

# MAHARASHTRA'S COMPREHENSIVE APPROACH TO SANITATION EXCELLENCE







The NFSSM Alliance is dedicated to advancing inclusive and safe sanitation practices across India, by driving discourse, shaping policy, and supporting governments at all levels in enhancing human waste management. Formed in 2016, the Alliance initially worked towards driving national discourse on Faecal Sludge and Septage Management (FSSM).

Today, the Alliance has become a key platform for collaboration, bringing together the expertise of over 35 diverse organisations, including NGOs, CSOs, academic institutions, and think tanks. Through this collective effort, the Alliance drives innovation in urban sanitation planning, infrastructure development, service delivery, and climate resilience, ensuring safe, inclusive, and equitable sanitation outcomes for all.

In its pursuit of nationwide impact, the Alliance has recently expanded its reach to new geographies with support from the Viega Foundation.



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The Centre for Water and Sanitation (CWAS), affiliated with CRDF, CEPT University focuses on improving water and sanitation services in India through data monitoring, capacity building, action-research, and policy advocacy. CWAS' recent work includes technical support to the Government of Maharashtra in implementing the Swachh Maharashtra Mission

# Introduction

According to the 2011 Census, nearly one in three urban households in Maharashtra did not have access to a toilet within the premises. The state of Maharashtra had pioneered initiatives on sanitation for all. The efforts made towards making two of its cities - Satara & Mahad ODF, preceded the launch of the SBM. Maharashtra's approach to making cities ODF was a Mission led by "Local Governments" & facilitated by the "State Government". At the outset, the Government of Maharashtra launched the "Swachh Maharashtra Mission", aligning with the national "Swachh Bharat Mission" aimed at making India Open Defecation Free (ODF). By declaring all urban areas ODF by the end of 2017, Maharashtra emerged as one of the pioneer states that manifested the vision of the Swachh Bharat Mission into reality.

## The Sustainability Charter- A Strategic Framework<sup>1</sup>

Building on the momentum of being a pioneering state in being declared ODF, Maharashtra ambitiously embarked on its journey towards achieving ODF++, aiming to safely collect, transport, treat, and dispose of faecal waste, through a coordinated state-guided and ULB-led initiative. This approach aligns closely with SBM 2.0's enhanced focus on advancing from ODF to ODF++, encompassing a more comprehensive framework for sanitation excellence. To sustain their ODF status and to advance towards ODF++, the Government of Maharashtra issued a 7-point sustainability charter.



### Sustainability Charter

We are committed towards the vision of Swachh Bharat. We shall ensure ODF sustainability in Maharashtra by:

- #1. Achieving universal access to Individual Household Level Latrines (IHHL), which is a leading development priority.
- #2. Ensuring adequate, clean and reliable access to public/ community toilets across urban Maharashtra, wherever IHHL is not possible.
- #3. Ensuring ODF sustainability through effective participation of government, elected representatives, schools, donors, NGOs, SHGs, CBOs and the communities.
- #4. Continuing and institutionalizing rigorous ODF validation and monitoring process through "OD Watch" and "ODF Sustainability Tracker".
- #5. Encouraging development of OD spots into usable public spaces.
- #6. Recognizing and awarding ULBs for their sustained performance.
- #7. Moving towards ODF+/++ by ensuring effective collection and adequate treatment of human faecal waste.

**Shri. Devendra Fadnis**  
Chief Minister, Maharashtra

**This charter is designed to reinforce and extend the gains made under the ODF programme, and it includes:**

- 🕒 **Achieving Universal Access to Individual Household Level Latrines:** Ensuring every household has access to private, hygienic toilets
- 🕒 **Ensuring Adequate, Clean, and Reliable Access to Public/Community Toilets:** Providing well-maintained public and community toilets to meet the needs of all citizens
- 🕒 **Ensuring ODF Sustainability Through Community Participation:** Engaging government bodies, elected representatives, SHGs, schools, NGOs, and communities to support and maintain ODF status
- 🕒 **Institutionalising ODF Validation and Monitoring:** Continuing rigorous validation and monitoring processes through "OD Watch" and the "ODF Sustainability Tracker".
- 🕒 **Encouraging Development of OD Spots:** Transforming areas previously used for open defecation into functional, usable public spaces.
- 🕒 **Recognising and Awarding ULBs:** Acknowledging and rewarding Urban Local Bodies (ULBs) for their sustained performance in maintaining ODF status
- 🕒 **Advancing to ODF++:** Ensuring effective collection and treatment of faecal waste to achieve higher standards of sanitation

