Financing and Contracts for FSSM: Models and Cases

at the
National Workshop on
Non-Networked Sanitation Systems in India
28th February, 2019
### For Town of Population 100,000

<table>
<thead>
<tr>
<th>Centralized Sewerage</th>
<th>FSM</th>
</tr>
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<tbody>
<tr>
<td>Rs. 180 Cr.</td>
<td>Rs. 9 Cr.</td>
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### 140 Million unsewered urban Indians

<table>
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<tr>
<th>Centralized Sewerage</th>
<th>FSM</th>
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<tbody>
<tr>
<td>Rs. 250,000 Cr. (USD 39 Billion)*</td>
<td>Rs. 13,000 Cr. (USD 2 Billion)</td>
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</table>

- FSM includes FSTP and Trucks only—not septic tanks
- Operating Costs NOT considered over 15-25 years lifecycle
- FSM is a long-term, partial solution

**Assumptions:** CapEx per capita: Rs 18,000 for Centralized Sewerage and Rs 900 for FSM
FSTP in Devanahalli
FSTP in Devanahalli
Case Study: Devanahalli, KN

- Peri-urban town of 35,000 about 40km north of Bangalore
- FSTP built in 2015: 7-9KLD
- Biological treatment processes—easy to maintain
- Odourless and clean—can be inside the city—important
- Easy to maintain + low-electricity—affordable for ULB
Case Study: Devanahalli, KN

- **Investment:**
- Contract to single party for integrated operations
- On-Call service, planning scheduled in future
- O&M Cost paid by TMC; will add to Property Tax in future
- Fee Rs 1,200 / trip: Rs 1,000 to TMC, Rs 200 to Operator
- So TMC pays Fixed Fee (covers cost) + Incentive (profit)

<table>
<thead>
<tr>
<th>Capital Cost</th>
<th>90</th>
</tr>
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<tbody>
<tr>
<td>Truck</td>
<td>25</td>
</tr>
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</table>

- **FSTP with comp.**
- **Op Ex (annual)**
  - Rs 1.15 Cr.
  - Rs 350/head

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Happiness doesn’t come from what we get, but from what we give.

Give us your shit. Be happy.

#FRS Leh +91 9469442403

LEH: BEAUTIFUL. SUSTAINABLE. RESILIENT.
Case Study: Leh, J&K

- Altitude 12,000 feet; Temperature -30°C to 35°C

- Pop. 45,000 + 320,000 tourists + 80,000 seasonal workers

- Tourism has become primary economic driver
  – Evidence of ground water pollution from septic tanks

- Sewerage system for 40% of town being built
  – Operational in 2020-21—too little, too late

- April-2017: MCL and Hotel Owner Association invited CDD and BORDA to recommend quick solution
Contract with Blue Water Co.

- Turnkey Integrated FSM: Build+Finance+Operate+Transfer
- 5 (+2) year contract (scheduled desludging + treatment)
- Design and build FSTP (land by LDA) within 3 months
  - 12KLD, **Planted Drying Bed** (easy O&M, flexible util.)
- Municipality collects user fees
  - Rs 3,500 per cleaning for commercial; **annual cleaning**
- 90% of fees paid to BWC *after* service is delivered
- Private players welcome—must bring FS to FSTP; tipping fee
- **Zero up-front cost or O&M cost to Govt; Profitable!!**
• Investment:
• BWC expected investment recovery in 4 years—unlikely; maybe 5-6 yrs
• Structure possible due to hotel commitment for annual cleaning + ULB support

Case Study: Leh, J&K

- Rs 1.05 Cr.
- Rs 235/head
- Rs 1.05 Cr.
- Rs 235/head

Capital Cost:
- Engg & Mgmt: 17
- Truck: 23
- FSTP: 65

Op Ex (annual):
- Rs 31L/yr.
- Rs 69/person

<table>
<thead>
<tr>
<th>Cost Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital</td>
<td>17</td>
</tr>
<tr>
<td>Expenses</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
</tr>
</tbody>
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Responsibilities in Leh: MCL / BWC

