Pre-feasibility Study on :
Waste to Electricity in Dhaka City

Promotion of Renewable Energy, Energy Efficiency and Greenhouse Gas Abatement (PREGA)

Socio-Economic Aspects

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Population

Dhaka City

Year	Population (in Million)
1981	3.4
1991	6.10
2001	9.9

Generation of Waste in Dhaka City per day

Year	Waste (in Ton)
2003	5650
2010	8280
2021	15110

Financial Aspects

Base case

Investment cost	:	1573.66 million Taka
Annual operating cost	:	61.8 million Taka
IRR	:	–6%
NPV (at 10%)	:	-77.57 million Taka
B-C Ratio (at 10%)	:	0.81

Project Sensitivity

(15% Fall in Revenue)

IRR	:	-10.79%
NPV (at 10%)	:	-328 million Taka
B-C, Ratio (at 10%)	:	0.20

15% Increase in Investment Cost

IRR	=	-3.20%
NPV (at 10%)	=	-278.50 million Taka
B-C Ratio (at 10%)	=	0.41

Financial Analysis with Carbon Benefit (1.13 million tons of CO_2 Reduction per annum)

with 5 dollar per ton of CO_2

IRR = 84.02%

NPV (at 10%) = 2136.99 million Taka

B-C ratio (at 10%) = 6.2

with 3 dollars per ton of CO_2

IRR = 54.73%

NPV (at 10%) = 1251.79 million Taka

B-C ratio (at 10%) = 4.4

15% Fall in Revenue (with Carbon Benefit)

IRR	=	39.62%
NPV (at 10%)	=	801.25 million Taka
B-C (at 10%)	=	2.95

15% Increase in Investment Cost (with carbon benefit)

IRR	=	43.24%
NPV (at 10%)	=	1050.25 million Taka
B-C Ratio (at 10%)	=	3.21

Benefits from local Environmental Improvement

Dump Site

Affected Group 4,500 Households

Sample : 50 Households.

82% willing to pay Tk.30 per month

Demand Curve : D = a-1.67p

Annual benefit : 1.6 million Taka (1)

Garbage Collection Point

4,920 Garbage Points

Affected group 23,800 Households

Sample size 50 Households

68 percent would pay 50 Taka per month

Demand Curve D = a – 1.56p

Annual benefit = 28.3 million Taka (2)

Total Annual Benefits (1+2) 1.6 + 28.3 = 29.9 million Taka

Economic Analysis

Health, Environment Benefit, (Taka 30 million per annum) and adjustment with appropriate shadow pricing

IRR	=	14.5%
NPV (at 10%)	=	114.92 million Taka
B-C Ratio (at 10%)	=	1.25

15% reduction in Benefit

IRR = 1.26%

NPV (at 10%) = -191.37 million Taka

B-C Ratio (at 10%) = 0.58

For 15% increase in Project Cost

IRR = 6.10%

NPV (at 10%) = -106.17 million Taka

B-C Ratio (at 10%) = 0.8

With carbon benefit the project becomes highly viable and its economic viability is greater than financial viability

Other Economic, Social Benefits

- Job creation : New jobs will be created through landfill project.
- Income generation : Incremental wage increase at land-fill energy plant compared to alternative jobs.
- Trade Balance : Positive trade balance due to reduction of fuel import.
- Efficient use of land : Density of waste in land fill project is higher than present dump-site. The higher the density, the better is the land use.
- Renewable Energy : It is renewable.
- The project will lead to technology transfer and which can be replicated.