The charter reflects Maharashtra's commitment to not only maintaining its ODF status but also advancing towards higher standards of sanitation practices, thereby ensuring a comprehensive approach to faecal waste management. This includes every stage of the sanitation service chain, from ensuring access to toilets, managing the containment, emptying and transporting faecal waste to treatment facilities, expanding treatment infrastructure, and exploring innovative methods for disposal and reuse. Maharashtra's journey towards enhanced sanitation is marked by its multifaceted efforts across these critical stages, exemplifying a model for effective and sustainable sanitation management.

cities, which are dependent on on-site sanitation and have no access to treatment facilities.

**To aid implementation, Urban Local Bodies (ULBs) were categorised into:**

- **Category A:** ULBs having functional sewage treatment plants
- **Category B:** ULBs having access to nearby sewage treatment plants for co-treatment
- **Category C:** ULBs that do not have access to treatment facilities and require independent faecal sludge treatment plants

**CO-TREATMENT OF FAECAL SLUDGE AT SEWAGE TREATMENT PLANTS**

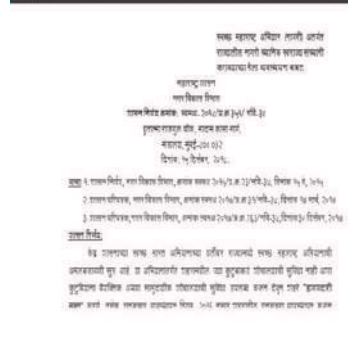
Co-treatment of faecal sludge was formalised through a Government Resolution (GR: SMU-2018 /Cr No. 351/UD-34 on 15th December 2018) issued by the Government of Maharashtra, while an MoU between the sending and receiving ULBs was signed to institutionalise the process, leading to tangible improvements in sanitation management. 71 ULBs are undertaking co-treatment, with 35 of these (Category A) utilising their functional STPs with excess capacity to co-treat faecal sludge from 36 additional nearby ULBs (Category B) within a 20 km radius that do not have their own treatment facilities.



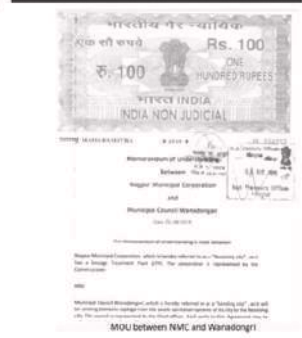
**Advancing towards ODF++: A Two-Pronged Approach<sup>2</sup>**

The Government of Maharashtra adopted a two-pronged approach for state-wide Faecal Sludge and Septage Management (FSSM) coverage. The two-pronged approach comprises co-treatment at Sewage Treatment Plants (STPs) & constructing independent Faecal Sludge Treatment Plants (FSTPs). To utilise the excess capacity of the existing sewage treatment plants, a co-treatment strategy was undertaken. All the cities, that do not have any treatment facilities & are located within a 20 km radius of a STP with surplus capacity, can co-treat their faecal waste in that plant. Independent FSTPs were constructed for the remaining

Government resolution on co-treatment of Septage – Own STP and Cities within 20 km of a nearby STP city



Institutionalize FS co-treatment through MoU between sending and receiving cities

