



Citywide Inclusive Sanitation Through Scheduled Desludging Services in India

Professionalised climate resilient and safe desludging

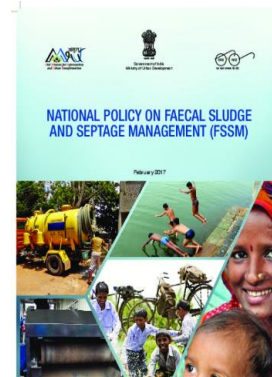
UNC 2023 Water and Health Conference
25th October, 2023

Emerging emphasis on FSSM in India

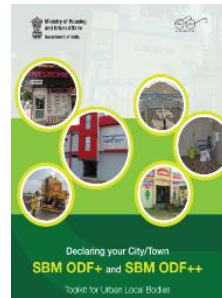
- ~Two-thirds of urban population in India are dependent on FSSM
- Over the past few years FSSM has received increasing attention and a national FSSM policy has been adopted.
- Government of India has undertaken several policy and programme initiatives like SBM , AMRUT, JJM.



SDG 6



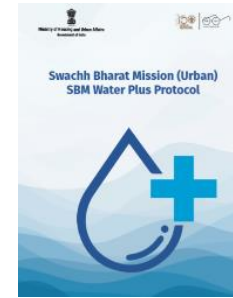
National policy on FSSM



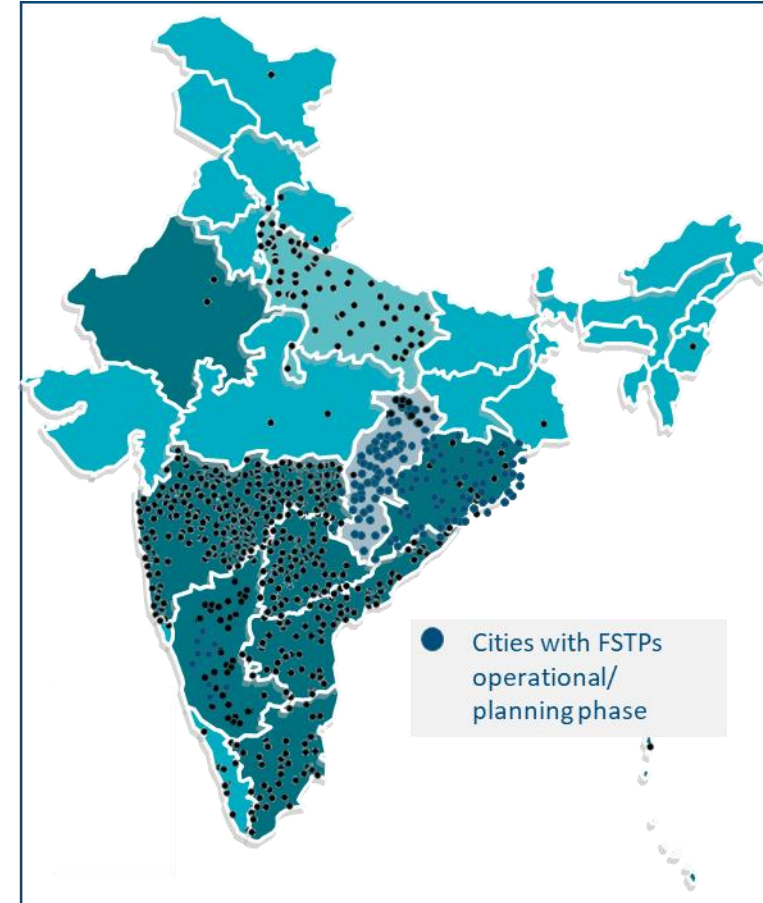
National ODF+ and ODF++ protocol



Swachh Survekshan

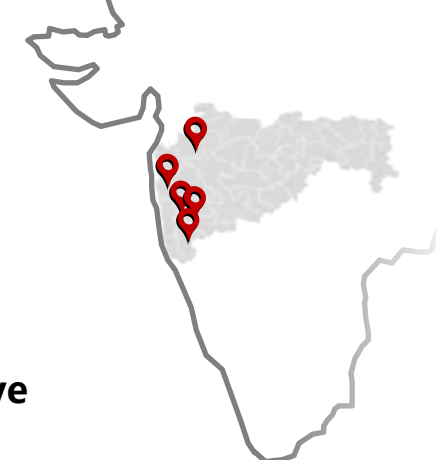


Water Plus



~700+ FSTPs at planning or implementation phase in India

Ideas demonstrated in these cities have become models for FSSM in India



Wai, Sinnar

Comprehensive City Sanitation planning



Pioneer cities in India to implement citywide scheduled emptying of septic tanks



City Wide Inclusive Sanitation



Scheduled emptying of septic tanks



Involving Private sector for emptying operations



Levying a Sanitation tax to support operations



Faecal Sludge and Septage treatment facility (FSTP)



Use of Own (DBO) / Philanthropy funds for FSTPs



Reuse of treated wastewater



Online monitoring systems for emptying and treatment



Municipal council commitment and leadership



Gender inclusivity in sanitation



Involvement of SHGs



San Workers training



Equitable Services for Slums and Vulnerable areas



Wai and Sinnar are the first cities in India to implement scheduled desludging of septic tanks

