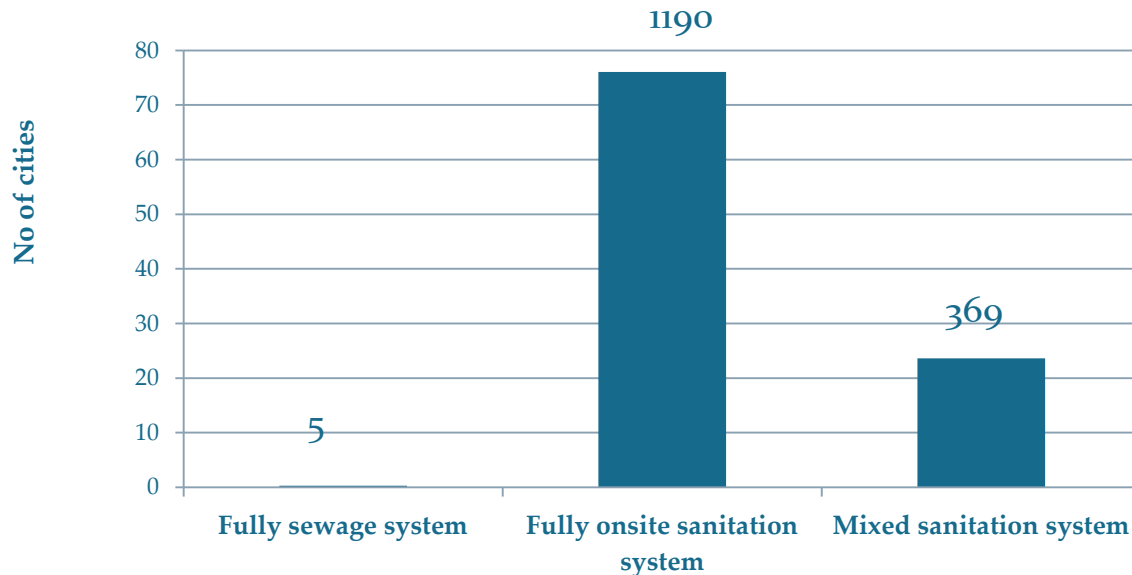


Citywide Integrated Fecal Sludge Management Action points for PPP

ADB National workshop, New Delhi, Oct 10 2014

Sanitation systems in Urban India

Different types of sanitation systems in urban India



- ✓ Only 5 cities are reported to have 100% sewerage system
- ✓ Nearly 1200 cities have fully onsite sanitation systems

76 % of cities in **India** are fully dependent on **on-site sanitation systems**

24% are dependent on **mixed sanitation systems**

Source: Based on the SLB data submitted to GOI by 16 states covering 1564 cities

Onsite sanitation and FSM – emerging questions

38.2% URBAN HHs HAVE SEPTIC TANKS



Are septic tanks linked to soak pits

Are they built as per Codes / Specifications ?

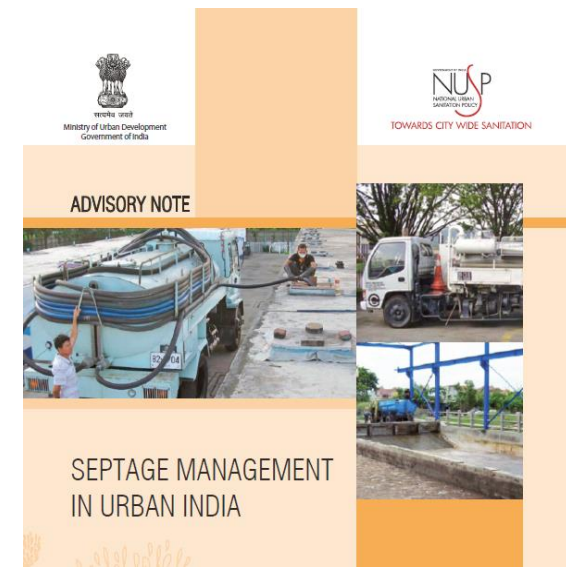
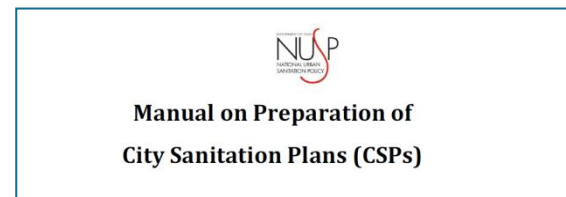
How often are they cleaned ?

Where does the effluent flow ?

What happens to the SLUDGE?

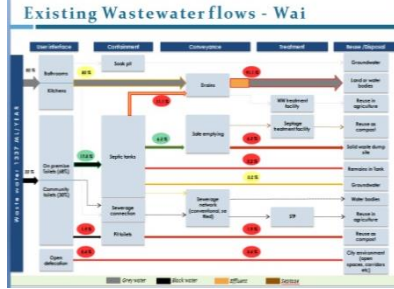
Emerging recognition of septage management / FSM

- ❑ **NUSP** has accorded **high importance** to **plan and implement** actions for the organized and **safe management of fecal matter** from **on-site installations**.
- ❑ It highlights the **importance of safe and hygienic facilities with proper disposal**. It emphasizes proper disposal and treatment of sludge from on-site installations (septic tanks, pit latrines, etc.); and proper operations & maintenance (O&M) of all sanitary facilities.
- ❑ **Recommends** developing a **Septage Management Plan (SMP)** as a **part of city sanitation plans (CSP)**
- ❑ **Septage Management Advisory** of Government of India provides references to CPHEEO guidelines, BIS standards, and other resources for preparing SMP / FSM plan.



Citywide Strategies

Key activities in preparation of CSP



Assessment of Sanitation situation in cities using the framework



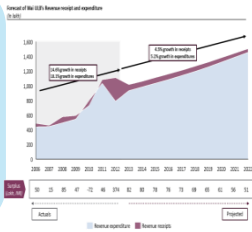
Development of sanitation options

Assessing waste water system options

	CONVENTIONAL SEWERAGE	TREATED SEWERAGE	ON-SITE SANITATION
Cost	High	Low	Low
Operational	High	Low	Low
SSS Low	High	Low	Low
Social Impact	High	Low	Low
Health Impact	High	Low	Low
Resilience	High	Low	Low
Flexibility	High	Low	Low
Scalability	High	Low	Low
Acceptance	High	Low	Low
Environmental	High	Low	Low

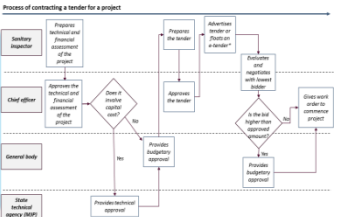


Analysis of city budgets



Continuous stakeholder engagement

Institutional Capacity assessment



Outcome:

A City Sanitation plan through which Universal access to Sanitation is achieved and the option is financially viable for ULB

Citywide sanitation improvement plans

City Sanitation plan options for the cities

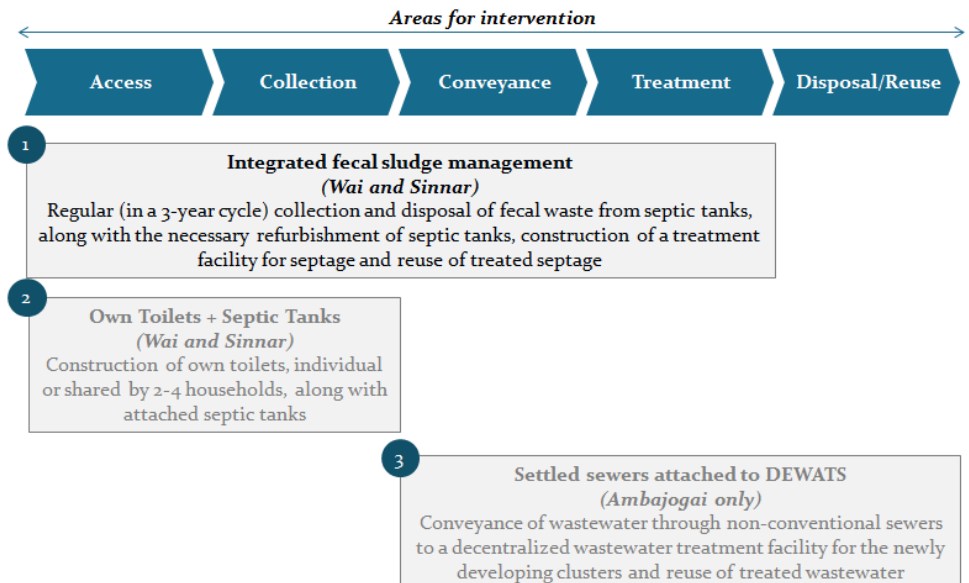


Centralized and Decentralized solutions having *same Outcomes. . .*

Implementation of citywide solutions based on local priorities

Develop **citywide sanitation improvement plans with non-conventional systems** that would have the **same outcomes**