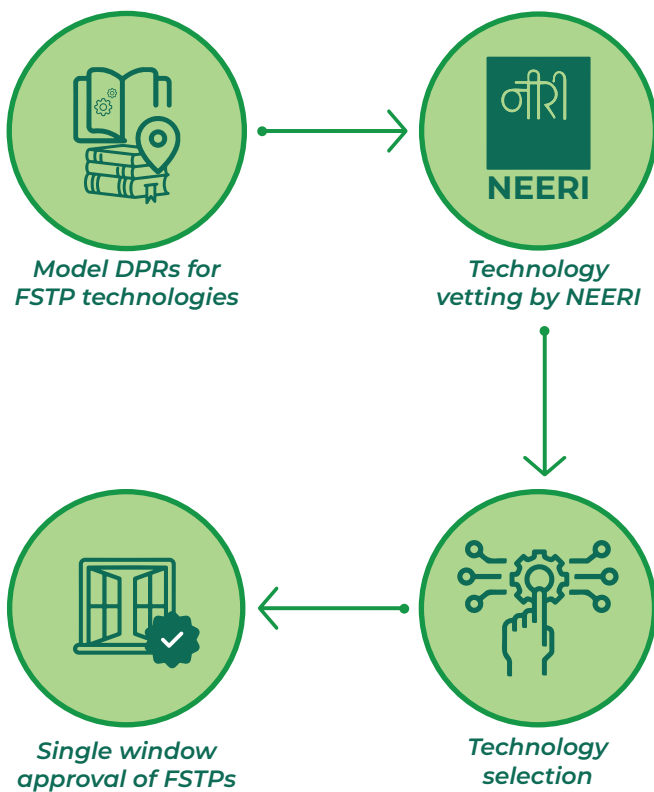


The remaining 300+ ULBs (Category C) will treat faecal waste at their independent FSTPs.<sup>3</sup>

<sup>2</sup>Faecal Sludge & Septage Management in Maharashtra, September 2020, CWAS, CRDF, CEPT University

## SETTING UP INDEPENDENT FAECAL SLUDGE TREATMENT PLANTS

The second prong focuses on constructing independent Faecal Sludge Treatment Plants (FSTPs) to ensure comprehensive management across all urban local bodies. This effort involved meticulous planning and strategic implementation, supported by detailed reports and guidelines to ensure the successful establishment and operation of these critical facilities.



### Model DPRs for FSTP Technologies

The Urban Development Department (UDD), Government of Maharashtra with support from its technical support unit - CWAS, created **Detailed Project Reports (DPR)** for setting up FSTPs in the 300+ Category C ULBs. The DPR included several critical components to ensure the project's success - beginning with an overview of the project and highlighting the need for FSTPs and project objectives. The DPR included site details covering land ownership, safety from flooding, clearances, and the technical design including engineering specifications for components, leachate collection tanks, electro-chlorinators, etc., along with detailed

measurements and cost estimates for materials, labour, and equipment. The implementation plan outlines the project timeline, stakeholder responsibilities, and quality control measures. Operation and Maintenance (O&M) plans ensure **long-term functionality**, with training for personnel and a maintenance schedule. Environmental and social impact assessments identified potential impacts and mitigation measures, while the **monitoring and evaluation framework tracks the plant's performance**, ensuring it meets its objectives. The DPR ensures comprehensive planning and sustainable implementation of FSTPs. Model DPRs of varying capacities i.e. 3 KLD, 5 KLD, 10 KLD and 20 KLD were prepared for all six divisions of the state.