Small & Medium towns in Maharashtra

Population
Wai ~43,000
Sinnar ~72,000 ,

Declared ODF in 2016 - 2017

Declared ODF++
2018-2019

Representative of 4000+ small and medium cities of India

Sinnar



Wai

Conventional practice of emergency complaint redressal system with high user charges

Low frequency of desludging

On-demand desludging
= only done when septic tanks overflow
= frequency of 8-10 years+
CPHEEO norm is 2-3 years

Environmental impacts of poor-quality effluent

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

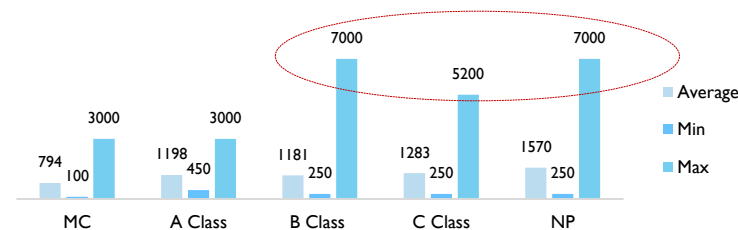
Increased chances of Manual Scavenging

Low desludging frequency
= sludge hardens in the tank
= requirement of manual labour to remove it

High costs per desludging

Not affordable to all
Desludgers find it difficult to achieve economies of scale.
Cannot optimize trips or have assured amount of business in on-demand service

Small towns pay higher prices



High desludging charges may discourage HHs from using toilets

Adversely affects ODF sustainability

Move from a consumer complaint redressal system to a scheduled service

On-Demand Basis

Cleaning is done **on-call** by the household, who do not see the need for regular cleaning

The **cleaning services** of the ULB are currently treated as a **complaint redressal** system for overflowing septic tanks rather than a regular cleaning and maintenance service.

The **ULBs operates the trucks** when the demand arises.

Households generally pay a certain amount once in >8-10 years to get tanks cleaned during the time of overflow.

Scheduled Practice

Septic tanks will be cleaned on a **pre-determined schedule**.

Regulations and penalties will be set in place to ensure **periodic cleaning**

Awareness generation activities will educate households about the need for regular cleaning

ULB will require an additional **number of trucks to meet service standards** (which can be operated by a **private player**)

Local taxes levied by the ULB will be used to **recover the operating expenses** for regular cleaning.

A Government resolution was passed to implement FSSM plan in their cities through a council resolution

वाई नगरपरिषद सर्वसाधारण सभा ठराव क्रमांक ५ दिनांक १८-०५-२०१५
 ठराव क्रमांक ५

विषय - मैला व्यवस्थापन आराखडा तयार करून त्याची अंमलबजावणी करणे आणि हुडको कॅम्पलपाकडे निर्भी मंजूरीसाठी प्रस्ताव सादर करणे बाबत निर्णय घेणे.

ठराव - २०१५ च्या जनसंख्येनुसार ८,००९ कुटुंबांपैकी ५,१२५ कुटुंबांकरिता वैयक्तिक सोबाचाने असून त्यातील ४,४२५ कुटुंबांची सोबाचाने ही सेंटिक टॅम्बलना जोडलेली आहेत. बाई नगरपालिकेने केलेल्या विद्येपचाररम्यान असे लक्षात आले की, पुढील स्तरावरील बहुसंख्य सेंटिक टॅम्बल हे आयएस नियमावली आणि सीपीएचईईसी माहितीपुस्तिका यांनी सुचित केलेल्या आराखडा नियमानुसार नाहीत. बहुसंख्य सेंटिक टॅम्बल हे जोडता आकाराचे होते ज्यामुळे ते एप्रिल ८-१० वर्षा काळावधीपेक्षा अधिक काळात ही स्वरूढ केले जात आहेत किंवा ते काहीच स्वरूढ केलेले नाहीत. यामुळे सेंटिक टॅम्बलमध्ये घन पदार्थ जमा होतात आणि सेंटिक टॅम्बलची प्रक्रिया कार्याचलनात / अमलात कमी होते. असा सेंटिक टॅम्बलमधून वेगळा-वा सोडण्यापासत बीओडीचे प्रमाण अधिक असते ज्यामुळे याच्या संबंधित वेगळा-वा जालीच्या आरोग्यावर त्याचा परिणाम होऊ शकतो. तसेच, असा प्रक्रिया न केलेल्या वेगळा-वाची रस्त्याच्या कडेच्या कटारांमार्फत कुल्ला नदीत पाटांद्वारे वेत विच्छेदातही जाऊ शकते.