Based on local priorities the following solutions have been short-listed for each city



Need to assess septage management situation (1/2)

City Profile of selected cities for IFSM

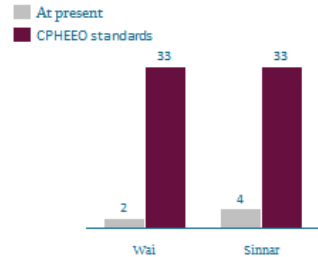
	Wai	Sinnar
District	Satara	Nashik
Geographic Location	Latitude 17°56'N and Longitude 73°53' E	Latitude 19°51'N and Longitude 74°00'E
Civic status	Nagar Parishad 'C' class	Nagar Parishad 'C' class
Total Area	3.64 sq km	51.4 sq km
Population	36025	65299
Households	7580	13112
Slum HHs	456 (6%)	837 (6%)
No of Wards	19 wards managed through 5 Prabhags	23 wards managed through 6 Prabhags



Small and Medium towns in Maharashtra

Consequently, households get their septic tanks cleaned only once in 8-10 years, resulting in the release of effluent with solids into the drainage system

Estimated number of septic tanks cleaned annually by the local ULBs (As a % of total septic tanks)



Resulting issues



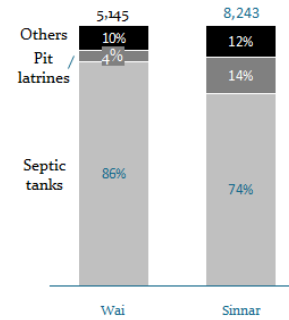
The CPHEEO manual and the MoUD septage management advisory recommend that household septic tanks be cleaned every ~2-3 years, i.e., ~33% of them should be cleaned each year

- Septic tanks often overflow and fecal matter along with effluent is released into drains
- In addition, septage hardens and cannot be easily suctioned off, often requiring manual intervention or

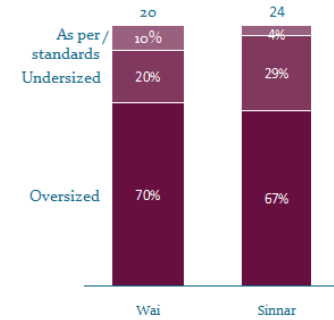
8-10 Year cleaning frequency of septic tanks

A majority of personal toilets in Wai and Sinnar are connected to septic tanks, which are larger than recommended standards

Method of collection of waste for all households (HH)



Assessment of size of septic tanks connected to personal toilets (Number of toilets)



~75-85% of households in these cities depend on septic tanks

A sample survey conducted in Wai and Sinnar found that septic tanks connected to individual toilets are largely

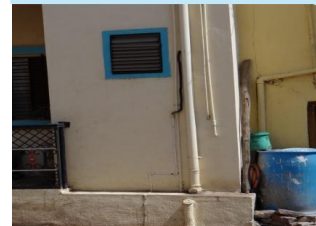
Major dependency on septic tanks which are oversized



Chambered tank



Some places septic tanks are below the toilets



Vent pipes



Septic tanks tops are sealed

Need to assess septage management situation (2/2)

Both towns rely on a single vacuum emptier truck which is owned and operated by the ULB, and cleans both personal and community toilets

Septage is disposed off at the solid waste dump site without treatment in both towns

Existing septage conveyance mechanism in Wai and Sinnar

- Both Wai and Sinnar have **only one suction emptier truck** each with a capacity of 5kl and 3kl respectively
- The trucks are **owned and operated by the ULBs**, and also clean septic tanks connected to **community and public toilets once a week**
- The ULBs charges households –INR 400 - 800 in Sinnar and –INR 1000 in Wai per cleaning
- There is **no regulated schedule for cleaning**, and households call the ULB when required, once in >8-10 years
- Each tank emptier can clean ~4-5 septic tanks per day**, just enough to clean the community and public toilets each week

Existing septage conveyance mechanism

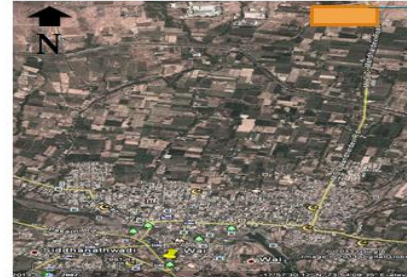
Suction emptier truck of 5KL capacity in Wai



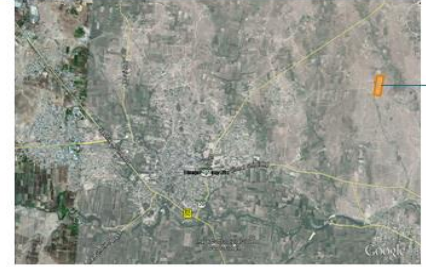
Suction emptier truck of 3KL capacity in Sinnar



Location of the dumping ground in Wai



Location of dump site in Sinnar

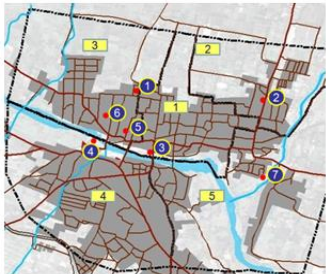


Demand based emptying services provided by ULB

Crude disposal of septage at solid waste dump site

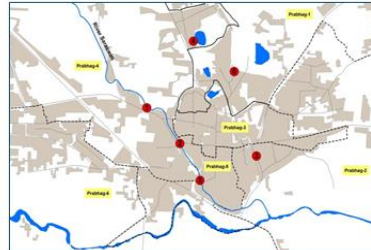
Sample tests of wastewater show that key indicators of pollution exceed the prescribed limits by the Central Pollution Control Board (CPCB)

Test results of sample wastewater testing in Wai



- Wastewater samples were tested from 7 locations in Wai and checked the levels of Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS) and pH count