### Technology Vetting & Selection

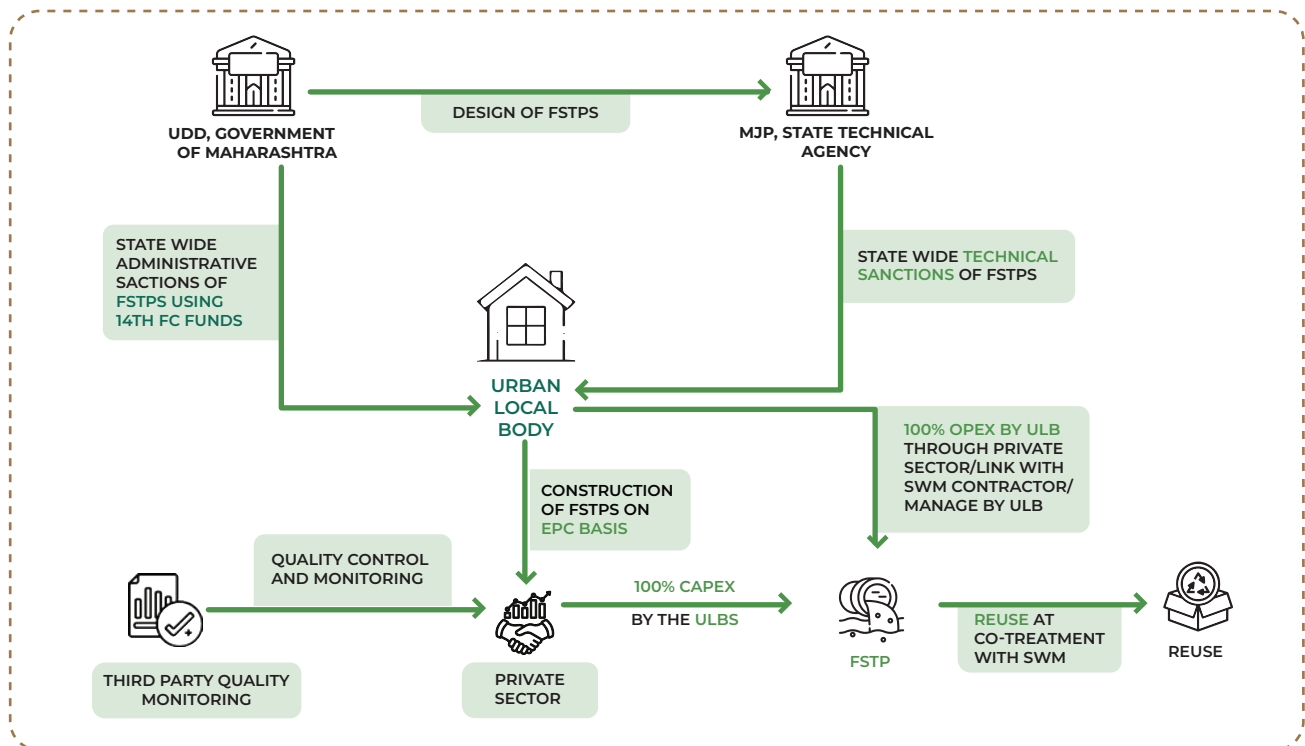
Government Resolution No. SMMUA-2019/Circular No. 124/UD-34, dated 8th November 2019, with technical support from CWAS, provided guidelines to ULBs for implementing appropriate faecal sludge treatment technologies. Following a thorough vetting process by the National Environmental Engineering Research Institute (NEERI) - a constituent laboratory of the Council of Scientific & Industrial Research (CSIR), several options were evaluated, including Sludge Drying Bed (SDB), Planted Sludge Drying Bed (PSDB), Moving Bed Biofilm Reactor (MBBR), and Upflow Anaerobic Sludge Blanket (UASB). The nature-based Sludge Drying Bed (SDB) with planted gravel filter technology was ultimately chosen due to its ease of **implementation, availability of materials, resilience to power supply interruptions, and straightforward maintenance requirements**. Based on population size, ULBs were categorised into five groups to determine the appropriate FSTP capacities, as detailed below:

POPULATION SIZE	FSTP CAPACITY (KLD)
UP TO 15,000	3 KLD
15,001 - 25,000	5 KLD
25,001 - 50,000	10 KLD
50,001 - 75,000	15 KLD
MORE THAN 75,000	20 KLD

## ○ Single-window Approach

The Government of Maharashtra adopted a single-window approach to expedite the establishment of FSTPs by centralising and coordinating all approvals through a unified system. This approach **simplifies and accelerates administrative and technical**

**sanctions** by employing a **single approving authority**. It also includes pre-approved designs and operation guidelines, as well as standardised tender documents & training programmes to ensure consistency and efficiency in the implementation process.



### APPROVALS

- Maharashtra Jeevan Pradhikaran (MJP) - the Water Supply and Sanitation Department of the Government of Maharashtra issued a statewide **technical sanction** for FSTPs which included technical design and structural and hydraulic design templates.
- UDD provided the statewide **administrative approval** to ULBs for utilising the **14th Finance Commission funds**.



### FINANCING

- ULBs bear the **capital expenditure** for FSTP construction by utilising the **14th Finance Commission funds**.
- ULBs bear the **operational expenditure** for operations & maintenance of the FSTPs through **municipal taxes/sanitation tax, etc.**



### CONSTRUCTION OF FSTPS

- The FSTPs were **constructed by agencies selected on an Engineering Procurement Contract (EPC) basis**. Pre-approved technical design and structural and hydraulic design templates of FSTP have significantly contributed to fast-tracking the setting up of FSTPs in ULBs.
- Currently, there are more than 220 FSTPs operational, which impact more than a million lives.



