



Prospects of Green Jobs in Waste Recycling

Presented by
Waste Concern

www.wasteconcern.org

**Workshop on
GREEN JOBS INITIATIVES IN
BANGLADESH**

Jointly Organized by
Ministry of Labour and Employment
Government of the People's Republic of
Bangladesh
International Labour Organization

Venue: SURMA Hall, Hotel Sonargaon,
Dhaka

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Presentation **Outline**

- I. Overview of Waste Sector in Bangladesh**
- II. Baseline Situation of Waste Recycling**
- III. Opportunity of Green Jobs from Waste Recycling**
- IV. National Policies and Rules Linked with Green Jobs**
- V. Barriers Faced**
- VI. Way Forward**



Overview of Waste Sector in Bangladesh

Urbanization in Bangladesh

Year	Urban Population Density/Sq.Km.		
	Bangladesh Urban	Dhaka Mega City	Dhaka City Corporation Area
1991	2179	4795	15333
2004	3008	8573	18055

Year	Total Urban Population	Percent of Urban Population	Average Annual Growth Rate (%)
1951	1819773	4.33	1.69
1961	2640726	5.19	3.75
1974	6273602	8.78	6.62
1981	13535963	15.54	10.63
1991	20872204	20.15	5.43
2001	28808477	23.39	3.27
2025*	78440000	40.00	-

* source: UMP, Asia News, Summer, 1999

Total Waste Generation in Urban Areas of Bangladesh in 2005

City/Town	*WGR (kg/cap/day)	No. of City/Town	Total Population (2005)	Population** (2005)	TWG*** (Ton/day)		Average TWG (Ton/day)
					Dry season	Wet season	
Dhaka	0.56	1	6,116,731	6,728,404	3,767.91	5,501.14	4,634.52
Chittagong	0.48	1	2,383,725	2,622,098	1,258.61	1,837.57	1,548.09
Rajshahi	0.3	1	425,798	468,378	140.51	205.15	172.83
Khulna	0.27	1	879,422	967,365	261.19	381.34	321.26
Barisal	0.25	1	397,281	437,009	109.25	159.51	134.38
Sylhet	0.3	1	351,724	386,896	116.07	169.46	142.76
Pourashavas	0.25	298	13,831,187	15,214,306	3,803.58	5,553.22	4,678.40
Other Urban Centers	0.15	218	8,379,647	9,217,612	1,382.64	2,018.66	1,700.65
Total	-	522	32,765,516	36,042,067	10,839.75	5,826.04	13,332.89

*WGR= Waste Generation Rate,

** Including 10% increase for floating population,

***TWG= Total Waste Generation, which increases 46% in wet season from dry season

Source: 1 JICA (2004), 2 Chittagong City Corporation, 3 Field Survey, 4 Sinha (2000), 5 Field Survey, 6 Sylhet City Corporation, 7, 8 Field Survey

