Tamil Nadu Urban Sanitation Support Programme: Looking Back to Look Forward

Draft
October 2021

Tamil Nadu Urban Sanitation Support Programme: Looking Back to Look Forward

September 2021

For Citation: TNUSSP, 2021. Tamil Nadu Urban Sanitation Support Programme: Looking Back to Look Forward

This document is produced as part of Tamil Nadu Urban Sanitation Support Programme (TNUSSP). TNUSSP supports the Government of Tamil Nadu (GoTN) and cities in making improvements along the entire urban sanitation chain. The TNUSSP is being implemented by a consortium of organisations led by the Indian Institute for Human Settlements (IIHS).

Document Team: Mahima Vijendra (mvijendra@iihs.ac.in), Srinithi Sudhakar (srinithis@iihs.ac.in), Anneka Majhi (amajhi@iihs.ac.in),

Editing: Word Lab, IIHS

Co-Team Leader: Santhosh Ragavan

Team Leader: Kavita Wankhade

2. BMGF funding acknowledgment: This Research / Work was supported by Bill & Melinda Gates Foundation.

3. Acknowledgment: xxx

www.tnussp.co.in | www.iihs.co.in

Contents

1. Introduction

1.1 Genesis of the Programme

The lack of adequate sanitation has been one of the major challenges faced in urban Indian households. Census 2011 indicates that only one-third of urban households are connected to sewerage systems while a majority of households are connected to different types of on-site sanitation systems. However, in India, traditionally investment has been diverted to only sewerage systems. The focus of national flagships like Swachh Bharat Mission (SBM) was predominantly on provisioning of toilets.

As various locations began piloting Fecal Sludge Management (FSM) systems, either as standalone systems (for smaller towns) or as complementary solutions (in larger cities), FSM was highlighted as a viable method to address urban India's sanitation concerns – economically, quickly and at scale. Gradually, there was a shift in policy attention to the full sanitation chain starting from access to toilets, safe collection, conveyance, proper treatment and reuse to deliver the public health benefits. In February 2017 the National Policy on Faecal Sludge and Septage Management (FSSM) was launched. This provided major impetus to achieve total sanitation.

The Government of Tamil Nadu (GoTN) has been a pioneer in not only recognising sanitation challenges as core to improved standards of public health, but has also prioritised the full sanitation chain, including the strengthening of FSM as an economical and sustainable complement to network-based systems. As a first step, the state initiated the roll-out of a fairly large programme ("Namma Toilet" or "Our Own Toilet") for public toilets in urban areas.

Further, in 2014, Tamil Nadu was the first state to announce the 'Operative Guidelines for Septage Management for Local Bodies in Tamil Nadu' (OG) which aimed to standardise containment structures, and systematise and regulate the process of collection, transportation, treatment and disposal of fecal sludge. The State's strategy has been to demonstrate improvements along the sanitation chain with a focus on FSM.

To achieve this goal and support the GoTN in its Total Sanitation Mission, the Tamil Nadu Urban Sanitation Support Programme (TNUSSP) was launched in November 2015 by the Bill and Melinda Gates Foundation (BMGF). TNUSSP is being implemented across two phases by a Technical Support Unit (TSU) comprised of a consortium of organisations, led by the IIHS. Phase I of the Programme ran from 2015 until 2018 and Phase II is currently under implementation.

1.2 Structure of the Report

This report reflects on the key lessons and challenges of the two phases of TNUSSP. It sets out the approach of the programme and highlights the design and achievements of the Programme. The document is to be read keeping in mind that the Programme is ongoing, and therefore, the learnings and challenges are likely to evolve.

The report is structured as follows:

- Section 2 presents the Results Framework, detailing the outcomes, risks and assumptions, and broad strategy of TNUSSP.
- Section 3 describes the design of the Programme covering aspects of programme management, stakeholder engagement and partnerships.
- Section 4 sets out TNUSSP's the achievements to date.
- Section 5 draws out the key lessons and challenges from the implementation of the two phases of the Programme.
- Section 6 summarises the current status and planned exit strategy for TNUSSP.

2. Results Framework

2.1 Outcomes and Outputs

TNUSSP was launched in 2015 with the aim of aiding the GoTN achieve Total Sanitation, wherein everyone in the state has access to safe and sustainable sanitation infrastructure and services. The Programme had a special focus on marginalised communities and was targeted at urban areas, where nearly half the state's population is resident.

In order to achieve the long-term goal, the intended outcomes of TNUSSP were to reduce untreated wastewater while demonstrating innovations in urban sanitation and creating conditions for interventions to be scaled up and sustained. A Results Framework (RF) consisting of primary and intermediate outcomes, outputs and activities was framed for each phase of TNUSSP. The complete RF for Phases I and II with corresponding outputs and activities can be found in the **Annexure A**.

Under Phase I, TNUSSP was to demonstrate innovations across the full cycle of sanitation and in selected urban typologies that would enable scale-up, as well as build capacity of multiple stakeholder groups, while creating a knowledge repository on urban sanitation.

To realise these outcomes, the Programme sought to deliver the following key outputs:

1. A sanitation baseline and strategy for implementation.
2. Sanitation committees and improved legal, regulatory, institutional and planning frameworks for sanitation along with private sector engagement.
3. FSM tools, methods, technology and solutions.
4. FSM learning materials to build capacities of a range of sanitation stakeholders.
5. City sanitation and investment plans and techno-feasibility studies at select urban locations.
6. Documentation of project findings and initiatives.
7. Dissemination of FSM work through multiple communication campaigns.
8. Formation of network of partners to support programme implementation.

Given the nascent state of FSM in the country and the dearth of precedents, meant the Programme evolved as it was being implemented. Key challenges, risks and opportunities identified during the implementation of Phase I of TNUSSP influenced outcomes and outputs for the remainder of the Phase, as well as informed the Results Framework for Phase II of the Programme.