### QUALITY CONTROL & MONITORING

- A compulsory **third-party technical audit** through empanelled **engineering and polytechnic colleges** was also conducted to ensure quality assurance and control while constructing the FSTPs.

## Scheduled Desludging of Septic Tanks<sup>4</sup>

In India, both the National Policy on Faecal Sludge and Septage Management, 2017 and the Central Public Health and Environmental Engineering Organisation guidelines, 2013 recommend regular cleaning of septic tanks once every two to three years through a systematic extraction and collection procedure. The scheduled desludging model involves intentional efforts to clean the septic tanks as per a **predetermined schedule**,<sup>5</sup> contrary to the demand-based scheduling model, which requires the households to call for desludging services. In a scheduled desludging model, the frequency of cleaning the septic tanks as per the national guidelines can be adhered to. In this model, all the septic tanks in the city are visited once during the fixed cycle and are mandatorily emptied as per the pre-determined schedule through **licensed desludging operators**.

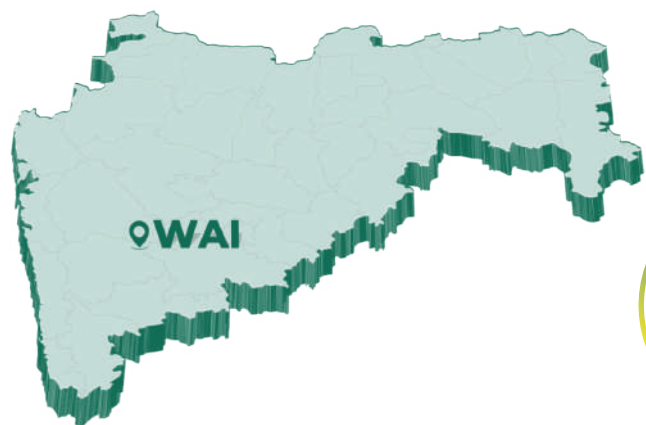


### Scheduled desludging offers merits such as:

- Preventing manual labour due to regular emptying of septic tanks, as the sludge doesn't get hardened considering regular desludging
- Optimisation of infrastructure due to planned services and predictable load for treatment
- Lower prices for desludging paid by the households as the desludging operators can optimise their overheads as a result of economies of scale

- Environmental benefits from lower chances of septic tanks overflowing
- ODF sustainability through increased usage of toilets as a result of better functioning of the toilets

In 2018, the **Municipal Councils of Wai**, a pilgrimage town located around 200 km from Mumbai, with a **population of 43,000**; and Sinnar, an industrial town near Nashik with a population of **72,000** adopted **scheduled desludging** through a Public-Private Partnership (PPP) model.



In these cities, the desludging services are provided by the municipal councils through a Contractual agreement with private sector desludging operators as per a planned cycle of three years, covering both, residential and non-residential properties. To implement scheduled desludging, the cities were divided into 3 zones based on the citywide database of toilets and septic tanks. Every zone is to be covered in one year. Based on the zones, the requirement of emptying vehicles, their capacity, and routes were planned. As a result of scheduled desludging, the desludging charges in Wai and Sinnar have been reduced to nearly one-third<sup>6</sup> of what the households would have paid in on-demand desludging. As most desludging operators are located in bigger cities, their overhead expenditures are often included in the desludging charges. However, with scheduled desludging, the operators know the number of septic tanks to be emptied, and can therefore optimise their routes. This helps the sector optimise their businesses and profits through better resource planning.

<sup>4</sup>Source: CWAS website.