सद्यस्थितीत, नगरपालिका ही कुटुंबांना सेंटिक टॅम्बल स्वरूढ करण्याची सेवा स. १००० पर्यंत देऊन मुल्यामध्ये मासालीनुसार पुरविते आणि त्यातील वेगळा-वा प्रक्रिया न करणाऱ्या घनकचरा जमा करणाऱ्या ठिकाणी (इमिंग साईटवर) त्याची विच्छेदात लावली जाते. पर्यावरण तसेच संपुष्ट / प्राणी यांच्या आरोग्यावर याचे परिणाम होतील. सेंटिक टॅम्बलची अधिक नियमित स्वरूढता करण्यासाठी आणि प्रक्रिया न केलेल्या मैला तयार टाकणे टाळण्यासाठी नियमित सेंटिक टॅम्बल स्वरूढ करण्याच्या वेळेची तसेच वेळापत्रकिया प्रकल्पाची योजना आखणे आवश्यक आहे. यासाठी विकास मंत्रालयाच्या तशीच मैला व्यवस्थापनविषयक सल्लामार समितीने सिफारस केली आहे की, सेंटिक टॅम्बल दर तीन वर्षांच्या काळावधीत स्वरूढ केले पाहिजेत, त्या वेळावर प्रक्रिया केली गेली पाहिजे व घन त्याचा पुनर्वापर केला गेवा पाहिजे. हे करण्याचे पायले म्हणजे - अधिक काळावधीनंतर सेंटिक टॅम्बल स्वरूढ करण्याच्या कालावधी सेंटिक टॅम्बलची प्रक्रिया कार्याचलनात / अमलात कार्याचलन जाणार नाही. योजनेच्या दितीने सेंटिक टॅम्बल स्वरूढ केले जातील. सेंटिक टॅम्बल स्वरूढ करण्यातून निघित मलमूलाचा ओघ मुक्त होईल आणि प्रक्रिया केलेल्या वेगळा-वाची विडी करत वेईल. म्हणून नगरपालिकेने बाईसाठी सार्वजनिक वेळा व्यवस्थापन योजनेत कार्याचलन करणे आवश्यक आहे.

या ठरावानुसार असा निर्णय घेतलेत येत आहे की, सेंटिक टॅम्बल योजनेच्या दितीने नियमितपणे स्वरूढ करण्याची सेवा पुरविल्याचा आणि सध्दे नंबर २३८ (मुगा) / २५५ (नवीन) येथील घनकचरा टाकण्याच्या ठिकाणी (इमिंग साईटवर) वेळापत्रकिया सुविधा/ प्रकल्प उभारण्याचा निर्णय नगरपालिकेने घेतला आहे. सेंटिक टॅम्बल स्वरूढ करण्याची सेवा पुरविले (दुक घेणे व कार्याचलने) व वेळापत्रकिया प्रकल्प कार्याचलने हे खाजगी संस्थे/ संस्थांमार्फत केले जाईल. मैला व्यवस्थापनामध्ये खाजगी संस्थांचा हा सहाय्य करणारा/ टिकवून ठेवण्यासाठी, साक्षरता/ शिक्षणीकर कर त्यातील यात. तसेच सर्व योजनेत घासणी नगरपालिकेने ठरवून घेतलेल्या वेळापत्रकाप्रमाणे त्यांचे सेंटिक टॅम्बल तीन वर्षांनुसृत एकदा स्वरूढ करून घेणे अंमलबजावणी पाहिजे. सेंटिक टॅम्बल नियमितपणे स्वरूढ करून वेगळा-वा त्यांना आरूढ उपकरणा वेगळा-वा तपासणुकांची (manholes) ठरवून करून घेण्याची व याह्यांसाठी योग्य असा योजनेच रस्ता देण्याची जबाबदारी यानमला घारणाची राहिल. "Onsite Sanitation" स्वरूढता राखिल्यासाठी नवीन नियमावली व bye-laws बनविल्यात यावेत.

या ठरावानुसार असा निर्णय घेतलेत येत आहे की, खाजगी संस्थांच्या सहाय्यातून संबंधीत वेळा व्यवस्थापनाची कार्याचलनी करण्यासाठी व त्याच्या याला अंमलबजावणीसाठी योग्य असे कर, नियमावली व जबाबेत लागू करण्यात मंजुरी देण्यात येत आहे. तसेच सार वेळापत्रकिया प्रकल्पाचा 'सल्लामार प्रकल्प आराखडा' बनवून निर्भी प्रांतीसाठी HUDCO या संस्थेकडे सादर करण्याचेही या ठरावाद्वारे घेतलेत येत आहे.

सूचक - मा.सौ. सुरेखा विठ्ठलराव जतन सही XXX

अनुमोदक - मा.सौ. नर्मिना दिव्य उर्फ कुतु सही XXX

ड.स.मंजूर सत्यप्रत
 सही XXX
 अध्यक्ष
 बाई नगरपरिषद बाई

सत्यप्रत
 मुख्याधिकारी
 बाई नगरपरिषद बाई



The resolution covers aspects like:

- ❑ Citywide FSSM
- ❑ Involving Private sector
- ❑ Scheduled cleaning
- ❑ Land for treatment facility
- ❑ Taxes to be levied

1st City in INDIA
 to have passed such a resolution ...

Inclusive services



Includes those not connected to sewer networks



Mandatory desludging service but not linked to "user charges" – service to ALL



Special care to service vulnerable areas – long pipes for narrow lanes



Equitable - no charges at time of desludging - benefiting low-income areas - sustainably financed through equitable "sanitation tax"



