

Inclusive Fecal Sludge Management (FSM) in Rural Maharashtra

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Global South Academic Conclave on WASH and Climate 2025
21st - 23rd February 2025, Ahmedabad

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Unsafe management of fecal sludge leads to wide spread pollution and impacts the environment & climate

Impacts of unsafe fecal sludge management

Water Pollution

- Ground and surface water contamination
- Eutrophication
- Spread of waterborne diseases

Soil pollution

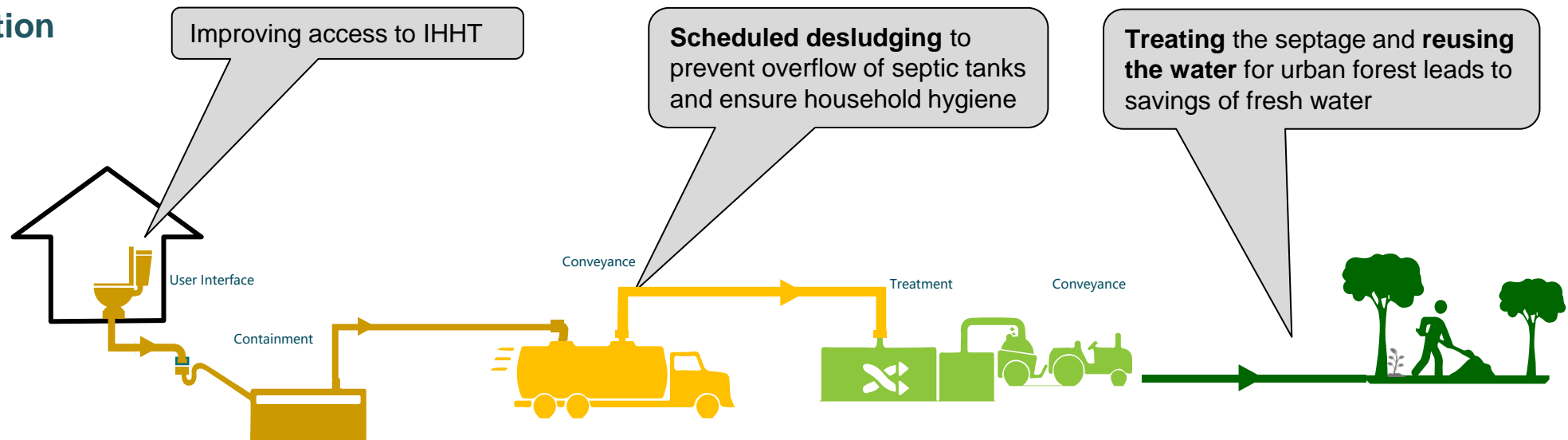
- Degradation of agricultural land
- Spread of diseases due to direct contact

Air pollution and GHG emission

- Methane and Nitrous oxide emission
- Unpleasant odor

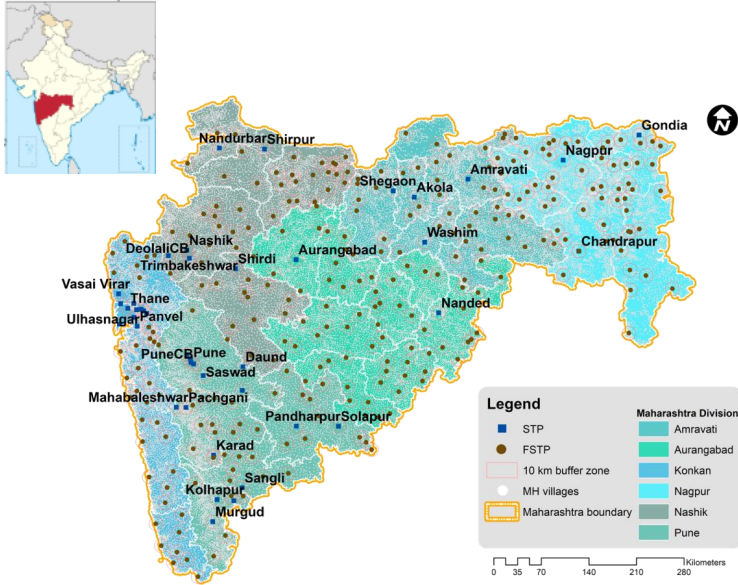
With limited financial capacities, human resource and technical know-how, **rural areas become one of the most vulnerable communities** to be affected by the impact of improper management of fecal sludge

