

A photograph of two workers in safety gear (hard hats, masks, and gloves) handling a green hose in an urban alleyway. The worker on the right is wearing a yellow hard hat and a blue jacket, while the worker on the left is wearing a white hard hat and a blue jacket. They are standing in front of a chain-link fence. In the background, a yellow truck is visible on a narrow street. A motorcycle is parked on the left side of the alleyway.

Implementing Scheduled desludging

Step-Step Approach - based on experience of cities from Maharashtra

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Maharashtra has taken a two-pronged approach for scaling up FSSM : 71 cities practicing Co-treatment and 200+ FSTPs operational . . .

Co-treatment at own/near by STP Cities - 71

Independent FSTP Cities - 323

Category A cities:
ULBs with STPs

Category B cities:
Co-treatment at nearby STPs

Category C cities:
Independent FSTPs

Co-treatment at own STP and accept FS
from nearby cities

Co-treatment at nearby STPs within 20
km

Remaining ULBs will treat septage at
FSTPs

Functional STPs

35 cities

Co-treat at nearby STPs

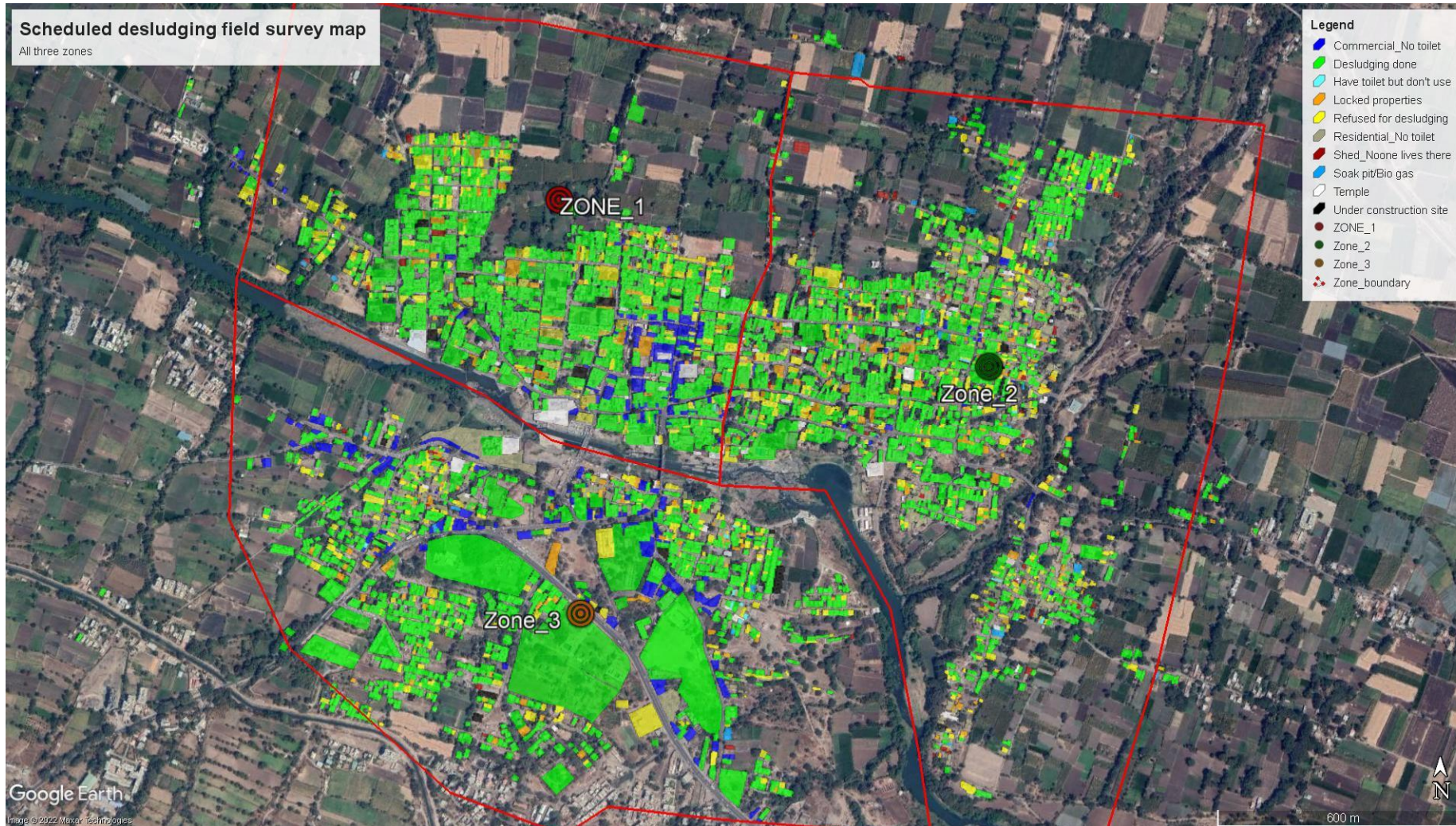
36 cities

Independent FSTP

323 cities

State level policy for taking up scheduled desludging across all 390 + cities . . .

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



3600+
Septic tanks served

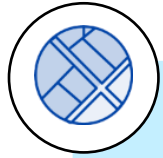
6800+
Properties covered

95%
Acceptance rate of services

19 million
Liters of septage treated

Question – What steps are required for replication ...