Planning for scheduled desludging

- **Zones of Emptying cycle**

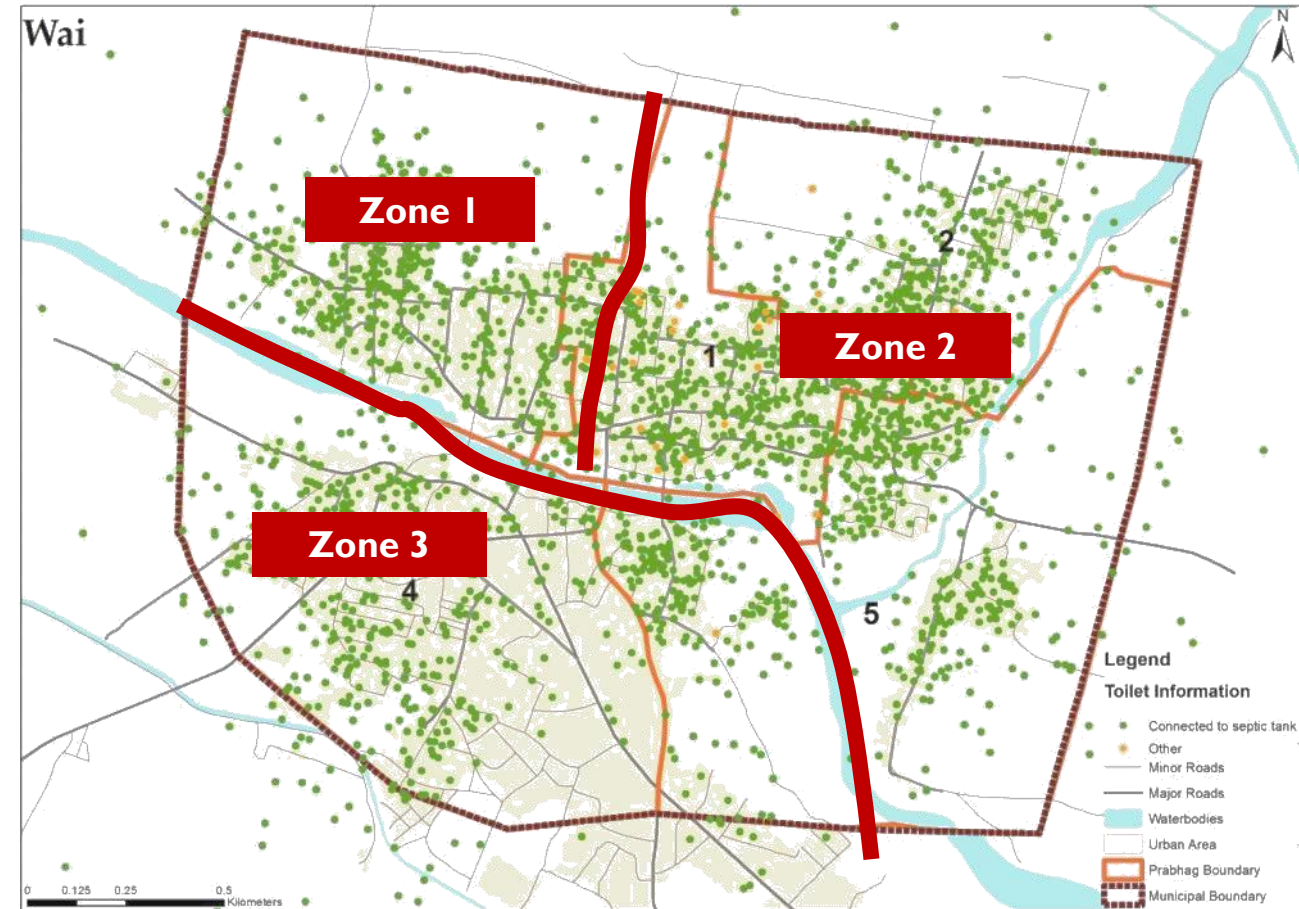
- The city was divided into 3 zones as per the citywide database on toilets and septic tanks.