Improved sanitation service chain



Sanitation in Rural Area : A Snapshot

Government of India's (GoI) Ministry of Jal Shakti through Water supply and sanitation department have made transformative improvements in Rural India's sanitation and Solid and Liquid waste management services (SLWM)



The NARSS 2019-20 survey report for rural Maharashtra	0.7 %	30 %	26 %	27 %
	Toilets connected to septic tank with overflow	Toilets connected to septic tank without overflow	Toilets connected to single pits	Toilets connected to Twin pits

Sanitation practices in rural areas :-

- **Abandoning full pits** and constructing new ones.
- Relying on **informal operators** for emptying tanks, who could be unavailable when needed to charges exorbitant rates
- **Unsafe desludging and disposal practices** by private operators
- Unemptied pits/septic tanks results in pollution of ground water posing serious **public health and environmental risk**



Under Swachh Bharat Mission (Grameen) Maharashtra state has made significant progress in **Constructing IHHTs and Declaring rural areas ODF**
 Next Challenge – **ODF sustainability through effective FSM**

GOI has emphasized the **need for Urban-Rural FSM linkages to optimize resource utilization and provide safe sanitation services in rural areas**

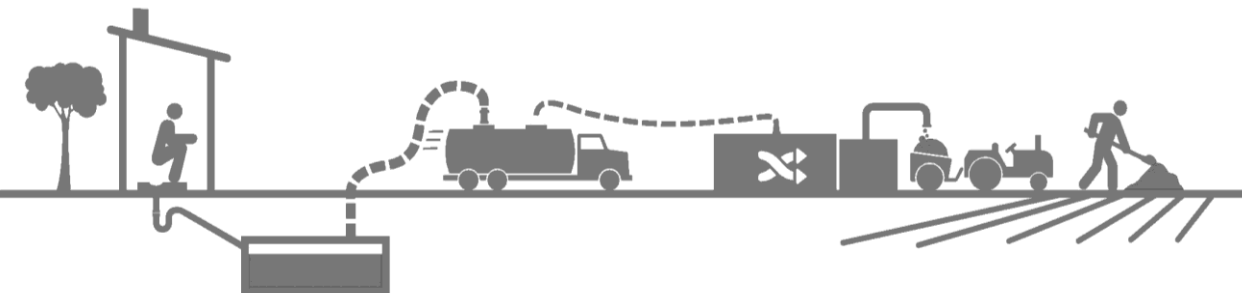
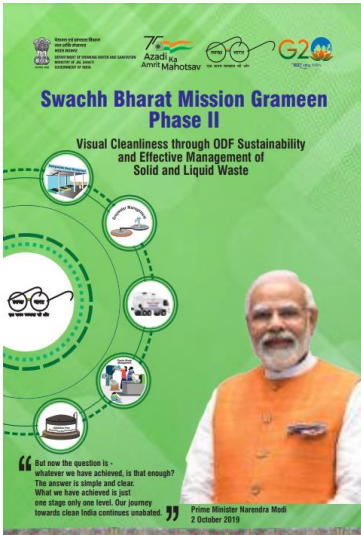
Holistic approach for strengthening rural sanitation

SBM phase II Guidelines on FSM

To ensure effective management of faecal sludge, districts are required to strengthen mechanized desludging of on-site sanitation systems and establish treatment units for the safe disposal of faecal sludge.

Ex-Situ Treatment Faecal sludge from septic tanks and single-pit toilets to be mechanically desludged and safely transported to an FSTP/STP within 15-20 km for treatment.

- **Existing STPs/FSTPs:** Peri-urban areas or villages in proximity to urban areas **should transport collected faecal sludge to STPs/FSTPs located in urban areas for treatment**
- **New FSTP:** A new FSTP can be constructed for a **cluster of villages** that cannot be linked to existing treatment systems.