In the second phase of TNUSSP, the focus shifted from demonstration of innovations to scale up of improved sanitation systems across urban Tamil Nadu. This was to be realised through institutionalisation of FSM, strengthened capacities of various stakeholder groups and development of viable business models.

Key outputs for this phase of the Programme were:

1. Demonstration Fecal Sludge Treatment Plants operational as per performance standards.
2. Strategy and Action Plan for augmenting government treatment capacities.
3. Solutions to improve containment systems for large generators of fecal sludge
4. Strengthened operational mechanisms, institutional capacities, regulations and processes for state-wide implementation of FSM.
5. FSM orientation and other relevant training programmes for officers from select government agencies, masons and sanitation workers.

6. Approaches (govt schemes, NGO-led etc.) to promote sanitation with urban poor communities, and particularly among women and children.
7. Platform for private sector and NGOs participation.
8. Communities of Practice for FSM.
9. Replicable city-wide models/ packages for FSM planning and implementation in the different tiers Urban Local Bodies.

2.2 Assumptions

In order for TNUSSP to succeed in reaching the long-term goal, its Results Framework were premised on the following key assumptions:

1. The TSU-led approach would be able to achieve the desired transformation for universal access to safe and sustainable sanitation.
2. A majority of changes can be affected by building on existing strengths and resources, and are scalable.
3. Multiple interventions would be needed to bring about the required changes as opposed to pivotal shifts alone, given programmatic constraints such as timelines and a lack of knowledge on effective levers of change.

2.3 Strategy

TNUSSP adopted a multi-pronged strategy to deliver defined outputs. It included:

1. Initiating multiple forms of intervention (engineering, capacity building, behaviour change and communication, community engagement etc.) to address barriers to safe sanitation and enable transformation;
2. Creating an enabling environment (including policy, regulations, financing, and promotion of non-state actors);
3. Creating awareness among citizens, government and other stakeholders through behaviour change and communication, and creation of knowledge repositories;
4. Engaging with multiple stakeholders such as the State, local governments, private enterprises (formal and informal), Community Based Organisations (CBOs), NGOs and civil society; and
5. Enabling private sector development through outreach, orientation and appropriate regulation.

Phase I of the Programme sought to:

1. Demonstrate innovations in two model urban locations to build credibility and momentum for FSM, while simultaneously initiating state-level policies, actions and strengthening of operational mechanisms to support rapid state-wide scale up of innovations; and
2. Demonstrate FSM in the two urban locations either as standalone solution (for smaller towns) or as complementary solution (in larger cities). For these two locations representing different typologies in the state were selected

The selected urban locations were:

1. Tiruchirappalli: A large Class 1 city that is partially sewered was selected to demonstrate FSM as a complementary solution to the existing networked system.
2. Periyanaicken-Palayam (PNP) and Narasimhanaicken-Palayam (NNP): Two Town Panchayat (TP) clusters in Coimbatore district that were expected to be a model for stand-alone FSM solutions for the 500-odd TPs in Tamil Nadu, as well as demonstrate a cluster-based approach.

Phase II carried forward a number of strategies of Phase I. It continued to focus on creation of enabling environment for state-wide scaling of FSM, implementation of FSM policies, regulation and investments and strengthening of institutional capacity. To further build on the FSM demonstrations, Phase II adopted state-wide scaling of treatment facilities and focused on increasing community engagement and strengthening operational mechanisms to sustain FSM infrastructure and services.

The key strategic approaches for this phase were:

1) Developing protocols and processes to scale-up FSSM: The first phase of the programme had resulted in a considerable number of templates (diagnostics, analytics, etc.), products (BCC materials, data aggregation platforms, FOP, SLA, etc.), and processes (working groups, committees, etc.). The second phase of the programme aimed at scaling these up throughout the state by state-level implementation guidelines and ULB-level resolutions and actions.

2) Implementing innovations: Demonstrations of FSM technologies, especially with respect to treatment systems (falling under the purview of GoTN) were scaled up state-wide by providing hand-holding and advisory support to ULBs in planning and implementing the FSM solutions across the sanitation chain both in cities with sewerage as well as those with basic systems without proper treatment.

3) Building institutional capacity and sustainability: The mechanisms for working with the government largely remained similar but the Institutional strengthening process evolved based on the learnings from Phase I. While the first phase of the programme has been done in collaboration with the state-level departments, the second phase focused on integration of FSM processes and roles into the GoTN systems. This was to be achieved by understanding gaps in existing institutional structure, suggesting improvements, strengthening the existing and systems and mainstreaming efforts through requisite FSM regulations. This was identified as critical for Government to take ownership of the of the project essential to the sustainability of FSM interventions.

4) Establishing community and stakeholders' engagement model: The engagement with existing stakeholders such as masons and de-sludging operators was strengthened and scaled up through a strong set of partnerships and trainings with other organisations working in the sanitation sector. Additionally, the programme aimed to closely work with the private sector to build their capacities for new upcoming FSM opportunities and advocacy and other stakeholders such as academic institutions for building FSM knowledge.

5) Focusing on inclusive sanitation and gender: The programme focused strongly on various under-privileged communities like urban poor, sanitation workers etc. to ensure that benefits of sanitation reach those most in need. The programme design included specific components and activities to mainstream gender improvements.

6) Managing programme knowledge: The programme aimed to leverage and scale the lessons – especially given that the concept of FSM had gained traction in the Indian sanitation sector. The programme ensured systematic documentation and aimed at creating Communities of Practice.

