



Responses to Queries

Operationalising FSM at Scale: Approaches and Learnings from Tamil Nadu

IIHS

List of Acronyms

CAPEX	Capital Expenditure
CPCB	Central Pollution Control Board
FCO	Fertiliser Control Order
FCS	Full Cycle of Sanitation
FSM	Fecal Sludge Management
FSTP	Fecal Sludge Treatment Plant
GoTN	Government of Tamil Nadu
KLD	Kilo Litres per Day
KPI	Key Performance Indicator
MBBR	Moving Bed Biofilm Reactor
MSW	Municipal Solid Waste
NIMBY	Not In My Backyard
O&M	Operation & Maintenance
OPEX	Operational Expenditure
OSS	Onsite Sanitation System
PNP	Periyanaicken-Palayam
RRP	Resource Recovery Park
SIP	State Investment Plan
STP	Sewage Treatment Plant
TNCDBR	Tamil Nadu Combined Development and Building Rules
TNUSSP	Tamil Nadu Urban Sanitation Support Programme
UGSS	Underground Sewerage System
ULB	Urban Local Body
WASH	Water Sanitation and Hygiene
MHM	Menstrual Hygiene Management

The webinar recording can be accessed at:

<https://www.youtube.com/watch?v=HhjDVB0lk84&feature=youtu.be>

The film screened during the webinar can be accessed at:

<https://www.youtube.com/watch?v=h8aTZNE0IbE&feature=youtu.be>

Please write to us at tnussp@iihs.ac.in with any additional questions or comments.

Responses to queries in Q & A Chat Box

This document contains the responses to queries raised during the webinar: “Operationalising FSM at Scale: Approaches and Learnings from Tamil Nadu” held as part of the World Water Week on 25 August, 2020.

A. Technology/ Technology comparisons/ STP/FSTP

1. Any consideration of non-sewered sanitation options currently?

The State of Tamil Nadu can be an example for consideration of non-sewered sanitation options. The State has a mix of both sewered and on-site sanitation systems (OSS). Considering over 45 per cent of the State’s urban population relies on on-site sanitation systems, the Government of Tamil Nadu (GoTN) recognised the importance of Fecal Sludge Management (FSM) (or non- sewered sanitation) as an economical and sustainable complement to networked sanitation systems.

The State, therefore, adopted the Operative Guidelines for Septage Management in September 2014, and subsequently, in 2018, a State Investment Plan (SIP) for the creation of Fecal Sludge Treatment Plants (FSTP) and scaling of FSM. Currently, the GoTN is working on the implementation of FSTPs and scale up of non-sewered sanitation solutions across the State. The SIP can be accessed [here](#).

2. What is the technology/process used in Fecal Sludge Treatment Plants (FSTPs) in Tamil Nadu?

A non-mechanised system using a combination of sand drying beds and constructed wetlands is being adopted in Tamil Nadu. In some cases where there is a land constraint Tamil Nadu is using mechanised screw press for dewatering instead of sand drying bed.

3. What were the technologies used? Were all the 61 FSTPs using the same technology?

Though both mechanical and biological-based technology were used in TN, non-mechanised system using a combination of sand drying beds and constructed wetlands were used in most of the ULBs. Among the non-mechanised gravity based FSTPs, there were two variants of biological-based process used- in ULBs where fresh/ undigested fecal sludge (from Community toilets, hostels and other places where holding tanks collect fecal waste and have to be regularly emptied) was expected, fecal sludge stabilisation unit was included in the treatment process, whereas in other ULBs this is not present.

4. What could be the possible set of criteria that would help decide the mix of technologies in different zones of a city?

Based on the technology assessment criteria prepared by TNUSSP, the following may be the key considerations in choosing a technology:

1. Characteristics of fecal sludge in the city
2. Regulatory standards in place
3. Health and safety of workers
4. CAPEX and OPEX
5. Technology requirement such as power, human resources and efficiency
6. Land availability
7. Design and O & M considerations

Factors such as population, population density, terrain and ability of ULB to sustainably operate, also needs to be considered.

