

# Training on Financing and Contracting Options for FSSM

## Part A - Presentation slides



**CWAS** CENTER FOR WATER AND SANITATION

**CRDF** CEPT RESEARCH AND DEVELOPMENT FOUNDATION

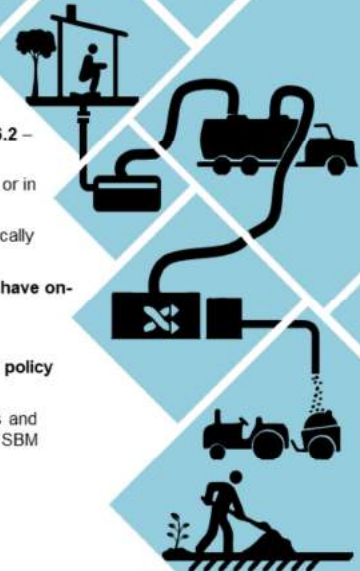
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**niu** National Institute of Urban Affairs



## About this training module on Financing and Contracting Options for FSSM

- After making cities ODF under Swachh Bharat Mission, now, need to think 'beyond toilets' for achieving **SDG 6.2** – focus on **conveyance, treatment and also reuse** for “safely managed sanitation”
  - ~ 70% of wastewater remains untreated<sup>1</sup> and discharged in the domestic environment, agriculture fields or in water bodies
  - Conventionally, “beyond toilet” entails treatment plants connected to large scale sewerage systems, typically funded by central and state government programmes
  - ... but only 400/4700 Indian cities, have sewerage connections with treatment plant<sup>2</sup>. **Most small cities have on-site sanitation systems**, which are financially viable for smaller cities<sup>2</sup> to service and manage.
- FSSM is a viable solution
  - **Faecal Sludge and Septage Management (FSSM)** now recognized nationally through **National FSSM policy** and missions and activities such as **Swachh Sarvekshan** and **AMRUT programme**.
  - Indian states now evolving FSSM strategies and implementing in cities through various state programmes and funds. Government of India has also made available programmatic funding through AMRUT and certain SBM components.
- This module focuses on –
  - how cities can leverage available public funds,
  - augment these with private financing and encourage private sector role in service delivery
  - explore other blended and innovative financing mechanisms.
  - guidance on potential service and operation models in FSSM for both conveyance and treatment.



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1. Central Pollution Control Board (2015). Inventory of sewage treatment plants. Retrieved from: [https://mol.nic.in/writereaddata/Files/opsa/levitem\\_210\\_inventory\\_of\\_sewage-treatment\\_plant.pdf](https://mol.nic.in/writereaddata/Files/opsa/levitem_210_inventory_of_sewage-treatment_plant.pdf)

2. Anetta M. Mehta D and Nadev U (2018) Citywide Inclusive Sanitation Through Scheduled Desludging Services: Emerging Experience From India. Front. Environ. Sci. 7: 285. doi: 10.3389/fenv.2018.00285. Retrieved from:

India has seen impressive sanitation achievements in making cities open defecation free and has largely succeeded in achieving the goal of **Swachh Bharat Mission**. However, achieving **Sustainable Development Goal 6.2 for moving towards “safely managed sanitation”** i.e collecting and treating all faecal waste safely, will require greater effort.

For moving ‘beyond toilets’ we need to **focus on conveyance, treatment and also reuse**. Data suggests that nearly 80% of faecal waste in India remains untreated<sup>1</sup> and discharged in the domestic environment, agriculture fields or in water bodies

Conventionally, in India, this entails treatment plants connected to large scale sewerage systems, typically funded by central and state government programmes. As a result, out of 4700 cities, only around 400 cities have sewerage connections with treatment plant<sup>2</sup>. **Most cities have on-site sanitation systems**, which are financially viable for smaller cities<sup>3</sup> to service and manage.

The need for **Faecal Sludge and Septage Management (FSSM)** is now recognized at the national level through **National FSSM policy** and missions and activities such as **Swachh Sarvekshan** and **AMRUT programme**.

Indian states are now evolving FSSM strategies and implementing them in their cities through various state programmes and funds. Government of India has also made available programmatic funding through AMRUT and certain SBM components.

This module on “**Financing and contracting options for FSSM**” focuses on how cities can leverage available public funds, augment these with private financing, encourage private sector role in service delivery and explore other blended and innovative financing mechanisms. It will provide guidance on potential service and operation models in FSSM for both conveyance and treatment.

## Learning objectives for this training

### What does this training expect the participants to learn?



1. Become familiar with the FSSM finance scenario in India and mechanisms adopted by states/ cities



2. Understand components of different FSSM business models for conveyance and treatment



3. Understanding processes for contracting with private sector and build balanced contracts



4. Understand financial requirements, potential sources and budgeting for operationalizing FSSM in a city



5. Learn about emerging innovative mechanisms for FSSM projects

### What can participants expect to do after this training?



Select an appropriate model for providing FSSM services in their city



Develop viable options for financing this model



Select a private player for providing services



Develop appropriate contracts for engaging private players

# Structure of the training

Session	Session 1 FSSM finance in India	Session 2 Business models for conveyance	Session3 Business models for treatment	Session 4 Private sector partnerships and contract management	Session 5 Innovative Financing options
Objectives	<ul style="list-style-type: none"> <li>To stress on the emerging importance and emphasis on FSSM in India</li> <li>Refresh concepts of sanitation value chain, steps for operationalising FSSM in a city, financial requirements for FSSM and potential sources for CapEx and OpEx</li> <li>Understand the current scenario of FSSM finance in India</li> </ul>	<ul style="list-style-type: none"> <li>Introduce the types of service models for operationalizing scheduled/ demand based desludging</li> <li>Understand benefits, challenges, applicability for each model as well as operational and financial roles</li> <li>Become familiar with national/international case studies of business models in conveyance</li> </ul>	<ul style="list-style-type: none"> <li>Introduce the types of models for treatment</li> <li>Understand benefits, challenges, applicability for each model as well as operational and financial roles</li> <li>Become familiar with national/international case studies of business models in treatment</li> </ul>	<ul style="list-style-type: none"> <li>Understand the need and scope of involving private sector in FSSM</li> <li>Understand the procurement and contracting process</li> <li>Understand the components of successful contracts for engaging the private sector – for conveyance of FS and for operation of FSTP</li> </ul>	<ul style="list-style-type: none"> <li>Understand potential to utilize public funds for leveraging innovative / blended finance and attract private/ commercial funds and impact investors</li> <li>Understand different innovative financing options like Blended finance, Development Impact Bond, Pooled funds, market borrowings, etc. for FSSM</li> <li>Present case studies/videos to explain different innovative financing options</li> </ul>
Activity	<p><b>Activity 1</b> Pre - assessment quiz</p> <p><b>Activity 2A</b> FSSM infrastructure estimation for a city</p> <p><b>Activity 2B</b> State budget estimation for FSSM services</p>	<p><b>Activity 3</b> Quiz on PLAM desludging service</p> <p><b>Activity 4</b> Building a model for a financially feasible desludging business in a city</p>	<p><b>Activity 5</b> FSSM business model canvas for identifying suitable service in a city</p>	<p><b>Activity 6A</b> Procurement plan</p> <p><b>Activity 6B</b> Setting goals for drafting contracts</p> <p><b>Activity 6C</b> Options for overcoming case specific contracting challenges</p>	<p><b>Activity 7</b> Video case study and quiz on new and emerging financing options</p>

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# Activity 1

## Pre-assessment quiz

**Refer to exercise workbook**

Participants should take the pre – evaluation quiz at this stage. Such quizzes are ideal for determining pre-existing subject knowledge in the audience and will help the trainer tweak their style of teaching and the knowledge baseline for covering each topic.

Although appearing to be counterintuitive, the quiz will cover material that the audience is not expected to know before the training. It will also the audience an indication of topics that will be covered and the depth of knowledge required.



## Session 1

# FSSM Finance in India

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## Session Objectives



Make a case for FSSM as a solution for safely managed sanitation for which there is growing recognition



Become acquainted with the status of FSSM sector in India



Know the basics of FSSM implementation



Understand financial requirements and emerging solutions for FSSM in cities



# Contents

- 1 Growing significance of FSSM in India
- 2 What does FSSM implementation entail?
- 3 Financial requirements for FSSM in cities





# Contents

1

Growing significance of FSSM in India

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2

What does FSSM implementation entail?

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3

Financial requirements for FSSM in cities

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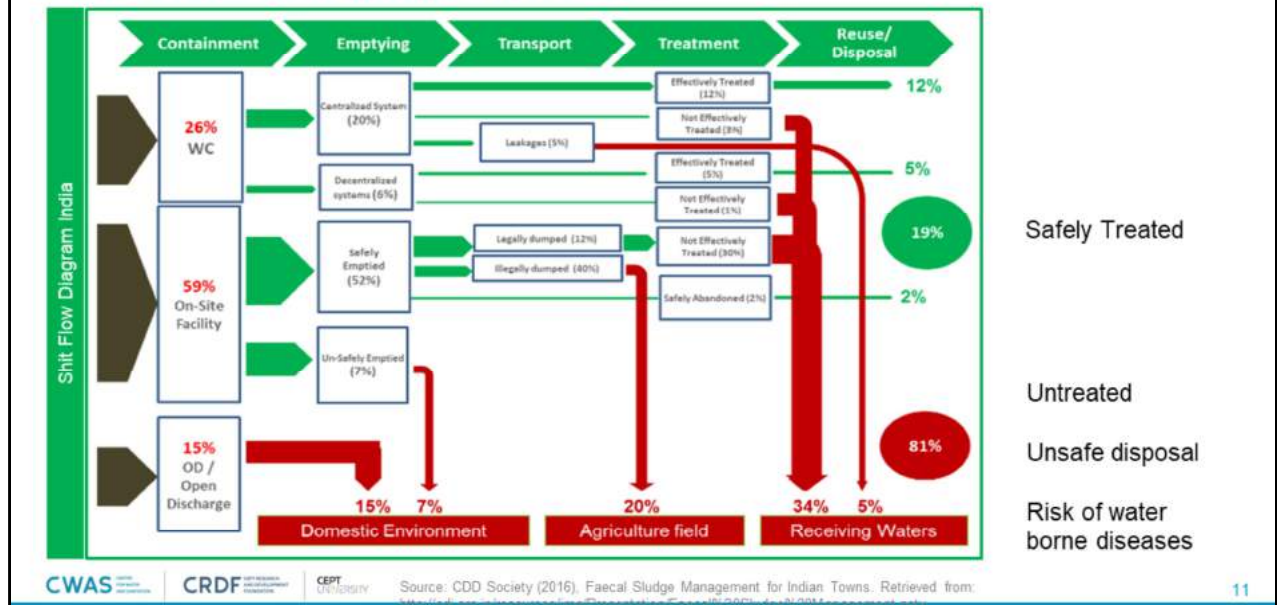
## Significant achievements in India under Swachh Bharat Mission



CWAS | CRDF | CEPT | Source: MOHUA, "Swachh Bharat Mission Urban – Dashboard" Retrieved from <http://swachhbharaturban.gov.in/dashboard/> on 17 Dec 2020

The Swachh Bharat Mission has resulted in significant achievements in making cities open defecation free. 99% of cities have been certified ODF. However, what happens to the water after it is flushed down the toilet? Focusing only on toilet construction leads to a situation where most of the waste remains untreated. Frameworks for ODF++ and Water+ seek to address this.

## BUT focusing only on toilets leads to a situation where 80% of waste remains untreated



An excreta flow diagram (or shit flow diagram, SFD) is a tool to understand and communicate how excreta ‘flow’ through a city or town. It shows how all excreta generated in a city is or is not contained as it moves from defecation to disposal or end-use.

This SFD for India, developed using Census 2011 data, suggests that 81% of faecal waste in India remains untreated and discharged in the domestic environment, agriculture fields or in water bodies.

Untreated waste is one of the main factors for the spread of water borne diseases which are a major cause of infant and child mortality in India.



India is also signatory to the ‘2030 Agenda for Sustainable Development’, adopted at the Sustainable Development Summit of the United Nations in September 2015. It comprises of seventeen Sustainable Development Goals (SDGs) and 169 associated targets. Of these, 3 SDGs namely SDG No. 6: Ensure availability and sustainable management of water and sanitation for all, SDG No. 11: Make cities and human settlements inclusive, safe, resilient and sustainable, and SDG No. 12: Ensure sustainable consumption and production patterns, are directly related to sanitation sector. This also obligates Government of India as well as State Governments to develop strategies to cover entire population with sanitation facility by year 2030.

SDG 6 relates to clean water and sanitation with the following goals -

- Target SDG 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation. Special focus on needs of women and girls and those in vulnerable situations
- Target SDG 6.3: By 2030, improve water quality by reducing pollution and halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

In order to achieve SDG 6, we will need to think beyond toilets!



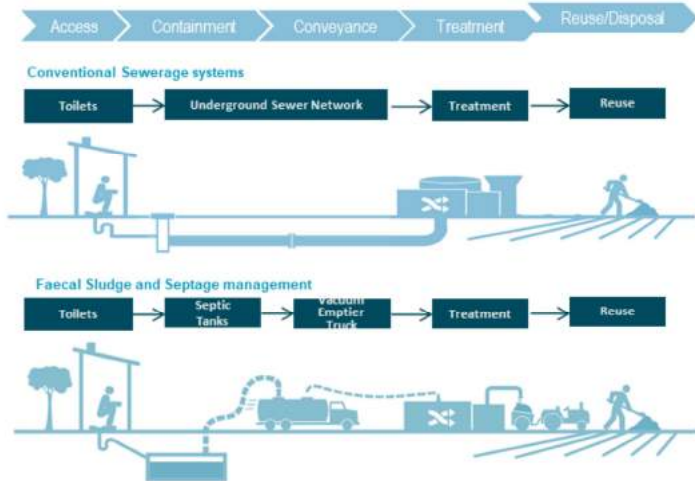
# FSSM as a viable solution for safely managed sanitation

## Sanitation ladder of JMP (WHO-UNICEF)<sup>1</sup>

Service Level	Definition
<b>SAFELY MANAGED</b>	Use of improved facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite
<b>BASIC</b>	Use of improved facilities that are not shared with other households
<b>LIMITED</b>	Use of improved facilities shared between two or more households
<b>UNIMPROVED</b>	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
<b>OPEN DEFECACTION</b>	Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches or other open spaces, or with solid waste

*Note: improved facilities include flush/pour flush to piped sewer systems, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets or pit latrines with slabs.*

## Safe management across sanitation value chain



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<sup>1</sup> UNICEF & WHO. Sanitation | JMP. WASHdata.org. Retrieved from <https://washdata.org/monitoring/sanitation>

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The Joint Monitoring Programme (JMP) for Water Supply and Sanitation by WHO and UNICEF is the official United Nations mechanism tasked with monitoring progress towards the Sustainable Development Goal Number 6 (SDG 6) since 2016.

JMP uses “service ladder” classifications to benchmark and compare progress across countries. The ladders for water and sanitation build on the established improved/unimproved facility type classification from the Millennium Development Goal era.

The sanitation ladder describes “safely managed sanitation” – the ultimate goal – to be “use of facilities that are not shared and where excreta are safely disposed of in situ or transported and treated offsite”.

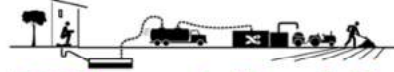
Solutions for faecal sludge and septage management – such as septic tank + soak pit + vacuum truck + FSTP combinations - also fit this definition and in absence of conventional sewerage systems, are a viable solution to achieve “safely managed sanitation”

## FSSM as a solution to address current urban sanitation challenges

Only **40%** of urban population in India is serviced **with sewerage systems**. **60%** dependent **on-site sanitation systems** like septic tanks<sup>1</sup>

Only **30%** of the **waste water** generated in urban areas currently **treated**<sup>2</sup>

India experiencing **high rate of urbanization** - By the year 2050, 50% population will be urban - indicating further sanitation challenges<sup>1</sup>



### FSSM as a viable solution

- Inexpensive to implement – low capital, O&M
- Easy to expand services in growing cities
- Lesser water requirements
- Low technical expertise
- Quick implementation

In absence of existing or planned networks in small and medium towns, new toilets built under SBM connected to onsite systems

**Sewerage and STP** projects being funded and initiated but they take **long periods** to become functional. **Not financially viable** for smaller towns. **Meanwhile, FSSM** more pragmatic solution

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1 MoHUA, Govt. (2020). Advisory On On-site And Off-site Sewage Management Practices. Retrieved from <https://scbp.niua.org/?q=content/advisory-site-and-off-site-sewage-management-practices-cphec-goi-0>

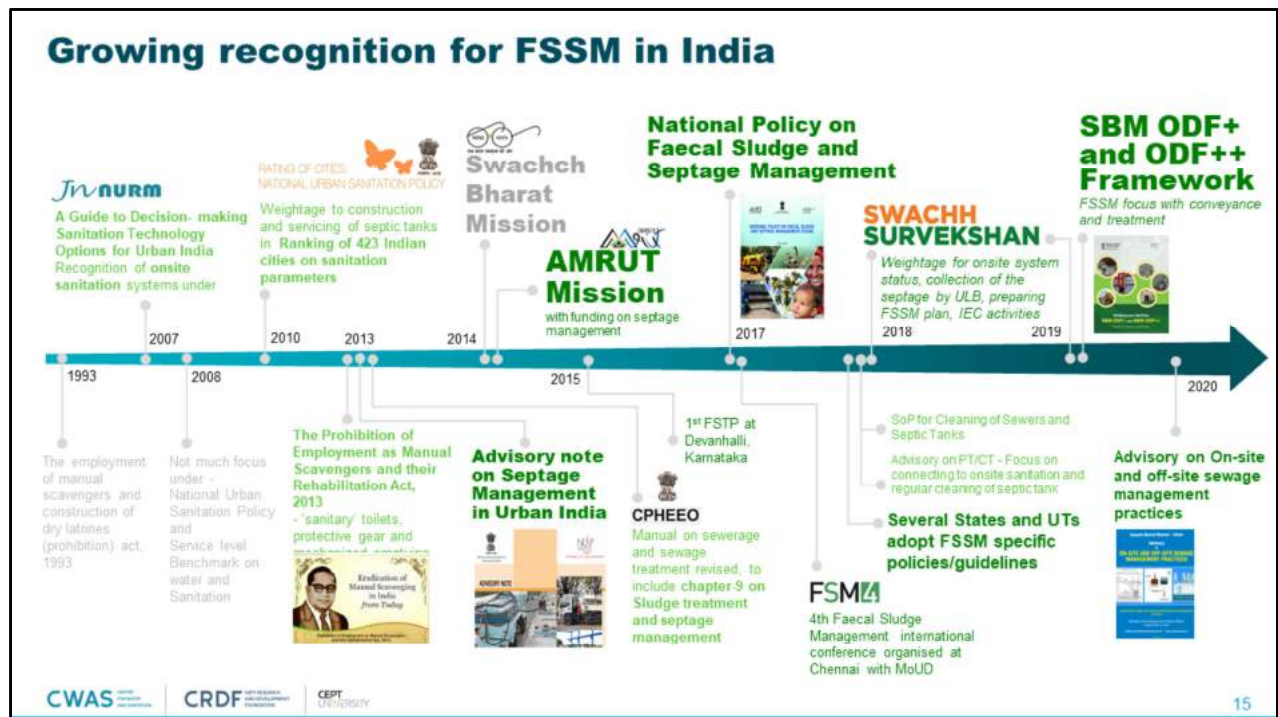
2 Central Pollution Control Board (2015). Inventorization of sewage treatment plants. Retrieved from: [https://nrcd.nic.in/writersdata/FileUploadNewItem\\_210\\_Inventorization\\_of\\_Sewage\\_Treatment\\_Plant.pdf](https://nrcd.nic.in/writersdata/FileUploadNewItem_210_Inventorization_of_Sewage_Treatment_Plant.pdf)

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In a scenario where 60% of the population is already dependent on on-site sanitation systems and untreated wastewater requires urgent attention, FSSM is a viable solution.

While, sewerage and STP projects are being funded and initiated across the country, they take long periods to become functional. Such capital intensive projects are also not financially viable for smaller towns which have limited revenue and budgets.

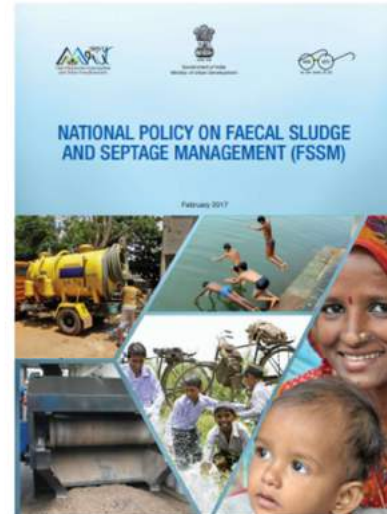
In absence of existing or planned networks in these towns, FSSM is a more pragmatic solution. It is relatively inexpensive and quick to implement and does not require high technical expertise. Water requirements are also low and services can easily be expanded to new areas in growing cities.



FSSM is fast gaining traction in India. In 2007, under JUNNURM, a guide to decision making sanitation technology options for urban India was launched under which onsite sanitation systems were recognised. In 2010, under the National Urban Policy, rating of 423 Indian cities was done on various sanitation parameters. In 2013, 'The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act' came which focussed on safety protocols of sanitation workers. Also, the CPHEEO guidelines were revised from sewerage and sewerage treatment to sludge treatment and septage management and an advisory note on septage management was launched. In 2014, sanitation gained momentum with the launch of Swachh Bharat Mission and Amrut Mission with funding on septage management by the government. In 2015, the first FSTP was set up in Devanhalli, Karnataka. In 2017, National Policy of Faecal Sludge and Septage Management was launched. In 2018, under the Swachh Sarvekshan, weightage for onsite system status, collection of septage by ULBs, preparation of FSSM plans and IEC activities were considered. In 2019, MOHUA launched the SBM ODF+ and ODF++ framework with a focus on conveyance and treatment. An advisory on on-site and off-site sewage management was launched in 2020 thriving the FSSM momentum continuously.

## Key Highlights of the FSSM Policy

- **Roles and responsibilities** of institutions and stakeholders
- **Framework** for preparing **FSSM plan** at **state level**
- **Promotes scheduled emptying** of **septic tanks** at an interval of **2-3 years**
- **Promotes private sector participation** in FSSM
- **Encourages ULBs** to start **levying sanitation tax/ user charges** to **meet the O&M cost** for **effective FSSM** operations at city level.
- **Adopts San-benchmarks at National level** for **monitoring FSSM**, instructs states and cities to set up monitoring and evaluation system for FSSM



The National FSSM policy was a key turning point in the enabling environment for FSSM in India. It described the roles and responsibilities of institutions and stakeholders and a framework for preparing FSSM plan at state level. It also introduced and adopted San-benchmarks at National level for monitoring FSSM. It promotes scheduled emptying of septic tanks at an interval of 2-3 years, private sector participation in FSSM and levying sanitation tax / user charges to meet the O&M cost for effective FSSM operations at city level.



## Protocols by MoHUA under SBM – FSSM a requirement to attain ODF++ status

ODF	ODF+	ODF++	Water +
A city / ward can be notified/declared as ODF city/ ODF ward if, at any point of the day, not a single person is found defecating in the open.	Not a single person is found defecating and/or urinating in the open, and all community & public toilets are functional and well maintained	<b>ODF+ AND Faecal sludge/septage and sewage is safely managed and treated, with no discharging and/or dumping of untreated faecal sludge/septage and sewage in drains/water bodies/open areas</b>	<b>All wastewater released from households, commercial establishments ,drains, nallahs etc. is treated to a satisfactory level before releasing the treated wastewater to the environment</b>

Source: Ministry of Housing and urban Affairs (2019) "Declaring your City/Town SBM ODF+ and SBM ODF++ Toolkit for Urban Local Bodies" Govt. of India. Retrieved from: <https://www.pcmoina.gov.in/mra/alf/sem/019/ODFPlus.pdf>  
Ministry of Urban Development (2019) "Swachh Bharat Mission (Urban) SBM Water Plus Protocol" Govt. of India. Retrieved from: <http://swachhbharatmission.gov.in/inter/readsata/WaterPlusBook24thMay20.pdf>

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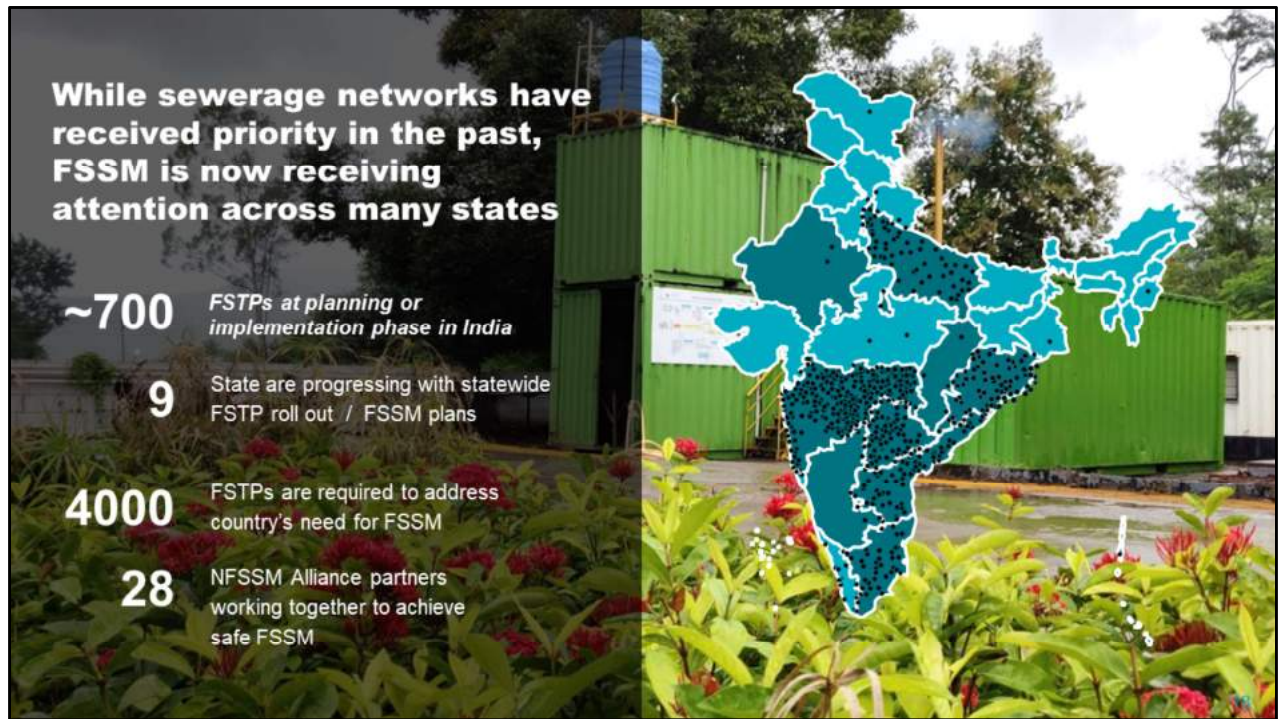
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Frameworks and protocols for ODF++ and Water+ certification under the Swachh Bharat Mission seek to address improvements beyond toilet access.

ODF++ certification requires that in addition to all requirements for ODF and ODF+, all faecal sludge and sewage is safely managed and treated, with no discharging or dumping of untreated faecal sludge and sewage in drains, water bodies or open areas.

Thus, FSSM has become a requirement to achieve ODF++ status for cities without sewerage and STPs as well as those cities which are not able to cover all areas with networks.



With such positive and enabling environment in recent years, FSSM is receiving attention nation wide. Many state governments are progressing with statewide FSSM plans and over 700 faecal sludge treatment plants are being mobilized across the country.



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Growing significance of FSSM in  
India

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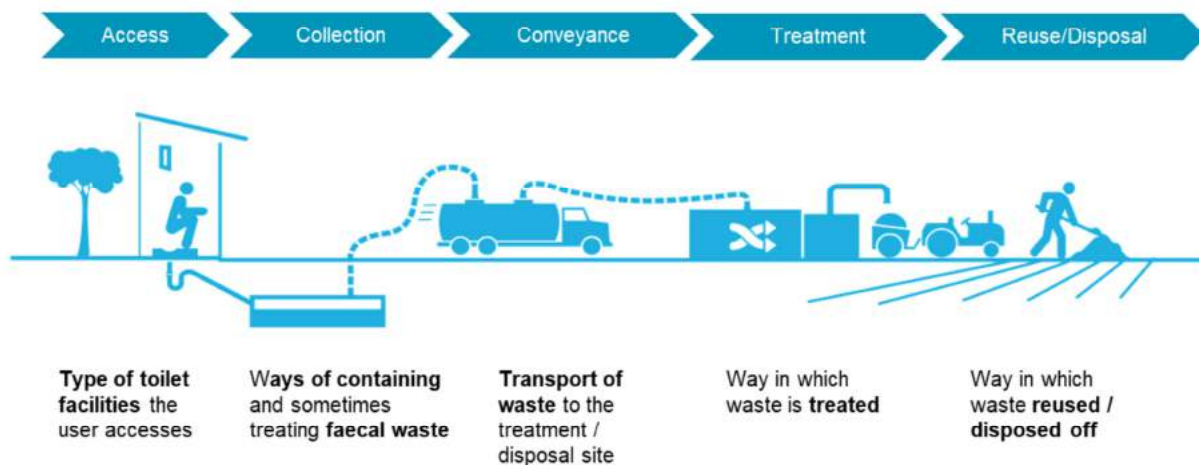
**2** What does FSSM implementation  
entail?

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**3** Financial requirements for FSSM  
in cities

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## FSSM value chain



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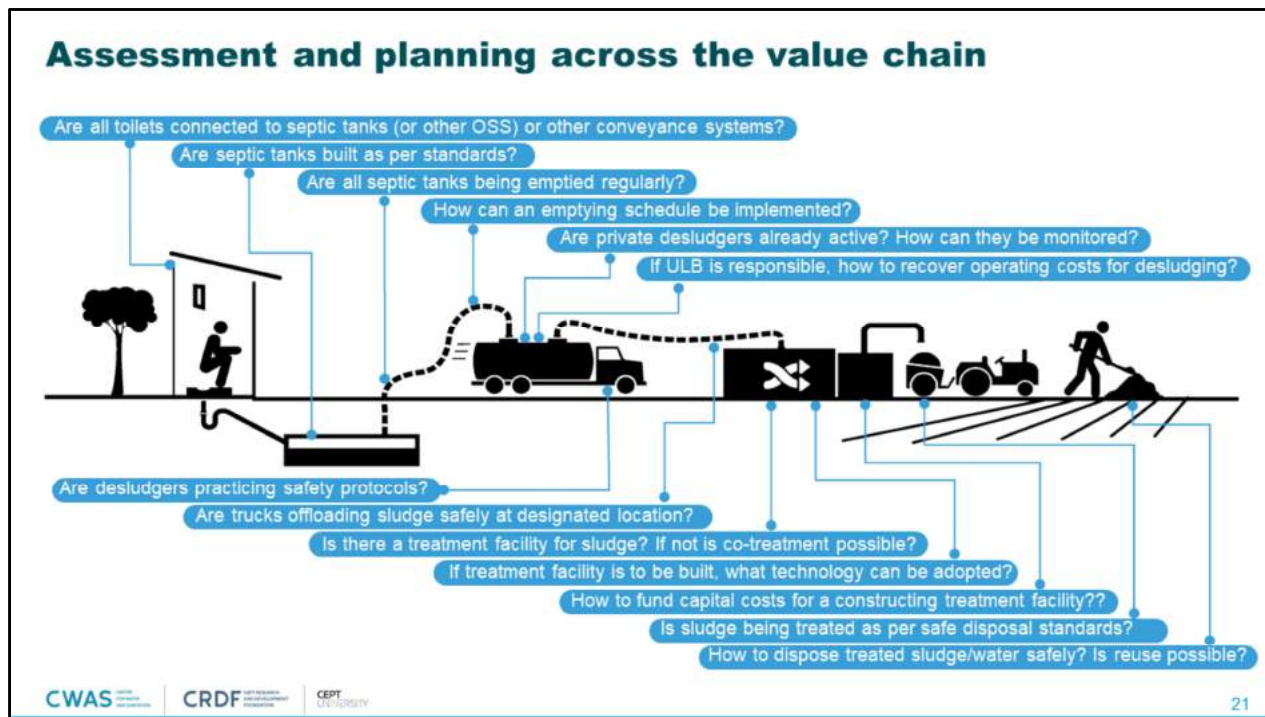
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Faecal sludge management refers to the processes for building a sustainable and environmentally safe infrastructure from containment to end use or disposal of faecal sludge from on-site sanitation systems (OSS). It is imperative to look at these processes as a value chain where value can be added at each stage. The Sanitation Value Chain also provides a useful method to divide different FSSM processes into different activities and identify the type of improvement actions that may be required.

In order to ensure efficient and end-to-end FSSM, planners need to assess services across all links in the FSSM value chain. The first link – access – refers to the type of toilet facilities available to the end user. Open defecation, if any, is also covered under this. Collection refers to the ways of containing, and sometimes treating, faecal waste. These are usually septic tanks, twin pits, single pits. Conveyance refers to the ways in which FS is removed from containment systems and transported to treatment and/or disposal sites. FS should then be treated and rendered fit for appropriate disposal or reuse as per prevailing quality standards.





Assessments and subsequent planning across the value chain should provide definitive answers to the above questions. While some can be answered by city level observations, others might require more in-depth analysis and household surveys. Detailed assessment of services will need to be done across each link in the chain through appropriate field assessments:

**Access:** Describes the type of toilet facilities available to the residents. It is useful to assess dependency of residents on individual, community and public toilets. Ideally such information should be assessed for various zones/wards of the city.

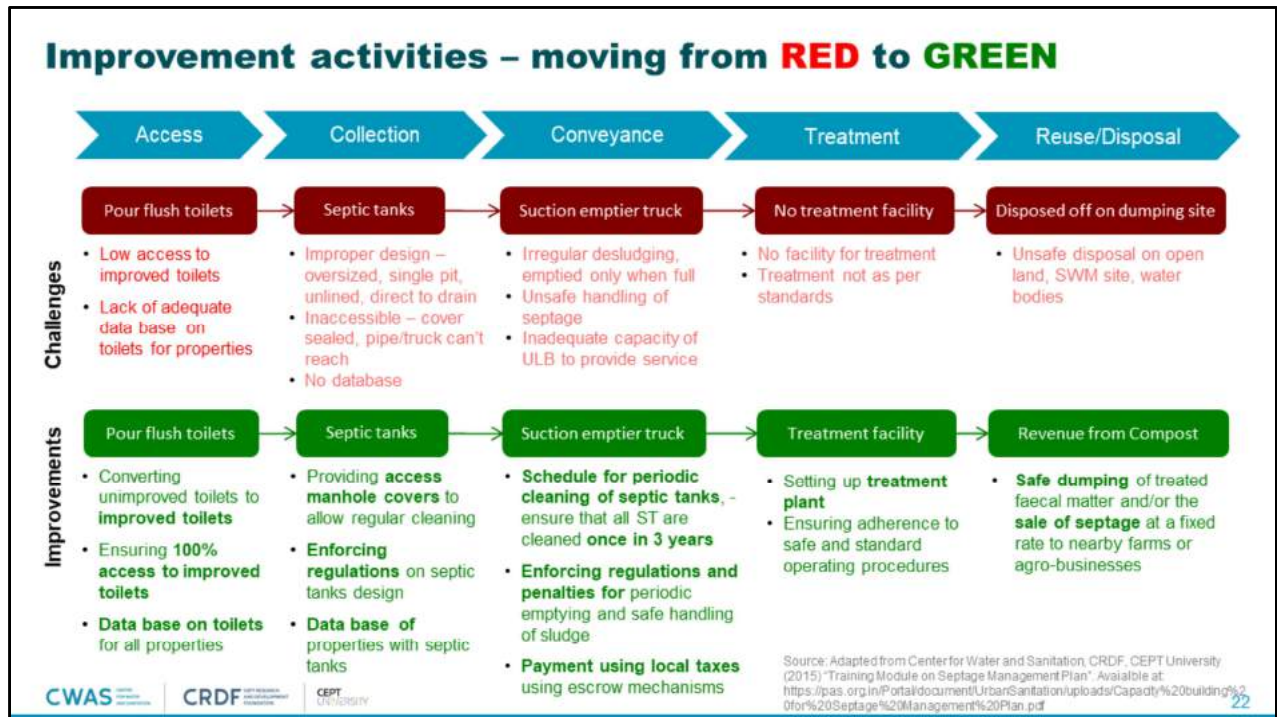
**Collection of septage:** Describes the ways of collecting, storing, and sometimes treating the fecal waste generated by the users. It is necessary to identify the type of toilets (septic tanks, double pits etc), and details related to location, size, design and access for emptying.

**Conveyance:** It is also important to assess how the fecal sludge is conveyed from household/community toilets to the treatment / disposal site. One needs to identify who is involved in emptying, the equipment used (e.g. septic tank emptier, jetting machine) and its details related to type and size and the fees charged for emptying by public and/or private agencies. As far as possible, details should be collected for different wards/zones of the city. The monitoring system for FSM should also be assessed.

**Septage treatment, disposal:** Assess how the collected fecal sludge is treated. In a large number of cities, it is often discarded in water bodies or on the ground without any treatment. It is important to assess the soil and water quality at the location where the septage is being treated / dumped

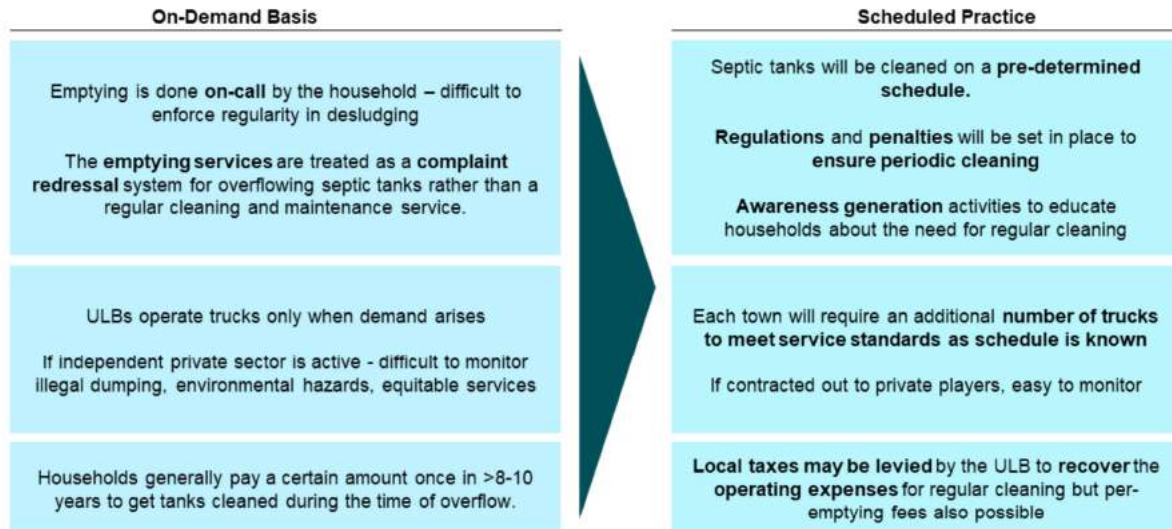
**Extent and nature of reuse:** The treated sludge can be used as fertilizer or used to generate energy. Assess how the sludge is used, assess the market, if any, for treated sludge.

## Improvement activities – moving from RED to GREEN



In the above chart, the red chain is a scenario typical to small and medium towns in India. The ultimate goal should be to move from red – to green –the ideal situation for safely managed sanitation

## Scheduled desludging – solution for regular emptying of septic tanks



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Source: Adapted from Center for Water and Sanitation, CRDF, CEPT University (2017) 'Training of Trainers for FSSM'. Prepared for NIIA under Sanitation Capacity Building Platform Retrieved from: [https://ps.srgh.in/Portal/document/Resource/Filespdfu/Training%20Presentation\\_ToT%20for%20FSSM.pdf](https://ps.srgh.in/Portal/document/Resource/Filespdfu/Training%20Presentation_ToT%20for%20FSSM.pdf) 23

While access to toilets has been sufficiently addressed under Swachh Bharat Mission and treatment plants are also being set up across the country, cities are now beginning to focus on conveyance services for faecal sludge from onsite systems like septic tanks.

CPHEEO guidelines recommend that the settled solids from a septic tank need to be desludged on a regular basis for it to function well. It suggests that “yearly desludging of septic tank is desirable, but if it is not feasible or economical, then septic tanks should be cleaned at least once in 2–3 years, provided the tank is not overloaded due to use by more than the number of persons for which it is designed” [[Central Public Health and Environmental Engineering Organisation \(CPHEEO\), 2013](#), p. 9–22].

