



Scheduled Desludging Innovation in Maharashtra Cities

Center for Water and Sanitation, CEPT University

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FSSM to address the challenge of safely managed sanitation

Safely Managed Sanitation



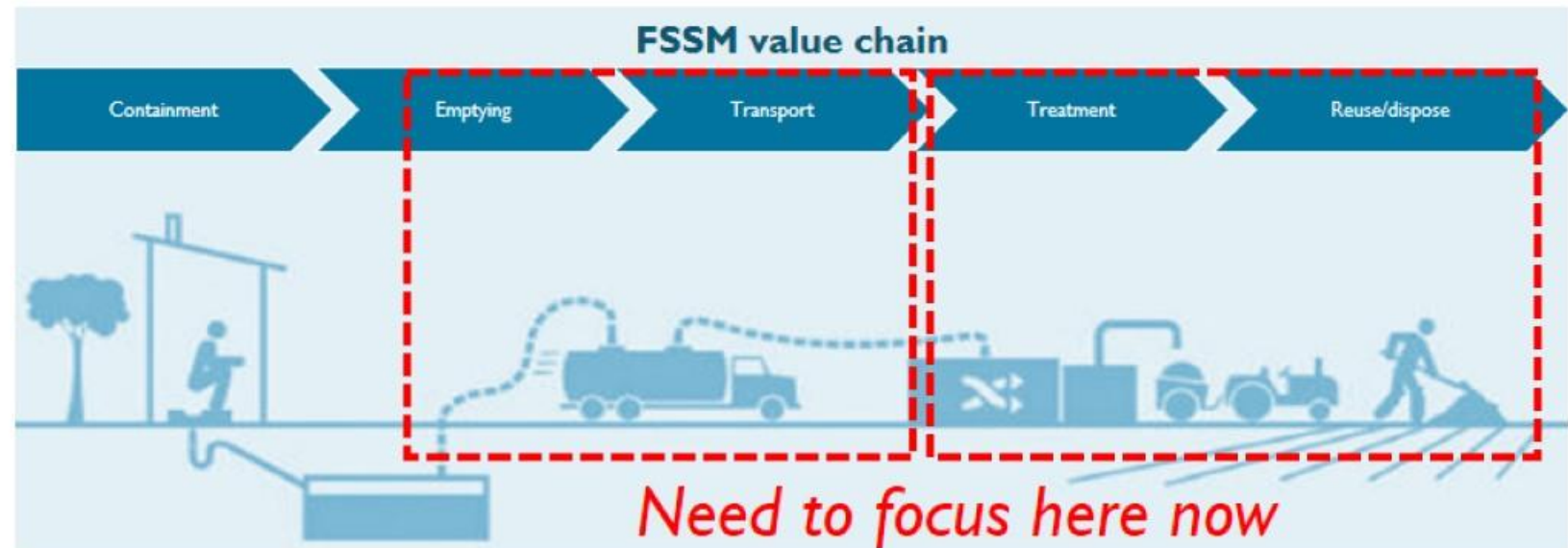
SWACHH SURVEKSHAN 2018



How can India achieve universal access to safely managed sanitation ?

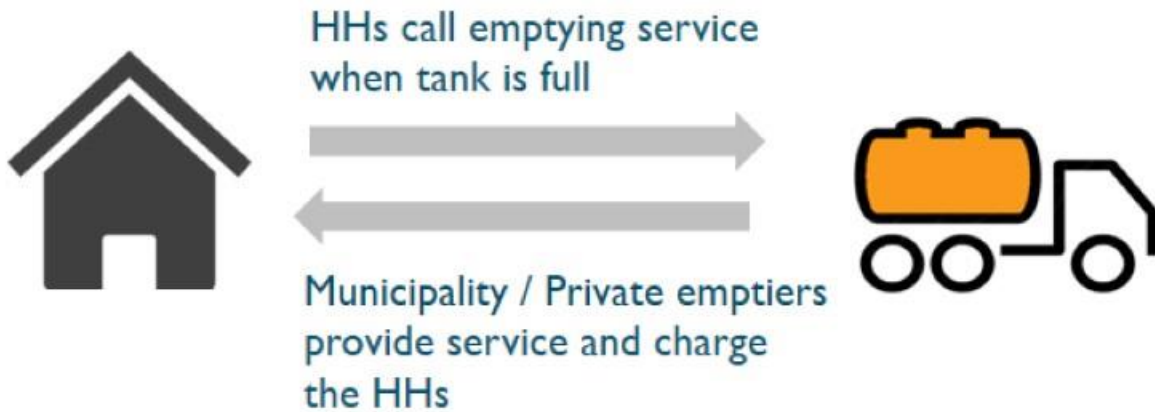
To achieve safely managed sanitation, a proven approach is the service chain of faecal sludge and septage management