5. Mechanised screw press (at PNP): is this the Gates Foundation-supported Omniprocessor technology?

It is not the Omni processor technology, the process followed at PNP is as defined below:

- **Step 1:** The septage is received in the septage receiving station (SRS) via screen. The grit settles in the SRS, and the septage flows into the storage tank.
- **Step 2:** The septage homogenises in the collection tank. The three-day retention time in the collection tank is designed to address the incoming fresh septage from community toilets and public toilets too.
- **Step 3:** Submersible sludge pumps are placed in the collection tank to pump the settled sludge from the collection tank to the sludge holding tank. Two pumps are placed in the first two sections of the holding tank, and one pump in the last two sections. About 65-70% of the sludge is pumped to the sludge holding tank. The rest of the supernatant overflows to the MBBR tank under gravity.
- **Step 4:** The sludge from the sludge holding tank is pumped to the dewatering unit. The dewatering unit consists of:
 - Polymer mixing system
 - Polymer maturation tank
 - Polymer dosing system
 - Dewatering – volute press (2 nos.)

The system is designed to handle the varying solids % in the sludge, and hence two volute press are provided. This also acts as a back-up in case of any maintenance requirements.

- **Step 5:** The dewatered solids fall into the trailer placed on the ground and is taken away to the composting yard for further composting with the MSW organic fraction. The filtrate from the volute flows to the MBBR.

- **Step 6:** The overflow from holding tank, and filtrate from volute is treated in the MBBR, and post the tertiary treatment, stored for use in the plant area in the treated water tank.
- The overall turn-around time for septage is 4-5 days, from the day of receipt into the FSTP.

6. **Have you thought of using a bio-product to enhance the efficiency of FSTP?**

This has not been explored. TNUSSP is open to consider suggestions on this. Please write to us at tnussp@iihs.ac.in if there are any suggestions.

7. **How does the O&M of FSTP and STP compare?**

FSTPs and STPs use similar treatment processes, except that the volumes treated in FSTPs are low – (by a few orders of magnitude) and waste is likely to have higher solids/ sludge content.

Therefore, operational procedures and maintenance requirements are similar. There are a few changes due to the need for a receiving facility and testing of waste prior to accepting for treatment, etc.

8. **What happens to the fecal matter; process?**

This depends on the technology adopted. The process adopted in most FSTPs in TN, in very simplistic terms, is as follows: the fecal matter gets digested and decomposed by microorganisms and is further dried before co-composting with municipal organic waste.

B. IT Tools/ Apps

9. **a. What kind of IT technology is put in place for tracking, traceability and quality control?**

b. It would be great to hear more about the tools used for quality assurance practices. Were digital tools used?

c. To what extent IT technology is used for monitoring FSM operations?

A mobile-based construction monitoring platform was configured with two checklists, one for stage based reporting of construction progress and the second for conformity of construction with design specifications and construction quality parameters. TSU field engineers periodically visiting sites used their mobile devices in the field to capture data and images that were uploaded to the platform.

A dashboard view was provided to state / regional level government officials to monitor the FSTP construction progress across the State at near real time. TSU was tasked with ensuring adherence to quality and timely escalation of issues to the local administration responsible for supervising construction activities. The systematic recording of information ensured private players were held accountable, both in terms of schedule and quality of construction.

10. To what extent Information Technology (IT) is used for monitoring FSM operations?

TNUSSP is currently exploring how IT can be used as part of FSM Operations such as digitising record-keeping at FSTPs/STPs.

C. Co-treatment/ Networked sanitation / STPs

11. How many co-treatment plants are in operation?

There are 50 STPs in the State (other than STPs in the Chennai Corporation limits). TNUSSP has assessed 33 STPs, 20 of which practice co-treatment. It is envisaged to scale this up to all STPs in TN.

12. What is the performance of the co-treatment plants (STPs)?

As per TNUSSP assessment, most of the STPs practicing co-treatment meet the CPCB norms for effluent disposal. As per the assessment, most STPs are underutilised (capacity utilisation around 60 per cent). Therefore, optimum utilisation of the facilities is the priority. For a few STPs which had reported certain O&M issues, we are trying to understand and resolve them.

13. How do the co-treatment plants solutions compare with stand-alone solutions vis-a-vis performance and costs - capex and opex?

FSTPs are designed to treat fecal sludge while STPs are designed to treat wastewater collected through UGSS. Comparison of performance between FSTPs and STPs is yet to be explored in TN.