Demand based models for desludging service are often not able to achieve this frequency. Emptying is done on-call by households who do not usually do so until their tanks overflow. Reasons for this include low awareness and avoidance of desludging costs unless absolutely necessary.

Scheduled desludging represents a planned effort to ensure regular desludging. In this, every property is covered along a defined route and the property occupiers are informed in advance about desludging.

Such a service has been successfully implemented in two cities in Maharashtra – Wai and Sinnar - as a municipal service in an effort to move away from a ‘complaint redressal model’ to a regular service. This service is offered to all properties in the city and is un-linked to a ‘desludging fee’, making it especially inclusive for low income households and those staying in slums.

The desludging service is provided in these cities as per a planned schedule to cover all residential and non-residential properties over a 3-year cycle. For this, the city area has been divided into three zones and each zone is planned to be covered in a year. Desludging is done by a private company that has entered into a performance-linked annuity contract with the local governments. The payment to the private provider is made by the local government against the targeted performance. A “sanitation tax” is added to each property tax bill to cover the payments made by local government to the desludging company.

## Benefits of Scheduled Emptying



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



**No manual labour** - Removal of need for manual labour due to regular emptying



**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



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



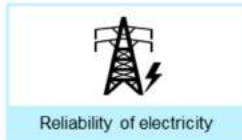
**Behavior change** - Contribution to ODF sustainability as toilet usage can increase



**Environmental benefits** - Lowered likelihood of septic tank overflows, increased efficiency of septic tanks resulting in lower pollutants (such as faecal coliforms) in drain effluent

# Identifying Septage Treatment Technology and Site

## Key factors in identifying treatment site



## Key factors in identifying treatment technology

**Local context and Site conditions:** Climate, soil Permeability, groundwater table, soil type, etc.

**Sludge characteristics and quantity and frequency of desludging**

**Land availability and cost**

**Capital and operating cost** - Investment costs covered, O&M costs covered, Affordability for households

**Simplicity in Construction & Operation** - Level of mechanization required for operations, availability of spares,

**Technical performance of treatment option:**

- Technology providing required quality of output according to the standards, Interest in end use
- Advantages and disadvantages in terms of local context
- Level of difficulty in handling end products generated, etc.





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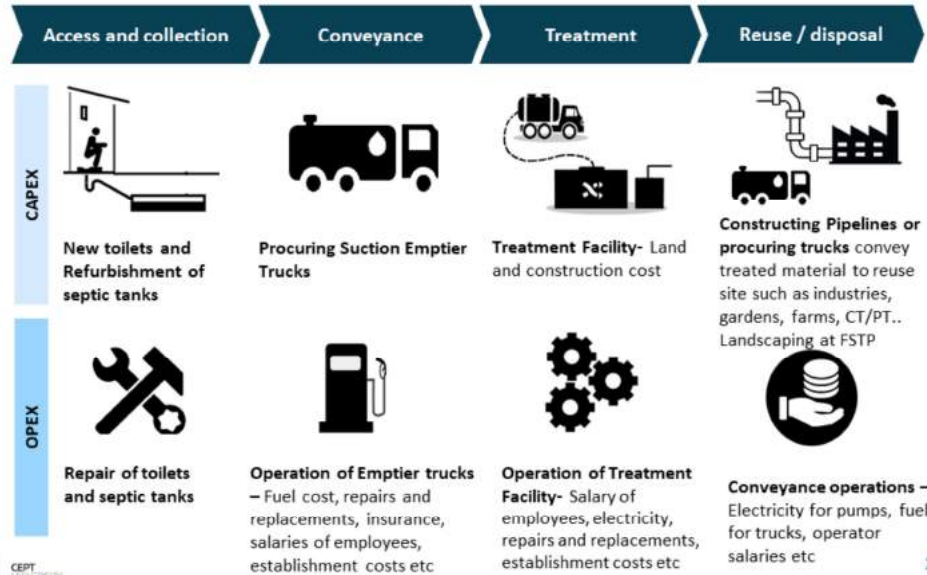
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## Financial requirements for FSSM

- Availability of funds for FSSM is crucial

- With increasing recognition of FSSM solutions, financing sources and models have emerged as key

- FSSM is typically viewed as a public good - public financing will have a significant role



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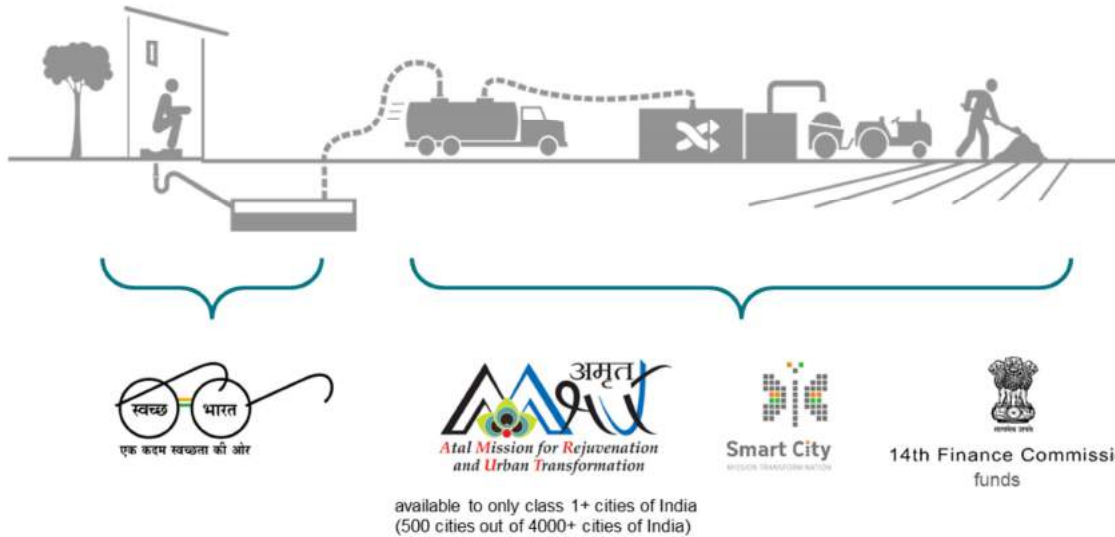
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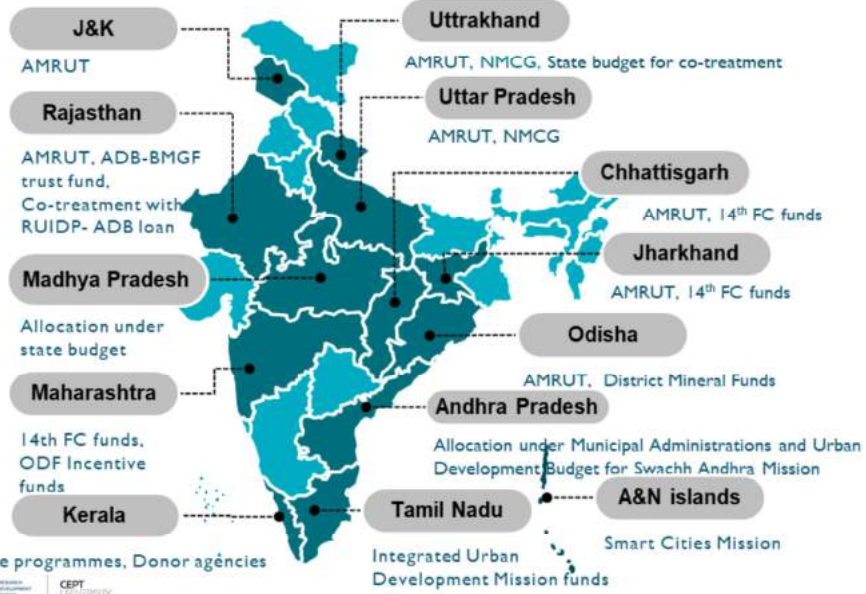
After understanding all the components of the FSSM value chain, it is essential to identify the possible financial sources to implement a FSSM plan in the city. With increasing recognition of FSSM solutions, financing sources and models have emerged as key. Sanitation services being the responsibility of local governments as per the 74<sup>th</sup> amendment, FSSM is typically viewed as a public good and thus public financing will have a significant role. While construction and repair of toilets/septic tank and operation of suction trucks (to some extent) can be funded by the end users, capital expenditure such as procurement of said trucks as well as construction of treatment plants will need to be funded through public financing. These come with added costs of daily operational expenditure such as fuel, electricity, salaries etc. In addition to these costs, there may also be additional activities such as awareness generation, improving data and monitoring systems and improving efficiency in collection of taxes and user charges by the local government.

## Current sources for funding FSSM



In terms of programmatic funding, currently, funds can be availed from the Swachh Bharat Mission for construction of individual toilets, public toilets, community toilets and OSS systems. Whereas funds for procuring vehicles and equipment for conveyance of septage, establishing treatment plant and disposal site, are being availed from the AMRUT mission and Smart Cities Mission. Cities are also showing initiative by using their 14<sup>th</sup> FC funds for such projects.

## States also funding FSTPs through various programmes



## Estimates for financing FSSM services across India vary though are not very high! For conveyance Capex ~INR 6000 crore and for treatment Capex ~6000-10,000 crore

### Estimate method 1 (2018-2022)<sup>1</sup>

Capex Requirement		
	in Rs. Crore	
	Conveyance	Treatment
AMRUT cities	2,833	2,903
Non-AMRUT cities	2,453	4,221
Census Towns	1,626	2,928
<b>All India</b>	<b>6,913</b>	<b>10,051</b>

Opex Requirement		
	in Rs. Crore	
	Conveyance	Treatment
AMRUT cities	2,133	808
Non-AMRUT cities	1,846	1,174
Census Towns	1,224	8,14
<b>All India</b>	<b>5,203</b>	<b>2,796</b>

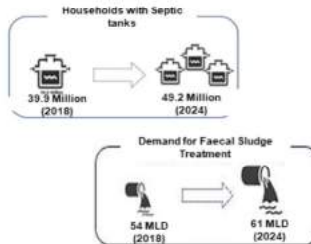
This excludes the investments already allocated. Ex: AMRUT

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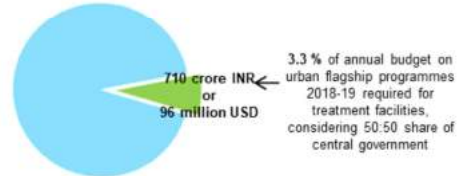
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### Estimate method 2 (2020-2024)<sup>2</sup>



- Intellicap<sup>2</sup> estimated that the required capacity for faecal sludge treatment will rise to **61 Million Litres per Day by 2024**
- "At least **2000 Faecal Sludge Treatment Plants (FSTPs)** will be needed to meet this demand along with investment required to the tune of **INR ~6000 Crore** over the next 5 years." - Intellicap, 2019.

### Govt. of India budget share<sup>3</sup>



- **3.3 %** of annual budget on urban flagship programmes 2018-19 required for treatment facilities, considering 50:50 share of central government
- **Gol can fund for FSTPs through national urban programs**
- CWAS's studies<sup>1</sup> across the four states of Maharashtra, Tamil Nadu, Andhra Pradesh and Odisha suggest that financing requirements for FSTPs is only 1 to 5% of state's UDD budgets
- Local governments have funds from **Finance Commission allocations**
- **Conveyance** can be financed through involvement of **private players**

1. CWAS estimates under the project "Financing FSSM". <https://cwas.org.in>

2. Intellicap (2019) "Catalyzing Private Sector Participation for Faecal Sludge and Septage Management (FSSM) in India". <https://www.intellicap.com/>

3. Ministry of Finance (2018-19) 'Ministry of Housing and Urban Affairs' expenditure budget



## Financially, what does it take to operationalize FSSM in a city?

### What does it take to build and run a Faecal Sludge Treatment Plant?

Costs vary widely between different technology options, however, based on generalized averages of existing FSTPs in India (2019)<sup>1</sup> –

- Rs. 6 lakh / KLD to construct
- 6% of construction of FSTP for annual operations

States	Technology	Number of FSTPs	Capacity (KLD)	Avg Capex (Rs lakh/ KLD)	Avg Opex (Rs lakh/KLD)
1. Odisha	DEWATS	10	20-75	5.9	0.4
2. Tamil Nadu	Non-Mechanical	3	23-32	14.0	0.6
3. Andhra Pradesh	-neutral-	2	15	5.0	0.7
4. Maharashtra	Non-Mechanical	100+	70	2.2	0.5
5. Rest of India		14	6-100	6.3	0.5

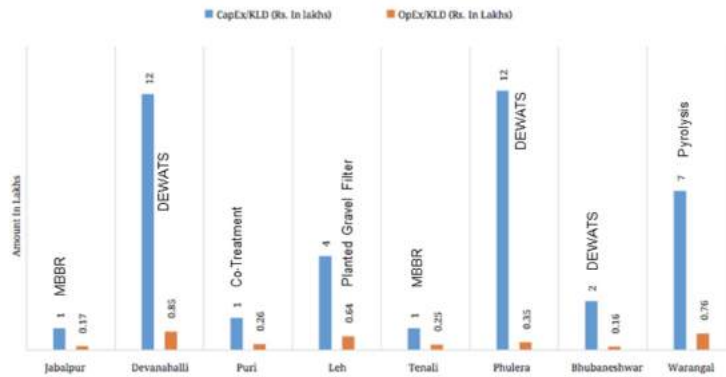
### What does it take to run desludging operations?

- Rs 30-35 lakh for 5000-6000 liters capacity truck
- Rs 15-25 lakh for 3000 liters capacity truck
- Fuel costs, operator salaries, establishment costs, trip economy...
- Desludging charges – Rs1000-3000 per operation. Some examples<sup>2</sup> -

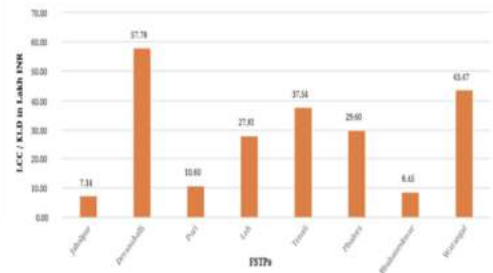
City	Population	Charge per operation (Rs)
Kundapura, Karnataka	31 K	1700
Mihijam, Jharkhand	40 K	2500-3000
Vijayapur, Karnataka	40 K	1000
Belgavi, Karnataka	1.1 L	1500-2500
Hazaribagh, Jharkhand	1.5 L	1000-1200
Adityapur, Jharkhand	1.7 L	2500-3000
Cuttak, Odisha	6.1 L	1000-1300
Jabalpur, Madhya Pradesh	12.6 L	1505

## FSTP costs vary by technology

### Comparative CapEx and OpEx for 8 FSTPs across India



However, lifecycle cost must also be considered  
LCC per KLD across technologies



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Source: NIUA (2019) "Cost Analysis of Faecal Sludge Treatment Plants in India". Retrieved from: [https://www.pseau.org/outils/outrages/niua\\_cost\\_analysis\\_of\\_faecal\\_sludge\\_treatment\\_plants\\_in\\_india\\_2019.pdf](https://www.pseau.org/outils/outrages/niua_cost_analysis_of_faecal_sludge_treatment_plants_in_india_2019.pdf)

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Cost of treatment depends greatly on technology selection. In a study conducted by the NIUA for cost assessments of 8 model FSTPs in India, a fundamental analysis of the costing per KLD is carried out to understand the variation of the costing between technologies. Noticeably, costs of the FSTPs vary significantly, from as low as Rs. 1,00,000 per KLD to as high as Rs. 17,00,000. The variations are also since the extent of treatment significantly varies between technologies as revealed in more detail in the study. The type of treatment system being considered will, to a large extent, determine the CapEx distribution profile. Systems that require large structures such as DEWATS will incur higher construction costs. Complex hybrid systems such as MBBRs will have higher specialized consumable material such as chemicals and labour costs. Natural systems such as CWs and Planted Drying Beds will have a much greater civil works cost than conventional electro-mechanical systems due to the large surface areas involved.

Life Cycle Costing or the total economic cost of a given system is determined by assessing both the capital and operational costs together over the entire life cycle of the system. The concept of LCC, now widely accepted, introduces a new level of transparency to costing, and exposed hidden costs that were not immediately apparent with traditional costing methods. This approach makes it possible to determine the most cost-effective solution amongst a range of alternatives by considering all cash flows over the lifetime of the system and allows practitioners to identify potential trade-offs between initial capital investment costs and long-term cost savings.

From the LCC analysis of the different technologies, it is evident that the technologies focusing primarily on liquid management are far lesser in the total LCC, when compared to technologies which focuses on both liquid as well as solids management. Phulera, Bhubaneswar and Warangal show total LCC, at about 3-4 times that of Jabalpur, Leh and Tenali.

# Activity 2A FSSM infrastructure estimation for a city

**Refer to exercise workbook**

Participants should refer to the exercise workbook at this stage for the cost estimation exercise. Such estimations for a city will give a rough idea of the fund requirements for implementing citywide FSSM.

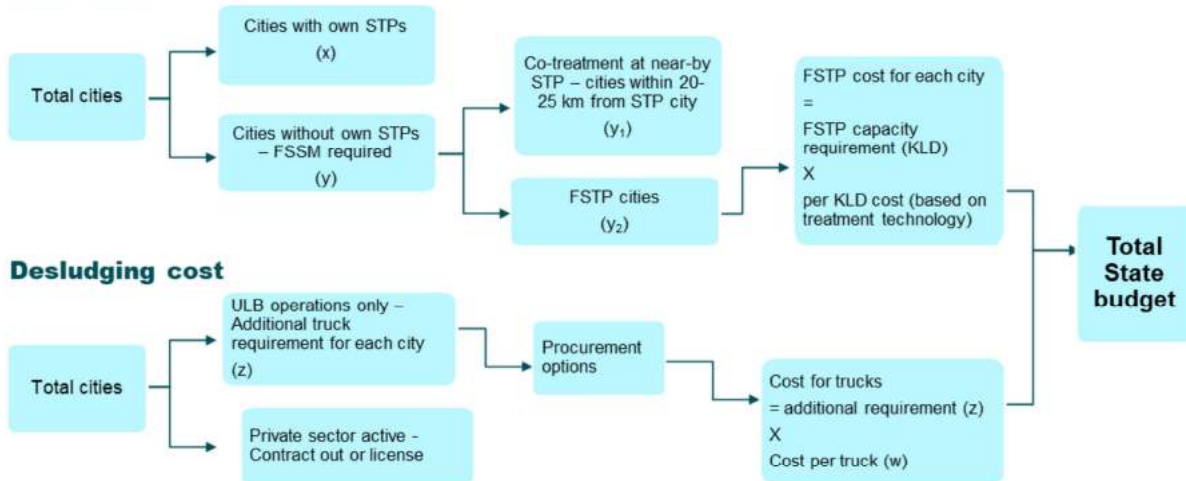
# Activity 2B State budget estimation for FSSM services

Refer to exercise workbook

Participants should refer to the exercise workbook at this stage for the cost estimation exercise. Such estimations for a city will give a rough idea of the fund requirements for implementing citywide FSSM.

## What should a statewide FSSM budget consider?

### FSTP cost



While local governments can plan for FSSM at city level, state governments need to strategize for scalability. Such statewide strategies begin by identifying existing treatment capacity and additional requirements across all cities. Co-treatment opportunities with STPs and cluster based approaches, if possible, can be explored. If new FSTPs are to be built at scale, states may need to adopt standardized technology, designs and financing models and plan for convergence of programmatic funding. For conveyance, the state will have to assess requirements for additional trucks and may need to procure wherever ULBs cannot do so through own funds.



# FSSM strategies in two states



## Odisha

2016 decided to adopt a non-sewered, decentralised and sustainable approach towards Faecal Sludge Management (FSM)

Two model FSTPs with donor funding

Selection of DEWATS technology with model DPR

8 new FSTPs to cover towns with 50% state population – AMRUT funding

State funds – 114 septage trucks for ULBs

114 new FSTPs commissioned

O&M with SHGs, reuse tie ups



## Maharashtra

FSSM as one of the focus areas for ODF sustainability  
Two pronged approach = co-treatment + independent FSTPs

2 model FSSM towns, Septage guidelines

GR for Co-treatment at own STP or STP of nearby city - 70 cities

GR to construct independent FSTP in 311 cities through 14th FC funds- Vetting of technology, adoption of cost effective and low mechanisation tech, single window approach for technical and administrative approvals, third party technical audits

Statewide monitoring system to track development

Training and capacity building for implementation

Guidelines and SoPs for FSTP construction and desludging

## Potential funding sources – CapEx and OpEx

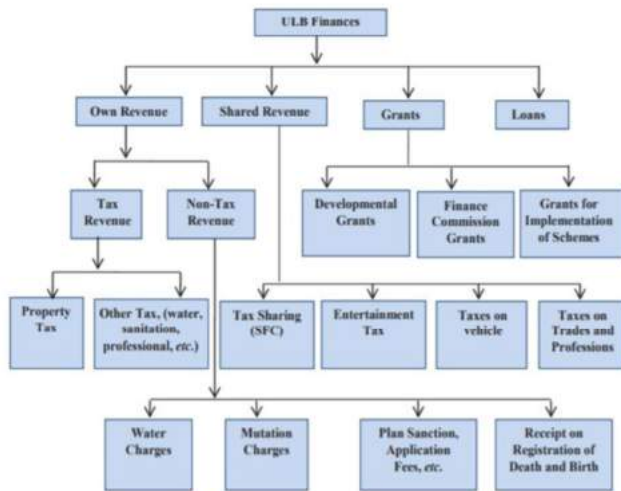
	Access	Conveyance	Treatment/ Disposal/Reuse
<b>CAPEX</b>	<b>New toilets and Refurbishment of septic tanks</b>	<b>Suction Emptier Trucks</b>	<b>Treatment Facility- Land and construction cost</b>
	Households	Central/State Grants	Central/State Grants, VGF
	Government Subsidy	Local Govt. funds	Local Govt. funds
	CSR fund, Crowdfunding, Credit	Private Sector/PPP	Municipal Bonds/Public Finance
			CSR, Crowdfunding, Donor agencies
			Private Sector/PPP
<b>OPEX</b>	<b>Repair of toilets and septic tanks</b>	<b>Operation of Emptier trucks</b>	<b>Operation of Treatment Facility</b>
	Households, Housing society fees	Sanitation Tax/Other Taxes	Initial period covered under grant funds
		User Charges (Emptying fees)	Sanitation Tax/Other Taxes
			Sale of Compost

CWAS | CRDF | CEPT | Source: Center for Water and Sanitation, CRDF, CEPT University (2017) "Training of Trainers for FSSM". Prepared for NIUA | 37

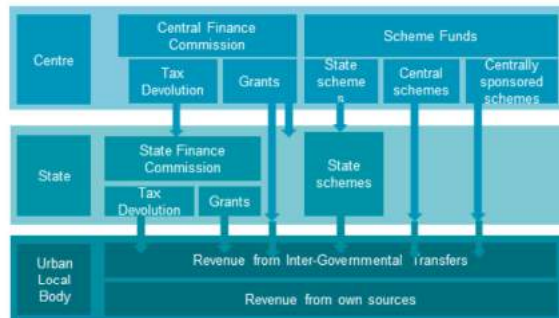
For developing a financing plan for FSM, potential sources of funds for capital expenditures will be required and terms and conditions for each will need to be identified. For construction of new septic tanks or refurbishment, possible sources for supporting capex include households, government subsidy and CSR funds. For conveyance of septage, capex can be sought from central or state grants, and under local government schemes. Establishing the FSTP and the disposal site are other major areas where more funds will be required if any private land needs to be procured. Background assessment of various ongoing programmes at the state and national levels will provide an idea of the possibility of accessing such funds to meet the capital expenditure requirements as well as for other needs such as awareness generation or data improvement measures.

Private sector participation is also a potential source of finance, especially for procuring suction trucks, but willingness of the private sector is to be assessed. State and central government will typically support only for capex and not for opex; the ULBs have to explore possible sources to cover opex costs. Potential sources for opex may include housing society fees, annual sanitation tax, and desludging fees taken from the property owners on the request of desludging their OSS systems. Assessment of current tariffs levels across FSSM service chain is required before levying new taxes for OpEx . Revenue generated by selling of product after the treatment of septage will also feed into opex revenues. For this, a landscape assessment of reuse market to assess possibility of selling compost or treated water

## Sources of finance for ULBs - own revenue, inter-governmental transfers, borrowings



- GST has subsumed local taxes such as octroi, including accounts-based octroi, in the form of local body tax, entry tax and advertisement tax
- Own source revenues are (almost) never enough to cover local expenditure responsibilities
- ULBs dependent on **the inter-governmental transfers** (IGT) from national and state governments



An Urban Local Government or a municipality is the layer of government which has the responsibility of development of cities and towns. The [74th Constitutional Amendment Act \(CAA\)](#), enacted in 1992, resulted in significant devolution of funds, functions and functionaries to this tier of government and hence functional autonomy of local governments. Following the passage of the 74th constitutional amendment which gave constitutional status to Urban Local Governments, various States created enabling legislation to transfer responsibilities of local infrastructure and service delivery to this tier of government.

Sources of municipal finance includes Taxes, Non-Tax, Fiscal Transfers and Loans/Grants, Capital Receipts and Contributions. Some of these such as tax and non-tax revenue are generated by these bodies themselves. But owing to rapid pace of urbanisation and the need for urban infrastructure development, own revenue generated by municipalities often falls short of their expenditure requirements. Thus, over and above their own revenue, most local bodies depend significantly upon the devolution of resources and grants from the State and Central governments; and borrowings from financial institutions.

As per the Constitution, the Government of India has been making allocations to local bodies through five year plans and finance commissions (Central Finance Commissions, State Finance Commissions). Beginning from the First Five Year Plan allocations have been made to Urban Local Governments for various purposes.

As regards the Central Finance Commissions, which primarily make recommendations on the distribution of tax revenues between the Union and the States, and also amongst the States, the Tenth Finance Commission introduced exclusive grants for rural and urban local governments. Since then various Finance Commissions have given concrete recommendations regarding municipal finances and the criteria for devolution of funds to Urban Local Bodies.

## Tax provisions related to sanitation services in municipal acts of various states

State	Provisions related to sanitation services	Provision for Sanitation Tax	State's Municipalities Act
Andhra Pradesh	1. Pay for clearance of sullage 2. Scavenging tax as a part of property tax	1. Owners of buildings to pay for clearance of sullage from their buildings by connecting their house-drains with public drains 2. a scavenging tax to provide for expenses connected with the removal of rubbish, filth or the carcasses of animals from private premises	The Andhra Pradesh Municipalities Act, 1965. Part IV and V. Chapter-1, Section 85 and Section 148
Odisha	1. Latrine Tax 2. Drainage Tax	1. a latrine tax on the annual value of holdings 2. a drainage tax on the annual value of holdings	The Orissa Municipal Act, 1950, Chapter XIII. Section 131
Gujarat	1. Special sanitary cess 2. General sanitary cess 3. Drainage tax	1. a special sanitary cess upon private latrines, premises or compounds cleansed by municipal agency, after notice given as hereinafter required a 2. general sanitary cess for the construction and maintenance of public latrines and for the removal and disposal of refuse 3. a drainage tax	The Gujarat Municipalities Act, 1963. Chapter VIII. Section 99
Uttar Pradesh/ Uttarakhand	1. Conservancy tax 2. Scavenging tax	1. a conservancy tax for the collection, removal and disposal of excrementious and polluted matter from privies, urinals, cesspools 2. A scavenging tax	The Uttar Pradesh Municipalities Act, 1916. Chapter V. Section 128.
Tamil Nadu	1. Sewerage tax	1. Sewerage tax can be levied at a rate not exceeding fifteen percent of property tax as the council may determine	The Tamil Nadu Urban Local Bodies Act, 1998. Chapter VI. Section 80.

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Levying taxes or user fee is an important source of revenue to make treatment plant financially sustainable. Many states in India have municipal acts which allow for levying certain special taxes for sanitation services. Various states have legal provisions in their tax structure for charging tax and are already charging fees in terms of sanitation tax/user charge, which is a major source of revenue. Gujarat, Maharashtra, Uttar Pradesh, Uttarakhand and Punjab have provisions for taxations in different heads like general sanitation tax for Gujarat, Special sanitary tax for Maharashtra etc. In case of West Bengal, Punjab, Haryana, Rajasthan there are provisions for fees and user charges for drainage, scavenging etc.



## Session 2

# Business Models For Conveyance

**CWAS** CENTER FOR WATER AND SANITATION

**CRDF** CEPT RESEARCH AND DEVELOPMENT FOUNDATION

**CEPT** UNIVERSITY



## Session Objective



### Introducing the types of models for operationalizing scheduled/ demand based desludging

This section will explain and describe the various types of business models of scheduled and demand based desludging.



### Understanding benefits, challenges, applicability for each model as well as operational and financial roles

The key benefits, challenges and applicability of each model along with its operational and financial roles will be explained.



### National/international Case studies of business models in conveyance

Case studies and examples of various cities in India and across the world will be explained.

Center for Water and Sanitation (CWAS), CRDF, CEPT University carried out a study on Business models for Faecal Sludge and Septage Management as a part of the project on 'Financing FSSM Services' funded by the Bill and Melinda Gates Foundation (BMGF). This section of the module is based on this study. For detailed study refer to - [https://pes.org.in/Portal/document/UrbanSanitation/uploads/Financing\\_and\\_business\\_models\\_for\\_FSSM\\_an\\_executive\\_summary\\_on\\_the\\_landscape\\_study\\_of\\_four\\_Indian\\_states.pdf](https://pes.org.in/Portal/document/UrbanSanitation/uploads/Financing_and_business_models_for_FSSM_an_executive_summary_on_the_landscape_study_of_four_Indian_states.pdf)



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## 1 What are Business Models?

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### Business Models For Conveyance

- ## 2
- 2.1 Demand Based Business Models
  - 2.2 Scheduled Based Business Models
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## 3 Summary and Key Inferences

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## 1 What are Business Models?

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Business Models For Conveyance

## 2

- 2.1 Demand-Based Business Models
- 2.2 Scheduled Based Business Models

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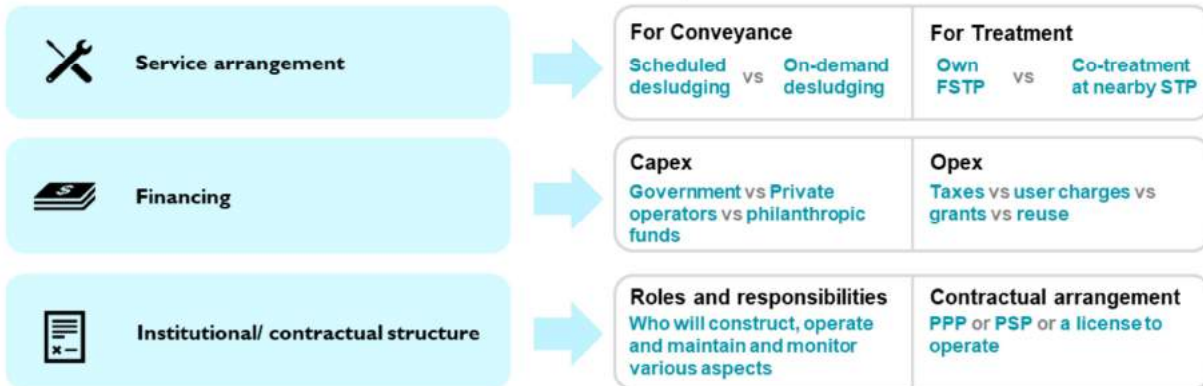
## 3 Summary and Key Inferences

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## Business models : 'service models' for sanitation and FSSM

A **business model** or a model for delivering a public service outlines the manner in which a service is structured, financed and managed for its delivery. Sanitation, and FSSM in particular, require this approach.

### Core parameters



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Besides ensuring adequate funding, adequate capacity is needed to both plan for and implement FSSM services at local level. While sanitation and FSSM are key responsibilities of local governments, it is also important to identify role of private sector and other stakeholders in managing and financing these services. Appropriate business models will help define ways to provide citywide sanitation services in an equitable, cost effective, and sustainable manner -which can be scaled up across cities and states. A business model is defined as a Service Model for a public service and outlines the manner in which a service is structured, financed and management arrangements for its delivery. The business models are defined around three core parameters:

### 1. Service arrangement

- The type of service delivery in Conveyance (e.g. scheduled vs. on-demand desludging) and type of service arrangement in Treatment (e.g. FSTPs, co-treatment at STPs) are key determinants of environmental outcomes

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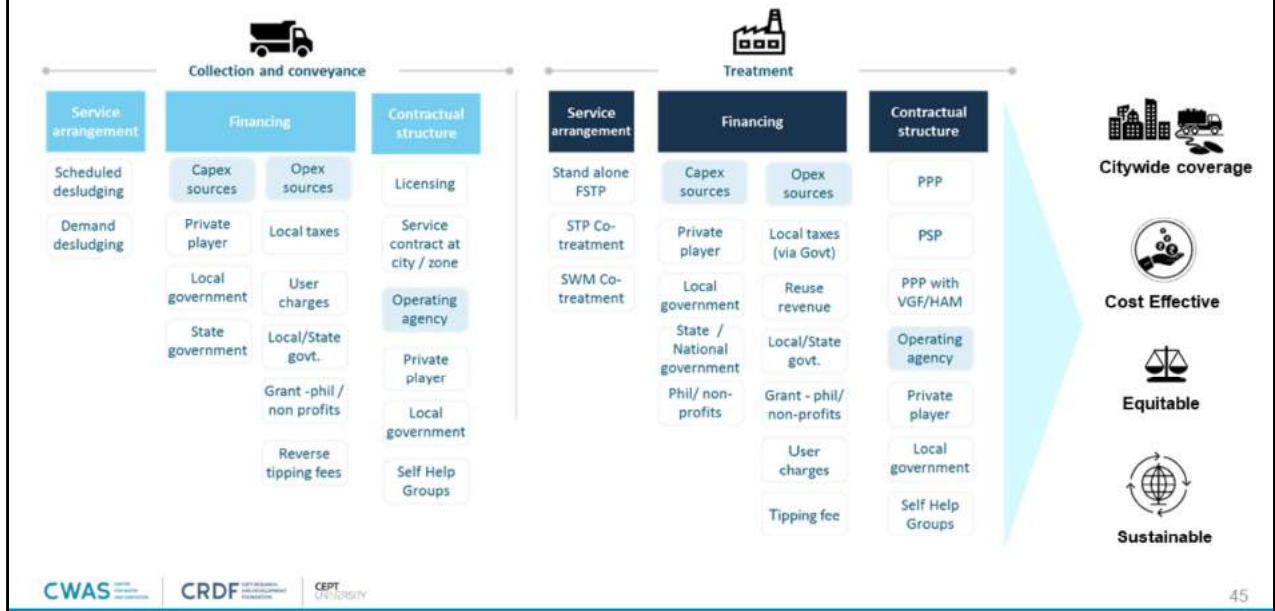
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through PPP or PSP, or a license to operate.

## Core parameters: Range of options to address key considerations



A wide range of options are available under each of the core parameters for both conveyance and treatment which combine to form suitable business models for addressing the following considerations for service delivery -

- Citywide coverage in which the sanitation services are accessible across all areas within the city.
- Equitable services, ensuring that the services are available to everyone including those in vulnerable communities.
- Cost effective for the consumers, the service providers and the ULB.
- Sustainable services which can be maintained for long periods and as permanent practices using available resources



Effective business models are a basic driver to scale FSSM solutions. Appropriate models are needed across the service chain for both conveyance and treatment.

**As FSSM gains traction, there is need to identify and catalyze appropriate business models**





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Summary and Key Inferences

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## Types of service arrangements for conveyance



### Demand desludging

Cleaning/desludging is done when households/users call for services and typically when their septic tanks are full.



### Scheduled desludging

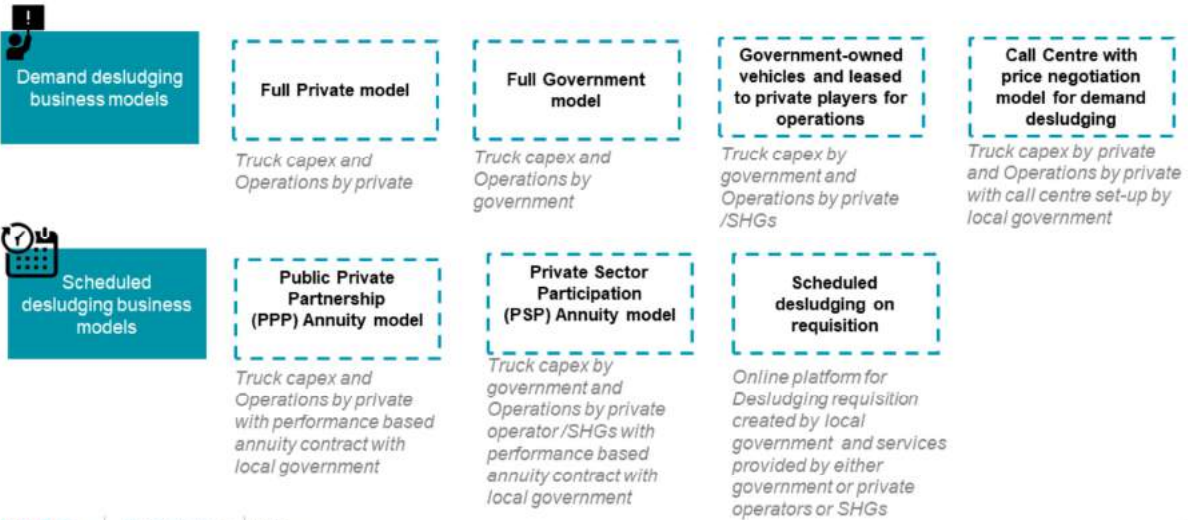
Regular cleaning/ desludging of septic tanks on pre-defined interval (e.g. every 3 to 5 years)



There are two types of service arrangements for conveyance - demand based desludging and scheduled emptying.

Demand desludging is a common practice where the users call the service operator for desludging services typically when their septic tanks are full. Scheduled desludging is an upcoming practice where all septic tanks are cleaned at fixed intervals by following a pre-determined schedule and cycle. This ensures regular cleaning and improves the efficiency of the septic tanks.

# Emerging Business Models of Conveyance System



Based on feasible combination of options in the the core parameters, 7 possible conveyance business models can be defined.

# Emerging Business Models of Conveyance System



**Demand desludging business models**

**Full Private model**

*Truck capex by private and Operations by private*

**Full Government model**

*Truck capex by government and Operations by government*

**Government-owned vehicles and leased to private players for operations**

*Truck capex by government and Operations by private /SHGs*

**Call Centre with price negotiation model for demand desludging**

*Truck capex by private and Operations by private with call centre set-up by local government*



**Scheduled desludging business models**

**PPP Annuity model**

*Truck capex and Operations by private with performance based annuity contract with local government*

**PSP Annuity model**

*Truck capex by government and Operations by private operator /SHGs with performance based annuity contract with local government*

**Scheduled desludging on requisition**

*Online platform for Desludging requisition created by local government and services provided by either government or private operators or SHGs*



# Conveyance prototype 1: Fully Private Model

## Model Description

- HHS request for desludging, typically only when tanks overflow.
- Private operators- buys own trucks; undertakes desludging after licensing or registration from local government and collects user charges from households

## Applicability

- When private sector is already active
- This model is common globally and in many states of India

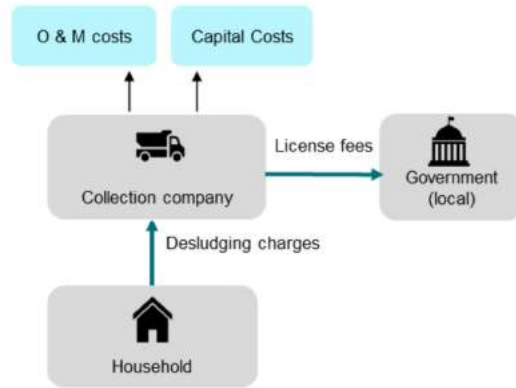
## Benefits

Commercially viable	Needs Low ULB financial capacity
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## Challenge

Environmental and health hazards from tank overflows	User charges high to meet profit margins
May lead to open defecation by low income customers who want to avoid high prices	Essential for ULBs to provide designated disposal sites and effectively monitor safe cleaning and disposal practices

Service:	Contract:	Capex:	Opex:
Demand desludging	Private player licensed	Private player	User charges



In the first conveyance prototype – fully private model for demand desludging, private operator (or operators) obtains a license or registers with the ULB to provide demand driven desludging services for households within the city limits.

The capital and operation and maintenance costs are borne by the private operators. This model is common globally as well as across India and is best applied when the private sector is already active in the city. The benefits of this model are that it is commercially viable since the charges are market based and requires low ULB financial and implementation capacity needs.

