS, nitrates and temperature for input and output water quality. The installation of Water Quality Monitoring system has now been mandated by both Central Pollution Control Board (CPCB) and Maharashtra Pollution Control Board (MPCB).

10. Experience Sharing by CWIS Cities

10.1. Gender Integrated Sanitation in Narsapur and Warangal



Presentation link: [Gender integrated sanitation in Narsapur; Gender integrated sanitation in Warangal](#)

Ms. Neeraja Thota, sanitation helpline coordinator in Narsapur, presented strategies for gender integration in sanitation. Almost all schools in Narsapur have separate toilets for girls and boys and; all the upper primary and high schools have an incinerator facility for ensuring Menstrual Hygiene Management (MHM). The local government has undertaken gender audits and floated retrofitting tenders, and also involved local SHGs for managing the Community Toilets (CTs). There is a strong presence of women representatives in sanitation sector including 31 gender subgroups, who have been involved in awareness generation activities. Municipal chairperson, National Service Scheme (NSS) cell nodal person, FSTP site-incharge and one of the truck operators, are all women. The local government has also established a sanitation helpline number for direct reach. The gender budget of INR 5 lakhs has been allotted for the year 2019-20. Trainings on MHM and toilet usage were provided to the municipal school teachers, Mission for Elimination of Poverty from Municipal Areas (MEPMA) resource persons, gender forum leaders and Arogya Mitras. The local government officials were also trained by ASCI on gender budgeting and utilization.

Warangal has also emphasized improving school toilets for integrating gender aspect in sanitation. Ms. Neela Priya, Sanitation & Knowledge Management Expert from ASCI highlighted that about 80% municipal schools in Warangal have segregated toilets and 90% schools have the essential MHM infrastructure (dustbins, incinerators etc.). Warangal is also known for “SHE Toilets” exclusively designed for women. Presence of women can be observed as NSS cell representatives; CSTF gender subgroups; SHE Toilet caretakers; Self Help Group (SHG) entrepreneurs for construction and operation and maintenance of public toilets and; a

desludging operator. The local government is also focusing on sanitation needs of transgender communities and has proposed one toilet cubicle in all existing Public Toilets (PTs) for them. Moreover, gender integration was also ensured through capacity building of slum sanitation committees, school sanitation workers, women masons etc. Despite these initiatives, a few common challenges related to stigma and discrimination of women who are willing to take up sanitation related work exists. It was highlighted that there is a need for gender budget and micro-financing options for urban poor to start up livelihood in sanitation sector.

There were discussions regarding the need for providing special toilets for third gender communities. Mr. Rajmohan Reddy, PMU-Warangal from ASCI explained the case of Warangal in particular where specific areas in the city had demand for these toilets. Hence, the local government took the initiative of providing separate cubicles for them. There were questions regarding the challenges faced in involving women in desludging business from the experience of Narsapur and Warangal. While currently the female desludging operator is getting a lot of positive attention for the work she is doing, there is also concern related to the social pressure faced by her. It was also mentioned that there is a common notion that sanitation activities are carried out by the low caste (ST) communities only. An example was given that the current lady desludging operator in Warangal entered the business by observing her husband's work who was already into it. She gradually showed interest as it was lucrative for her. However, it was difficult for her to convince her family members but she finally managed to be the first lady desludging operator in Warangal.

10.2.CWIS Activities in Trichy



Presentation link: [CWIS experience in Trichy](#)

Mr. Parameshwar Team Leader - CWIS from IHS gave a brief presentation on various CWIS activities in Trichy. Trichy, a city with more than 9 lakh population, demonstrates co-existence

of both on-site sanitation system, and a sewerage system which covers 35% properties in the city. There is an existing Sewage Treatment Plant (STP) of 88 MLD capacity which co-treats more than 300 KLD septage collected from on-site systems. Also, the local government has proposed another STP of 40 MLD capacity.