1. Create monthly cleaning schedule
2. Issue schedule notice to customers
3. Pre-visit to ensure septic tank access
4. Reminder to customer (24hrs)
5. Clean Tank, Customer signs
6. Treat at FSTP
7. Schedule Second Cleaning
8. Issue notice and collect fine
• Cleanings:

![Bar chart showing cleanings from Sep-17 to Sep-18 with MCL: 6-10]

- Sep-17: 42
- Oct-17: 48
- Nov-17: 52
- Dec-17: 81
- Jan-18: 108
- Feb-18: 97
- Mar-18: 115
- Apr-18: 69
- May-18: 107
- Jun-18: 107
- Jul-18: 107
- Aug-18: 107
- Sep-18: 107

• 2.2 Million liters in first year
1. Type of FSM:
   - Scheduled (useful if environmental hazard)
   - On-Call

2. Scope of Work
   - Integrated FSTP + De-sludging contract (single party)
   - Separate contracts

3. Financing and Management Structure *(next slide)*

4. Local Revenue Sources:
   - Add to Property Tax / Water bill etc (Scheduled)
   - Charge Service Fees to User (On-Call)
   - Other revenue (advertising, other sanitation services)
## Contract Options

<table>
<thead>
<tr>
<th>De-Sludging Trucks</th>
<th>Operate Only (Govt. buys)</th>
<th>Private Player Buys and Operate</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSTP</td>
<td>Party 1 Builds. Party 2 Operates</td>
<td>Pvt Player Builds and Operates</td>
</tr>
<tr>
<td>Integrated Trucks + FSTP</td>
<td>Govt. procures. Private Party executes/operates</td>
<td>Govt+Pvt Player Invest. Private Player executes and operates</td>
</tr>
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</table>
## Financing Implications (FSTP)

### Process

<table>
<thead>
<tr>
<th>CapEx by Govt</th>
<th>CapEx by Pvt.</th>
<th>OpEx by Govt.</th>
<th>Contract Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>--</td>
<td>100%</td>
<td>1-3 years</td>
</tr>
<tr>
<td>--</td>
<td>20-70%</td>
<td>70-100%</td>
<td>3-5 years</td>
</tr>
<tr>
<td>30-80%</td>
<td>--</td>
<td>50-80%</td>
<td>7-20 years</td>
</tr>
</tbody>
</table>

- Payment to Private Player
  - Fixed Fee covering full or part of Operating Costs
  - Revenue Share (profit share is too complicated)
Pros / Cons of FSTP Options

- **Separate Build / Operate Contracts**
- **Build + Operate Contract**
- **PPP (incl. HAM)**

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1. Long-term sanitation roadmap for the town

2. ULB Manager responsible for 10 years—continuity

3. Partnership approach vs Contracting approach

4. Service provider also monitors/regularizes septic tanks/pits

5. Build for short-term (10 years), upgrade as needed

6. Operating Costs must be covered from local revenues

7. Cluster Approach / Multi-town Contracts will improve management, technology choice
SDG 3: Good Health and Well-Being:
- End preventable deaths
- End malaria and water-borne diseases
- Reduce illness and deaths from water and soil pollution

SDG 6: Clean Water and Sanitation:
- Equitable access to safe drinking water
- Reduce people facing water scarcity
- Halve proportion of untreated wastewater and treat + re-use wastewater
- Protect and restore water ecosystems

SDG 11: Sustainable Cities:
- Upgrade slums, provide basic services for all
- Reduce adverse environmental impact of cities

SDG 7: Affordable, Clean Energy
- Increase renewable energy produced from waste

SDG 14: Life Below Water:
- Prevent marine pollution
- Protect marine life

SDG 8: Decent Work
- Improve dignity of sani jobs
- Promote waste e-ship