Public Private Partnership in Citywide Integrated Fecal Sludge Management

15th Sanitation Community of Practice (SanCoP) meeting, Nov 4 2014
Sanitation systems in Urban India

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

24% are dependent on mixed sanitation systems

Only 5 cities are reported to have 100% sewerage system

Nearly 1200 cities have fully onsite sanitation systems

Source: Based on the SLB data submitted to GOI by 16 states covering 1564 cities
Onsite sanitation and FSM – emerging questions

38.2% urban HHs have septic tanks

Are septic tanks linked to soak pits
Are they built as per Codes / Specifications?
How often are they cleaned?
Where does the effluent flow?
What happens to the sludge?
Emerging recognition of septage management / FSM

- NUSP has accorded **high importance** to **plan and implement** actions for the organized and **safe management** of **fecal matter** from **on-site installations**.

- It highlights the **importance of safe and hygienic facilities with proper disposal**. It emphasizes proper disposal and treatment of sludge from on-site installations (septic tanks, pit latrines, etc.); and proper operations & maintenance (O&M) of all sanitary facilities.

- **Recommends** developing a **Septage Management Plan (SMP)** as a **part** of city sanitation plans (CSP)

- **Septage Management Advisory** of Government of India provides references to CPHEEO guidelines, BIS standards, and other resources for preparing SMP / FSM plan.
Support to Citywide Strategies

CSP – Support to small and mid-sized cities

These cities were selected by the Maharashtra Jeevan Pradhikaran and the Water Supply and Sanitation Department of Maharashtra for the development of City Sanitation Plans (CSPs) with the support of CEPT University.

- Sinnar: Located in the Nashik district, with a population of ~60,000 that has more than doubled in size since 2001 mainly due to expansion of city boundaries and an industrial and manufacturing boom in nearby Nashik.
- Hingoli: Located in the Hingoli district, the town has a population of ~85,000 primarily a pilgrimage destination.
- Ambajogai: Located in the Beed district, the town has a population of ~74,000 that has grown at 3.9% p.a. since 2001.

Support to cities in Maharashtra, India

City Sanitation plan options for the cities

<table>
<thead>
<tr>
<th>Access</th>
<th>Collection</th>
<th>Conveyance</th>
<th>Treatment</th>
<th>Disposal/Reuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1: Citywide settled sewerage system (INR ~28 million investment)</td>
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Citywide Settled Sewerage System

- Rehabilitation of selected old community toilets
- Sewerage construction
- Wastewater treatment facility
- Reuse for agriculture and irrigation

Option 2: Citywide onsite sanitation system with treatment (INR ~129 million investment)

Citywide Onsite Sanitation System

- Own Toilets + Septic Tanks (Wai and Sinnar)
  - Construction of own toilets, individual or shared by 2-4 households, along with attached septic tanks

Option 3: Mix of Settled Sewerage and Onsite Sanitation system

Onsite systems with same outcomes

Key Activities in City Sanitation Plans

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

Areas for intervention

1. Integrated fecal sludge management (Wai and Sinnar)
   - Regular (in a 3 year cycle) collection and disposal of fecal waste from septic tanks, along with the necessary refurbishment of septic tanks, construction of a treatment facility for septage and reuse of treated septage

2. Own Toilets + Septic Tanks (Wai and Sinnar)
   - Construction of own toilets, individual or shared by 2-4 households, along with attached septic tanks

3. Settled sewers attached to DEWATS

Identify local priorities

Assessment of sanitation situation in cities using the framework

Development of sanitation options

Continuous stakeholder engagement

Institutional capacity assessment

Analysis of city budgets
Septage management situation in the cities (1/2)

Small and medium towns

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

- 8-10 Year cleaning frequency

Dependency on oversized septic tanks

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

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

- A sample survey conducted in Wai and Sinnar found that septic tanks connected to individual toilets are largely oversized, and do not meet the standards recommended by CPCHEE.

- The CPCHEE manual and the MoUD septic management advisory recommend that household septic tanks be cleaned every 3-5 years, i.e., ~33% of them should be cleaned each year.

- In addition, septic tanks often overflow, leading to the release of effluent into drains.
Septage management situation in the cities (2/2)

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

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

Complaint redressal by ULB

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

Quality tests show serious problems

Crude disposal at SW dump site

Situation assessment suggests, an URGENT need to improve the onsite sanitation situation.
To tackle these issues, there is a need to explore an end-to-end integrated fecal sludge management (IFSM) solution

### Current value chain
- **Access**
  - Pour flush toilets
- **Collection**
  - Septic tanks
  - Septic tanks lack manhole covers
  - Septic tanks are not of standard size
  - No database on septic tanks for properties
- **Conveyance**
  - Suction emptier truck
  - Only 2-4% of septic tanks cleaned annually
- **Treatment**
  - No treatment facility
  - No facility for fecal sludge treatment
- **Disposal / Reuse**
  - Disposed off on dumping site
  - Septage disposed off on dumping site without treatment