CWAS is supporting for scalable FSM Models for rural areas in Maharashtra

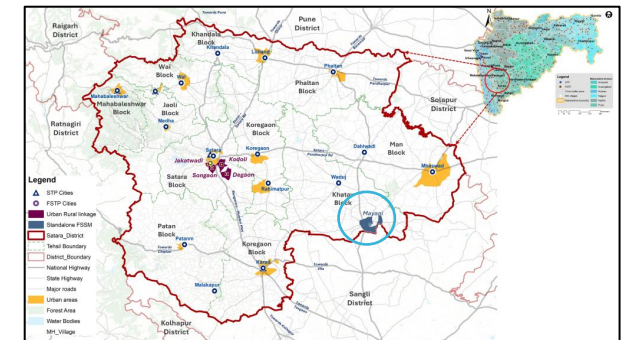
The project aims to develop and implement rural Faecal Sludge Management (FSM) business models in four selected villages in Maharashtra, focusing on - **Urban-Rural linkages and Standalone FSM rural systems**

Objective for the project -

1. Identify **cost-effective business** models to enhance **urban-rural FSM linkages**.
2. Assess **local sludge management models** for safe disposal in **remote areas** where waste transport is unfeasible.
3. Access the role of **private and public partnership** in developing and implementing these business models

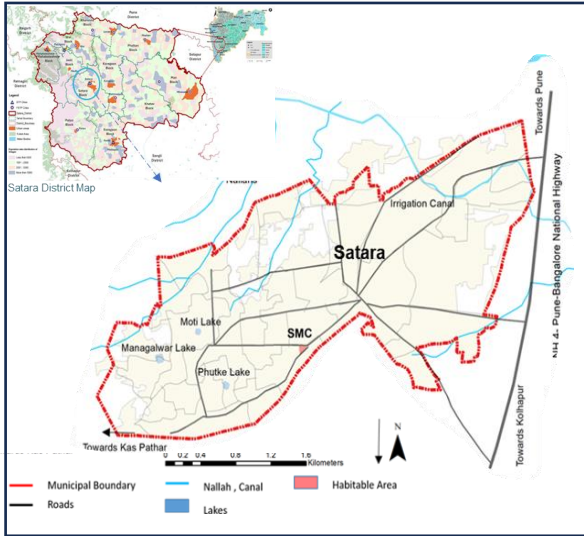
Selection of Satara district for demonstration of both models

- ✓ FSTPs in cities with additional capacity to treat rural fecal waste,
- ✓ Availability of private sector
- ✓ Strategic mix of urban-rural areas at varying distances



1. Urban-Rural Faecal Sludge Management linkages in Satara

Urban area with FSTP – Satara city



244,000
Population
(PAS -SLB 2022-23)

26.4 sq.km
City limit increased from
8.15 sq.km (2022)

65 KLD capacity
Nature based FSTP

10 -12 KLD
Additional capacity

Treatment Hub

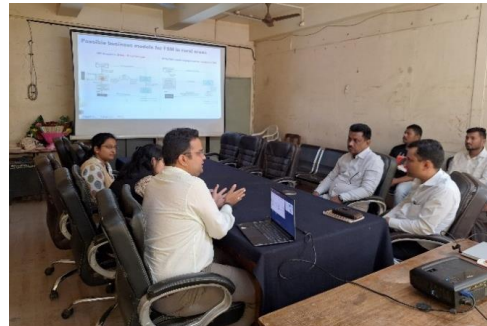
Receives FS from City and surrounding villages to treat at its FSTP

SMC's commitment

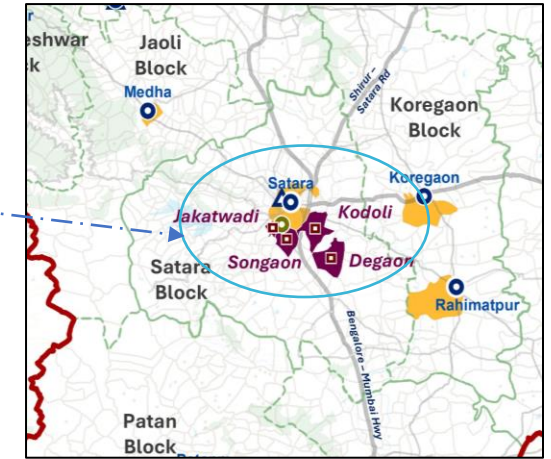
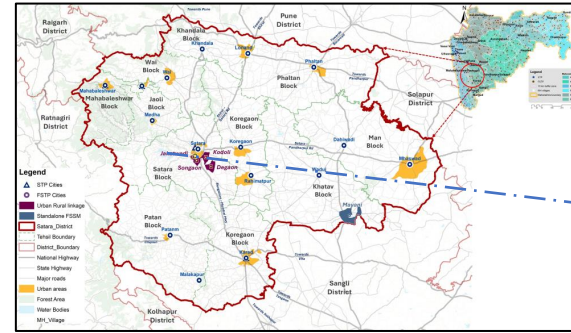
Willing to strengthen the UR-FSM linkages and optimise the utilisation of the FSTP.