How do I plan for a scheduled desludging service in my city?



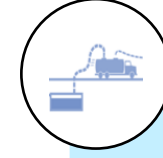
1. Understanding Sanitation coverage and Database



2. Scheduling and infrastructure assessments



3. Financial assessments and tariff calculations



4. Identify the model for service provision



5. City council resolution for Institutionalization



6. Develop Balanced Performance based Contract



7. Financing Model Performance linked annuity model



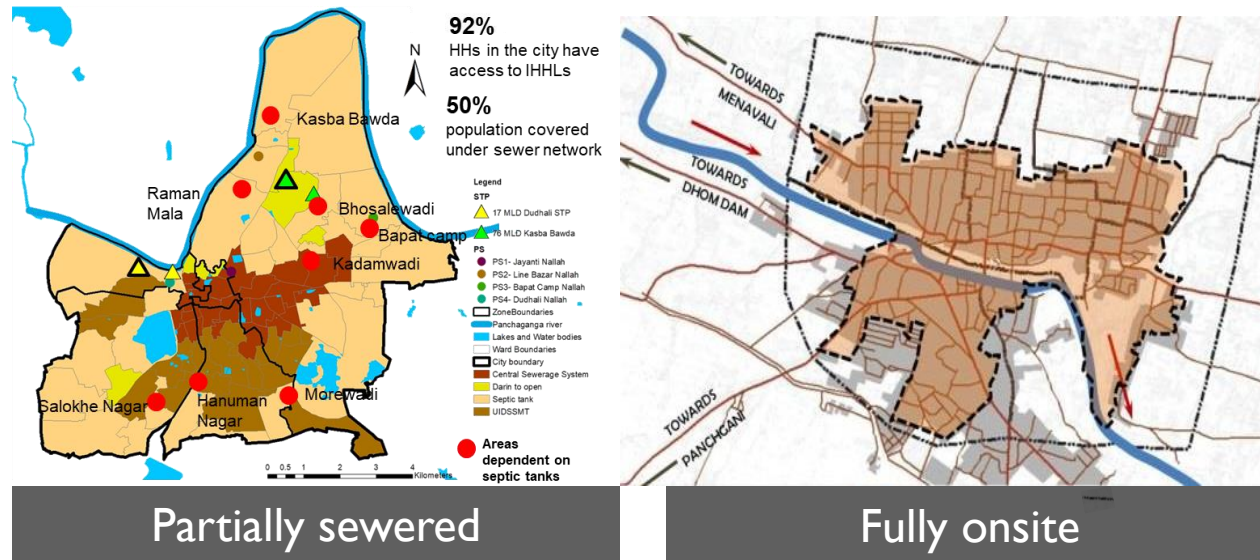
8. Performance monitoring linked to Payments



9. Awareness activities for implementation of services

Key steps for planning, implementation and monitoring of scheduled desludging

Understanding Sanitation coverage ...



Areas covered by onsite sanitation system and sewer system (if any)



Type of onsite sanitation system (septic tanks, pits), sizes, shape, accessibility for different typologies



Testing of characteristics of sludge – for different typologies (Bunglow, apartments, Institutional properties)

Review of Database ...

Use existing database: City can use their existing databased like the **property database**, check city level/ward estimates that are submitted in **SBM MIS and SS** or any recent survey as base list for designing schedule

- Understand broad number of **Septic tanks linked to Apartment properties**

Surveys: If city wants to have more detailed data – Citywide surveys could be conducted using mobile app like SaniTab

Generate the database as the service progresses – Based on a broad zoning and available database, start with any one area. As the service progresses, robust data will be generated for the next cycle.

Satara Municipal Council
SWACHH SURVEKSHAN 2022
GARBAGE FREE CITY

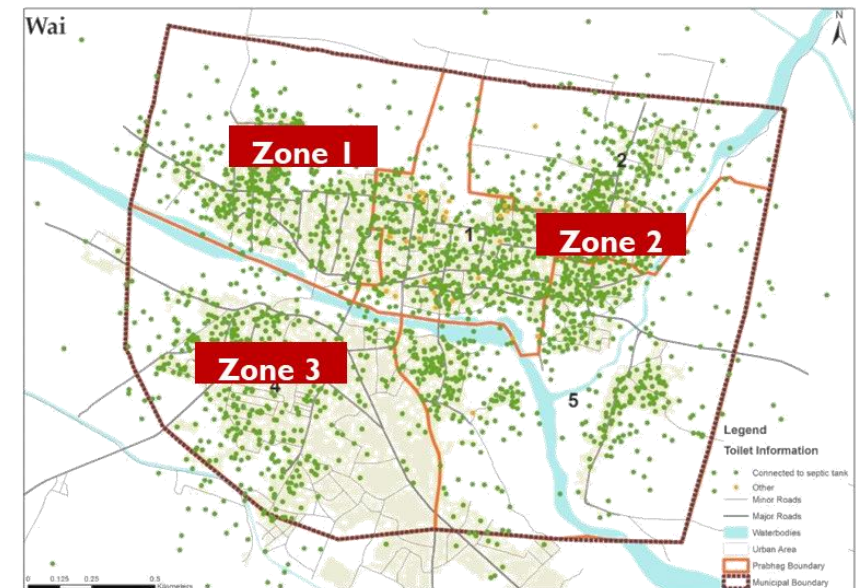
3.2: Wardwise details regarding households/commercial establishments (CT&PTs) mapping to sewerage network or septic tanks in a tabular format.