<sup>5</sup>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



## SANITATION TAX - FINANCING DESLUDGING SERVICES



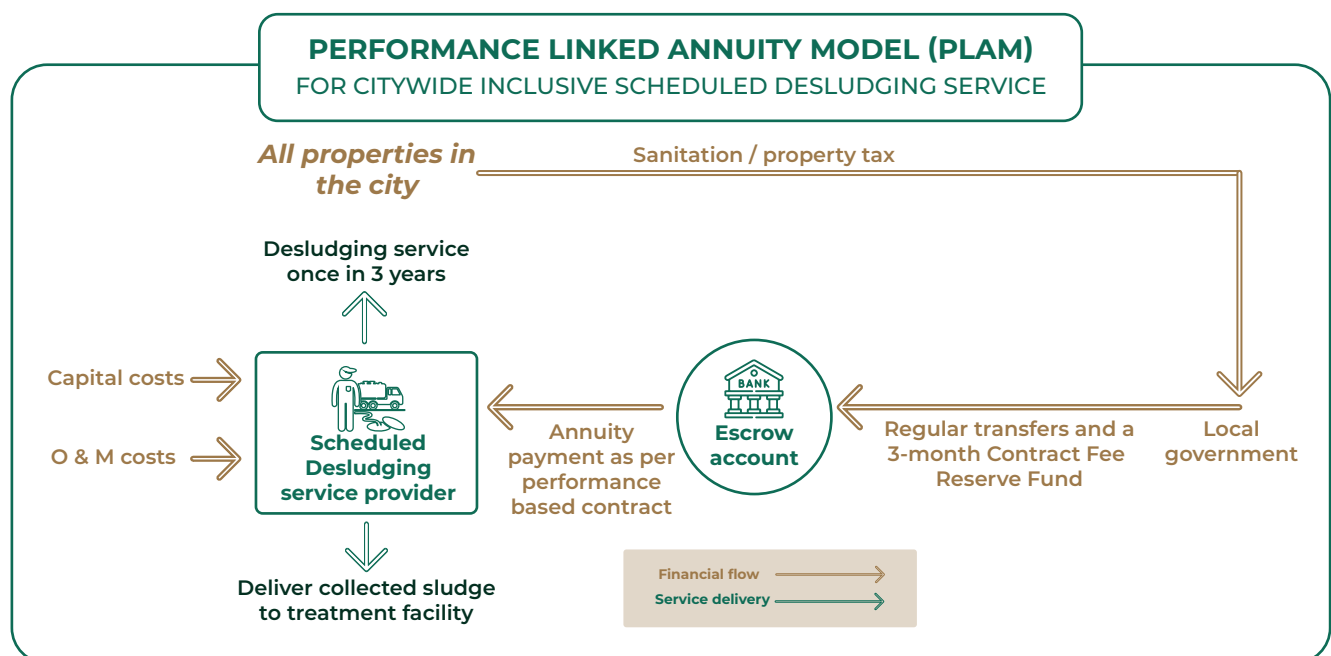
To finance scheduled desludging Wai and Sinnar have levied a sanitation tax, wherein property owners pay an annual sanitation tax to the local government, instead of paying desludging fees. This tax is included in the property tax and is collected with the property tax payments. The sanitation tax linked with the property tax is **progressive as households with larger properties pay**

**more taxes**, thereby ensuring equity. By integrating the cost into property tax, the overall expense for households is significantly reduced compared to paying for individual desludging services. This has led to a **perception of desludging as a free essential service**, which has been well-received by households in both cities.

## PERFORMANCE LINKED ANNUITY MODEL (PLAM) - COLLECTIVE ACCOUNTABILITY FROM DESLUDGING OPERATORS & LOCAL GOVERNMENT

The Municipal Councils of Wai and Sinnar engaged operators for scheduled desludging, selected through a transparent bidding process. The operators bring their emptying vehicles, which they operate for the three-year desludging cycle under a "Performance-based Annuity Contract" with the Municipal Councils. These contracts include clauses for **performance targets**, the number of septic tanks to be emptied, performance standards, and **safety compliances** during desludging. The payment to the operators is made monthly, depending on the number of septic tanks

cleaned and the adherence to clauses. The operators had earlier highlighted that delayed payments by the ULBs were a key concern to their operations. To mitigate this and to enhance the ULB's accountability, an escrow account,<sup>7</sup> comprising a tripartite agreement with the ULB, the local bank, and the operator was introduced. The ULB is mandated to maintain 3 months of contract payment as a reserve fund to safeguard against the risk of delayed payment. The monthly payments for the operator are financed through this escrow account.