Capex for STPs generally is in the range of 2.5-7.5 Million INR (approximately 35,000-100,000 USD)¹ per MLD treatment capacity. Opex generally varies from 3.0 - 3.3 INR per Kilo Litre. Capex for FSTPs varies from 0.9 -1.2 Million INR (approximately 12,000-16,500 USD) per KLD for FSTPs implemented in TN.

14. Are the 50 co-treatment plants and 61 FSTPs already operational? What is the operational experience in terms of Key Performance Indicators (KPIs)?

Around 20 STPs have started practicing co-treatment in the State. Of the 61 FSTPs 2 are operational, 4 are on trial run and the rest are under different stages of construction. The quantity of fecal sludge being received for treatment is increasing regularly as FSM is getting formalised across the treatment plants.

¹ Exchange Rate : 1 USD = 73.50 INR (As of 23 September 2020)

15. How many cities have been implemented with Underground Sewage Systems in Tamil Nadu and how many are being planned?

At present, 43 ULBs have implemented UGSS in Tamil Nadu and 27 ULBs have planned for it.

16. Any publications or documents related to these co-treatment plants?

Our publications on co-treatment will be uploaded soon. Kindly keep checking the resources section at tnussp.co.in

D. Re-use/ Resource recovery

17. What is the end use of FSTPs output in functioning plants in TN?

The end products of treatment can be divided as liquid stream and solid stream. In the liquid stream, the volume of treated water generated is in a few thousands of litres and can be used for gardening within FSTP premises. The treated solids can be used as manure for agriculture through co-composting with municipal solid waste or as fuel pellets.

18. Were there any resource recovery options operationalised in these examples?

Some of the FSTPs have already initiated co-composting. There is demand for treated water. Eventually, resource recovery will be scaled-up across all the FSTPs.

19. Any strategy to address the greywater, as it is different in quantity and quality compared to blackwater.

The Tamil Nadu government has come up with a wastewater re-use policy which covers greywater as well. Also TNCDBR, 2019 discusses greywater treatment strategy.

20. What can we do with purified water other than irrigation? Can you give your safe reuse techniques?

It can be used for groundwater recharge, hedge plantation, construction activities, and in industries for cooling and other secondary uses.

21. Can we link that with fertiliser company and produce urban manure?

It depends on the scalability and quantity of manure produced, along with the quality we can achieve. This is an evolving field. Urban manure production is an achievable outcome, though. Co-compost should follow FCO standards for organic compost.

E. Containment

22. Key measures taken with respect to containment systems and their rectification under TNUSSP?

As is widely accepted now, there is a wide variation in the containment system, and upgrading/ retrofitting these remain a critical challenge along the chain. Though our work on this front is still ongoing, it can be divided into the following components:

1. Exploring non-invasive technology for identification of issues such as cracks in existing OSS;
2. Assessing suitability of various OSS for different hydrological regions in the State
3. Technical options for improving functions of existing OSS, including low investment options and options for urban poor; and
4. Working with private sector for 3 above, and for disruptive innovations.

The work around containment is on-going. For specific queries, please write to: tnussp@iihs.ac.in

23. Retrofitting of septic tanks is being done as part of this? I'm sure it is. Who is funding it and what's the methodology followed in terms of institutionalising it?

Existing on-site systems is an ongoing challenge where some action under SBM was taken in terms of conversion of insanitary latrines to sanitary ones. We are pushing for ULBs to ensure new construction conforms to IS standards and TN building rules. Retrofitting of existing septic tanks has been tried by TNUSSP on a pilot basis for understanding the feasibility. This is an evolving field; we are yet to reach any conclusions. For specific queries, please write to tnussp@iihs.ac.in.

In terms of institutionalisation, we ensure that new septic tanks are built according to standards, and thereby ensured that building bye-laws are aligned towards this. Please see suggested changes to Municipal Building Rules [here](#).

Please also see response to question number 22.

24. In many places, soak pits are named as septic tanks. How government or ULBs are going to regulate and monitor it?

In order to effect improvements across the sanitation chain, an assessment of the existing practices with respect to on-site containment structures was undertaken. While already existing on-site structures need to be surveyed to ensure compliance with sanitary requirements, and enforcement in this regard has been taken up by ULBs in Tamil Nadu, another intervention identified was improvements to the existing procedures for receiving and approving building proposals. A note summarising the review and the ensuing recommendations shared with the Government of Tamil Nadu which are under consideration can be accessed [here](#).