3.2.A: Ward wise details of all residential areas with toilets within Households (HH)

Ward No./Ward Name	Name & Location of Residential area	Type of Residential area	Total No. of Residential area	Total No. of Household in residential area	No. of Toilets with functional septic tanks	No. of Sewerage connections (Where black water goes to PSTP)	No. of Toilets with Septic Tank	No. of Household do with Toilet latrines
1	Deshankh colony	Planned	2425	2425	NA	2425	NA	NA
2	Kanga colony	Planned	1454	1454	NA	1454	NA	NA
3	Mhada Colony	Planned	640	640	NA	640	NA	NA
4	Utkar nagar	Planned	1848	1848	NA	1848	NA	NA
5	paramo colony	Planned	2274	2274	NA	2274	NA	NA
6	Ajinkya colony/satara	Planned	1063	1063	NA	1063	NA	NA
7	Mhalar path	Planned	624	624	NA	624	NA	NA
8	Budhwar path/satara	Planned	1236	1236	NA	1236	NA	NA
9	Sarawath	Planned	1790	1790	NA	1790	NA	NA



स्वच्छ सर्वेक्षण 2022



Scheduling and infrastructure assessments ...

Decide the **desludging cycle** (3 years)

Number of zones – based on **Property tax ward**, **administrative ward**

Number of septic tanks to be **emptied daily**

Number of trucks required (Nos.) – Big / Small

Human resource requirement

Volume of septage to be **treated** (cum/day)

Divide the city into zones and prepare a yearly plan



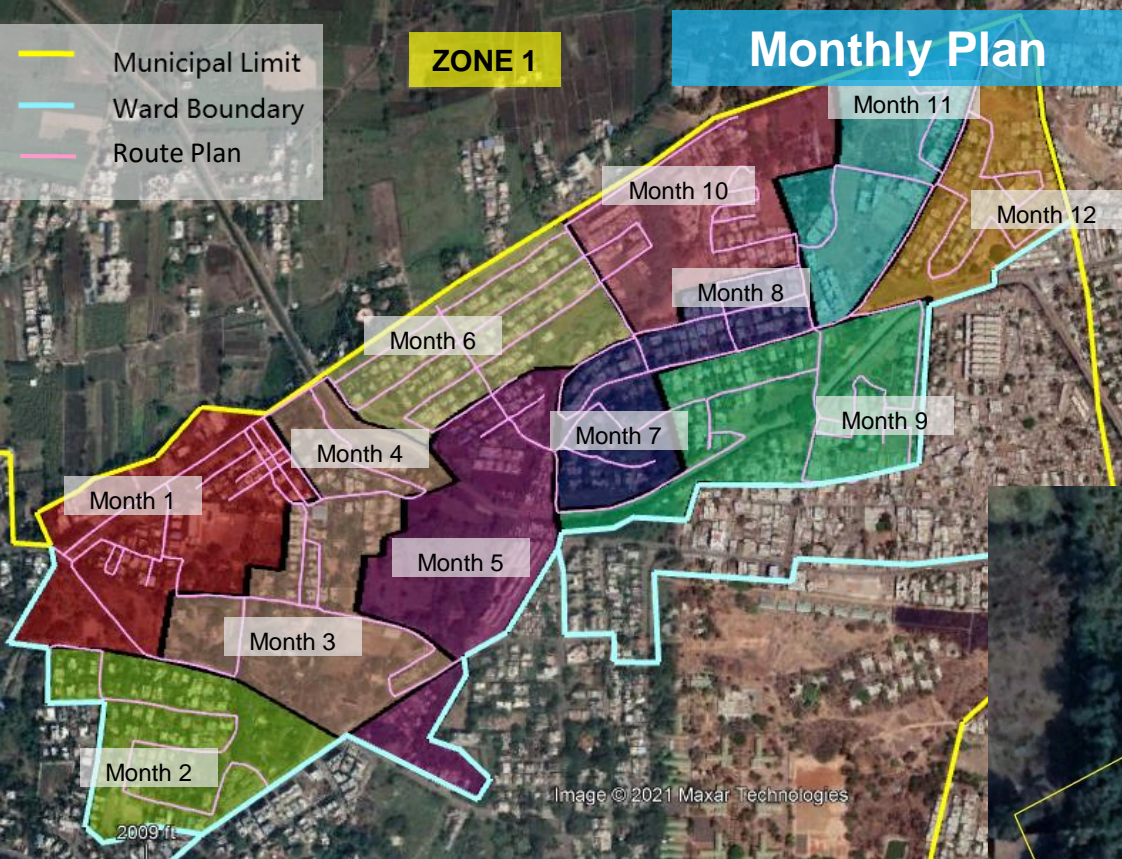
Year	Zone	Septic tanks to be cleaned annually (no)	Days required
Year 1	Zone 1	1889	201
	Zone 2	947	101
	Total	2836	302
Year 2	Zone 2	1262	135
	Zone 3	1582	169
	Total	2844	303
Year 3	Zone 3	2762	294
	Total	2762	294

