

Demonstration of Co-treatment of Faecal Sludge and Solid Waste Facility in Kushtia Municipality

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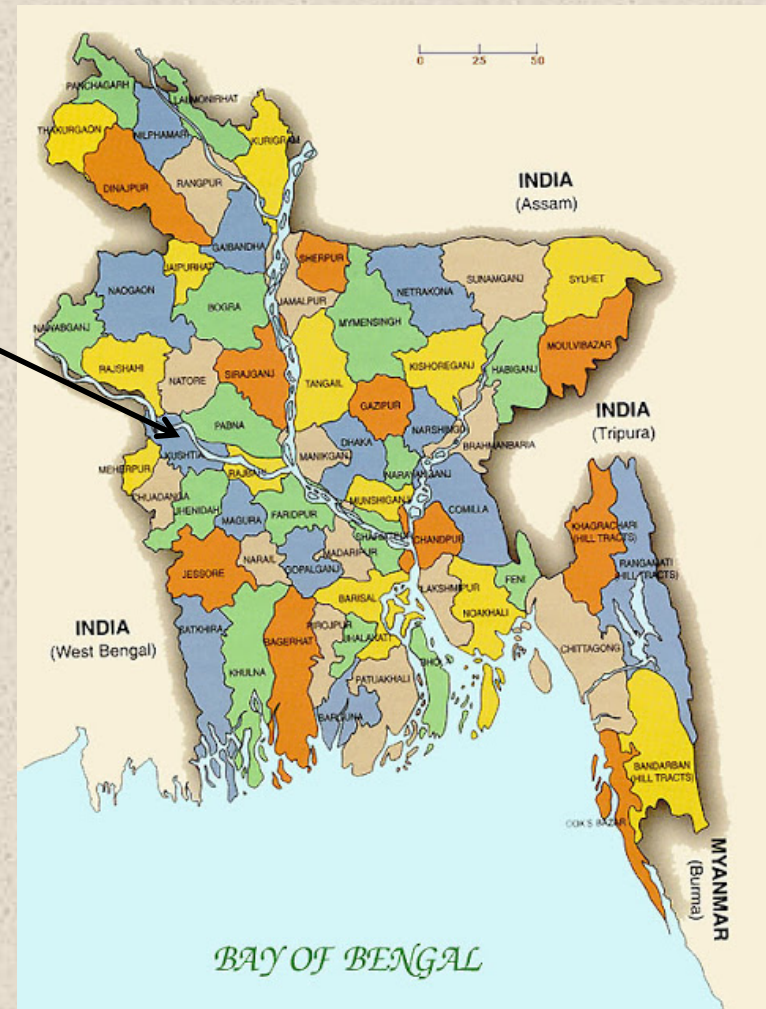
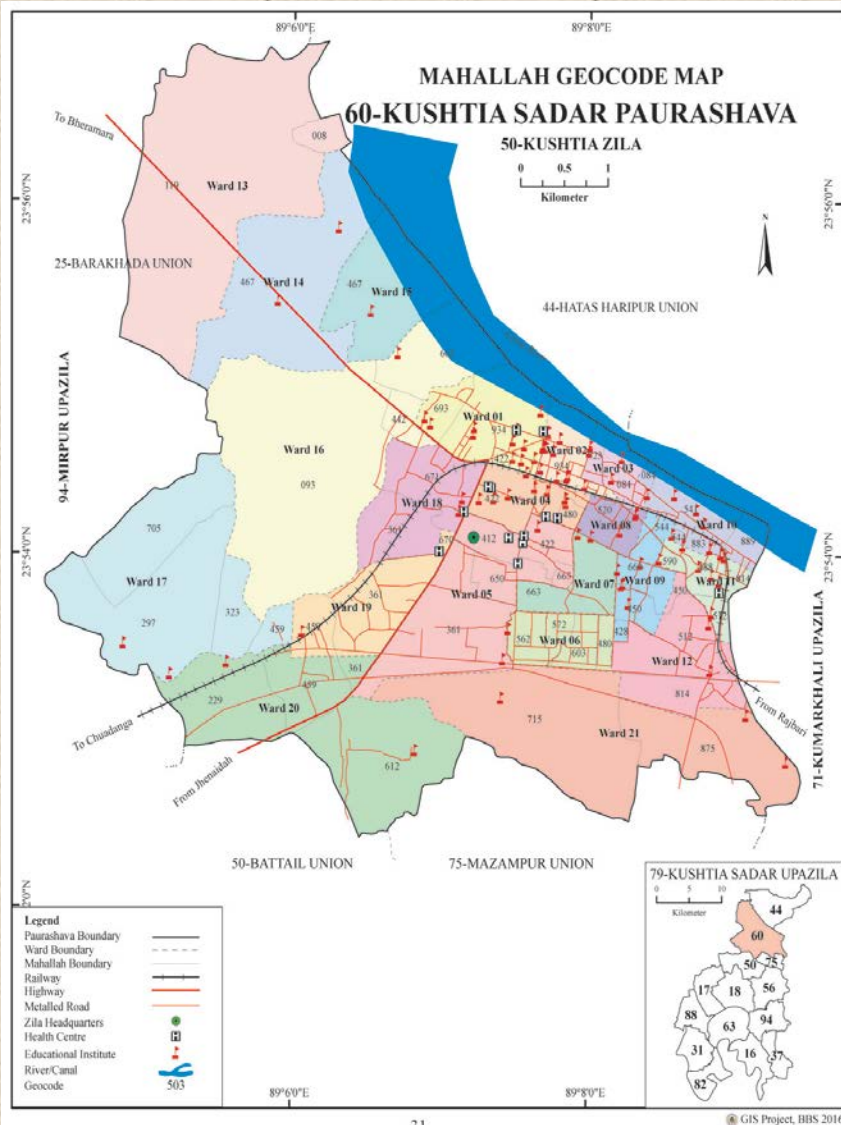
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Location of Kushtia Municipality