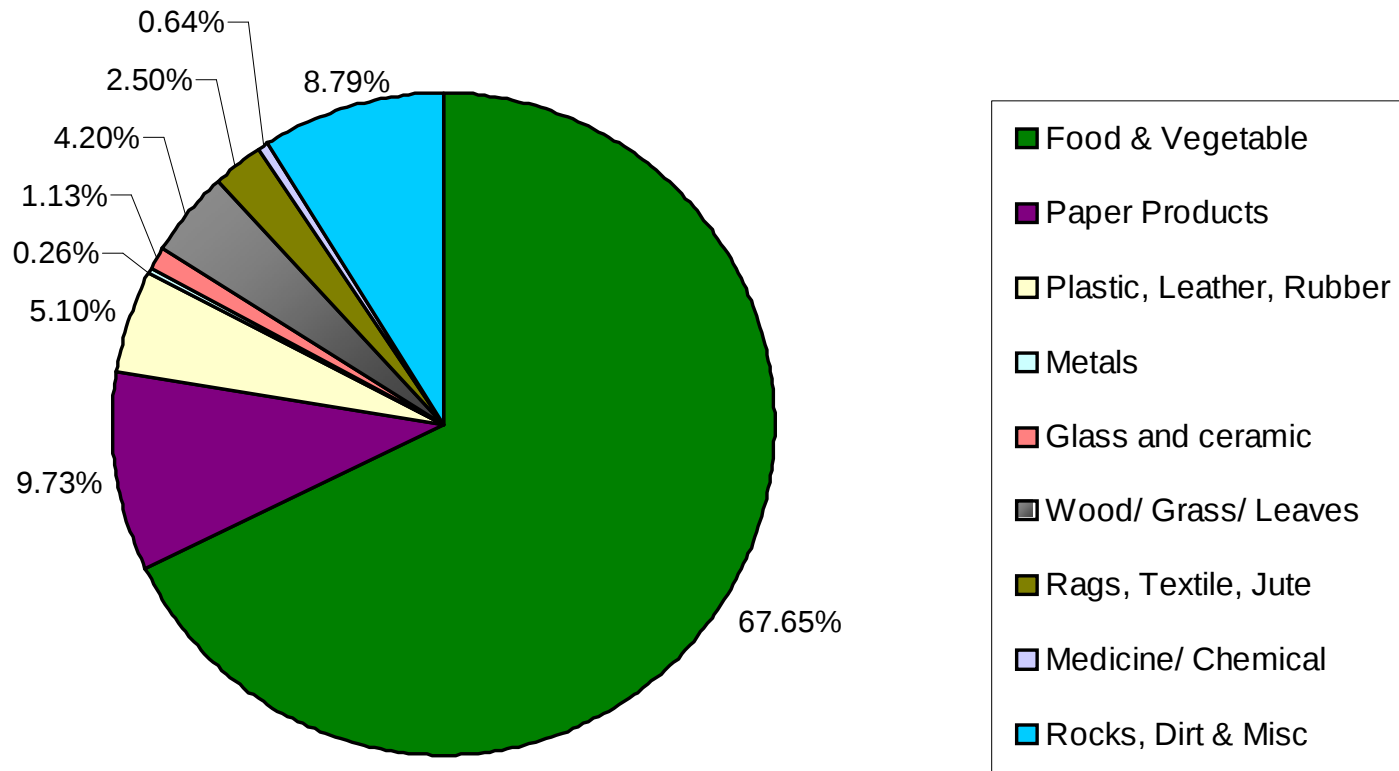
Average per capita urban waste generation rate is estimated as 0.41 kg/capita/day.

Relationship of GDP & Population with Waste Generation

Year	Urban Population	Total Urban Waste Generation (Ton/day)	Per Capita Waste Generation Rate in urban areas Kg/cap/day	Per Capita GDP
1991	20.8 million	6493	0.31*	US \$ 220
2005	32.76 million	13,330	0.41**	US \$ 482****
2025	78.44 million	47,000	0.60***	-

* World Bank, 1998, *** Waste Concern, 2005, *** UMP, 1999, **** GOB, 2006

Fig 1: Average Physical Composition of Urban Solid Waste



High organic matter

>>(more than 70%)

High moisture content

>>(more than 50%)

Low calorific value

>>(less than 1000 Kcal/Kg)

Lack of space for disposal of solid waste

WASTE GENERATION IS **RAPIDLY INCREASING**



Unsanitary Crude **Dumping Practice**

Mymensingh Town



Unsanitary Crude Dumping Practice

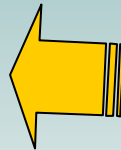


Negative Impacts of Unmanaged Waste

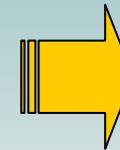
VERMINS
*Spreading more than
40 Diseases*