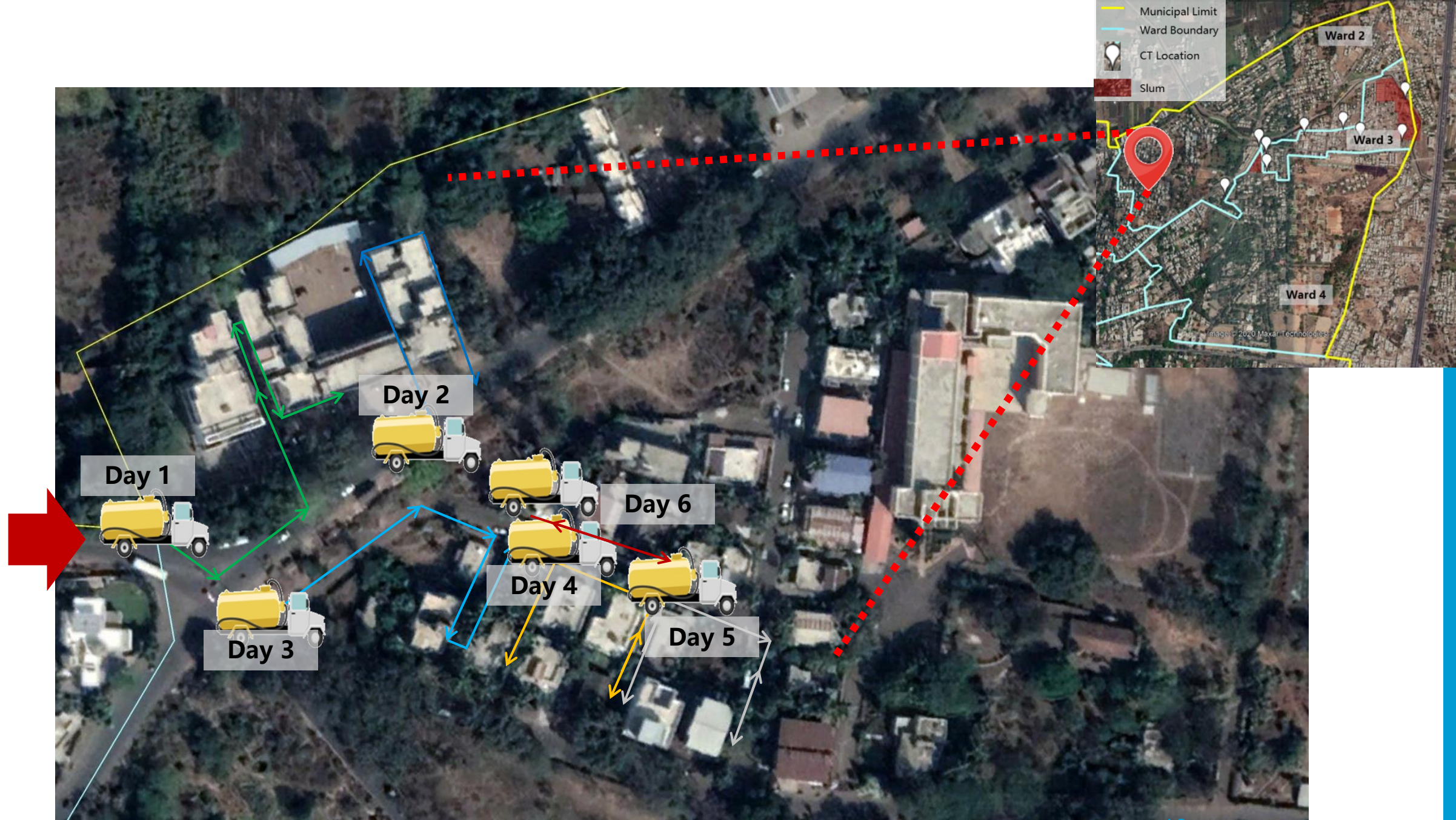
- **Emptying Truck: Number and capacity**

- Number and capacity of vehicles required for desludging operations.

- **Route planning**

- Deciding the truck movement within the zone





Wai and Sinnar LG involved private operators for providing inclusive scheduled desludging services

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

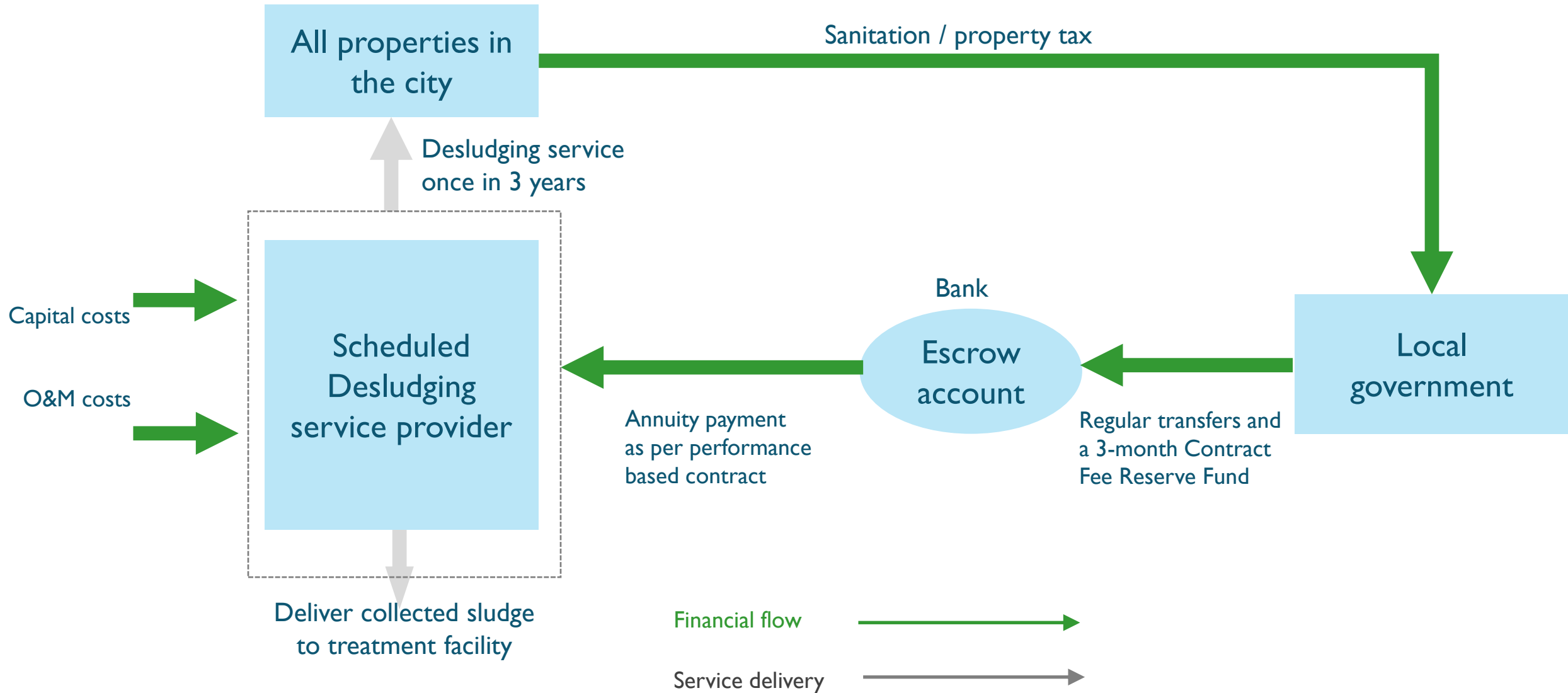
Escrow mechanism – reducing late payment risk