Septic tank cleaning cycle of 3 years

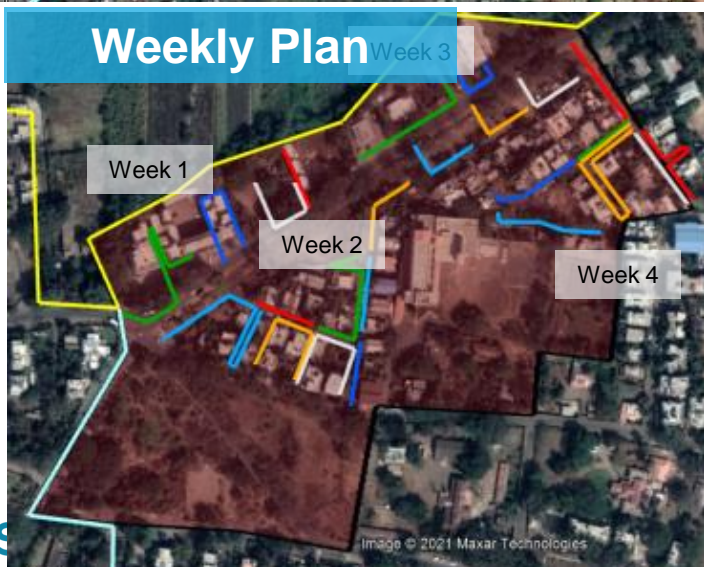
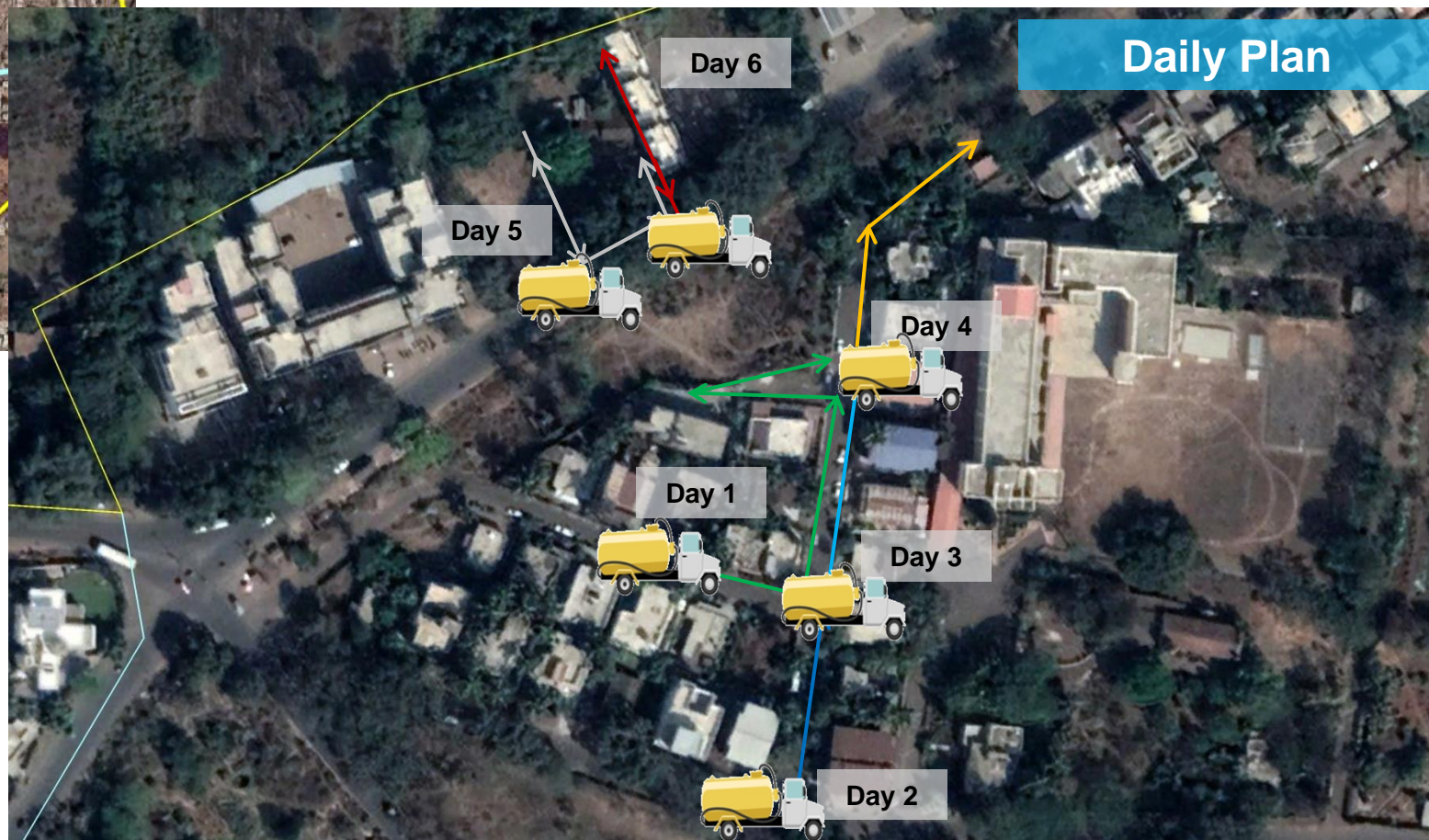
- To maintain a cycle of 3 years, roughly **2800 septic tanks** need to be **cleaned annually**
- Each vehicle needs to make **4 to 5 trips daily**
- Roughly **300 Working Days** are required
- To clean 2800 septic tanks, **2-3 nos of suction emptier trucks of 5000 capacity** would be required