Some basic information of Kushtia Municipality

1. Year of Establishment : April 1, 1869
2. Class of Municipality : A
3. Area : 42.79 Sq.km.
4. Number of Ward : 21
5. Number of Holding : 33,805
6. Number of Household : 89,020
7. Number of Population : 3,96,143 (June, 2018)
8. Number of Regular Staff : 165

IRRC Background in Kushtia Municipality

- With the support from Institute for Global Environmental Strategies (IGES) and UNCRD and in partnership with Department of Environment & Waste Concern, the municipality along with LGED established a pilot composting plant at Baradi (western part of the municipality) in 2008. Municipality Started IRRC operation through co-composting technology since 2012 with the help from UN-ESCAP and Waste Concern.

Anwar Ali, Mayor, Kushtia Municipality is inaugurating the co-composting works in the Compost Plant..



Institutional Structure to Operate IRRC

- ❑ Municipality has the sole responsibility of providing waste management/ sanitation services within the city. It has **Conservancy wing** under **Health & Family Planning Department** to provide the waste management services. It also has **Water Supply and Sanitation wing** under **Engineering Department** to provide sanitation services.
- ❑ Usually the Municipality provides this services to the citizen with it's own source revenue like **Holding Tax and Vacutug Service Charge**. Central Government sometimes come with different **development partner** to help the municipality through technical as well as financial support.
- ❑ The **Central Government** formulates different **concerned rules and regulations** and the municipalities has to provide the services in accordance to that rules and regulation.
- ❑ The overall sanitation situation is at first assessed by the **Water Supply & Sanitation Standing Committee**, then they proceed it to **Town Level Coordination Committee (TLCC)**, then the TLCC send it to Municipality Council's **General Meeting**.