There is high dependency on community and public toilets with more than 400 blocks in the city. More than 50% of them are managed by a Women Federation called WAVE. Trichy also has SHE (Sanitation Hygiene Education) toilet model, which are managed by Self Help Groups (SHGs) forming SHE teams. The SHE teams are crucial for integrating gender aspects in sanitation. One of this community toilets is managed by a transgender person. About 150 community and public toilets in the city have been identified for demonstrating improvements in terms of physical infrastructure, institutional arrangement with community and public toilets managed by SHE teams under WAVE, O&M protocols and financial sustainability. Once sustainable arrangements for these community and public toilets are in place, it will be scaled up for the remaining toilet blocks with local government support. Similarly, 50 out of 260 slums have been identified for demonstrating CWIS activities where awareness sessions were undertaken on Menstrual Hygiene Management (MHM), FSM, Solid Waste Management (SWM) and personal hygiene. The focus is to reduce high dependency on community toilets and ensure optimum standards for individual household toilets and containment systems. For improving school sanitation, awareness activities have been carried out in 40 schools. Five schools have been identified for demonstrating infrastructure improvement and behavior change aspects.

About 60% sanitation workers in the city are women. For improving working conditions of all the sanitation workers, a sanitation workers profile has been created. This will help in designing a sanitation workers programme to link it with government's schemes in Trichy, such as safety programme on PPEs, scholarship programmes for their children and health insurance for families etc.

There were discussions about the need to move away from community toilets as they require large capital and operational costs. Also, as Government of India has taken a lead through national programme, cities need to improve individual household level toilet coverage for overall Open Defecation Free sustainability. There is a need to develop innovations to overcome the common constraint of lack of space in cities for building IHHLs. Activities of CURE, New Delhi, Shelter Associates, Pune and Mahila Housing Trust, Ahmedabad are a few successful cases that could be referred.

10.3. Communication Strategy for FSSM in Wai and Sinnar



Presentation link: [Communication strategy for FSSM in Wai and Sinnar](#)

Ms. Aditi Dwivedi, Senior research associate CEPT University shared their overall experience of implementing different communication strategies for successful execution of scheduled desludging in Wai and Sinnar. Before starting scheduled desludging, it was essential to spread awareness regarding three key messages: a) What is scheduled desludging? b) What are the responsibilities of citizens? c) How to ensure good quality service as per the laws and regulations? For this, different channels were used: interpersonal communication (household visits, phone calls etc.); mass media (pamphlets, banners, bulk SMS, WhatsApp videos and Facebook page) and; sensitization workshops for masons, elected representatives, sanitation workers etc.

She also shared some of the key challenges and lessons learned from the communication strategy :

- A phased approach for awareness at household level is crucial. The Wai experience suggests that if all the citizens were informed about scheduled desludging at once, then the desludger gets a large number of emergency requests hampering their route plans. Thus, a phased approach was adopted in Sinnar.
- Households were very receptive about the scheduled desludging service as they were made aware well in advance. Households were also ready to pay the masons for replacing their sealed septic tank covers with removable lids for long-term convenience.
- As in most cases, household women are present during the day time when desludgers come and presence of a woman on the desludging team helps get more responses
- It is important to sensitize desludging operators about using good quality PPEs to ensure safety.

11. Exposure Visit to Wai



After the workshop, participants were taken on an exposure visit to Wai. A meeting was organized with the Wai Municipal Council (WMC) officials. This was followed by demonstration of scheduled desludging process, its monitoring and operations of treatment plant. Mrs. Pratibha Shinde, President, WMC, welcomed all the participants. She briefed the participants about the Wai's FSSM journey and involvement of BMGF and CEPT University.

After the meeting, private operator demonstrated the desludging operations of the septic tanks and CEPT team shown real time functioning of SaniTab app for monitoring. Representatives from TIDE Technocrats explained the functioning of different component of FS treatment plant, and the real time water quality monitoring system.

12. Key Takeaways

The workshop provided detailed insights on various CWIS activities that are being undertaken in Wai and Sinnar towns of Maharashtra. Participants also shared their experiences of implementing sanitation activities in their cities and under different contexts. Scheduled desludging implementation along with treatment in Wai and Sinnar is in line with the CWIS principles that aim towards achieving equitable, affordable, sustainable and safely managed sanitation services. While the participants acknowledged the benefits of implementing scheduled desludging, there was a lot discussion on *“In what context will scheduled desludging work best?”* Partners from other cities mentioned that while scheduled desludging in a small city without many desludging operators may be feasible, it may require different approaches and design of scheduled desludging in larger cities like Trichy or Bhubaneswar where there is an established market for private desludging operators. In such situations a different approaches like zonal contracts may be explored. Also, some of the monitoring elements of scheduled desludging are pretty much scalable and can be explored by various cities. This would include tools (SaniTab, SaniTrack, SanQ) and dashboards developed for monitoring conveyance and restricting reckless disposal of untreated faecal sludge.