F. Cluster Approach, Desludging and Conveyance

25. Any thoughts on scheduled desludging? Is it a requirement or can it be designed for "as and when required?"

While it is important to desludge periodically, given the non-standard nature, dimensions and conditions of containment systems, implementing a scheduled desludging model can be quite complex. More importantly, Tamil Nadu has a robust demand-based desludging market led by private players. Therefore, the primary objective of the Government was to ensure safe disposal through minimal regulation of the desludging market, thereby minimising disruption and protecting existing businesses and livelihoods. The approach also promotes the usage of treatment facilities by reducing the financial burden on private operators.

However, alternate approaches are being explored for other customer segments. For example, scheduled/periodic desludging is being explored for Bulk Waste Generators such as community/public toilets.

Scheduled desludging is not a requirement for the success of FSM, but it is important to ensure that desludging operators are safely disposing collected waste in designated treatment facilities. Therefore, currently, the focus is on regulated desludging. More details on systems and procedures for urban sanitation in Tamil Nadu can be found [here](#).

26. Is there scheduled desludging practices? If yes in how many cities?

We are piloting scheduled desludging only for Bulk Waste Generators such as community/public toilets. Scheduled desludging is not a requirement for the success of FSM, but it is important to ensure that desludging operators are disposing collected waste in the designated areas. Therefore, currently, the focus is on regulated desludging. Please see [these documents](#) for the model for regulated desludging. Please also see response to question number 25.

27. What is the basis of selecting a cluster for FSTPs?

In the cluster approach, ULBs have been clustered around existing or proposed treatment facilities within an average travel distance of 10 kms to ensure sharing of treatment facilities within the cluster. The average travel distance has been arrived at after a survey of operators across TN which revealed that this distance works best for the existing business models of operators. This distance is a thumb rule, and may need to be modified based on local conditions e.g. hilly areas, crowded highways etc.

The clustering of ULBs optimises the investments required to provide treatment infrastructure, and ensures that the treatment facilities are most likely located at the bigger ULBs that have the capacity and resources to manage these facilities. More details on clustering can be accessed in our [website](#).

28. "Light touch" regulation of private FSM service providers - Are more details on this available?

The GoTN has rolled out a Standard License Agreement (SLA) for desludging operators across ULBs in the State, which aims at optimal regulation of the private sector market without price interventions to address open dumping as well as promote worker safety. The SLA mandates desludging operators to adopt safe desludging and disposal practices. It promotes use of treatment facilities while keeping Tipping and License Fees at nominal rates to minimise disruption to existing market. The SLA also aims to increase awareness and training on Occupational Health Safety as well as improve access to Personal Protective Equipment. A copy of the Govt. Order can be accessed on our website [here](#).

29. Is there a big advantage in this cluster system compared to traditional centralised system? What are the gains you made by opting this new strategy of FSM?

The treatment of fecal sludge is being achieved by co-treatment with sewage in STPs or treatment at FSTPs. Traditional centralised systems require large capital expenditure and have many constraints, to be established in the ULBs with smaller populations. These constraints are in the financial, technical and operational aspects. At the same time, most of the STPs in Tamil Nadu are utilised to only around 60% of their capacity. Thus, clustering of neighboring ULBs for co-treatment allows existing facilities to be used to their optimum capacity while at the same time enabling ULBs without treatment facilities to gain access to treatment in a cost-effective way.

30. For clustering, what is the incentive for a ULB that has a treatment plant to share its capacity with others? Were there any cost sharing arrangements? How it became successful in your case?

Given the nascent state of FSM in Tamil Nadu, where ensuring Fecal Sludge and Septage reaches treatment facilities is still a challenge, the adopted cluster approach allows FSTP/STP capacities to be saturated, even as desludging and disposal process is streamlined. Additionally, the approach enables sharing of resources and capacity between ULBs. It is in the best interest of ULBs with treatment plants to optimise usage and share resources for the sustained operation of facilities. The GoTN has planned for the cluster ULBs to enter into a MoU that lays out the roles & responsibilities of each ULB including cost sharing arrangements between the ULBs. A Government Order has been issued which is currently being rolled out across the State. The order is available on our website [here](#).