2-3 trucks of 5000 litre capacity are required for cleaning HHs and non-residential septic tanks

Based on the above calculation, city also need to **assess the augmentations required in terms of truck and treatment infrastructure**



Route Planning

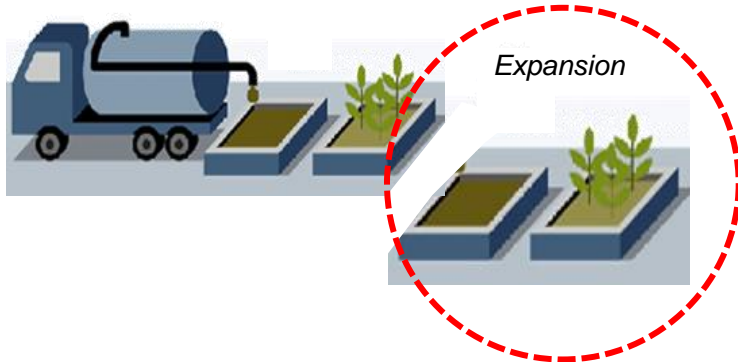


Treatment infrastructure . . .

Based on number of septic tanks to be desludged daily and estimated volume.

Plan for treatment infrastructure

New FSTP
or
Expansion of existing
FSTP



Co treatment with own
city STP
or
Nearby city STP



Financial assessments and tariff calculations ...

Identify the model for financing the operations:

- **Calculate the O&M cost for provision of the service**

- Fuel cost
- Repair and maintenance cost
- Salaries of human resource etc.

- **Calculate the capital cost for provision of service**

- Based upon who will be providing the service

- **Calculate the tax value**

- Sanitation tax per property (Differential / Flat tax)
- Levy it as a % of property tax to make it equitable



Identify the model for service provision ...

- **ULB Model** : Capex of trucks and Opex by ULB
- **PPP Model** : Capex of trucks and Opex by private operator
- **Private Sector Participation (PSP) model** : Capex of trucks by ULB and Opex by private operator
- **Integrated scheduled desludging and FSTP O&M model** : PPP / PSP
- **Involving SHGs in desludging activities** : PPP / PSP



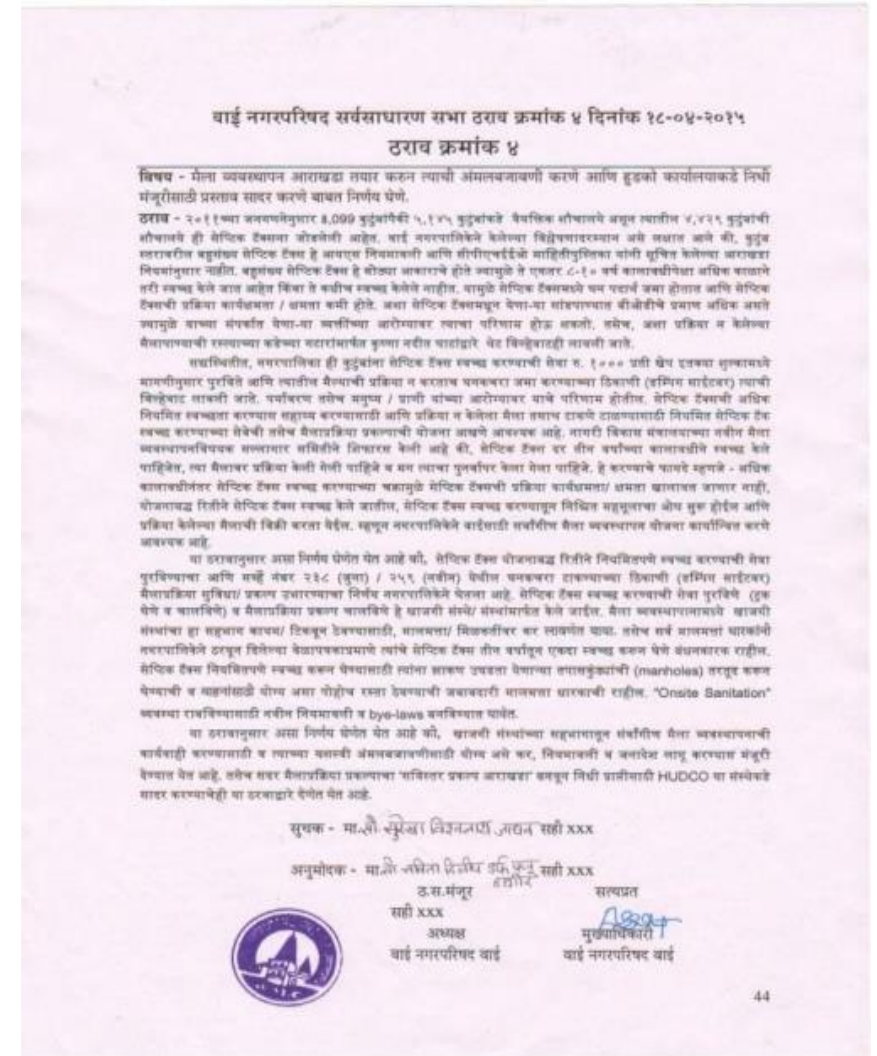
INTRODUCTION									
<p>About the model</p> <p>This model is developed to identify financing investments for implementing FSSM through various approaches and business models.</p> <p>This model helps to identify investment requirement according to five different business models for conveyance of septage. These business model calculations are based on the inputs provided about population of city, number of septic tanks, service provider, etc.</p>	<p>Structure of the model</p> <table border="1"> <tr> <td>Model selection</td> <td>Selection of the type of desludging model selected</td> </tr> <tr> <td>Infrastructure Requirement</td> <td>This sheet include the basic inputs required to run the model. Key inputs include : demographic details, city profile, type of facilities available. These inputs would generate the infrastructure requirements for the city.</td> </tr> <tr> <td>Cost Requirement</td> <td>The sheet generates the cost that would be incurred as per the infrastructure requirements for the city. This sheet requires basic inputs to run the model.</td> </tr> <tr> <td>Financing Infrastructure</td> <td>The sheet provides the financial feasibility of various scenarios depending on the contract type and method of cost recovery as per inputs</td> </tr> </table>	Model selection	Selection of the type of desludging model selected	Infrastructure Requirement	This sheet include the basic inputs required to run the model. Key inputs include : demographic details, city profile, type of facilities available. These inputs would generate the infrastructure requirements for the city.	Cost Requirement	The sheet generates the cost that would be incurred as per the infrastructure requirements for the city. This sheet requires basic inputs to run the model.	Financing Infrastructure	The sheet provides the financial feasibility of various scenarios depending on the contract type and method of cost recovery as per inputs
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<p>Business models for selection</p> <p>Following business model calculations are available:</p> <p>BM 1: PPP for scheduled desludging, Sanitation Tax BM 2: PPP for on demand desludging using user charge BM 3: PSP for scheduled desludging, Sanitation Tax BM 4: PSP for on demand desludging using user charge BM 5: Full government run model with sanitation tax</p>									