Test results of sample wastewater in Sinnar

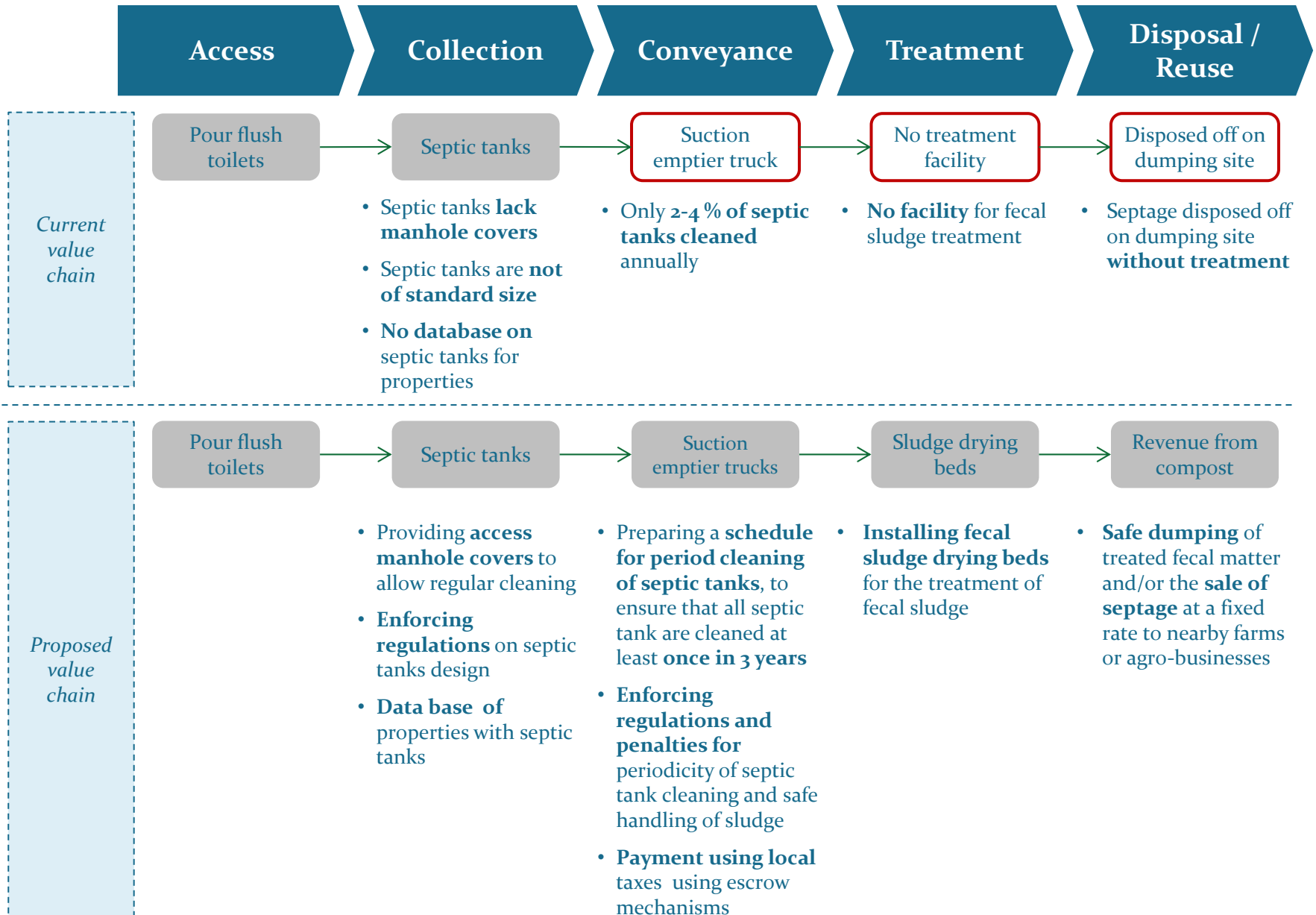


- Wastewater samples were tested from 5 locations in Sinnar and checked the levels of BOD, COD, TSS and the pH count

Situation **ASSESSMENT** suggests, there is an **URGENT** need to **improve** the **onsite sanitation situation** of the city

Quality tests results are way beyond prescribed limits

To tackle these issues, there is a need to explore an end-to-end integrated fecal sludge management (IFSM) solution

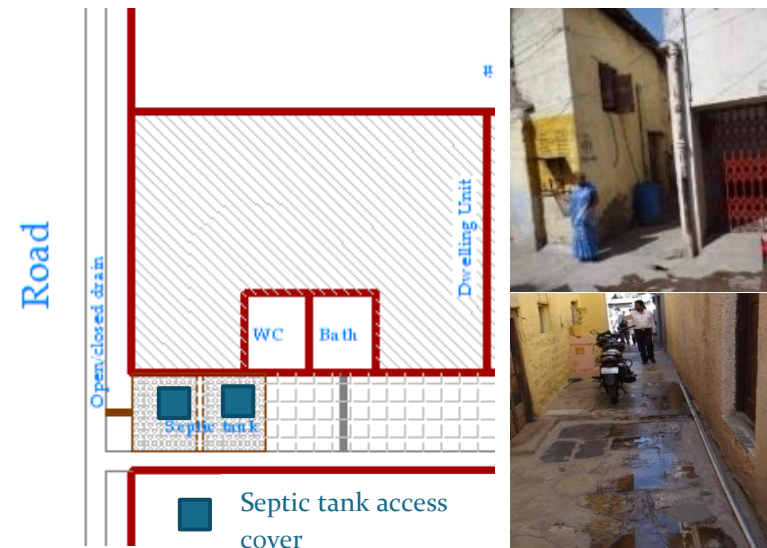


First, septic tanks will need to be refurbished to enable easy access for cleaning

Details of proposal

- Based on a sample technical assessment done in 2013, it was noticed that many **septic tanks in Wai and Sinnar had sealed covers or farsis (tiles) placed over them**
- This **prevented regular cleaning**, as the seal had to be broken each time to access the septic tanks
- **RCC access manhole covers (60 cm X 45 cm)** can be constructed to allow easy access during emptying, at a cost of **INR 500-800 per tank**
- The ULBs will do a **household level assessment** to assess the number of septic tanks that can be refurbished for access and also create a data base of households/properties with septic tanks.

Location of manhole of cover



RCC access manhole cover



Second, tanks will be required to be cleaned on a regulated schedule, and financed through taxation to ensure periodic cleaning

Current septage management practice

~2-4% of tanks cleaned per year
(once in >8-10 years)



Recommended septage management practice

~33% of tanks cleaned per year
(once in 3-5 years)

Current barriers

1 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

2 Each town has only **1 truck, owned and operated by the ULB**

3 Households pay ~**INR 400-1000** to get **tanks cleaned**, but only once in >8-10 years when the tanks overflow

Proposed solution

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

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

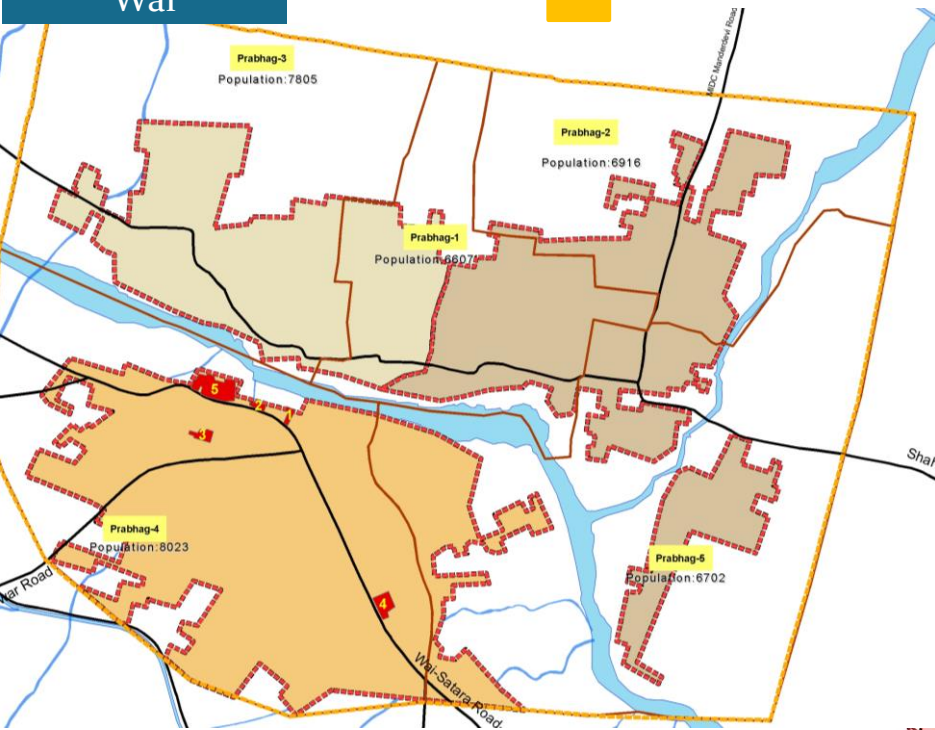
Awareness generation activities will educate households about the need for regular cleaning

2 Each town will get an additional **1-3 trucks to meet service standards**, which will be **operated by a private player**

3 **Local taxes levied** by the ULB as **per municipal act¹** will be used to **recover the operating expenses** for regular cleaning