However some of the challenges include environmental and health hazards due to the demand driven nature of services where households only request desludging when septic tanks overflow. It may also result in high user charges to meet the need for adequate profit margins due to inadequate demand. High costs may further lead low income customers to resort to open defecation to keep tank from filling up to avoid paying high prices for desludging. This model requires ULBs to build capacities to effectively monitor safe cleaning and disposal practices and provide designated disposal sites which they might not currently possess.



## Fully private models are prevalent globally and in many states of India

### Kumasi, Ghana



- City authority moves away from providing direct services and facilitates participation of the private sector in providing desludging services.
- **Waste Management Department (WMD) at Kumasi Metropolitan Assembly (KMA)** issues licenses to operate for private trucks
- **Rules for private sector participation** and operator vetted before issuing a license.
- **Private truck operators pay disposal fees to treatment plant**
- **Strict monitoring + threat of license** being revoked on non-compliance + community shaming has drastically reduced illegal dumping of FS.

### Andhra Pradesh, India



- Most ULBs have active private players for desludging
- Private operators register with ULB - only allowed to operate within ULB limits
- Condition to dump at the treatment site for registration
- No tipping fees, Opex is recovered through user charges (Rs. 1000-2500 per trip)

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Source: Post, V. presentation on Business models in Sanitation at IHE Delft (Netherlands);  
Picture credits: GVMC FSSM policy and operational guidelines. Retrieved from: <https://rb.gy/eyon04>

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The global case study is about Kumasi, Ghana where private operators obtain licences for the city authority and the city authority moves away from being a service provider to a regulator. In Andhra Pradesh, India, most ULBs have active private operators who register with the ULB so that they can operate within the ULB limits to provide desludging to the households.

## Conveyance prototype 2: Full government model

### Model Description

- HHs request for desludging, typically only **when tanks overflow**.
- The **local/state government buys own trucks**; undertake desludging operation and collects user charges from households.

Service:	Contract:	Capex:	Opex:
Demand desludging	Local govt. provides services	Local govt.	User charges

### Applicability

ULB financial and operational capacity is **more** and presence of private sector desludging operator is not available.

### Benefits

Financially **feasible** for the government

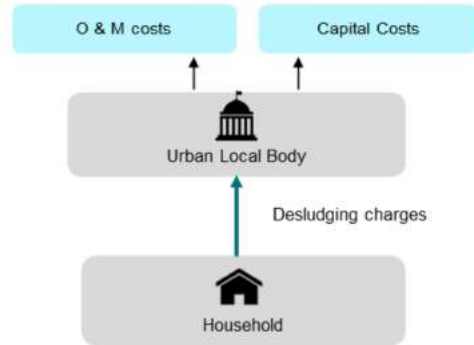
**No contracting and monitoring arrangements needed** between multiple players since the govt. is the single service provider

### Challenges

**High implementation capacity** of the ULB

**Capex and opex burden** is on the ULB

**Low service delivery levels** of publicly owned trucks



The second first conveyance prototype is the fully government model. In this model the ULB itself provides desludging to all households within the city and bears both the capital and O&M costs. Services are provided on demand basis and ULB collects user charges from the households. This model is applicable where ULBs have the financial and operational capacity and private sector operators are not available.

The benefits of this model are financial feasibility for the ULB as the desludging charges revenue for opex recovery. Since the local government is the only service provider, contracting or monitoring arrangements are not required. However this model requires high implementation capacity from the ULB. The capex and opex burden is to be borne by the ULB which might not have the enough resources available. Finally, publically owned trucks may provide low levels of service delivery.

## Case of Maharashtra- Local government demand based model



Large number of **medium and small size cities** in Maharashtra are dependent on local government for desludging services.



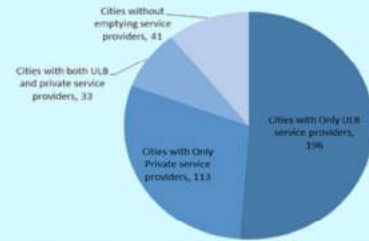
Local government mostly has 1-2 trucks which provide desludging service on the demand of HHs.



**User charges** are collected at the time of desludging services based on the **number of trips** and **distance covered**.



In some cities, private sector are also present but without any **licensing and registration process**. Currently only **9 cities** have private operators on contract basis.



Desludging user charges are higher in smaller cities



The full government demand desludging model has been demonstrated in a large number of medium and small cities in Maharashtra.

## Conveyance prototype 3: Government-owned vehicles and leased to private players or SHGs for operations using demand based desludging

### Model Description

- HHs request for desludging, typically only when tanks overflow.
- **Private enterprise or Self Help Groups lease vehicles** from the government and provide cleaning in response to service requests from HHs.
- **User charges** are either collected by **private operator/SHGs** or by **local govt.**

### Applicability

ULB has good financial capacity and presence of private sector desludging operator is available.

### Benefits

Commercially viable

Low ULB implementation capacity needs

High performance levels due to private sector operations and incentives

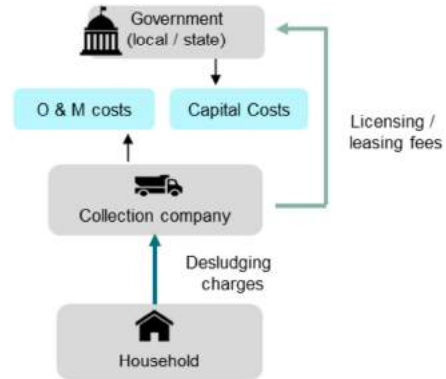
### Challenges

Capex burden is on the ULB

Equity can be a challenge in the absence of rate cards

Requires high contract monitoring capacity within ULBs

Service:	Contract:	Capex:	Opex:
Demand desludging	Private player / SHG	Local govt.	User charges



The third conveyance prototype is - government-owned vehicles leased to private players/SHGs for demand based operations. Here also, the desludging vehicles are owned by the government which bears the capital costs for acquiring the same. These vehicles are leased to a private operator who will pay a certain fees to the government to operate those vehicles. The private operator is responsible for recovery of the operation and maintenance costs which it does by charging the customers user charges. This model is applicable to cities where the ULB has good financial capacity but lacks the operational capacity to provide the services and where there is a good presence of private desludging operators.

The benefits of this model are that it is commercially viable since the user charges are market based and need low implementation capacity by the ULB as the operations are taken care by the private operator. This model is likely to reflect high performance levels bringing in expertise of private sector operations and incentives provided.

The challenges for implementation of this model are that the capex burden is on the ULB, the services may not be equitable due to absence of rate cards and it requires great capacity from the ULB to be able to prepare effective contracts and monitor the provision of the services.

## Odisha, India - Government has adopted the model of owning emptier vehicles and leasing it to private operators for operations



OWSSB (State government agency) had purchased desludging trucks and allocated them to ULBs based on estimated sludge generation in their cities. The OWSSB used OUIDF funding to buy trucks.



Local Government had issued tenders for inviting private operators to operate these vehicles.



The ULB has a contract with the private player, where the private player will operate the trucks and carry out desludging services in the city and charge a cleaning fee from the households.



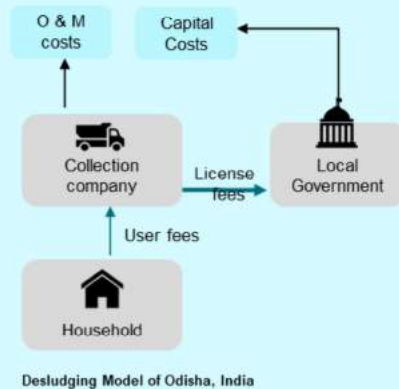
User charges (Rs. 900 per trip) are fixed by government and are collected from household either by ULB or private players depending on contract/ licensing terms



The operator does 6 desludging operations per vehicle per day. Private agency are responsible for these activities for a period of seven years.



Local governments have to monitor the entire service and conduct various awareness generation programs through IEC modes.



This model is demonstrated in Odisha, India where the State government agency OWSSB has purchased desludging trucks and allocated them to respective ULBs. The ULBs invited private operators to bid for tenders to operate these vehicles with their city.



## Vasai Virar, Maharashtra - Engagement of SHGs in desludging activity



23 members from the City Level Federation awarded desludging contract by the ULB.



After completing the desludging activity, SHG members generate a bill and submit to the ULB based on which they are paid Rs 500 per tank.



Vasai Virar in Maharashtra is an example where the government-owned vehicles are leased to SHGs for operations. Here 23 members from the City Level Federation (CLF) were awarded desludging contracts by the ULB.



# Dhaka and Faridpur , Bangladesh

## Dhaka, Bangladesh

- In Dhaka in 2015, **WSUP designed** a PPP to be delivered through a lease contract between **DWASA** and a **cleaning services business** with well-defined roles and responsibilities.
- Under this agreement, DWASA provided the company with two **2,000 litre vacuum tankers** to use under the **'SWEEP'** brand.
- Until recently, focus was on medium and large customers to establish commercial viability. New clause introduced in mid-2017 mandating **30% of customers from low-income communities**.
- For service fees to be paid by consumers, **differential pricing model** was introduced to **facilitate service** offering to low-income customers. Entrepreneurs have flexibility to set price and respond to the market accordingly



## Faridpur, Bangladesh



**Two groups of pit emptiers are formalised into cooperatives** and lease equipment from the municipality. Cooperatives provide mechanical desludging for a fee.



**Performance-based contract**, with targets for quality control and safe disposal at a new treatment plant.

## Positive results

- 11,122m<sup>3</sup> FS safely managed
- 257,011 customers served
- US \$ 112,064 revenue earned
- US \$ 20,121 profit generated



This model is also demonstrated in Dhaka and Faridpur, Bangladesh where Water and Sanitation for the Urban Poor (WSUP) designed a PPP between the Dhaka Water Supply and Sewerage Authority (DWASA) and a cleaning service business to provide desludging services.

## Conveyance prototype 4: Call center with price negotiation model for demand desludging

### Model Description

- After receiving request from HHs, the call center contacts the emptier in vicinity of households for quotations.
- The **emptiers send their quotation** to the **call center** which then sends the **lowest quotation** to the HHs.
- On confirmation of HHs, the center assigns the service to the private player.
- The center also checks the quality of service and HHs satisfaction.

### Applicability

Large cities with multiple private players

### Benefits

Easy access to desludging services

Creating consortium of emptiers

Likely high performance levels

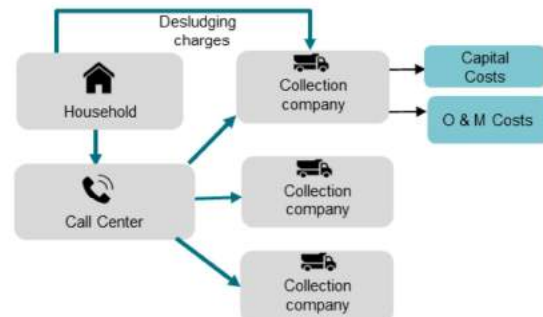
Provide **more equitable and affordable** desludging service

Can potentially **reduce the desludging fee**

### Challenges

Requires **high level of monitoring** and implementation capacity

Service:	Contract:	Capex:	Opex:
Demand desludging	Private player	Private player	User charges with price negotiation



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The fourth conveyance prototype is the call centre model with price negotiation. In this model, a call center is established for linking households with private desludging operators with the mechanisms of emptying charges negotiation. In this, households send the desludging request to the call center. The call center contacts the emptier in vicinity of households for quotations. The emptiers send their quotations to the call center. The center then sends the lowest quotation to the household. On confirmation from the customer household, the center assigns the service to the private player. The center also checks the quality of service and customer satisfaction.

The capital costs and operation and maintenance costs are borne by the individual operators. This model is applicable in large cities with multiple private operators with competition amongst each other.

The benefits of this model include easy access to services, provision of more equitable and affordable desludging services with potentially reduced charges, high performance levels and creating a consortium of emptier. The main challenge is the need for high level of monitoring and implementation capacity.

## Case of Dakar, Senegal- Call center model for market based desludging services

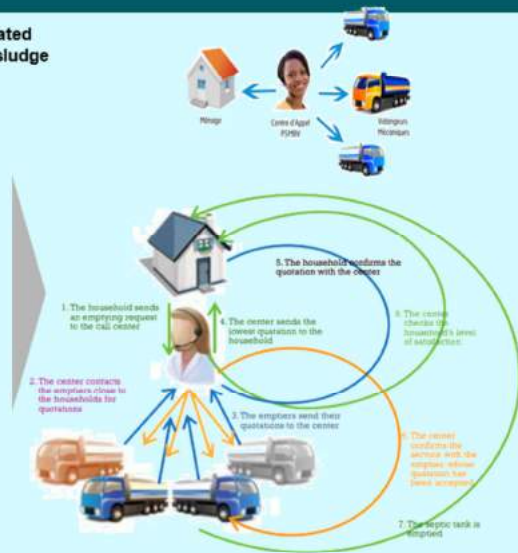
The PSMBV (Program for Market structuring of faecal sludge management) has initiated innovative activities, including the establishment of a call center to connect Faecal sludge desludging operators to households in need on mechanical desludging.

### What has been achieved:

- ✓ **Easy access to desludging services**- Call center Services available all around Dakar
- ✓ **Creating consortium of emptiers** - 138 desludging trucks are listed in the call center platform database
- ✓ Transferred sludge volumes at stations have increased since the scaling of the call center
- ✓ The average price of the desludging service through the call centre has declined from USD 56 (before program) to USD 46 (between 2012 and 2016, a drop of 18%).

### Case of Kampala

- In Kampala , a call centre links private sanitation service providers with customers.
- The city has been divided into FS desludging zones and FS operators have been designated for specific zones.



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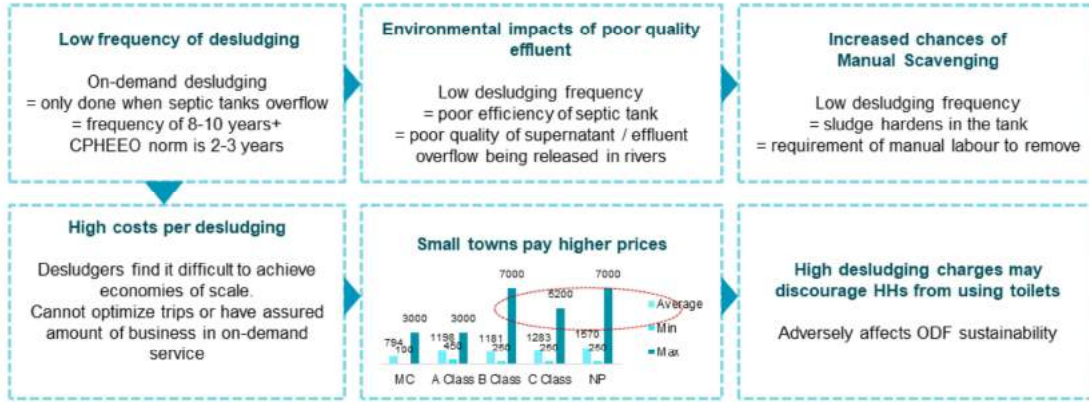
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Source: Program for the Structuring of the faecal Sludge market for Poor PeoPle in dakar Suburban areas (Pikine and Guédiawaye), Post, V "Business models in sanitation" Presentation at IHE Netherland: [website- https://www.onasbv.sn/en/psmbv-innovations/call-center/](https://www.onasbv.sn/en/psmbv-innovations/call-center/) 60

An example of this model is the case of Dakar, Senegal where Program On Structuring Faecal Sludge (PSMBV) established of a call center for desludging operators to provide households options for desludging operators.

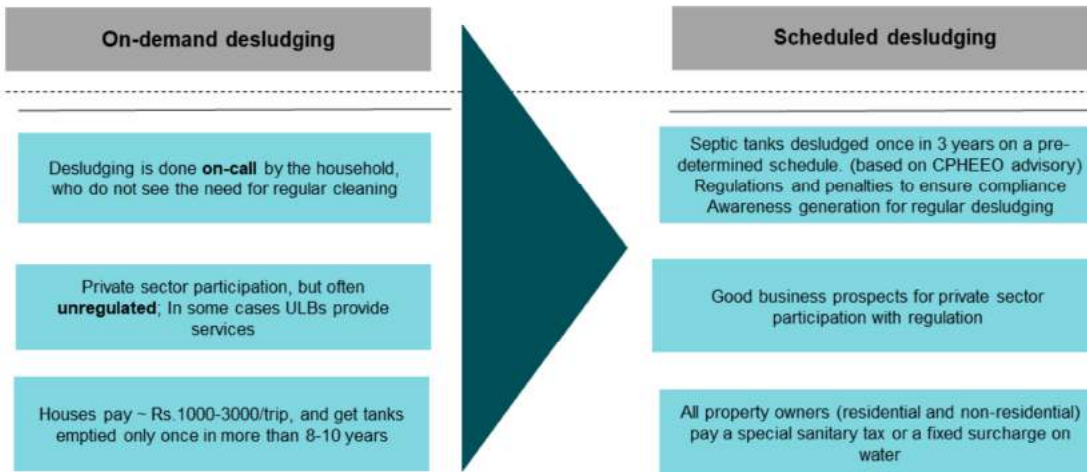
## Despite its widespread use, demand based desludging poses many serious issues of equity and negative environmental impacts



- This is the common business model and is based on user charges levied at the time of desludging. In most cases charges are high ranging from Rs. 1000 to Rs. 1500. In some cities it is reported that a **very high fee of Rs. 7,000 is charged**. Desludging charges are generally higher in smaller cities and in areas outside the ULB jurisdiction.
- Households are generally willing to pay these high charges as they have no other recourse but to pay whatever the emptier demands.

Demand based desludging, though a common practice, has many interconnected issues such as low frequency of desludging, high costs per desludging which leads to high user charges with smaller town paying very high prices, and environmental impacts both due to poor quality of effluent and in some cases increasing instances of OD.

## Scheduled desludging can achieve regular desludging as recommended by CPHEEO



Source: Center for Water and Sanitation, CRDF, CEPT University (2019) "Good Practices for Desludging Services – Emerging lessons from national and international cases".

CPHEEO, MoUD, GoI (2013) Advisory note on Septage Management in Urban India. Retrieved from:

<http://cpheeo.gov.in/upload/uploadfiles/files/Advisory%20Note%20on%20Septage%20Management%20in%20Urban%20India.pdf>

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Scheduled desludging overcomes some of the challenges in demand desludging and achieves regular desludging based on a pre-determined schedule.



## Benefits of Scheduled Emptying



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



**No manual labour** - Removal of need for manual labour due to regular emptying



**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



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



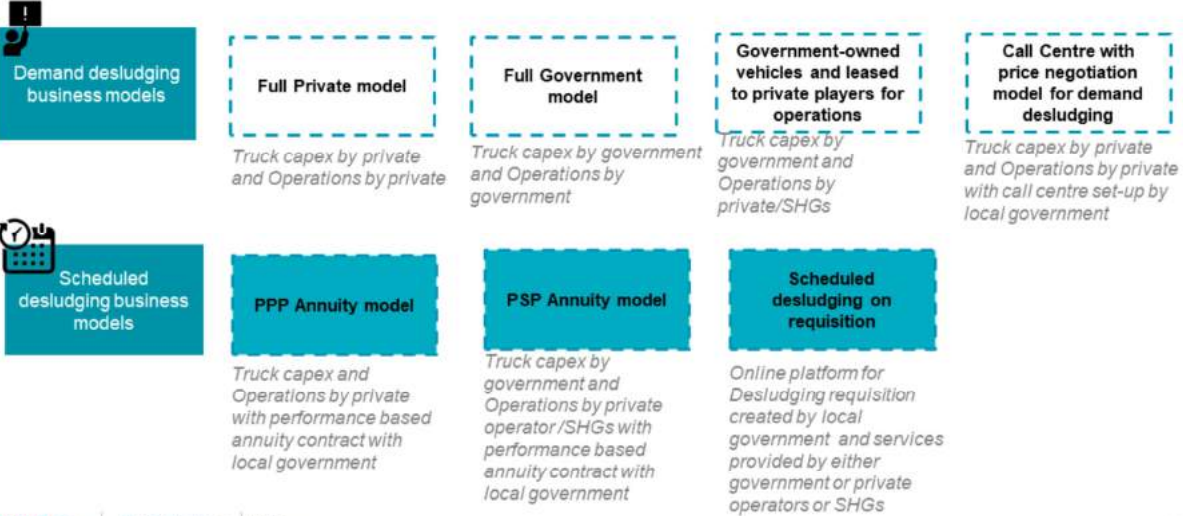
**Behavior change** - Contribution to ODF sustainability as toilet usage can increase



**Environmental benefits** - Lowered likelihood of septic tank overflows, increased efficiency of septic tanks resulting in lower pollutants (such as faecal coliforms) in drain effluent



# Emerging Business Models of Conveyance System



The following section focuses on scheduled desludging business models.

## Conveyance prototype 5: PPP Annuity model for scheduled desludging

### Model Description

- Private service provider bring trucks and operate through a **performance based contract** to carry out scheduled desludging.
- The **city collects a special tax** or a surcharge on water/property tax to cover fees.
- For large cities and for metropolitan areas where **partial sewerage network** is present, scheduled desludging model can be explored for areas with **onsite sanitation systems**.
- These could be through **zonal contracts** with private operators.

### Applicability

Presence and willingness of private sector to **invest in trucks capex** and take on contracts.  
Local government has capacity to **monitor operations**

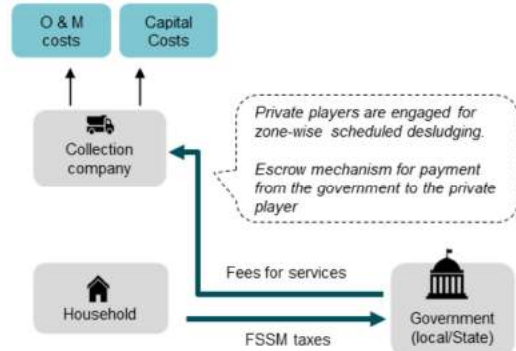
### Benefits

- Reduces the **capex burden** for ULBs
- Generates **revenue** through taxes to pay for service
- High **service levels** through performance based contract
- Can induce **higher private sector participation**

### Challenges

- Requires **high-levels of monitoring** of private operations
- Significant **behaviour change needed** to mobilize the tax
- Requires **high levels of ULB capacity**
- Limited Government Capacities** to design & implement services

Service:	Contract:	Capex:	Opex:
Scheduled desludging	Private player	Private player	Local taxes



The fifth prototype for conveyance is the Public Private Partnership (PPP) annuity model for scheduled desludging where the private operator signs a performance based contract with the ULB to provide scheduled desludging services to the households in the city. The private operator bears the capital costs as well as the operation and maintenance costs. The city collects taxes from the household and pays a fees to the private operators for their service. This model is applicable in cities which have a good presence of private operators who are willing to invest in providing the service and where the ULB has the capacity to monitor operations. The benefits of this model are that it reduces the capex burden on the ULBs, generates revenue through taxes, provides high service levels due to performance based contracts and also induces high private sector participation. The challenges this model faces is the requirement of high capacities by the ULB to be able to monitor progress and mobilize tax collection which requires significant behaviour change.

## Case of Wai, Maharashtra-PPP annuity model for scheduled desludging (1/2)

- On May 30, 2018, Wai Municipal Council in Maharashtra became the first city in India to start a Scheduled Desludging service.
- ULB appointed the private player to carry out scheduled desludging service in the city.
- The Capex cost of the truck and Opex cost of the desludging service will be initially mobilized by the private player which will be paid back by the local government using annuity payments.
- The private player will be paid against performance linked to the number of septic tanks emptied.
- The household will pay sanitation tax to the local government, which will ensure that adequate funds are available to recover the cost of desludging service.
- The risk of late payment raised by private players is attempted to be mitigated through an escrow account mechanism.



### Benefits



### Performance Linked Annuity Model (PLAM)

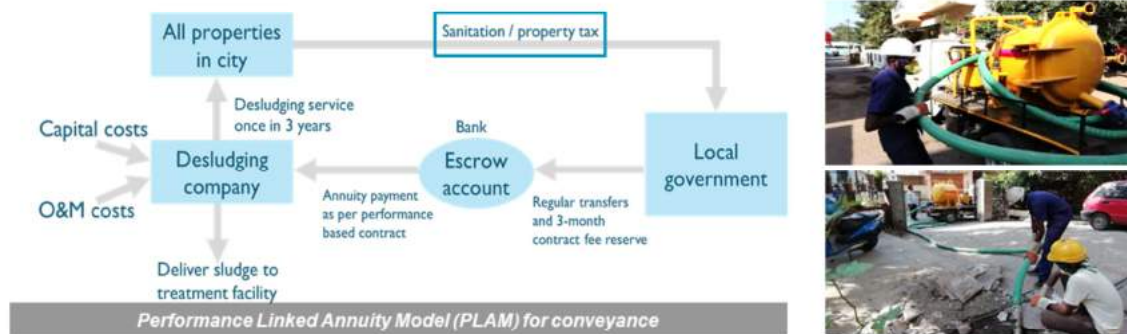


The PPP Annuity model for scheduled desludging is demonstrated in Wai, Maharashtra where the ULB appointed a private operator to provide scheduled desludging services in the city through a performance based contract. The Capex cost of the truck and Opex cost of the emptying service will be initially mobilized by the private player which will be paid back by the local government using annuity payments. The private player will be paid against performance linked to the number of septic tanks emptied. The household will pay sanitation tax to the local government, which will ensure that adequate funds are available to recover the cost of emptying service. The risk of late payment raised by private players is attempted to be mitigated through an escrow account mechanism.

Thus, with a performance-based contract, customers are assured of a high-quality service with low prices paid through sanitation tax. Lower prices are due to economies of scale, lowering the charge per individual emptying.

## Sanitation tax

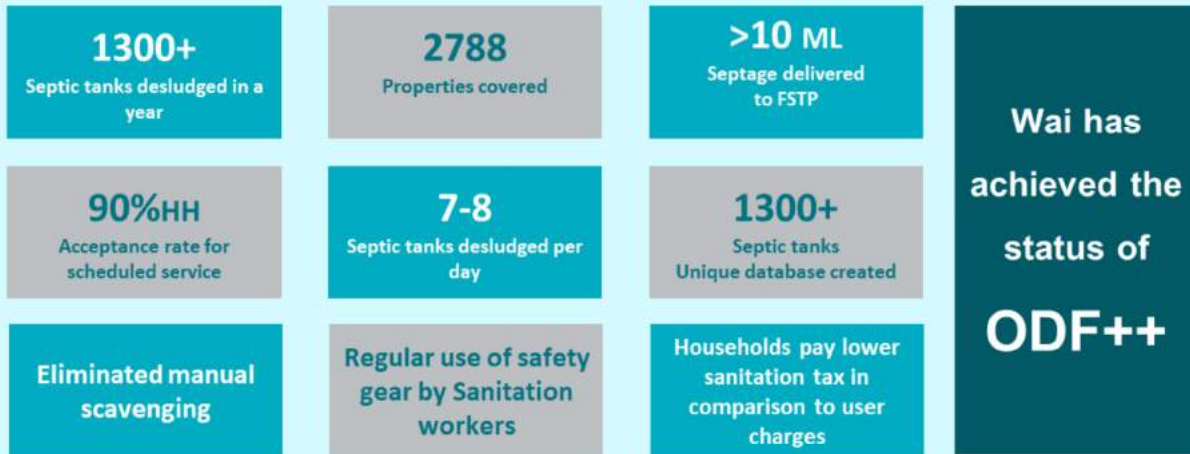
- Unlike user charge, the payment for the service is not paid at the time of desludging but **through a sanitation tax (levied as a flat charge or as a % of property tax) paid annually**
- **Sanitation tax much less** than the cost incurred per household previously for emergency emptying due to trip optimization
- The sanitation taxes levied by ULB is for **recovering OpEx**. This could be graded to make it affordable for all.



In Wai, unlike previous cases the payment of the service isn't through user charges collected at the time of desludging, rather it is through sanitation tax which is paid annually. This sanitation tax is affordable and helps in recovering the opex.

## Case of Wai, Maharashtra-PPP annuity model for scheduled desludging (2/2)

### Positive impact of scheduled desludging in Wai



There have been numerous positive impacts due to implementation of scheduled desludging in Wai which include elimination of manual scavenging, achieving safety of sanitation workers and households paying lower sanitation tax as compared to user charges.



## Philippines - Scheduled desludging by private concessionaires through environment tax

- Clean Water Act recognized the full service chain of sanitation and scheduled desludging cycle
- Private firms operate scheduled desludging under a concession agreement with the Metropolitan Waterworks and Sewerage System
- In Manila - Manila Water Company + Maynilad Water Services, Inc.
- In Dumaguete - Water District Authority (collection and transportation) + Dumaguete city government (treatment O&M)
- Tariffs to recover capex, opex, with some built in profit - Environment fee of 20% of water bill or a tariff linked to water consumption levied for desludging services.
- Charges and penalty norms for denial of desludging service
- Effective awareness programs and IEC activities
- Safe desludging practices like use of safety gears in place

Description	Baliwag	Veteran Village (Maynilad)	Dumaguete
Desludging cycle	5	5	5
Start year	2013	2012	2010
Responsibility of desludging	Baliwag Water District	Maynilad Water Services Inc	Dumaguete City Water District
Capex Funding	Baliwag Water District invested in 2 trucks of 5 m <sup>3</sup> capacity each	Maynilad invested in 27 trucks	Water district invested in 7 trucks of 3 m <sup>3</sup> size.
Opex Funding	10% of water bill	20% of water bill	Tariff of 2 PHP per cubic meter of Water Consumed



Another case of PPP Annuity model for scheduled desludging is in the Philippines where private firms operate under a concession agreement with the Metropolitan Waterworks and Sewerage System.



# Activity 3

## Quiz on PLAM desludging service

Refer to exercise workbook

## Conveyance prototype 6: PSP Annuity model for scheduled desludging

### Model Description

- Private service provider or SHGs leases or operates local /state government trucks and carry out desludging operations on a performance based contract.
- Fees determined as per the bid to private operators per septic tank or per trip emptied.
- The city collects a special tax or a surcharge on water to cover the payment of fees.

### Applicability

Private sector or SHGs presence, but low capacity to invest, while local /state government has financial and monitoring capacity  
Government capex may incentivize private players or SHGs to participate

### Benefits

**Generates revenue** through tariffs to pay for service

**High service levels** through performance based contract

**Covers service gaps** where there are few private players or players with low financial capacity

### Challenges

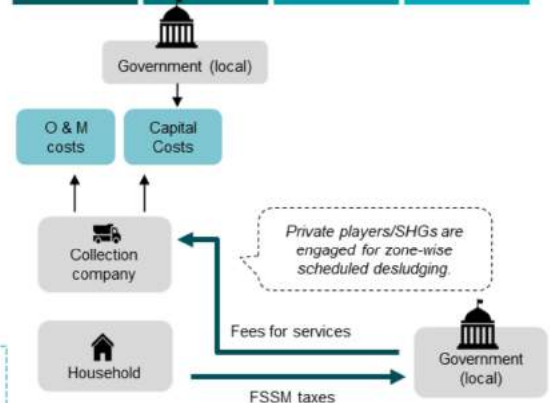
Requires **high-levels of monitoring** of private operations or SHGs

Significant **behaviour change needed** to mobilize tax

**Monitoring private operations** to prevent open dumping

Govt. capex may **incentivize** more and smaller private providers to participate

Service:	Contract:	Capex:	Opex:
Scheduled Desludging	Private player	Local government	Local taxes








The sixth prototype for conveyance is Private Sector Participation (PSP) Annuity model for scheduled desludging where the ULB bears the capital costs of purchasing the trucks and equipment and provides the trucks to a private operator or SHG which will carry out the operations as per a performance based contract. The ULB will pay a fees for the service to the private operator and will collect FSSM taxes from the citizens. This fee is determined as per the bid submitted by the private operator per septic tank or per trip. The city collects a special tax or a surcharge on water to cover the payment of fees.

This model is applicable in cities where private sector is active but has low capacity to invest, while local /state government has financial and monitoring capacity

The benefits of this model are the ability to generate revenue to pay for the service making it financially feasible, high service levels achieved through the performance based contract and the ability to cover service gaps where there are very few private operators. The challenges this model poses is the requirement of high capacities from the ULB to monitor the operations and mobilizing tax requires significant behavior change.

## Gevrai, Maharashtra & Puri, Odisha - PSP annuity model for scheduled desludging

-  Both the cities are planning for scheduled desludging options for conveyance.
-  Trucks will be provided by government and private sector will be contracted for operations of scheduled desludging model
-  FSSM taxes (as part of property tax) will be collected by local government from households
-  Local government will monitor private sector activities and oversee to disposed collected sludge at treatment plant only.
-  Payment to private sector will be on performance or number of septic tanks emptied.



## Vietnam- Scheduled desludging in Hai Phong with surcharge on water bill

- Hai Phong Sewerage and Drainage a state Company limited (Hai Phong SADCO) is responsible for provision of sanitation services
- Its GIS database has **86,501 septic tanks under scheduled desludging across 4 urban districts.**
- **Desludging interval** for household septic tanks is once in **5 - 6 years**, and for communal apartments once in 1 - 2 years
- Scheduled desludging is covered by the **city's budget** and **waste water fee of 15% surcharge on water bill**
- In the city of Hai Phong, scheduled faecal sludge desludging service for the communities is only through the surcharge.



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Source: Viet Angh, N., et.al. (2011) "Landscape Analysis and Business Model Assessment in Faecal Sludge Management, Extraction and Transportation Models in Vietnam" Hanoi University Of Civil Engineering, Hanoi.

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The Private Sector Participation (PSP) Annuity model for scheduled desludging has been demonstrated in Gevrai, Maharashtra and Puri, Odisha in India and Hai Phong in Vietnam.

## Conveyance prototype 7: Scheduled desludging on requisition

### Model Description

The desludging rates are fixed by the government on basis on demand desludging requisition or scheduled desludging requisition, with incentives to those preferring scheduled desludging models.

### Benefits

Can be explored as a **potential model for transition from on-demand to scheduled desludging**

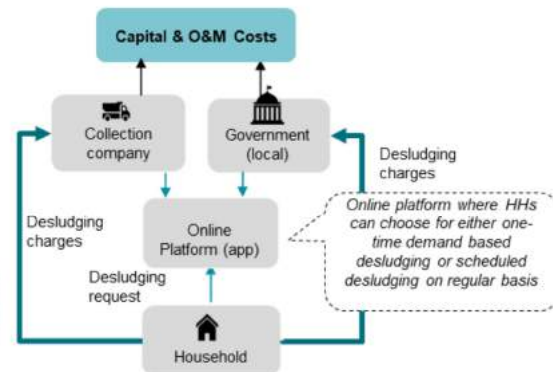
### Challenges

**Focus on IEC** to generate buy-in by household /property owner

### Applicability

Applicable in areas where there is considerable **variations across properties** in containment sizes in a given city

Service:	Contract:	Capex:	Opex:
Scheduled desludging on opt-in basis	Private player or Local government		



The seventh conveyance prototype is scheduled desludging on requisition where both the ULB and the private operator bear the capital costs as well as the operation and maintenance costs of providing a scheduled desludging service and scheduled desludging service is provided to only those households that request regular desludging. An online platform is created by local government, where HHs can register for desludging request and can choose from options of either one-time demand based desludging or scheduled desludging on regular basis. The service are either provided by government or by private provider registered on online platform. The desludging rates are fixed by the government on basis on demand desludging requisition or scheduled desludging requisition, with incentives to those preferring scheduled desludging models.

This model can be applicable in cities where there is considerable variations in containment sizes across properties. It is also ideal as a model for transition from on-demand services to scheduled services however it will require great focus on IEC to generate buy-in by household.

## Bekasi city, Indonesia- Regular desludging on requisition

- **Android Based App** for households to request desludging services.
- A **single app** provides access to the **LG trucks** and **private trucks**
- **HH register** on the **on-line platform**, HHs inform their regular desludging period and based on their request service is provided
- A **dashboard** is prepared to monitor the activities of the desludging vehicles.
- The **LG monitors** the LG trucks as well as the private trucks
- **Access to the dashboard** is given according to the stakeholder.
- **Bar-code** is placed at every registered HH.



### Steps followed in scheduled desludging process....



Source: Bustraan, F. (2018) "Introduction of Scheduled Desludging Services in Indonesia" Presentation at National Workshop Decentralized Sanitation Solutions at Mumbai – 18 November 2018. Retrieved from: <https://nuu.org/scbp/sites/default/files/Introduction%20of%20Scheduled%20Desludging%20services%20in%20Indonesia.pdf>

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The scheduled desludging on requisition model has been demonstrated in Bekasi, Indonesia where an android based app was developed for households to request desludging services.





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## 1 What are Business Models?

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### Business Models For Conveyance

## 2

- 2.1 Demand Based Business Models
- 2.2 Scheduled Based Business Models

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## 3 Summary and Key Inferences

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## Conveyance Business Models - Summary & Key Inferences



**High level of private participation**  
reflects high business opportunity in the FSSM value chain.



On-demand desludging most prevalent in India. However, **scheduled desludging** is needed to **ensure regular and timely desludging**.

achieve equitable services, including the poor; positive environmental impact; removes need for manual labour and help build a good database on real situation of onsite facilities.



**SHGs can be involved in conveyance activities**

like awareness generation for desludging; data collection, demand generation and mobilization; Monitoring of safe emptying services are provided and there is no manual scavenging; Operating the desludging vehicle, trained for emptying services



**Appropriate regulatory and policy guidelines at the state level to minimize risks**

In order to mitigate payment risks, there is a need for regulatory measures and formulation of guidelines at the state level for engagement of private sector. Possibility of guarantee fund also need to be explored.



**Bundled contracts** to offer larger conveyance contracts to induce larger operators and **Scheduled desludging models for zones in large cities** emerges as most promising models.

Reflections on the business models for conveyance show high levels of private participation, the need for ensuring regular and timely desludging, the need for appropriate regulatory and policy guidelines at the state level to minimize risks.

## Precautions while using these conveyance business model prototypes



Though there are multiple benefits to the business model prototypes certain precautions should be taken based on an understanding of the context.

For scheduled desludging, it is essential a) to avoid user charges at the time of desludging, b) to have at least a property tax database for the city, and c) have a good risk management plan while developing PPP/PSP contracts. For demand based desludging, need to license private providers. In both models, it is necessary to ensure safe disposal of collected FS at a designated treatment facility and ensuring use of PPE by private and ULB staff.

# **Activity 4**

## **Building a model for a financially feasible desludging business in a city**

**Refer to exercise workbook**



## Session 3

# Business Models For Treatment

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## Session Objectives



### Introducing the types of models for building and running Faecal Sludge Treatment Plants (FSTPs)

This section will explain and describe the various types of business models for FSTPs. It will also talk about integrated business models combining Desludging and treatment activities.



### Understanding benefits, challenges, applicability for each model as well as operational and financial roles

The key benefits, challenges and applicability of each model along with its operational and financial roles will be explained.



### National/international Case studies of business models in treatment

Case studies and examples of various cities in India and across the world will be explained.