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

Performance Linked Annuity Model (PLAM) was adopted



Cities levied differential sanitation tax on all properties for financing FSSM services

Differential taxation rates

Residential Properties **with / without toilets** –
\$ 4 / annum

Non Residential Properties **with toilets** –
\$ 4 / toilet seat

Non-residential properties without toilets –
\$ 1.5 / annum

Executive order for taxation

सिन्नर नगरपरिषद, सिन्नर मे. विशेष सभा
ठराव क्रमांक ६१ दिनांक २४/०३/२०१७

विषय क्रमांक ५) सिन्नर नगरपरिषद तर्फे आकारण्यात येणारा स्वच्छता कर, घनकचरा व्यवस्थापन कर व मैला व्यवस्थापन कर यांची पुनःरचना करणेबाबत चर्चा करून निर्णय घेणे.

प्रस्तावाचा मजकूर - कार्यालयीन टिपणीचे सभागृहात चर्चा होयुन सिन्नर नगरपरिषदे तर्फे सद्या आकारण्यात येणारे विशेष स्वच्छता कर, विशेष घनकचरा कर व मैला व्यवस्थापन कर यांची पुनःरचना करून यापुढे सन २०१७-१८ या आर्थिक वर्षापासून खालील प्रमाणे मैला व्यवस्थापन कर व घनकचरा कर म्हणून आकारण्यात यावेत व त्याप्रमाणे बिल तयार करून मालमत्ता धारकांना देण्यात यावेत.

वार्षिक कराचे दर (रुपये)

अ.क्र.	कराचे नांव	निवासी मालमत्ता		बिगर निवासी मालमत्ता	
		शौचालय असलेले	शौचालय नसलेले	शौचालय असलेले	शौचालय नसलेले
१.	मैला व्यवस्थापन कर	३००/- (प्रति सिट)	३००/-	३००/- (प्रति सिट)	१००/-

वार्षिक कराचे दर (रुपये)

अ.क्र.	कराचे नांव	निवासी	बिगर निवासी
१	घनकचरा व्यवस्थापन कर	१००/-	३००/-

वरीलप्रमाणे कर आकारणी करणेस सदरची सभा सर्वानुमते मान्यता देत आहेत. त्याप्रमाणे प्रशासकीय कार्यवाही करण्यात यावी.

सुचक :- श्री. लोखंडे गो.वि.
अनुमोदन :- श्री. चोथवे प्र.झुं.
ठराव सर्वानुमते मंजूर

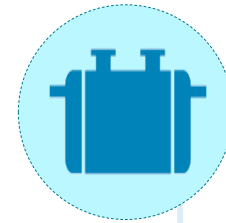



अध्यक्ष,
सिन्नर नगरपरिषद, सिन्नर

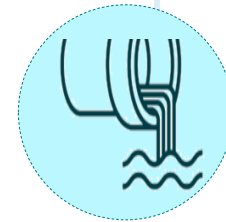
Now moving towards levying **Sanitation tax as a percentage of property tax** to make it **more equitable**. . .



Improved performance of septic tanks after desludging resulting in improved drain water quality flowing into river



Reduction in Nitrogen, Total Suspended solids and Organic loads



50-60% decrease in the value of TSS and BOD load in desludged areas



Improvement in quality of river water and ground water

Solar FSTP setup in the city to treat the septage and treated WW reused for urban forest and landscaping



Wai, Maharashtra

Funded through grant



Sinnar, Maharashtra

Funded by city's own funds. Private enterprise contracted to Build-Operate-Transfer

50+ ML septage treated at these FSTP facilities

FSTP plant is energy +ve

Performance linked Monitoring Mechanism

Daily report on septic tanks emptied by private operators to council

101

WMC's copy

101

Property holder's copy

101

Treatment plant's copy

101

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

Add-on online monitoring system added to paper-based monitoring system

Accountability strengthened through IT enabled monitoring systems for FSSM

“Real time” monitoring



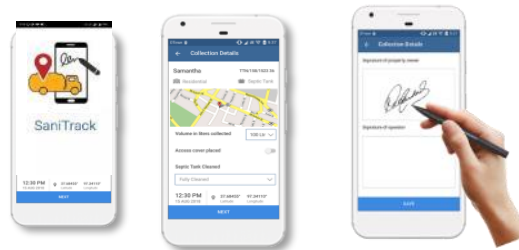
SaniTab



Easy to Operate



SaniTrack



Monitors performance of FSSM services



SanQ



Photo stamping, Geo stamping, Signatures



Unique database



Logged In User: CEPT Logout

CONSOLIDATED PROGRESS REPORT

3573 Septic Tanks Remaining To Be Desludged	2427 Desludged	2168 Scheduled	259 Emergency
2614 Service Visits	230 Properties Refused	5066 Properties Covered	7445 KL Volume Desludged