Need to plan for a regulated schedule of three year septic tank cleaning cycle

Wai



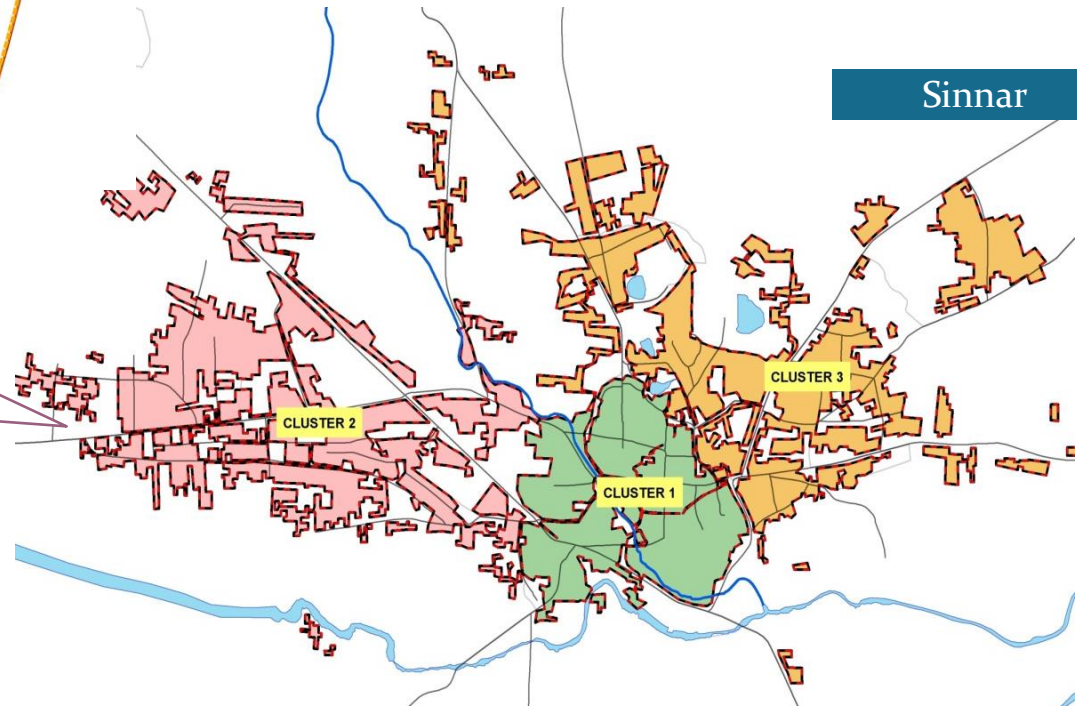
Wai requires 1 more additional suction emptier truck

~1760 septic tanks need to be cleaned annually on scheduled basis

Sinnar requires 3 more additional suction emptier truck

~2800 septic tanks need to be cleaned annually on scheduled basis

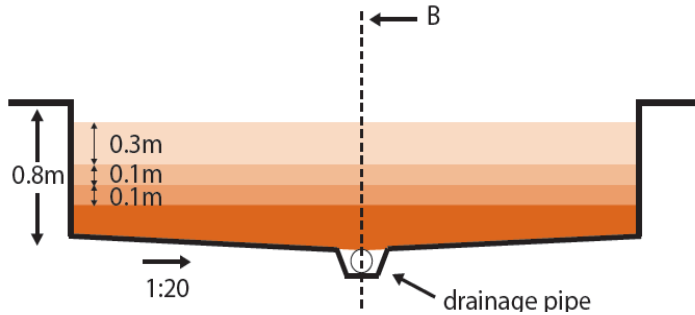
Sinnar



Third, treatment facility needs to be constructed for the treatment of sludge

Technical details of sludge drying bed

Technical illustration of a sludge drying bed

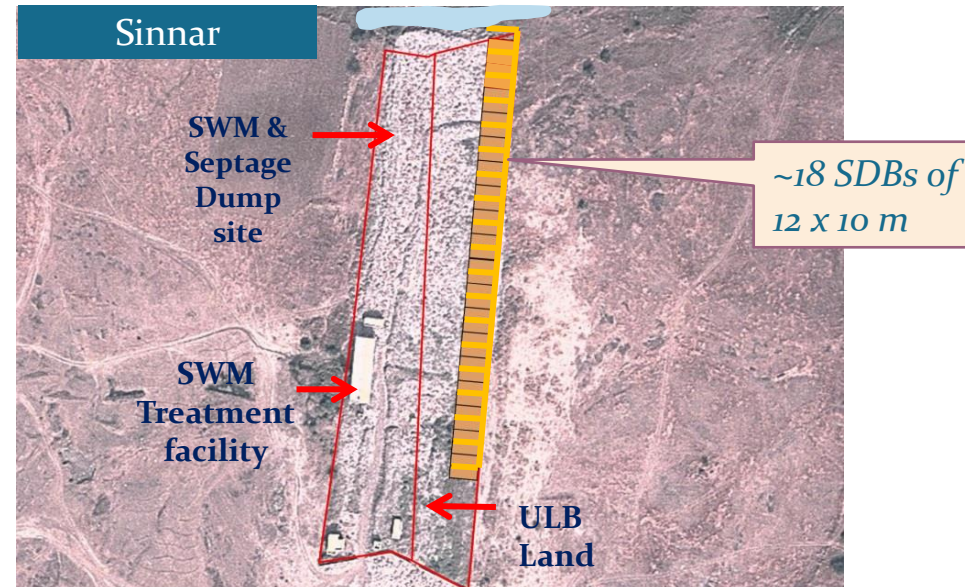


- Faecal sludge layer 30 cm
- Sand layer 10 cm; d=0.2-0.6 mm
- Gravel layer 10 cm; d=7-15 mm
- Gravel layer 20 cm; d=15-30 mm

- The MoUD advisory recommends the use of unplanted **sludge drying beds (SDB)** for the treatment of collected septage
- The sludge will be allowed to dry for **15 days to form sludge cakes**, which can be disposed safely in the open
- In India, SDBs are being used in **100 villages in Punjab** the World Bank's Punjab Rural Water supply & Sanitation scheme

The total cost of construction would be INR 22 lakhs in Wai and INR 45 lakhs in Sinnar

Description of proposal



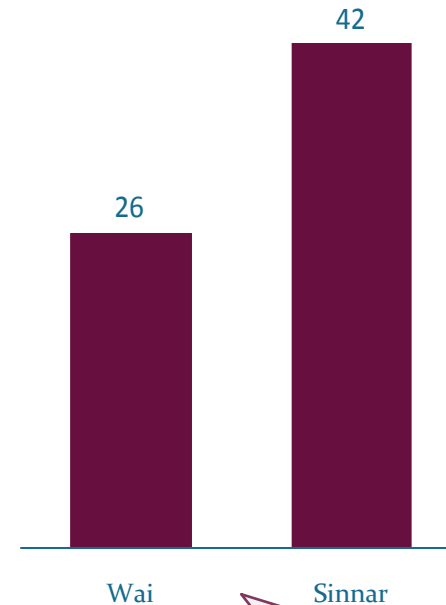
Note: (1) Excluding the cost of land, which will be provided by the ULB

Fourth, treated septage needs to be disposed off safely in fields, or sold to nearby farms or agri-businesses

Examples of septage re-use

- **Land application of raw or dewatered fecal sludge**
 - In areas around Bangalore city, sludge compost sells for ~INR 650/cum and is commonly used to cultivate fruit trees
 - In Kenya, a company called Sanergy produces organic fertilizers from waste collected daily from its pre-fabricated toilets
- **Fecal sludge digestion for biogas production**
 - In India, the non-profit SKG Sangha has implemented over 64,000+ small scale anaerobic digesters for fecal waste in villages
 - Sulabh International has been utilizing waste to generate biogas for heating and electricity at 200 of its 8000+ facilities in India
- **Dried fecal sludge can also be incinerated as fuel**, but there are limited examples in India
- **Urine diverting dry toilets (UDDT)** have been piloted in several countries such as Kenya, Uganda and South Africa for the re-use of urine and dehydrated fecal matter in household gardening or farming, but there are limited examples in India