METHANE GAS
*Bad Odor &
Green House
gas*



LEACHATE
*Polluting
Ground
& Surface Water*



Baseline Situation of **Waste Recycling**



ALUMINIUM



PLASTIC



GLASS



PAPER



BONES

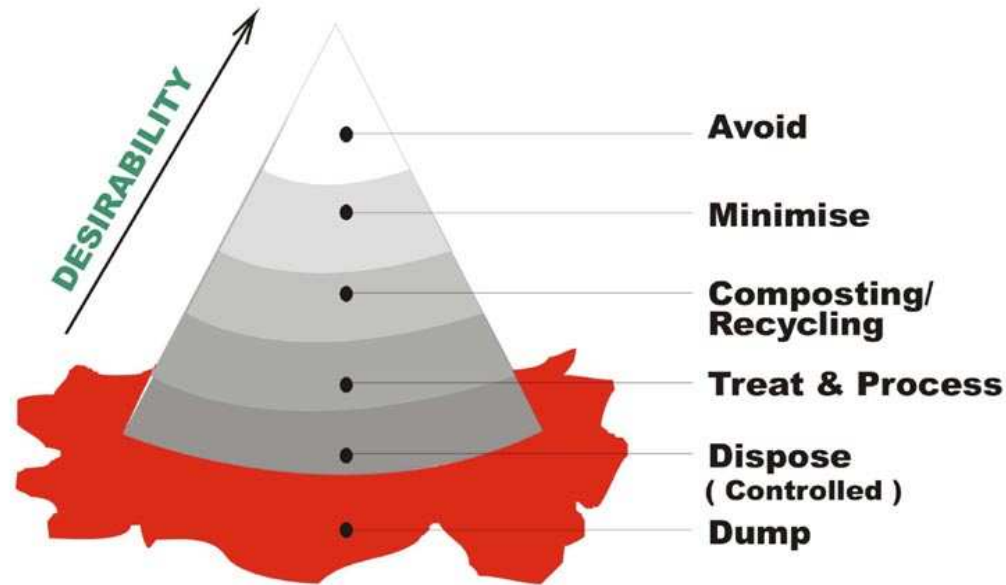


POLYTHENE

City	TWG* (Ton/day)	% of Inorganic Waste Recycling**	Savings through recycling per year, (Tk. million)
Dhaka	4,634.52	15.00	170.00

- **500,000 nos.** (estimated) poor from the informal sector involved in recycling trade in Bangladesh
- **120,000 nos.** poor from informal sector are involved in recycling trade chain of Dhaka city