Treatment type –
Solid: SDB and dewatering unit
Liquid: ABR, PGF, PSF and ACF, Chlorination
Maintenance –
Saptatara Majur Sahakari Sanstha
Amount –
Rs. 1,15,000 per month
Contract upto August 2025



Rural areas with fecal sludge to be treated – Four villages near Satara city



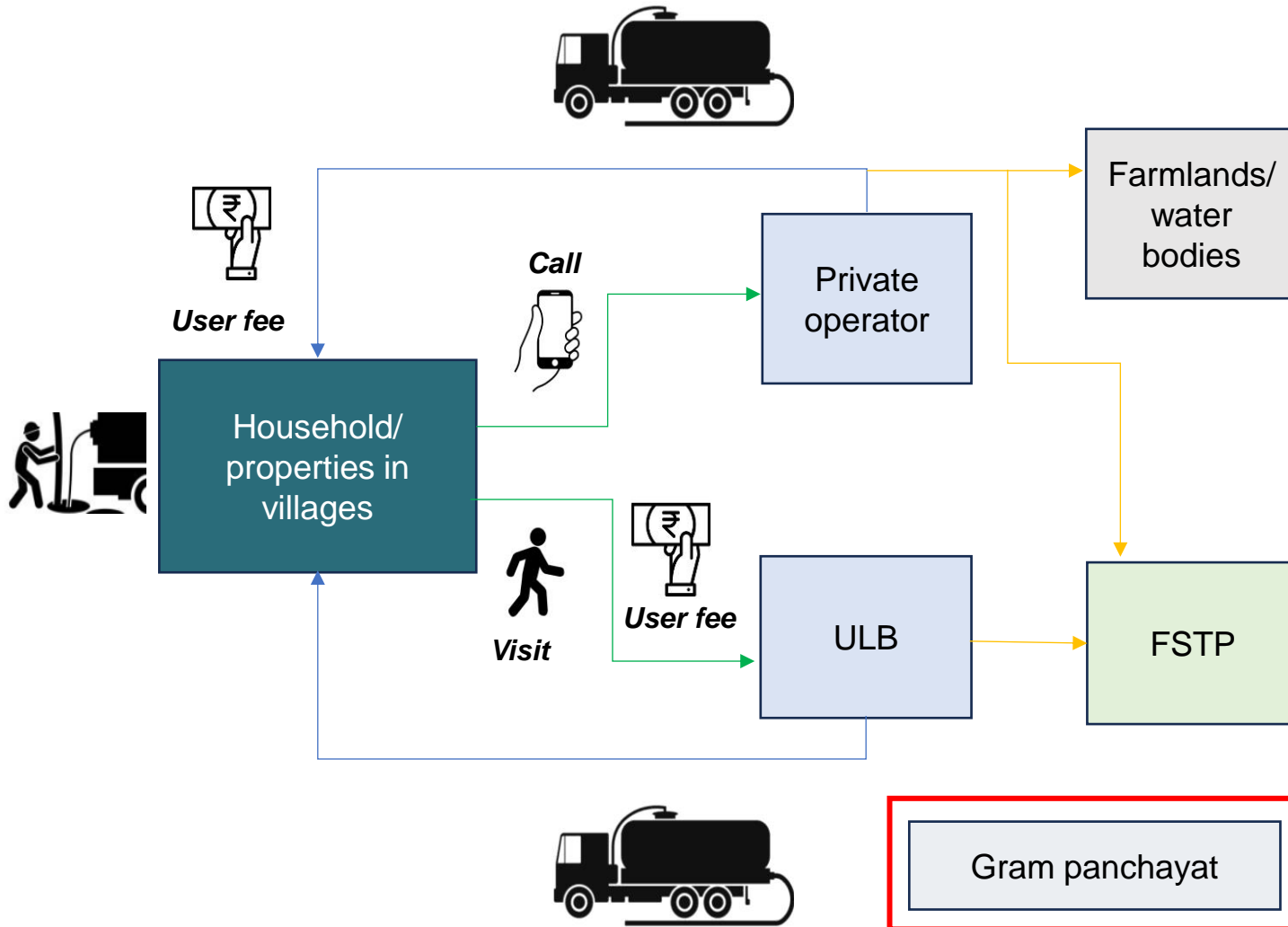
Name of GP	Distance from FSTP (Km)	No. of HHs	HHs with toilets (%)	Coverage of Septic tanks (%)	HHs with septic tanks
Jakatwadi	1.5	1200	90	95	1140
Songaon	3.2	1135	100	80	908
Kodoli	8.1	5500	100	95	5225
Degaon	12.9	1248	100	80	998