Center for Water and Sanitation (CWAS), CRDF, CEPT University carried out a study on Business models for Faecal Sludge and Septage Management as a part of the project on 'Financing FSSM Services' funded by the Bill and Melinda Gates Foundation (BMGF). This section of the module is based on this study. For detailed study refer - [https://pas.org.in/Portal/document/UrbanSanitation/uploads/Financing\\_and\\_business\\_models\\_for\\_FSSM\\_an\\_executive\\_summary\\_on\\_the\\_landscape\\_study\\_of\\_four\\_Indian\\_states.pdf](https://pas.org.in/Portal/document/UrbanSanitation/uploads/Financing_and_business_models_for_FSSM_an_executive_summary_on_the_landscape_study_of_four_Indian_states.pdf)



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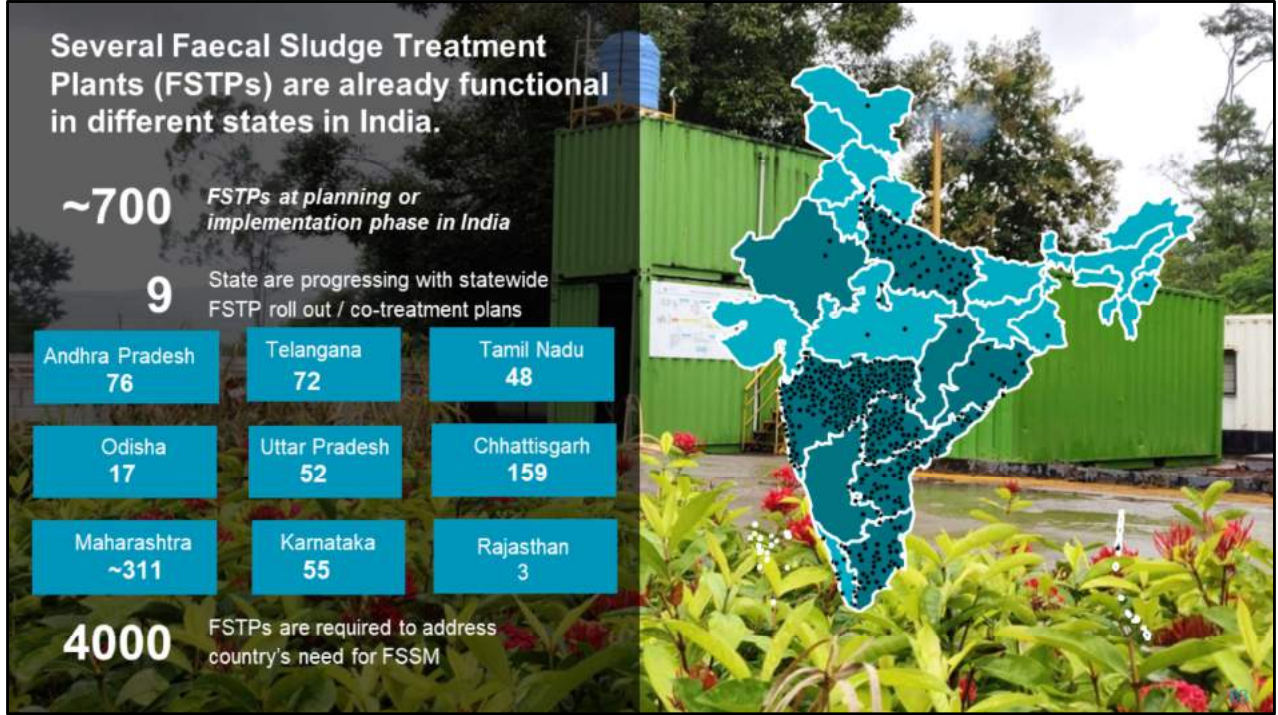
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FSSM is fast gaining traction in India as a viable option for safely managed sanitation and nine states are already progressing with statewide FSSM strategies. More than 700 FSTPs have been mobilized across the country and are at various stages of planning and implementation. However, this needs to be scaled up even further. By certain estimates, over 4000 FSTPs are required to address the country's need for FSSM.





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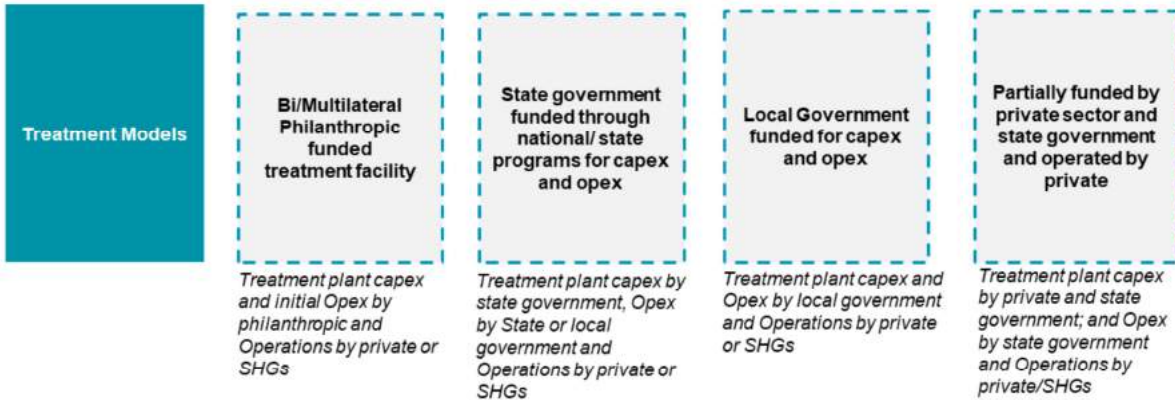
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## Emerging Business Models for Treatment



For treatment, based on feasible combination of options in the the core parameters, 4 possible business models can be defined.

## Treatment prototype 1: Bi/Multilateral Philanthropic/ Non-profit funded treatment business models

### Model Description

- Philanthropy supports capex requirements.
- Is operated by a private player or SHGs, working with the philanthropic funder to develop and test treatment technologies or models.
- Opex recovery from sources such as the government or philanthropic funders.
- The plant is handed to city government after successful pilot of project (after 2-3 years as per MoU with government)

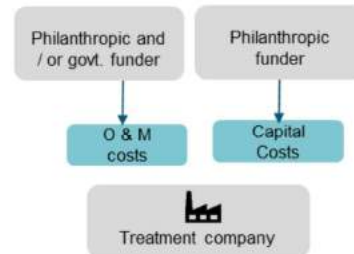
### Benefits

Plugs the funding gap for new treatment technologies and models

No financial or implementation burden on governments

### Challenge

Philanthropic funds are not a sustainable source of funds for the long term



In the first prototype for treatment, Philanthropic funders or CSR support capex requirements, typically for pilots of treatment technologies or models. The plant is operated by a private player, working with the philanthropic funder to develop and test treatment technologies or models. Philanthropic funding typically drives capex investment, and supports opex recovery in the short / medium term, driven by the recognition that reuse / tipping fees are unlikely to fund all or a significant proportion of opex. Opex funding is short / medium term, local governments may need to take over thereafter and thus the plant is handed to city government after successful pilot of project (after 2-3 years as per MoU with government). The benefit here is that such financing plugs the funding gap for new treatment technologies and models, which are still being tested and for which alternate sources of funds may not exist. Moreover there is no financial or implementation burden on governments, since the philanthropic and private players are responsible for the same. However, it must be borne in mind that philanthropic funds are not a sustainable source of funds for the long term or for established technologies/models

## Philanthropy funded plants in India

### Coimbatore (2 towns)

- Plant **capex** is funded by **BMGF** but constructed by a private player.
- Plant will **initially be operated** by a **private player**, then handed over to ULBs. Operating costs initially funded by **BMGF**, and later guaranteed funding by the ULB
- **Cluster approach** i.e. common FSTP for 2 towns



### Wai

- Plant **capex** funded by **BMGF**. A private player will design, build and operate the plant (**DBOT**).
- Tide Technocrats has a 2 year O&M contract, funded by **BMGF**.
- Plant **O&M** is planned to be funded through **sanitation / property tax** in the future.



### Narsapur

- **BMGF** has provided a grant to Tide Technocrats for the FSTP.
- **One year O&M** (funded by **BMGF**) is built into the contract with Tide Technocrats. The FSTP will be manned by five staff members, hired by Tide.
- Only **licensed operators** are allowed to deposit the faecal sludge at the FSTP.



### Warangal

- FSTP using **pyrolysis technology** is being funded by **BMGF**, under a **DBOT model**.
- The plant will be operated by a private player. **BMGF** will provide opex for the FSTP for the initial year.



### Others

- **Devenahalli** uses a **mix** of funds, including capex funding and one year opex from CDD and **BMGF**.
- **Dhenkanal** uses **BMGF** funds capex and 1-2 years of opex. Revenue generation options for the long term are being explored e.g. **reuse revenues**.

The following are examples of philanthropic or non-profit funded business models for treatment facility.

## Treatment prototype 2: State government funded through national/ state programs for capex and opex

### Model Description

- State supports capex requirements.
- Initial opex through either National or State level programs like AMRUT.
- Is constructed and operated by a private operator or SHGs.
- Opex recovery from state government in initial period & thereafter through local government.

### Applicability

Relevant where Government has some funding capacity but limited operating capacity and where private sector participation or SHGs involvement is considered important from a operations perspective.

### Benefits

Govt. participation in capex funding incentivizes private participation- lower financial risk for private player

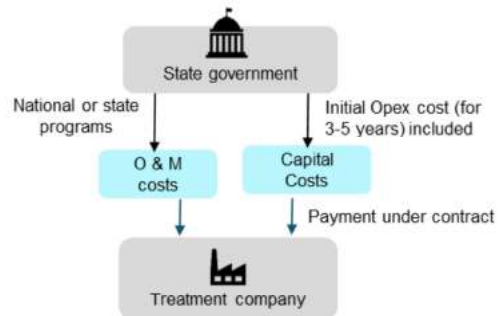
Sustainable plant operations since implementation responsibility is with the private operator or SHGs

### Challenge

Requires allocation of public funds for FSSM capex which requires advocacy

Long term sustainability may be a challenge, as dependency on O&M financial support from state government

Need to assess ULB financial capacity for opex requirement



The second treatment prototype for state government funded FSTP through national or state programs is where the capital costs are borne by the state and the treatment facility is constructed and operated by a private operator or SHG. The opex recovery is from the state government in initial period and thereafter through local government. This is relevant where Government has some funding capacity but limited operating capacity and where private sector participation is considered important from a operations perspective. Govt. participation in capex funding incentivizes private participation, with lower financial burden and project risks for the private player. Plant operations are also sustainable since implementation responsibility is with the private operator. However, this model requires allocation of public funds for FSSM capex which requires advocacy. Long term sustainability may be a challenge, if there is dependency on O&M financial support from state government and there is a need to assess ULB financial capacity to finance Opex of treatment plants. The limited role of ULB in implementation and monitoring may also challenge sustainability.

## Odisha, India : State government funded plants



In Odisha, **AMRUT program** (National government program) funding was used to **build FSTPs** (sewage management) in **9 cities**.



**Odisha Water Supply and Sewerage Board (OWSSB)** (State level agency) carried out **design, manage construction and O&M contracts for FSTPs**.



Allocation of land for FSTPs by ULB.



**O&M cost for 5 years** through **AMRUT program**.



**OWSSB** floated tender on lump-sum contract basis to invite private sector to build and Operate treatment plants.



In Odisha, the Odisha Water Supply and Sewerage Board (OWSSB) carried out the design, managed construction and prepared operation and maintenance contracts for FSTPs in nine cities which were funded through the AMRUT program.







## Treatment prototype 3 : Local Government funded for capex and opex

### Model Description

- Local government finances capex requirements and opex both through own funds.
- Local government tenders out construction and O&M to private players/SHGs.
- Opex recovery from local government own funds. Also includes reuse options though its contribution is less.

### Applicability

Relevant where Government has funding capacity but **limited operating capacity**

### Benefits

Govt. participation in capex funding incentivizes private participation- **lower financial risk** for private player/SHGs

**Sustainable plant operations** since implementation responsibility is with private operator/SHGs

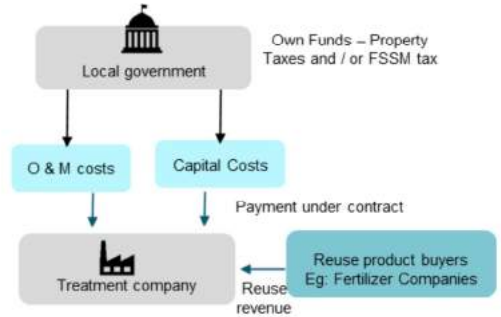
**Low implementation burden on governments** as private player is responsible for operations

### Challenge

Requires **allocation of public funds** for FSSM capex

**Reuse markets** are nascent, market creation & linkages needed

Need to **assess ULB financial capacity** for opex requirement



In the third treatment prototype, local Government fully finances capex and opex through its own funds. The local government tenders out the construction and O&M to a private player and Opex recovery is from the local government own funds. The other sources of Opex recovery also includes reuse revenue, though its contribution is very less, given the low development of reuse market. Benefits are similar to the previous model- Govt. participation in capex funding incentivizes private participation, with lower financial burden and project risks for the private player. Plant operations are sustainable since implementation responsibility is with the private operator and there is low implementation burden on governments, since the private player is responsible for operations

## Sinnar, Maharashtra - Local government funded plant



Sinnar is the first city in India to fund an FSTP through ULB own funds (14<sup>th</sup> FC funds).



Key success factor is relatively strong ULB finances, to support this model



Private operator is selected through DBOT tender. Private operator is responsible for construction and/ or operation of treatment plant.



O&M funded by ULB through sanitation and property tax.



An example of the local government funded treatment facility is in Sinnar city where the local government funded the FSTP through its 14<sup>th</sup> FC funds and a private operator was responsible for construction and/ or operation through a DBOT tender.

## Maharashtra state - State-wide GR for setting up independent FSTP in 311 ULBs

In order to ensure that faecal sludge from septic tanks in those cities without STPs or FSTPs or co-treatment options is treated, this GR was passed to select an appropriate technology and adopt the same.



### Capital cost for FSTP

14th FC funds (State already directed cities to use 50% of 14th FC funds for this)

### O&M cost for FSTP

ULB own funds



### Land

FSTP to be setup at SWM site

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In Maharashtra a state-wide Government Resolution was passed for setting up FSTPs across 311 ULBs where CapEx is to be directed from 14<sup>th</sup> FC funds and the operation and maintenance costs will be from the ULB's own funds.

## Treatment prototype 4 : Partially funded by private sector and state government and operated by private operator or SHGs

### Model Description

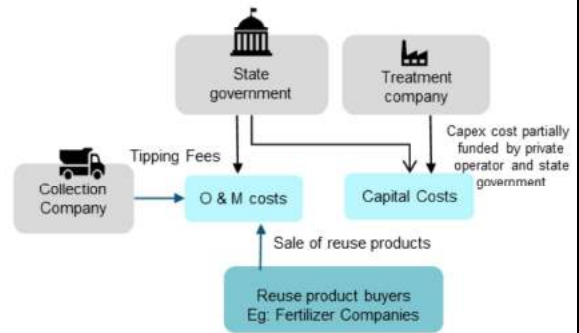
- **Private enterprise** funds plant capex fully, undertakes construction, operation and maintenance of a treatment plant. Private operator can also involve SHGs for operation of treatment plant
- The **private sector capex cost** will be **repaid by the government** in the form of **annuity payment** over the O&M period.

### Benefits

- Reduces the capex burden** for governments, since the operator bears upfront costs with subsequent recovery from the government
- Sustainable plant operations** since implementation responsibility is with the private operator
- Funding by State government **alleviates concerns around individual ULB financial capacity and payment risks**

### Challenge

- Difficulty in finding medium-large players** with the financial and technical capacity
- Small players will be discouraged** since their financial capacity will not be enough to finance the part capex cost



### Applicability

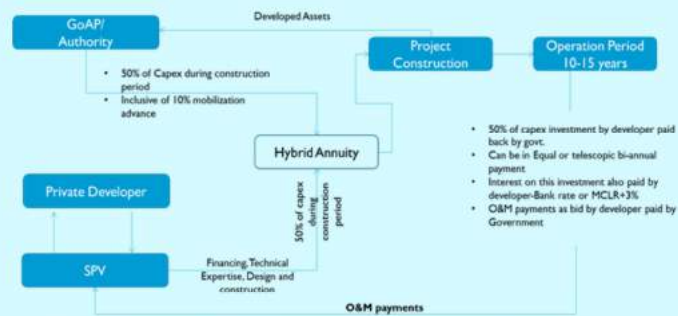
Relevant in scenarios where **private sector participation and part funding is prioritized** and government support is needed to bridge viability gap funding and justify commercial return

In the fourth treatment prototype, the private enterprise funds plant capex fully or partially with the rest borne by the government. Private enterprise also undertakes construction, operation and maintenance of a treatment plant. The private sector capex cost will be repaid by the government in the form of annuity payment over the O&M period. This is relevant in scenarios where private sector participation and part funding is prioritized and government support is needed to bridge viability gap funding and justify commercial return. This model reduces the capex burden for governments, since the operator bears upfront costs with subsequent recovery from the government. Plant operations are sustainable since implementation responsibility is with the private operator and part capex cost will be returned over the O&M period. Further, funding by State government alleviates concerns around individual ULB financial capacity and payment risks. Under this model however, ULBs may face difficulty in finding medium-large players with the financial and technical capacity. This will discourage small players since their financial capacity will not be enough to finance capex cost

## Andhra Pradesh and Telangana states - Hybrid Annuity Model for treatment

- Private companies - undertake construction, operation and maintenance on a DBOT basis. Cost determined by bidding
- CapEx – 50% by government , 50% by private company
- Funding by Swachh Andhra Corporation supported through the state budget alleviates concerns around individual ULB financial capacity and payment risks
- Private player clustering approach (multiple ULBs per partner) to achieve scale economies and a large contract
- Private player responsible for selling soil conditioner/bio-fertilizer/biogas and recycled wastewater. In the long term, part opex recovery planned through user charges.

HAM model proposed through city clusters for  
**76 ULBs in AP**  
**72 ULBs in Telangana**

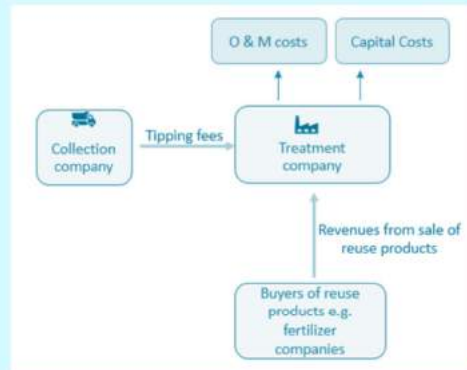


In Andhra Pradesh and Telangana ULBs are setting up FSTPs under the HAM model where 50% of capital costs are borne by the government and 50% by the private operator and operated by the private operator.



## Vietnam- Privately funded treatment plant

- Built, owned and run by Hoa Binh fertilizer company.
- FS is **separated from wastewater**, and **dried into bio-solids** and **dried sludge**. The dried sludge is sold for fertilizing crops, while the biological sludge is sold to the wastewater treatment company.
- Desludging operators (both government and private) pay the fertilizer company for depositing FS about **USD 1.46 for each truck**.
- Current revenue limited due to **illegal dumping of sludge** by private operators.
- Relevant model where reuse markets are better developed.



Source: Viet Angh, N., et.al. (2011) "Landscape Analysis and Business Model Assessment in Faecal Sludge Management: Extraction and Transportation Models in Vietnam" Hanoi University Of Civil Engineering, Hanoi. Retrieved from: <https://rb.gy/52vuba>

In Vietnam, a fertilizer company has built and runs a treatment plant and recovers operational costs through tipping fees received from the collection companies and by sale of by-products for reuse.



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## Integrated models for conveyance and treatment



- 1  Integrated models offer efficiencies, convenience and easier contracting with the same player responsible for operations across the value chain
- 2  Interesting options for opex funding of conveyance and treatment from households – as a bundled price can be implemented efficiently
- 3  Dependency on a single player  
(1) compounds risk of non-performance, (2) crowds out existing smaller players, which can impact implementation
- 4  Market information and subtle nudges along with technical assistance might be required to increase the number of players in the market
- 5  Scheduled desludging may be more conducive for integrated players given that it offers predictability of operations in conveyance.

### Prototypes

- 1 **Integrated model for scheduled desludging and treatment** : Same private firm operates both desludging and treatment service for one city
- 2 **Integrated model with a cluster based approach** : Same private firm operates both desludging and treatment service for a group of nearby cities

Integrated models for conveyance and treatment offer interesting bundled options for increased efficiencies, convenience, open funding and easier contracting with the same player responsible for operations across the value chain. However, dependency on a single player may compound risk of non-performance and crowd out existing smaller players which can impact implementation. Market information and subtle nudges along with technical assistance might be required to increase the number of players in the market. In such integrated cases, scheduled desludging may be more conducive for players given that it offers predictability of operations in conveyance.

There are two options for integrated models. The first is where the same private firm operates both desludging and treatment service for one city and the second is with a cluster based approach where the same private firm operates both desludging and treatment service for a group of nearby cities

## Prototype 1: Integrated model with scheduled desludging and treatment

### Model Description

- Desludging charges from HHs are the source of opex funding for conveyance and Treatment.
- Charges are collected directly by the operator (user charges) or indirectly through the government (FSSM taxes) which then pays the operator.

### Applicability

Relevant in areas where there are private players with capacity to manage both treatment and desludging operations.

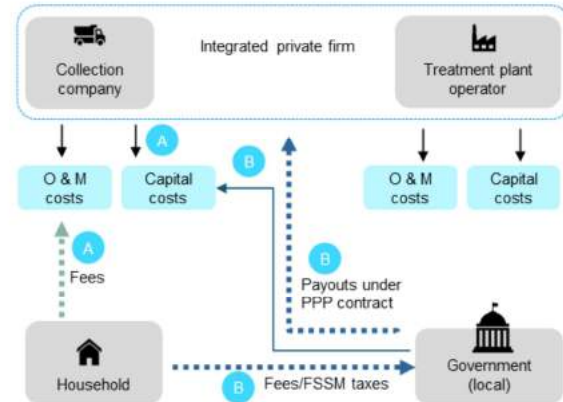
### Benefits

Integrated models offer efficiencies, convenience, and easier contracting, with the same private provider.

Incentives for the operator to bring all collected FS to the plant for treatment.

### Challenge

**Dependency on a single player**  
(1) compounds risk of non-performance, and (2) crowds out existing smaller players



- The first integrated prototype is where an integrated private firm handles both the collection and transport and disposal of faecal sludge and septage through scheduled desludging. The private firm bears the capex and desludging charges from HHs are the source of opex funding for conveyance and Treatment. Charges are collected directly by the operator (user charges) or indirectly through the government (FSSM taxes) which then pays the operator. Such a model is applicable where the active private players have capacity to manage both treatment and desludging operations. The private operator is incentivised to bring all collected FS to the plant for treatment and reduces chances of illegal disposal. This model, similar to the previous, also faces risks by depending on a single private player.

## Case Example: Integrated model at Leh, India

 Blue Water Company (BWC) designed, financed, built and operates the FSTP on the land provided by the LDA

 Municipality will give its suction truck which will be operated by BWC at its own costs

 Municipality will collect user fees, with help from BWC

 Five year contract (cleaning and treatment)

**Inclusive Services:** Cross-subsidize cost of FSM services to poorer households through higher fees from hotels and guesthouses



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Source: Blue Water Company, Poster on Leh (Ladakh)—India's first PPP in FSM. Available at : [https://niu.org/scbp/sites/default/files/FSSM\\_leh.pdf](https://niu.org/scbp/sites/default/files/FSSM_leh.pdf)

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The integrated model with scheduled desludging and treatment prototype has been demonstrated in Leh, India where a private company Blue Water designed, financed, built and operates the FSTP while also operating the municipality's own suction truck.



## Prototype 2 : Integrated model with cluster based approach

### Model Description

- Recovery is mainly from desludging charges and partial from the government (PPP contract).
- Charges are collected directly by the operator (user charges) or indirectly through the government (FSSM taxes) which then pays the operator.

### Benefits

Cluster approach can provide efficiencies and cost recovery for treatment facilities

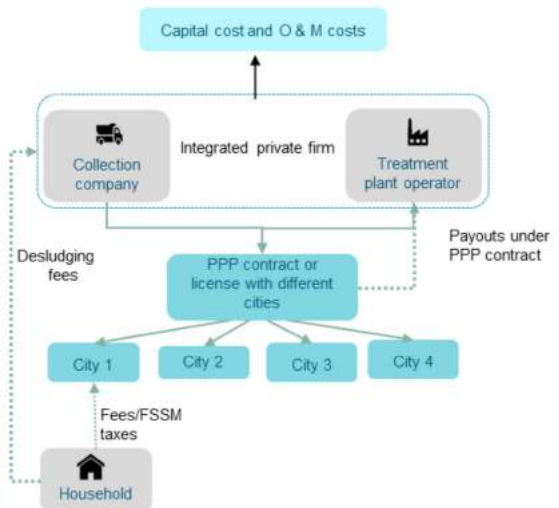
### Challenge

Co-operation among cities, efficient road connections

### Applicability

Relevant in areas where there are private players with capacity to manage both treatment and desludging operations.

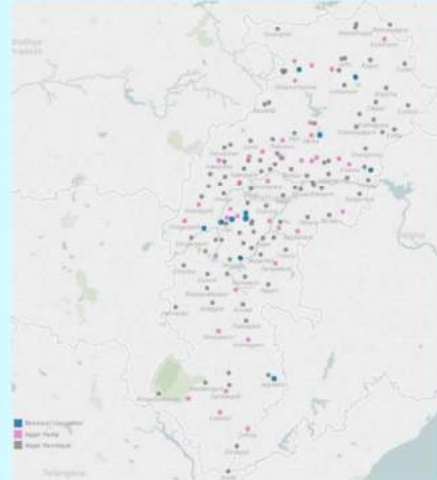
Also where the nearby cities are willing to come together for a cluster approach.



The second prototype for integrated model is based on a cluster approach. The private firm which performs both the collection and transport and disposal of faecal sludge and septage, however here the private operator has contracts or licenses with multiple neighbouring ULBs to provide this service. The capex and opex is borne by the private operator and it receives desludging charges from the households as well as payments under the contracts from the ULBs. This model is feasible in areas where nearby cities are willing to co-operate as a cluster and where private operators have the capacities to handle both conveyance and treatment.

## Case Example: Integrated Cluster based approach in Chhatisgarh, India

- State has already started planning for cluster based faecal sludge treatment plant for **non AMRUT ULBs**.
- **Preparing clusters in 15 – 20 kms distance** and will also fix 3 – 4 non-mechanized treatment technology for non-AMRUT towns.
- State authority will rolled out tender to invite single private player for both desludging and treatment.
- **The capex and 10 years opex cost** will be inbuilt in bid and will be funded by **state government**.



The Integrated model with cluster based approach has been applied in Chhatisgarh, India where ULBs not covered by AMRUT prepared clusters within 15 kms to 20 kms and set up treatment plants as a state led initiative.

## Case Example: Cluster based approach in Thailand

Thongthawil Service Co. Ltd (TSCL) located in Rayong province provides services for septage desludging and treatment in two municipalities and 8 sub-district organizations.



### Conveyance

- Separate license for emptying and treatment in all these municipalities under the 1992 Public Health Act.
- 15 trucks and average 10-12 trucks serve daily, Services are provided for 365 days.
- Customers directly call TSCL for desludging services. They have a QR code on each truck where customer can directly send an online request for emptying services.



### Treatment

- Treatment plant is owned by the TSCL private agency.
- Each municipality provides an annual license to TSCL, and the company collects a license fee for providing treatment services.
- TSCL charge only industrial domestic waste for providing treatment services under Factory act. Around 40% customers are from industries.



**Service Area**  
440 sq. km



**Population**  
3,98,656

Similarly in Thailand, this cluster based approach was taken up by a private company to provide desludging and treatment services for two municipalities and 8 sub-district organizations.



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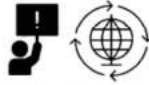
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## Treatment Business Models- Summary & Key Inferences (1/2)



Since there is **limited commercial return potential**, **government funding** would remain the **dominant source** of funding for treatment facilities.



**Opex funding** for treatment is critical for **sustainability** and will need careful attention, as well attention on resource recovery for the future. This has to be partially funded by local government.



A **state level strategy for FSSM treatment at scale** will guide the ULBs and motivate private participation



**Monitoring the system**- It can also help enhance project quality through quality monitoring and zero energy systems as well as to develop these as resource centres.



**Treatment operations are mostly outsourced**, due to ULB's limited resources, financial and technical capacity



**Government funding is important**, but **philanthropic funding** can be useful in initial stages. Many technologies are in an early stage and inadequate experience exists, philanthropic or CSR funding can support pilots and demonstration projects.



## Treatment Business Models- Summary & Key Inferences (2/2)



**Reuse revenues** require developed markets and market linkages. As these are at **relatively nascent** stage, more advocacy and innovation will be needed to develop these markets.



**Opex costs** will need to be mainly funded from **local government sources**. Plant selection (through tendering) can also emphasize low opex expenditure to the extent possible



The option of **tipping fees** is also difficult in most cases, due to negative incentives to private operators to dump outside.



**SHGs can be involved in various activities** like **Operation and maintenance** of FSTP; **Sale** of dry compost/sludge; **Landscaping** at FST; **Operating** Sanitation resource centre



## Integrated Business Models- Summary & Key Inferences



### Preferable option from government perspective

From the ULB perspective a single operator for conveyance and treatment may imply ease and simplicity of **reporting and monitoring**



### Limited number of private player for integrated options

From the perspective of private providers, integrated contracts maybe difficult as very few private enterprises are in both areas of business, and thus they have to take on work which may not be their forte, or form consortia. In this process, it may **lead to crowding out of expertise of smaller independent service providers.**



### Opex funding could be explored

An integrated contract offers interesting options for **opex funding of treatment from households** – as a bundled price can be implemented

# Activity 5

## FSSM business model canvas for identifying suitable service in a city

Refer to exercise workbook



## Session 4

# Private sector partnerships and contract management

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UNIVERSITY

## Session objectives

In previous sessions we have already talked about business models for FSSM where private sector has roles to play.

In this session-

Understanding the benefits and role of private sector in FSSM

Understanding needs, interests and concerns from both ULB and Private sector perspective

Learn about processes for engaging private sector and understand key challenges and risks encountered in the procurement process and how to mitigate them

Learn about considerations for building successful contracts





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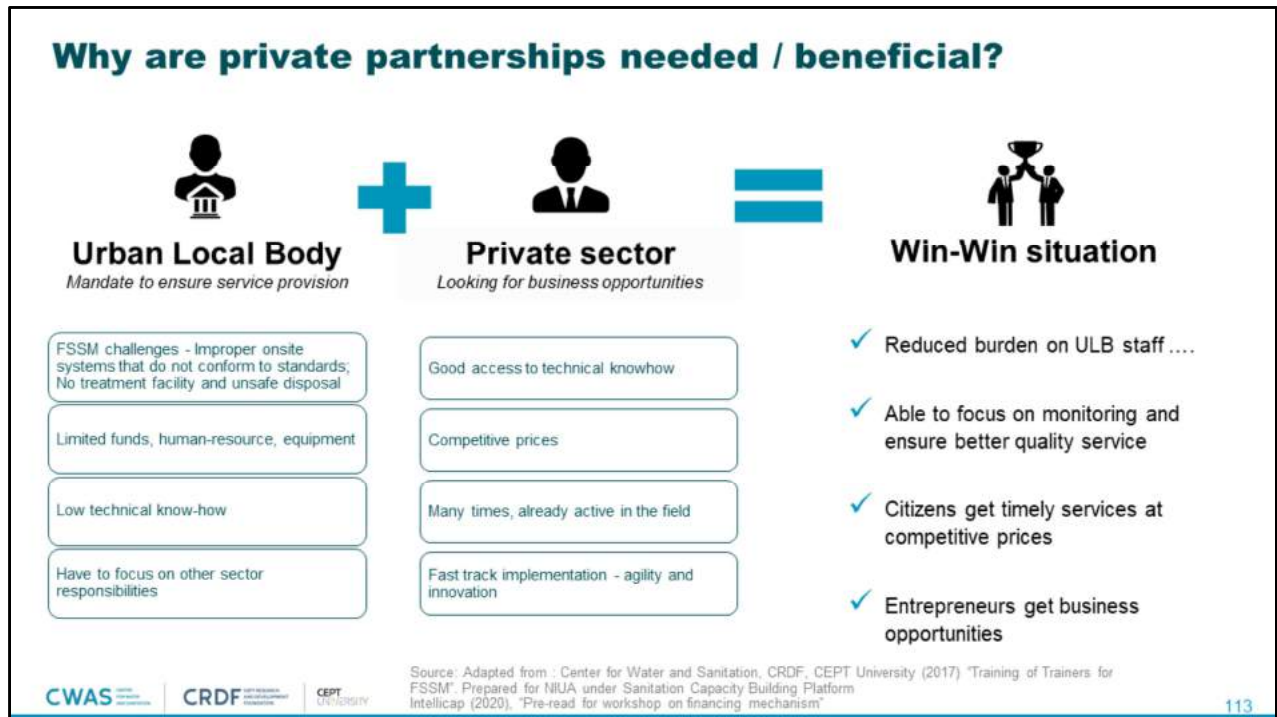
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## Why are private partnerships needed / beneficial?



While city governments generally have the mandate to ensure provision of sanitation services as per the 74<sup>th</sup> amendment, often there is an active private sector that provides FSSM services in the city. The ULBs are often unsuited to face the prevailing challenges with limited funds, human resources, technical know-how and equipment. They are also required to focus on responsibilities in other sectors. In such cases partnering with the private sector is a win win situation for all. The private sector is usually looking for new business opportunities and can offer good technical know-how, competitive prices, agility and innovation in implementation. Engaging the private sector may result in reduced burden on ULB staff who are then free to focus on quality control and monitoring. On the other hand, citizens are also getting timely services. Thus, it is necessary to assess the current role of private sector providers as well as their potential role in citywide service provision.

## Need to address typical challenges faced by private players

### Tech and experience requirements

Tenders don't have provisions for participation of players who have limited experience in the region but may have relevant experience outside.

Given that design specs have been pre-specified in some tenders, there need not be restrictions on prior technical expertise of the bidders such that pure civil contractors may be allowed to bid.

Technology in tenders should be left variable in order to accommodate more players and bring in more cost effective solutions.

Thinking of expanding to state A and B but discouraged due to more rigid tech criteria in these states

Financing these FSTP projects is a big challenge. Unsecured lending interest rates are about 18%-19%. Typically only half of this is secured. This seriously affects our profitability. The only reason we are still focused on these projects is because we are currently prioritizing top line growth.

### Financial constraints

In most cases, even though we have all of the technical know-how and experience, we need to consider entering into joint ventures for FSTP projects since we don't have the financial strength.

Modifications in bidder turnover requirement will allow start-ups and SMEs to apply for FSTP tenders.

High EMDs and security deposit requirements in FSTP tenders puts a strain on our working capital for the project.

We have approached a few banks and NBFCs for financing but have been turned down at the first instance since the ROI is low relative to other projects. Collateral is also a problem here.

### Distrust in working with government

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.

Payment delays from the Government is one of the biggest discouraging factors for us to participate as well as for our ability to get lending support.

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

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

### Issue with project structure

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. I don't want my payment to suffer.

Escalation of fuel costs is an issue. The contract should clearly account for that."

Source: Center for Water and Sanitation, CRDF, CEPT University "PSP Toolkit for IFSM"  
Intellicap (2020) "Catalyzing private sector participation in FSSM in India: Contract Management – A Private Sector Perspective" Presentation at TSU-PMU convening Intellicap (2020) "Pre-read for workshop on financing mechanism"

## Multiple components to catalyze private sector participation



Source:  
Center for Water and Sanitation, CRDF, CEPT University "PSP Toolkit for IFSM"  
Intellicap (2020) "Catalyzing private sector participation in FSSM in India: Contract Management – A Private Sector Perspective" Presentation at TSU-PMU convening

When it comes to private sector participation in the sanitation space, resources exist to guide PSP in large scale projects, but there is still a need for guidance on engaging contractors in small-scale projects based on the FSSM approach. It is not enough to provide or enable market opportunities for the private sector to participate in FSSM. In order to catalyze more private sector participation, market opportunities need to be showcased through successful examples and an enabling environment needs to be created which includes but is not limited to points like political will, legal support, increased engagement capacity of public sector, balanced contracts and project structures, resolution for payment risks and availability of financing options.

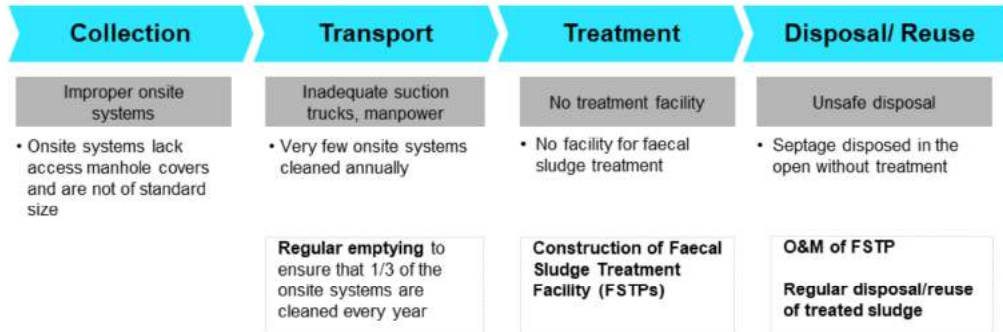
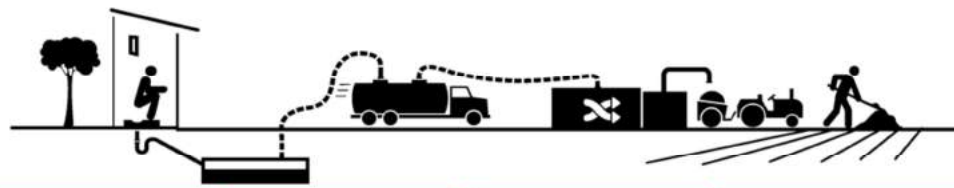


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## Market opportunities for private sector across sanitation chain



Note: (i) As per MoUD guidelines, a household onsite system/onsite system must be emptied every 3 years hence 33% of all onsite systems/onsite systems should be emptied annually

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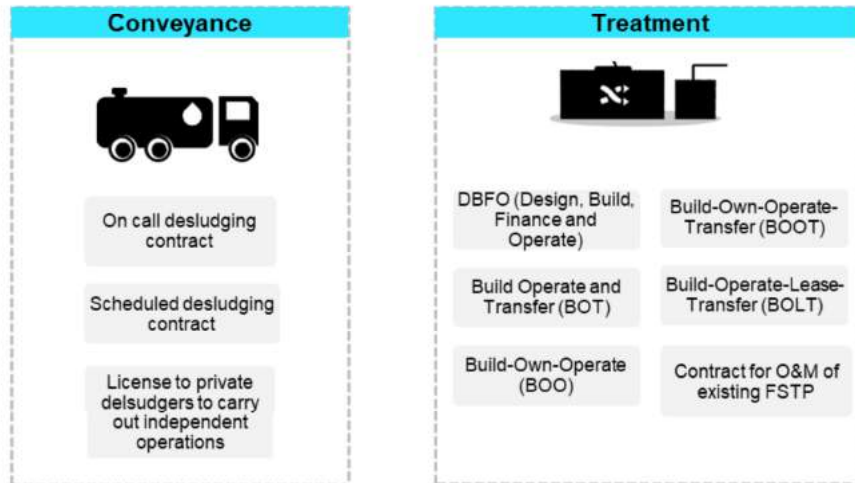
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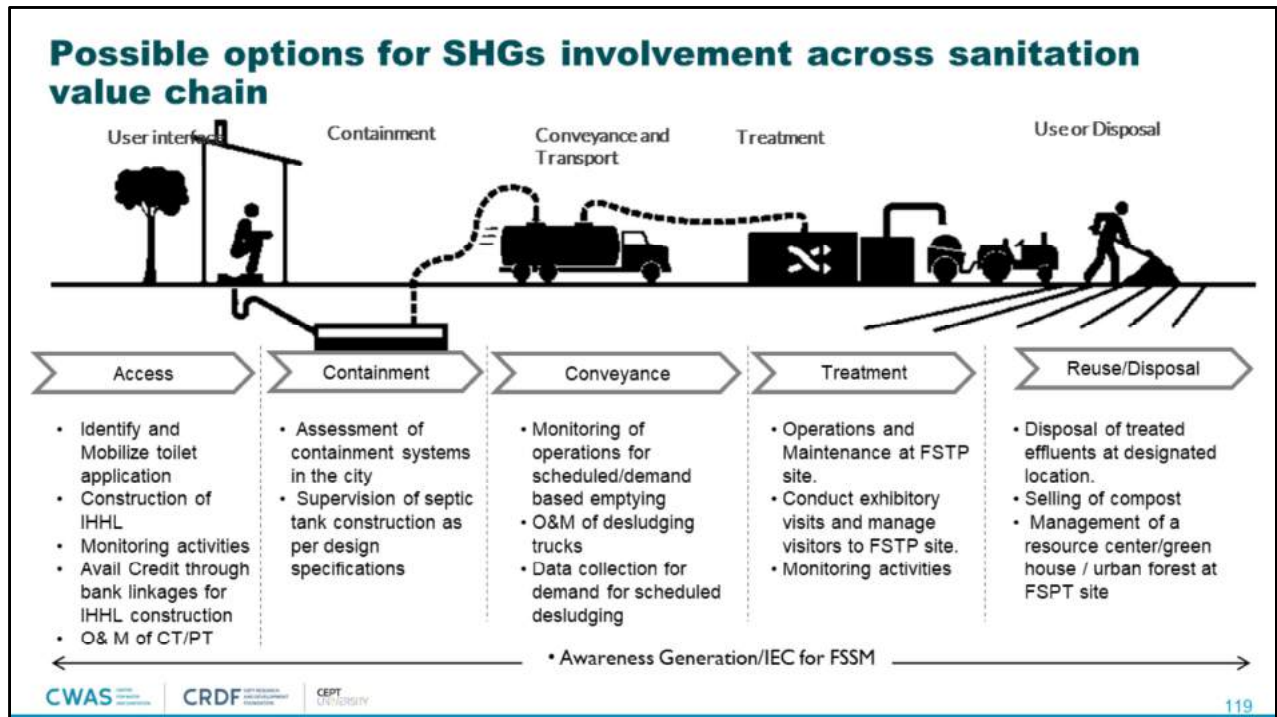
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Small and medium towns have a sizable market potential for private sector engagement in sanitation. Tapping into this opportunity will also help ULBs address internal capacity constraints and enhance sanitation services. Across the FSSM service chain, three possible activities offer the possibility for private sector engagement – desludging of septic tank, FSTP construction and FSTP O&M including regular disposal/reuse of treated sludge.