SPATIAL VIEW

Cumulative

Property Details

- Nature of Service
- Type of properties visited
- Vulnerable areas covered

Desludging Details

- Last time ST was emptied
- Opened covers for service
- Problems faced during emptying
- Household's plan to reseat ST

Performance Metric

- PPE Usage
- Two-inch septage left

Charts: Nature of Service

Awareness generation a key feature for success of high uptake of FSSM services

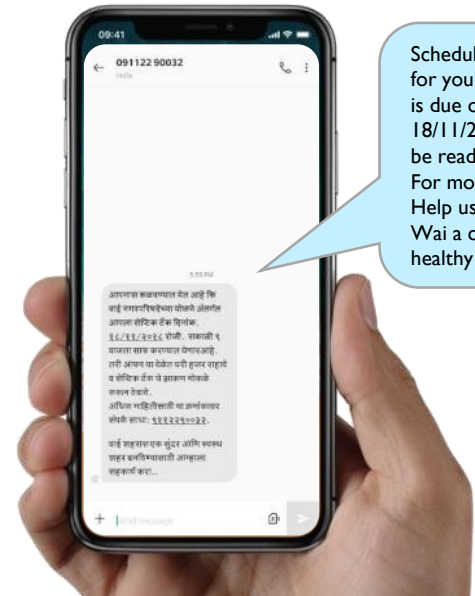
Paintings / banners in the city by WMC



Household visits by desludger with info. leaflets

Cities circulated small videos

Intimation through SMS



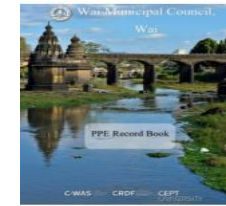
Empowering women for inclusive FSSM service delivery

- Building capacities of Elected Women Representatives (EWRs) for effective functioning and participation in local governance focusing on FSSM.
- Celebrating Women Sanitation champions in the city and acknowledging their participation
- Sensitizing women at household level regarding the process of desludging



Sanitation workers safety

- Registers for PPE usage and replacement
- SaniTab / SaniTrack dashboard monitors the PPE usage of desludgers on daily basis.
- PPE flyer has been prepared for various sanitation activities and shared with stakeholders
- Training workshop along with a health camp was organized for all sanitation workers. Also, PPEs were distributed during this event.
- Council has introduced clauses related to provision, usage and monitoring of PPEs in all their upcoming contracts for Sanitation based on experience of this scheduled desludging contract