Recce visits and stakeholder consultation to understand the FSM practices



Current FSM practices in villages around Satara

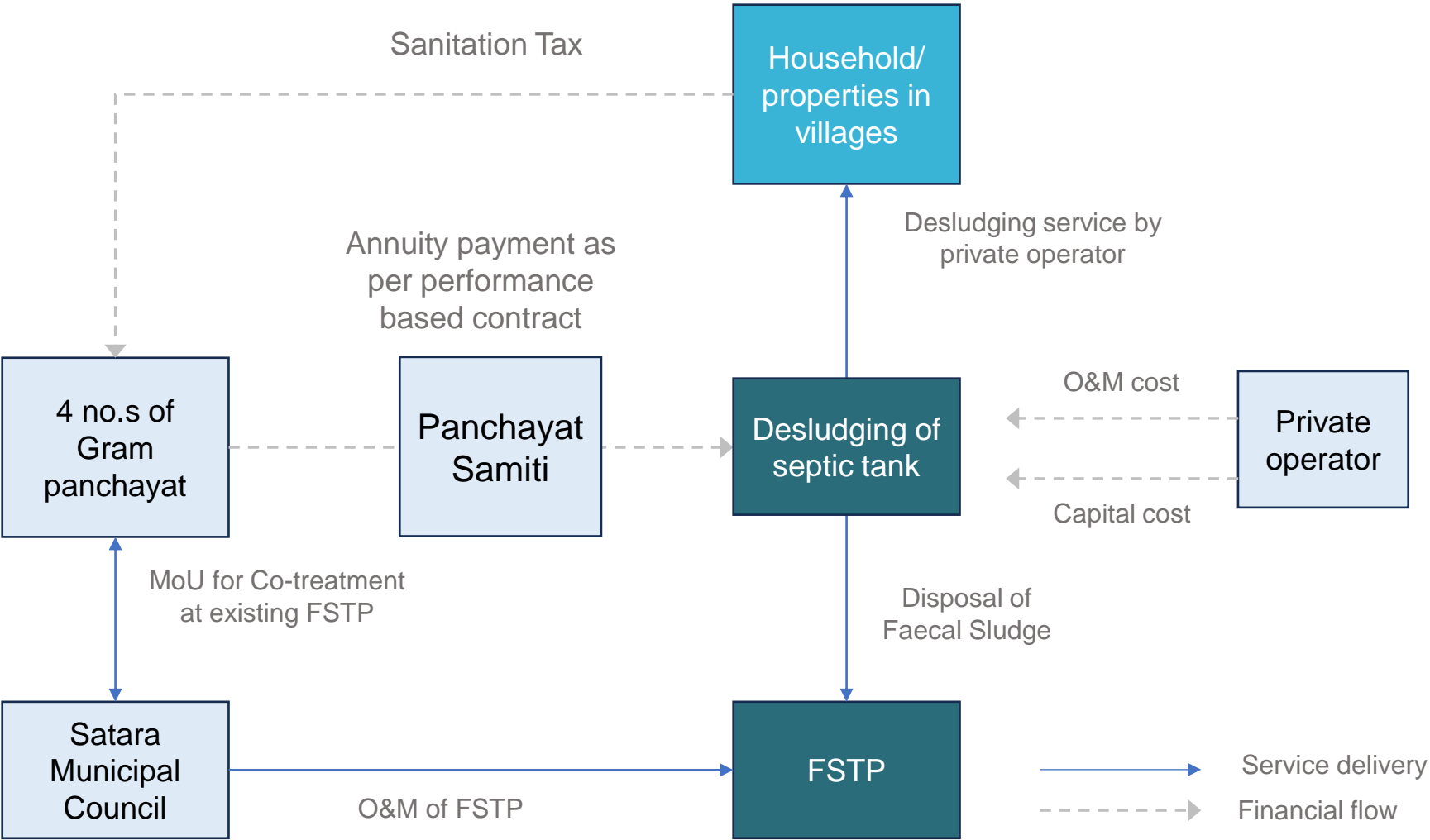
Desludging services in the villages near Satara city are provided by the private operators or SMC on demand basis