## Possible PSP options



Depending on the choice of business model, a range of options exist for PSP. Conveyance arrangements, if centralized, may be through an on-call contract or a scheduled desludging contract. Alternatively the ULB may also choose to simply license private desludgers for carrying out independent operations. Treatment arrangements, for construction may be through a variety of contracts in various combinations for designing, building, operating, owning and transfer options. For existing FSTPs, simple O&M contracts are also an option.



Opportunities also exist for self help groups to get involved in FSSM activities. With varying degrees of capacity and training, SHGs may be engaged for activities that require low technical skills such as awareness generation and CT/PT O&M to activities requiring high technical skills such as conducting citywide surveys and FSTP operations.

## Possible Challenges in linking SHGs to Sanitation enterprises



Requirement of capacity building program for enhancing the technical, and managerial skills



Support required to bear shocks of irregular ULB payment cycle



Model contracts, SOPs, training to SHGs

CWAS

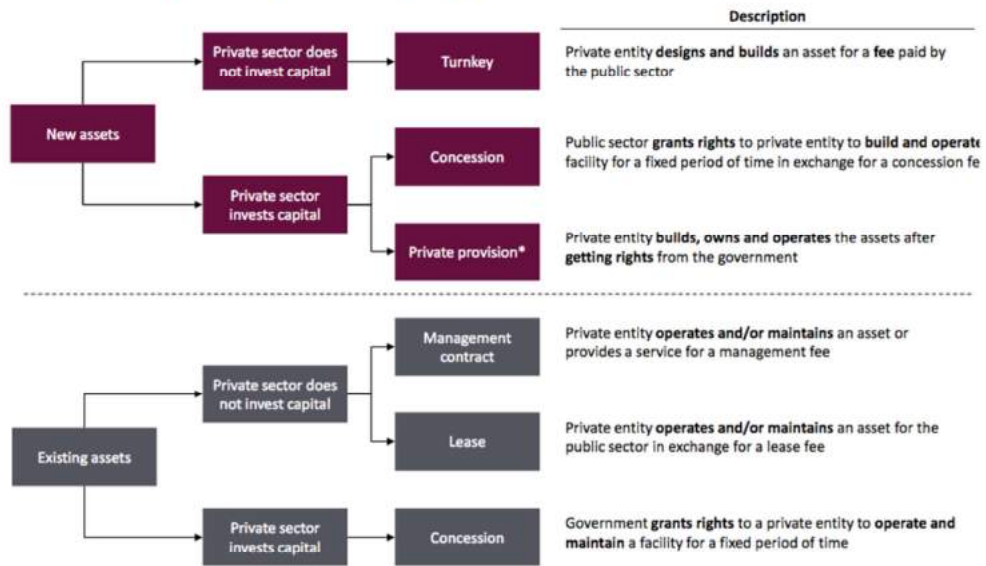
CRDF

Source: UMC (2020). Presentation on NULM-SBM convergence for Maharashtra

SHG engagement, however, will require extensive capacity building programs for enhancing technical and managerial skills in members. While private enterprises are experienced in working through contracts, for SHGs support may also be required to bear shocks, if any, in payment schedules and cycles of working with government bodies. Model contracts and standard operations procedures need to be provided to facilitate the process.



## Private sector participation projects can be categorized into 6 types



## What does the desludging market look like for private players?

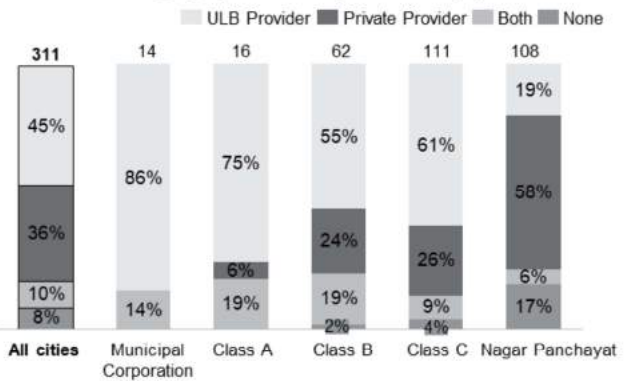
### A case of Maharashtra – one of the most urbanized states in India

A research was conducted by Arete Advisors with CWAS-CEPT University on the private sector players across cities in Maharashtra – 62 pvt players interviewed across all classes of towns, PAS Project data from 311 cities analyzed



### 1. Private sector is already active, especially in smaller towns

Share of desludging operators – city class wise (%)



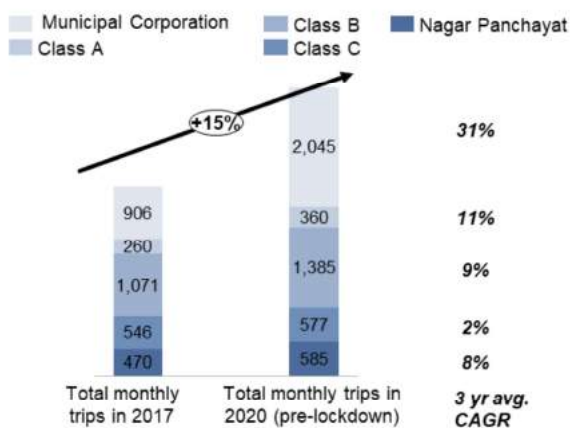
CWAS, CRDF, CEPT. Source: Arete (2020) 'Private sector assessment for scheduled desludging services in Maharashtra' CWAS, CRDF, CEPT University. Analysis based on data from PAS Project, CWAS

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While studies have been done recently on PSP in FSTP activities in partnerships with local government bodies, not much is known about the desludging market aside from studies in individual towns. A research was conducted by Arete Advisors with CWAS-CEPT University on the private sector players across cities in Maharashtra – 62 pvt players were interviewed across all classes of cities. The first observation from this study was the stark difference in private sector desludging activity in smaller towns vs larger corporations pointing to low service capacity of smaller local governments.

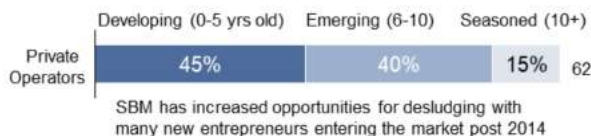
## 2. Big corporations are also seeing increasing demand for pvt. desludgers

### Growth rate by City class



## 3. Desludging as a business is upcoming – Most entities are developing and individually owned businesses

### Maturity of private operators







### Type of registration by private operators



Although, private operators show a lower share in activities in larger corporations as compared to ULB services, they are also seeing increasing demand per month lately. Increasing demand and upcoming profile of desludging as a business is also seen in the age profile of existing entities – more are developing (0-5 years old) and individually owned as against seasoned players (10+ years in business) and established companies.

## 4. Four diverse customer segments

 <p>Individual</p>	 <p>Industries</p>
<p>About 50% of the private operators service only the <b>individual residential household</b>, these emptying are less frequent and generally would have a single trip</p>	<p>About 35% of the operators have <b>industrial trips greater than 25% of their total trips</b>, price points charged to industrial customers are relatively higher than other customers</p>
 <p>Event/ Site Toilets</p>	 <p>Tender/ ULBs</p>
<p>In larger towns, operators have started servicing desludging demand from <b>construction sites, events, etc.</b> as an alternate source of income</p>	<p>ULBs have started to give out one-year contracts to private operators for desludging operations, operator bids on monthly <b>payment to be paid by the ULB</b> per month for emptying</p>

## What does the treatment market look like for private players?

### 1. Typical bidders for PPP model FSTP projects

Sanitation enterprises which are already working in the space and have experience in FSTP construction, O&M  
Examples: BankabioLoo, Tide Technocrats, Tiger Toilets

Enterprise related information	
States/ districts of operations	States – 3,4   Districts – 8,10
Number of years of operations	05-10 Years
Promoter experience	12-20
Sector of expertise	Sanitation and Allied space
Customer information	ULBs, government clients

Operational Details	
No. of employees	50-100
No. of customers	12-20
Percentage revenue from top 5 customers	70%

Financial details	
Collateral availability	Available
Turnover	15 crore

### 2. Typical enterprises for Turnkey / EPC projects

Local contractors who work with ULBs/Government to implement construction projects like road, sewer etc.  
Examples: DD Builders

Enterprise related information	
States/ districts of operations	States – 01   Districts – 2,3
Number of years of operations	05-10 Years
Promoter experience	8-10 Years
Sector of expertise	Construction activities
Customer information	ULBs, Private construction companies

Operational Details	
No. of employees	30-40   100 (temporary workers)
No. of customers	12-20
Percentage revenue from top 5 customers	90%

Financial details	
Collateral availability	Limited
Turnover	5 crore

CWAS

CRDF

CEPT

Source: Intelicap (2020) 'Pre-read\_Workshop on financing mechanism'

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In terms of the treatment market, sanitation enterprises which are already working in the space and have experience in FSTP construction, O&M Examples: BankabioLoo, Tide Technocrats, Tiger Toilets. Such enterprises are experienced with a diversified customer base, available financing opportunities and high turnovers of upto 15 crores. For turnkey or EPC projects, typical bidders are local contractors who work with ULBs/Government to implement construction projects like road, sewer etc. Examples: DD Builders. Such enterprises, although experienced are smaller and more dependent on a few big customers. Their collateral availability is also limited and turnovers smaller at 5 crores.

### 3. Typical enterprises for FSTP service contracts

Since this model limits itself to operations, small enterprises, NGOs, Area Level Federations (SHGs) are the prominent bidders.

Example: Hand in Hand, Tamil Nadu ; Hasirudala, Karnataka

Enterprise related information	
States/ districts of operations	States: 10-15   Districts: 200-250
Number of years of operations	NGOs – 15 Years
Promoter experience	NA
Sector expertise	Waste Management
Customer information	ULBs, Donors

Operational Details	
No. of employees	8000-10000 (NGOs)
No. of customers	60-70
Percentage revenue from top 5 customers	50%

Financial details	
Collateral availability	Not Available
Turnover	NA

### 4. Typical profiles for integrated models

Truck operating enterprises with approximately 20-30 trucks participate in such integrated projects. Usually these enterprises are already engaged in Sludge transportation and/or Solid Waste Management.

Enterprise related information	
States/ districts of operations	01-State   02-Districts
Number of years of operations	04-05 Years
Promoter experience	~ 10 years
Entrepreneur type	Technical Entrepreneur
Customer information	ULBs and government clients

Operational Details	
No. of employees	100-200
No. of customers	04-05 clients
Capacity utilization	90%
Percentage revenue from top 5 customers	95%

Financial details	
Collateral availability	Available
Turnover	INR 40-50 Cr

CWAS | CRDF | Source: Intellicap (2020) "Pre-read\_Workshop on financing mechanism"

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For contracts limited to services only, such as O&M, typical bidders are small enterprises, NGOs, Area Level Federations (SHGs). These, if experienced, may often have a large employee base and highly diversified customers. Lastly, in the case of integrated models for conveyance and treatment, typical bidders are very large organizations which are experienced in in Sludge transportation and/or Solid Waste Management.



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## Assessing legal and political environment

Favourability toward PSP from a legal and political standpoint

Existing drivers that can propel a potential PSP



Feasibility and ease of engaging with contractors



### Legal limitations

Do laws and regulations allow private contractor engagement?

Restrictions - ULB should reach out to state government for exception

Specific regulations - proactively seek early buy-in of state government

Land acquisition beforehand



### Policy support

Does a policy for private sector participation in IFSM, or sanitation exist?

If no, clarify way forward through consultations

Policy issued by previous government - confirm current government's views



### Political will

Is there political will in the local govt or a committed political champion?

No - proactively seek early buy-in of state government

Lower level political support exists - submit project proposal to higher-level authorities. Align with broader sanitation agenda



### Community support





Local community actively opposed - targeted stakeholder discussions

Broader exercise (e.g. through newspapers) to state how community views have been taken into account.

Community not engaged - Seek feedback on project through local newspapers

If market opportunity exists, the next step is to assess legal and political environment for favorability towards PSP and existing drivers that can propel such opportunities. There must be no legal limitations and policy support, political will as well as community support must exist. If there are barriers in any of these aspects, appropriate steps must be taken to address the issues for smooth contracting.

## Has the ULB engaged the private sector for FSSM or in other sectors previously ?

Sector	Type of the contract	LG responsibilities	Contractor responsibilities
	<ul style="list-style-type: none"> <li>Management contract for door collection of waste and cleaning of drains</li> </ul>	<ul style="list-style-type: none"> <li>Fixed monthly payment made to the contractor</li> </ul>	<ul style="list-style-type: none"> <li>Door to door collection of waste and cleaning to drains</li> <li>Provision of labor required</li> <li>Provision, Operation and maintenance of trucks</li> </ul>
	<ul style="list-style-type: none"> <li>Management contract for the O&amp;M of vermi-compost treatment plant</li> </ul>	<ul style="list-style-type: none"> <li>Monthly payment made to contractor for operation and maintenance of compost plant constructed by the LG</li> </ul>	<ul style="list-style-type: none"> <li>Provision of labor, equipment and utilities for the plant</li> <li>Sale of compost, 50% of the proceeds of which, need to paid to the LG</li> </ul>
	<ul style="list-style-type: none"> <li>Management contract for the O&amp;M of community toilets</li> </ul>	<ul style="list-style-type: none"> <li>Monthly payment made to contractor</li> <li>Payment for utilities</li> </ul>	<ul style="list-style-type: none"> <li>O&amp;M of community toilets along with regular cleaning and repairs</li> </ul>
	<ul style="list-style-type: none"> <li>Management contract for cleaning of pre-monsoon drain cleaning</li> </ul>	<ul style="list-style-type: none"> <li>Fixed monthly payment made to the contractor</li> </ul>	<ul style="list-style-type: none"> <li>Undertaking cleaning of drains</li> <li>Provision of labor required</li> <li>Provision of equipment required to undertake cleaning</li> </ul>

The main objective of this assessment is to understand the past experience of local government with planning and implementing engagements with the private sector in provision of urban services. This would be based on an understanding of the processes and key stakeholders required for implementing a private sector engagement right from the evaluation of need for the project to contracting, implementation and monitoring. This assessment would help to assess the key challenges that are encountered before, during and after awarding the contract as well as the positive practices and preferences that have enabled success from local government point of view.

## What was the overall experience of the ULB in these engagements?

- What are the positive factors that enabled the ULB to undertake these engagements successfully?
- What are the key challenges the ULB faced during the process?
- Are private parties easily and locally available?
- Are there any private contractors the ULB uses to supply labor for various services in the WASH sector?
- Are the ULB officials satisfied with the services provided by the private player? How is the standard of service provided by the private player in comparison to that of the ULB itself?
- Has the ULB ever had to discontinue a private sector engagement model? What were the reasons?

*"Our experience with these contracts has been quite good. The LG has not received any complaints so far. It is a relief for our staff." - A city Engineer*

*"We are paying more than we did when we did these activities ourselves. However, the service levels have improved and we have shifted a lot of our burden on to the private player. For example, we constantly faced issues with theft and vandalism in community toilets. That is now the responsibility of the private player to keep this toilets operational." - A city Sanitary Inspector*

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## What was the structure of these contracts?

Contract to be assessed on the following parameters

Features	Contract 1	Contract 2	Contract 3	Contract 4
Contract length	3 years	3 years	3 years	Annual
Automatic Renewal	✗	✗	✗	✗
Tender type	Open bid	Open bid	Open bid	Open bid
Payment duration	Monthly	Monthly	Monthly	Monthly
Item rate or Lump sum/ fixed fee	Fixed fee	Fixed fee	Fixed fee	Item rate
Rate per unit (INR)	1,90,000 per month	221,000 per month	1,55,000 per month	~1600-2000 per truck trip, ~350/manday
Penalty clause for non-performance	✓	✓	✓	✓
Number of bids received last year	5	3	3	4

- **Medium term** contracts allow for stability in services
- **Lump sum contracts** are not tied to inputs and avoid incentives for private players to inflate bills. Easier to monitor with fewer disputes.
- However, private players complain that the lump sum payments do not account for repair costs or price escalations
- **Payment should be clearly linked to monitoring and reporting requirements**
- Penalty clauses should be tied to monitored outputs or service levels and not be open ended
- Positive performance incentives tied directly to outputs or service levels should be considered

**Performance penalty in contract for door-to-door collection of waste** - "If any complaint is received by this office that the collection vehicle has not visited the designated area, an appropriate amount shall be deducted from my monthly bill and I will have no objection to such deductions."

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## What were the terms for risk mitigation and dispute resolution in the contracts?

### Priority contract clauses for effective engagements

Features	Door-to-door waste collection	O&M of vermi-compost plant	Cleaning of community + public toilets	Pre-monsoon drain cleaning
Redress of user complaints	✓	NA	✓	✗
Dispute resolution mechanism	✓	✓	✓	✓
Mitigating payment risk	✗	✗	✗	✗
Mitigating Termination risk	✗	✓	✓	✓

- All contracts include a **dispute resolution clause** that "Any dispute regarding the bills will be settled at City X and in the jurisdiction of City X court."
- All contracts should have a **termination clause** in case of public and private termination.
- **Complaint redressal processes and** expected service standards should be clear with responsibility
- There should be clauses to **manage delays in payments** (e.g. interest paid to the private sector)

**Complaint redress clause in contract for community toilet cleaning-** "In case of any complaint or a conflict regarding the public lavatory, it would be my responsibility to solve the complaint and I will not involve the municipal council in the matter."

**Termination clause in contract for vermi-compost plant-** "I agree that the Town Council has reserved the right to cancel this contract if the work is not satisfactory and the work is not improved after due notice and instructions."

The main objective of this assessment is to understand the past experience of local government with planning and implementing engagements with the private sector in provision of urban services. This would be based on an understanding of the processes and key stakeholders required for implementing a private sector engagement right from the evaluation of need for the project to contracting, implementation and monitoring. This assessment would help to assess the key challenges that are encountered before, during and after awarding the contract as well as the positive practices and preferences that have enabled success from local government point of view.



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## Landscape assessment of Private players

Are contractors available to provide the proposed services?

- Who are the relevant contractors for the proposed project?
- How can they be identified?

Do these players have expertise in delivering similar projects?

- Do the players possess relevant technical expertise and knowledge?
- Do they have prior experience in IFSM?
- Do they have prior experience of working with the public sector?

What are their key considerations or interests?

- What are the key interests of the private partner?



Once we have established the need and opportunities for PSP in FSSM the town/ city, the next step is to understand the availability and capability of the contractors operating in the region. A landscape study along the abovementioned questions would help provide an assessment of work profile, interests, expertise and capacity and willingness to undertake various FSSM activities.

## Inviting Expression of Interest (Eoi) for scoping potential players

- The ULB should launch an Expression of Interest (EOI) to capture inputs from private sector operators.
- The EOI would require companies to provide information related to the following aspects relevant documents



### Experience

- Years of experience in providing service in relevant sector
- Experience in working with public sector
- Certification / accreditation / registration with relevant agencies
- Past experience and future intent to provide relevant services



### Technical fitness

- Base of operations and geographical spread
- Standard mechanisms for service provision / Expertise in types of technology
- Details of available physical infrastructure – technology, age and number
- Details of staff
- Typical team structure for projects
- Financial health – Tax returns



### Interest

- Interest in working with public sector
- Willingness to invest and expected returns

In the absence of resources for conducting an in-depth independent landscape study, ULB may advertise and invite “Expression of Interest” from interested parties. Typical Eois require companies to provide information in their experience in the sector, technical fitness in terms of available staff/physical infrastructure/financial health as well as interest in investing and/or providing required services.

## Assess work profiles, interests and capacity of interested parties

### Sample Company Profile

1. **Name:** Company X
2. **Geographic focus:** Maharashtra, Karnataka, Tamil Nadu, Goa and Delhi NCR
3. **Services offered:** Company X core business is the manufacture and supply of recyclable portable toilets, but they also offer commercial and residential septic tank cleaning and septage treatment
4. **Business model (conveyance):**
  - 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
5. **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"*
  - "We would be interested in an integrated contract for faecal sludge management. In terms of profitability, the business is only viable if you're doing at least a 20-25% EBITDA"*
6. **Key Concerns**

### Small scale players (<10 employees)

Labour contractors

Septic tank cleaning companies

### Medium scale enterprises (>10-50 employees)

Pure play treatment players

Integrated FSSM service providers

Others

Buyers of septage

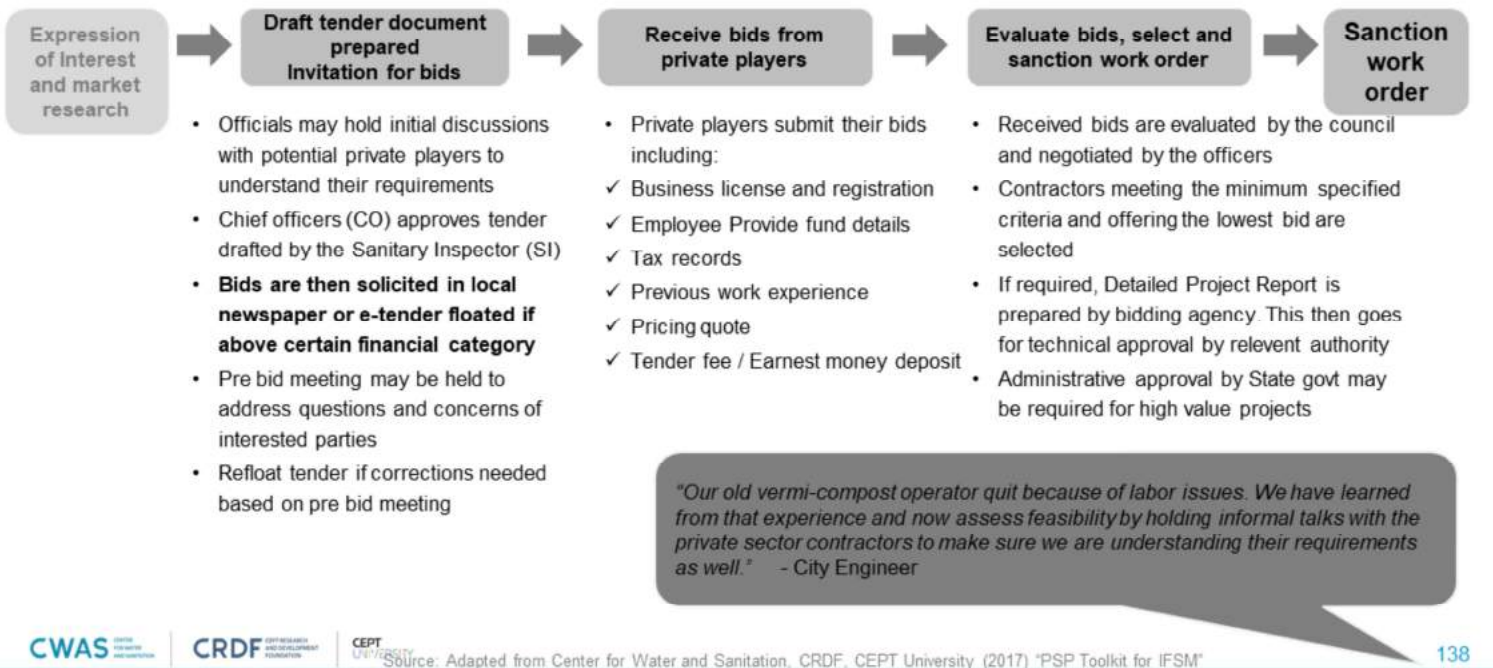
On receiving EoI, the ULB or assessing organization can create individual company profiles based on provided parameters. A sample profile is provided above. Typically, companies can be categorized into small scale players – which are interested in being labour contractors or desludging operators – or medium enterprises which are more interested in treatment or integrated FSSM services. Another category may be those that are not interested in providing services but may want to purchase treated products of septage for re-use.

## Willingness for engagement as per their competencies and interests



Key		Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
Labor contractors	Company 1	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
	Company 2	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
Small-scale septic tank cleaners	Company 3	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
	Company 4	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
	Company 5	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
STP companies	Company 6	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
	Company 7	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
Integrated players	Company 8	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced
	Company 9	Interested, with previous experience	Interested, no previous experience	Experienced, not interested	Not interested, not experienced

## Typical procurement process in local government



The next stage in a typical procurement process is generally to float a tender inviting bids with specifications on the kind of services required and related terms and conditions. This may be done through advertisements in newspapers or through the state government's e-tendering website. The draft contract and tender documents need to be approved at multiple stage and relevant officials. Once bids are received, they are evaluated by the city council and subsequently negotiated by the executive wing officials. Contractors meeting the minimum specified criteria in the technical evaluations stage and offering the lowest bid in the financial evaluation stage are selected and work order is given.



## Pre-procurement challenges faced by private players

Challenge	Impact on private player	Recommendation
Bidder size (turnover) requirements	Minimum Average Turnover requirements are usually set at 25-33% of the project cost	While the minimum average turnover should be in line with the existing ULB norms, joint venture / consortium should be allowed.
Restrictions on partnerships while bidding	Consortium / Joint Venture not allowed  Many new players are unable to meet the minimum criteria.	
Geographical presence requirements	Many tenders ask for an office set up in the region or experience in similar projects in the region, which disqualifies many bidders.	Experience in managing similar projects is critical. However the need for a regional player and an infrastructure setup for such small projects is unwarranted.
Fixed vs open technology for treatment	New technology solutions are not being tested and technology startups are not eligible for these contracts.	Its better to standardize output parameters rather than the technology. An open technology with due validation will allow more bidders to participate.
Earnest Money Deposit	The EMD amount of 1% of the project cost is an added financial burden on the private sector player.	Need to adopt the GOI guideline of exempting MSMEs from EMD.

The above table lists some common challenges faced by private players in the pre-procurement stage during bidding. Most of the times they issues relate to limitation clauses in the tender document that restrict certain players from entering the bid.

## No-procurement case: License to carry out independent desludging operations

In case private sector is providing independent services, ULBs should certify and license private septage transporters to desludge and transport waste to the designated treatment facility

- ✓ **Permission to run desludging operations**
- ✓ **Private player owns trucks**
- ✓ **Private player is collecting charges independently**
- ✓ **Private player to ensure safe disposal at designated site**
- ✓ **Permit to be renewed periodically**
- ✓ **Can be cancelled if violating and Acts, Rules and Regulations**

### Septage Transporter Permit for \_\_\_\_\_ Municipality

In accordance with all the terms and conditions of the current \_\_\_\_\_ Municipality's Rates, Rules and Regulations, the special permit conditions accompanying this permit, and all applicable rules, laws or regulations of Government of Maharashtra, permission is hereby granted to:

NAME OF PERMITTEE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

For the disposal of septage from domestic septic tank or commercial holding tank at the \_\_\_\_\_ treatment facility.

This Permit is based on information provided in the Septage Transporter Permit application which constitutes the Septage Management Hauled Permit.

This Permit is effective for the period set forth below, may be suspended or revoked for Permit Condition Non Compliance and is not transferable. The original permit shall be kept on file in the Permittee's office. A copy of this Permit shall be carried in every registered vehicle used by the permittee.

EFFECTIVE DATE:

EXPIRATION DATE:

\_\_\_\_ CHECK IF RENEWED PERMIT

Permit is liable to be cancelled in case of violations of any Acts, Rules and Regulations relating to the operation of Septage System or in cases of safety protocols not being adhered to or in case of non-permitted disposals.

In case the ULB is not opting for centralized contracts for desludging services, it should certify and license septage transporters in order to monitor their operations and ensure safe disposal at designated sites. A sample permit is given above. This is relevant for Conveyance prototype 1: Fully private model described in the previous sessions.

## No-procurement case: License to carry out independent desludging operations

In case private sector is providing independent services, **ULB** should certify and license private septage transporters to desludge and transport waste to the designated treatment facility.

- ✓ **Permission to run desludging operations**
- ✓ **Private player owns trucks**
- ✓ **Private player is collecting charges independently**
- ✓ **Private player to ensure safe disposal at designated site**
- ✓ **Permit to be renewed periodically**
- ✓ **Can be cancelled if violating and Acts, Rules and Regulations**

### Conveyance prototype 1: Full Private Model

EFFECTIVE DATE:

EXPIRATION DATE:

CHECK IF RENEWED PERMIT

Permit is liable to be cancelled in case of violations of any Acts, Rules and Regulations relating to the operation of Septage System or in cases of safety protocols not being adhered to or in case of non-permitted disposals.

# Activity 6A Procurement plan

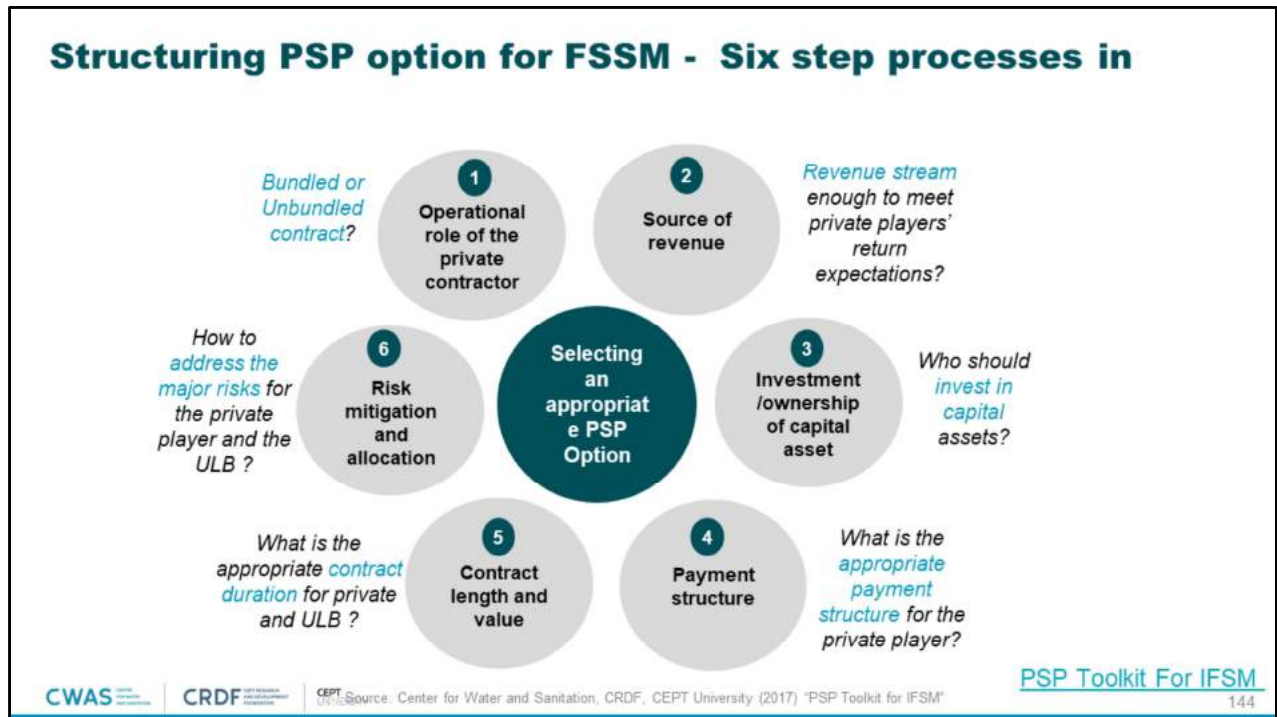
Refer to exercise workbook

# Contents

- 1 Introduction to private sector participation
- 2 Market opportunities for private sector in FSSM
- 3 Enabling environment, ULB capacity and experience
- 4 Procurement process
- 5 Developing balanced contracts, project structures
- 6 Addressing risks and payment delays



## Structuring PSP option for FSSM - Six step processes in



For designing contracts, there are six decision areas processes involved in structuring and assessing a PSP option for septage management.

- **Operational role of Private Sector – appropriate bundling of contracts:** Should the local government put out an integrated FSM contract for the entire service chain, or unbundle the contract for specific activities
- **Return expectations and source of revenue:** What are the likely revenue requirements to meet private players' return expectations? What could be the potential sources for these revenues – taxes or user charges?
- **Investment and ownership of capital assets:** Should the capital investments in the vacuum truck and sludge treatment facility be borne by the private players or by the local government?
- **Payment structure:** What is the appropriate payment structure? E.g. should it be a fee per unit, or a lump sum contract or a monthly fee?
- **Contract length and value:** What is the appropriate contract duration and value which compensates private players for the risks they undertake, while providing the local government with the flexibility to switch providers?
- **Risk mitigation and allocation:** What are the major identified risks for the private sector and the city government that need to be mitigated? If it is difficult to mitigate some risks how should these be allocated?

Once these key questions are addressed, it will be possible to develop an appropriate structure of engagement with the private sector as well as develop the necessary contracts and bid documents. Based on these, a further round of detailed consultations should be done with both the local government as well as a few key private players to get their feedback.



# 1. Operational role of the private contractor – creating bundled contracts

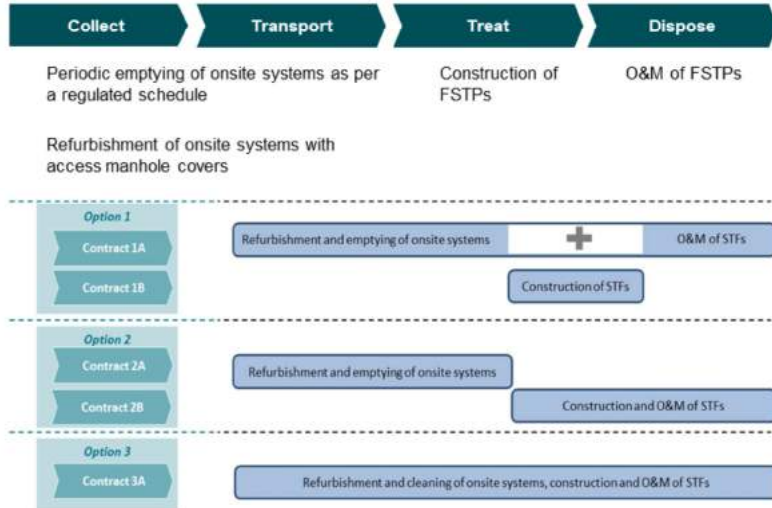
Identify the different activities under the sanitation value chain



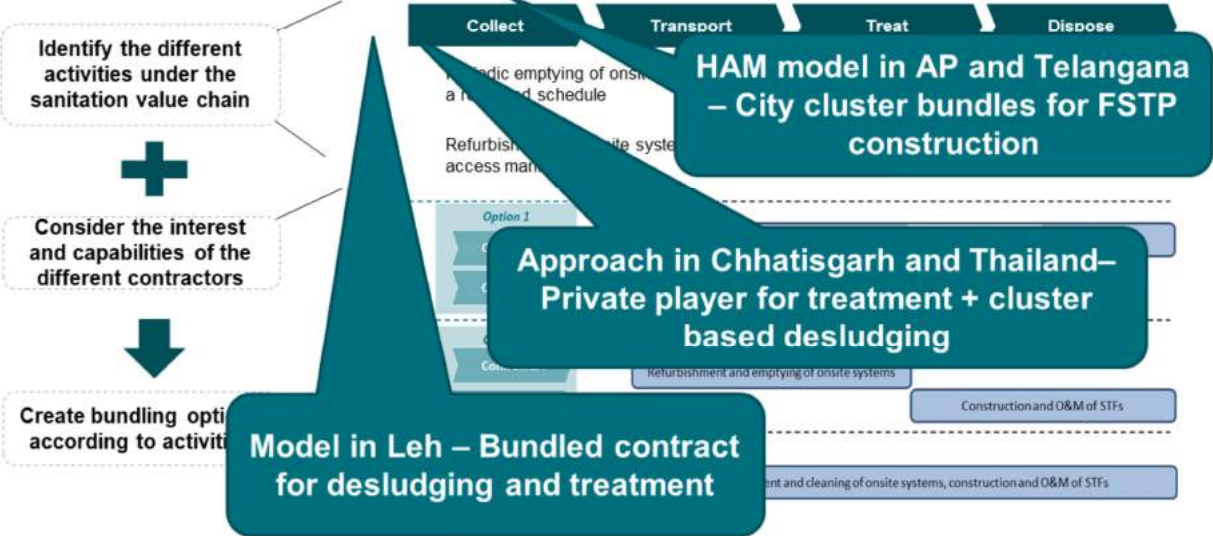
Consider the interest and capabilities of the different contractors



Create bundling options according to activities



# 1. Operational role of the private contractor – creating bundled contracts



## Bundling contracts simplifies vendor management, and ensures greater accountability

### Advantages of bundled contracts

- **Ensures greater accountability:** Having a single point of contact avoids the issue of players blaming each other for lapses in service
- **Aligns performance incentives:** Creates incentives for the private player to manage each element of the chain successfully
- **Simplifies contract management:** Reduces the number of transactions needed to co-ordinate with different players

### Advantages of unbundled contracts

- **Diversifies non-performance risk:** With a bundled contract, non-performance puts all activities at risk
- **Takes advantage of player expertise:** Contracts can be awarded to the most qualified player for each activity

*The elements of integrated faecal sludge management are highly connected and success of one element is closely tied to the success of the others. Hence, bundled contracts have tangible benefits over unbundled contracts for IFSM.*

## 2. Identify revenue sources

Identify the different sources of revenues



Assess the different options on the basis of sustainability and reliability

ULB sources

Government sources

Miscellaneous sources

Can be used individually or in combination

Is fund available through the duration of the contract?

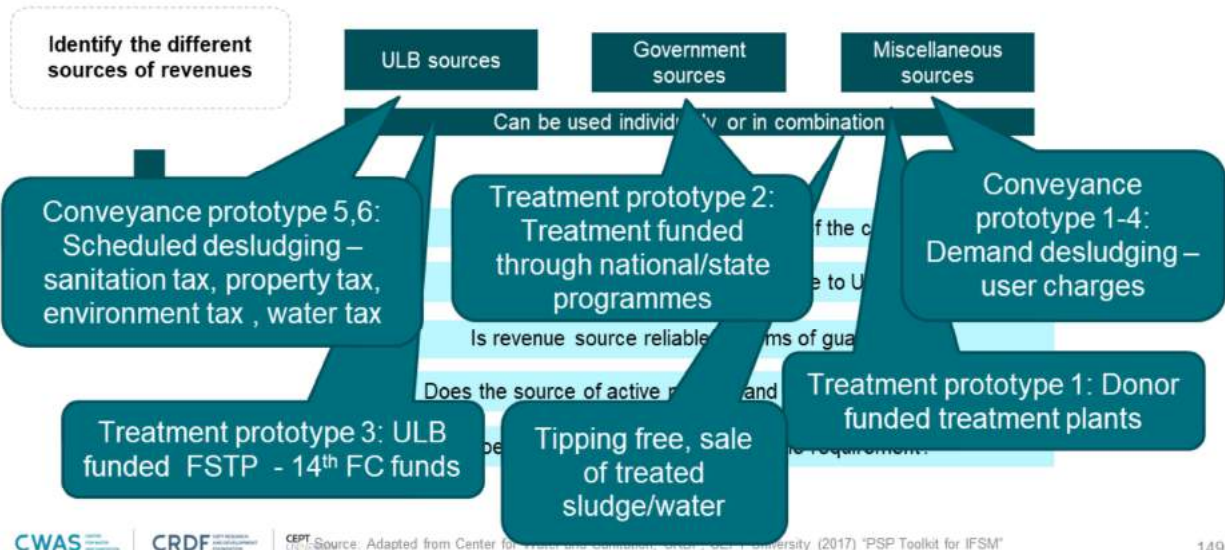
Are the financing terms acceptable to ULB?

Is revenue source reliable in terms of guarantee?

Does the source of active political and community support?

Does the cash flow timing match the requirement?

## 2. Identify revenue sources



## Sanitation tax as a revenue source - Case of Wai and Sinnar

The ULB can consider using its conservancy taxes to support the integrated faecal sludge management plan, and will need to compensate private players directly through a management fee

## Sale of treated septage for reuse: source of revenue

"Larger farmers who export their crops are bound by restrictions on the use of animal and human waste. **Sludge can be sold mainly to small and marginal farmers, who lack access to synthetic fertilizers.**"

- Person X

"**Faecal sludge cannot be used in organic farming** due to concerns about e-coli and shigella infections. However, it is often used by small farmers as 'son-khad'."

- Person Y, Farming association

"We make compost from solid waste. The market is extremely seasonal. Creating a continuous market for this waste is tough. People say that you are creating compost from waste so we don't want to use it. **Source is very important.**"

- Person Z, Entrepreneur

"I often have to **pay farmers** to dump sludge in their farms, I do not think the sale of septage is a viable revenue source."