Safe containment, conveyance, treatment, disposal/reuse

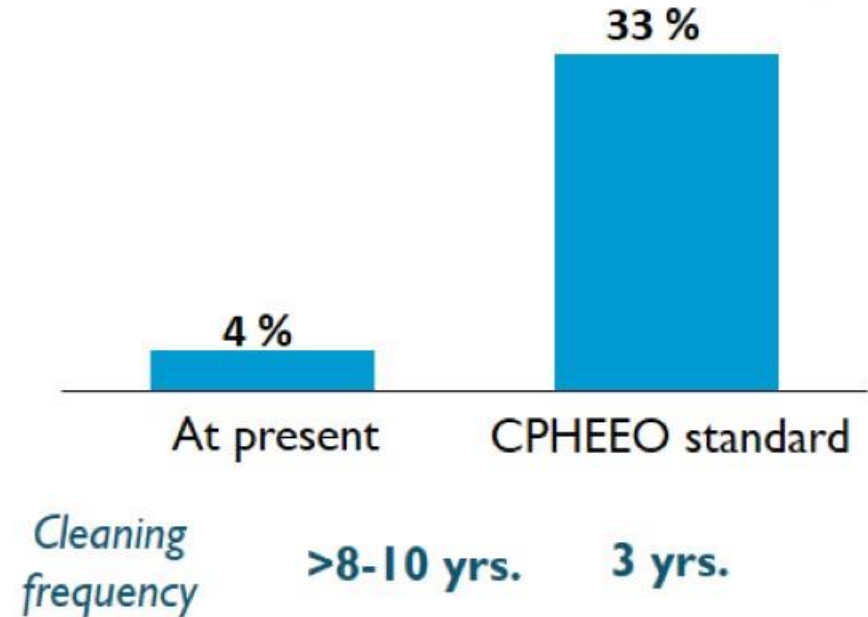


Current practice of desludging in Indian cities is of complaint redressal and NOT a public service the way sewerage and SWM are!

Common practice is of on-call demand based services as complaint redressal in India



Number of septic tanks cleaned annually by a small/medium ULB in India (As a % of total septic tanks)



Environmental impacts of poor quality effluent and un-monitored septage dumping



Low desludging frequency
= poor efficiency of septic tank
= poor quality of supernatant / effluent
overflow being released in rivers



With no designated sites for safe disposal, truck operators often have to resort to dumping on open ground or in water bodies

Increased chances of Manual Scavenging

39 Deaths In 100 Days: How Manual Scavenging Continues To Exist In India Despite It Being Illegal

The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 has not been a deterrent as manual scavengers continue to be employed due to apathy of general public and lack of proper implementation of the law by the authorities

Features | Written By: [Saptarshi Dutta](#) | Edited By: [Sonia Bhaskar](#) | September 04, 2017 5:56 PM | 3



Around 700,000 manual scavengers still exist in India

Image Credit: Satri Karmachari Anshika

Manual scavenging: Non-existent for govt, yet people die 30-ft under ground

The recent deaths of five manual scavengers again raises the question of how far will India let this problem go