31. Co-treatment allows only Urban HH containment? Or both rural and urban? Whether co treatment is urban-rural?

Through co-treatment at STPs, fecal sludge from areas governed under rural administrative structure can also be treated by adopting a cluster approach.

32. The FSTP system is based on collection from housing units; was the previous system based on individual septic tank at house level or was it already dependent on city collection system?

FSM is needed for properties/residential units which has or plan to have on-site sanitation. Nearly two-thirds of urban Tamil Nadu relies on on-site sanitation such as septic tank or equivalent. We are providing FSM to these urban areas.

33. How many cities are planned to be covered?

A State Investment Plan (SIP) that estimates the investment required by the GoTN to ensure full coverage of sanitation through a mix of networked and non-networked systems was prepared. It covered 663 ULBs in a phased manner by supplementing existing treatment facilities through co-treatment and construction of new FSTPs. The following are the details of ULBs covered in different phases:

1. Phase-I & Phase-II: Enabling co-treatment in existing and upcoming Sewage Treatment Plants (STPs) respectively. Phase I and II together covers 155 ULBs.
2. Phase-III: Utilising space available in the Solid Waste Management Sites in Municipalities for Construction of New FSTPs. Phase III covers 110 ULBs.
3. Phase-IV: Utilising space available in the Resource Recovery Parks in Town Panchayats for construction of New FSTPs. Phase IV will cover 111 ULBs.
4. Phase-V: Treatment facilities catering to standalone towns/cities (not covered in clusters). Phase V will cover 287 ULBs.

The SIP can be accessed [here](#).

34. Can circular economy be achieved in FSM?

Circular economy can be achieved in FSM.

G. Governance/ Regulations

35. Is there a regulatory body that oversees the FSM operations?

The Municipal Administration and Water Supply Department is the principal agency in Tamil Nadu overseeing urban water supply and sanitation. Urban Local Bodies enforce onsite sanitation systems (design and build) based on the State-level regulations. The service of collection and conveyance of FS is largely provided by an established market of private operators with minimal regulation from the State through a Government order issued for a Standard Licensing Agreement (SLA). The SLA mandates desludging operators to adopt proper desludging and disposal practices, and safeguard the health and safety of their employees.

The implementation of the State Investment Plan for scaling of treatment facilities across the State is driven by the Commissionerate of Municipal Administration (CMA) which is responsible for municipal corporations and municipalities, and the Directorate of Town Panchayat (DTP) which oversees town panchayats. Government orders have been issued for i) construction of treatment facilities and ii) Memorandum of Understanding between the ULB clusters that govern the co-treatment process and the use of upcoming shared treatment facilities. The treatment of fecal sludge and its disposal is regulated by the standards set by the Pollution Control Board. More details on systems and procedures for FSM in Tamil Nadu can be found [here](#).

H. Capacity Building

36. As part of the overall sanitation improvement of the State, what works have been initiated in terms of strengthening the capacity of ULBs and institutionalising the concepts of sanitation beyond FSM?

Capacity Building is an important and crucial aspect of delivering FSM at scale. In this regard, TNUSSP has been working with different cadres of officers including state and nodal officers, and ULB officers (including engineering and public health departments). The capacity building programme is planned to cover the entire FSM chain. The programme was planned to be delivered through classroom sessions and exposure visits, followed by intense roving support. However, given the pandemic, we are piloting a digital blended learning method through which officers receive a blended learning experience – through webinars and digital modules. The digital blended learning method also allows learners to engage with the materials at their own pace. The main objective of Capacity Building is to ensure that FSM is operationalised and this can be seen through the FSTP construction across the State. ULB engineers were trained on the construction, operation & maintenance of FSTP, and roving support is being provided to all the ULBs to enable them to complete construction effectively. Assessments of training programmes conducted to date, can be found [here](#).

I. Financing/ Cost/ Business model

37. What is the average cost of the FSM plant?

The cost of FSTP depends on the technology adopted. For the designs adopted in Tamil Nadu, average cost for gravity-based system varies from 1.0-1.2 Million INR (approximately 13,500- 16,500 USD)² per KLD of treatment capacity while that for mechanised system varies from 0.9-1.0 Million INR (approximately 12,000- 13,500 USD).