- X Enterprises

"It (sale of septage) is possible, **but will require investment in marketing and distribution, which we do not do.**"

- Y Enterprises

There is demand for sludge among small and medium farmers, but willingness to pay is unclear

### Sanitation tax as a revenue source - Case of Wai and Sinnar

Currently, households clean their septic tanks once in 8-10 years and spend INR ~1000 in Wai and INR ~400 - 800 in Sinnar

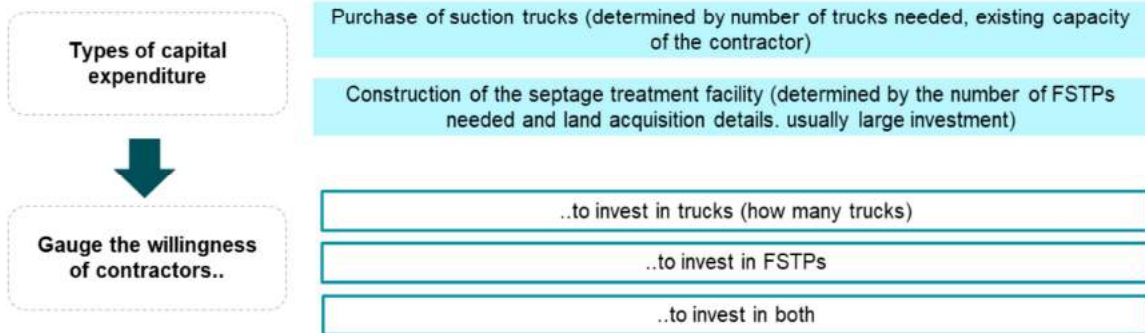
Property owners currently have to pay local taxes of about Rs 2200/annum in Wai and Rs.1600/annum in Sinnar

To cover the costs of a cleaning cycle of ~3 years would require **an increase** in annual tax spend for a household of about **10% in Wai and 20% in Sinnar.**

As these are reasonable increases for a regular service and related environmental as well as personal benefits, it is expected that with **appropriate awareness** there will be willingness to pay additional taxes.

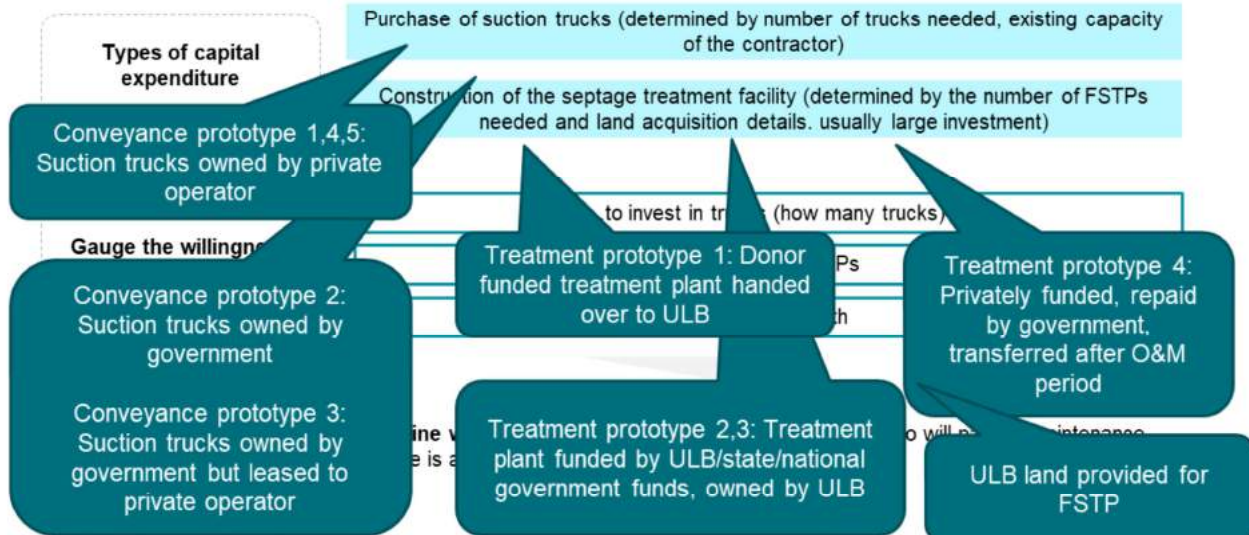


### 3. Decide ownership of capital assets



The PSP contract must clearly define who will purchase or pay for the asset and who will pay for maintenance, and if there is a transfer of asset after a specified period of time

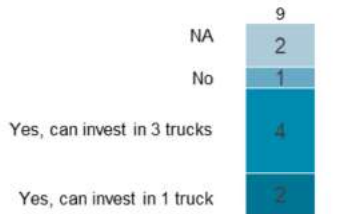
### 3. Decide ownership of capital assets



**Assessment of contractors revealed that contractors were willing to invest in suction trucks, but do not want in on the construction of FSTPs**

**Willingness to invest in a suction truck**

(Number of players)



*"Yes, I can procure a truck and operate it on the regulated schedule... I can use (the truck) for other business in case the contract does not work out."*

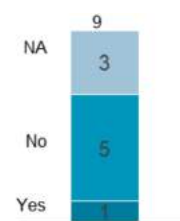
- X Enterprises

*"I cannot afford to buy more than one truck. I have just ordered a truck, and faced financial troubles there too."*

- Y Cleaning Services

**Willingness to invest in construction of FSTPs**

(Number of players)



*"Payment needs to be mile-stone based, ~40% up-front, 50% when materials are delivered to the site and 10% post-completion."*

- Z company

*"It would be interesting to explore an integrated contract structured as a build-operate-transfer concession agreement."*

- V Enterprise

## Private sector investment in trucks has significant benefits for the ULB

### Benefits to public sector

- ✓ **Ease of procurement:** ULB procurement of the truck would require floating a tender, inviting, evaluating and negotiating bids. This is likely to be time consuming, and involve transaction costs that can be avoided if the private player purchases the truck.
- ✓ **Aligns private sector incentives:** Private sector investment in trucks incentivizes the player to use and maintain the truck well.
- ✓ **Allows investment in quality:** ULBs are often bound to minimize cost, while the private sector can invest in quality trucks with longer lifecycles and additional features like water jets.

### Benefits to private sector

- ✓ **Facilitates access to finance:** Having a contract from the ULB can make it easier for the private player to raise capital for the truck and negotiate better financing terms.
- ✓ **Provides a platform for business expansion:** A contract with the ULB serves as a low-risk platform for private sector players to scale by providing access to guaranteed demand to recoup investment in a truck.

## 4. Define payment structure for different activities



### Key activities

Refurbishment of septic tanks

Regular cleaning of septic tanks

Emergency Cleaning of septic tanks

O&M of FSTPs

Construction of FSTPs

### Payment structure

*Fixed fee per unit*

*Recurring fixed fee*

*Fixed fee per emptying service*

*Recurring fixed fee*

*Overall fixed fee*

### Rationale

Refurbishment is a **one time** activity in which the **cost per tank is known**, but the **number of tanks is not**. Hence a fixed fee per refurbished tank is paid

Because of the ULB HH survey, the number of tanks to be cleaned and the schedule is well determined. Hence it is an **ongoing activity** for which a **fixed monthly fee** is paid given the schedule being followed and proper field reports are submitted by the private sector.

The **emergency septic tank emptying** service can be provided by the ULB using its own vehicle. The fee of this would be kept high as a **deterrent** for users to **not opt out** of regulated services

O&M of FSTPs is an **ongoing activity** for which the costs and procedures are well defined. Hence, a recurring fixed fee is paid

Construction of FSTPs would be a **one time activity**. Since the design is specified by the ULB, the costs would be well known. Hence, an overall fixed fee can be given

## 4. Define payment structure for different activities



Key activities	Payment structure	Rationale
<p>Conveyance prototype 1-3: Fixed user charges per tank / per trip collected on spot</p> <p>Regular cleaning of septic tanks</p>	<p>Conveyance prototype 4: Lowest quotation by desludger accepted by call center. Paid on spot</p> <p>Re fee</p>	<p>Conveyance prototype 5: Payment per tank/trip, paid monthly in bulk</p> <p>the schedule is well determined. Hence it is an ongoing activity for which a fixed monthly fee is paid given the schedule being followed and proper field reports are submitted by the private sector.</p>
<p>FSTP construction – Fixed fee based on DPR estimates and drawings</p> <p>Payment on milestone based invoices – eg: Excavation, Foundation, Plinth, Unit wise / Floor wise, functional structure</p>		<p>FSTP O&amp;M – fixed monthly fee</p> <p>septic vehicle. The sept out is an or Hence</p> <p>FSTPs would be a one time activity. Since the design is ULB, the costs would be well known. Hence, an overall fee can be given</p>



## 5. Define contract length and value

Estimating the contract length and value



Calculate the total taxes that need to be raised from the households to finance the increased expenditure



## Sample structures

Contracts	Source of revenue	Ownership of asset	Payment method	Contract length and value	Tax /annum / property
Refurbishment and cleaning of septic tanks + O&M of FSTPs	LG	Private player	Recurring fixed fee with Fixed fee per unit for refurbishment	2-3 year, ~INR 32-36 lakhs in City Y and ~INR 15-17 lakhs in City X	Resi : 190-270 Non-Resi : 230-320
Construction of FSTPs	LG	LG	Overall fixed fee on a pre-decided schedule	~ INR 96 lakhs in City Y and ~71 lakhs in City X lasting the time period of construction	
Refurbishment and cleaning of septic tanks	LG	Private player	Recurring fixed fee with Fixed fee per unit for refurbishment	2-3 year, ~INR 27-32 lakhs in City Y, ~INR 11-13 lakhs in City X	Resi : 140-230 Non-Resi : 170-270
Construction and O&M of FSTPs	LG	LG	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 City Y and ~4-5 lakhs in City X	
Integrated contract - refurbishment, cleaning of septic tanks, construction and O&M of FSTPs	LG	Trucks – Private FSTP- LG	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	Resi : 190-270 Non-Resi : 230-320

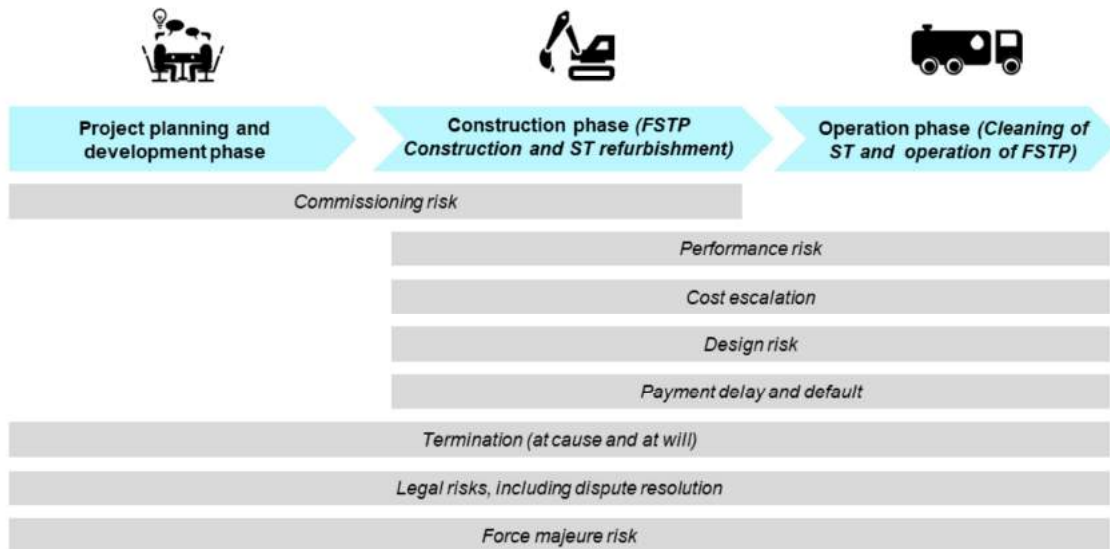
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CEPT Source: Center for Water and Sanitation, CRDF, CEPT University (2017) "PSP Toolkit for IFSM"

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## 6. Risk Mitigation and performance monitoring



Good risk mitigation and allocation can attract good contractors and help reduce contract price. Current contracts are relatively simple documents, where ULBs simply list each of their current activities and assign them to the private sector. In most cases, there is no rigorous evaluation of the risks involved with a private sector engagement. As a result, contracts are often revised several times after they have been signed, as new risks are discovered. While the nature of risks varies on a case by case basis, the above diagram lists some common risks that have been observed to be inadequately managed in current contracts. These are explained further in detail in later slides.

## Summary: Key clauses in standard contracts

### 1 Obligations before signing contract

- Bank guarantee, performance guarantee by contractor
- Mapping, field visits, design specifications, IEC
- Setting up payment accounts

### 2 Obligations after signing, but before work begins

- Detailed project report
- Work order, commencement in 30 days
- Equipment and material purchase
- Permissions, utility connections
- Furnish insurance, driving license for drivers, business registration license, PAN card, affidavit of character

### 3 Terms of work during contract, expected standard of service

- Visits as per schedule
- Use of safety gear
- Adequate emptying, safe transport
- No damage to property
- Construction as per design
- Construction milestones to be achieved
- Work hours / timelines / milestones
- Repair and maintenance

### 4 Payment terms

- Amount due
- Mechanism of payment
- Performance standards, milestones
- Procedure on delay
- Cost escalation

### 5 Penalties & Incentives

for instances when service standards are not met by the private player, as well as incentives to reward strong performance

### 6 Termination of contract

- At will / at cause
- Seizure or forfeit of bank guarantee
- Compensatory payments
- Notice period

### 7 Force Majeure

Clauses to free all parties from liability or obligation when an extraordinary event or circumstance occurs which is beyond the control of the parties an event or effect that can be neither anticipated nor controlled

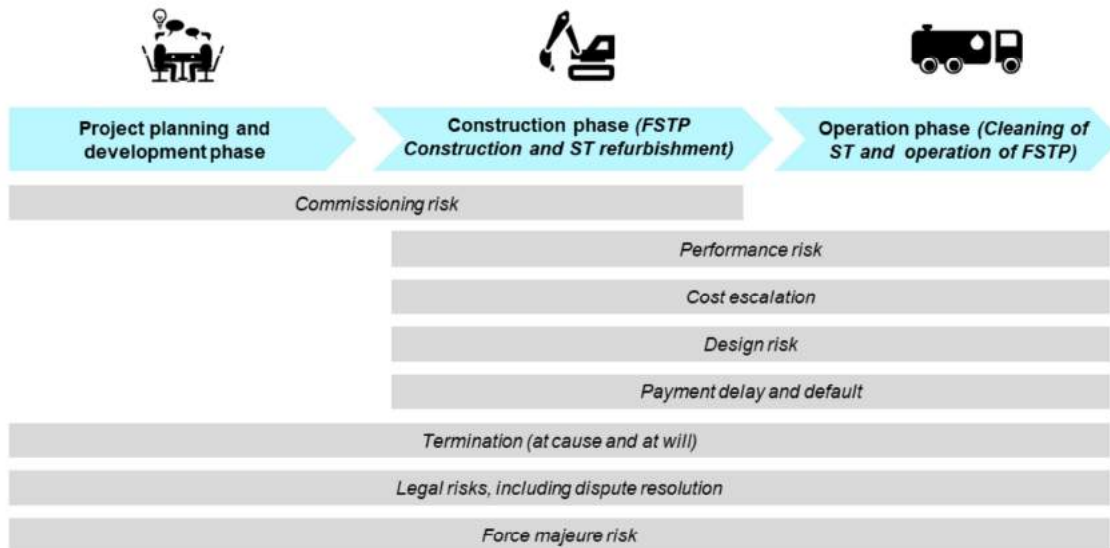
Contracts are complicated documents with multiple clauses which must be vetted by legal experts. However, the clauses can be loosely grouped into seven categories. The above list consists of key sections and clauses which must be included in standard contracts.

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## Risk Mitigation and performance monitoring



Good risk mitigation and allocation can attract good contractors and help reduce contract price. Current contracts are relatively simple documents, where ULBs simply list each of their current activities and assign them to the private sector. In most cases, there is no rigorous evaluation of the risks involved with a private sector engagement. As a result, contracts are often revised several times after they have been signed, as new risks are discovered. While the nature of risks varies on a case by case basis, the above diagram lists some common risks that have been observed to be inadequately managed in current contracts.



## Protecting Private enterprise interests

### 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."*

– X 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."*

– Y 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."*

– Z company

### 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."*

– AA Enterprises

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

– ZY 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."*

– AB 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."*

– AX Enterprises

Balanced contracts protect the interest of all parties including the private sector. Addressing the concerns of private enterprises at the contract stage itself results in a good contract management experience for the ULB and encourages the private sector to maintain the relationship as well as participate more in public sector projects.

## Risk mitigation: Commissioning risks

Risk	Mitigation	Allocation of remaining risk
<p><b>Delay in land acquisition</b> - Escalation of project cost, opportunity cost; impact on the viability of the project</p>	<ul style="list-style-type: none"> <li>Land acquisition to be complete before project begins</li> <li>Contractor should <b>be compensated for the delay</b> either through credits or penalties.</li> <li><b>Right of Access</b> should be made part of the land acquisition process. Access infrastructure can be included in the project cost if needed.</li> </ul>	
<p><b>Delay in construction/ commissioning related approvals</b></p>	<ul style="list-style-type: none"> <li>A streamlined <b>process for approvals</b> need to be incorporated defining <b>timelines</b> and responsibilities of both ULB and contractor</li> </ul>	<ul style="list-style-type: none"> <li>Penalty payments for delay time period</li> </ul>
<p>Change in Law risk Project uncertainty</p>	<ul style="list-style-type: none"> <li>Contractor to be secured against this</li> </ul>	
<p>Force Majeure risk</p>	<ul style="list-style-type: none"> <li>Insurance</li> <li>Risk to be shared between contractor and ULB</li> </ul>	

Commissioning risks, typically in the case of construction projects, relate to challenges faces prior to which delay the commencement of construction phase.

## Risk mitigation: Performance and meeting contract clauses



Cleaning of septic tanks

Risk	Mitigation	Allocation of remaining risk
Private player uses <b>manual scavenging</b> for cleaning septic tanks or FSTPs	<ul style="list-style-type: none"> <li>Requirement of <b>safety gear</b> for all personnel</li> <li>A clear description of activities that constitute <b>manual scavenging</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Contract terminated</b> if complaints of manual scavenging are received from HH or ULB staff</li> </ul>
Private player does not clean septic tanks <b>as per schedule</b>	<ul style="list-style-type: none"> <li><b>Portion of monthly payment tied</b> to number of HH signatures collected whose septic tanks have been cleaned</li> <li>Undertaking <b>random inspections</b> of HH whose signatures have been submitted</li> <li>A <b>complaint redress mechanism</b> to be opened by the ULB for the HH</li> <li>In case of demand issues/service refusals - <b>appropriate IEC</b> to be done by the ULB</li> </ul>	<ul style="list-style-type: none"> <li><b>Penalties</b> imposed if number of cleanings is lower than specified in the contract, or if discrepancies found during random sampling, or if complaints not dealt with</li> <li>Large or persistent breaches can lead to termination</li> </ul>
Private player <b>damages tanks</b> during cleaning	<ul style="list-style-type: none"> <li>As above</li> </ul>	<ul style="list-style-type: none"> <li>Work would have to be remedied within a specified days of complaint and the <b>cost borne by the private player</b></li> </ul>
Private player <b>spills septage</b> during transportation	<ul style="list-style-type: none"> <li>A complaint redress mechanism to be opened by the ULB for the HH</li> </ul>	<ul style="list-style-type: none"> <li><b>Complaints of spillage and illegal dumping</b> must be addressed within a specified period, to avoid a fine</li> <li>If the number of complaints exceeds a specified number in a time period, the contract can be <b>terminated</b></li> </ul>
Private player <b>dumps septage in the open</b>	<ul style="list-style-type: none"> <li>A portion of monthly payment is tied to signatures collected from the SDB operator</li> </ul>	

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Source: Adapted from Castalia Partners. Improving sanitation outcomes through service level agreements



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Performance risk: A key risk that needs to be managed to prevent dispute is the inability of the private sector to meet the performance standards desired by the ULB. This risk can be mitigated by clearly communicating the expected outputs desired by the ULB in the contract terms. It is important to offer private providers a detailed understanding of expectations by going beyond defining outputs to defining service levels. Next, the contract terms should communicate how these outputs will be monitored, and how the findings from the monitored output will be linked to payment

## Risk mitigation: Performance and meeting contract clauses

	Risk	Mitigation	Allocation of remaining risk
 <b>Construction of FSTP</b>	<p>FSTP or ST does not meet <b>specified design</b></p>	<ul style="list-style-type: none"> <li>• <b>Specify the design</b> and materials to be used in consultation with town consultants</li> <li>• <b>Payment</b> made in <b>installments</b> on the completion of construction milestones</li> <li>• <b>Regular reporting</b> by the player and monitoring by the ULB</li> </ul>	<ul style="list-style-type: none"> <li>• If work is found to be faulty at any stage, <b>payment to be withheld</b> until the corrections are made</li> </ul>
 <b>O&amp;M of FSTP</b>	<p>Sludge recovered from FSTP is <b>not sufficiently treated</b></p> <p>Inability to achieve the output parameters</p>	<ul style="list-style-type: none"> <li>• Output parameters should be defined along with the estimation mechanism.</li> <li>• Regular checks to be undertaken by the sanitation department to measure sludge properties</li> <li>• <b>X% of O&amp;M payment to be conditional</b> on the sludge meeting specified qualities</li> </ul>	<ul style="list-style-type: none"> <li>• <b>If specified standards not met</b>, a warning to be given, followed by <b>fines</b>.</li> <li>• Persistent breaches may lead to termination</li> </ul>

## Risk mitigation: Payment and costs

	Risk	Mitigation	Allocation of remaining risk
 <b>Payment delays</b>	<ul style="list-style-type: none"> <li>ULB is <b>unable to make timely payments towards the project</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Ensuring budgetary allocation</b> for contracts before procurement</li> <li>Establishment of an <b>escrow account</b> for payment with a 3-6 month advance deposit</li> </ul>	<ul style="list-style-type: none"> <li>ULB to pay interest for the <b>payment, delayed by X months or more, at a negotiated rate of interest</b></li> </ul>
 <b>Cost escalation</b>	<ul style="list-style-type: none"> <li><b>Cost of inputs increase over the course of contract</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Adjustment of contract value</b> annually for inflation</li> <li>Inclusion of a <b>cost re-negotiation clause</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Private player would be responsible</b> for bearing the <b>cost escalations</b> within the negotiated period</li> </ul>
<b>Cost escalation</b>	<ul style="list-style-type: none"> <li><b>Incorrect estimate</b> of project costs – Escalation of project cost, construction period</li> </ul>	<ul style="list-style-type: none"> <li>RFP should indicate a cost as per existing estimates. However, the bidders should be encouraged and supported to undertake their own assessment of the project on of a <b>cost re-negotiation clause</b></li> <li>For design issues, responsibility according to project structure</li> </ul>	

Payment delays and defaults: A common cause of dispute in public–private partnerships is delays or defaults in payment on the part of the ULB. Often this is the reason for service providers to stay away from entering into a contract with urban local bodies (ULBs). This risk can be mitigated by clearly identifying a reliable source of funding for the engagement before starting the procurement process. In addition, ULBs can ensure they meet their ongoing payment obligations by using an escrow account to ear-mark funds for the engagements. Finally, it is recommended that contracts include a mutually agreed upon mechanism to manage delays in payments, by including an interest payment or a temporary pause in services

## Why are payments delayed? – Local government perspective



### Use of public funds requires multiple checks and balances

Administrative approval protocols have multiple levels and stakeholders- on-ground inspectors, executive wing, elected wing, accounting wing. Government bodies are required to follow fixed procedures



### Availability of funds, ring-fencing

For projects being funded out of specific programmes, payments are subject to release of ring-fenced funds from state and central governments

For smaller urban centers, own funds and revenue generation is limited



### Staffing, multiple charges and institutional issues

In smaller urban centers, staff is limited and more often than not hold charges in multiple departments.



### Performance vetting

Correct invoice formats, performance assessments, adherence to contract clauses



## Options to address risks of delayed payments by ULBs

**Delayed payment monitoring portal – MSME Samadhan**  
Provision for MSMEs through state facilitation councils - Monthly compound interest to be paid if payment not done within 45 days. Online portal for lodging cases

**Escrow account mechanisms**

- Agreement between service provider, ULB and bank where ULB maintains mandatory reserve fund in Escrow account
- Option for automatic payment when fixed time passes after submitting invoice
- Payment guarantees by local government

**Two part payments** - Fixed amount paid immediately, variable/ performance based component after review

**Bill clearance mechanisms** and timelines specified in contracts and backed by an online bill monitoring system

**Risk Mitigation fund** through philanthropy / CSR which can be accessed at no or low interest rates for working capital

**Mobilization advance** for large projects

**Trade Receivables Discounting System (TReDS) Platform** - financial arrangement wherein a seller recovers an amount of the sales bill from a financial intermediary, after paying a discount fee, before it is due

Source: Center for Water and Sanitation, CRDF, CEPT University (2020) "Addressing Risks of Delayed Payments by Urban Local Bodies". Retrieved from: [www.cwas.in](#)

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### Escrow account mechanisms

Escrow account mechanism can be used to ensure availability of funds for timely payments to a private service provider in a contract. For example, in scheduled desludging operation in Maharashtra, an escrow account is created between contractor, local government and a bank through a tripartite agreement. It is mandated to maintain a minimum three months' payment which is called 'Contract Fees Reserve fund' for the private operator in the escrow account. Apart from this, it is also mentioned that private operator will get interest payment in addition to invoice amount, if payments are delayed by more than three months.

### Two-part payment (fixed and variable / performance based)

One can address delayed payment by adding a two-part payment clause in tender documents, wherein payment to private operator can be done in two parts, a) one is fixed part- which is released as soon as bills are submitted by private operators and b) other is variable/ performance based- which is released only after reviewing the actual performance of private operators as per target specified. This will help private operator to get part payment on time so that they can have some working capital to continue operations. This will safeguard interest of both local governments and private operators.

Expenditure Management Committee was constituted by Government of India, headed by Dr. Bimal Jalan in 2015. One of their recommendations was "Payments delays impact the bid value as this is factored into the bid by way of an increase in interest carry cost. It is learnt that Delhi Metro Rail Corporation has instituted a system whereby 75% of all running bills are released with 7 days of submission, without a detailed check on the claim. The balance is released after the claims are scrutinized as per procedure. This system is stated to have helped both in getting more competitive bids and in speedier execution, as cash flow is a critical requirement in a project. It is recommended that this practice of releasing a specified proportion of the running milestone payments, within a week of the bill being submitted, could be instituted in other large projects as well. If required an enabling provision may be incorporated in the special conditions of contract".

### **Specifying detailed bill clearance mechanisms in contracts and backed by an online bill monitoring system**

One of the key reasons for the delay in payment is also the lengthy departmental procedures and clearances that government follows to clear payments. It would be helpful to clearly specify the detailed steps in the payment process, (e.g. date by which invoice should be submitted, and steps required for its clearance in the system. It must also specify the minimum /maximum number of days for each step for any bill to be approved and paid by the local government) in the tender document. This will give a clear idea to the private enterprise on the process of payment and the likely time that it could take.

### **A Risk Mitigation Fund for SMEs (with Philanthropy /CSR funds)**

A risk mitigation fund can be set up to enable private contractor to access loans at low interest rates for meeting working capital requirements when payments are delayed. Such a fund can be set up with a combination of public allocations and grants from CSR or philanthropy funds.

Access to working capital loans at no or low interest rates can help mitigate risks of delayed payments.

Appropriate arrangements can be made to ensure that once payments are made by the ULBs, loans will be directly repaid through the escrow mechanisms. The possibility of using intercept mechanisms using state grants to ULBs as security, as has been done successfully under the Tamil Nadu Urban Development Fund for its loans to ULBs.

### **Mobilization Advance**

Mobilization advance or secured advance may also reduce private sector working capital needs. Generally, mobilization advance is given only in large and capital-intensive works. Also, urban local governments generally do not provide mobilization advance to private contractor. The mobilization advance can be provided as 10% of contract value and such advance can be deducted from running bills or in the final bill.

### **Trade Receivables Discounting System (TReDS) Platform**

Another idea that has gained popularity in recent times is invoice discounting. Invoice discounting accelerates payment against approved bills by agreeing for a cash discount directly to the buyer or through a financier, who in turn collect the full amount. In 2015, RBI allowed setting up of the Trade Receivable e-Discounting System to help discounting and settling of invoices, which render factoring services in case of delayed payment. This is a financial arrangement wherein a seller recovers an amount of the sales bill from a financial intermediary, after paying a discount/fee, before it is due. Three TReDS exchanges — M1, RXIL and ATREDS — have been set up since then. In 2017-18, all the three exchanges put together handled transactions of Rs 300 crore. However, this is limited to only companies registered under the Companies Act 2013 and reporting a turnover of over Rs 500 crore. It would be useful to explore a similar platform for small and medium sized private players.



In the Union Budget 2020-21, it was announced that “An app-based invoice financing loans product will be launched soon, which will obviate the problem of delayed payments and consequential cash flow mismatches for the MSMEs. Necessary amendments will be made to the Factor Regulation Act 2011 to enable Non Banking Financial Companies (NBFCs) to extend invoice financing to the MSMEs through TReDS thereby enhancing the economic and financial sustainability.” Such measures by Government of India may further alleviate the problem of delayed payments.

### **Delayed payment monitoring portal – MSME Samadhan**

Government of India, through its Micro Small and Medium Enterprises Development (MSMED) Act, 2006 has added a provision related to delayed payments to Micro, Small and Medium Enterprises (MSMEs). As mandated under this act, all the states/Union Territories in India have constituted Micro and Small Enterprise Facilitation Council (MSEFC) for the settlement of disputes on delayed payments. The buyer is liable to pay a monthly compound interest to the supplier at three times the bank rate notified by the Reserve Bank of India (RBI) if the payment is not made within 45 days of the day of acceptance of the goods/service or the deemed day of acceptance. However, not many small and medium sized private players have opted for this route for the fear of losing out on future contracts. To empower micro and small enterprises to directly register cases relating to delayed payments by government bodies, the MSME ministry has also launched a delayed payment monitoring portal, ‘MSME Samadhan’ in 2017. However, of the 39,256 applications received on the portal, only 3132 were resolved by MSEFC, according to the data available on the portal. This is possibly due the limitation imposed on claimants. Currently, only micro and small enterprises (MSEs) having Udyog Aadhaar Number (UAN), are eligible to apply at the portal. Medium enterprises are deprived access. The expert committee on MSMEs formed by RBI recommended that

“ambit of facilitation council (MSEFC) may be extended to medium enterprises also”. It was also observed by the committee that MSE borrowers lack awareness about Samadhaan portal and hence there is a need to publicize the portal amongst MSMEs. Also as the settlements of cases on the portal seems to have been low, more acceleration is required on resolving cases on faster pace. The committee also recommended that “there is a need to increase the number of MSEFCs particularly in larger states, so as to meet the time specified for resolving cases”.

## Risk mitigation: Termination

	Risk	Mitigation	Allocation of remaining risk
 <b>Termination at cause</b>	<ul style="list-style-type: none"> <li>• ULB does not fulfill <b>contract conditions</b></li> <li>• Private player does not <b>meet service standards</b></li> </ul>	<ul style="list-style-type: none"> <li>• Ensuring a clear <b>monitoring mechanism</b> for transparent contract execution</li> <li>• Disputes to be handled through <b>frequent communication</b> and by an agreed upon third party mediator</li> <li>• As above</li> <li>• A trial run and a <b>defect liability period</b> should be included</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Private player compensated for investments</b>, the cost of winding down and foregone profits</li> <li>• Private player compensated for some portion of capital investments performance bank guarantee<sup>1</sup> seized</li> </ul>
 <b>Termination at will</b>	<ul style="list-style-type: none"> <li>• ULB terminates the contract for <b>reasons unrelated to player performance</b></li> <li>• Private player terminates the contract due to <b>reasons unrelated to ULB compliance</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Up-front discussions</b> with key stakeholders to create buy-in for private sector engagement</li> <li>• Frequent communication between ULB and private player</li> <li>• Frequent communication between ULB and private player</li> </ul>	<ul style="list-style-type: none"> <li>• X month <b>notice period required</b></li> <li>• Private player compensated for investments, the cost of winding down and foregone profits</li> <li>• <b>Performance bank guarantee returned</b></li> <li>• X month notice period required</li> <li>• <b>Private player forfeits the performance bank guarantee</b></li> </ul>

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Source: Adapted from Castalia Partners 'Improving sanitation outcomes through service level agreements'

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Termination: Contracts should include strong termination(exit)clauses protecting both the ULB and the private sector. Most contracts that we analyzed lacked termination clauses for both at cause termination (related to non-compliance with contractual terms and obligations), and at will termination (related to factors other than those specified in the contract). Contracts need to include notice periods in case of at will termination by both the public and private player. In case the notice period is not honored, penalties can be imposed. In case of at cause termination initiated by the private player in response to ULB violations of contract terms, the private player should be compensated for its investment. In case of at cause termination initiated by the ULB, the ULB may compensate the private player for some portion of its investment, or none at all, depending on the size of investment.

# Following this six step process, bid documents have been rolled out in cities of Maharashtra

### Scheduled desludging of Septic tank Tender document

**Link document**


**Sinnar Municipal Council, Sinnar**

**TENDER DOCUMENT**

Name of Work  
"Scheduled desludging of septic tanks, Sinnar"

Estimated Cost: To be given by the bidder

E.M.D. 240,000/-



Office of the  
**Chief Officer,**  
Sinnar Municipal Council, Sinnar

Municipal Engineer    Head Clerk & Revenue    Surveyor    Assistant Engineer

### Model DBOT tender for FSTP


**Link document**

**Sinnar Municipal Council, Maharashtra**

**TENDER DOCUMENT**

Name of Work  
"A turnkey project on Design, Construction, Commissioning and Operation of Fecal Sludge & Sewage treatment plant of capacity 75 m3/day at Sinnar Municipal Council, District -  
Mumbai, Maharashtra"

The work includes (i) Design, Construction and Commissioning of Fecal Sludge & Sewage treatment plant (FSTP) with all departmental clearances and other works including all necessary approvals from various government departments etc. complete including testing, trial run for one month and commissioning of the plant (ii) operation & maintenance of the complete works of FSTP and allied works for a period of 3 years



**Chief Officer,**  
Sinnar Municipal Council, Maharashtra

Municipal Engineer    Chief Officer    Vice President    President

**CONTENTS**

1. Brief Tender Notice
2. Detailed Tender Schedule
3. Notes
4. List of documents to be submitted along with tender
5. Detailed Tender Notice - General Conditions
6. Detailed Tender Notice - Special Conditions
7. Form Formats
8. Details of location/emptying trucks available with the tenders for the site of this work
9. Details of work of similar type and magnitude carried out by the tenderer
10. Details of technical personnel with the tenderer
11. Tender price statement showing cost of uncompleted works
12. Opening of Tender
13. Acceptance of Tender
14. Declaration of the Tenderer
15. Financial Bid Form

**Table of Contents**

Section-1 Invitation for Bid

Section-2 Instruction to Bidders

Section-3 Qualification criteria and Bid Framework

Section-4 Bidding Forms

Section-5 Conditions of Contract

Section-6 Scope of Work

Section-7 Price Bid and Terms of Payment

Section-8 Technical Specifications

These model tender documents for "Service contract for scheduled emptying of septic tanks" and "DBOT project for FSTP" provide customizable templates for inviting bids to provide sanitation services. The documents cover standard clauses about qualification criteria, scope of work, technical specifications, performance standards, monitoring, payments etc.

# Activity 6B

## Setting goals for drafting contracts

Refer to exercise workbook



# Activity 6C

## Options for overcoming case specific contracting challenges

Refer to exercise workbook



## Session 5

# Innovative Financing

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## Session Objectives



Recognize potential to utilize public funds for leveraging innovative / blended finance to attract private and commercial funds and impact investors



Understand different innovative financing options like Blended finance, Development Impact Bond, etc. and how these can be used in FSSM sector.



# Contents

- 1** Need For Innovative Finance Mechanism
- 2** Options of Innovative Finance Mechanisms
- 3** Summary of Innovative Financing
- 4** Detailed case studies for reference



# Contents

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## Urban infrastructure has been generally financed through public funds but repayable finance is also an option

### Own sources

#### Own sources of revenue of the local government or utility:

Taxes  
Non tax income from Fees, user charges  
Rental Income etc.

### Grants

#### Transfers from higher level of governments:

State and Central (Tied or Untied)  
Other Development Agencies and Partners  
Grants and loans from Multi-lateral investment banks

### Repayable finance

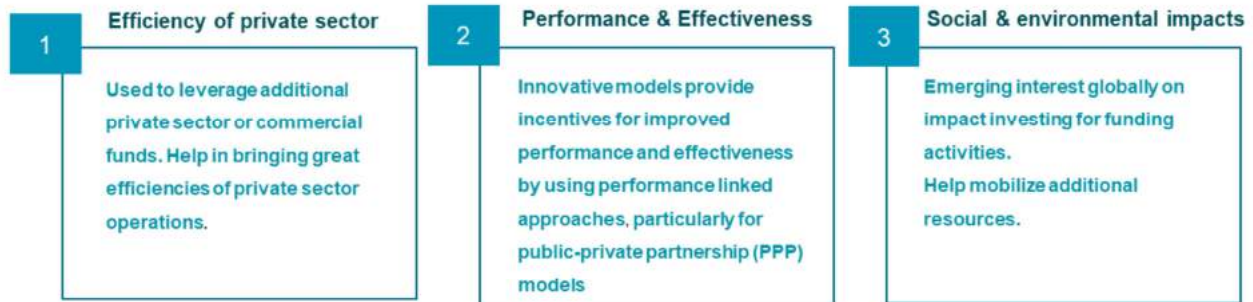
#### Commercial Borrowing

Loans from financial institutions, bilateral or multilateral international agencies, commercial banks, Municipal Development Funds (MDFs)  
Market borrowing

Urban infrastructure projects can be financed through own sources and grants, however, repayable finance is also an option for financing. Urban infrastructure projects have been generally financed through own sources of revenue like taxes, user charges, fees and rental income, transfers from higher level of governments like state and central grants, loans from multi-lateral investment banks etc. However, there is also a huge potential of financing them through commercial borrowings like loans from financial institutions, bilateral and multi-lingual agencies, commercial banks, municipal development funds and market borrowings.



## Reasons to explore new financing mechanisms



New and Innovative financing mechanisms will help leverage new and potentially large funding sources to demonstrate more effective models and over time **help mobilize additional resources**. Public funds can be used to **leverage additional private sector** or commercial funds. Besides additional resources, this would **help in bringing great efficiencies of private sector operations**, or scrutiny from commercial lenders. Emphasis on innovative models is also **to provide incentives for improved performance and effectiveness** by using **performance linked approaches**, particularly for public-private partnership (PPP) models. There is **emerging interest globally** on **impact investing for funding** activities which can have considerable social and environmental impacts.

## Emerging sources

### Philanthropic Foundations / Donors/ Individuals/ Private Foundations and CSR

Improve effectiveness of their grants/ funding, or because of CSR requirements as in India

### Social impact Investors

Beyond financial returns to social/  
environment impacts, patient capital

## New methods being used by other funders

1

Multilateral and bilateral agencies using **Output based Aid (OBA)** and **Program for results (P4R)**

2

Government programs using **OBA / Results based funding (RBF)** approaches

3

**Blended finance** to leverage private and commercial finance

4

**Impact bonds** as pay for outcome model



# Contents

- 1 Need For Innovative Finance Mechanism
- 2 Options of Innovative Finance Mechanisms
- 3 Summary of Innovative Financing
- 4 Detailed case studies for reference

## Innovative financing mechanisms



Innovative financing mechanisms described under this section can broadly be categorized in three groups - results based financing, municipal bonds/pooled funds/municipal borrowings and CSR/philanthropic funding.

## Emerging options to leverage PPP

### Outcome based funding



Funder makes payments only if pre-agreed outcomes are achieved

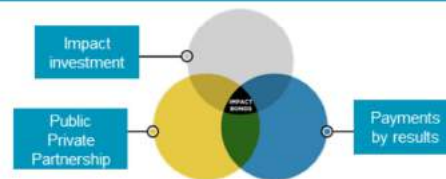
### Blended financing



The combination of return seeking and philanthropic capital to achieve development outcomes

### Development Impact Bond

Confluence of outcome based funding and blended financing and leveraging PPP.



**Outcome Based Funding:** It follows a financing mechanism funder makes payments only if pre-agreed outcomes are achieved.

**Blended Financing:** This is a combination of return seeking and philanthropic capital to achieve development outcomes.