3. Programme Design

3.1 Programme Management

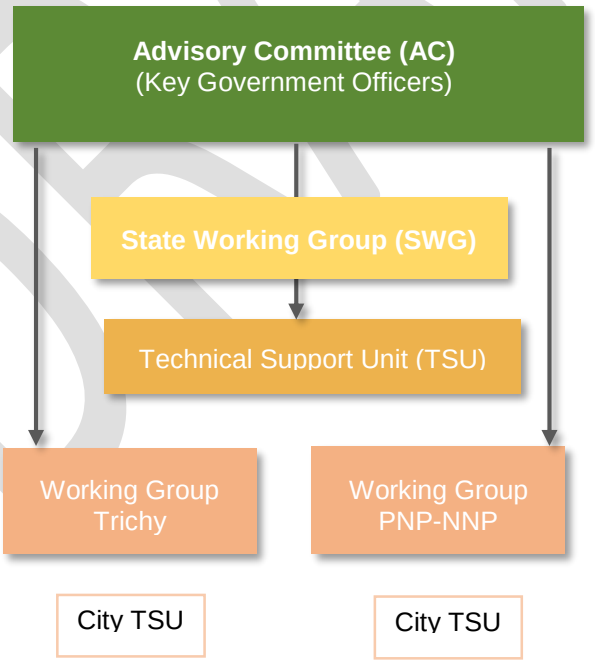
When TNUSSP was launched to support the GoTN scale FSM across Tamil Nadu's 663 Urban Local Bodies (ULBs) a state level Technical Support Unit (TSU) was set up within the Municipal Administration and Water Supply Department (MAWS), as well as two sub-TSUs in the two model urban locations reporting to respective local bodies. These TSUs were conceptualised to be the technical arm for MAWS and ULBs to assist them in the implementation of the state-level and city-level sanitation initiatives.

An Advisory Committee (AC) envisioned as a formal institutional mechanism was created for collaboration between BMGF and its grantees/contractors, relevant partners and the key GoTN departments involved in sanitation (MAWS, Commissionerate of Municipal Administration (CMA), Directorate of Town Panchayats (DTP)) for the implementation of the Sanitation Mission.

The objective of the Advisory Committee was to provide strategic oversight to the activities and arrangements leading to the achievement of total sanitation and obtain support in taking key decisions to scale FSM.

The State TSU was accountable to the Advisory Committee. The AC was chaired by the Principal Secretary (MAWS), and it composed of the various heads of departments/agencies within MAWS (CMA, DTP etc.), invited other-department and agency representatives (including those from private and non-government organizations), representatives from BMGF and other development partners. The structure of working with the government is depicted below:

Figure 3:1 Working with the Government



3.2 Stakeholder Engagement

The programme design was predicated upon sustainable transformation brought about by collaborations with a variety of stakeholders. The key stakeholders currently identified were government officers (across levels), formal and informal service providers across the sanitation value chain (masons, de-sludging operators, builders, manufacturers etc.), students and finally households and communities. The

programme engaged with them through a number of consultative, outreach, and capacity building initiatives, apart from seeking information and suggestions, and sharing information with them. It also aimed to provide handholding support and other services to private service providers. The stakeholder engagement strategy has been presented in **Annexure B**.

3.3 Partnerships

As FSM was relatively new concept in beginning of programme and the programme aimed for state-wide scaling of treatment facilities, it provided an opportunity for collaboration between multiple organisations with their specific expertise. While the programme was led by IIHS, at the start of the programme, CDD-BORDA was identified to provide technical/engineering inputs, based on their long-standing experience in various sanitation technology systems, including FSM. Gramalaya and Keystone Foundation provided implementation support in the two selected model urban locations.

As the Programme progressed, the partners changed to address the type of support required. In Phase II, IIHS initiated collaboration with other new partners such as Dasra, National Institute of Urban Affairs (NIUA) inter alia brought in to provide select inputs, support and help in scaling. The TSU also worked in collaboration with the BMGF supported SBM-PMU established at the national level in the Ministry of Urban Development (MoUD, Govt. of India).

Currently the TSU is run along with Keystone Foundation, CDD Society, Gramalaya, People's Development Initiatives, YUGAA, Bharathidasan University Tiruchirappalli, Hasiru Dala, Hand-in-Hand Inclusive Development and Services as partners.

Overall, the programme was premised on a strong consortium of organisations and partners with complementary competencies.

4. Achievements

4.1 Phase I

The achievements of the Phase I of the programme include multiple assessments, planning support and recommendations for infrastructural improvements, and efforts to create an enabling environment for FSM at the city and the state level through requisite institutional and regulatory changes, capacity building, behaviour change communication and community engagement.

1. Diagnostics and Planning:

    a. A number of baseline assessments were conducted across the entire sanitation chain and on various stakeholders at the state and city level to understand sanitation landscape and issues. The assessments were conducted both at the state level and for the selected model urban locations.

    b. A comprehensive review was carried out to map the legal, institutional and financial arrangements that govern urban sanitation in the State, and this highlighted the key areas for improvement in sanitation governance in the State.

    c. Training Needs Assessment was conducted for different sanitation stakeholders such as government officers, masons, desludging operators to understand existing knowledge level, modes of operation and requirements to implement FSM.

    d. A BCC Strategy was developed and approved by GoTN. The strategy aimed to highlight sanitation as being about more than just toilets, and emphasise the full cycle of sanitation, besides addressing the taboos and stigma surrounding sanitation.

    e. An assessment of existing Public Toilets (PTs) and Community toilets (CTs) was conducted in both the TPs and in Trichy.

    f. A study on menstrual hygiene management (MHM) was conducted at the two TPs to understand the current MHM practices, perceptions of girls and women towards menstruation and existing gaps.

    g. An occupational safety study was conducted in Trichy which identified the key safety concerns for de-sludging operators and put forth broad set of preventive, mitigative and protective measures for improving occupational safety of de-sludging operators/workers.

    h. To ensure co-treatment of fecal sludge with septage a study to identify improvements to the existing decanting station at Trichy City was carried out and recommendations for infrastructural improvements were presented to the Trichy City Corporation. Additionally, a systematic assessment of Trichy's Waste Stabilisation Pond (WSP) was carried out to assess the potential for augmenting the capacity of the plant to meet future co-treatment requirements.