Issues with the current desludging service

- Gram Panchayat is **neither informed nor does it monitor** the desludging service being provided in their village.
- Desludging of septic tanks is done **only when it overflows**. Should be desludged after ever 3-5 years.
- No **monitoring/capping** on the **desludging fee charged** by the private service provider.
- **No monitoring** of the **sludge disposal practices**. Sludge sometimes disposed by the private operators on the **farmlands without treatment**.

Proposed Model: Scheduled Desludging by engaging private operators



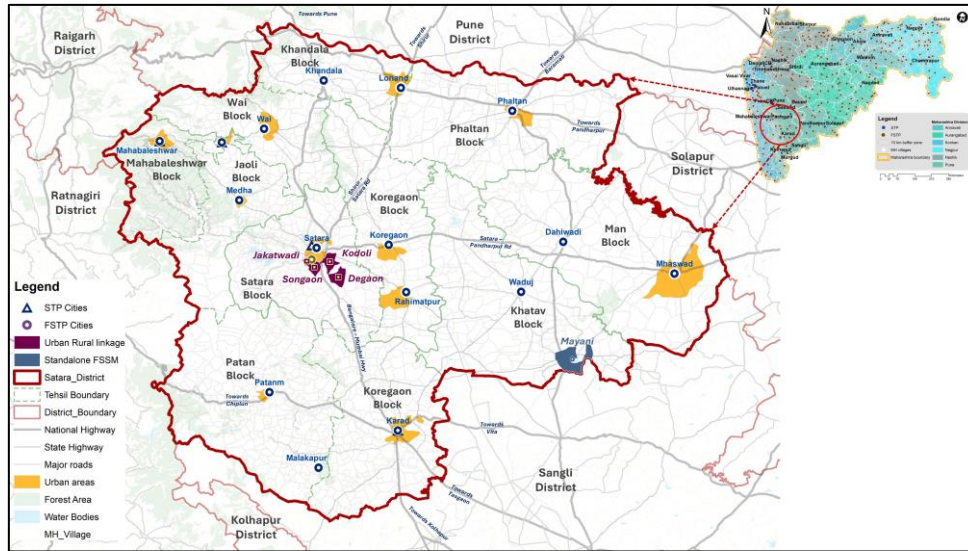
- ✓ The idea is to move from consumer complaint redressal system to a scheduled service
- ✓ Providing emptying services in cycle of 5 years for each Households
- ✓ Sanitation tax would be Rs 120- 180 per household per year

Benefits of Schedule desludging

- ✓ Equitable and inclusive services
- ✓ Infrastructure optimization
- ✓ Environmental benefits
- ✓ No manual labor
- ✓ Low pricing

2. Standalone Faecal Sludge Management Model

Mayani village in Khatav taluka has been selected for standalone model



Current Sanitation situation

Access to toilets – 85% of HHs have IHHT with around 85% of them being connected to septic tanks.

Collection and conveyance –

- Daily around 3 requests are received, mostly from Mayani village.
- Mayani GP has purchased own tractor trolley mounted desludging truck of 5000 liters capacity.
- Charges Rs. 2000 per trip.