NEXT NEWS >

By [Isha Baggai](#)
Last Updated: Tuesday 11 September 2018



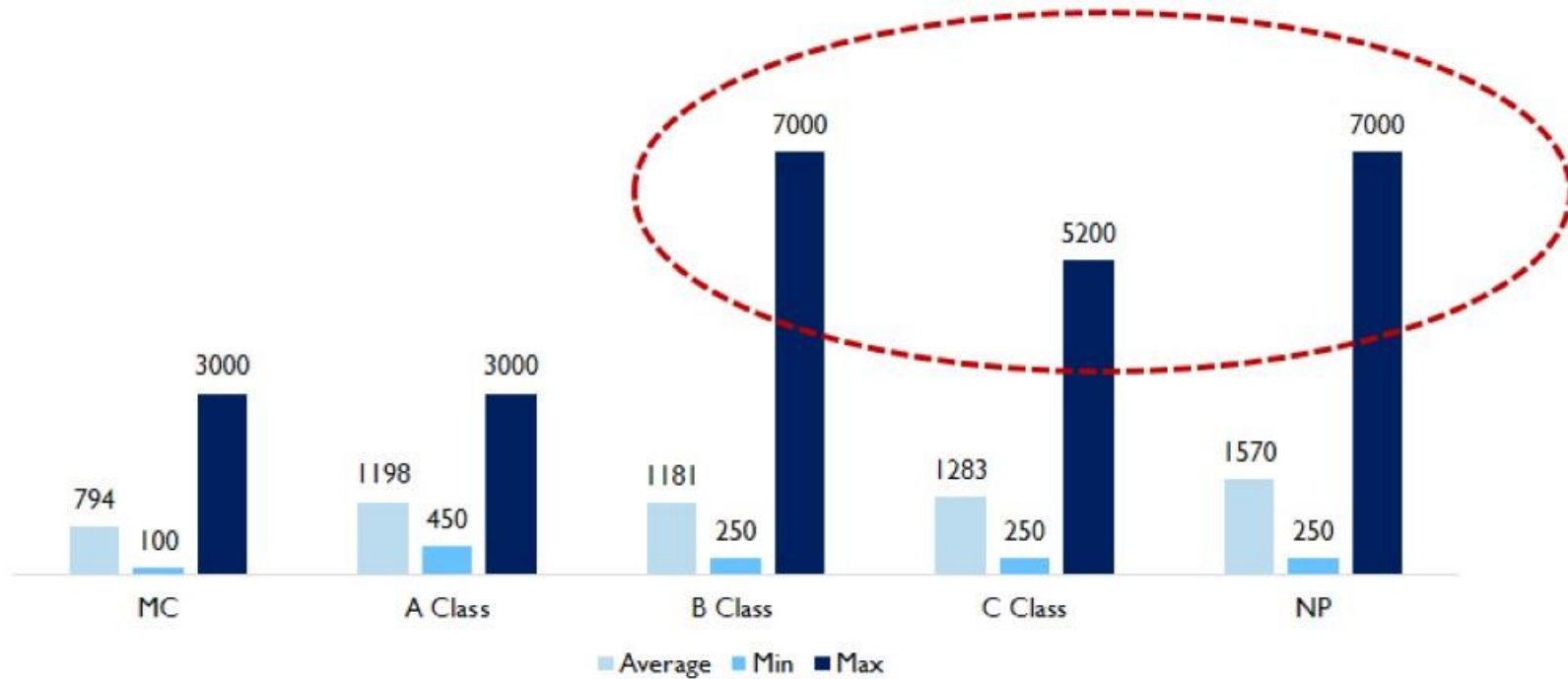
Low desludging frequency

= sludge hardens in the tank

= trucks not able to break hardened sludge+ more time to desludged septic tank

= requirement of manual labour to remove it

High user charges are paid by households, especially in smaller towns



User charges of septage emptying services in Maharashtra

Desludgers find it difficult to achieve economies of scale.

Cannot optimize trips or have assured amount of business in on-demand service

High desludging charges discourage HHs from using toilets

Adversely affects ODF sustainability

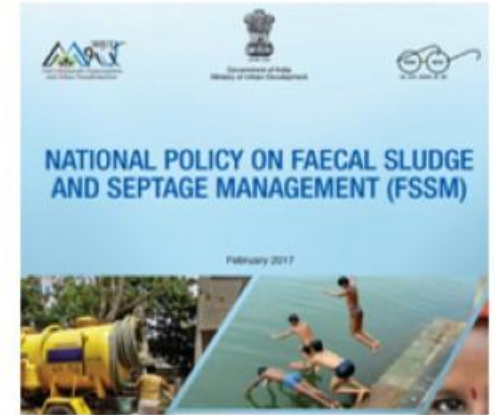
Source: PAS-SLB data 2016-17, the figures present the maximum charges present in each city category