IRRC in Kushtia Municipality

- ❑ Kushtia Municipality established its IRRC in 2008 and started producing co-compost through FSM since 2012.
- ❑ The IRRC has the capacity of 2 (two) Ton of solid waste per day, and 8-9m³ of faecal sludge per day.
- ❑ The IRRC consists of 12 perforated composting boxes, 2 drying bed for Faecal Sludge Treatment and a Coco-pit filter for the treatment of the liquid faecal sludge.
- ❑ The IRRC has about 10 acres of land, and is located about 5 km away from the city centre.



Solid Waste collection under IRRC

- ❑ The Municipality has door to door Van service for household organic/inorganic waste collection. It charges only BDT 50/per household per month.
- ❑ The Municipality deploy 2 bigger Van in its 2 kitchen market to collect and transport the market waste to IRRC.
- ❑ The Municipality has 6 Garbage Truck to collect solid waste from different transfer station situated within the city.



Van service



Van for Kitchen Market



Garbage Truck

Vacutug Service in Kushtia Municipality

- ❑ Before 2013, the municipality only **charge the fuel cost** to the city dweller for emptying Septic Tank/Pit Latrine services which incur a huge amount of subsidy to this sector.
- ❑ Municipality provides a lot of **awareness campaign** for the city dweller to use municipal vacutug service for their septic-tank and pit latrine emptying.
- ❑ The municipality imposed a fixed service charge for vacutug service from 2013 with the vision of **developing a regular mechanism** for this service with **financial calculation**. Observing still a significant loss, the municipality revised the vacutug service charge in August 2016.

Vacutug Service Charge (In BDT), effective from Feb 2013 to Jul 2016			
Irrespective of vacutug Size			
1	Septic Tank	800-1000/-	+ 15% Vat
2	Pit Latrine	300-500/-	

Vacutug Service Charge (In BDT), effective from Aug 2016					
Septic Tank					
Sl	Trip/Vacutug Size	1000 Lt.	2000 Lt.	4000 Lt.	Vat
1	1 st Trip	800/-	1000/-	1200/-	15%
2	Every Next Trip	200/-	300/-	500/-	
Pit Latrine					
3	Full Empty	500/-			15%

Vacutugs in Kushtia Municipality



1000 Lt. Vacutig



2000 Lt. Vacutig



4000 Lt. Vacutig

Faecal Sludge collection under IRRC

- ❑ The Municipality has 3 Vacutug with the capacity of 1000 Litre, 2000 Litre and 4000 Litre for faecal sludge collection and transport to the IRRC.
- ❑ The Municipality has shortage of capacity for both collection and drying of the faecal sludge. On an average 5-6 application for emptying has come everyday, whereas the municipality can serve 3-4 per day. The collection is about 15-16m³ whereas the drying bed capacity is about 8-9m³ per day.
- ❑ The municipality has specific service charge system for its Vacutug operation:



Income-Expenditure Analysis of Vacutug Operation 2018

Month	Income (BDT)	Expenditure (BDT)				Profit/Loss
		Salary	Fuel	Maintenance	Total	
Jan	128,000	35850	8516	0	44,366	83,634
Feb	122,800	42630	20963	21200	84,793	38,007
Mar	82,600	45750	25286	0	71,036	11,564
Apr	72,100	45690	19521	70050	135,261	-63,161
May	115,600	50100	29478	57420	136,998	-21,398
Jun	99,900	52140	20509	0	72,649	27,251
Jul	106,200	52200	27514	0	79,714	26,486
Aug	80,400	55350	24631	0	79,981	419
Sep	71,500	50460	21290	49350	121,100	-49,600
Oct	104,175	56820	19980	10590	87,390	16,785
Nov	108,000	46190	24893	72500	143,583	-35,583
Dec	108,200	51080	24566	26480	102,126	6,074
Total	1,199,475	584260	267147	307590	1,158,997	40,478

