



Sustainable Faecal Sludge Treatment and Reuse: A Case of Faecal Sludge Treatment Plant, Lubhu

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Introduction

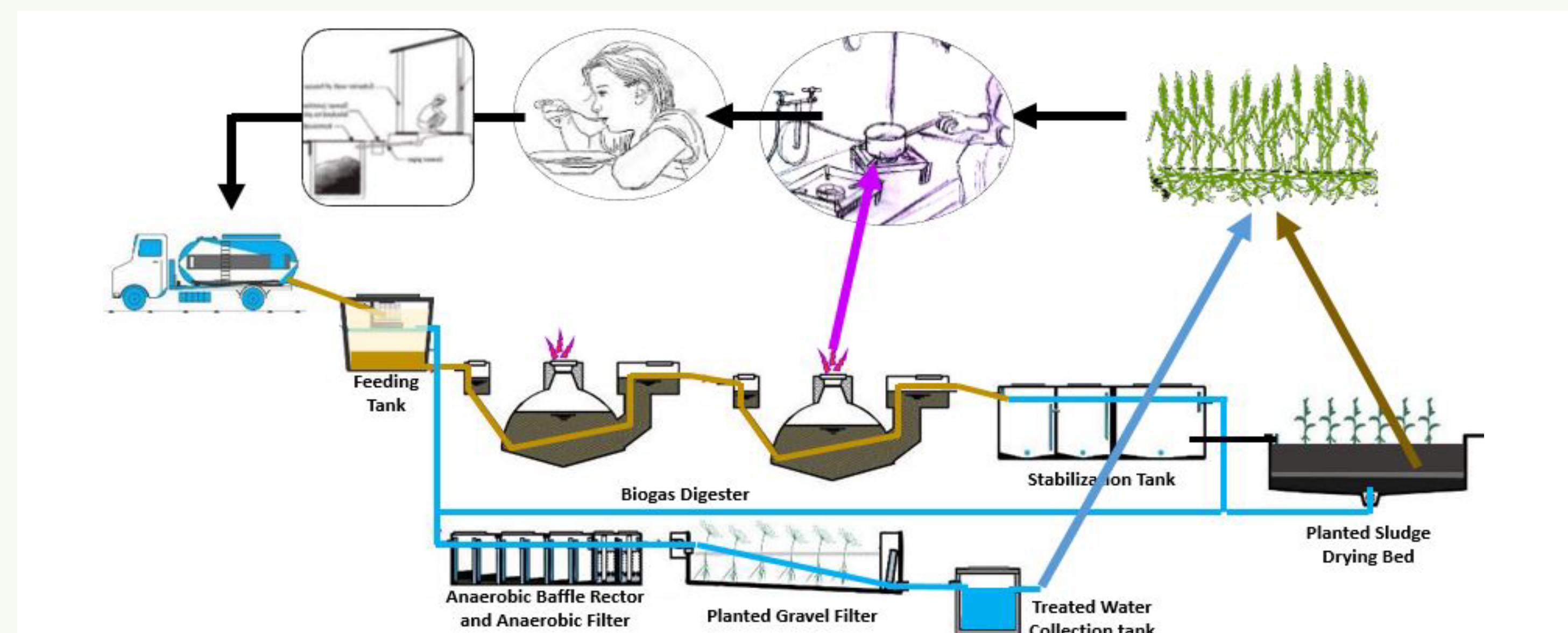
Location: Lubhu, Mahalaxmi Municipality, Lalitpur
Implementing Partners: ENPHO, and CDD Society (India)
Supported by: BORDA, Help for Children Beilngries-Kathmandu, Mahalaxmi Municipality

Special Features

- Prefabricated treatment Modules except Planted Sludge Drying Beds and Planted Gravel Filter.
- Constructed within 45 days
- Footprint: 300 sq. m
- Design Capacity: 6 cum/ week.
- Gravity flow system

3. From the SSP assessment,

- No leakages and seepage found - prefabricated and underground components
- Well-trained operator
- Proper use of appropriate personal protective equipment
- Inspection and record keeping of incoming FS before feeding into the treatment plant
- Availability of concern body (SSP team) to provide the required technical support and guidance for any susceptible events
- The quality of vegetables grown using the treated water was found with no helminthes indicating safe consumption of the products.



Components of Faecal Sludge Treatment Plant(FSTP):

- Feeding Tank (FT)
 - Solid Treatment Components:
 - Biogas Digester (BGD)
 - Stabilization Tank (ST)
 - Planted Sludge Drying Beds (PSDB)
- Liquid Treatment Components:
 - Settler with Integrated Anaerobic Baffle Reactor (ABR) and Anaerobic Filter (AF)
 - Planted Gravel Filter (PGF)
- Collection Tank (CT)

Methodology

- Field observations
- Interview with operator
- Risk identification to exposure groups at the treatment plant following SSP framework.
- Calculation of monetary value of benefits obtained from treatment plant



Overview of Poster

This poster presents Sustainability study of FSTP through Financial Assessment and Sanitation Safety Planning Approach.

Results

1. From the field observation, it has been found that within 21 months of operation:
 - 462 m³ of FS has been treated from which 336 m³ of treated water, 48 m³ of compost manure and 631 m³ of biogas was reclaimed and used.
 - Treatment modules are properly maintained and are operational.



2. The interview with operator (who is also the farmer using the end products of the treatment plant), imparted that

- Treatment plant has benefitted them with surplus water for irrigation (even during the dry season), compost manure and the sufficient biogas for cooking.
- They do not have to buy the additives (especially minerals) to increase the quality of soil.
- Vegetable production is high compared to past years as they are growing vegetables year round.



4. The calculation of monetary value of benefits obtained showed that about NPR 426,296 could be gained per annum, if treatment plant is fully operational.

Benefits	Benefits		Remarks	Operational Expenses		
	1.75 years-till December 2017	1 year		1.75 years-till dec.2017	1 year	
From fuel	24,750	14,143	Use of alternative fuel LPG (18 nos.) till date assuming that worth NPR 1375 / cylinder.	Personal Protective Equipment	2,794	1,596
From compost	87,500	50,000	It represents the worth of cow dung they used to buy.	caretaker	-	36,000
Additives	26,250	15,000	It represents the worth of minerals they used to buy.	Regular O&M	-	34,650
Water	52,500	30,000	It represents the worth of water they used to buy.	Repair and Maintenance	-	50,000
visitor's Fee	7,350	4,200	Based on the visitor's fee collected till date.	Farmer's salary	-	120,000
Tipping Fee	-	44,000	This has not been collected yet. But assuming NPR.500 collected per trip (154 trips till date).	Seeds for cultivation	-	20,000
Vegetable Production	-	224,000	Based on the fiscal year 2073/74.			
Compost value	-	307,200	Considering the density of loam (1280 kg/m ³), total mass of compost value			
Total	688,543			Total	262,247	

It represents the time when the abstract was written (December,2017).

Conclusion

- Faecal Sludge Management can be merged with resource generation.
- Health risk from exposure to hazardous event can be minimized.
- Zero waste system, as multiple by-products (biogas, treated water and compost manure) having financial values are produced and are in use.
- FSTP, as such, which closes the sanitation loop, is financially sustainable (benefits: NPR 688,543 and expenses: NPR 262,247) and safe. Hence can be replicated.