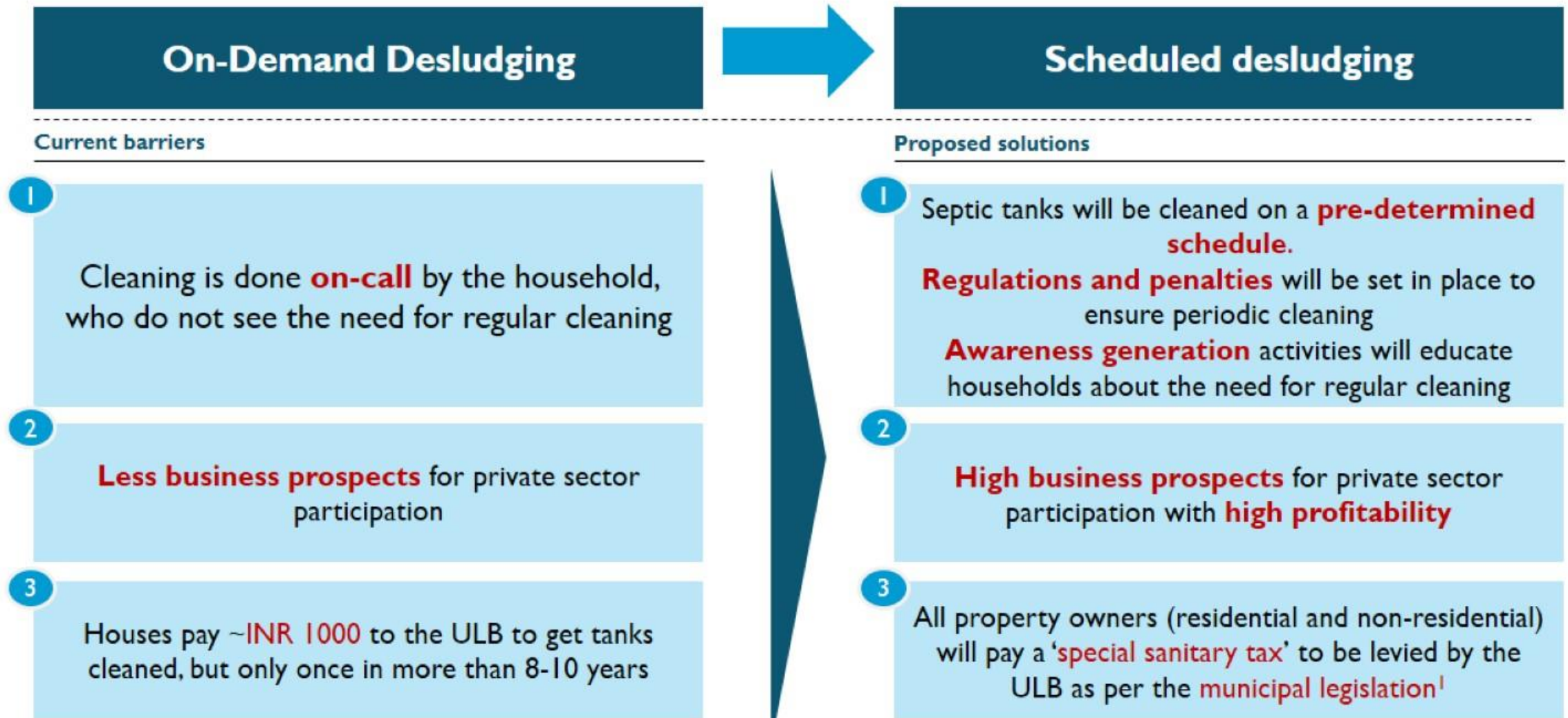
Scheduled
desludging in Wai

National Policies and guidelines advise regular cleaning of septic tanks

- While desludging frequencies vary, it is typically considered best practice to desludge tanks once every two to three years, or when the tank becomes two-thirds full.
- **National Policy on Faecal Sludge and Septage management** says Regular cleaning of septic tanks through a systematic extraction and collection procedure is essential to check environmental pollution.
- **CPHEEO** suggests septic tanks should be cleaned at least once in two - three years.



Scheduled desludging can achieve regular emptying as recommended by CPHHEO



(1) Maharashtra Municipal Councils, Nagar Panchayats and Industrial Townships Act, 1965, Chapter IX : Municipal taxation, Section 108

On May 30 2018, Wai Municipal Council in Maharashtra became the first city in India to start a Scheduled Desludging service.

Wai is small municipality with a population of 45,000 in Maharashtra.

It is possible for most cities in India to adopt this practice.



What is Scheduled Desludging?

Under a scheduled desludging service...

all septic tanks in the city are visited...

once during a **fixed cycle** and...

mandatory desludging is done...

according to a **predetermined schedule**...

by one or more **licenced service providers**...

Who are paid through **annuity payment** backed by ULB revenues

who delivers sludge safely to a **designated disposal site for treatment and reuse**



Benefits of Scheduled Emptying



Equitable and inclusive services - all households / properties are covered by services. The payment is linked to property tax.



Pricing – Services are offered at lower prices, due to efficiency gains



Behavior change - Contribution to ODF sustainability as toilet usage can increase



Manual scavenging - Removal of need for manual scavenging due to regular emptying



Infrastructure optimization – Planned schedule and frequency for all. Clustered service visits. More predictable loads for treatment facility and route optimization of trucks



Environmental benefits - Likely reduction in BOD and coliform in septic tank effluent, as well as lower likelihood of septic tank overflows