Strategy for Improvement

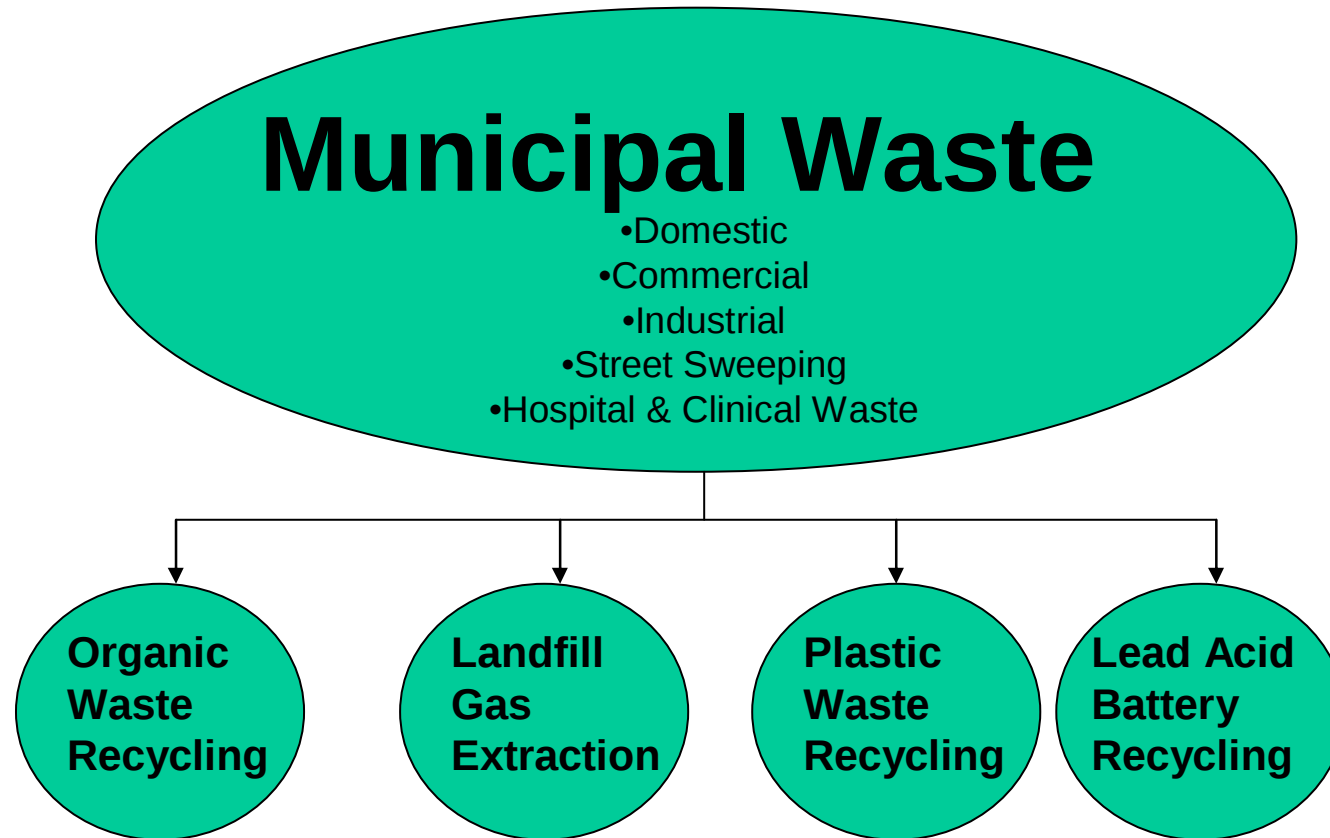


The Waste Management Hierarchy

Waste Concern's Believes ...

'Waste is merely raw material in the wrong place', (Talbot, 1920). Eighty eight years ago, Fedrick A. Talbot in his book, Millions from Waste wrote this line.

Opportunity of Green Jobs from **Waste Recycling**



Composting of **Organic Waste**

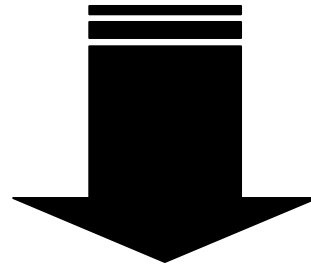


**ENVIRONMENTAL AND HEALTH
PROBLEMS IN URBAN AREAS
DUE TO UNMANAGED WASTE**

**ADDRESSING TWO
MAJOR PROBLEMS**



**ORGANIC MATTER DEPLETION
IN THE SOIL OF RURAL AREAS**



SOLUTION

Composting Organic Waste

700 Tons/day Capacity Clean Development Mechanism (CDM) Based Composting Project in Dhaka (being implemented by Waste Concern)



Input

- **Collection**
(Organic Waste From Markets)
- **Saving** DCC cost

Pro-poor element

- **700 tons/ day**
of waste collection
Starting from 100 tons/day
- **Job Creation**
400 new jobs



Process

- **Aerobic Composting**
- **Saving** Landfill Area

Pro-poor element

- **Creating 800 new jobs**
- **Focusing on Waste Pickers**
- **Health Insurance**
- **Daycare Center**
- **Free Meal**



Output

- **Compost** (50,000 tons/year)
- **Carbon Credits**
(89,000 ton Co2e)
- **Producing** environment friendly product

Pro-poor element

- **Cheaper**
- **Less Irrigation**
- **Soil Quality Improved**
- **Higher Yield**
- **Leads to higher income**

