FAECAL SLUDGE MANAGEMENT

Dhenkanal, Odisha

60 km from Bhubaneswar	68,000	9000	60%	0%	51%
Location	**Population**	**Households**	**Access to toilets**	**UGD coverage**	**Septic tanks/ pits coverage**

One of Odisha's first Faecal Sludge Treatment Plant (FSTP) has been built in Dhenkanal, by Practical Action and CDD Society in coordination with the Dhenkanal Municipality and the Government of Odisha. Dhenkanal, like 7000+ small towns in India, doesn't have access to a centralized sewage treatment system. The entire town is dependent on Onsite Sanitation Systems (OSS) such as septic tanks and pits. The OSS are emptied by cesspool trucks when they are full, but, there was no facility to ensure treatment of the faecal sludge.

This project was piloted to demonstrate sustainable faecal sludge management using natural treatment systems in Odisha, under Project Nirmal, funded by the Bill and Melinda Gates Foundation and Arghyam.

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Features

Nature-based technology for treatment and pasteurization	Low Operation and Maintenance, no special skill required, no odour
27 KLD capacity, built on 2.5 acres	Modular functionality makes operating easier
Low cost FSM, affordable for the ULB	CAPEX: INR 2.9 Cr OPEX (Plant + Truck): INR 28 lakhs/yr
Distance from town centre – 7 km	Easily accessible by trucks

Integrating Truck Operations and FSTP operations

One agency manages both collection/transportation of faecal sludge and the operation of the treatment plant, which means the ULB has only a single point of contact for managing the entire system.

The system (as depicted below) helps the ULB monitor the handling of faecal sludge along the sanitation value chain seamlessly, enabling them to provide the highest quality of service to the town of Dhenkanal.

Operation and Maintenance

Operational Model

- The operation and maintenance of the desludging truck and FSTP was integrated and tendered. This eased the process of managing and monitoring implementation of FSM in the town by the Municipality.
- The integrated O&M service provider was chosen through a quality and cost based selection.
- Blue Water Company, a start-up in the FSM service arena, was awarded this integrated contract for a period of one year.
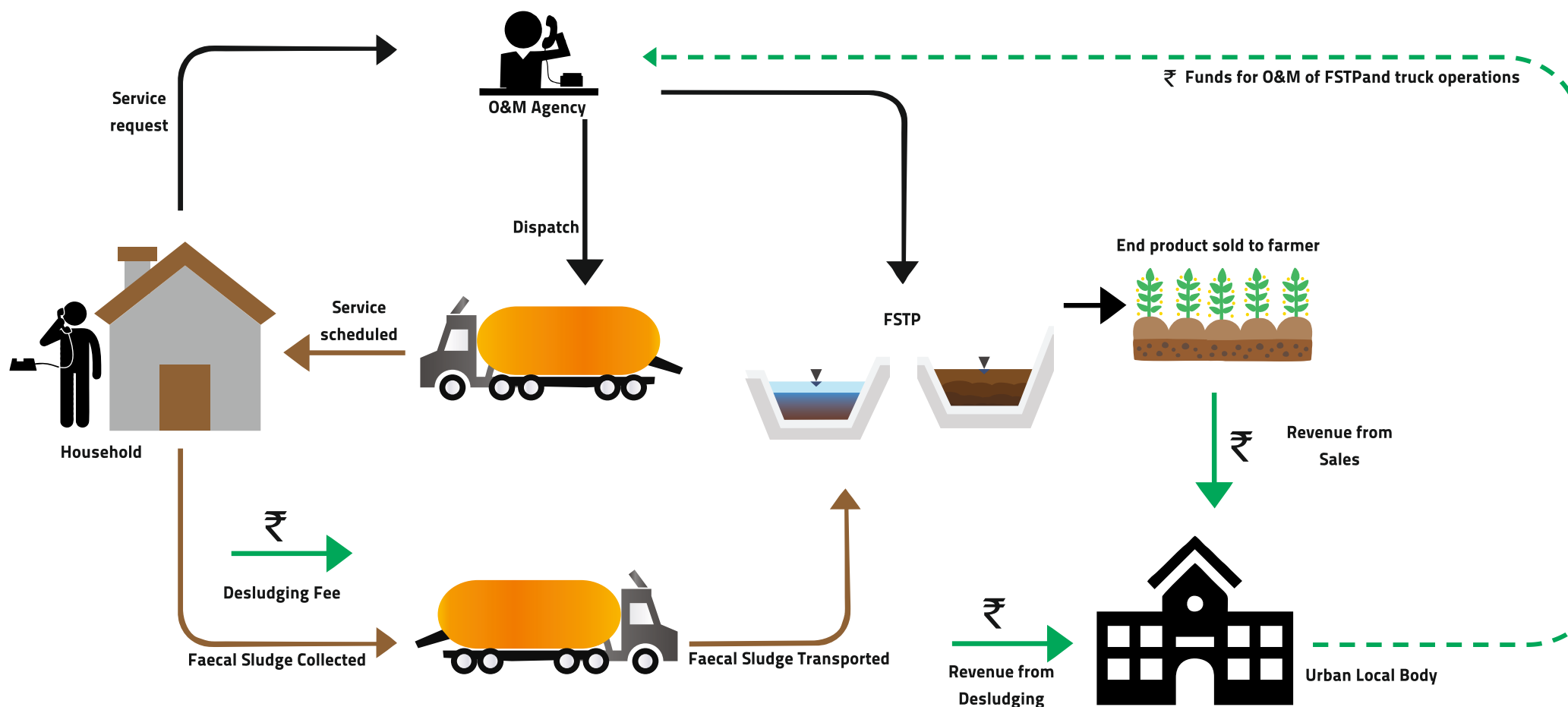
Collection of Faecal Sludge