Planning for Scheduled desludging in WAI

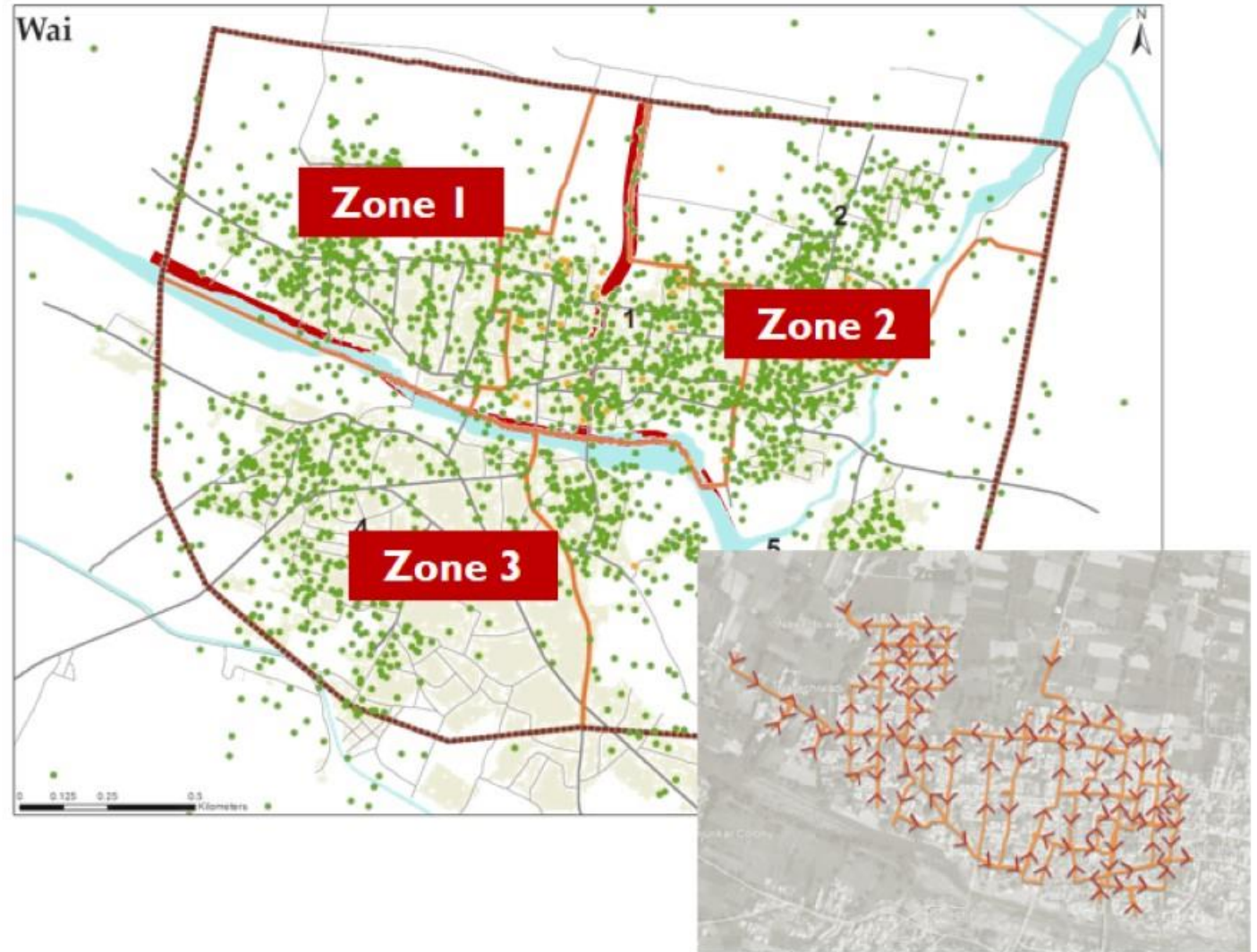
1. Zones of Emptying cycle

- The city was divided into 3 zones as per the citywide database on toilets and septic tanks.

2. Emptying Truck: Number and capacity

- Determine number and capacity of vehicles required for desludging operations.

3. Route planning



Wai council decided to involve private sector for Scheduled desludging

Preliminary discussions with potential private providers to assess interest, concerns

Ownership of assets

The private party brings their own trucks for emptying and operate them for 3 years.

Transparent bidding process through government approved process and websites

Performance linked payments

Payments based on achieving agreed targets of septic tanks emptied

Clauses to ensure safety standards - use of PPE and vigilance against manual scavenging

Fines on non-achievement of targets

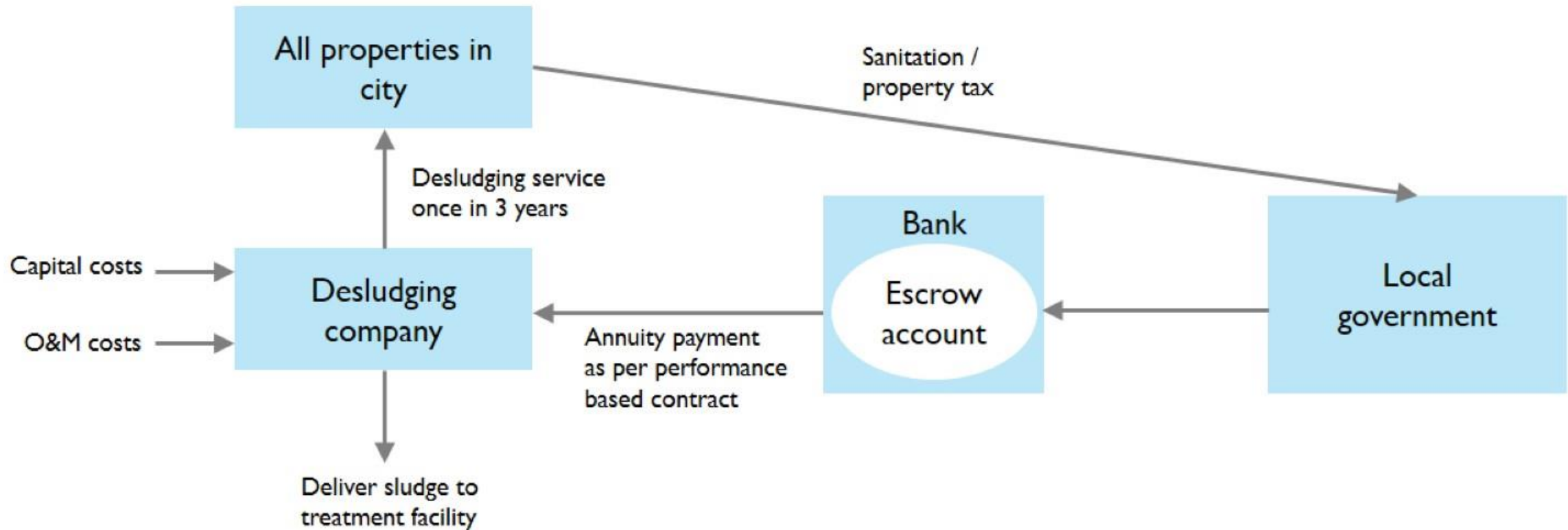
Awareness activities to be done by private contractor

Escrow mechanism – reducing late payment risk

An Escrow account is held by a third party bank.
ULB needs to maintain a fixed balance in it = 3 months of payment