2. Creation of an Enabling Environment:

    a. The Advisory Committee set up with key government departments was a key platform for creating an enabling environment for FSM interventions and develop an approach to scale up FSM.

b. On request from GoTN a state-wide MIS reporting system for FSM data collection in all 663 ULBs and a scheduled de-sludging tool for piloting one town panchayat was developed

3. Institutional Strengthening:

   a. Recommendations to improve the construction process and existing procedures for approving sanitation systems in building proposals were provided to the GoTN. A few of these recommendations have been reflected in the revised Tamil Nadu Combined Development & Building Rules of 2019 (TNCDBR).

   b. Improving access to individual household toilets through SBM-U is one of the priorities for the TPs in PNP-NNP. A guide book on how to construct a proper sanitary toilet with the correct sub-structure within the stipulated funds was prepared for Urban Local Body (ULB) officers.

4. Building Capacity and Awareness:

   a. Based on the findings from the Training Needs Assessment, various training programmes, domestic and international exposure visits, workshops and orientations have been conducted to equip all identified stakeholders with the requisite knowledge and skills for implementing FSM interventions.

   b. IEC materials such as short films and posters were developed. Further, sanitation awareness programmes were organised at schools and campaigns were annually conducted during World Toilet Day and important WASH relevant days to mobilise communities and raise awareness on FSM.

   c. Training programmes for masons and builders on constructing proper septic tanks and twin-pits according to CPHEEO standards were conducted in both model locations.

   d. In both Trichy and PNP/NNP the de-sludging operators and their workers were provided with training on the full cycle of sanitation, best practices in de-sludging methods and the need to use personal protective equipment during work. Additionally, regular health check-up and health camps were organised for sanitary workers in PNP and NNP.

4.2 Phase II

Building on the successes of the first phase, key achievements as part of phase II of the Programme were:

1. Scaling Treatment Infrastructure:

   a. A State Investment Plan was prepared that estimated the investment required by GoTN for scaling of treatment facilities covering 663 ULBs across the State in a phased manner. The Legislative Assembly approved this plan, and a Government Order was passed on 31 August 2018 and budgetary allocation of Rs. 200 crore was approved for the construction of 56 FSTPs.

   b. To enable and improve co-treatment options at STPs, an assessment of the existing decanting stations (fecal sludge receiving facilities) and the STPs was carried out. The assessment has helped determine possible improvements to infrastructure and O&M, feasibility for decanting and safety of workers. ULBs are being guided to ensure better

access to decanting facilities, to improve decanting facilities, and to implement and institutionalise testing protocols.

2. Implementation and Operationalisation of FSSM:

    a. TNUSSP was responsible for providing technical support (model estimate, type design, detailed drawings) and Quality Assurance support such as assistance to obtain Consent to Establish (COE) and Consent to Operate (CTO) certificates, checklists to monitor construction progress, IT dashboards for review of construction progress and finally commissioning and O&M protocols. In addition to regular roving support, in order to capacitate officers Virtual Reality videos and on-site cross learning and orientation programmes was conducted to discuss the progress and dos' and don'ts of FSTP construction.

    b. IT backbone with options for collection and monitoring of desludging operations, decanting/ disposal locations and FSTP performance has been developed. The backbone will be supported with applications for data collection by different users.

    c. Two governance mechanisms to maximise utilisation of treatment facilities were framed and adopted. The first, a Memorandum of Understanding to establish a formal process by which ULBs share a common treatment facility. The second, a Standard License Agreement for private de-sludging operators to streamline the de-sludging process and ensure safe disposal practices.

    d. The existing institutional arrangements for sanitation at the state, regional and ULB levels were evaluated. This mapping exercise helped identify gaps and made recommendations for instituting new FSM processes and roles for efficient service delivery by the Government. The FSM processes and roles identified are being institutionalised into the government system through government orders, bye-laws, service rules etc. for ensuring sustenance of FSM interventions.

3. Strengthening Capacity and Increasing Awareness

    a. Capacity building efforts for government officers have been dovetailed with GoTN investment plans. So far, TSU has conducted four workshops covering 84 government officers across the State on FSTP design and construction, including site visits. Taking into consideration the impact of Covid-19 the use of digital learning materials and method was identified suitable for government officers. Modules for various FSM components such as SIP, MOU & SLA have been created.

    b. Capacity building programmes for stakeholders such as masons and de-sludging operators have been provided to increase awareness of the crucial role they play in promoting safe sanitation. Orientation for de-sludging operators have been conducted on the utility of FSTPs, and how such facilities complement their business operations and additionally they were taken through a guided tour of the FSTP. Materials for occupational safety trainings and first aid trainings are also being prepared for de-sludging operators.

    c. To ensure scaling and sustainability of initiatives across Tamil Nadu, the TSU has identified and shortlisted training institutes and Training of Trainers (ToT) has been conducted for these partner institutions to take toward the capacity building initiatives.

    d. A landscaping study for identifying potential private and non-govt. agencies/organisations for carrying out O&M of FSTPs had also been carried out across 23 FSTP ULBs. A

standard template for labour contract with O&M protocol to be followed was prepared and shared with the ULBs for adoption.

e. A Kakkaman mascot-led campaign has been created to take sanitation to the public. As part of the campaign, TSU has finalised the communication materials such as print, posters, wall painting designs, films, jingles with GoTN. As a next step, TSU is helping GoTN in designing a pan-state BCC campaign.