While protecting the interests of the local government, citizens, and operators; the performance-based contracts have ensured a superior quality of desludging services in the towns. In 2022, Wai completed the first cycle of Scheduled Desludging. In the first

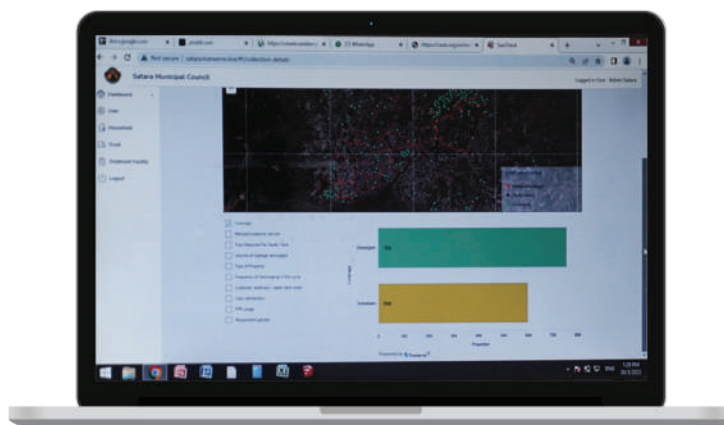
cycle, over 3600 septic tanks were served, 6800 properties were covered, and 19 million liters of septage was treated. The scheduled desludging services were monitored through IT enabled tools, which helped in tracking progress real time.

<sup>6</sup>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

<sup>7</sup>An Escrow Account is a contractual mechanism where a third-party (the bank, in this context) receives and disburses money for primary transacting parties (Private sector operators and the Municipal Councils, in this context)

# IT-enabled Monitoring Systems to ensure Inclusive Service Delivery<sup>8</sup>

To ensure robust monitoring mechanisms for FSSM, especially to monitor safe and inclusive service delivery, Maharashtra has developed key IT-enabled systems: SaniTab, SaniTrack, SaniQ and SaniChatbot. These systems collectively enhance the efficiency, inclusivity, and transparency of FSSM services across the state.



These IT-enabled Monitoring Systems include features such as:



## Real-time Monitoring

The systems provide real-time data, enabling immediate insights into the status of sanitation services and facilitating prompt decision-making and interventions.



## Ease of Use

The applications are designed to be user-friendly, minimising the need for extensive training, reducing paperwork, and streamlining operations for broad accessibility.



## Performance Monitoring

The systems include features like photo stamping, geo stamping, and signature capture to verify service delivery and ensure service providers meet their targets and maintain high operational standards.

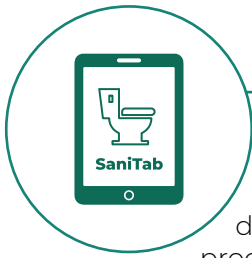


## Unique Database

A comprehensive database is maintained, encompassing detailed data on sanitation services statewide. This database helps track progress, identify gaps, and ensure service coverage in vulnerable areas.



## THE SYSTEMS



### SaniTab

Captures on-site sanitation information, tracks desludging services, and uses dashboards for real-time progress monitoring. This system ensures comprehensive data collection and analysis, supporting high sanitation service standards.



### SaniTrack

Focuses on tracking the emptying of septic tanks, ensuring adherence to desludging schedules and efficient service provision.



### SaniQ

Integrates the functionalities of SaniTab and SaniTrack, offering a holistic monitoring solution for FSSM. SaniQ maps service coverage in vulnerable areas and ensures safe discharge and treatment of faecal sludge at FSTPs.



### SaniChatbot

A WhatsApp-based chatbot system that enables the state to monitor the FSTP data on a daily basis, enhancing real-time oversight and responsiveness.

## IMPACT ON SERVICE DELIVERY

- **Inclusive Service Delivery:** These IT-enabled systems ensure that sanitation services are inclusive, reaching all areas, including underserved and vulnerable communities, thus promoting equitable service delivery.
- **Enhanced Accountability:** Detailed, verifiable data from these systems enhance accountability among service providers. Real-time monitoring and performance metrics ensure high standards and prompt issue resolution.
- **Improved Planning and Resource Allocation:** Data from these systems aid in better planning and resource allocation. Authorities can identify areas needing attention and allocate resources effectively for comprehensive service coverage.
- **Ensuring Safe Disposal and Treatment:** The systems track the entire process from collection to disposal, ensuring that faecal sludge is safely discharged and treated, maintaining environmental standards and preventing contamination.