Emergency emptying also included in contract

PLAM - Performance linked annuity model for scheduled desludging



Performance clauses



Targeted amount of septic tanks emptied

- Survey of all properties done
- Operator must empty pre-determined target of septic tanks in the cycle as per schedule
- After each desludging, desludging form to signed by household - Payment on submission of these forms



Compliance to safety standards and laws

- Disposal at designated site only – subject to fine
- On reaching FSTP site, desludging form must be signed again as proof of receipt - Payment on submission of these forms
- Manual labour should not happen according to law – households can complain with picture proof – violation can lead to contract termination
- Use of personal protective equipment mandatory – subject to warnings and fine



Quality of service

- Operator must clean any spillage – fine for non-addressed grievances
- There should be no damage to septic tanks during emptying

Appointment of contractor for scheduled desludging

- Sumeet Facilitates private Ltd. is a company based in Pune with offering variety of services with pan India presence.
- Appointed in Wai for scheduled emptying service through a competitive tendering process
- Service based contract for 3 years
- Operations in Wai started since 30th of May 2018



Awareness generation to ensure success

Paintings / banners in the city by WMC



Household visits by desludger with info. leaflets



WMC circulated small videos



Intimation through SMS





Wai Nagarpalika

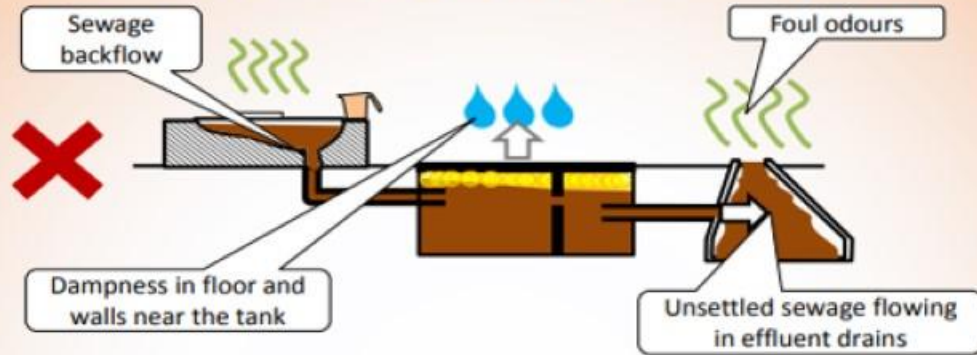
has devised a unique

“Scheduled Emptying of Septic Tanks scheme”



A first of its kind in the country, under which septic tanks of each and every property of the municipal council will be emptied at least once in every 3 years

You clean your septic tanks only when it overflows...But are you aware of the side effects of not cleaning it periodically?

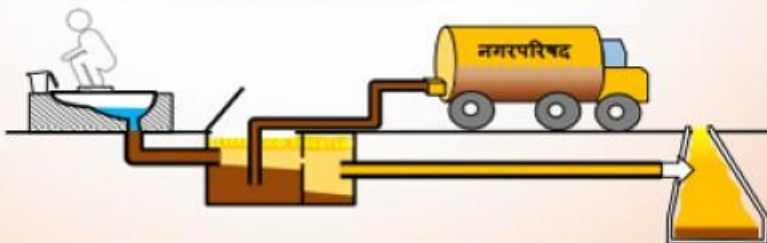


Septic tank should be emptied every 3 years
Avail Nagarpalika services to empty!

And the good news is...

Nagarpalika will get in touch with you regarding your turn for emptying as per schedule and you do not have to pay for this.

DON'T MISS YOUR TURN . . .



Remember!

✓ Service is available to each household once every 3 years

✓ Contractor will visit between 7 am and 5 pm. Be present at home and ready! Keep Septic tank cover open for visit

✗ When constructing new septic tank, do not seal cover and give proper access

✗ Contractor will call 2 days before scheduled visit

✓ Cleaner should be wearing proper safety gear

- Helmet
- Safety goggles
- Mask
- Suit with apron
- Rubber gloves
- Torch
- Gum boots

✗ No one should enter tank! Manual scavenging is prohibited by law

✓ Leave 2 inches of sludge when emptying

✗ There should not be any spillage or damage to septic tank

✓ After emptying sign the receipt given by contractor

✗ No payment is to be done to the contractor

✗ Do not put acid/harsh chemicals, or solid waste in you septic tanks

✗ There should not be any spillage in the city or disposal in drains

✓ Septage should only be disposed at designated treatment plant

Systematic emptying process followed in Wai



1 All the properties in the city surveyed to collect sanitation data



2 Route plan prepared



3 Households informed about the visit a day earlier. Expected to open covers of their septic tanks at the time of visit.



4 Households visited as per the route plan between 7am to 5 pm



5 Form to be signed by household once the tank is emptied



6 Septage carried to the treatment plant and record maintained

Performance linked Monitoring Mechanism

I **Daily report** on septic tanks emptied by Sumeet team to council

WMC's copy

Property holder's copy

Treatment plant's copy

Sumeet team's copy

Collection and transport record form Serial No: _____

i. Details of Waste Generator

- Name :
- Phone Number :
- Address :
- Property Tax Number :
- Type of building : Individual house / Apartment/ Commercial complex / Other (specify) _____
- Was the Septic tank cover open (Yes / No) _____

ii. Identification of Waste:

- Volume _____ liters
- Type : _____ Septic Tank _____ Others _____
- Source : Residential/Commercial/Restaurant/Others _____
- Septic tank cover placed back on Septic tank : Yes / No _____
- Septic tank emptied : Yes / No _____
- Any kind of deficiencies, missing pipes or fittings, improper manholes or access covers, any other cracks or damage observed : _____

The undersigned being duly authorized does hereby certify to the accuracy of the source and type of Fecal Sludge and septage collected and transported.