### Proposed value chain
- **Access**
  - Pour flush toilets
- **Collection**
  - Septic tanks
  - Providing access manhole covers to allow regular cleaning
  - Enforcing regulations on septic tanks design
  - Data base of properties with septic tanks
- **Conveyance**
  - Suction emptier trucks
  - Preparing a schedule for period cleaning of septic tanks, to ensure that all septic tanks are cleaned at least once in 3 years
- **Treatment**
  - Sludge drying beds
  - Installing fecal sludge drying beds for the treatment of fecal sludge
- **Disposal / Reuse**
  - Revenue from compost
  - Safe dumping of treated fecal matter and/or the sale of septage at a fixed rate to nearby farms or agro-businesses
  - Payment using local taxes using escrow mechanisms
Citywide - Integrated Fecal sludge Management Plan (1/2)

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

Details of proposal
- Based on a sample technical assessment done in 2019, it was noticed that many septic tanks in Wai and Sinnar had sealed covers or faris (tiles) placed over them.
- This prevented regular cleaning, as the seal had to be broken each time to access the septic tanks.
- RCC access manhole covers (60 cm X 45 cm) can be constructed to allow easy access during emptying, at a cost of INR 500-600 per tank.
- The ULBs will do a household level assessment to assess the number of septic tanks that can be refurbished for access and also create a

First, Refurbishment of Septic tanks

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

Current septage management practice
- ~2.4% of tanks cleaned per year (once in >10 years)

Recommended septage management practice
- ~30% of tanks cleaned per year (once in 3-5 years)

Current barriers

<table>
<thead>
<tr>
<th>Current barriers</th>
<th>Proposed solution</th>
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</thead>
<tbody>
<tr>
<td>1. Cleaning is done on-call by the household, who do not see the need for regular cleaning</td>
<td>1. Septic tanks will be cleaned on a pre-determined schedule</td>
</tr>
<tr>
<td>2. The cleaning services of the ULBs are currently treated as a complaint redressal system for overflowing septic tanks rather than a regular cleaning and maintenance service</td>
<td>2. Regulations and penalties will be set in place to ensure periodic cleaning</td>
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<tr>
<td>3. Each town has only 1 truck, owned and operated by the ULB</td>
<td>3. Awareness generation activities will be conducted to educate households about the need for regular cleaning</td>
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</table>

Second, Regulated Cleaning of septic tanks and financing through taxation

Third, treatment facility will be constructed for the treatment of sludge

Regulated schedule of three year septic tank cleaning cycle

- Wai requires 3 more additional suction emptier trucks
- ~1,760 septic tanks need to be cleaned annually on scheduled basis

Third, treatment / reuse

Technical details of sludge drying bed
- Technical illustration of a sludge drying bed

- The MoHFW’s advisory recommends the use of unlined sludge drying beds (SDB) for the treatment of collected septage.
- The sludge will be allowed to dry for 32 days to form sludge cakes, which can be disposed safely in the open.
- In India, SDBs are being used in 200 villages in Punjab under the World Bank’s Punjab Rural Water supply & Sanitation scheme.
- The total cost of construction would be INR 32 lakhs.

- Wai - 3 SDBs of 23 x 20 m
- Sinnar - 2 SDBs of 23 x 20 m
Citywide - Integrated Fecal sludge Management Plan (2/2)

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

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

Fourth, regulation and implementation

Financial analysis for funding IFSM activities

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

Funding options for IFSM activities

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

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

Fifth, IEC and Awareness generation

Create citywide information for successful implementation of PPP and improving monitoring by ULB for IFSM activities

Present system

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

Creating database and improving monitoring:

- Create GIS database for each HHs / property depicting details on Toilets, septic tanks, soak pits details
- Update of HHs / property on server through mobile application or reporting systems once the septic tank is cleaned

Citywide database and MIS
We identified private players offering septage management services within and nearby towns.

**Proposed value chain**

- **Pour flush toilets**
  - Access
- **Septic tanks**
  - Collection
- **Suction emptier trucks**
  - Conveyance
- **Sludge drying beds**
  - Treatment
- **Revenue from compost**
  - Disposal / Reuse

**Activities required**

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

**Small scale players (<10 employees)**

- Labor contractors for septic tank cleaning
- Septic tank cleaning companies
- Pure-play treatment players

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

- Integrated fecal sludge management providers

**Buyers of septage**

- Maharashtra Organic Farming Association
- Agro-based industries
- Local farmers and growers associations

Source: Field visits, online business listings
Assessed work profile, interests and capacity of private sector doing IFSM activities

**Labour contractors**

These are small players that employ workers to operate rental trucks, and also offer other facility management services.