² Exchange Rate : 1 USD = 73.50 INR (As of 23 September 2020)

38. How will the costs of operating and maintaining the FSTPs be covered into the future?

The GoTN is exploring the option of utilising a proportion of the Water and Sanitation (W&S) tax to cover the O&M costs of FSTPs. W&S tax is collected as a component of Property Tax in the State.

39. How are you recovering the costs? Are you selling biogas or electricity?

The GoTN is exploring the option of utilising a proportion of the Water and Sanitation tax to cover the O&M costs of FSTPs. W&S tax is collected as a component of Property Tax in the State. At the moment, the priority is on service delivery. Options for cost recovery are being explored.

40. How the cost for construction is shared among State and local government/municipalities/ How land issues are resolved?

The cost for construction of FSTPs was budgeted by the State government. To mitigate land issues such as availability and nimbyism, an approach of co-locating FSTPs on existing Solid Waste Management sites and Resource Recovery Parks was adopted.

41. Do you envision the FSTP itself evolving into a viable business enterprise, or is it more important to maintain a non-business approach in order to support other stakeholders, including commercial service providers?

It is important to see FSM as a service provision also. It has a lot of non-quantifiable merits which should not be overlooked. At the same time, cost efficiencies/ development of a circular economy in FSM should also be explored.

42. How FSTP operational cost is met?

FSTP operational cost is expected to be met through ULB's own funding.

J. Publications/ Reports/ Assessments

43. Have you done assessments of the positive impacts, if any, of improved sanitation on covid-19 infection?

We acknowledge the critical linkages between improved WASH and Covid-19 and we are in the process of understanding the same through primary interactions with our stakeholders and secondary research.

44. Can you share ppt and relevant papers?

All knowledge products can be accessed on our website, www.tnussp.com

K. TNUSSP- Programme specific

45. What are the difficulties faced during the initial stage of implementing this program (FSTP)?

Given that the technological options with respect to FSM were new to Tamil Nadu, building capacities of local governments, demonstrating FSM in towns both as complementing and stand-alone systems as applicable, developing an over-arching enabling environment, and finally regulating the whole sector were some of the key challenges faced.

Due to the prevalent stigma of 'NIMBY' around FSM and sanitation, the location of land parcels for constructing the FSTPs were a challenging task. There were special considerations to be taken for implementing FSTPs in difficult terrain conditions.

46. What has been achieved in TNUSSP so far? Sanitation for all by 2023?

TNUSSP works across the full cycle of sanitation to effect infrastructure improvements while establishing an enabling environment for safe sanitation for all through multi-stakeholder action.

- TNUSSP has supported GoTN in adoption of a State Investment Plan to establish safe sanitation across 663 Urban Local Bodies (ULBs) covering a population of nearly 25 Million. It is working with GoTN to set up 61 FSTPs across the State and providing support to enable co-treatment at 50 existing STPs to optimise treatment capacities. These 111 treatment plants (61 FSTPs and 50 STPs) cover a population of nearly 14 Million through clustering.
- To promote and secure the sustained usage of the treatment facilities, TNUSSP has also helped develop and institutionalise mechanisms in the form a Memorandum of Understanding between ULBs and a Standard License Agreement for private desludging operators in the State.
- TNUSSP seeks to positively impact public health and WASH practices across urban communities at state, city and town panchayat levels, through:
 - Establishing sites of learning and simultaneously scaling initiatives with institutional buy-in from the Government;
 - Government Orders to implement construction and operationalise governance mechanisms that enable the utilisation of shared treatment facilities and ensure safe disposal of fecal sludge (G.O. No.88, G.O. No.12 and G.O. (2D) 35);
 - Working with communities and non-government players for efficient FSM delivery across the FCS;
 - Greater awareness of FSM, WASH and MHM through behaviour change communication & campaigns and capacity building for key FSM stakeholders; and
 - Empowerment of multiple stakeholders across the FCS including health camps, improvement of safety and social security for sanitation workers,

gender sanitation inclusion activities, strengthening livelihoods and best practices for service delivery.

47. Have you adopted any good practices from across the world in this domain before starting this journey?

South East Asian countries like Malaysia, Indonesia and Philippines have adopted FSM models, and officers from GoTN were taken on exposure visits as cross learning initiatives for implementing FSM on ground in Tamil Nadu.