Amount of septage generated in each town (Cum/day)



If 30% of septage is sold after treatment at INR 0.5/Kg, it could lead to an annual revenue of INR 1.4 Million in Wai and INR 2.2 Million in Sinnar, almost offsetting the yearly O&M cost of septic tank cleaning and maintenance of SDBs

Fifth, appropriate regulation and IEC for successful implementation

To ensure adoption of the integrated fecal sludge management plan, the ULB has to make regulatory changes

- The key issue in ensuring regular and safe septage management is **lack of implementation of government regulations and advisories**
- This will need the **formulation of ULB bye-laws** and rules to ensure implementation of each aspect of the IFSM plan
- The rules should address:
 1. **Septic tank design:** to ensure septic tanks of standard size are installed in new constructions
 2. **Periodicity of de-sludging:** to ensure septic tanks are cleaned every 3 years as per the MoUD's advisory
 3. **De-sludging procedures:** to ensure safe handling of fecal sludge
 4. **Sanitation tax:** to persuade households to clean septic tanks regularly
 5. **Penalties:** to deter irregular cleaning and use of substandard septic tanks
- There is also a need for **regular monitoring and inspection** of septic tanks and de-sludging procedures to facilitate the implementation of bye-laws

IEC and Awareness generation campaigns for community acceptance and adherence to regulations and IFSM plan and service

Set up **regulation** for **Onsite Sanitation** management and **strict implementation**

These activities also need to be supported by campaigns for awareness generation

- To ensure adoption of government regulations and ULB bye-laws, there is a need to generate awareness about regular septic tanks emptying
- To educate people about IFSM we can involve :
 1. Print and electronic media
 2. Civil Society organizations such as NGOs and RWAs
 3. Academic institutions such as schools and colleges
 4. Opinion influencers such as doctors and religious leaders

Illustrative posters to generate awareness

Wrong Septic Tank Design vs **Correct Septic Tank Design**

Home Check, **Nagar Palika**, **Pumping**

Service provided by Nagar Parishad

De-sludge Your Septic Tank every 3 Year

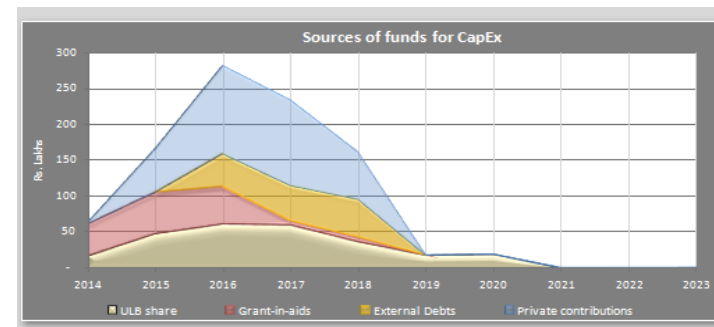
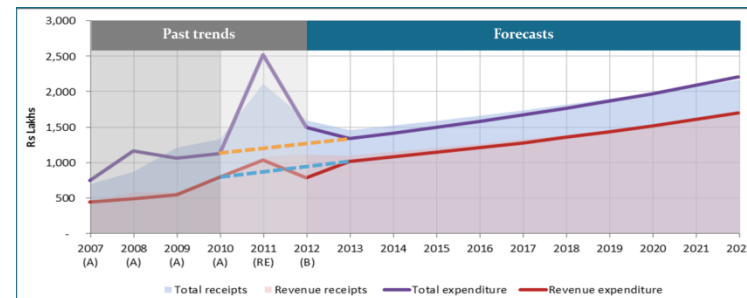
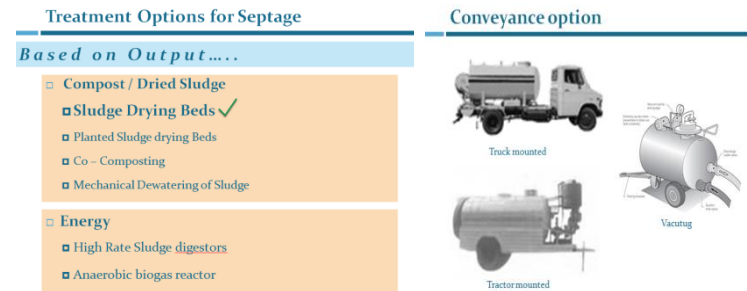
Proper Design

- Preservation of the Environment is our joint responsibility.
- Septic tank base should always be sealed, so that it does not pollute the ground
- Whenever the septic tank get cleaned, please check that no cracks in the side walls or base of septic tanks
- Have proper vent pipes for your septic tanks
- Septic tanks should be located away from groundwater source
- Provide proper access manhole to ease the process of emptying

- As you clean your toilets daily, so that it does not affect your health, similarly clean your septic tanks every 3 years so that it does not affect the environment
- Ambajogai Nagar Parishad will provide you services for cleaning of Septic tank free of cost once every 3 years.
- The ULB officials will inform you in advance before they clean your septic tanks
- ULB will leave sludge of solids inside septic tank, as it will act as seedling material for new incoming waste

Need to undertake financial analysis for funding IFSM activities

- **Financial Analysis** of options for **conveyance** and **treatment** need to be carried out and **linked** to the **ULB budget** for financing
- **Analysis** of **ULB budget** needs to be undertaken, to **understand ULB** capacity to **fund** the **IFSM activities**.
- Various **other sources** of **finances** needs to be looked into for **funding IFSM** activities



Need to create citywide information for successful implementation of PPP and improving monitoring by ULB for IFSM activities

Present system

- ❑ **No database** of toilets, septic tanks for HHs
- ❑ **No ready database** to show how often a septic tank is being cleaned and at which location in the city

Creating database and improving monitoring :

- ❑ **Create GIS database** for each HHs / property depicting **details** on **Toilets, septic tanks, soak pits** details
- ❑ **Update of HHs / property** on server through mobile application or reporting systems **once** the **septic tank is cleaned**
 - ❑ Automatic reminder sent to the HHs after 3 years to clean the septic tank

System required

Details of toilets



Details of where toilets are connected

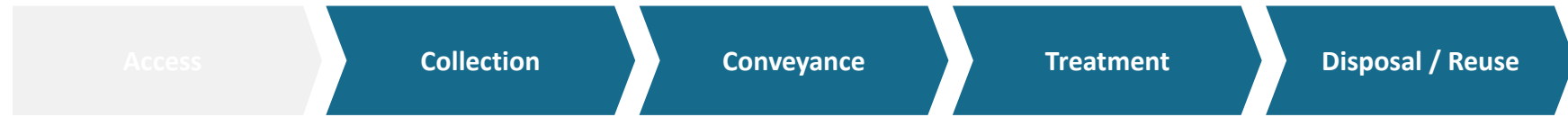


Details of where bathroom and kitchen are connected

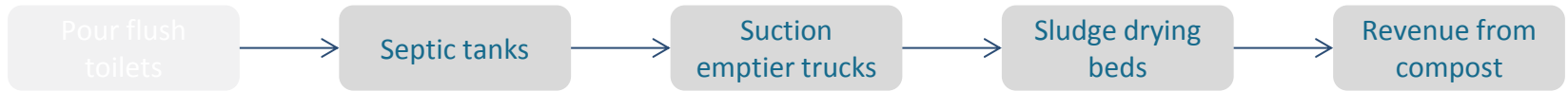


PPP in IFSM activities

Need to identify private players offering septage management services within and nearby towns



Proposed value chain



Activities required

- A** Refurbishment of septic tanks with access manhole covers
- B** Periodic cleaning of septic tanks along a regulated schedule
- C** Construction of fecal sludge drying beds (SDBs)
- D** Operation and maintenance of SDBs
- E** Sale of septage at a fixed rate to nearby farms or agro-businesses




- Buyers of septage*
- Maharashtra Organic Farming Association
 - Agro-based industries
 - Local farmers and growers associations