Prospects of Harnessing **Kyoto Protocol and CDM** to Create Green Job

Industrialized country

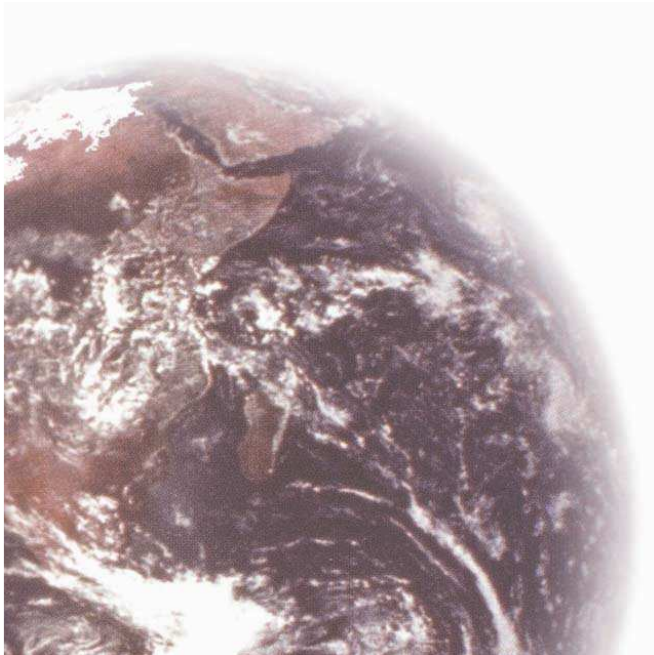
Investment \$\$



Emission reduction
credits (cer/ver)



Project Reducing GHG
emissions in developing
country



GHG emission potential from Urban Organic
Waste of Bangladesh:
2 .19 million ton CO₂e / year

Before-After: **Waste Collection System**



Present Collection Practice



Improved Covered Collection

Aerobic Composting System



Process Quality Control



Temperature Monitoring



Quality Control



Aeration Control



Regular Oxygen Monitoring

Giving Better Working Environment



Organic Cotton Production in Bogra



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聞こえたこと、見えたこと」

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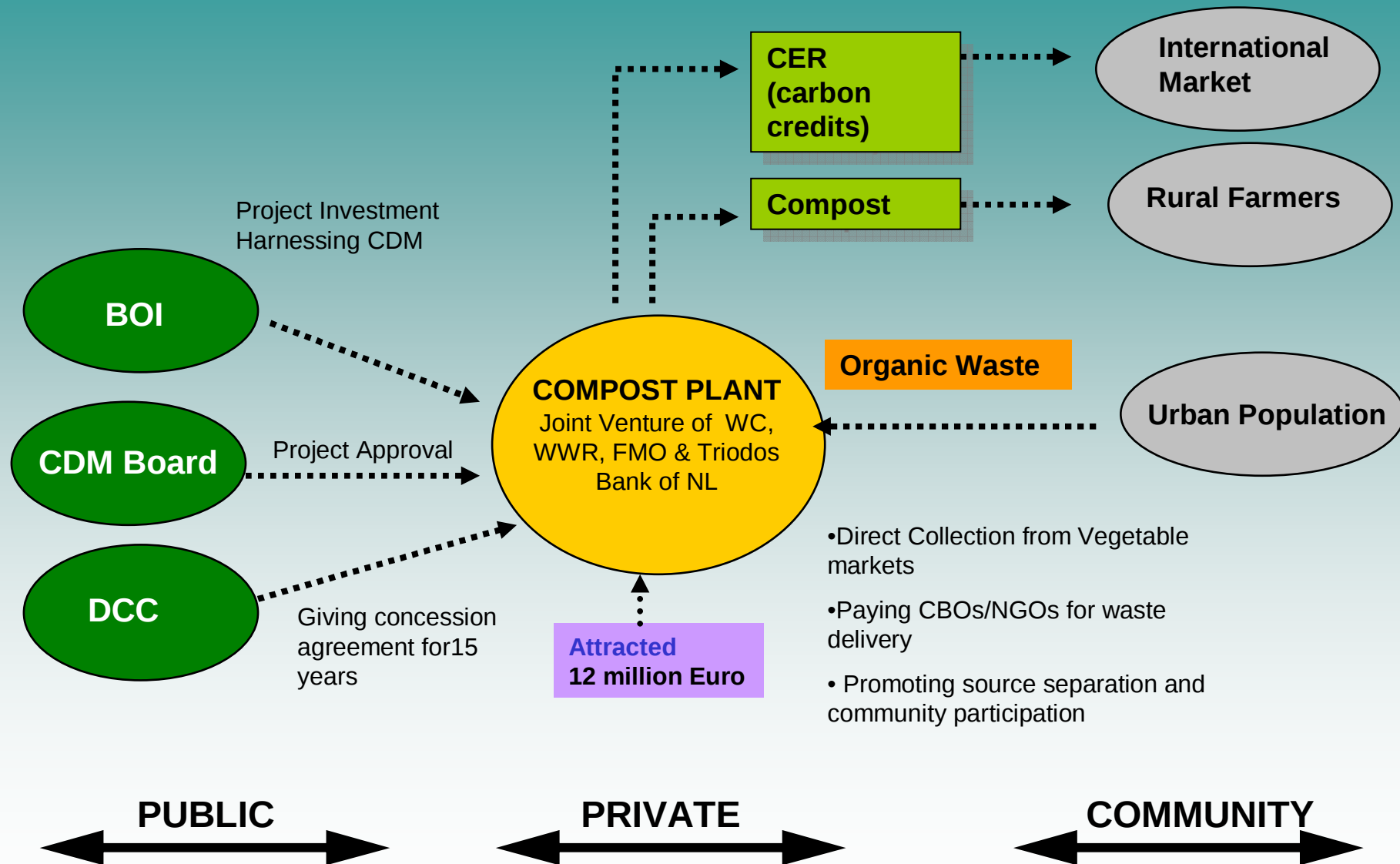
Organic Crops