City council resolution for institutionalization ...

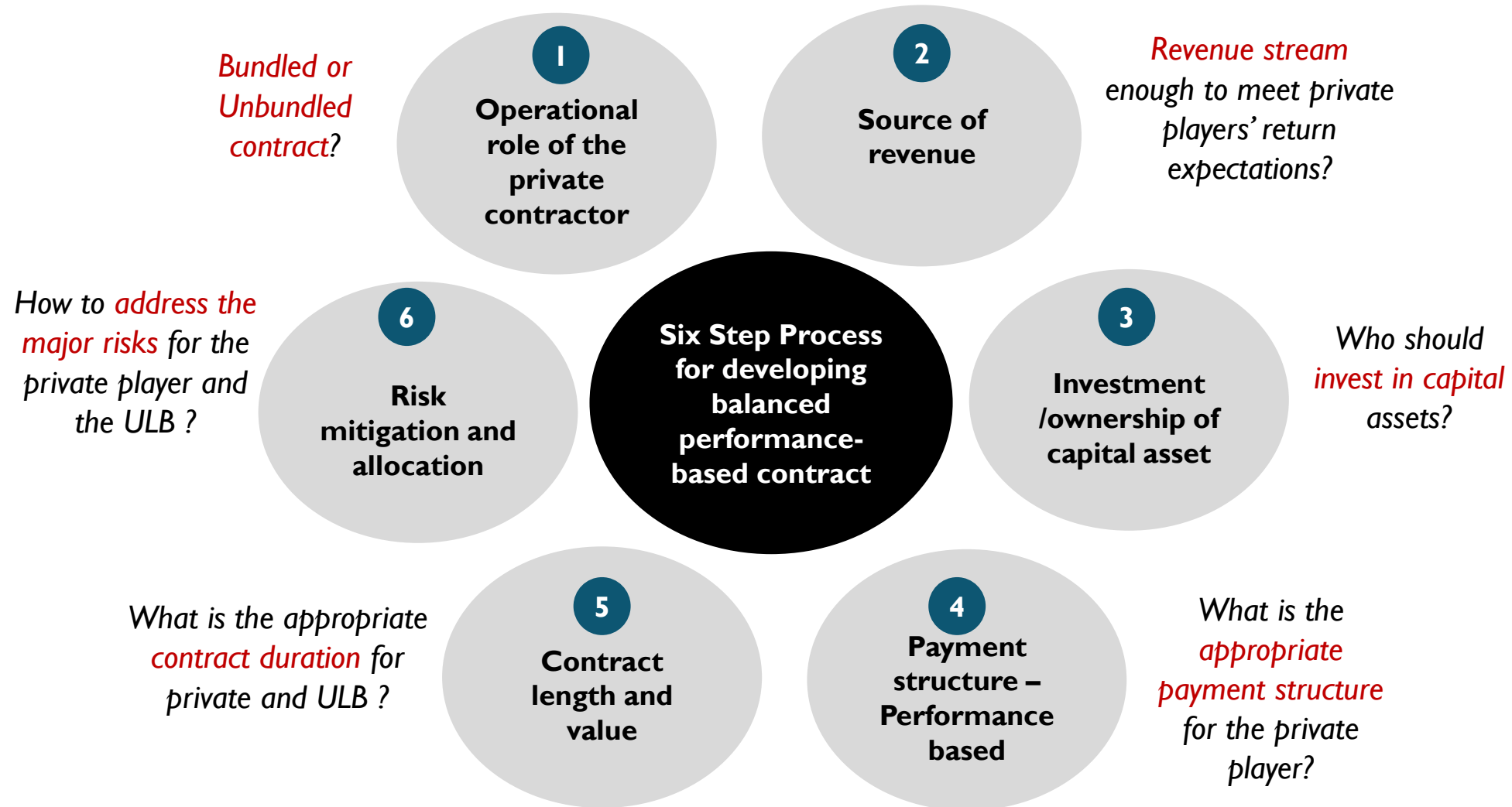
A city level resolution is an expression of opinion or intention of the local body to :