4. Mainstreaming Inclusion and Vulnerable Communities

a. As part of a deeper engagement with two slums in PNP-NNP, the TSU has helped renovate CTs along with their containment systems and enabled a women's group from undertake management of a CT.

b. The Programme has worked with sanitation workers, desludging operators, Self-Help Groups (SHGs) in enterprise development (e.g. soap/ mask production), institutional strengthening, streamlining processes such as financial management and recordkeeping to improve business / service delivery efficiency.

c. Health camps for around 845 sanitation workers including men and women were organised through a collaboration between ULBs and private trust hospitals. The TSU is working towards institutionalisation and scale up of these camps across Tamil Nadu.

d. TSU has conducted WASH improvements and awareness programmes in five Govt./ Govt. aided schools in the Town Panchayats of NNP/PNP. WASH facility improvement is in progress and around 2,500 students from these schools will benefit from the WASH infrastructures improvement.

e. "Ungal Thozhi"- a forum for women from community and frontline workers on menstruation has been set-up for regular engagement. Awareness is being created on menstrual hygiene management in PNP/NNP slums and schools. A diagnostics study was conducted with the women from two intervening slums and adolescent girls from five intervention schools. Based on the findings from the diagnostics a comprehensive module has been designed keeping all components of MHM value chain viz. awareness, access, usage and disposal.

5. Reflections

5.1 Learnings

There were several lessons to be learnt from the first phase, the key ones being:

- Developing credibility of FSM takes time, concerted efforts and multiple approaches: Although FSM was prioritised by the government, a higher degree of buy-in was required from officers who were implementing it. TNUSSP-I persisted with multiple approaches to help decision-makers open their minds to start looking at FSM as possible and good solutions for TN. A combination of advocacy material and events, exposure visits (domestic and international), capacity building and powerful communications was adopted. A key associated issue was the lack of demonstrated models of FSM. The TSU overcame this through capacity building initiatives for the GoTN officers, including exposure visits to Devanhalli in Karnataka and Malaysia, to understand successful models of FSM. Also, mechanisms such as AC and working groups facilitated the implementation of the programme, while demonstration sites in Tiruchirappalli, PNP and NNP, helped operationalise it. Simultaneously, the programme involved key partners in the sanitation chain such as masons and desludging operators, by training them on the importance of their role and associated best practices in their domain.

- Strengthening sanitation in urban TN was possible since it built on the existing Operational Guidelines: The existing guidelines provided Tamil Nadu's own framework that needed support in operationalisation and roll-out. Therefore, TNUSSP could build on refining and strengthening the Guidelines, and focus on ULBs (especially in two model locations) to implement these Guidelines in a systematic manner.

- Strengthening the institutional home and processes for urban sanitation in existing institutions as well as creating spaces for other stakeholders to participate, appears to be a robust approach: Rather than adding new units or layers in state and city level institutions, the project worked closely with the existing state level directorates responsible for sanitation infrastructure creation, as well as the ULBs responsible for services delivery, thereby seeking to strengthen existing institutional structures and processes.

- The paucity of sanitation information with respect to FSM practices and services were addressed by undertaking a range of diagnostic studies: scoping studies, baseline assessments, institutional review and needs assessments. This gave further insights into the scope of the existing problem and helped plan interventions.

Key lessons from the second phase of the Programme were:

- Land and NIMBY constraints were resolved through co-location of FSTPs: FSTPs were co-located on sites designated for solid waste management, which also offered the option of co-composting.

- Intensive technical support required to scale FSTPs: As FSM was a relatively new domain for private operators invited to bid for FSTPs, hand holding support was provided at the bidding and evaluation stages. Further, FSTP designs were standardised to enable greater participation. Considerable flexibility was also offered to allow players to leverage their skills and co-bid for FSTP projects.

- Extensive capacity building required to scale FSTPs: The FSTP construction and QA support was also a new area of work which required substantial capacity building for all private players and ULB

personnel involved. The successful QA training programs and workshops to private contractors helped them bid for more FSTP projects, as well as seek out more FSM works.

- Regular hand-holding support needed to implement new governance mechanisms: With the MoU and Standard License Agreement being first-of-its-kind governance mechanisms, it required intense capacity building sessions and regular handholding support to ensure implementation.

- Innovative capacity building mechanisms required to overcome resource constraints: The freeze on government recruitment and lack of buy-in to setting up new FSM departments steered the Programme's objectives towards strengthening existing staffing roles and processes rather than adding new units or departments. In order to scale up capacity building initiatives across the state the use of digital learning content and platforms was identified as a way forward. This ensured optimal utilisation of time and resources for large audiences in the long run.

5.2 Challenges

- Lack of ownership and institutional role clarity amongst government officers to undertake and sustain FSM interventions.

- Lack of acceptance and uptake of FSM tools by government officers.

- Difficulty in sustaining proper maintenance and management of Public/Community toilets especially in densely populated urban settlements.

- Legacy containment structures especially bulk generators in commercial spaces not conforming to CPHEEO norms posed as an environmental challenge. It was an economic constraint for households to bear the cost of upgradation to safe structures. Further, improvements to containment structures required space, which was a concern in high-density urban slums.

- Land and NIMBY constraints: availability of land in urban clusters for building FSTPs, which are simultaneously away from households at the centre of the city, yet not too far for desludging operators to access was an issue.

- Resistance to adoption of governance mechanisms: there was resistance to adopting new systems of regulation or licensing both by ULBs and private desludging operators due to the cost factor. Additionally, operational challenges including those in monitoring desludging, disposal practices and occupational safety needed to be addressed.

- Slow adoption of new FSM processes: while co-treatment of fecal sludge posed challenges such as varying characteristics and volume of fecal sludge, the possibility of industrial waste being mixed with sewage also existed. This raised the need for rigorous monitoring mechanisms to ensure efficiency in treatment processes.

- Significant difficulties in operationalising institutional strengthening measures: strengthening the enabling environment for FSM service delivery in Tamil Nadu was a time-intensive and iterative process given the dearth of implemented and proven interventions in FSM. Adequacy of government staff and minimal private sector participation in the sector were added challenges to sustain interventions.