Participants from Nepal and Bangladesh talked about the positive learning experience they had as they learn various new perspectives other than faecal sludge treatment plants. The commitment by local government is the key to success for any initiative as it would streamline the process, institutional arrangement and flow of funds. Performance based contracts and escrow account mechanisms have played a key role in promoting Private sector involvement and safeguarding the private sector involved in desludging or treatment process.

A common suggestion given by the participants was the need to have more detailed discussions on various sanitation strategies. Throwing some light on what was actually planned and what corrections were needed during implementation on ground will provide an important lesson. This would lead to better cross learning and improved sanitation plans in future.

13. Agenda of the Workshop

Day 1 – 4th September, 2019

16:30 – 17:00	Registration
17:00 – 19:00	Introduction to CWIS and cities
	Welcome and Introductions
	Introduction to CWIS concept and principles
	Overview of Wai
	Overview of Sinnar
19:00 onwards	Welcome dinner

Day 2 – 5th September, 2019

9:30 – 10:00	State perspective
	Scaling up FSSM in Maharashtra
10:00 – 12:00	Scheduled emptying
	Experience of scheduled emptying in Wai and Sinnar
	Perspective of private sector on scheduled emptying
	Panel – Uptake of scheduled emptying in TSU states and CWIS cities
12:00 – 12:15	Tea

12:15 – 13:15	Experience of FSTPs – technology and monitoring
	Wai FSTP
	Sinnar FSTP
13:15 – 14:15	Lunch
14:15 – 15:30	CWIS activities by partners
	Gender integrated sanitation in Warangal and Narsapur
	Monitoring mechanism for scheduled emptying operations in Wai and Sinnar
	CWIS work in Trichy
	Communication strategy for FSSM in Wai and Sinnar
15:30 – 16:00	Tea
16:00 – 17:15	Group work on scheduled emptying by all participants
17:15 – 17:45	Presentation of group work
17.45 -18.00	Key takeaways
Day 3 – 6th September, 2019	
7:30	Leave for field visit to Wai
10:30 – 11:00	Meeting with Wai Municipal Council officials
11:00 – 12:30	Demonstration of scheduled emptying operations

12:30 – 13:30

Demonstration of FSTP operations

13:30 – 14:30

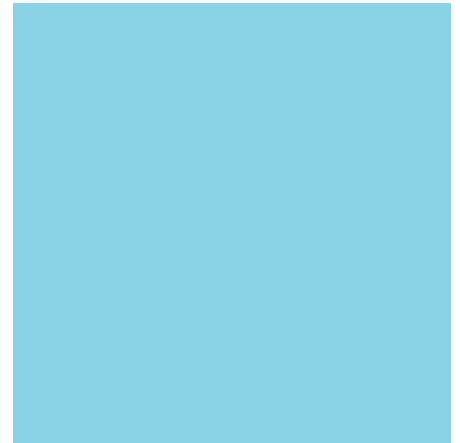
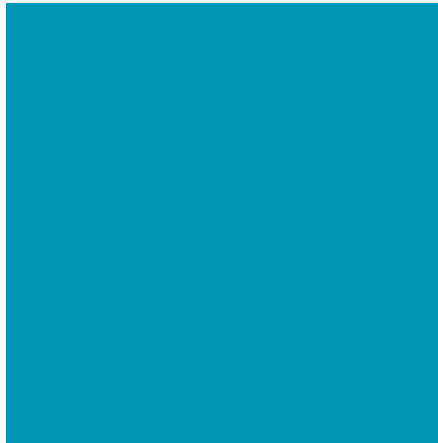
Lunch and depart for Pune/Airport

