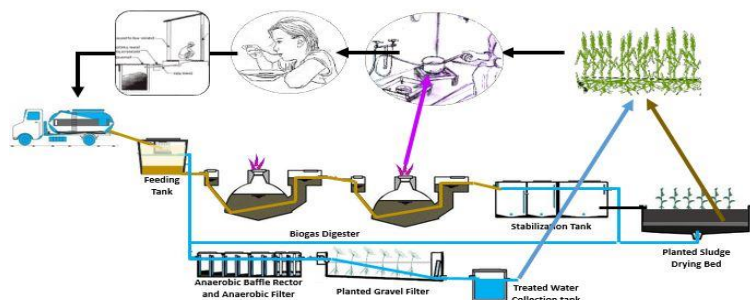




## Site C: Faecal Sludge Treatment Plant (FSTP)-Lubhu, Mahalaxmi Municipality

### Key Information:

- Design Capacity: 6 cum/ week
- Prefabricated treatment modules except Planted Sludge Drying Beds and Planted Gravel Filter.
- Constructed within 45 days in 300 sq. m land area
- Gravity flow system
- Financial support: <sup>1</sup>BORDA
- Technical support: ENPHO<sup>2</sup> and CDD Society<sup>3</sup>
- Benefits: Biogas, treated water and compost manure



### Components of Treatment Plant including their sizes and functions Figure 1 Flow diagram of FSTP

	Name of Module	Size	Function
Solid Treatment Units	Feeding Tank (FT) (common for both treatment plant)	4 cum	<ol style="list-style-type: none"> <li>1. Bar-screen provided within feeding tank separates solid waste;</li> <li>2. Incoming faecal sludge (FS) is retained for 3-4 hours for solid-liquid separation;</li> <li>3. After retention, supernatant is discharged to settler with anaerobic baffle reactor (ABR) and anaerobic filter (AF) and sludge into biogas digester.</li> </ol>
	Biogas Digester (BGD) (in series)	6 cum each (2 numbers)	<ol style="list-style-type: none"> <li>1. Anaerobic treatment of highly concentrated organic sludge;</li> <li>2. Produces biogas as the by-product.</li> </ol>
	Stabilization Tank (ST)	10 cum	<ol style="list-style-type: none"> <li>1. Allow the sludge to get further stabilized, which leads to settlement of solids at the bottom and supernatant to flow into the settler with integrated ABR and AF.</li> </ol>
Water Treatment Units	Planted Sludge Drying Beds (PSDB)	20 sq. m each (3 numbers)	<ol style="list-style-type: none"> <li>1. Digest the sludge to reduce the organic activity, thereby reducing the pathogen content.</li> <li>2. Dehydrates the sludge to produce bio-solids that can be easily transported or handled for reuse applications.</li> </ol>
	Integrated Settler, Anaerobic Baffle Reactor (ABR) with Anaerobic Filters (AF)	10cum	<ol style="list-style-type: none"> <li>1. Wastewater undergoes sludge stabilization with biological treatment in settler;</li> <li>2. Anaerobic degradation of suspended and dissolved solids while flowing through sludge blanket making use of the pollutants for metabolism by anaerobic bacteria in ABR;</li> <li>3. Allows the growth of microorganisms to make use of the pollutants for metabolism, degrading the organic material present in the wastewater in AF.</li> </ol>
	Planted Gravel Filter (PGF)	15 sq. m	<ol style="list-style-type: none"> <li>1. Aerobic tertiary treatment unit where the pollutants (mostly nutrients) present in the wastewater are degraded aerobically.</li> </ol>
	Collection Tank	4 cum	<ol style="list-style-type: none"> <li>1. Collects treated water.</li> </ol>

### Performance of Treatment Plant

Parameters	Unit	Treated water	Dried Sludge (removed from PSDB)	Vegetable (Cauliflower)
pH	-	7.9	5.9	-
Total Suspended Solids (TSS)	mg/L	36	-	-
Total Phosphorus	mg/L	8.2	0.69% per gram	-
Total Nitrogen	mg/L	324	2% per gram	-
Biochemical Oxygen Demand (BOD)	mg/L	125	-	-
Chemical Oxygen Demand (COD)	mg/L	266	-	-
Potassium (K)	mg/L	221	313	-
Helminths	Per L or per kg	Absent	600 per kg	Absent
E.coli	CFU/mL	2.99*10	900	Absent

<sup>1</sup> Bremen Overseas Regional Development Association

<sup>2</sup> Environment and Public Health organization

<sup>3</sup> Consortium for DEWATS™ Dissemination Society