**Development Impact Bonds:** They are confluence of outcome based funding and blended financing and leveraging PPP. The DIB instrument can be structured by incorporating elements on both outcome based financing and blended financing

## Innovative financing mechanisms

Results Based Financing and Annuity Based Models for leveraging PPP

Output based aid -performance based incentives

Blended finance- Annuity based models like PLAM and HAM

Development Impact Bonds

CSR and Philanthropic Funding

Corporate Social Responsibility Funding

Crowd Funding

Philanthropy and Individual Funding

Municipal Bonds, Pooled Bonds & Municipal Borrowing

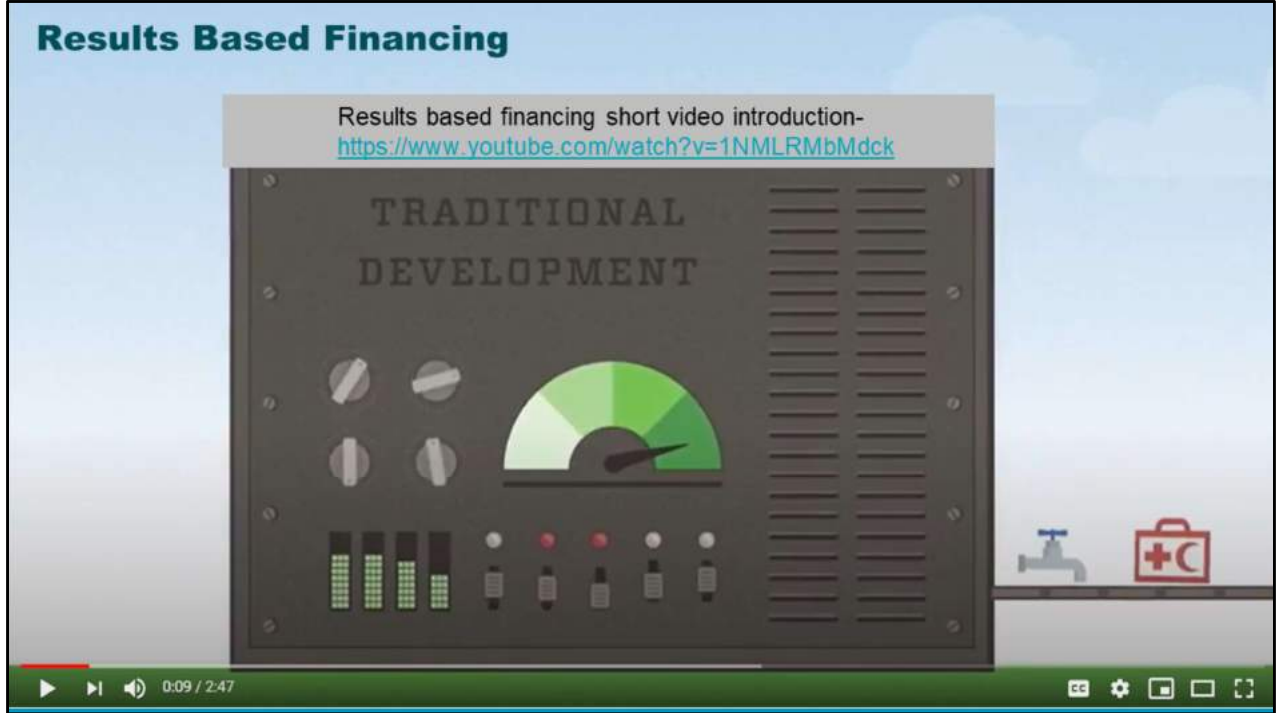
Municipal Bonds and Water Sanitation Pooled Funds

Institutional and Market Borrowing for Capital Investments

Municipal borrowing from Banks under Priority Sector Lending



## Results Based Financing



This animated video compares the concepts behind traditional funding of international development, and the option of results-based financing (RBF) and how is it different from traditional development finance. Also highlighted is output-based aid (OBA)-- implemented by GPOBA -- which focuses on supporting basic services for the poor.

## Results based financing

### What is 'Results Based Funding'?

Public funds or those from donors or social impact investors are made available not as “inputs” but only on delivery of “outputs or agreed performance”, generally for innovative approaches

Also referred as **Payment by Results (PbR)** particularly by DFID, UK

### Why is it needed?

Government funding is often **insufficiently focused on results and performance** and more on outputs and fund utilization

**Inadequate performance evaluation** allows ineffective programs to persist

The **proof-of-concept process for social innovations is slow.**

**Innovation is risky** and public officials are wary of failure

**BUT** – Performance-based funding requires **upfront investments and the ability to absorb risk**

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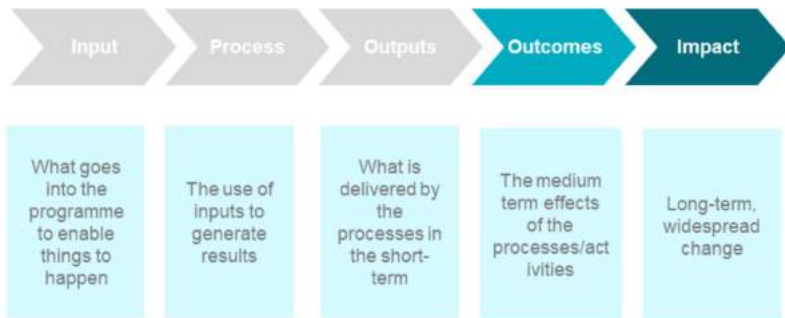
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**Results Based Financing:** Results-based funding involves a mechanism through which a funder is willing to make payments to an agent who assumes responsibility for achieving pre-defined results. Results are defined in advance and funding is only released upon the achievement of these results that are verified independently. The rationale behind this approach is to link financing more directly with outputs and outcomes, rather than inputs and processes. The objective is to increase accountability and create incentives to improve programme effectiveness.

A considerable amount of programmes and pilots is currently being tested out or implemented. Results based funding covers a variety of applications such as: Payment by Results (PbR), Payment for Results (PforR), Results-Based Lending (RBL), Performance-driven loans (PDL), performance-based aid for REDD+, performance tranches in budget support, Cash on Delivery (CoD), Output-Based Aid (OBA), etc. Synonymous with “results-based funding”, the terms “results-based approaches” and sometimes “results based financing” are also used as umbrella terms in the literature.

Even though such programmes follow a common approach that links payment to results, their design can be differentiated by their funding target, the level of pre-financing and the targeted link in the results chain. Results-based funding encompasses contracts signed with partner governments or directly with implementers.

## Results chain is critical

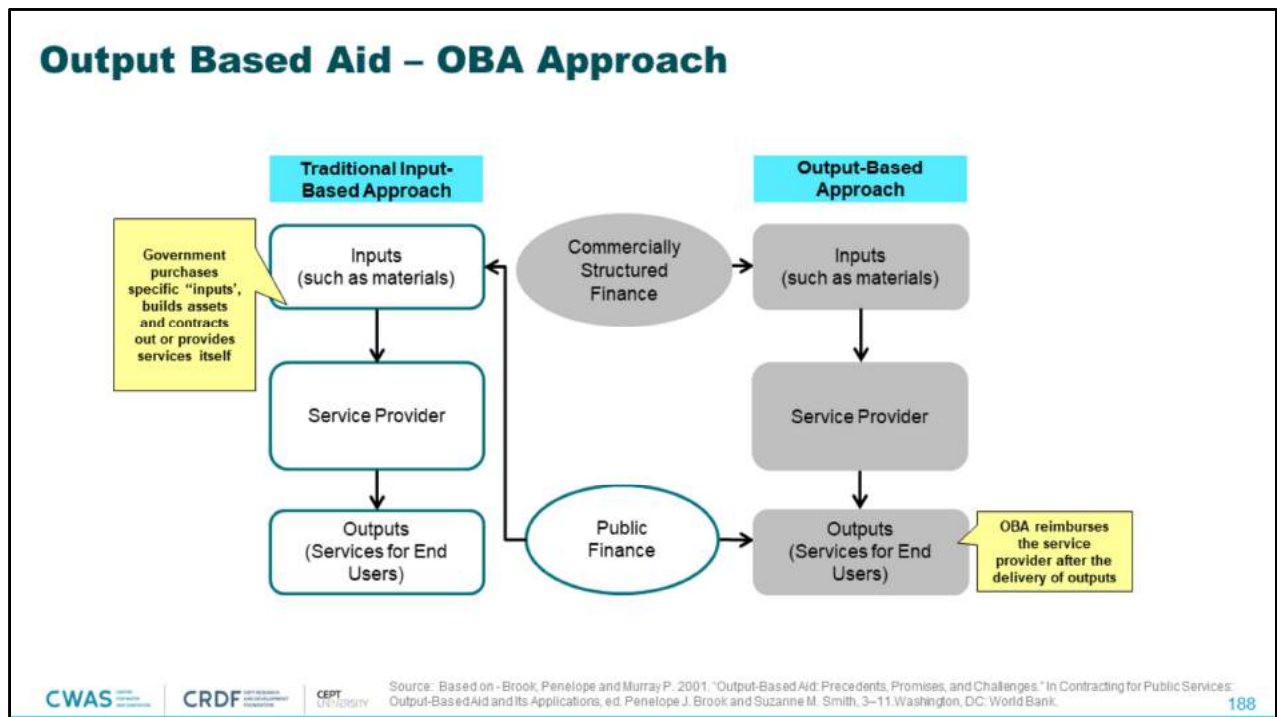


Different methods such as (RBA, RBF, COD, OBA, P4R etc.) reflect a combination of financier, recipient and results for payment. Some are linked to **outputs (OBA)** or some to **outcomes (COD, SIB, DIB, P4R, etc.)**

Extent of financing /funding linked to results can also vary.

The framework followed by DFID for "Payment by result", does not stipulate the type of organisation one is working with or a minimum amount of payment on delivery, but an intervention will only be regarded as Payment by Results if payments are made for pre-agreed results, rather than inputs. Development is a complex process and what constitutes a "result" will vary according to context. To count as Payment by Results, payments have to be for measurable improvements in performance. Different methods like RBA, RBF, OBA etc. reflect a combination of financier, recipient and results for payment. Some are linked to outputs whereas some are linked to outcomes.

## Output Based Aid – OBA Approach



OBA targets individuals who lack the financial means to pay for basic services. It is specifically targeted for individuals in developing countries. The service provider will receive subsidies to replace costs associated with providing the service to people, such as user fees. Individual agents will verify that the service is being delivered and based on the performance of the service-provider, a subsidy will be granted. That is how it is "performance-based".

OBA generally works through a private firm, or another third party, acting as the service provider. The service provider is responsible for the initial financing of the project and, only after results have been verified, will the firm receive subsidies from a donor. In such schemes, it is the provider who bears the risk of loss, rather than the aid donor, and output-based schemes allow for the tracking of results because of the way they function. Integration of the private sector into aid schemes is common with OBA, since they often provide the initial financing. The World Bank sees OBA as a way to improve aid effectiveness.

This differs from traditional aid schemes that will usually focus on the inputs to service providers rather than the outputs. The donor is usually the World Bank, a government or an international organization or philanthropist that is part of the OBA scheme. Subsidies from a donor will generally serve to complement or reduce user fees. The subsidy is paid only after the particular service has been delivered to a community. The subsidies are targeted to poorer individuals, since OBA initiatives are carried out in regions with significant amounts of poverty.

## Government of Maharashtra : Incentive scheme for ODF cities - Utilisation of funds for sustainability and moving towards ODF+ and ODF++



	ODF Cities (Rs.)	Swachh Cities (Rs.)	Linked to Sustainability and ODF+
A Class	2 Cr.	2 Cr.	30% released on <b>first State</b> validation, if positive
B Class	1.5 Cr.	1.5 Cr.	30% released on <b>national</b> validation, if positive
C Class	1 Cr.	1 Cr.	40% released on <b>2nd State</b> validation after a year, if positive

This slide explains the case of Government of Maharashtra who used an output based approach developed an incentive scheme for ODF cities.

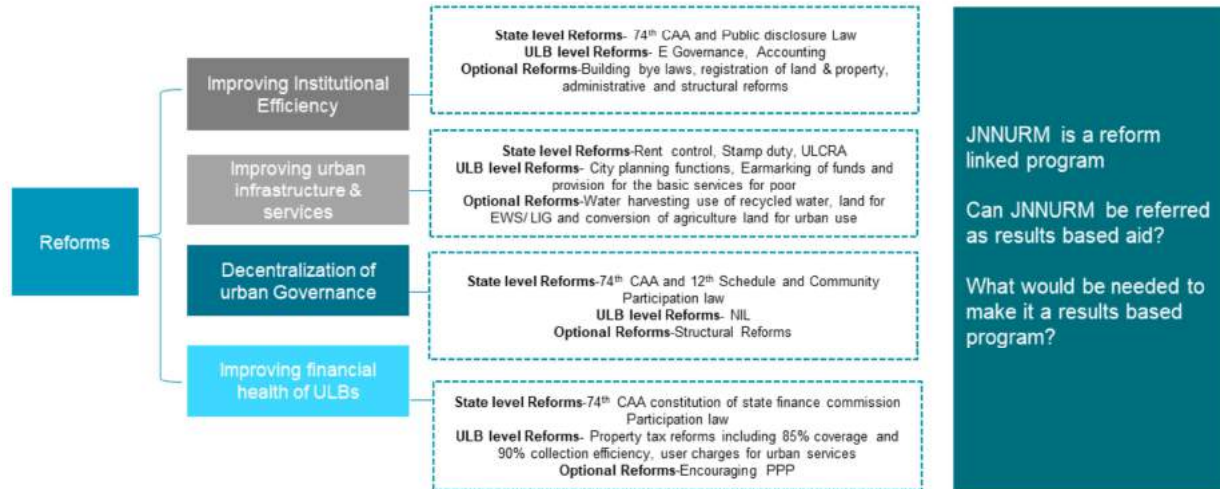
After ODF declaration by the cities of Maharashtra and their validation at collector level, the cities received 30% incentives of (Rs. 2 crore for Class A, Rs. 1.5 crore for Class B and Rs. 1 crore for Class C cities) after the 1<sup>st</sup> validation by the State Level Committee.

The State then sends the list of State Level Validated ODF cities to MoHUA and is validated under the MoHUA protocol by a third party by the Government of India. Under this validation, if positive, the cities receive another 30% of the grants.

After a year of the first validation, the ODF protocol is again monitored by a third party at the state level and if positive, cities receive 40% funds.

Thus, 100% funding of the Swachh cities is received based on the outcome and sustainability.

## JNNURM – a reform linked program??



Source for chart: Grant Thornton Appraisal of JnNURM Volume1, available at <http://jnnurm.nic.in/wp-content/uploads/2012/06/Appraisal-of-JnNURM-Final-Report-Volume-I-.pdf>

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One can also argue that JNNURM which was a reform linked program launched by the Government of India in 2005, phased over seven years and extended further for two years followed results based approach of funding.

Rather than unilaterally mandating local government reforms, JNNURM invited states and local governments to enter into an agreement with national government to implement an agreed plan of mandatory and optional reforms, and to receive project funding for urban infrastructure and basic services.

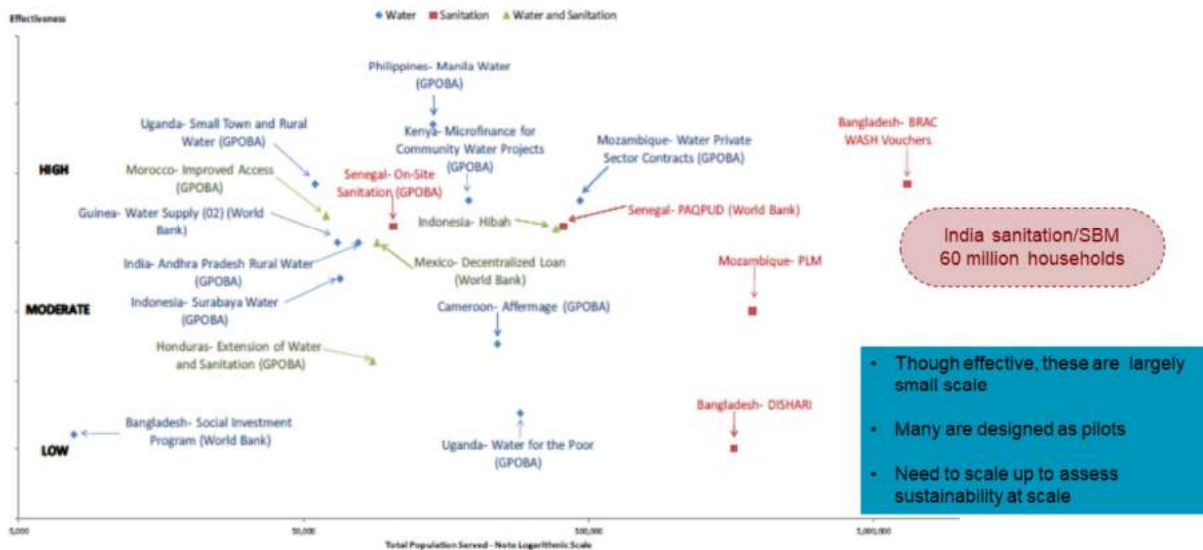
The Ministry of Urban Development being the focal agency at the national level, together with the Ministry of Housing and Urban Poverty Alleviation. The national government provided 35-90 percent of the investment funding needed for approved projects, with grants given to state-level focal agencies and then disbursed to ULBs and parastatal agencies as grants, soft loans or a combination of the two. ULBs then had to raise additional funding, either from their own resources or other funding sources. In order to access these funds, the relevant state, ULBs and parastatal agencies had to reach an agreement with the national government, stating milestones for achieving agreed reforms over seven years. Twenty-five percent of project funds were released upon signing the memorandum of agreement, with the balance being released when the reform agenda milestones are met. Central government funding was available only for projects and not for implementation of the reform agenda itself.

Reform-linked funding resulted in major changes in urban infrastructure in India. By 2012, 554 urban infrastructure and governance projects had been approved, of which 139 had been completed and 415 were ongoing. These infrastructure projects require USD 9.7 billion of investment, of which USD 4.5 billion will be funded by the central government and USD 2.79 billion had already been released (MOUD, 2012). Projects address water supply (32.9 percent), sewerage (24 percent), roads and flyovers (14 percent), drainage (13.4 percent), mass rapid transit systems (8.3 percent), others (4 percent), and solid waste management (3.3 percent).

**JNNURM effectively integrated national and sub-national policies and introduced co-financing as an incentive for the reform.**



## Scale and effectiveness of RBF/OBA in WASH sector



- Though effective, these are largely small scale
- Many are designed as pilots
- Need to scale up to assess sustainability at scale

This chart compares known RBF/OBA programmes in the WASH sector by scale and effectiveness. Though most programmes are largely small, they have been very effective and many are designed as pilots in developing countries like Mozambique, Senegal, Indonesia, Bangladesh etc. There is a need to scale up to assess the sustainability and effectiveness at scale in the WASH sector. The Swachh Bharat Mission in India may also be considered as a RBF/OBA programme due to its phased subsidy pattern linked to toilet construction stages. In this chart SBM can be placed very high on scale also between high and moderate in terms of effectiveness.

## Innovative financing mechanisms

Results Based Financing and Annuity Based Models for leveraging PPP

Output based aid -performance based incentives

Blended finance- Annuity based models like PLAM and HAM

Development Impact Bonds

CSR and Philanthropic Funding

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Municipal Bonds, Pooled Bonds & Municipal Borrowing

Municipal Bonds and Water Sanitation Pooled Funds

Institutional and Market Borrowing for Capital Investments

Municipal borrowing from Banks under Priority Sector Lending

## Annuity based models for leveraging public private partnerships



Wai and Sinnar Municipal Councils in Maharashtra have contracted a private company to provide citywide services, and with performance linked payment – based on number of septic tanks emptied.

Each household pays a small fixed amount as sanitation tax, and Sanitation tax + property tax used to pay private company

- As no permit will be given to another private operator, there will be an assured market for the contracted player.
- It also ensures that the households will be willing to empty their septic tanks as no user charge is paid at the time of emptying.

This slide explains annuity based models for leveraging public private partnerships through the case of Wai and Sinnar Municipal Councils in Maharashtra in which both the cities have contracted a private company to provide citywide services, and with monthly performance linked payment – based on number of septic tanks emptied.

Each household pays a small fixed amount as sanitation tax, and Sanitation tax + property tax is used to pay the private company.

This is to create an assured market for the contracted player as no permits are given to another private operator.

This also ensures that the HHs will be willing to empty their septic tanks as no user charges is paid at the time of emptying.

## Strong monitoring systems for performance linked annuity models

Performance linked annuity models requires strong and sustainable monitoring systems.

It requires performance assessment in terms of services delivery.



✓ For conveyance contracts, performance is easier to assess as number of septic tanks emptied, though attention will have to put on ensuring that all contract clauses are followed.



✓ Two contracts in Maharashtra for Conveyance, are strengthening their monitoring through online GPS and app-based systems.

✓ Implementation of scheduled desludging, backed by a concurrent monitoring system, will provide an opportunity to create a database on existing septic tanks which has otherwise been very difficult.



✓ In the case of HAM for treatment in AP, monitoring systems will need to assess treatment performance as well as a proper assessment of actual capital costs incurred. As the project is being implemented by a state entity, appropriate mechanism for participation of local governments will need to be developed.

## Hybrid Annuity Model (HAM) model for treatment facilities

In this framework, the Government pays 40% of the capital cost of the project upfront during the construction period and 60% of the payment is paid as annuities along with interest over the operation period.



The use of hybrid annuity model for FSTPs, provides **opportunities to leverage public resources** to bring in **private sector funding for treatment**. This also **helps to reduce the initial public investments**, though the private sector must be repaid through **annuities using public funds**.



However, unlike roads, where there is a clear revenue stream of tolls from users that is used for annuity payments by governments, in FSTP, there are **no clear revenue streams**. So government will have to **budget for this payment**. The bidders are likely to add their cost of debt and returns on equity and this may raise the total cost of project as compared to an EPC contract.










The advantage of this model is that since the annuity payment is **linked to the performance**, it will also help to **improve efficiency and effectiveness in operations**.




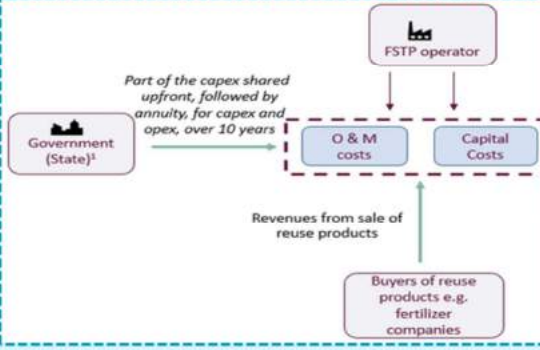
However, given the **higher cost of debt for private sector** and their **high return expectations on equity**, the **total investment requirement is likely to increase**.

Hybrid Annuity Models (HAM) provide opportunity to leverage public resources to bring in private sector funding for treatment. This helps to reduce the public investments required at the initial stage of the project. The private sector must be repaid through annuities using public funds.

# Hybrid Annuity Models for FSTPs in Andhra Pradesh, India; STPs under National Mission for Clean Ganga

-  AP has launched HAM for FSTP, through Public Private Partnership (the "PPP") on **Design, Build, Operate and Transfer** ("DBOT Hybrid Annuity") basis for **76 towns** for which **7 packages** are created.
-  Private companies - undertake **design, construction, operation and maintenance** on a DBOT basis. Cost determined by bidding
-  CapEx – 50% by government , 50% by private company
-  Annuity payments cover a) CapEx by private company repaid through annuity payments over contract period, b) and OpEx
-  Funding by State government alleviates concerns **around individual ULB financial capacity and payment risks**
-  **Private player clustering approach** (multiple ULBs per partner) to achieve scale economies and a large contract
-  In the long term, part **opex recovery** planned through **user charges**.





*Private player responsible for selling soil conditioner/bio-fertilizer/biogas and recycled wastewater.*

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CEPT Source: Center for Water and Sanitation, CRDF, CEPT University (2019) "Financing Faecal Sludge and Septage Management: A landscape study of four Indian states" Pp- 114-115

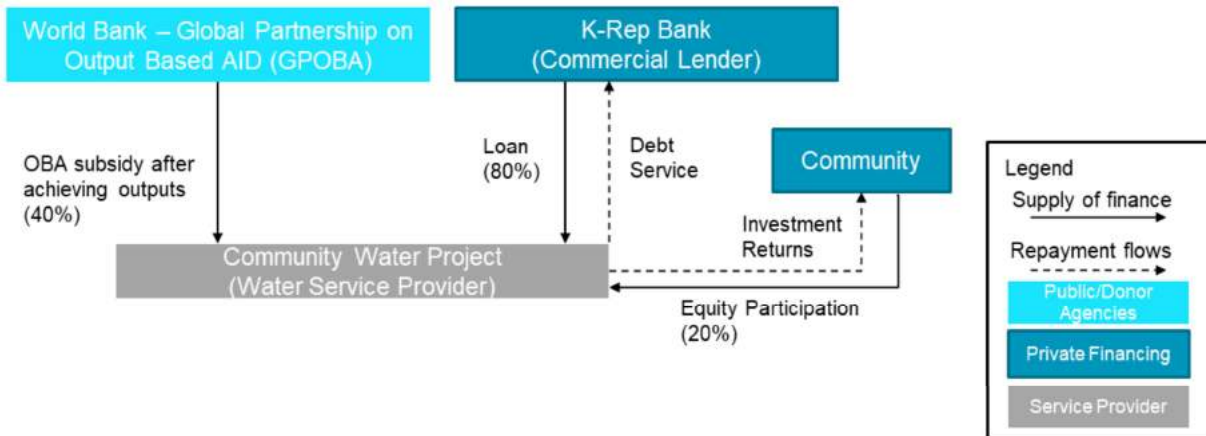
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Hybrid Annuity Model was launched for FSTPs in Andhra Pradesh, India where 50% of capex was shared upfront , followed by annuity , for capex and opex over 10 years. The annuity payments were recovered by private companies. Revenues are to be collected from sale of reuse products and in long term through user charges.



## Blended Finance: Mobilizing commercial finance with partial subsidies

Scaling up Blended Financing for Water and Sanitation in Kenya: Maji ni Maisha Financial Structure



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Source: World Bank Group (2016). "Scaling up blended finance for water and sanitation in Kenya" in "Case studies in blended finance for water and sanitation", p. 2

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- Over the last ten years, Kenya has experimented with various approaches to using blended finance in order to help mobilize commercial finance. Efforts have so far been focused on using output-based subsidies (i.e. performance-based incentives paid to service providers to enhance access to infrastructure services for the poor) and on increasing transparency in the sector through the development of creditworthiness indices.
- One of the first attempts at using blended finance to mobilize commercial financing in the country is the Maji ni Maisha program. The World Bank launched the pilot loan program in 2007 with K-Rep Bank, a Kenyan commercial bank specializing in microfinance lending. The objective was to incentivize rural and peri-urban communities to access loan financing so as to rehabilitate and expand small-piped water systems. The program identified projects requiring up to US\$200,000 for investment to cover O&M costs, which had the potential to repay their loans.
- Qualifying communities contributed 20 percent of project costs in pre-financing and K-Rep Bank financed 80 percent through a medium- to long-term loan. Once an independent review confirmed that the community project had met its pre-agreed targets, the output-based grant (OBA) of up to 40 percent of total eligible project costs was transferred to the community, reducing the debt service costs and enabling the supply of water at affordable rates. The subsidy was used to refinance the loan, and communities repaid the remaining amount over five years through operating revenues from water sales. To mitigate the risk of implementation failure, K-Rep Bank purchased a partial credit guarantee from USAID's Development Credit Authority for 50 percent of K-Rep's exposure. Figure in the slide shows the financial structure for the Maji ni Maisha program. The program was later scaled up with support from the European Union. By 2012, some 35 communities had borrowed US\$3.4 million from K-Rep Bank, raised US\$1.2 million of equity, and accessed OBA grants of US\$2.8 million. This enabled provision of access to 190,000 people.

## Credit options for the private player

### Existing schemes available to small and medium enterprises in India

#### Priority Sector Lending

**Overview:** RBI has mandated all the commercial and foreign banks to earmark atleast 40% of the Adjusted Net Bank Credit for priority sector which includes water and sanitation. Interest is charged at ~12-14%.

#### MUDRA LOAN

**Overview:** MUDRA loan is provided as a refinancing support to non-farming and non-corporate micro and small enterprises. These enterprises can avail loans up to Rs. 10 Lakh under the MUDRA (Micro Units Development & Refinance Agency Ltd.) scheme. Its on a non

#### Credit Guarantee Trust Fund for Micro & Small Enterprises (CGTMSE)

**Overview:** The corpus of CGTMSE is contributed by Government of India and SIDBI. 75% of the loan amount to the bank is guaranteed by the Trust Fund. Collateral free loan up to a limit of Rs.100 lakh is available for individual MSE on payment of guarantee fee to bank by the MSE.

There are various credit options for private player. Many existing schemes are available to small and medium enterprises in India through Private Sector Lending, MUDRA Loan and Credit Guarantee Trust Fund for Micro and Small Enterprises (CGTMSE).

## Innovative financing mechanisms

Results Based Financing and Annuity Based Models for leveraging PPP

Output based aid -performance based incentives

Blended finance- Annuity based models like PLAM and HAM

Development Impact Bonds

CSR and Philanthropic Funding

Corporate Social Responsibility Funding

Crowd Funding

Philanthropy and Individual Funding

Municipal Bonds, Pooled Bonds & Municipal Borrowing

Municipal Bonds and Water Sanitation Pooled Funds

Institutional and Market Borrowing for Capital Investments

Municipal borrowing from Banks under Priority Sector Lending

## What is an impact bond?

Impact bonds can be characterized under Results-Based Financing (RBF), focusing the allocation of money to social programs that yield effective results.

In an Impact Bond model,



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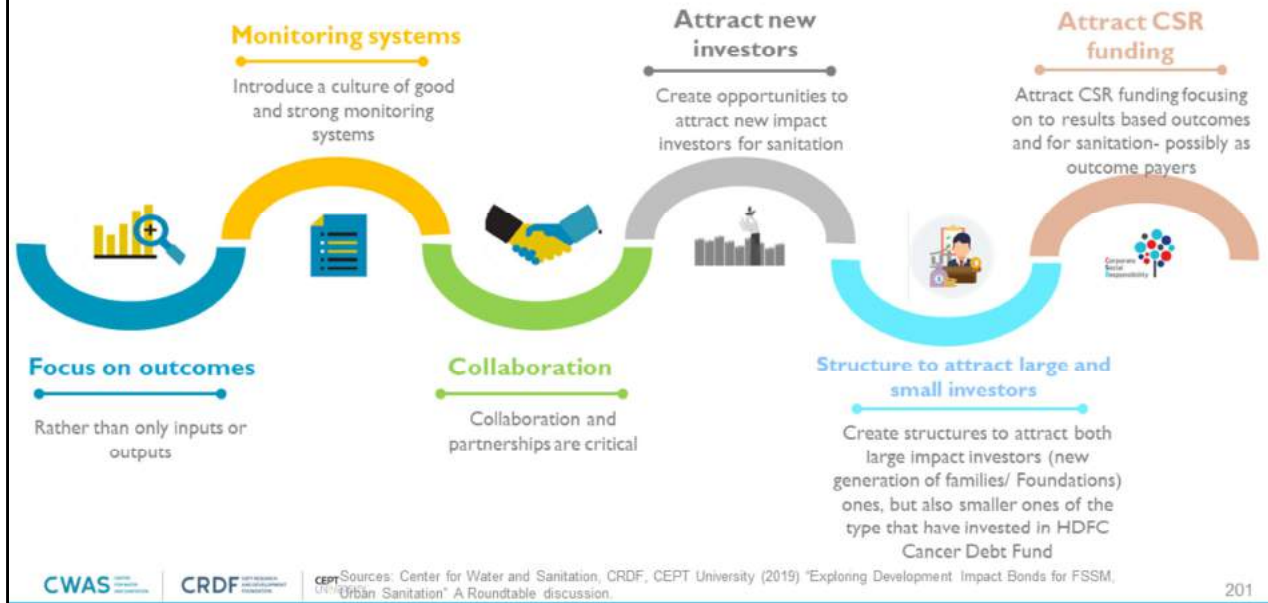
Source: Social India Finance presentation, 2020; <https://www.instiglio.org/en/impact-bonds/>

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Development Impact Bonds (DIBs) are a performance-based investment instrument intended to finance development programmes. Based on the Social Impact Bond model, a DIB creates a contract between private investors and donors or governments who have agreed upon a shared development goal. An investor (or group of investors) provides up-front financing for the operations of a service provider, receiving a return from the outcome payer (usually a government or donor) once results have been achieved.

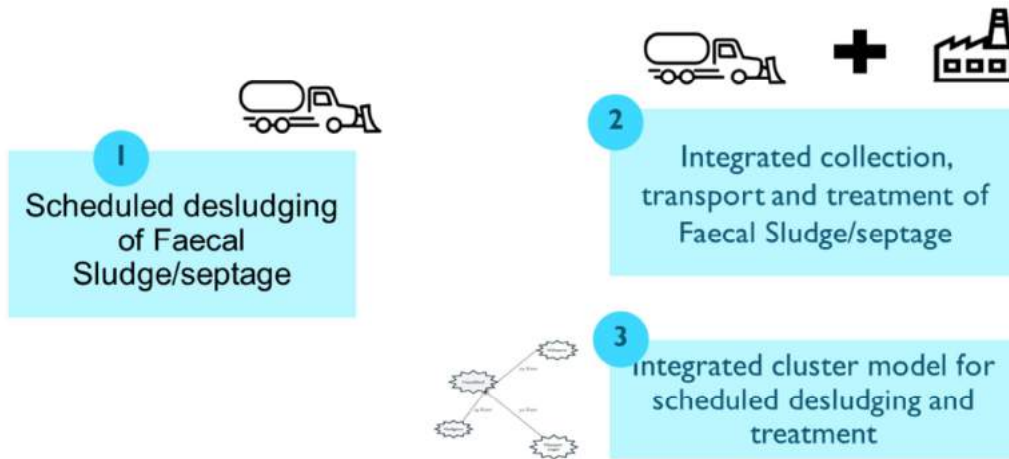
The first social impact bond was originated by [Social Finance UK](#) in 2010, supported by the [Rockefeller Foundation](#), structured to reduce recidivism among inmates from Peterborough Prison. The USA launched its first impact bond in 2012. In India, the first impact bond was launched in 2015 by Instiglio, [Children's Investment Fund Foundation](#) (CIFF), Educate Girls, IDinsight and UBS Optimus Foundation to reduce the gender gap in education in Rural India by getting girls into school and learning. By 2020, almost 194 bonds have been launched globally across 33 countries.

## Why Development Impact Bond?



Development impact bonds can be used as an option of innovative financing mechanism. They mainly focus on outcomes rather than only inputs or outputs. They act as good and strong monitoring systems since they are result based financing mechanisms based on output. DIBs may attract new investors and hence, create opportunities to attract impact investors for sanitation sector. They may also attract CSR funding focusing on results based outcomes and for sanitation possibly as outcome players. DIBs are structured in a way that they attract large and small investors like philanthropic foundations and smaller ones which have invested in HDFC.

## Possible options for a DIB in FSSM



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CEPT Sources: Center for Water and Sanitation, CRDF, CEPT University (2019) "Exploring Development Impact Bonds for FSSM, Urban Sanitation" A Roundtable discussion

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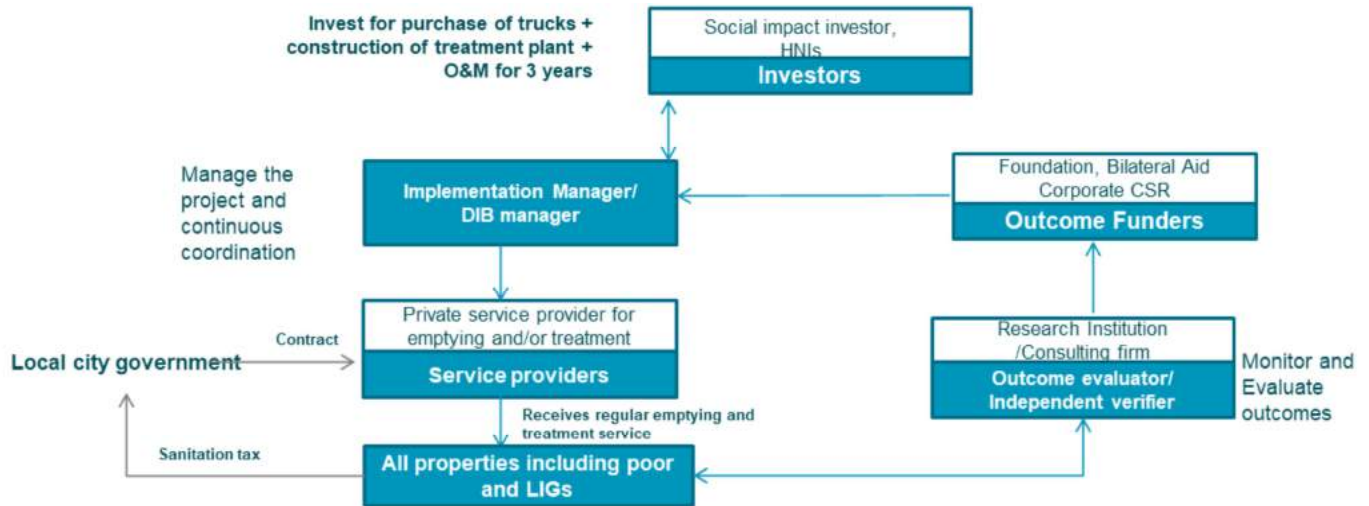
Various service models for emptying and treatment of fecal sludge and septage are possible and involve private service providers.

A number of different options for developing Development Impact Bonds (DIB) for FSSM is possible

- a) Citywide scheduled desludging of septic tank
- b) Integrated model of citywide scheduled desludging, treatment and reuse services
- c) Cluster based approach scheduled desludging and treatment services to group of small cities and nearby villages.



## Exploring a contract structure for a urban sanitation/ FSSM DIB



Key points from deliberations of exploring a contract structure for urban sanitation/FSSM DIB:

**Role of private sector service providers:** The private players should also be asked to put certain percentage of investment in the project, so that they are motivated to perform well and achieve desired outcomes.

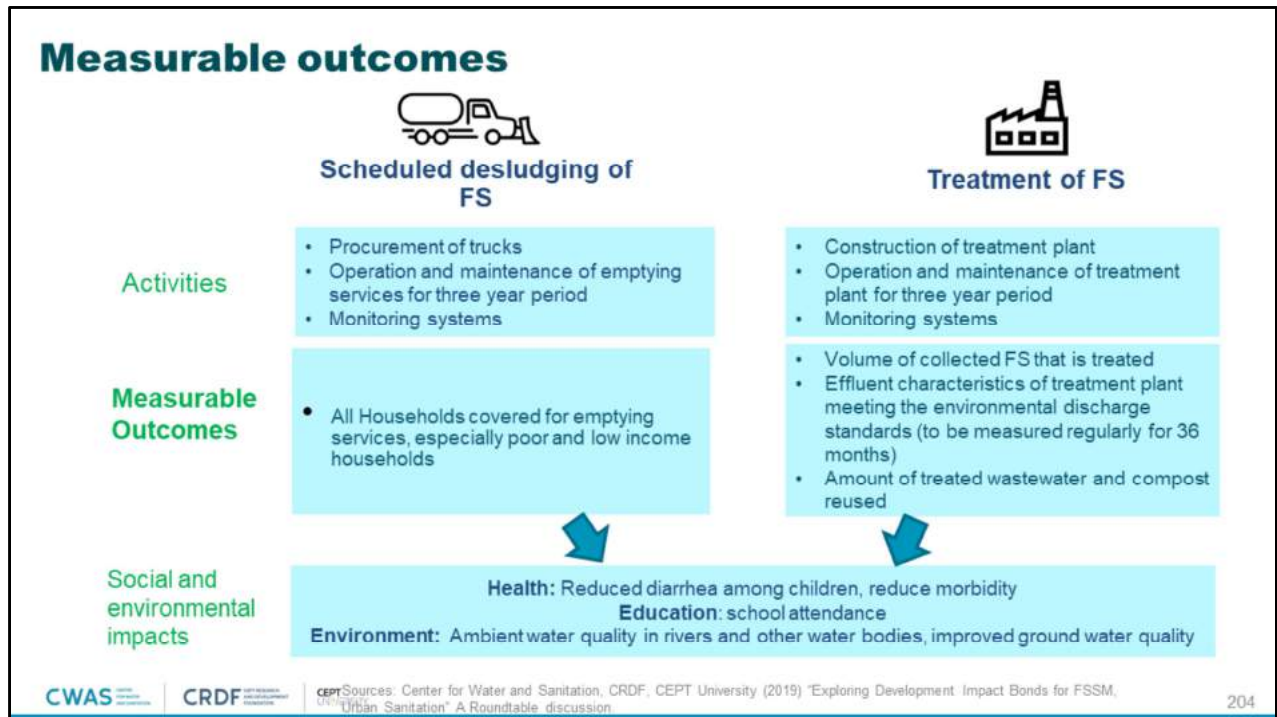
**Role of Local Governments:** Since, local government is responsible for provision of sanitation services in the city, their role in the DIB will be crucial. Though at this pilot stage involving local government financially will complicate the process, they should be encouraged in monitoring activities.