Date: _____ Time: _____, Name and Signature - Property owner: _____

iii. Details of Sumeet Facilities Operator

- Name of Driver :
- Permit :
- Vehicle License no :
- Truck Capacity :
- Pump Out Date :
- No. of trips taken to empty the septic tank:

The above described wastewater was picked up and hauled by me to the disposal facility named below and was discharged. I certify that the foregoing is true and correct.

Name and Signature of authorized transport agent and title: _____

iv) Acceptance by Wai Municipality's authorized FSTP

The above transporter delivered the described Fecal sludge and Septage to this treatment facility and it was accepted.

The waste was contaminated with solid waste or other kinds of waste: YES / No _____

Details (if yes): _____

No of trips received at the FSTP for this form: _____

Septage received at treatment plant: Date: _____ Time : _____, Volume : _____ liters

Name and Signature of authorized treatment plant operator signatory and title: _____

NOTE: SUBJECT TO THE TERMS AND CONDITIONS OF WAI MUNICIPALITY

Soon paper based monitoring system will be replaced by online monitoring system

Performance linked Monitoring Mechanism

2 Monthly report of the septic tanks emptied by Sumeet team to council

S N	Property Number	Property Address and Contact	Date of Cleaning	Access Cover Placed (Y/N)	Septic Tank Cleaned (Y/N)	<u>Septage</u> Received at Treatment Plant (Y/N)	Contaminated Waste (Y/N)
1							
2							
3							

3 Random checks by SI of the properties whose septic tanks are emptied

4 Release of payment only after work is done as per satisfaction and as per the target achieved by Sumeet team



Sanitab is being used by CEPT team to help WMC gather data related to onsite sanitation system and monitor the emptying process effectively

IT enabled monitoring and database creation

“Real time” monitoring
No need to process data
for results



Easy to Operate,
Reduce paper work,
Minimize human error



Can view progress easily
and process payments



Photo stamping,
Geo stamping,
Signatures



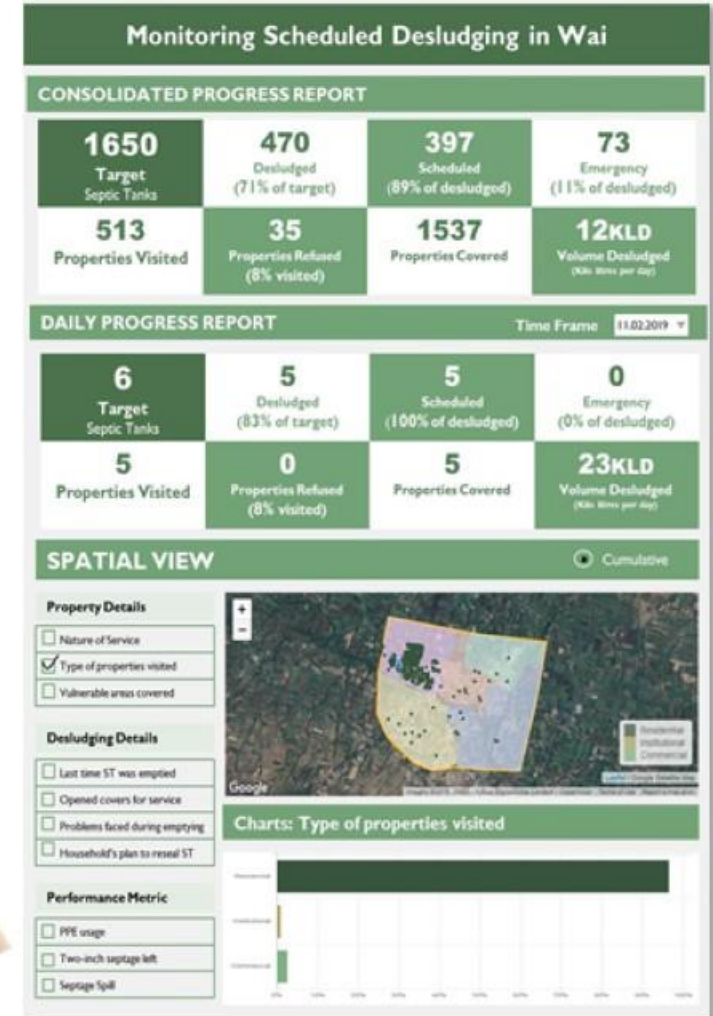
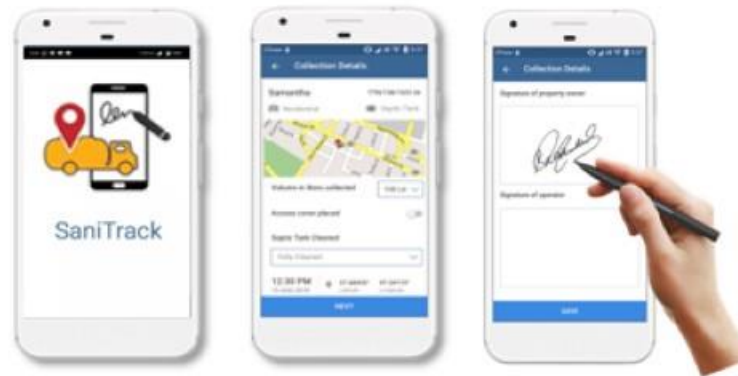
Unique database