- COVID-19: The onset of COVID realigned priorities and stalled many activities. Resumption of activities demanded re-issue of directives from state officials and re-orientation to officers. Change

or transfer of ULB officers due to new government has also resulted in knowledge gaps which has necessitated additional capacity building initiatives.

6. Current Status and Exit Strategy

The first phase of TNUSSP focused on creation of institutional buy-in for FSM, demonstration in two distinct type of urban areas and preparation for scaling while the second phase focused on scaling and institutionalization of FSM across Tamil Nadu. The second phase also focused on issues of inclusion, focusing particularly on urban poor, sanitation workers and women. The second phase was done in middle of COVID-19 pandemic, and the State has also seen a change of government, after 10 years.

The current needs are to:

1. Institutionalise the FSM work, and prepare for exit
2. Deepen work around inclusion, and
3. Take the lessons from FSM to other states, and countries through mix of knowledge management, communication and technical assistance.

To achieve this outcome, the following strategies are being explored:

1. Strengthening and sustenance of existing FSM operations (including FSTPs, co-treatment and regulatory models). This will increase the design, implementation, management and monitoring of Fecal Sludge Management systems
2. Institutionalising FSM in the govt. - The programme will strengthen the FSM institutional arrangements at three levels: the state, regional and ULBs. This will be done through various options such as service rules, government orders, bye-laws, and updated FSM JDs incorporated into local municipal laws.
3. Strengthening the FSM ecosystem of private players, NGOs and media.
4. Establishing knowledge repositories and interactive digital blended learning platforms to serve as ready reckoners/ self-learning environment for the ULBs and other sanitation stakeholders.

ANNEXURE – A: Results Frameworks

Results Framework Phase I

Primary Outcome	Intermediate outcomes	Outputs
Tamil Nadu becomes a pioneer in demonstrating innovations in achieving the full cycle of safe sanitation in urban areas.	**1.1) Creation of enabling environment for state wide roll-out of full sanitation cycle.**	1.1.1) Baseline Completed
		1.1.2) State Operational Strategy and 1-3 year Action Plans Prepared.
		1.1.3) State Sanitation Steering Committee formed and active.
		1.1.4) Sector Financial Review and Financial Plan completed.
		1.1.5) Requisite changes for legal, regulatory, institutional and planning framework proposed to the government.
		1.1.6) Review of Supply Chain and Business Models for Private Sector Participation Developed.
	1.2) Increased Evidence of FSM in various plans and investment plans.	1.2.1) Septage Management Plans / Strategy being prepared by various towns.
		1.2.2) Training of ULBs officials/ Cadre Regularisation progressed.
		1.2.3) Existing tools, methods and techno-managerial solutions, including ones developed by BMGF, modified to Tamil Nadu context.
	1.3) X no. of ULB Cities are able to procure funding for non-sewered technologies or Cities are proposing FSM as part of investment.	1.3.1) Various technological systems reviewed and adapted for local context.
		1.3.2) Manuals modified to Tamil Nadu context.
		1.3.3) Preparation of 20 DPRs.
	1.4) Preliminary evidence of Increased Capacity of	1.4.1) Detailed Training Needs Assessment completed for all stakeholders.
		1.4.2) Strategy/ Action Plan for Development of Cadre of public and private sector professions working on FSM.

Primary Outcome	Intermediate outcomes	Outputs
	Stakeholders - at individual and institutional levels.	1.4.3) Development of Teaching Learning Material.
		1.4.4) x no of Training Programmes completed covering y% of personnel.
		1.4.5) Systems and Procedures introduced in X ULBs.
		1.4.6) Domestic and International Exposure Visits conducted
	1.5) X% of stakeholders are sensitised/impacted by outreach activities as measured by evidence	1.5.1) Communication Strategy prepared.
		1.5.2) Communication campaign rolled out in 20 cities
	1.6) Framework of participation of non-state institutions in place.	1.6.1) Business Models developed and framework of participation of non-state institutions finalized after consultations - pilot concepts tested.
	1.7) Availability of various knowledge products.	1.7.1) Findings from project systematically documented.
		1.7.2) Dissemination of findings.
	1.8) Project Activities are modified based on evidence from performance monitoring.	1.8.1) Development and implementation of an MIS and M & E framework.
Two urban locations are prepared to demonstrate implementation of innovations and approaches to improve the entire sanitation chain.	**2.1) Identification of two model urban locations, and formation of city level mission/ task force.**	2.1.1) State and City Level Consultations Conducted.
	2.2) City Sanitation Plan and Investment Plan endorsed/approved by relevant stakeholders (Council and other groups).	2.2.1) Various baseline studies completed.
		2.2.2) Preparation of City Sanitation Plan.
		2.2.3) Preparation of Investment Plan.

Primary Outcome	Intermediate outcomes	Outputs
	2.3) X % households have access to improved sanitation facilities (individual or community) through provisioning of new toilets or upgradation of existing toilets.	2.3.1) Funding secured for individual and community toilets.
		2.3.2) Roll out of communication campaign and impact testing completed.
		2.3.3) Training of Masons.
		2.3.4) Pilot of upgradation of existing toilets.
	2.4) X % households and institutions are regularly desludging their toilets.	2.4.1) Roll out of Communication Campaign.
		2.4.2) Training of Service Providers.
		2.4.3) Review and testing business models.
		2.4.4) Requisite changes to regulation of service providers.
	2.5) Cities are ready to implement appropriate treatment systems (at city and/ or cluster level).	2.5.1) Techno-feasibility study, including O & M requirements, of various technological options carried out.
		2.5.2) Selection of technology after consultative process.
		2.5.3) Land for treatment facility made available.
		2.5.4) Preparation of DPR.
		2.5.5) Investment is made available.
	2.6) Institutional Capacity of ULBs strengthened.	2.6.1) Training Needs Assessment.
		2.6.2) Execution of Training Programmes.
	2.7) City is prepared with a set of prioritised projects (DPRs) including interventions for rapid improvements, along with institution, finances,	2.7.1) Preparation of DPRs.