The adoption of SaniTab, SaniTrack, SaniQ and SaniChatbot into Maharashtra's sanitation framework represents a significant advancement in ensuring efficient, inclusive, and transparent service delivery. These systems are crucial in maintaining high sanitation standards, promoting public health, and achieving the state's sanitation goals.



# CONCLUSION

Maharashtra's transformative approach to faecal sludge and septage management has firmly established it as a leader in sanitation excellence. Consistently being in the **top three positions and topping the Swachh Survekshan** rankings in 2023, the state has demonstrated its commitment to innovative and comprehensive solutions. Initiatives like the **holistic two-pronged strategy; streamlining administrative processes via a single-window approach and introducing innovations like scheduled desludging with private sector engagement, and sanitation taxation** have contributed to Maharashtra's sanitation success.

This success is a testament to Maharashtra's holistic strategy that not only addresses infrastructure and service delivery but also integrates community engagement and sustainable practices. As Maharashtra strides towards its aspiration of becoming a **Water+ state**, its ongoing efforts to enhance resource management, secure vital resources, and align with **SDG 6.2** underscore its dedication to achieving inclusive & sustainable sanitation for all.

Maharashtra's dedication to advancing sanitation goes beyond infrastructure development and innovative practices, embracing active community participation and effective resource management. Throughout the state's journey towards comprehensive sanitation solutions, **Self-Help Groups (SHGs)** have been instrumental. From evaluating community needs and offering critical feedback to aligning sanitation projects with local priorities, SHGs have significantly contributed at each stage. Their active role in community outreach and education has fostered **local ownership** and **enhanced the sustainability of sanitation services**, ensuring that these initiatives are both effective and deeply rooted in the communities they serve. Their involvement extends to managing and operating sanitation facilities, facilitating scheduled desludging services, and promoting hygiene practices within their communities.

By embedding **SHGs into the sanitation framework**, Maharashtra has leveraged their **local knowledge and networks**, enhancing the **effectiveness of its sanitation initiatives** and ensuring that **services are responsive to the needs of diverse communities**. This grassroots involvement has not only strengthened the state's sanitation infrastructure but has also fostered a sense of collective responsibility and empowerment among residents. To further strengthen and formalize engagement with the SHGs, Maharashtra is developing a **strategy for National Urban Livelihood Mission and Swachh Bharat Mission convergence**. This strategy adopts a four-fold approach of Engaging SHGs, Empowering SHGs, Ensuring Stakeholder Participation, and Enabling Implementation Structure.

Additionally, Maharashtra is also exploring convergence with the **"Majhi Vasundhara"** mission, which focuses on activating **community engagement for mitigating climate change**.

In parallel, the state's commitment to **resource recovery** underscores its forward-thinking approach to sustainability. The Government Resolution issued for co-treatment of faecal waste also encourages the cities to explore viable reuse options for treated faecal sludge and wastewater. By reimagining waste as a valuable resource, municipalities such as Wai and Sinnar are at the forefront of pioneering reuse and recovery efforts. **Treated wastewater and by-products from faecal sludge treatment** present significant opportunities for resource optimisation. **Wai and Sinnar have implemented innovative practices like using treated wastewater for irrigating urban forests, exploring biochar as a soil enhancer, and utilising biogas for energy**. While these initiatives advance a **circular economy model** they also exemplify Maharashtra's comprehensive strategy to integrate resource management and sustainability into its sanitation efforts.





## SANITATION HALL OF CHANGE

Maharashtra has set the gold standard in India's sanitation journey, thanks to the tireless efforts of its sanitation champions. These dedicated individuals—from community leaders to government officials—have driven transformative initiatives, propelling the state to the forefront of faecal sludge and septage management.

Their work has turned challenges into successes, making Maharashtra a leader in achieving ODF, ODF+, and ODF++ status. The Sanitation Hall of Change celebrates these unsung heroes who have ensured every citizen's access to safe and sustainable sanitation.



Visit our website to discover the unsung heroes of sanitation!





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