Faecal Sludge Management
Devanahalli, Bengaluru
First-of-its-kind town-scale Faecal Sludge Treatment Plant in India

Background
Devanahalli is a small town with a population of around 40,000 residents. It lies to the north of Bengaluru, close to the Kempegowda International Airport. Given its location, in the last decade it has seen tremendous growth in residential settlements and commercial activity. Devanahalli resembles a city today, but is still administratively managed as a Town Municipal Corporation, which implies a dearth of funds for public infrastructure similar to many others like it in the country.

The Need
With the advent of the Swachh Bharat Mission, thousands of toilets were built which helped the city reach Open Defecation Free (ODF) status. However, there was no provision for transportation or treatment of the faecal waste generated by these toilets or even wastewater generated from households. As a result, households had to contain this faecal waste by building on-site containment units such as pits or septic tanks, which vary widely in design and capacity. There were no systems in place to treat this faecal waste.

About Devanahalli

<table>
<thead>
<tr>
<th>Location</th>
<th>Population</th>
<th>Households</th>
<th>Access to toilets</th>
<th>Underground Drainage system</th>
<th>Septic tanks/pits coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 kms from Bangalore Airport</td>
<td>40,000</td>
<td>7,100</td>
<td>98%</td>
<td>0%</td>
<td>98%</td>
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</tbody>
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Consortium for DEWATS Dissemination Society
Survey No.205, Opp. Beedi Workers Colony, Kommaghatta Road, Bandemath, Kengeri Satellite Town, Bengaluru, Karnataka 560 060
P : +91 80 2848 6700/ 2194/ 2274/ 2262 | F : +91 80 2848 2144 | E : bangalore@cddsociety.org

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The Solution

To treat the septage and faecal sludge that was being accumulated in the on-site sanitation systems of these toilets, CDD Society, in coordination with Devanahalli’s Town Municipal Council (TMC), and support from the Bill and Melinda Gates Foundation, built a faecal sludge treatment plant (FSTP). The Council decided on building a decentralised FSTP instead of connecting the whole town to a centralised sewage treatment system due to multiple reasons, the primary one being a lack of funds for implementing and maintaining a conventional system.

How Devanahalli implemented FSM

Baseline (2014):
To understand the need of the town, household level study of toilets and containment units was conducted in the town.

Treatment infrastructure (2015):
A 6 KLD FSTP was set up and CDD Society was mandated to operate and monitor the plant for 1 year. Improvements were made incrementally over the years.

Improvements (2017 - Ongoing):
Based on learnings from operating the faecal sludge treatment plant for over a year, incremental changes were made to improve the treatment performance. Enhancements were made in the sludge digestion process and drying bed performance.

Behavior change (2015 onwards):
Undertake behavior change activities like public awareness events to encourage regular desludging; training programs for school children and women regarding menstrual hygiene and sanitation; management practices for sustainable FSM; and mass media campaigns that encouraged proper disposal of solid waste.

Buy in (2015):
The TMC resolved to implement Faecal Sludge Management (FSM) in the town, and allocated a site to construct the FSTP.

Operations (2015 onwards):
Construction and operation of co-composting unit, which treats biosolids with municipal organic waste. This helps in killing disease causing pathogen in sludge and improve nutrient and carbon content for reuse.

Regulations (2016):
The TMC, Devanahalli passed resolutions to regulate faecal sludge disposal; outsource O&M of the truck and FSTP; monitor construction of septic pits and tanks; inclusion of fee for FSM services in Property Tax.

Outsource both the truck, plant and co-composting unit operations to a single agency for seamless monitoring and supervision by TMC, Devanahalli; schedule desludging services; attach desludging fee to the property tax or sanitation tax.

Operational Model:

Truck Operations — TMC, Devanahalli in charge; a driver and helper operate the truck on demand. The demand for services is placed with the TMC directly; the fee charged is Rs. 1.200 per trip, if serviced within the city limits.

The FSTP is managed by an operator and a helper (if needed) with supervision from CDD Society*. The operations of the plant are fairly simple, and can be undertaken by unskilled workers with basic training.

The co-composting unit is adjacent to the FSTP; it receives municipal wet waste from the TMC. This facility is also maintained by a worker (supervised by CDD Society*). The operations are, like the FSTP, basic and can be carried out by unskilled workers with basic training.

* Since July 2019, CDD Society officially handed over the O&M of the FSTP & Co-compost unit to TMC, Devanahalli.
Outcomes

- The town has significantly improved its sanitation situation by scientifically treating most of its faecal waste.
- Households now have access to on-time and professionally-managed desludging services.
- Turnaround time and asset utilization of government-owned trucks has improved two-fold.
- Farmers have access to safe and low-cost compost from the treatment plant.

Learnings

- ULBs lack technical capacity to manage daily operations of FSTP and FSM value chain related service. Outsourcing these to competent private sector players will improve the service delivery.
- FSM implementation is a very long process and requires significant and consistent efforts in pursuing behavior change in private desludging truck operators and households. Establishing an FSM cell at the ULB will ensure that there is constant effort being made in this direction.
- FSTPs are designed based on many assumptions, which over a period of time, needs to be verified for that context. Hence it is necessary that long term monitoring of the treatment operations is carried out and the system is corrected accordingly.