Primary Outcome	Intermediate outcomes	Outputs
	community engagement, and technical feasibility being already established.	
IIHS becomes the centre for documentation, capitalisation and dissemination of knowledge; and provides capacity building support to different stakeholder groups in urban sanitation in selected other states. (especially strengthening the body of knowledge and practice related to improved sanitation access, sustained behaviour change, safe conveyance, and safe disposal and reuse (faecal sludge management).	**3.1) Resourcing and strengthening of IIHS environmental services team to engage and respond to needs of urban sanitation in selected states.**	3.1.1) Recruitments and Training of IIHS Team Members, including exposure visits.
		3.1.2) Engagement with selected state governments on broadening options for urban sanitation improvements informed by work in Tamil Nadu.
	3.2) IIHS to serve as a knowledge hub for documenting, distilling knowledge from action research and converting findings from research and practice into knowledge that is made available to different target groups.	3.2.1) Documentation and dissemination of case studies through multiple media.
		3.2.2) Establishment of Knowledge Gateway and Communities of Practice.
	3.3) Establish IIHS as a regional capacity building and implementation advisory support centre.	3.3.1) Partnerships with existing capacity building institutions, including BMGF grantees.
		3.3.2) IIHS to run training programmes on various aspects of urban sanitation, particularly FSM.
		3.3.3) Preparation of Open Access Teaching Learning Material for MOOC.
		3.3.4) IIHS Team Members trained to deliver 'Training of Trainers' Programmes.
		3.3.5) Identification and assessment of Institutions (public and private) whose capacity can be increased to deliver courses on urban sanitation.
		3.3.6) IIHS to demonstrate increased capacity of at least one institution to run courses on sanitation.

Results Framework Phase II

Outcome (s)	Intermediate Outcome	Output	Actions/Activities
Urban areas of Tamil Nadu demonstrate measurable improvements in reduction of untreated waste going into the environment	**Strengthened operational mechanisms for sustained implementation of FSM, policies, regulations, and investments**	**Strengthened operational mechanisms for state-wide implementation**	Presentation of regulatory models (for cluster operations) to Government completed. i) MoU for regulating cluster operations and Licensing for regulating desludging operators issued as G.O. (2D) 35 and being implemented across Tamil Nadu
			Different Desludging model(s) being piloted that takes into account: a. Equitable service-delivery through cross-subsidies b. Sustainability of FSTP c. Incentivising proper disposal

Outcome (s)	Intermediate Outcome	Output	Actions/Activities
			Create systems and process that enable ULBs to capture and collate data for the MIS. i) Out of 664 ULBs, 520 no. of ULBs registered and 361 ULBs submitted reports. ii) IT-IOT system for FSM implementation being piloted
			Increased investment in FSM i) Support/Enable ULBs to prepare investment plans including provision to attract private sector funds completed. Budgetary allocation of 217 crores for 49 FSTPs in place.
	Increase in volume of fecal sludge co-treated or treated at various facilities	**Strategy and Action Plan for augmenting government treatment capacities**	Strategies and Action Plans are developed for Co-treatment i) Base data collection on the existing STPs, pumping stations and analysis of potential for co-treatment completed ii) Technical Assistance provided for improvement of existing/new infrastructure of decanting facility and for improvement of O&M practices in Co-treatment ii) Orientation and capacity building of stakeholders (ULB, private players) on co-treatment complete iii) Co-Treatment initiated in 48 STP ULBs

Outcome (s)	Intermediate Outcome	Output	Actions/Activities
			Strategies and Action Plans are developed and implemented for FSTP i) Preparation of type designs, detailed designs and drawings completed ii) Training for preparation of DPRs and review completed iii) Quality assurance implementation plan prepared; QA Support and O&M FSTPs (scaling) ongoing iv) O & M Model contracts, protocols and Service Agreements in place
			Understanding current practices of re-use of treated water and developing a plan for ULBs to market treated water
		Strategy and Action Plan for treatment/ re-use in large private and public installations and de-centralised wastewater systems (establishments, resorts etc.) and addressing containment systems for large generators of fecal sludge	Preparation of Strategy and Action Plan for augmenting treatment facilities and for upgrading and monitoring containment systems for large generators of fecal sludge prepared. i) Base data collection/assessment on treatment facilities ii) Developing strategies and action plan iii) List of containment-improvement technologies prepared iv) IHHL Containment improvements: Options for scaleup

Outcome (s)	Intermediate Outcome	Output	Actions/Activities
	Increased uptake of non-sewered solutions by ULBs	**City-Wide Models/ packages for FSM planning and implementation in ULBs**	i) FSTP have been designed for a cluster bundling. Ii) Technical Assistance to prepare DPRs for treatment (56 FSTPs), transfer stations or decanting stations completed. Iii) Technical assistance provided for preparation of data collection checklists, tools, design, document and estimation
		Identification of financially viable and environmentally safe solutions for difficult terrain conditions	i) Identification constraints/ difficult terrains and conceptual solutions ii) Pilot demonstration of treatment in Coonor and support for implementation ongoing
Strengthened institutional capacities for sustaining inclusive FSM services across the full sanitation value chain	**Increased capacity in selected ULBs, Regional and State level agencies for planning, implementation and management of inclusive Fecal Sludge Management**	**Orientation and training programme for officers from select govt. agencies on FSM**	i) Programme strategy plan for conducting trainings completed ii) Classroom training, exposure visits and field visit programme delivery ongoing iii) Modules for digital delivery of FSM materials and instituting in Government systems ongoing iv) Partners being identifed for ToT and service delivery
		Strengthening Institutional capacities and processes for delivering FSM	MoU & Licensing being rolled out in all STP & FSTP ULBs for strengthening governance mechanisms for cluster operations and streamlining desludging operators.
			Systems and Procedures for Institutionalising FSM shared with GoTN for circulation
			Prepared protocols for contract packages; procurement and tender documents for inclusive FSM
			Review of the FSM tools (Updated FSM toolbox developed AIT tool box)