- Undertake FSSM activities
- Confirm the financial model
- Confirm the service provision model
- Land allocation for FSTP etc.

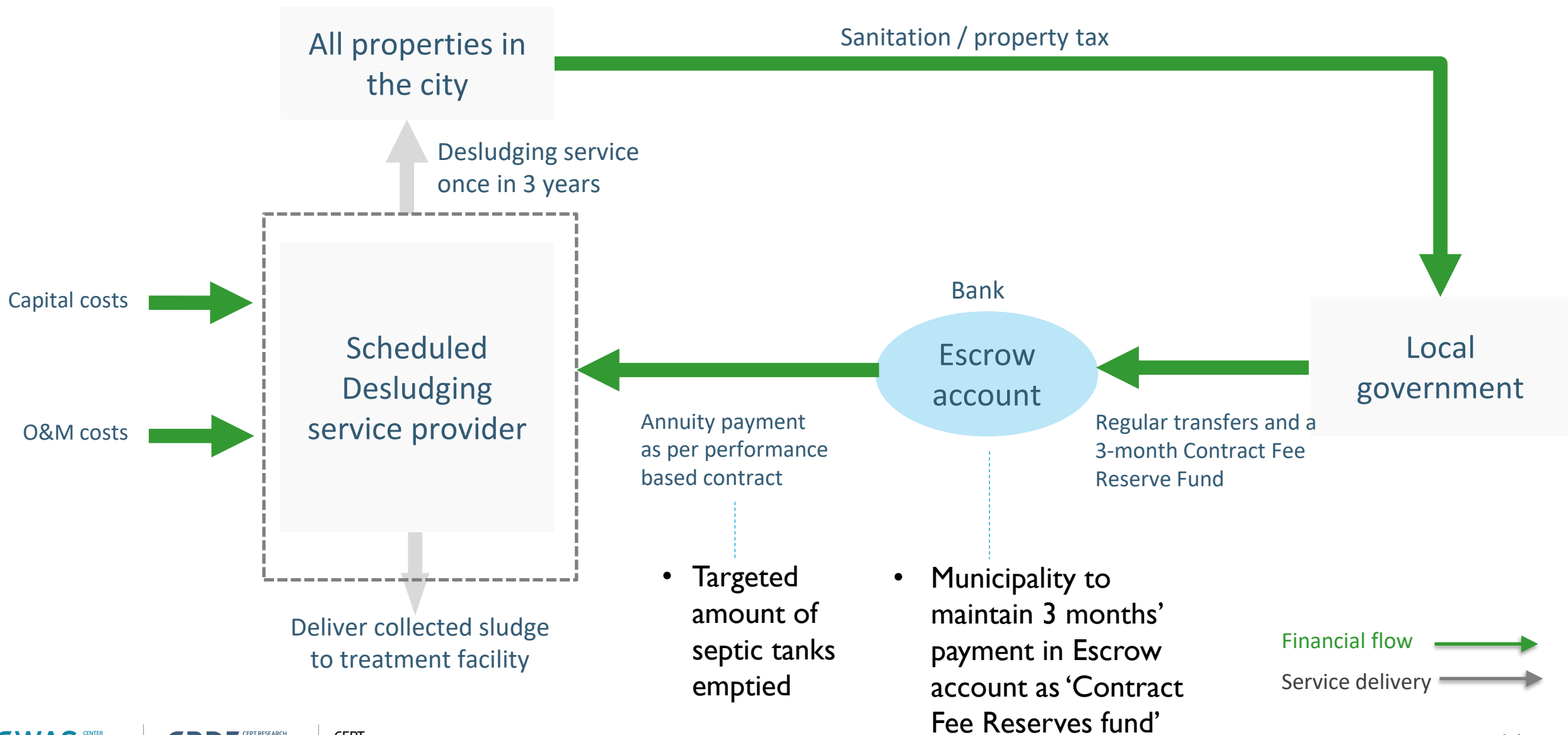
The city level resolution for provision of service is important for sustaining it in the long run.



