

# Faecal Sludge Treatment Plant, Dhenkanal

## PROJECT BRIEF

Dhenkanal is a town, as well as a district headquarter, located 60 kms north west of the state capital Bhubaneswar in Odisha. The town has around 15,000 households, all of which rely on some form of on-site sanitation system, such as pits or septic tanks for containing and partially treating the excreta generated from toilets. The urban local body (local government) has made provisions for mechanical desludging of these on-site containment units. However, the town lacked any dedicated disposal or treatment arrangement for faecal sludge collected and transported through these desludging trucks.

In 2016, Practical Action, CDD Society and CPR with the support of Arghyam and the Bill and Melinda Gates Foundation came together to demonstrate sustainable and innovative solutions for managing faecal sludge in 2 pilot towns of Odisha under Project Nirmal, Dhenkanal being one of them. A low operative intensive FSTP, which is part of the larger integrated FSM initiative for the town, has been designed and built, so far.

## TREATMENT OBJECTIVES

- Remove pathogens and other harmful micro-organism from faecal sludge
- Stabilize the sludge to reduce bio-chemical parameters
- Improve the characteristics of bio-solids to increase its reuse potential
- Reduce reliance on energy and external inputs to make the operations robust and low resource intensive
- To meet discharge and other regulatory standards as prescribed by the government

## SYSTEM IN BRIEF

The sludge treatment part of the FSTP is built in 3 parallel streams, each catering to 9 KLD of a total capacity of 27 KLD. This was done to cater to the low incoming sludge load during the initial phase of implementation and also undertake maintenance of each stream as needed with other two streams operating as usual, thus not disrupting the entire treatment process.

## SALIENT FEATURES

- Capacity: 27 KLD
- Capex: INR 28.5 Million
- Opex: INR 1.05 Million per annum
- Date of commissioning: 26 October 2018
- Area : 1.5 acres ( 0.9 acres for the treatment plant)

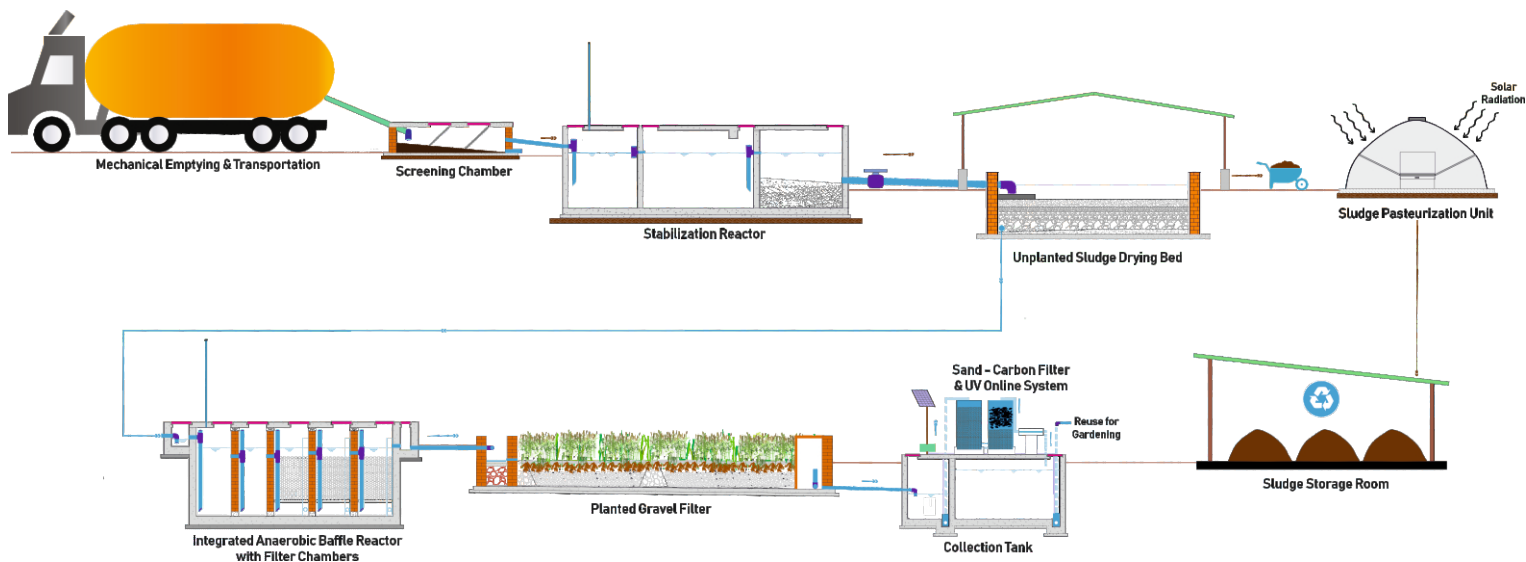
## REUSE OPTIONS

- The treated water, which shall be around 22-25 m<sup>3</sup> per day at full capacity shall be partially used for irrigating the landscape within the FSTP premise; and the remaining used to recharge a nearby waterbody.
- The dried and disinfected bio-solids are sold to local farmers as soil conditioner. The sale from the revenue is additional income to the ULB.



Stage	Module	Function
Pre-treatment	Screen and Grit chamber	Receiving sludge from the truck and removal of inorganic solid waste and silt through physical screening and settlement
Solid stabilization	Stabilization reactor	Digest the sludge anaerobically for reducing bio-chemical parameters and improve dewaterability
Sludge dewatering and drying	Sludge drying bed	Dewaters the liquid from digested sludge and also enables drying.
Sludge disinfection	Sludge pasteurization unit and storage	Kills pathogens and micro-organisms by raising the temperature of the sludge to more than 60 degree.
Liquid component – Secondary treatment	Anaerobic baffle reactor and filter	Anaerobically digests the organics present in the percolate from the drying bed
Liquid component – Tertiary treatment	Planted gravel, Sand and carbon filter	Physically removes the suspended solids and reduces nutrients from the treated percolate
Liquid component – Disinfection	Ultra violet radiation	Kills pathogens and other disease-causing microorganisms by using ultra violet wavelength radiation.

## TREATMENT PROCESS FLOW



## SYSTEM IN BRIEF

Sample	TS(mg/L)	TSS(mg/L)	COD(mg/L)	BOD(mg/L)	Faecal Coliform (MPN/100 mL)	TKN(mg/L)
Inlet FS - Raw	22,000	N.A	41,600	2,512	11 x 10 <sup>8</sup>	1,030
ABR inlet - percolate	5,520	1,350	1,700	49	4.3 X 10 <sup>5</sup>	119
Treated water	1,380	20	134	9	<2	51
Sample	TS(%)	VS(%)	Moisture content(%)	Calorific value(kj/Kg)	Total Carbon(%)	Total Nitrogen(%)
Dried Bio-solids	87.2	24.5	12.8	2,580	24	0.2



Scan through your phone camera to locate the FSTP on map

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