Small scale players (<10 employees)

Medium scale enterprises (>10-50 employees)

Need to assess work profile, interests and capacity of private sector doing IFSM activities

1 Labor contractors: These are small players that employ workers to operate rental trucks, and also offer other facility management services



<p>Name: ZR Enterprises Geographic focus: Pune Services offered: General facility management Business model:</p> <ul style="list-style-type: none"> • Scale: ~1-3 trips per month • Customers: Households and small retail establishments • Payment structure: ~ INR 1000 - 3000 per trip • Expected return: ~ 10 - 15 lakh per year <p>Interest in business opportunity: "Yes, I am actively looking for new business opportunities... I can obtain a truck and labor for cleaning. I am familiar with sludge drying beds and know a contractor who can assist with their construction. I am not sure the sale of septage is a possibility, I would prefer to be paid a fee."</p>	<p>Name: Manisha Enterprises Geographic focus: Pune Services offered: Septic tank & storm water cleaning Business model:</p> <ul style="list-style-type: none"> • Scale: ~2-3 trips per day • Customers: Households and small retail establishments • Payment structure: ~ INR 1000 - 1200 per trip • Expected return: Operating margin of 30%-40% <p>Interest in business opportunity: "Yes, but only if the ULB provides the truck. We find enough business in Pune and don't see a reason to expand. We do not do construction and are not familiar with sludge drying beds."</p>
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Labour contractors

2 Septic tank cleaning companies: These small companies own 1-2 trucks and do not offer any other services (1/3)



<p>Name: Kadam Enterprises Geographic focus: 150 km radius in the Pune and Satara districts Service offered: Septic tank cleaning services Business model:</p> <ul style="list-style-type: none"> • Scale: Operates one Tata 709 truck of 3.2 kL capacity, that cleans ~70-80 tanks per month • Customers: Industrial estates and households in nearby villages • Payment structure: One-time cash payment @ ~INR 1700 per trip • Expected return: ~ INR 50,000 - 75,000 in operating profit per truck per month <p>Interest in business opportunity: "Yes, I can procure a truck and operate it on the regulated schedule. The repair can be done by a local contractor. I am familiar with sludge drying beds but am not interested in constructing them, because unlike the truck which I can use for other business in case the contract does not work out, I can't take the bed with me. As for sale of septage, it is possible, but will require investment in marketing and..."</p>

Septic tank cleaning companies

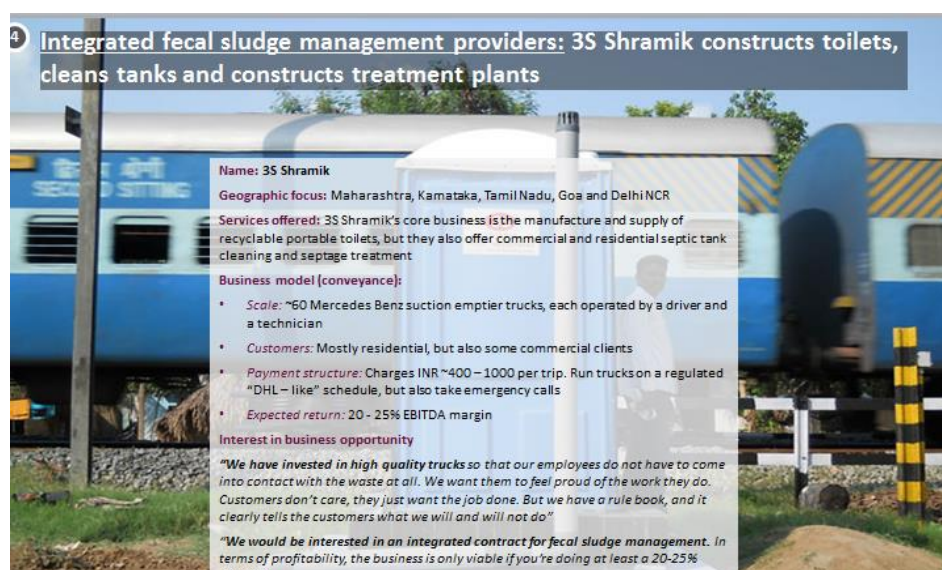
3 Pure-play treatment players: Traditional sewage treatment plant providers are focused on more advanced technologies than sludge drying beds



<p>Name: Era Hydro-Biotech Energy Private Limited Geographic focus: Pune Services offered: Manufacturing and construction of water, wastewater and sewage treatment plants Interest in business opportunity:</p> <p>"We do not approve of stand-alone sludge drying beds. Dried sludge will need to be handled manually, and what happens during the monsoon? In addition, each bed would need to be cleaned and repaired every few months. I would suggest a large anaerobic biogas plant, the gas from which can be used for electricity generation."</p> <p>"I am fine with a BOOT contract with a 1-2 year contract, but generally these contracts are milestone based with 20% payment in advance, and the rest after project delivery."</p>	<p>Name: Envicare Technologies Private Limited Geographic focus: Pune Service offered: Manufacturing and construction of water, wastewater and sewage treatment plants Interest in business opportunity:</p> <p>"We are not interested in constructing sludge drying beds by themselves. The sludge will be half-digested, and attract fleas or fungal growth. We recommend an anaerobic digester attached to a bed. You can generate methane from the digester, and the dried sludge can be used as manure"</p> <p>"Payment needs to be mile-stone based, ~40% up-front, 50% when materials are delivered to the site and 10% post-completion. We would like a 25% return."</p>
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Pure play treatment players

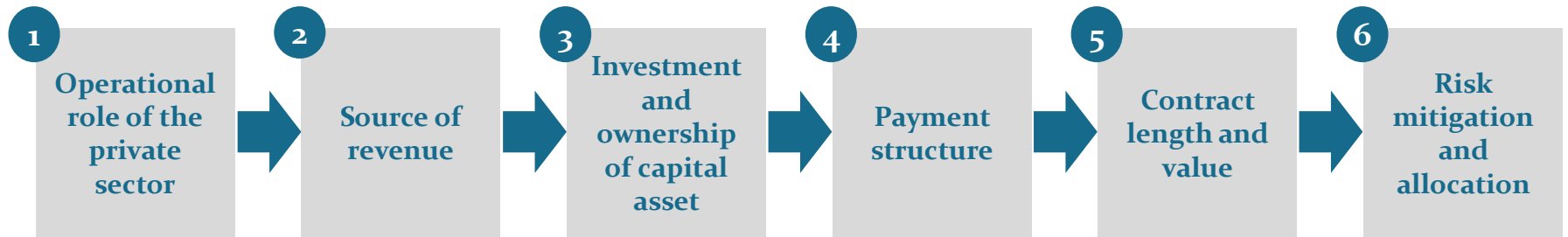
4 Integrated fecal sludge management providers: 3S Shramik constructs toilets, cleans tanks and constructs treatment plants



<p>Name: 3S Shramik Geographic focus: Maharashtra, Karnataka, Tamil Nadu, Goa and Delhi NCR Services offered: 3S Shramik's core business is the manufacture and supply of recyclable portable toilets, but they also offer commercial and residential septic tank cleaning and septage treatment Business model [conveyance]:</p> <ul style="list-style-type: none"> • Scale: ~60 Mercedes Benz suction emptier trucks, each operated by a driver and a technician • Customers: Mostly residential, but also some commercial clients • Payment structure: Charges INR ~400-1000 per trip. Run trucks on a regulated "DHL-like" schedule, but also take emergency calls • Expected return: 20 - 25% EBITDA margin <p>Interest in business opportunity: "We have invested in high quality trucks so that our employees do not have to come into contact with the waste at all. We want them to feel proud of the work they do. Customers don't care, they just want the job done. But we have a rule book, and it clearly tells the customers what we will and will not do"</p> <p>"We would be interested in an integrated contract for fecal sludge management. In terms of profitability, the business is only viable if you're doing at least a 20-25% EBITDA margin."</p>

IFSM service providers

An iterative six step process to structure a private sector engagement for integrated fecal sludge management



Bundled or Unbundled contract?