Outcome (s)	Intermediate Outcome	Output	Actions/Activities
	5 private sector companies and NGOs active in inclusive FSM in the state	**Creation of platform for private sector and NGOs participation and Communities of Practice (CoP) for FSM at the state level**	Established a multi-level stakeholders' platform at the state level (NGO platform)
	Strengthened roles for community stakeholders including urban poor communities, sanitation workers and masons	**Orientation and capacity building for masons and sanitation workers including implementation of PPE and OSS**	i) Sourcing and collation of information for identification of training centres completed ii) Programme plan for conducting trainings ongoing
		Approaches (govt schemes, NGO led etc.) for promoting sanitation with urban poor communities tested, particularly women	Identification of partners, commencement of work ongoing
	Collaboration with academic and training institutions for development and delivery of teaching and training modules for FSM services, policies, and/or finance	**Partnerships developed with academic and training institutions, including govt. institutions like TNIUS**	i) Sourcing and collation of information and identification partners in progress ii) Discussions with academic institutions on FSM curriculum ongoing.Challenge in institutions adopting FSM modules

Outcome (s)	Intermediate Outcome	Output	Actions/Activities
FSTPs at both PNP/NNP and Trichy are operational	**FSTP operational as per performance standards**	**FSTP operational as per performance standards**	ULBs trained to conduct monitoring of PNP FSTP and personnel identified within ULBs responsible for monitoring i) Protocols developed and monitoring ongoing ii) Delivery of training through technical assistance or Capacity Building ongoing
			i) Co-composting ongoing ii) Trial runs for utilising recycled water and co-composed solids ongoing
40% of reduction in fecal sludge going untreated into the environment in PNP and NNP	**Safe containment, De-sludging and Transport of Fecal Sludge in PNP and NNP**	**Strengthening regulations, systems and procedures for fecal sludge and septage management at the ULB level**	i) Consultation with de-sludging operators in progress ii) Developing safety manual/guidelines in guidelines ongoing iii)Training to de-sludging operators on occupational safety standards and Protocols to be initiated
			Consultation with TP and DTP
		Improvements in access to sanitary facilities, safe containment, de-sludging and conveyance services for the urban poor, with a focus on women	Improvements in access in select slums commenced i) Identification of slum based on vulnerability assessment and consultation with TP completed ii) Slum mapping and baseline including MHM completed iii) Renovation of CTs with sustainable management model completed iv) Health camps for sanitary workers, desludging operators and their family members ongoing
			i) School programme ongoing ii) BCC - Community awareness programmes, MHM day, Global Hand washing day and WTD programmes were conducted

Outcome (s)	Intermediate Outcome	Output	Actions/Activities
	Replicable model for FSM implementation in TPs is in place	**Replicable model for FSM implementation in TPs is in place**	Documentation of different processes and models complete

ANNEXURE – B: Stakeholder Engagement Strategy

#	Stakeholders	Objectives	Engagement Mode	Scaling
1	Government Officers	• Ensure buy-in for FSM • Improve FSM technical knowledge • Build institutional capacity to anchor FSM	• Domestic and international exposure visits to successful FSM demonstrations • Consultative workshops for FSM planning • Regular meetings to obtain approvals • Classroom sessions and field trainings to showcase FSM interventions • Demand-based advisory support	Repository of FSM training materials as • Simple standard templates for quick adoption • Digital/online learning modules for better accessibility • Digital tools and apps for easy usage
2	Masons	• Understand modes of operation and training needs • Build technical knowledge for proper construction of sanitation systems	• Training programme focusing on toilets, septic tank and twin pit construction with demonstrations, and emphasizing the mason's role in building safe systems	Shortlisted training institutes and Training of Trainers has been conducted for partner institutions for scaling initiatives across the state
3	De-sludging Operators, Sanitation Workers	• Understand modes of operation and training needs • Orient on efficient and safe desludging and disposal practices	• Sensitisation on vehicle designs, occupational safety procedures and equipment's to ensure safe and efficient sludge management practices • Trainings on safe desludging, safety equipment, tools and first aid training • Providing access to welfare programmes, health camps and livelihood options	
4	Students	• Building awareness on safe WASH practices	• WASH awareness programmes and workshops conducted for school children and teachers	Discussions with academic institutions and education boards

#	Stakeholders	Objectives	Engagement Mode	Scaling
		• Building capacities of young graduates (particularly from engineering, urban planning and social work) to enter into the sanitation sector	• Interactive WASH and MHM communication modules created for students • Leveraging CSR support for improvement of WASH infrastructure at schools	for incorporating FSM and MHM modules into learning curriculums
5	Citizen/Households	• Awareness on importance on FSM • Awareness on maintenance of safe sanitation systems	• Behaviour Change Campaigns • Celebrating days of importance for WASH- E.g. World Toilet Day • Creation of FSM knowledge products such as short films, and project communications through social, digital and print media	Sanitation Mascot created and State-wide rollout of ATL and BTL for all ULBs developed
6	Private players	• Capacitate players with FSM technical knowledge and provide support to take up new FSM opportunities	• On-field support and training for designing, implementing and maintaining treatment facilities and containment systems • Support in tendering and contracting processes, and guiding on managerial support for maintenance of sanitation facilities	• Simple standardised design templates for easy uptake and learning • Digital learning materials (E.g. virtual reality tools)