**Sustainability of sanitation services:** While no payments are envisaged from the Local Governments in the DIB structure, it would be important to provide incentives to local governments to continue to collect sanitation tax from households. This would help to sustain and continue sanitation services after the DIB intervention period. Later, after the success of a pilot DIB project, the role of government as a full or partial outcome funder can also be explored.

**Use of CSR for outcome funding:** It was pointed out it will be necessary to assess whether corporate funds under current CSR framework and rules can be used to provide 'outcome funding'.

The credit finance group set up the India Sanitation coalition (ISC) has developed a paper on this and intends to take this forward with the GoI and RBI. From a legal perspective, as the suggested DIB structure envisages a non-profit (Section 8) company as the Implementation Manager.

## Measurable outcomes

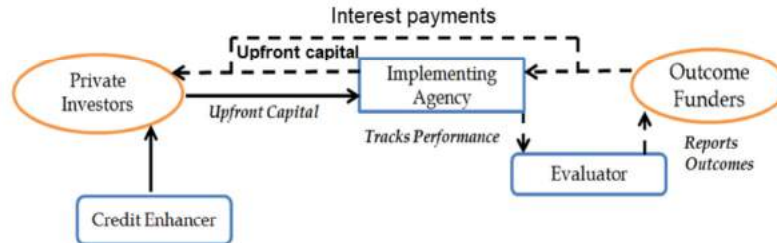


For DIB, the return on payments is linked to the outcomes achieved. Investors are not only looking at neat and measurable outcomes but also social indicators and impact achieved from the intervention. It is possible to show and rigorously measure outcomes to attract potential investors.

For emptying - the impact could be in terms of full coverage with a particular focus on the poor and low income communities, and for treatment it could be in terms of quality standards achieved and extent of reuse. Though direct impact with health or environment is difficult to measured, a secondary matrix could be developed to monitor health and environment impact and small outcome amount could be linked to this matrix.

## Grameen capital DIB structure

Development impact bond in form of interest rate subvention could be another form of DIB which could be explored where for-profit organizations are involved as an implementing agency.



- In this DIB model, **investors will provide upfront working loans to for-profit implementing agency** and thereafter approach outcome funders to either waive off or reduce their interest rate/payment.
- An **Independent Evaluator would track the performance of the Implementing** to quantify the impact and showcase progress of the Bond.
- **Outcome funders based on the feedback from the independent evaluator**, would serve the financial interest of the bond in case the implementing agency is a for-profit social enterprise. The for-profit social enterprise itself would be liable to pay back the upfront capital to the Private Investors.
- This may provide **access to funds for private enterprises**.

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Source: Grameen capitals and based on discussions with their team as in Center for Water and Sanitation, CRDF, CEPT University (2019) 'Financing Faecal Sludge and Septage Management: A landscape study of four Indian states' 112

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The slide describes Grameen capital DIB structure in detail. In this DIB model, **investors will provide upfront working loans to for-profit implementing agency** and thereafter approach outcome funders to either waive off or reduce their interest rate/payment. Also an independent evaluator is appointed to track the performance of implementation. The outcome funders serve the financial interest of the bond based on feedback received from the independent evaluator. This may make the funds accessible for private enterprises.

## Outcomes rate cards are being used in UK

“Outcomes rate card is a menu of outcomes that government seeks to achieve and the prices they are willing to pay for each outcome achievement.”

### OUTCOMES RATE CARD PROCESS



“They are used as a procurement and contracting tool with the ability to standardize performance-based financing, through Pay for Success, and drastically reduce the time such deals take to get to market. One rate card can result in multiple contracts with multiple providers, who must deliver against its pre-determined outcomes and prices, receiving payment only when the stated outcomes are achieved and participants’ lives are positively impacted”

In UK, outcome rate cards are used where they payment is done based on success of the project. In the outcome rate card process, the government pre-determines priority outcomes, prices and methodologies . The government procures for outcomes by issuing Request for Proposal with rate card. The service providers and investors partner raise capital commitments and respond to Request for Proposal (RFP). The government wards multiple contracts to service providers and service begin.

## Benefits of Result Based Financing



**Better quality of services**  
because incentives are placed on  
quality and timely delivery



**Reduced corruption**, due to  
increased transparency in the  
results-payment link



Change in culture, **from budget-  
driven to results-oriented**



**Closer supervision** as this is a  
necessary condition to issue  
payments



**Sustainability**, particularly if the  
**indicators are tracked**  
**throughout the project life**



**Increased autonomy for the  
implementing agency** as to  
"how" to deliver the results

There are various benefits of Results Based Financing. It covers various aspects like better quality of services, reduced corruption due to increased transparency, change in culture from budget driven to results-oriented, closer supervision and monitoring, sustainability if the indicators are tracked throughout and increased autonomy for the implementing agency to deliver the results.

## But, RBF also comes at a cost!!



### High transaction costs

Developing the scheme requires large time investments during project preparation



### Requires Pre-Financing

RBF, requires pre-financing! This comes at a high cost particularly for non-governmental entities



### Monitoring & Supervision

Higher costs of monitoring and supervision



### Risk

Risk of unintended distortions caused by ill-defined incentives

However, Results Based Financing mechanism also comes with various challenges.

High Transaction Costs: Developing the schemes and projects require high transaction costs throughout the project.

Pre-financing requirements: RBF requires pre-financing for funding the project

High Cost for Monitoring and Supervision: Monitoring and supervision of project have to be done regularly hence it becomes cost-effective

Risk: Challenge of risk of unintended distortions if the incentives are not defined properly.



## Innovative financing mechanisms



## Corporate Social Responsibility(CSR) and Philanthropic funding for sanitation

While both public finance and possible commercial resources are important, FSSM financing can also come through other emerging innovative mechanisms including CSR, philanthropy and funding by social impact investors.



Grants  
+  
Loans



This may comprise **grants or loans** depending on the specific sources. While the **CSR and philanthropy funds** will largely be as **grants and project support**, the **social impact funds** can be either as **grants or loans**, depending on the specific mechanisms used.



For both corporates and philanthropists, while sanitation has gradually emerged as an important area, **there is little understanding of FSSM and the need to look beyond toilets to making cities ODF+ by ensuring safely managed sanitation.**



Philanthropy has helped to fund a few pilot FSTPs such as those in **Devanhalli in Karnataka, Wai in Maharashtra, Trichi in Tamil Nadu, Warangal in Telangana and Narsapur in Andhra Pradesh.**



These have **showcased new technologies** and made it possible to make these concepts popular. However, it can be argued that this is not a sustainable source beyond initial demonstration of technologies.

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Corporate Social Responsibility( CSR) and philanthropic funding have a potential and can be used as an innovative approach of financing for sanitation. CSRs and philanthropy funding can be used as grant and project support. It is important to explore these funding options in sanitation beyond toilet construction and management. Many FSTPs like Devanhalli in Karnataka, Wai in Maharashtra, **Trichi in Tamil Nadu, Warangal in Telangana and Narsapur in Andhra Pradesh** have been successfully constructed using philanthropic funds. This option gives the possibility of exploring and utilizing new technologies. However, it is not a sustainable source beyond initial demonstration of technologies.

## Mobilizing CSR funds for FSSM

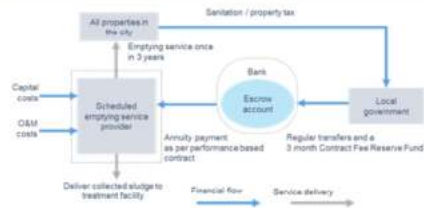
There is a possibility of mobilizing corporate funding using CSR for large companies as the Companies Act, 2013 mandates that large companies spend 2% of their three-year average annual profit towards CSR.

Mobilizing of CSR funds to support FSSM for different activities that would help the quality and effectiveness of investments.

For example, CEPT university has mobilized CSR funding from HSBC for Sinnar, a small city in Maharashtra. This supports activities related to ODF sustainability and for making the city ODF+.



Toilets constructed in Sinnar through HSBC support



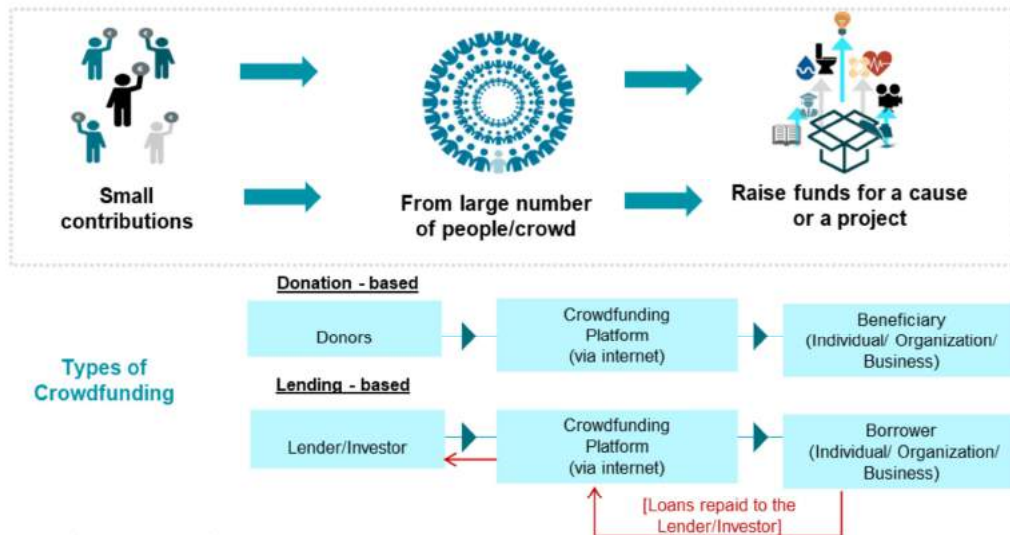
CSR funds can also be mobilized for other such activities such as guarantee funds to back up escrow accounts being used for annuity models. This arrangement would give private players greater comfort and would help in reducing bid prices.

The Companies Act, 2013 mandates

## Innovative financing mechanisms



## What is Crowdfunding?



CWAS | CRDF | CERT Source: Mehta, M. and Mehta, D. (2019) "Innovative Finance Option" Course material for Master of Science Programme in Sanitation at IHE, Delft

Crowdfunding is the practice of funding a project or venture by raising small amounts of money from a large number of people, typically via the internet. Crowdfunding is a form of crowdsourcing as an alternative source of financing. There are two types of crowdfunding : Donation based and Lending based.

Donation based: Donation-based crowdfunding is the collective effort of individuals where donors come together to create an online community around a common cause to help fund services and programs to combat a variety of issues including healthcare and community development.

Lending based: In lending based crowdfunding, the investors collect money through the internet on a crowdfunding platform and the borrower repays back to the lender after a certain period of time.

## Crowdfunding for School Sanitation, Sinnar, Maharashtra

The image shows a screenshot of a Milaap crowdfunding campaign page. The campaign is titled "Support Toilets for Children in Zapwadi School". It features a progress bar showing that Rs. 4,28,729 has been raised out of a goal of Rs. 4,00,000. The page includes social media sharing options, a "Donate now" button, and a list of campaign details.

**Campaign Organizer** – Center for Water and Sanitation, CEPT University

**Beneficiary** – Students of Zila Parishad School, Sinnar, Maharashtra

**Purpose** – Construction, refurbishment and operation and maintenance of toilets.

**Funds Raised** – Rs 4,28,000 (USD 6700) in 2 months

**Source:** <https://milaap.org/fundraisers/support-school-toilets>, Mehta, M. and Mehta, D. (2019) "Innovative Finance Option" Course material for Master of Science Programme in Sanitation at IHE, Delhi

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Crowdfunding was successfully implemented in Sinnar city of Maharashtra for construction, refurbishment and operation and maintenance of toilets in a school. The campaign was organized by Center for Water and Sanitation, CEPT University via an online crowdfunding platform called Milaap. There was a huge support from individuals and approximately, 6700 USD (~ INR 4,28,000) was raised in two months.



## Innovative financing mechanisms

Results Based Financing and Annuity Based Models for leveraging PPP	CSR and Philanthropic Funding	<b>Municipal Bonds, Pooled Bonds &amp; Municipal Borrowing</b>
Output based aid -performance based incentives	Corporate Social Responsibility Funding	Municipal Bonds and Water Sanitation Pooled Funds
Blended finance- Annuity based models like PLAM and HAM	Crowd Funding	Institutional and Market Borrowing for Capital Investments
Development Impact Bonds	Philanthropy and Individual Funding	Municipal borrowing from Banks under Priority Sector Lending

## Municipal Bonds

- Though the idea of municipal bonds in India was introduced more than 20 years ago, despite the initial flurry of bonds, **ULBs have not used this route.**
- Recent issuance of municipal bonds by a few ULBs such as **Pune, Hyderabad and Indore** have raised interest in this. However, so far it is generally the large ULBs, mainly municipal corporations that have raised funds via this route, and for FSSM they are not likely to require funds for treatment as they can use co-treatment. Also, the costs of preparing for such debt mobilization are high and the smaller ULBs may find it difficult to use this route.

### Pune Bond

- First Municipal Corporation to successfully raise Rs.200 crores on the BSE BOND platform!
- PMC Bonds received overwhelming response with 6 times of oversubscription.

### Indore Bond

- First Municipal Bond to be listed on Debt Market platform of NSE
- IMC Bonds received overwhelming response with an oversubscription of 1.26 times

### GHMC Bond

- GHMC has become the second ULB to raise Rs.200 crores on the BSE BOND platform
- GHMC Bonds received overwhelming response with 2 times of oversubscription

A municipal bond, commonly known as a muni bond, is a bond issued by a local government or territory, or one of their agencies. It is generally used to finance public projects such as roads, schools, airports and seaports, and infrastructure-related repairs. The term municipal bond is commonly used in the United States, which has the largest market of such trade-able securities in the world. As of 2011, the municipal bond market was valued at \$3.7 trillion. Municipal bonds issued by local bodies have minimum risks and huge benefits on taxes.

In India, municipal bonds have been issued by few Urban Local Bodies like Pune, Hyderabad and Indore.

## Municipal Development Funds

- Municipal Development Funds can provide a much needed link between civic infrastructure financing needs and domestic capital markets.
- MDFs usually start as an intergovernmental approach to municipal credit supply, structured as para-statal organizations, but then evolve to become financial intermediaries focusing on municipal credit



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CEPT Source: Center for Water and Sanitation, CRDF, CEPT University (2019) "Financing Faecal Sludge and Septage Management: A Landscape study of four Indian states" P. 124

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Municipal development funds have the basic purposes of channelling more investments in urban infrastructure through municipal governments and of strengthening the capacity of these institutions in the process. They have attracted the support of the international aid donors because they offer a mechanism for "wholeselling" urban investment, i.e. for the provision of aid funds to widely diffused investments, often of a minute scale by donor standards. ULBs can borrow from the state MDFs. Tamil Nadu, Andhra Pradesh and Maharashtra have set up MDFs where ULBs can borrow from the state funds.

## Municipal borrowing for sanitation infrastructure

For some ULBs access to **additional resources maybe needed to meet the capital investments for FSSM**. One option can be debt mobilization by ULBs, through borrowing from banks and government institutions or through the capital market in the form of bonds.

Following options are available for municipal borrowing:

<b>Scheduled Commercial Banks</b>	<ul style="list-style-type: none"><li>• Private sector banks</li><li>• Public sector banks</li></ul>
<b>Sector Specific Municipal Development funds</b>	<ul style="list-style-type: none"><li>• Tamil Nadu Urban Development Fund (State Specific)</li><li>• Pan India Pooled Municipal Debt Obligation Facility (PMDO)</li></ul>
<b>Capital marketing</b>	<ul style="list-style-type: none"><li>• Municipal Bond</li></ul>
<b>Government Institutions</b>	<ul style="list-style-type: none"><li>• Housing and Urban Development Corporation (HUDCO)</li></ul>

ULBs when need an additional resources for capital investments for FSSM can adopt municipal borrowings from various private and public sector banks, raise money through municipal bonds, state municipal development funds and government institutions.

## Institutional borrowing from HUDCO

Housing and Urban Development Corporation (HUDCO) provides loans to public agencies and private sector for urban infrastructure. State Governments and ULBs can borrow from HUDCO to finance their FSSM related capital investments.



HUDCO offers loans at competitive terms



In 2015-16, it disbursed loans worth Rs. 8,250 crores for urban infrastructure and over the 6 years period from 2011 to 2016 it released loans worth Rs. 14000 crore per annum.

34% total HUDCO Assistance was given for Water and Sanitation sector for six years from 2010-16



Interest are about 10.35% and the loan tenor ranges from 7 to 15 years depending on the types of projects.



However, HUDCO requires a state government guarantee for lending to urban local bodies, which may become a constraint as such guarantees affects contingent liability of state governments. Also, under the new Fiscal Responsibility and Budget Management Acts of different state governments, many have a ceiling on total guarantees.



Of the four focus states of except Maharashtra all other states have such stipulated limits. However, HUDCO funding can be explored for treatment facilities by private providers in a PPP arrangement for FSSM services, if it is competitive as compared to other options for them.





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- 1 Need For Innovative Finance Mechanism
- 2 Options of Innovative Finance Mechanisms
- 3 Summary of Innovative Financing
- 4 Detailed case studies for reference



## Potential innovative financing options for FSSM

### Performance Based Annuity Model

- Maharashtra experience of ULB level, performance based annuity model for conveyance and Andhra Pradesh experience of HAM for treatment in small cities will provide lessons for other states.
- An escrow account mechanism can be used to mitigate late payment risks of private sector.

### Development Impact Bonds

- An impact bond for FSSM can be developed for scheduled desludging of septic tanks and treatment of FS.
- Measurable outcomes in them can be: All Households covered for emptying services, especially poor and low income households for desludging of tanks and volume of collected FS that is treated, effluent characteristics of treatment plant meeting the environmental discharge standards for treatment of FS.

### Borrowings from Institutions/ Banks

- For capital investment for treatment plant, ULB can borrow from banks under the priority sector lending.
- Most banks may not have realized that lending for FSTPs of up to Rs. 5 crores will also be covered under the priority sector lending (PSL) requirements for commercial banks. This will make it attractive for banks to lend to ULBs for sanitation projects.

There is a huge potential for innovative financing options in FSSM using Performance Based Annuity Models, Development Impact Bonds and borrowings from banks and institutions. This has been understood well using many case studies and good practices mentioned in the previous sections.



# Activity 7

## Video case study and quiz on new and emerging financing options

Refer to exercise workbook

Participants should take the pre – evaluation quiz at this stage. Such quizzes are ideal for determining pre-existing subject knowledge in the audience and will help the trainer tweak their style of teaching and the knowledge baseline for covering each topic.

Although appearing to be counterintuitive, the quiz will cover material that the audience is not expected to know before the training. It will also the audience an indication of topics that will be covered and the depth of knowledge required.



# Contents

1 Need For Innovative Finance Mechanism

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## Municipal bonds of Pune, Indore and Hyderabad

City	Type	Bond size	Guarantee	Interest rate	Tenure periods	Credit Rating	Escrow	Purpose	Remarks
PMC	Unsecured Redeemable Listed Taxable Non Convertible Debentures	200 Cr.	No	7.59%	10 year	AA+	Revenues of the PMC	24 x 7 Water supply	Credit rating Agencies: India Ratings and Care Payment of Interest : Half yearly
IMC	Secured, Non convertible, Redeemable bonds in the	100 Cr. with Green Shoe	No	9.25%	7 Years	AA	Revenues of the IMC	Water supply	Credit rating Agencies: Brickwork, SMERA Payment of Interest : Half yearly
GHMC	Unsecured Listed Taxable Non-Convertible Redeemable Bonds	200 Cr.	No	8.90%	10 years	AA	-	Strategic road development programme.	Credit rating Agencies: India Rating, CARE Payment of Interest: Half yearly

Source: Pune's Path Breaking success in municipal bond: [www.pmc.gov.in](http://www.pmc.gov.in), <https://www.financialexpress.com/market/rs-2264-cr-pune-municipal-bond-issue-without-maharashtra-government-backing-mumbonds-face-testing-times/716782>, [https://www.nseindia.com/content/press/PR\\_cc\\_05072018.pdf](https://www.nseindia.com/content/press/PR_cc_05072018.pdf), Draft Information Memorandum on IMC Bond, <https://economictimes.indiatimes.com/markets/bonds/how-indore-has-set-the-tone-for-municipal-bonds/articleshow/64673939.cms>, <https://www.bsandia.com/markets/marketing/bsm/MediaReleases.aspx?page=Site1&file=9c504d3c9ef642eb1036c>, <https://www.bsandia.com/markets/MarketInfo/DispNotice/Circulars.aspx?NoticeId=%7BCB91CD87F97E44307950C1CA3435E9995%7D&noticeNo=20180221&bandid=0271701&bandicount=2&bandidcount=3&andlag=0>

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PMC: Recognizing the fact that Municipal Bonds can be a useful tool to meet the city's growing infrastructure-financing needs, Pune Municipal Corporation (PMC) is proactively working with Government of Maharashtra (GoM), Union Ministry of Finance (MoF), Union Ministry of Urban Development (MoUD), SEBI, SBI Capital Markets Ltd. (SBI Caps) and advisors from the US Department of Treasury's Office of Technical Assistance (OTA) in developing this new financial-asset-class.

Pune Municipal Corporation proposed to raise bonds amounting to INR 200 Crores during the first tranche of its 5-year bond program (INR 2264 Crores). PMC's Standing Committee and General Body approved a consumption based telescopic water tariff structure for the next 30 years. This policy is based on progressive increase of the revenues generated from the 24x7 Water Project leading it towards self-sustenance. Additionally, as a part of the structured escrow payment mechanism, a portion of PMC's Property Tax has also been pledged for the debt servicing of the bond program. As per the financial-prudence prevailing at different points in time in the future while simultaneously adhering to the relevant regulatory framework, the bonds may also be partly/fully paid from PMC's several revenue sources.

IMC: Indore, the commercial hub of central India and business capital of Madhya Pradesh, led five local bodies that would collectively raise up to Rs 1,200 crore through the sale of municipal debt papers. Indore Municipal Corporation, rated as AA (SO), or two notches lower than the top grade, has raised about Rs 140 crore by selling bonds, which offered 9.25% with 10-year maturity. The issuer will transfer property tax related revenues to an escrow account maintained with a bank, which will be used to service the debt as and when repayment obligation arises.

GHMC: Greater Hyderabad Municipal Corporation (GHMC) has raised Rs 195 crore by selling municipal bonds for the second time within four months, seeking to use the proceeds on road projects. The bonds offer 9.38% with 10-year maturity.



## Water and Sanitation Pooled Fund – Tamil Nadu 1/2

The pooled bond mechanism has been successfully used by the TNUDF over the past 15 years for mobilizing market resources for water and sanitation investments by smaller ULBs in Tamil Nadu.

- The WSPF is one of a two innovative pooled funds in Tamil Nadu, the other one being TNUDF.
- The fund has become a model and has inspired other such structures, such as the Karnataka Water and Sanitation Pooled Fund Trust.
- This approach allows small and medium sized ULBs with poor credit ratings to access debt markets. Potential to crowd-in otherwise risk-averse private capital.
- However, this will require supporting TNUDF which has experience in this route, to consider FSSM projects within this. There is also a need for some regulatory clarity as TNUDF has not been to use this route under the new SEBI regulations for municipal bonds.

Generally, small and medium-sized ULBs face difficulties in raising capital using this method, for reasons such as small issuance size, prohibitive cost of issuance, lack of financial wherewithal and lack of knowledge of financial markets and the process of raising private capital. Under these circumstances bond banks or pooled financing facilities offer a mechanism for small and medium-sized ULBs to finance smart cities or other infrastructure projects through bond issuances on a sustainable basis. A number of countries have used pooled financing structures to accelerate investments in infrastructure projects.

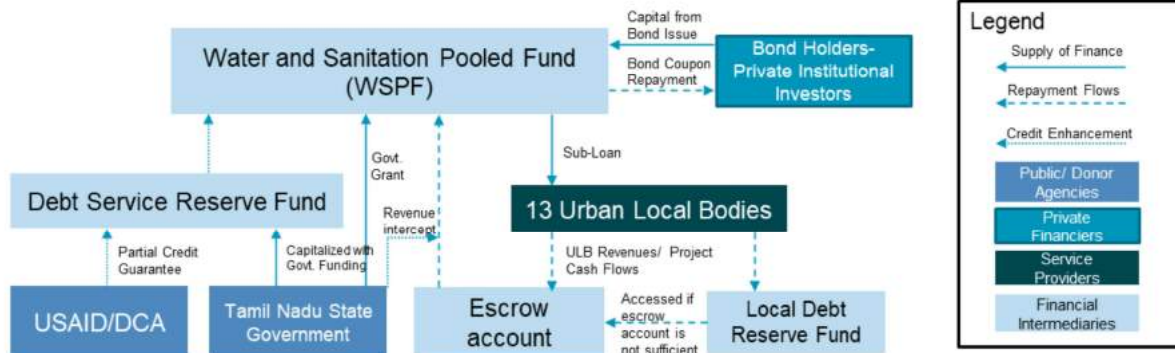
A bond bank is essentially a state-sponsored intermediary which provides local governments with access to capital markets through debt issuance. The bond bank then lends capital to participating local governments by either providing them with direct loans or purchasing their bonds. By virtue of pooling debt in this manner, high credit ratings, larger issue sizes and wider investor coverage have been achieved.

Water and Sanitation Pooled Fund is set up by the state of Tamil Nadu.



## Water and Sanitation Pooled Fund – Tamil Nadu 2/2

- The WSPF issues bonds to commercial investors, with these bonds guaranteed by state government funds in an escrow account and a partial credit guarantee from USAID, in addition to an intricate web of credit enhancements.
- Money is lent out to small and medium sized ULBs.



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Source: Based on World Bank Group (2016), "Pooled Municipal bond issuance in Tamil Nadu, India in "Case studies in blended finance for water and sanitation", p. 2

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The pooled bond issuance for the 13 municipalities and town panchayats took the form of a structured debt obligation for Rs. 304.1 (US\$6.2 million). The bond was AA rated, and had a coupon of 9.2 percent per annum and a maturity of 15 years, with put and call options after ten years. These options acted as a safeguard for investors by offering them the opportunity to take their money out prior to the end of the bond lifespan. The ULBs paid back their WSPF debt obligations from project and municipal revenues, including water tariffs and from interest earned on the money deposited from connection fees.

The state government of Tamil Nadu capitalized a debt service reserve fund (DSRF) with an amount close to 1.5 times the annual principal and interest payments. Approximately US\$1.42 million was assigned to the fund, and helped generate investor confidence through the assurance that the fund could pay creditors if the municipal borrowers were unable to meet scheduled repayments.

A second level of enhancement was created by legally requiring the 13 participating local governments to establish an escrow account and make deposits into it so that their annual debt service obligations to WSPF was paid in early. Municipal revenues from property tax and other tax collections, as well as project revenues, were the source for funds deposited into this account. A third level of enhancement was added with a local debt service reserve fund, which received contributions amounting to 5 percent of the principal amount borrowed by each ULB. That account could be tapped in the event that revenues in the debt service escrow were not sufficient. A fourth layer of enhancement included the ability of the WSPF to intercept State revenue transfer payments.

Finally, a partial credit guarantee was provided by USAID on the WSPF's debt service reserve fund. The guarantee would help re-supply 50 percent of the principal amount of a default paid for by the debt service reserve fund (DSRF). In that case USAID, would be reimbursed for its guarantee payment by the GoTN, while all other funds used from the DSRF would be reimbursed by deducting moneys from the defaulting ULB's individual State revenue transfer payments.

Results:

The WSPF helped spread credit risks and pool the ULBs' resources to meet funding requirements for market access, thereby achieving economies of scale in the process. The proceeds from the pooled bond issuance

were disbursed to ULBs in 2003, and the majority went to refinance outstanding loans at lower interest rates for previously completed water and sanitation projects. The WSPF issuance for this initial bond set a model for future pooled bond use. It was well structured from a credit perspective and achieved a very high AA rating, which enabled it to be sold.

## Municipal borrowing from banks under Priority Sector Lending (PSL)

- ✓ ULBs can borrow from various banks – ranging from **scheduled commercial banks, small finance banks to urban cooperative banks.**
- ✓ Bank loans will be available for ULBs at relatively good terms though tenor will be short of up to **5 years.**
- ✓ It is important to point out that most banks may not have realized that lending for FSTPs of **up to Rs. 5 crores** will also be covered under the **priority sector lending (PSL) requirements for commercial banks.** This will make it attractive for banks to lend to ULBs for sanitation projects.
- ✓ However, this **requires awareness generation for both banks and ULBs.** It will also require **rigorous assessment of municipal finances to ensure their repayment capacities.** It would be useful to explore pooling of a few smaller ULBs that are interested to borrow from banks. This will help reduce their costs and make it attractive for banks to consider a larger project. Any borrowing from banks will also require permission from the State Government as per most state Municipal legislation.

"Bank loans up to a limit of Rs. 5 crore per borrower for building social infrastructure for activities namely schools, health care facilities, drinking water facilities and sanitation facilities in Tier II to Tier VI centres."

### RBI "Priority Sector Lending- Targets & Classification"

- Agriculture
- Micro, Small and Medium Enterprises
- Export Credit
- Education
- Housing
- Social Infrastructure
- Renewable Energy
- Others

Municipal borrowings can also be done from banks under Priority Sector Lending. The Reserve Bank of India (RBI) has classified various target groups and sectors under the Priority Sector Lending which covers social infrastructure.

## Institutional and market borrowing for capital investments



- Institutional and market borrowing will require a **rigorous assessment of municipal finances**.



- It would be easier in states such as TN as the **ULBs have credit history through the TNUDF operations**, or in Maharashtra where the ULBs have **high own income through sources such as property and sanitation tax**, as well as various **land value capture mechanism** such as betterment levy, Transfer of Development Rights (TDR), etc.



- Till recently, the Municipal Corporations also enjoyed a very **buoyant source in Local Body Tax (LBT)**. It is worth noting that in **Maharashtra share of own income in total revenue income of ULBs is high at 50% and property tax comprises only 30% of own income**.

For ULBs to borrow from institutions and rely on market borrowings, it becomes important for them to have good history of municipal finances. Hence, past trend analysis of municipal finances becomes necessary for ULBs to apply for such borrowings. ULBs need to have buoyant own tax income like property tax, water tax, sanitation tax etc. and non-tax income like rental income

## Institutional borrowing from HUDCO

Housing and Urban Development Corporation (HUDCO) provides loans to public agencies and private sector for urban infrastructure. State Governments and ULBs can borrow from HUDCO to finance their FSSM related capital investments.



HUDCO offers loans at competitive terms and can be a good source for ULBs for urban infrastructure as FSSM can be included in this.



In 2015-16, it disbursed loans worth Rs. 8,250 crores for urban infrastructure and over the 6 years period from 2011 to 2016 it released loans worth Rs. 14000 crore per annum.



HUDCO's loans provide a good option for ULBs. The interest rates are about 10.35% and the loan tenor ranges from 7 to 15 years depending on the types of projects.

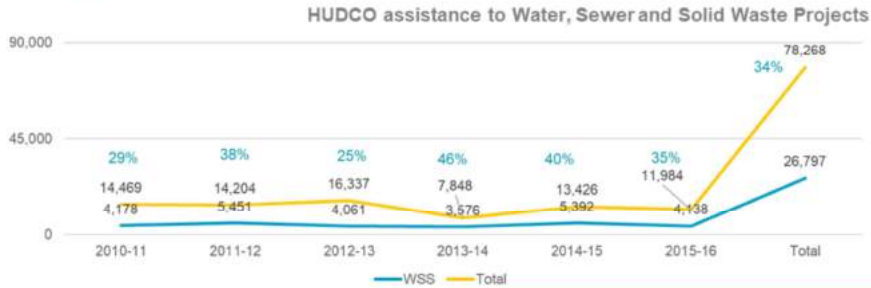


However, HUDCO requires a state government guarantee for lending to urban local bodies, which may become a constraint as such guarantees affects contingent liability of state governments. Also, under the new Fiscal Responsibility and Budget Management Acts of different state governments, many have a ceiling on total guarantees.



Of the four focus states of except Maharashtra all other states have such stipulated limits. However, HUDCO funding can be explored for treatment facilities by private providers in a PPP arrangement for FSSM services, if it is competitive as compared to other options for them.

# HUDCO assistance to Water and Sanitation Projects in comparison with total assistance



**34% total HUDCO Assistance was given for Water and Sanitation sector for six years from 2010-16**

HUDCO Assistance (Rs. crore)							
Year	Water supply	Sewerage, Drainage and Solid waste	Transport	Area divnt.	Social infrastructure	Others	Total
2010-11	2,721	1,457	3,263	115	176	6,737	14,469
2011-12	2,606	2,845	2,510	-	647	5,595	14,204
2012-13	3,089	972	4,925	-	2,202	5,149	16,337
2013-14	1,812	1,784	2,121	-	154	1,997	7,848
2014-15	4,919	473	3,787	-	213	4,034	13,426
2015-16	2,425	1,713	4,762	-	1,239	1,626	11,984
<b>Total</b>	<b>17,573</b>	<b>9,224</b>	<b>21,389</b>	<b>115</b>	<b>4,631</b>	<b>25,337</b>	<b>78,268</b>

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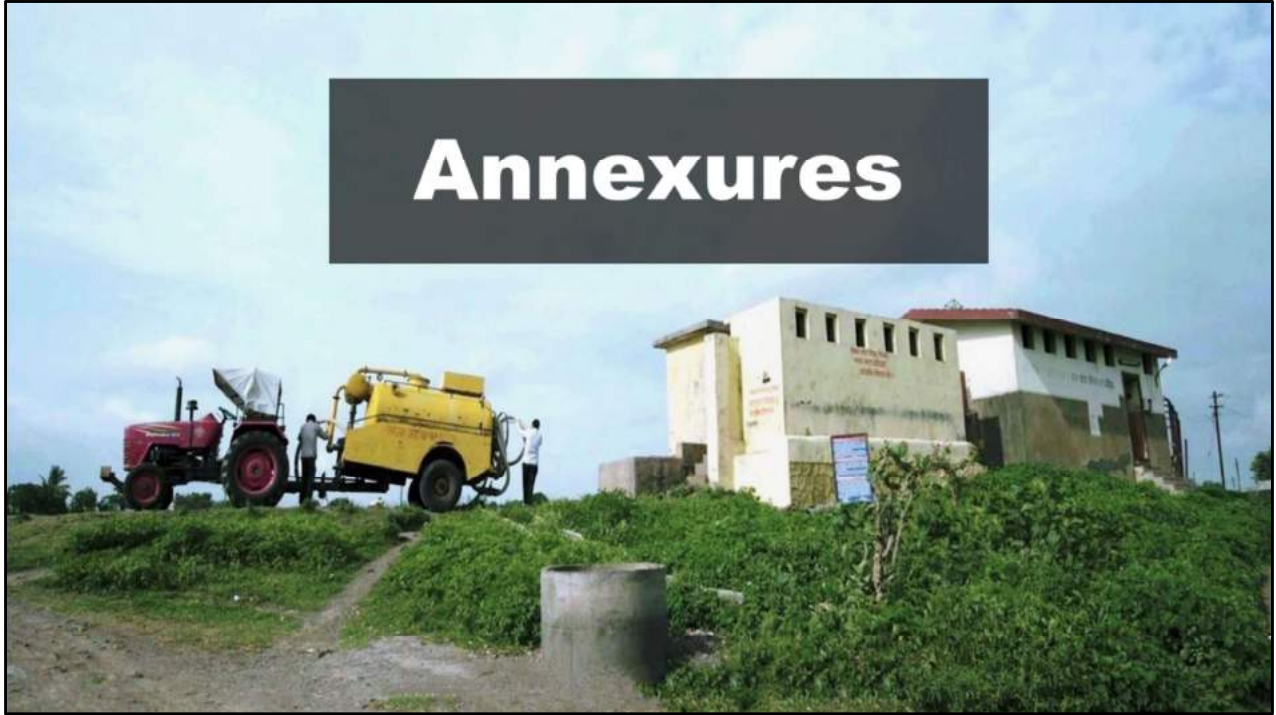
Sources: Analysis done by CWAS based on HUDCO (2010-15) "Annual reports of HUDCO"

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Over the last six years, from 2010-16, HUDCO has provided almost 34% of its total assistance in the Water and Sanitation Sector for water supply, sewerage and drainage and solid waste management projects. This assistance has been increased incrementally over the years. Thus, there is a huge potential for ULBs to borrow assistance from HUDCO for FSSM projects.



# Annexures



## List of acronyms

ALF	Area Level Federations	FRBM	Fiscal Responsibility and Budget Management Act	PbR	Payment by Results
AMRUT	Atal Mission For Rejuvenation And Urban Transformation	FSM	Faecal Sludge Management	PLAM	Performance Linked Annuity Model
BMGF	Bill and Melinda Gates Foundation	FSSM	Faecal Sludge and Septage Management	PMC	Pune Municipal Corporation
BOD	Biological Oxygen Demand	FSTP	Faecal Sludge Treatment Plant	PMDO	Pan India Pooled Municipal Debt Obligation Facility
BOLT	Build-Operate-Lease-Transfer	GHMC	Greater Hyderabad Municipal Corporation	PPP	Public-private partnership
BOO	Build-Own-Operate	HAM	Hybrid Annuity Model		Program for Market structuring of faecal sludge management
BOOT	Build-Own-Operate-Transfer	HH	Household	PSMBV	Program for Market structuring of faecal sludge management
BOT	Build Operate and Transfer	HUDDCO	Housing and Urban Development Corporation	PSP	Private Sector Participation
BSE	Bombay Stock Exchange	IMC	Indore municipal corporation	RBF	Results based funding
BWC	Blue Water Company	JMP	Joint Monitoring Programme	SBM	Swachh Bharat Mission
CapEx	Capital Expenditure	KLD	Kilo Liters per day	SDG	Sustainable Development Goal
CDD	Consortium for DEWATS Dissemination	KMA	Kumasi Metropolitan Assembly	SFD	Shit-Flow Diagram
CGTMSE	Credit Guarantee Trust Fund for Micro & Small Enterprises	KWSPFT	Karnataka Water and Sanitation Pooled Fund Trust	SHG	Self-Help Group
CLF	City Level Federation	LBT	Local Body Tax	SI	Sanitary Inspector
CO	Chief officers	LG	Local Government	SMERA	Small and Medium Enterprises Rating Agency of India Limited
COD	Cash-On-Delivery Aid	LPCD	Litre Per Capita Per Day	SOP	Standard Operating Procedure
CPHEEO	Central Public Health and Environmental Engineering Organisation	MDF	Municipal Development Funds	STP	Sewage Treatment Plant
CSR	Corporate Social Responsibility	MoHUA	Ministry of Housing and Urban Affairs	SWM	Solid Waste Management
CT/PT	Community toilets / public toilets	MoUD	Ministry of Urban Development	TDR	Transfer of Development Rights
DBOT	Design Build Operate Transfer	MSMEs	Micro, Small & Medium Enterprises	TNUDF	Tamil Nadu Urban Development Fund
DIB	Development Impact Bond	MUDRA	Micro Units Development & Refinance Agency Ltd	TSCL	Thongthawl Service Corporation Limited
DSCR	Debt service coverage ratio	MUINFRA	Maharashtra Urban Infrastructure Development Co. Ltd.	UDD	Urban Development Department
DWASA	Dhaka Water Supply and Sewerage Authority	NFSSM	National Faecal Sludge and Septage Management Alliance	ULB	Urban Local Body
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization	NCO	Non-Governmental Organization	VGf	Viability Gap Funding
EMD	Earnest Money Deposit	NMCG	National Mission for Clean Ganga	WASH	Water, Sanitation and Hygiene
Eol	Expression of Interest	NSE	National Stock Exchange of India	WMC	Wai Municipal Council
		OBA	Output based Aid	WMD	Waste Management Department
		ODF	Open Defecation Free	WSPF	Water and Sanitation Pooled Fund
		OpEx	Operational Expenditure	WSS	Water sanitation solid-waste
		OWSSB	Odisha Water Supply and Sewerage Board	WSUP	Water & Sanitation for the Urban Poor
		P4R	Program for results		

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