- **Demand based collection:**
  - Easy access to desludging services through a toll-free number, managed by the O&M service provider
  - Service provided within 48 hours of demand placed
- **Cost:** INR 1,000 per trip, within city limits
- **Payments:** Digital payments are possible via Point of Sale payment, along with cash
- **Tracking:** GPS tracking of vacuum trucks
- **MIS:** A database on collection and transportation is maintained regularly and shared with the ULB periodically

Operation and Maintenance of FSTP

- **Supervision:** The FSTP is supervised by a manager, with an operator employed permanently for day-to-day operations
- **Routine Tasks:** Routine tasks such as receiving loads, turning valves and record keeping can be performed by unskilled labour if trained
- **Quality Testing:** Treated sludge and water samples are tested in an accredited lab in Bhubaneswar
- **Sale of FS:** Treated faecal sludge is sold as soil conditioner, revenue generated is accrued to ULB's account
- **MIS:** Database on faecal sludge received and treatment performance maintained and shared with ULB regularly
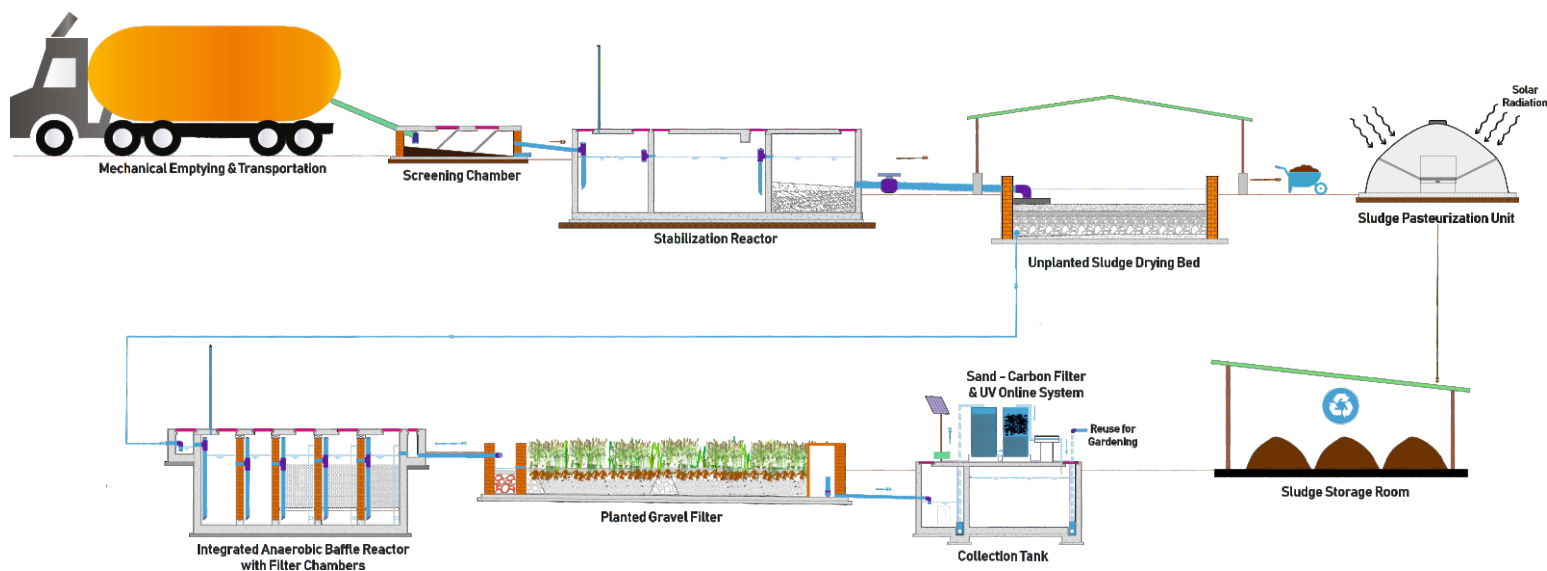
Learnings

- **Continuous engagement of local leaders:** The success and sustainability of a project like this depends to a large extent on the interest and influence of local leaders.
- **Context is important:** Operational models for each project need to be tailored to suit the local context.
- **Standards and protocols:** Lack of standards and protocols for faecal sludge or septage treatment by the Pollution Control Board is often cause for delays and road blocks in implementation.

Flow diagram: Household — Service request → O&M Agency → Dispatch → Service scheduled → (truck) → Household. Household → Desludging Fee → Faecal Sludge Collected → (truck) → Faecal Sludge Transported → FSTP → End product sold to farmer → Revenue from Sales → Urban Local Body. Revenue from Desludging → Urban Local Body. ₹ Funds for O&M of FSTP and truck operations → O&M Agency.

Treatment Process Faecal Sludge Treatment Plant , Dhenkanal Municipality

Mechanical Emptying & Transportation

Screening Chamber

Stabilization Reactor

Unplanted Sludge Drying Bed

Solar Radiation

Sludge Pasteurization Unit

Integrated Anaerobic Baffle Reactor with Filter Chambers

Planted Gravel Filter

Sand – Carbon Filter & UV Online System

Reuse for Gardening

Collection Tank

Sludge Storage Room