SaniTab



SaniTrack



What has been achieved by scheduled desludging in Wai

Results after 1 year of
scheduled emptying

612
service visits

1510
properties in the
city covered

93%
properties
serviced

7% properties
refused

Unique database
of **550+** septic
tanks in the
city

521
scheduled
desludgings

92
emergency
desludgings

28 Community
toilets serviced
weekly

84%
prepared
with access covers open

~4.8 Million litres
of septage
delivered safely to
treatment facility

Scheduled desludging in Wai, Maharashtra

Before

- ✓ 90 septic tanks desludged in last whole year (7-8 septic tanks per month)
- ✓ No records of how much quantity of septage collected dumped untreated in open
- ✓ No Sanitation workers wear PPE
- ✓ Households pay high user charges (Rs. 1500 to 2000 per trip)

After

- ✓ 521 scheduled desludgings done in 1 year. Target is to desludge 7-8 septic tanks every day. 1500 properties covered total
- ✓ 4.8 Million liter septage delivered to treatment facility
- ✓ Sanitation workers now wear safety gear regularly
- ✓ Households pay sanitation tax of Rs. 300 per year + transfers from property tax



First day of operations for the private emptier



Faecal sludge treatment plant inaugurated to receive collected septage



Residents of first household to receive service along with operations team



Initial Challenges and Solutions

1 Breaking of floor tiles/concrete to access septic tanks



- Initially there was resistant from citizen as they had to break access covers
- Opening access covers became a part of awareness drive.
- The Municipality provided a **mason** for opening access covers



93% properties now ready with open access covers

2 Solidified Septage in tanks



- Vehicle started breaking down frequently because of solidify septage
- Emptying of one septic tanks were taking longer time
- The private sector is going to bring new improved vehicle which can break solidified septage

New improved high jetting desludging vehicle

Initial Challenges and Solutions

3 Access issue in narrow lanes



- Access of septic tanks in narrow lanes
- An smaller truck with a capacity of 600 liters was procured for accessing properties in narrow lanes
- Long pipes are also used for accessing septic tanks.

4

Locked properties/ Properties that ask to rescheduled desludging

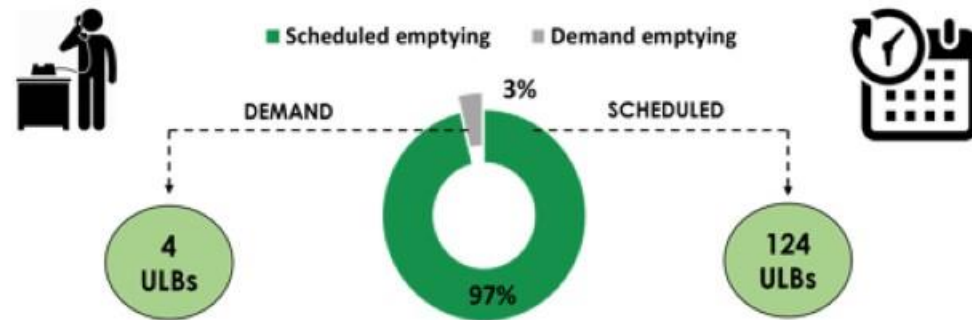
15 day period set to cover rescheduled properties



Scaling up efforts of scheduled desludging

“Which type will you implement in your city?”

Compiled from responses of cities during state level workshops in Maharashtra



- Training of 130 ULBs selected from Maharashtra for developing FSSM plans
- 97% cities have shown readiness for implementation of scheduled emptying

- After Wai, Sinnar city has also begun scheduled emptying operations
- Following suite - Tazgaon ULB invited bids following this model
- Maharashtra government focusing on FSSM after becoming ODF. Sustainability charter stresses importance of FSSM in ODF sustainability
- Resource materials available for cities
 - Model tender documents
 - Case studies of Wai and Sinnar
 - Awareness materials
 - Monitoring tool being prepared
- **Interest by other States/cities:**
 - Warangal in AP,
 - Puri in Odisha

Awareness video on scheduled desludging

<https://youtu.be/HTNBw5d3j9A>



Thank you

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About us

The Center for Water and Sanitation (C-WAS) at CEPT University carries out various activities – action research, training, advocacy to enable state and local governments to improve delivery of services.

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