14. List of Participants

Sr. No.	Name	Organization
1	Ms. Utkarsha Kavadi	AIILSG
2	Ms. Aashima Parikh	AIILSG
3	Ms. Shweta Nagarkar	AIILSG
4	Mr. Roshan Kumare	Akot Municipal Council
5	Mr. Rajamohan Reddy	ASCI
6	Dr. Neela Priya	ASCI
7	Dr. Malini Reddy	ASCI
8	Mr Ramkrishna Paul	Athena
9	Ms. Anupama V. S.	Athena
10	Ms. Vinitha Venkatraman	BBC Media Action
11	Ms. Anisha Singh	BBC Media Action
12	Ms. Sakshi Gudwani	BMGF
13	Mr. K.Phalgun Kumar	CDMA
14	Mr. T. Krishna Mohan Reddy	CDMA
15	Mr. P.Sridhar	CDMA
16	Mr Harsh Yadava	CSE
17	Mr Manish Mishra	CSE
18	Ms. Kasturi Joshi	C-WAS
19	Mr. Dinesh Mehta	C-WAS
20	Ms. Meera Mehta	C-WAS
21	Mr. Dhruv Bhavsar	C-WAS
22	Mr. Aasim Mansuri	C-WAS
23	Ms. Upasana Yadav	C-WAS
24	Ms. Yugasha Bakshi	C-WAS
25	Mr. Bhushan Talware	C-WAS
26	Mr. Arfat Attar	C-WAS
27	Ms. Arwa Bharmal	C-WAS
28	Ms. Gargi Mishra	C-WAS
29	Ms. Jinal Chheda	C-WAS
30	Ms. Aditi Dwivedi	C-WAS
31	Ms. Hiral Joshi	C-WAS
32	Ms. Rucha Tavkar	C-WAS

Sr. No.	Name	Organization
33	Mr. Nikhil Iyer	DASRA
34	Ms. Parnasha Banerjee	DASRA
35	Mr. Krishnan Hariharan	DASRA
36	Ms. Charushree Nakarmi	EcoConcern Pvt. Ltd, Nepal
37	Mr. Nitesh Shrestha	EcoConcern Pvt. Ltd, Nepal
38	Ms. Bhawna Prakash	Ernst & Young
39	Mr. Bhagvat Bighot	Georai Council
40	Kiran Bedwal	Georai Council
41	Mr. Rajesh Ramamoorthy	IIHS
42	Mr. Dhanik Narayan	IIHS
43	Mr. Parameshwar	IIHS
44	Ms. Priyanka Thompson	Independent consultant
45	Ms. Shubhra Batra	Intellectap Advisory Services Private Limited
46	Mr. Vineeth Menon	Intellectap Advisory Services Private Limited
47	Mr. Shashwat Jha	Intellectap Advisory Services Private Limited
48	Shri Ajay Kumar Sao	Bundu Nagar Parishad, Jharkhand
49	Mr. Devashish dass	KPMG
50	Mr. Bhupendra Jha	KPMG
51	Harmaan Madon	Mandon Applied Sciences LLP
52	Mr. Kushal Thapa	Mahakali Mangalgadhi Suppliers, Nepal
53	Mr. Law Kumar Gupta	Mahalaxmi Municipality, Nepal
54	Mr. Sasidhar Vipparthi	Narsapur
55	Ms. Neeraja Thota	Narsapur
56	Ms. Anjali Manandhar Sherpa	Nepal
57	Mr. Umesh Panse	Panse Consultants
58	Mr. Prasad Gadekar	Panse Consultants
59	Mr. Omkar Kadam	Panse Consultants
60	Mr. Saief Manzoor-Al-Islam	Practical Action, Bangladesh
61	Mr. Vyankatesh Durwas	Sinnar Municipal Council
62	Mr. Ravindra Deshmukh	Sinnar Municipal Council
63	Mr Rakesh Shinde	Sinnar Municipal Council
64	Mr. Jayan Dandegaonkar	SMMUA
65	Mr. Lek Bikram Shah	SNV Netherlands Development Organisation, Nepal
66	Shri Gagan Wasan	SUDA Chhattisgarh
67	Shri Samved Sharma	SUDA Chhattisgarh

Sr. No.	Name	Organization
68	Mr. Amit Salunke	Sumeet Facilities
69	Mr. Pramod Mungi	Sumeet Facilities
70	Mr.Sunil Kumbharkar	Sumeet Facilities
71	Mr. Rajkiran	Tide Technocrats
72	Mr.Satish Jung Shahi	UCLG ASPAC
73	Mr.Saurabh Agashe	Urcon consultant
74	Ms.Kranti Waghmare	Wai Municipal Council
75	Mr.Gunvant Khopade	Wai Municipal Council
76	Mr.Sandipan Sarangi	WASH Institute
77	Ms.Jayashree Pattnayak	WASH Institute
78	Mr.Praveen Yadav	WASH Institute
79	Mr.Babul Bala	Water Aid, Bangladesh



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.