48. Are you expanding the activity to any town panchayats in Kanchipuram, Tiruvallur or Kanyakumari District

The GoTN State Investment Plan covers all Town Panchayats in the State. Currently, Mamallapuram Town Panchayat has been supported for co-treatment and Karunguzhi Town Panchayats for FSTP improvements.

L. Replicability in other States

49. What are the key ingredients that need to be in place for this to work in other contexts outside Tamil Nadu and India?

There are many elements that contribute towards the scaling and adoption of FSM. For instance, in TN there was commitment from the Govt. towards ensuring sanitation for all and a willingness to collaborate to achieve this.

The GoTN leveraged the optimal utilisation of existing treatment facilities through a cluster approach which minimised investments and resources requirements. This provided a platform for demonstration and adoption of different approaches and innovations, which were also highlighted in the webinar.

These are catalysts that could enable scaling of FSM in other contexts, and hence, are being advocated at the national level and adopted by other states across the country.

50. Can we replicate Tamil Nadu learnings to other states? What challenges we may face? Please also throw light on how national FSM policy (2017) helped TNUSSP team in reaching the goal??

Replicating learnings from Tamil Nadu and use in other states is possible. The major challenge may be contextualisation as each state and city has its own character and FSM has to be adapted to suit the needs. Some of the replicable features of TNUSSP initiatives in Tamil Nadu are:

- I. Clustering of Local Bodies (expanded to cover rural areas)
- II. Sharing of FSTP O&M costs between Local Bodies

- III. Ring-fenced account to safeguard funds for O&M of treatment / disposal facilities
- IV. Recording details of facilities' performance to promote transparency and accountability
- V. Standardised licensing system for private desludging operators
- VI. Addressing sanitation workers' safety and welfare requirements through licensing
- VII. To tackle the prevalent stigma of 'NIMBY' around FSM and sanitation, TN followed co-location of FSTPs in existing MSW sites and RRP.

Given that the technological options for FSM were new for Tamil Nadu, building capacities of local governments, demonstrating FSM in towns where it is a new concept, and developing an over-arching enabling environment, thereby regulating the whole sector, with institutional buy-in from the government are other key challenges while replicating TN's efforts.

The National FSM policy provided the impetus to the State government to recognise the criticality of FSM.

51. Are service providers identified across Indian states other than Tamil Nadu and rates for such activities fixed or regulated?

Which are the other states that are adopting this model?

Yes, Odisha, Andhra Pradesh, Telangana and Maharashtra have undertaken some activities in this regard (Unclear about the context here).

L. Livelihood

52. What is the scope for the SHGs for their livelihood in FSM?

SHGs can be empowered to engage in activities throughout the full cycle of sanitation. In the context of TN, for example, SHGs in the city of Tiruchirappalli, namely the Sanitation, Hygiene and Education (SHE) teams, instituted under the WAVE federation, are being institutionally strengthened to manage 150 out of 400 community toilets in the city.

Nationally, there are also other examples of SHGs operating desludging services and managing the O&M of FSTPs.

A relevant document from MoHUA on the critical role of CBOs in urban sanitation and waste management can be accessed [here](#) to understand best practices.

M. General Queries

53. I would like to know how many cities of TN awarded ODF++ in recently announced Swachh Survekshan 2020 result.

List of all ODF++ certified ULBs can be found [here](#).

TN's mission is to achieve total sanitation by 2023 and it is in the process of scaling FSM across the State.

54. **Would you please clarify small urban bodies in terms of population?**

In the context of FSM in Tamil Nadu, small urban local bodies are generally those towns which fall under category III or IV as per Census of India. Class III towns have a population ranging from 20,000 to 49,999 whereas, class IV towns have population ranging between 10,000 and 19,999.

55. **Is there India level/state level guidelines/regulations across India on the pumping, transport and disposal of sludge in individual septic tanks of residential buildings. Its high time that above service providers are enlisted across India, rates fixed and disposal solutions identified.**

There are guidelines available at national and state levels. Septage management advisory can be accessed [here](#).

TN Operative guidelines can be accessed [here](#).

56. **Opportunities for researchers to access data on the schemes?**

Please write to tnussp@iihs.ac.in clarifying on the schemes referred to in the question raised. Our knowledge products can be accessed on our [website](#).