**Labour contractors:**

- **Names:** 24 Enterprises, Sandeep Enterprises
- **Geographic focus:** Pune
- **Services offered:** General facility management
- **Business model:**
  - Scale: 1-3 trips per month
  - Customers: Households and small retail establishments
  - Payment structure: INR 1000 - 2000 per trip
  - Expected return: INR 10-15 lakhs per year
- **Interest in business opportunity:**
  - “Yes, we are actively seeking new business opportunities. We can obtain a truck and labor for cleaning. I am familiar with septic tank cleaning and have a contract with a rental company. I can serve the area of my convenience. I would prefer to be paid on a weekly basis.”

- **Names:** Mantaha Enterprises, Satish Enterprises
- **Geographic focus:** Pune
- **Services offered:** Septic tank & storm water cleaning
- **Business model:**
  - Scale: 2-3 trips per day
  - Customers: Households and small retail establishments
  - Payment structure: INR 2000 - 1200 per trip
  - Expected return: Operating margin of 30%-40%
- **Interest in business opportunity:**
  - “Yes, but only if the ITR provides the truck. We find enough business in Pune and don’t see a reason to expand. We are not contracted for construction and are not familiar with sludge drying beds.”

**Septic tank cleaning companies**

These small companies own 1-2 trucks and do not offer any other services.

**Septic tank cleaning companies:**

- **Names:** Kadam Enterprises, Shraddha Enterprises
- **Geographic focus:** 150 km radius in the Pune and Satara districts
- **Services offered:** Septic tank cleaning services
- **Business model:**
  - Scale: Operates one Tata 709K truck, capacity that can clean 70-80 tanks per month
  - Customers: Industrial estates and households in small villages
  - Payment structure: One-time cash payment of INR 1200 per trip
  - Expected return: INR 50,000 – 75,000 in operating profit per truck per month
- **Interest in business opportunity:**
  - “Yes, I can procure a truck and operate on the regulated schedule. The repair can be done by a local contractor. I am familiar with septic tank cleaning, but I am not interested in constructing them, because unlike the trucks which I can use for other business in case the contract does not work out, I can’t take the tool to another job.”

**Pure-play treatment players:** Traditional sewage treatment plant providers are not focused on more advanced technologies than sludge drying beds.

**Pure-play treatment players:**

- **Names:** Era Hydro-Biotech Energy Private Limited, Envirotech Private Limited
- **Geographic focus:** Pune
- **Services offered:** Manufacturing and construction of water, wastewater and sewage treatment plants
- **Interest in business opportunity:**
  - “We do not approve of stand-alone septic tank or sludge drying beds. We stick to our roots and focus on our core competency.”
  - “We are not interested in constructing septic tank beds, but we can help and advise.”

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

**Integrated fecal sludge management providers:**

- **Name:** 3S Shramik
- **Geographic focus:** Maharashtra, Karnataka, Tamil Nadu, Goa and Delhi-NCR
- **Services offered:** 3S Shramik’s core business is the manufacture and supply of high-quality portable toilets, but they also offer commercial and residential septic tank cleaning and septic tank management services.
- **Business model (conceptual):**
  - Scale: 50 Mercedes-Benz suction emptier trucks, each operated by a driver and technician.
  - Customers: Mostly residential, but also some commercial clients.
  - Payment structure: Charge per visit for emptying the tank and “DHL-like” schedule, but also take emergency calls.
  - Expected return: 20% – 25% EBITDA margin
- **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, so we provide a good salary, and we ensure they are well taken care of. But we have a big test, and it clearly tells us where we want and will not do.”
  - “We would be interested in an integrated contract for fecal sludge management. In terms of profitability, the business is only viable if you’re doing at least 20-25% of the market.”
We followed a six step process to structure a private sector engagement for integrated fecal sludge management:

1. Operational role of the private sector
2. Source of revenue
3. Investment and ownership of capital asset
4. Payment structure
5. Contract length and value
6. Risk mitigation and allocation

**Bundled or Unbundled contract?**

**Revenue stream enough to meet private players’ return expectations?**

**Who should invest in capital assets?**

**What is the appropriate payment structure for the private player?**

**What is the appropriate contract duration for private and ULB?**

**How to address the major identified for the private player and the ULB?**
Assessed contract options for IFSM activities

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

Assessed possibilities of bundling and unbundling of contracts

Possible contracts based on interests and capacities of private sector
### Possible PPP structures for Integrated Fecal sludge management (IFSM)