Revenue stream enough to meet private players' return expectations?

Who should invest in capital assets?

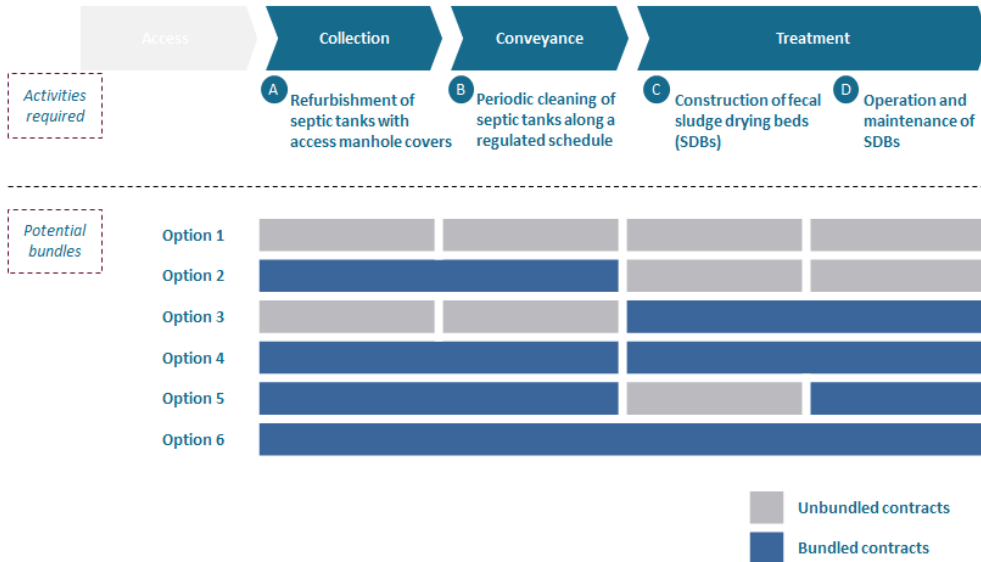
What is the appropriate payment structure for the private player?

What is the appropriate contract duration for private and ULB ?

How to address the major identified for the private player and the ULB ?

Need to assess contract options for IFSM activities

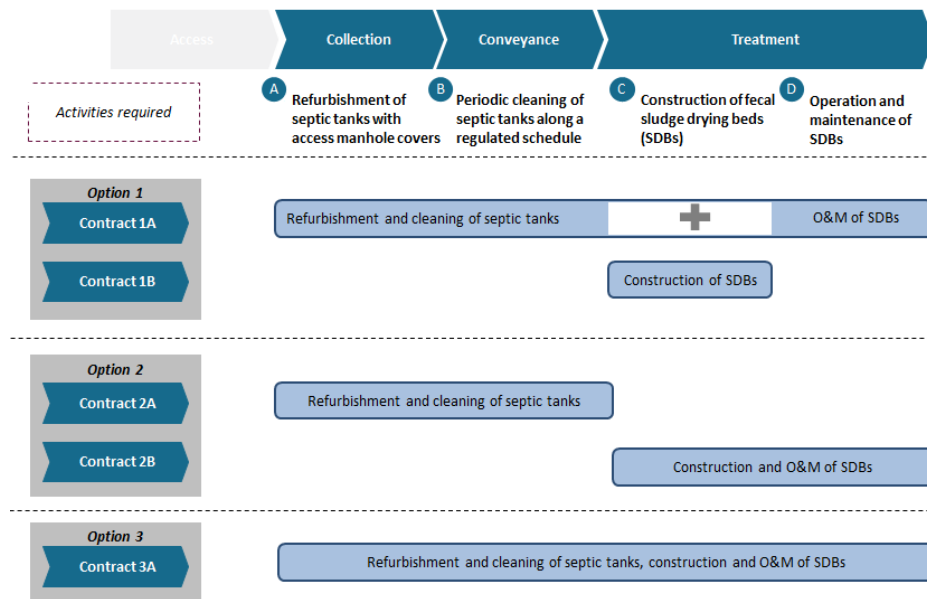
Operational role: There are various possible contract combinations depending on how IFSM activities are bundled together



Assessed possibilities of **bundling** and **unbundling** of **contracts**

Possible **contracts** based on **interests** and **capacities** of **private sector**

Given the interest and capabilities of identified players, there are three possible options for contract bundles



Formulate possible PPP structures for Integrated Fecal sludge management (IFSM) activities

Contracts	Source of revenue	Ownership of asset	Payment method	Contract length and value
1A Refurbishment and cleaning of septic tanks + O&M of SDBs	ULB	Private player	Recurring fixed fee with Fixed fee per unit for refurbishment	2-3 year, ~INR 32-36 lakhs in Sinnar and ~INR 15-17 lakhs in Wai
1B Construction of SDBs	ULB	ULB	Overall fixed fee on a pre-decided schedule	~ INR 40-45 lakhs in Sinnar and ~24-28 lakhs in Wai lasting the time period of construction
2A Refurbishment and cleaning of septic tanks	ULB	Private player	Recurring fixed fee with Fixed fee per unit for refurbishment	2-3 year, ~INR 27-32 lakhs in Sinnar , ~INR 11-13 lakhs in Wai
2B Construction and O&M of SDBs	ULB	ULB	Overall fixed fee on a pre-decided schedule + recurring fixed fee for O&M	12-18 months, Construction cost plus ~5-6 lakhs annually for O&M in Sinnar and ~4-5 lakhs in Wai
3A Integrated contract involving refurbishment, cleaning of septic tanks, construction and O&M of SDBs	ULB	Trucks – Private SDBs- ULB	Recurring fixed fee for cleaning and O&M with Fixed fee for Construction and Fixed fee per unit for refurbishment	Payment for refurbishment, cleaning and O&M as in 1A above; payment for construction as in 1B above

Need to assess contact values and taxes to be committed/ levied

Contract valuations for Wai and Sinnar

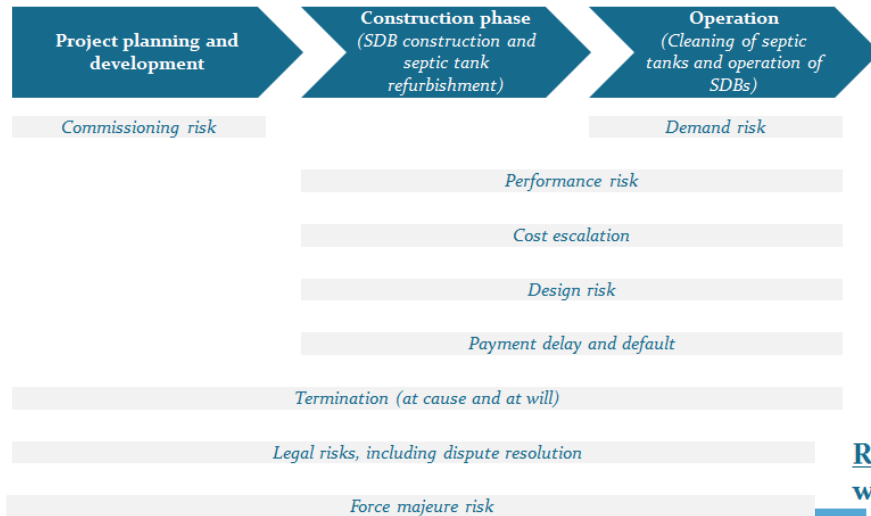
S. No	Types of contract	Contract length	Wai			Sinnar		
			Annual contract value (INR, Lakhs)	Sanitation tax per residential property (INR)	Sanitation tax per non-residential property (INR)	Annual Contract value (INR, Lakhs)	Sanitation tax per residential property (INR)	Sanitation tax per non-residential property (INR)
1A	Refurbishment and regular cleaning of septic tanks with O&M of SDBs	2 - 3 years	15-17	~190	~230	32-36	~270	~320
1B	Construction of SDBs	Duration of construction	24-28	N.A.	N.A.	40-45	N.A.	N.A.
2A	Refurbishment and regular cleaning of septic tanks	2 - 3 years	11-13	~140	~170	27-32	~230	~270
2B	Construction and O&M of SDBs	1 year	28-33	N.A.	N.A.	45-51	N.A.	N.A.
3A	Refurbishment and regular cleaning of septic tanks with construction and O&M of SDBs	2 - 3 years	39-45	~190	~230	72-81	~270	~320

Property owners currently have to **pay local taxes** of about **Rs 2600/annum** in Wai and Sinnar

To cover the costs of a cleaning cycle of ~3 years would require an **increase** in annual tax spend for a household of about **7% in Wai and 11% in Sinnar**.