Disposal – A pit is created in one of the private farmlands. Also disposed in farmlands of local farmers. Due to heat sludge dries quickly and usually taken by nearby farmers for sugarcane farming.

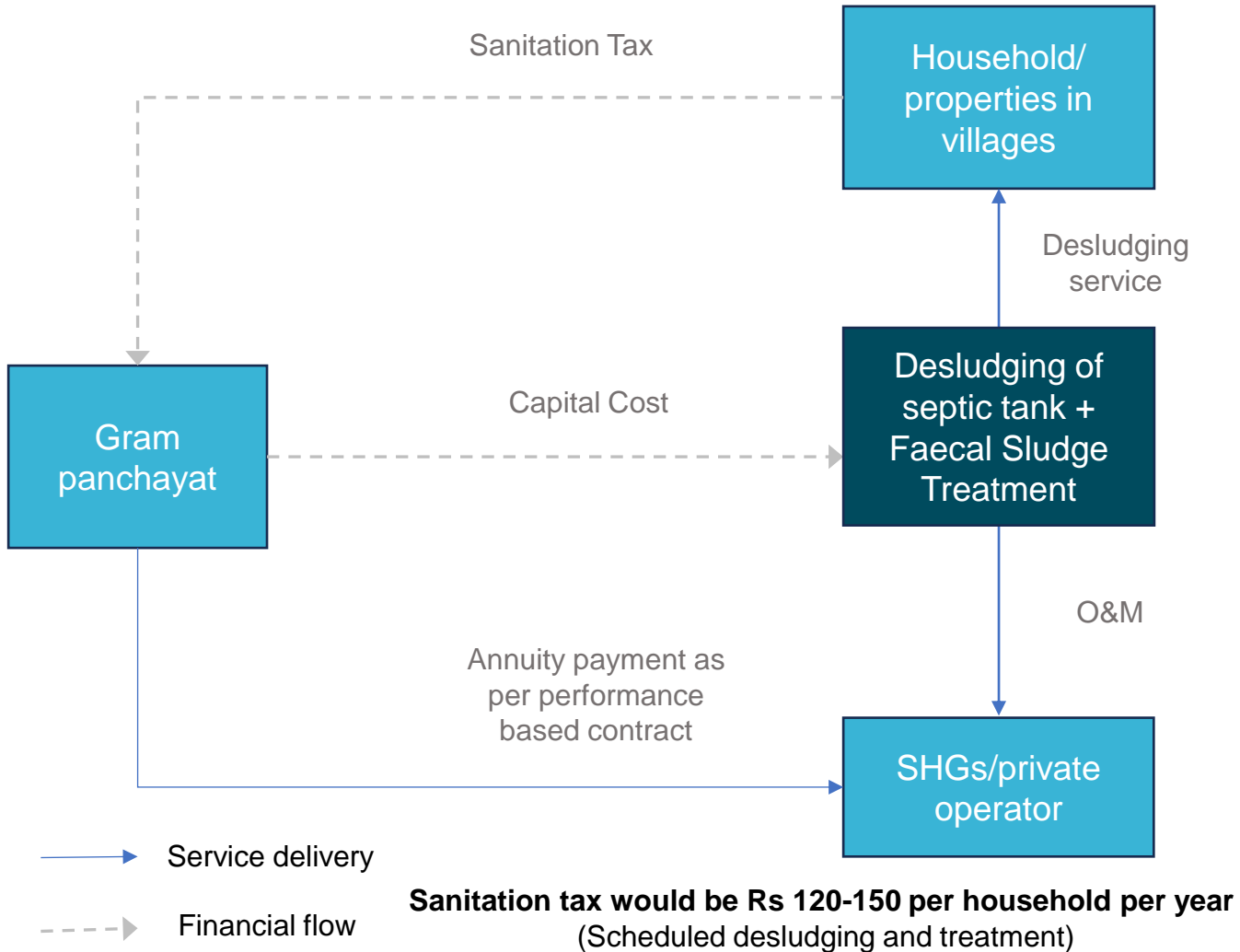
1	Village name	Mayani
2	Taluka	Khatav
3	Population	17000
4	HHs	5500
5	HHs with toilet	4675
6	HHs with septic tank	3974