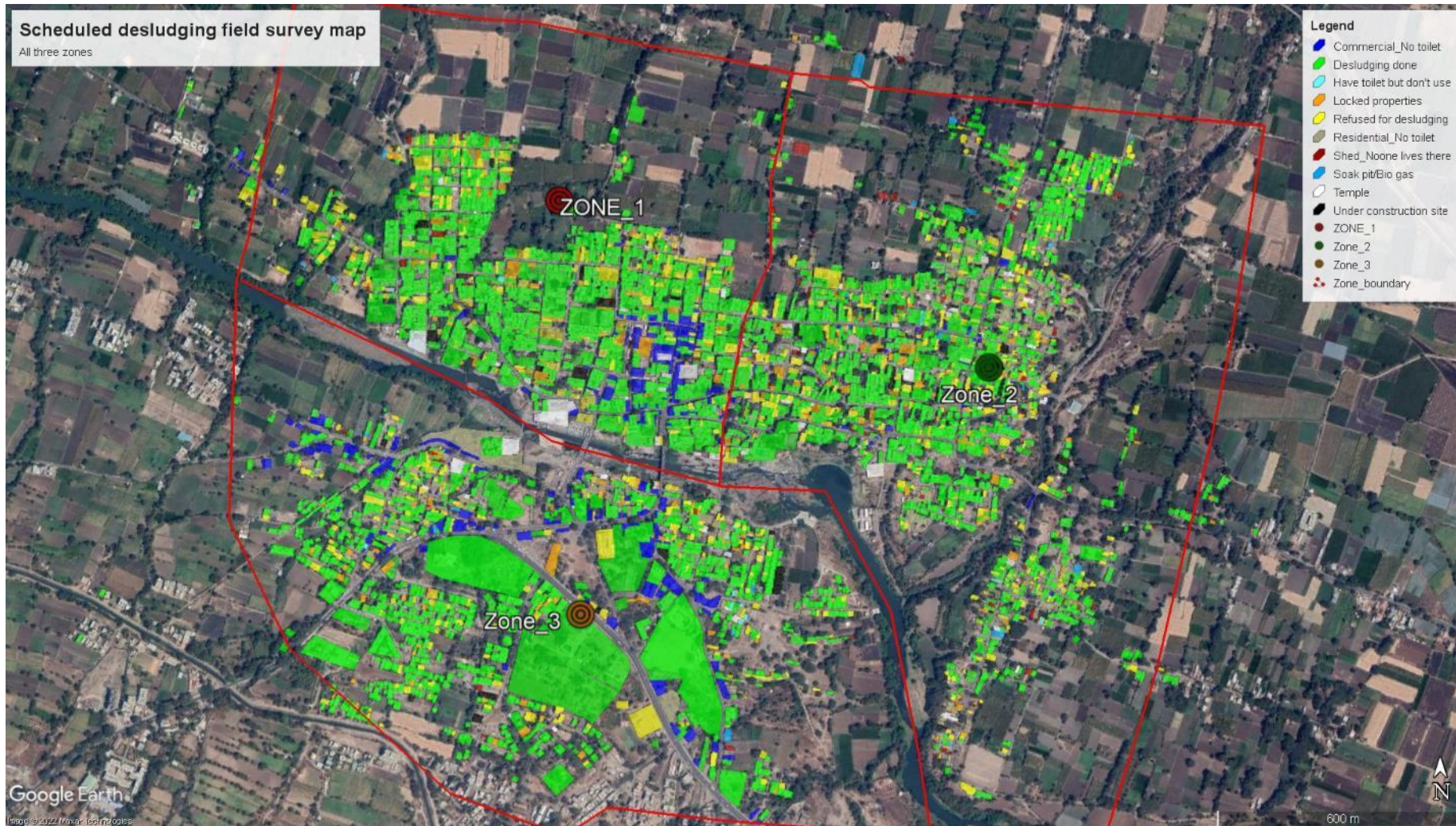


Name of the worker: _____							Remark	Sign
Helmet	Safety goggles	Nose Mask	Hand Gloves	Jacket	Safety Shoes	Gum-boots		
Date	Date	Date	Date	Date	Date	Date	PPE set given	Sign
			Date				Hand gloves are torn.	Sign

Sample of formats prepared for capturing replacement and distribution of PPE in the PPE record book.



In January 2022, Wai successfully completed its first 3-year cycle of scheduled desludging



3600+
Septic tanks served

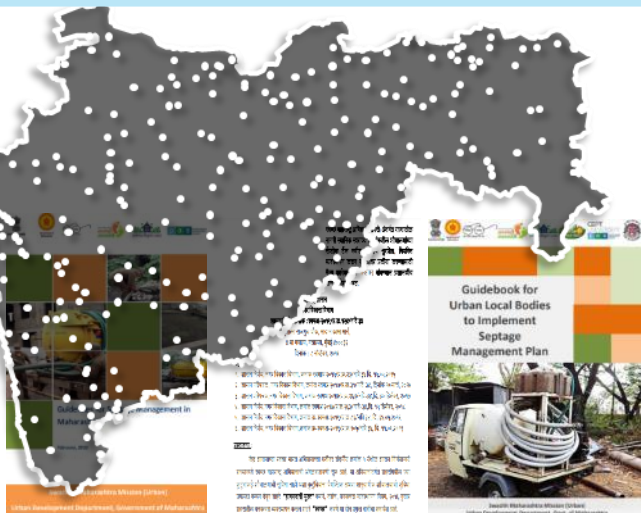
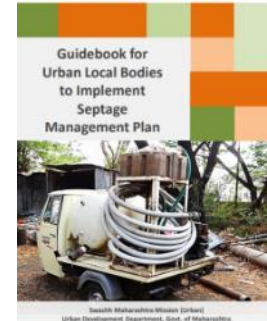
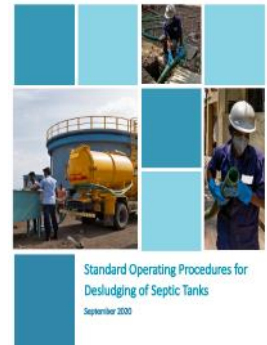
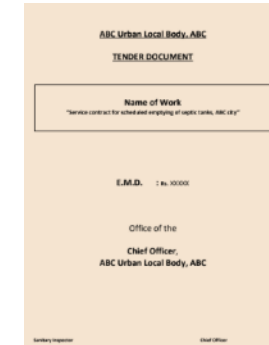
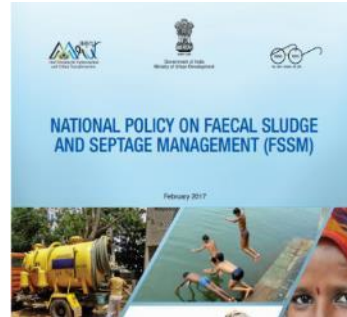
6800+
Properties covered

95%
Acceptance rate of services

19 million
Liters of septage treated

Scaling up . . . Not just one-off pilots!

Successfully demonstrating in other few cities. Exploring in more...



Scaling up lessons across Maharashtra through policies, guidelines and implementation support

Influenced National Policies and guidelines

Tools for training ULBs across India

Model Tenders and SoPs for FSSM used by ULBs

Partnerships and Collaboration to attain Scale

BILL & MELINDA
GATES *foundation*

HSBC 



Government of
Maharashtra



Department
for International
Development

CWAS CENTER
FOR WATER
AND SANITATION

CRDF CEPT RESEARCH
AND DEVELOPMENT
FOUNDATION

CEPT
UNIVERSITY


NFSSM
Alliance

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.

CWAS

Centre for
Water and
Sanitation

CRDF

Centre for
Research and
Development

CEPT

UNIVERSITY



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pas.org.in/web/ceptpas/pase-news
Sign up: tiny.cc/pasenews

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 and the pricing is much less than the distress fee that households had to pay previously



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



No manual labour - Removal of need for manual labour 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 in septic tank effluent, as well as lower likelihood of septic tank overflows