Private Entrepreneur in IRRC Operation

- ❑ The Municipality has outsourced its IRRC to Aprokashi Ltd in 2016, a private firm has the experience and License of producing and marketing of the produced compost. ERAS, a franchise of Aprokashi Ltd is operating the Kushtia IRRC now.
- ❑ Now, the municipality only ensures that both the organic kitchen/market waste and faecal sludge has been transported to the IRRC through Garbage Truck and Vacutug respectively.
- ❑ Manpower involved in the IRRC by Aprokashi Ltd.:

Sl.	Position	Number	Gender
1	Manager (Full-time)	1	Male
2	Environmentalist (Part-time)	1	Male
3	Supervisor (Full-time)	1	Male
4	Compost Worker (Full-time)	6	Male-4, Female-2
5	Security Guard (Full-time), provide by the municipality	3	Male-3
	Total	12	Male-10, Female-2

Operational Status of the IRRC by ERAS

- ❑ The Municipality has outsourced its IRRC to Aprozashi Ltd/Environmental Resource Advancement Services (ERAS), a private firm has the experience and License of producing and marketing of the produced compost.
- ❑ Now, the municipality only ensures that both the organic kitchen/market waste and faecal sludge has been transported to the IRRC through Garbage Truck and Vacutug respectively.
- ❑ Operational Status of IRRC by Aprozashi Ltd./ERAS are as follows:

Month in 2019	Sludge Collection in IRRC (in m ³)	Soild Waste Collection in IRRC (in Tonne)	Amount of Compost Produced (in Tonne)	Operation Cost (in BDT)	Value of Compost (in BDT)
Jan	48	45	12	49,000	120,000
Feb	42	42	10	51,000	100,000
Mar	52	51	11	50,000	110,000
Apr	56	48	15	50,500	150,000
Total	198	186	48	2,00,500	4,80,000

Composting Process at IRRC



Achievements

- ❑ Vacutug Service Charge revision to make the system financially sustainable.
- ❑ Bangladesh Agricultural Research Institute (BARI) has demonstrated the produced co-compost to 4 vegetables and 2 flowers and the result is significantly positive.
- ❑ Develop OHS Training Manual and conduct training & capacity building program for emptier to ensure safe and hygienic emptying services.
- ❑ Outsource the IRRC to Aprojashi/ERAS through PPP approach.
- ❑ Market acceptance study on co-compost as organic fertilizer in Kushtia.
- ❑ Capacity building program for the Pourashava Staffs and councils to ensure efficient and effective FSM system.
- ❑ National Environmental Award 2018 in “Environmental Conservation and Pollution Control” category.

Challenges

- ❑ The trained IRRC labour/staff is not available in the market.
- ❑ Municipality can collect 50% of its solid waste everyday.
- ❑ Only 1 FSTP , located in the western side of the city is incurring fuel and labour loss to the city authority .
- ❑ Marketing of the co-compost is very difficult as still a significant number of farmer/people trying to think it as an alternative of chemical fertilizer.
- ❑ The number of licensed private entrepreneur to operate IRRC (or waste treatment facility) in Bangladesh is very few. Moreover, the private operator in Kushtia still cannot approach to the bigger companies as they need big amount of compost at a regular basis.
- ❑ Number of Vacutug is still insufficient to the city authority; existing Vacutug cannot serve all the area within the city.
- ❑ The present capacity of the drying bed is too insufficient.

Present Concern/Area to work

- ☐ Ensure effective & efficient use of the infrastructure, i.e. IRRC, Vacutug, Garbage Truck, etc.
- ☐ Increase the present capacity of the Drying bed and Vacutug service.
- ☐ Increase the present compost production capacity.
- ☐ Introduction of Sanitation Tax as a regular tax.
- ☐ Financing for long term treatment option.
- ☐ Develop a guideline for outsourcing Vacutug service as well as comprehensive IRRC operation.
- ☐ Purchase at least 2 small Vacutug of 1000 Lt. and 2000 Lt.

Video Documentary

Waste Management in Kushtia Municipality

YouTube link:

<https://www.youtube.com/watch?v=HduglZicwpM>



Thank You