Financing non-network systems for small towns: An exploratory analysis

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Small Towns in India

- 30% of urban India households reside in towns with population < 50,000
- Account for 85% of the urban local bodies in the country
- Low population density and low levels of water supply
- Significant number of HH’s dependent on on-site sanitation
- Centrally sponsored programs do not provide funding for sanitation
PPP an option?

Is private sector financing a viable option?

Collection

Collection + treatment (Septage)

Collection + treatment (septage & grey water)

Evaluate the user charge for an IRR of 16%
Assumptions

Population – 50000

No. of households – 12000

No. of households with emptiable septic tanks – 9600

Toilet connected to septic tank

Volume of septic tank – 3 – 4 m³
Assumptions

Grey water discharged to open

Emptying frequency – once in 2 years

Number of days of operation – 300 days in a year

Travel distance – 20 kms (round trip)

Septage and Grey water treatment
Septage treatment

1. Preliminary screens
2. Biogas digester and equalization tank
3. Anaerobic Baffle Reactor
4. Horizontal Planted Gravel Filter
5. Feeding tank
6. Sludge drying beds
7. Co-composting
8. Land Application
## User fee payable for different scenarios

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Collection only</th>
<th>Collection &amp; treatment (Septage)</th>
<th>Collection + treatment (septage + grey water)</th>
</tr>
</thead>
<tbody>
<tr>
<td>User fee per HH</td>
<td>725</td>
<td>2000 - 2400</td>
<td>2650 - 3500</td>
</tr>
<tr>
<td>Pay back</td>
<td>6.20 years</td>
<td>6 years</td>
<td>10</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>12%</td>
<td>14%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Low Risk Investment

“Shriram considers providing financing to vacuum truck operators a safe investment.”

“We have provided loans to six vacuum truck operators in Tumkur, and all have successfully paid back by the end of the loan period, which is about 2-3 years.”

“A few of our vacuum truck clients have been successful enough to take out second and third loans to increase their fleet.”

- Branch Manager, Shri Ram Commercial Vehicle Finance Pvt. Ltd, Tumkur

Vacuum truck financing terms: lending rates of 12-14% for the truck and 16-18% for the tanker.

Local banks responded favorably to lending to vacuum truck operators, given the relatively short breakeven timeline, and classify vacuum truck loans as “low-risk” investment.

Source: Results for Development 2013
Comparison sewer-based sanitation and fecal sludge management in Dakar, Senegal

Dodane et al, 2012
Kushtia plant operational costs and revenue breakdown

### Operational Cost of the Project Per Month

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary of Supervisor of Compost Plant</td>
<td>260</td>
</tr>
<tr>
<td>Salary of 2 Drivers of Vacuum Tug</td>
<td>467</td>
</tr>
<tr>
<td>Salary of 6 labors for faecal sludge collection</td>
<td>467</td>
</tr>
<tr>
<td>Salary of 6 labors for compost plant</td>
<td>467</td>
</tr>
<tr>
<td>Fuel cost for tractors</td>
<td>256</td>
</tr>
<tr>
<td>Fuel cost for vacuum tugs</td>
<td>807</td>
</tr>
<tr>
<td>Maintenance cost for vacuum tugs</td>
<td>80</td>
</tr>
<tr>
<td>Saw dust for composting</td>
<td>80</td>
</tr>
<tr>
<td>Personal Protection Equipment</td>
<td>30</td>
</tr>
<tr>
<td>Total Monthly Operational Cost</td>
<td>2914</td>
</tr>
</tbody>
</table>

### Income from Co-Compost Plant Per Month

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>of compost 20 tons per month at a price of USD 130/ton</td>
<td>2600</td>
</tr>
<tr>
<td>Income from collection of faecal sludge and treatment of waste form 90 holdings (180 households) @ USD 12.5 per holding</td>
<td>1125</td>
</tr>
<tr>
<td>House to house waste collection fee from 1556 households @ USD 0.5 per month per household</td>
<td>778</td>
</tr>
<tr>
<td>Total Income</td>
<td>4503</td>
</tr>
</tbody>
</table>

Source: WasteConcern
Conclusion

Collection
   extremely attractive returns
   low risk

Collection + treatment (septage / septage + grey water)
   User charge may not be affordable
   Subsidize treatment /revenue from end products
Thank you