GP's own land available for treatment



Proposed Business Model For Mayani

Mayani GP has its own truck mounted desludging vehicle of 5000 litre capacity.
Can engage SHG/Private operator only for operation



Daily Faecal Sludge Quantity To Be Treated In Mayani

Total HHs with IHHT	4675
Avg. size of Septic Tanks (liters)	5000
Septic Tanks to be cleaned per day	3
FSTP Capacity needs to constructed (KLD)	≈ 15

Technology for Faecal Treatment

Nature Based technology - SDB + ABR + PGF



Capital Cost	Rs. 30-32 Lakhs* (SBM funds)
O & M Cost	Annually Rs. 4-6 Lakhs (GP's Sanitation tax)
Area req.	235 Sq.m

Involvement and consultation with all three tiers of PRIs for planning and decision making



Satara Zilla Parishad and Panchayat Samiti officials



Elected and administrative officials from Gram Panchayats



Gram Sabhas

Technical support to GPs for informed decision making



1. Developing the model for service provision



2. Developing the Financing Model



3. Draft resolutions for Institutionalization



4. Developing Balanced Performance based Contract



5. Setting up app-based monitoring systems

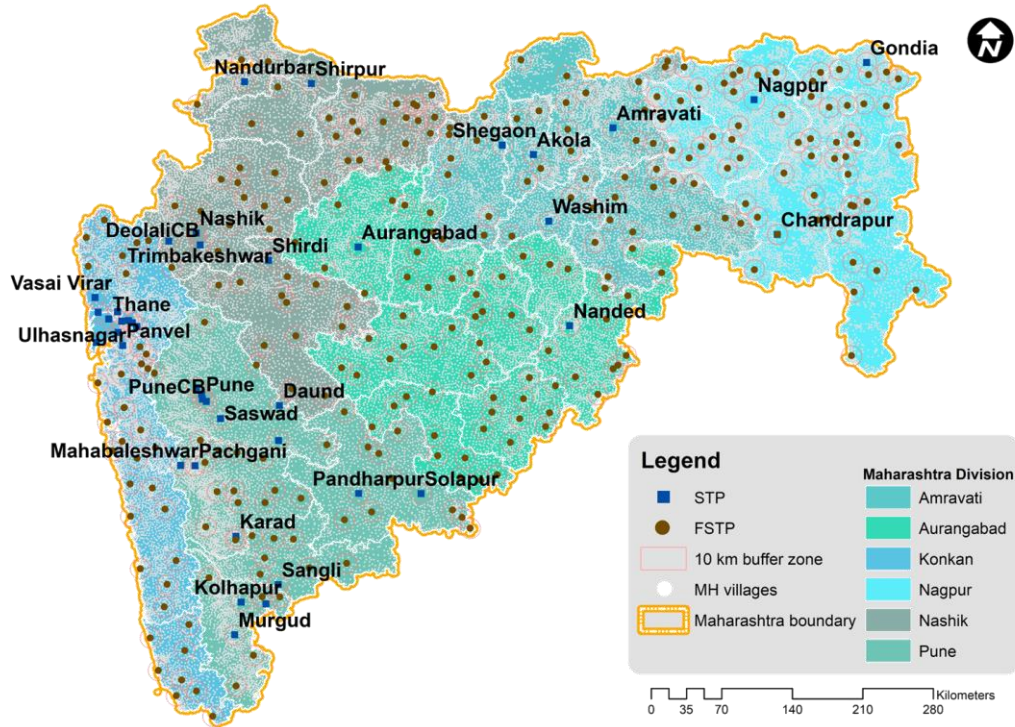


6. Developing strategy and material for awareness generation.



7. Training and capacity building of the SHGs

Way ahead and scaleup



Maharashtra holds huge potential for scaling up learnings from this project

- Maharashtra has **35 districts** with around **43,000+** villages.
- The state has **270+ ULBs** with operational **FSTPs/STPs** and capacity available to treat the fecal sludge from rural areas
- These **resources can be effectively utilized** for treating the fecal sludge from rural areas.
- The **isolated villages** can be supported with a **standalone/cluster FSTP**

Learnings from the project shall be scaled up through

- Documenting and sharing at various platforms,
- Exposure visits,
- Capacity strengthening initiatives
- Policy integration at State level etc.



Thank You

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