

Stakeholders' Meeting on

**Dhaka City Solid Waste to Electric Energy**  
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LGED Bhaban, Dhaka

**B.D. Rahmatullah**  
**Director, Power Cell**  
**Ministry of Power, Energy and Mineral Resources**  
**GOB**

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## **1. Current position of electricity production**

- Installed capacity : 4710 MW
  - GOB : 3420 MW
  - Private : 1290 MW
- Production Capacity : 3622 MW
- Firm Capacity : 3424 MW
- Maximum demand : 3592 MW

## **2. Current problems in electricity production sector**

- Production Capability less than demand
  - Load shedding (2000-01) = 1042 hrs
  - Load shedding (2000-01) = 663 MW
  - Unexpected blackout
- Increasing demand  
Annual demand growth : 10%
- Commercial fuels used for electricity production

## **3. Electricity production by fuel type**

Natural gas : 89%

Liquid fuel : 6%

Hydro : 5%

## **4. Management of Dhaka City Solid Waste**

- Cleaners dump the sweepings on the roadside
- City dwellers throw the wastes on the roadside and open dustbins kept on the road side
- DCC trucks carry these wastes to the dumping sites.
- Dumped wastes spread bad odour
- Pollute environment

## 5. Year-wise projection of waste generation in Dhaka city

Year	Quantity of wastes (Thousand tonnes/day)	Quantity of Wastes (Million tonnes/year)
2003	5.65	2.06
2005	6.30	2.30
2007	7.03	2.57
2009	7.84	2.86
2011	8.75	3.19
2013	9.76	3.56
2015	10.89	3.97
2017	12.15	4.43
2019	13.55	4.95
2021	15.11	5.52

## 6. Characteristics of Wastes of Dhaka City

(As per analysis by the Institute of Fuel Research and Development, BCSIR)

Chemical analysis	
<u>Constituent</u>	<u>Amount (%)</u>
Moisture	50 – 70
Carbon	6.02 – 26.06
Hydrogen	1.20 – 3.53
Nitrogen	0.46 – 1.62
Sulpher	0.00 – 0.02
Ash	13 – 33

Calorific values		
<u>Condition</u>	<u>Calorific values</u>	
	<u>BTU/lb</u>	<u>Kcal/kg</u>
As received	1386-2600	770-1444
Air dry	2900-4300	1611-2389
Over dry	3200-6200	1833-3444

## **7. Pre-feasibility study for power production from city wastes**

Technologies available for processing solid wastes

### **i). Landfill**

- Biogas and bio-fertilizer production
- Amount of gas less than that produced with other technologies

### **ii) Mass Burn Incinerator**

- Heat generated by burning wastes used for running boilers and then steam turbines
- Unsuitable for Dhaka city wastes because of high moisture content

### **iii) Fluidised Bed Incinerator**

- Pre-processing needed before burning wastes to generate heat
- Unsuitable because of high cost

### **iv) Gasification**

- Wastes converted into CO and H<sub>2</sub> at 1100°C
- Still in the R & D stage

### **v) Plasma Converter**

- Electricity utilised to reach a temperature of 6000°C for converting wastes into CO and H<sub>2</sub>
- Expensive process

## **8. Steps undertaken by GOB for production of electricity from wastes**

- As per decision of the inter-ministerial meeting, tenders have been invited for short listing of bidders
- In 1998, under the supervision of the Power Cell and with the financial support from the World Bank, the following two studies were completed:
  - Quantity of Dhaka City Solid Wastes
  - Quality of Dhaka City Solid Wastes

- An Inter-ministerial Committee constituted in 1999 with the Director General (DG) of the Department of Environment (DOE) as Convenor to report on the feasibility of Wastes to Electric Energy.
- A Committee formed in 2001 with the DG, DOE as convenor to report on the feasibility of plasma technology.
- A Committee of Experts formed in 2003 with the DG, DOE as convenor to prepare a TAPP/PCP on Waste to Energy and Fertilizer.

## **9. Pre-feasibility study for power generation from solid wastes under PREGA**

- 4 projects identified for pre-feasibility study:
  - Waste to Electricity
  - Co-generation in sugar industry
  - Solar-wind-diesel hybrid for power generation
  - switch from oil to gas for power generation
- Report on pre-feasibility study for Dhaka City Solid Wastes to Electric Energy Project prepared by BCAS has been submitted to ADB and NIC

## **10. Recommendation**

- A 20-25 MW power plant may be installed based on the quality and current generation of solid wastes in Dhaka City.
- It may be considered as a Waste Management Project rather than as a Electricity Generation Project
- In view of the pollution effect of city wastes, this project merits implementation on an urgent basis.