Development of Balanced Performance based Contract (for private sector engagement) ...



Performance linked annuity model (PLAM) for financing ...

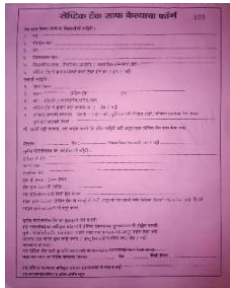


Performance monitoring linked to payments ...

Paper based monitoring systems



LG's copy

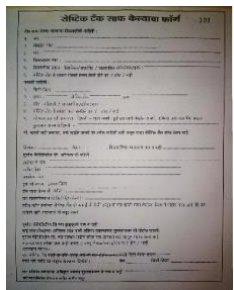


Property owner's copy

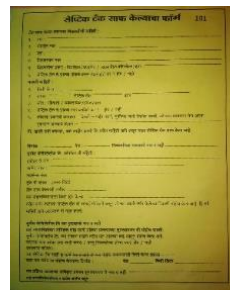


Monitoring through paper based forms.

Four forms will be used and be provided to each stakeholder involved in the service



Treatment plant's copy



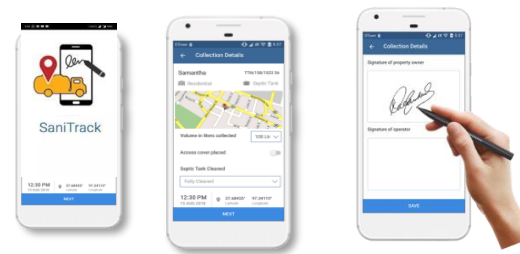
Private operator's copy

Online monitoring systems

SaniTab



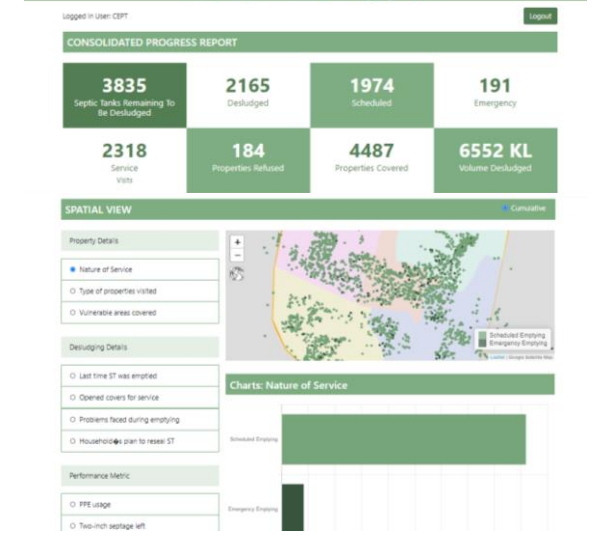
SaniTrack



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

Easy to Operate,
Reduce paper work,
Minimize human error

Photo stamping,
Geo stamping,
Signatures



Awareness activities for successful implementation of scheduled services ...

Develop the IEC material as well as strategy of its implementation – **Need to do as per zones**



Household visits by desludger with info. leaflets

Paintings / banners in the city by WMC



Cities circulated small videos



Intimation through SMS





These steps have been demonstrated by CWAS in these cities that have become models for CWIS-FSSM / ODF++ ...

Wai, Sinnar, Kolhapur, Satara, Khopoli, Igatpuri

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



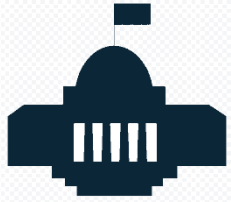
San Workers training



Equitable Services for Slums and Vulnerable areas



Summary - Key factors for successful implementation of Scheduled Desludging ...



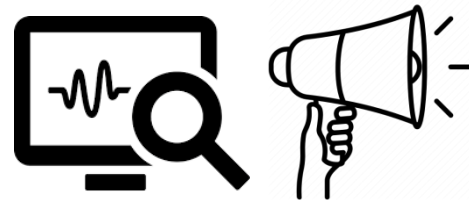
Providing scheduled desludging service as a Municipal Service

- Like provision of SWM door to door collection service
- Promote supply driven approach and not demand driven.
- The onus of desludging the septic tank must not be on the HHs



Higher degree of desludging acceptance rate linked to indirect cost recovery

- Avoid/ user chargers based model (Based on international experiences)
- Should promote indirect cost recovery mechanism such as sanitation tax or sewerage tax as percentage of property tax.



Proper monitoring and IEC campaigns

- Involving various stakeholders for Awareness generations i.e. Citizens, NGOs, ULB officials, SHGs, etc.
- Paper based or IT based monitoring systems

THANK YOU

CWAS CENTER
FOR WATER
AND SANITATION

CRDF CEPT RESEARCH
AND DEVELOPMENT
FOUNDATION

CEPT
UNIVERSITY

About us

The Center for Water and Sanitation (CWAS) is a part of CEPT Research and Development Foundation (CRDF) at CEPT University. CWAS undertakes action-research, implementation support, capacity building and advocacy in the field of urban water and sanitation. Acting as a thought catalyst and facilitator, CWAS works closely with all levels of governments - national, state and local to support them in delivering water and sanitation services in an efficient, effective and equitable manner.



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