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

### Contract valuations for Wai and Sinnar

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Types of contract</th>
<th>Contract length</th>
<th>Wai</th>
<th>Sinnar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Annual contract value (INR, Lakhs)</td>
<td>Sanitation tax per residential property (INR)</td>
</tr>
<tr>
<td>1A</td>
<td>Refurbishment and regular cleaning of septic tanks with O&amp;M of SDBs</td>
<td>2 - 3 years</td>
<td>15-17</td>
<td>~190</td>
</tr>
<tr>
<td>1B</td>
<td>Construction of SDBs</td>
<td>Duration of construction</td>
<td>24-28</td>
<td>N.A.</td>
</tr>
<tr>
<td>2A</td>
<td>Refurbishment and regular cleaning of septic tanks</td>
<td>2 - 3 years</td>
<td>11-13</td>
<td>~140</td>
</tr>
<tr>
<td>2B</td>
<td>Construction and O&amp;M of SDBs</td>
<td>1 year</td>
<td>28-33</td>
<td>N.A.</td>
</tr>
<tr>
<td>3A</td>
<td>Refurbishment and regular cleaning of septic tanks with construction and O&amp;M of SDBs</td>
<td>2 - 3 years</td>
<td>39-45</td>
<td>~190</td>
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**Property owners** currently have to **pay local taxes** of about **Rs 2600/annum** in Wai and Sinnar.

To cover the costs of a cleaning cycle of ~3 years would require an **increase** in annual tax spend for a household of about **7% in Wai** and **11% in Sinnar.**
Good risk mitigation and allocation can attract good contractors and help reduce contract price.

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

- Project planning and development
  - Commissioning risk
  - Performance risk
  - Cost escalation
  - Design risk
  - Payment delay and default

- Construction phase (SDB construction and septic tank refurbishment)

- Operation (Cleaning of septic tanks and operation of SDih)

Need to address several risks involved during lifecycle of the PPP project.

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

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

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

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

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

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

    - "If we work on a regulated schedule, it will be difficult to get household signatures. That will become complicated, and I don’t want my payment to suffer." - Ugale Septic Tank Cleaning Services

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

Concerns about addressing these risks were raised by private sector during interactions.

Addressing the risks involved in PPP engagement for IFSM activities

### Managing performance risk through performance based monitoring and payment

<table>
<thead>
<tr>
<th>Risk</th>
<th>Mitigation</th>
<th>Allocation of remaining risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ULB does not fulfill contract conditions</td>
<td>• Establishing a clear reporting and monitoring mechanism to ensure transparent contract execution</td>
<td>• Private player compensated for investments, the cost of winding down and foregone profits</td>
</tr>
<tr>
<td>• Private player is unable to meet service standards</td>
<td>• Establishing a clear reporting and monitoring mechanism to ensure transparent contract execution</td>
<td>• Private player compensated for investments, the cost of winding down and foregone profits</td>
</tr>
<tr>
<td>• ULB decides to discontinue the service</td>
<td>• Up-front discussions with key stakeholders to create buy-in for termination</td>
<td>• X month notice period required</td>
</tr>
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### Managing termination risk

<table>
<thead>
<tr>
<th>Risk</th>
<th>Mitigation</th>
<th>Allocation of remaining risk</th>
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</thead>
<tbody>
<tr>
<td>• ULB is unable to make timely payments towards the project</td>
<td>• ULB can compensate the private player for some portion of its capital investments but not all the performance bond guarantee</td>
<td>• Private player compensated for</td>
</tr>
<tr>
<td>• ULB decides to discontinue the service</td>
<td>• Up-front discussions with key stakeholders to create buy-in for termination</td>
<td>• Private player compensated for</td>
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### Managing payment and cost escalation risk

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<tr>
<th>Risk</th>
<th>Mitigation</th>
<th>Allocation of remaining risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ULB is unable to make timely payments towards the project</td>
<td>• Ensuring budgetary allocation for contracts before procurement</td>
<td>• ULB to pay interest for the payment, delayed by X months or more, at a negotiated rate of interest</td>
</tr>
<tr>
<td>• Private player would be responsible for bearing the cost escalations within the contract terms</td>
<td>• Adjusting contract value annually for inflation</td>
<td>• Private player would be responsible for bearing the cost escalations within the contract terms</td>
</tr>
</tbody>
</table>
Quick summary for successful implementation of IFSM activities through PPP – city level

- Assessment, plan and regulation for the full service chain – from toilets to reuse
- **Assess potential and concerns of private sector** in the city/region context
- Risk assessment, risk management and appropriate contract design (regulated emptying cycle, use of tax with an escrow account, termination clauses)
- **Awareness among residents** about IFSM service and regulation
- Set up **citywide information system** and strengthen local capacity for contract management and monitoring
National / State level activities

- Guidelines for citywide IFSM with private sector participation
- Need for a regulatory framework at state level for implementation and monitoring of IFSM activities
- Empanel private sector for taking up IFSM activities and create a conducive environment for private sector participation
- Financing IFSM activities through Viability Gap Funding (VGF)
- Include IFSM in National/State programs
Thank you

meeramehta@cept.ac.in  dineshmehta@cept.ac.in

www.pas.org.in

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