Good risk mitigation and allocation can attract good contractors and help reduce contract price

Risk mitigation: There are several types of risks that must be managed across the lifecycle of any public private partnership



Several **risks** involved during **lifecycle** of the **project**, where **PPP** is involved. These need to be **addressed**

Risk mitigation: Private players highlighted a number of concerns with public private partnerships that need to be addressed

Source: ADB, "Toolkit for Public Private Partnerships in Urban Water Supply for the State of Maharashtra, India; Ministry of Finance, Government of India, "PPP Toolkit for Improving PPP decision-making processes in water and sanitation, PPIAF, Vijay Sarma, "Risks in PPP projects in Western India"

Concerns about **addressing** the **risks** were **raised** by **private sector** during interactions

Termination

"The contract should have a clause defining a 3 month notification period in case of termination. It should also have a dispute resolution mechanism."

- Kadam Enterprises

Delayed payments

"Ideally, bills should be cleared in 30 days, and for late payments, interest should be paid at the rate of 8% per annum."

- Manisha Enterprises

Transparent procurement

"We would rather not deal with the ULB directly, there are always issues with internal politics. If there is a mediator in between then we would be interested."

- Envicare

Cost escalation

"For a fixed-fee contract for regulated schedule, we cannot offer 24 hour emergency service. We will only work 8 hours a day, otherwise it is likely that we will over-use our truck."

- Aditya Enterprises

"Another key issue is the escalation of fuel costs. The contract should clearly account for that."

- ZR Enterprises

Performance risks

"If we work on a regulated schedule, it will be difficult to get household signatures. That will become complicated, and I don't want my payment to suffer."


- Ugale Septic Tank Cleaning Services

"I have tried to do a regulated schedule on my route, but that has been difficult. People always say, "come back later", and it falls apart."

- Aditya Enterprises



Address the risks involved in PPP engagement for IFSM activities

Risk mitigation: Building a strong system for performance based monitoring and payment is critical to managing performance risk (1/2)

Risk	Mitigation	Allocation of remaining risk
 Private player uses manual scavenging for cleaning septic tanks or sludge drying beds	<ul style="list-style-type: none"> Require safety gear for all personnel Include a clear description of activities that constitute manual scavenging 	<ul style="list-style-type: none"> Contract terminated if complaints of manual scavenging are received from households or ULB staff
<div style="border: 2px dashed red; padding: 5px;">Private player does not clean household tanks as per the schedule</div>	<ul style="list-style-type: none"> Portion of the monthly payment should be tied to the number of household signatures collected from households whose septic tanks have been cleaned satisfactorily ULB to undertake random inspections of households whose signatures have been submitted A complaint redress mechanism to be opened where grievances can be lodged by the HH with the ULB 	<ul style="list-style-type: none"> Penalties to be imposed if the reported number of cleanings is lower than specified in the contract, or if discrepancies are found during random sampling, or if complaints are not dealt with in a timely manner Large or persistent breaches can lead to termination
Private player	As above	Work on faulty septic tanks would have to

Cleaning of septic tanks

Risk mitigation: Building a strong system for performance based monitoring and payment is critical to managing performance risk (2/2)

Risk	Mitigation	Allocation of remaining risk
 Septic tanks are damaged during or as a result of refurbishment	<ul style="list-style-type: none"> Specify the type of materials required Payment tied to the number of signatures from households whose septic tanks have been repaired to their satisfaction 	<ul style="list-style-type: none"> Damaged septic tanks must be repaired within a specified period days of complaint and the cost shall be borne by the private player Penalties will be imposed if discrepancies are found during random sampling, or if complaints are not dealt with in a timely manner Persistent breaches may lead to termination
<div style="border: 2px dashed red; padding: 5px;">Refurbishment of septic tanks</div>	<ul style="list-style-type: none"> ULB to undertake random inspections of households whose signatures have been submitted A complaint redress mechanism to be opened where grievances can be lodged by the HH with the ULB 	<ul style="list-style-type: none"> if the work is found to be faulty at any stage, the payment will be withheld until the corrections are made
 Sludge drying beds do not meet specified design	<ul style="list-style-type: none"> The ULB will specify the design and materials to be used in consultation with town consultants Payment made in installments on the completion of specific construction milestones 	
Construction of SDBs		


Managing performance risk through performance based monitoring and payment

transportation	citizens with the ULB	specified period, to avoid a fine
Private player dumps septage at places other than the treatment site	A portion of monthly payment is tied to signatures collected from the SDB operator	In case the number of complaints exceeds a specified number in a given time period, the contract can be terminated
		standards, a warning would be given, followed by fines.
		Persistent breaches may lead to termination

O&M of SDBs




from SDBs is not sufficiently treated	sanitation department to measure sludge properties	
	X% of O&M payment to be conditional on the sludge meeting specified qualities	

Risk mitigation: Contracts must also clearly manage at will and at cause termination by the private player and the ULB

Risk	Mitigation	Allocation of remaining risk
 ULB does not fulfill contract conditions	<ul style="list-style-type: none"> Establishing a clear reporting and monitoring mechanism to ensure transparent contract execution Ensuring that disputes are handled amicably through frequent communication and by appointing an agreed upon third party mediator As above 	<ul style="list-style-type: none"> Private player compensated for investments, the cost of winding down and foregone profits
Private player is unable to meet service standards		ULB can compensate the private player for some portion of its capital investments but seize the performance bank guarantee
ULB decides to discontinue the	Up-front discussions with key stakeholders to create buy-in for	X month notice period required Private player compensated for

Termination at cause

Risk mitigation: Provisions need to be made for payment delays and cost escalation to protect private player and public interests

Risk	Mitigation	Allocation of remaining risk
 ULB is unable to make timely payments towards the project	<ul style="list-style-type: none"> Ensuring budgetary allocation for contracts before procurement Establishment of an escrow account for payment 	<ul style="list-style-type: none"> ULB to pay interest for the payment, delayed by X months or more, at a negotiated rate of interest
 Payment delays		
 Cost of inputs increase over the course of contract	Adjustment of contract value annually for inflation	Private player would be responsible for bearing the cost escalations within
Cost escalation		

Managing termination risk

 Private player wants to terminate the contract due to reasons unrelated to ULB compliance with contract terms	Frequent communication between ULB and private player	X month notice period required Private player forfeits the performance bank guarantee
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Termination at will

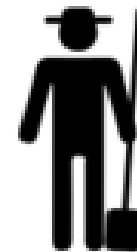
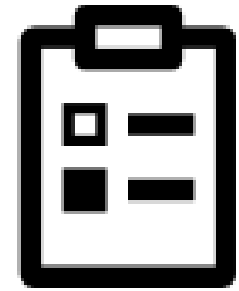
Managing payment and cost escalation risk

Quick summary – city level

- Assessment, plans and regulation for the **full service chain** – from toilets to reuse
- Need to **assess potential and concerns of private sector** in the city /region context
- Risk assessment, **risk management** and appropriate **contract design**
- **Awareness** among residents about IFSM service and regulation
- Set up **citywide information system** and strengthen local capacity for **contract management and monitoring**

National / State level activities

- **Guidelines for citywide IFSM** with private sector participation
- Need for a **regulatory framework** at state level for implementation and monitoring of **IFSM activities**
- **Empanel private sector** for taking up **IFSM** activities and create a **conducive environment** for private sector participation
- **Financing IFSM** activities through **Viability Gap Funding (VGF)**
- Include IFSM in **Swachh Bharat program**



Thank you

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