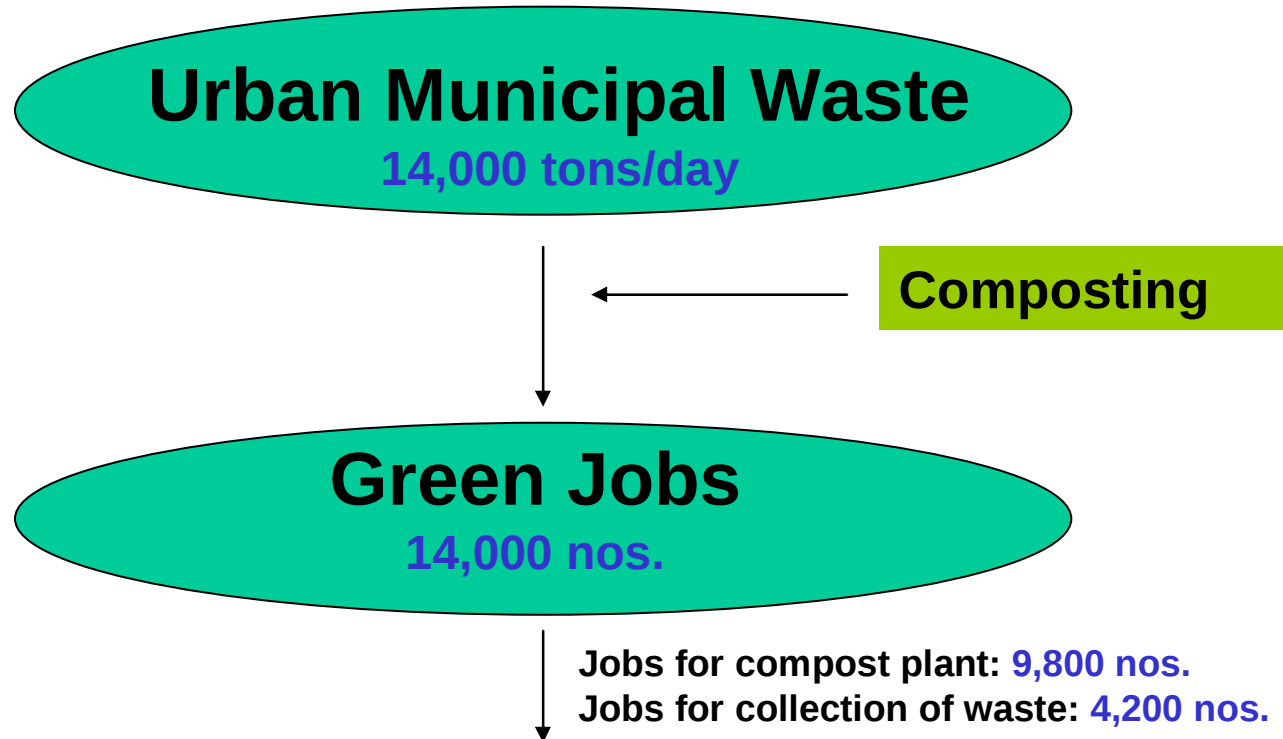
Replication in Rural Areas of Bangladesh



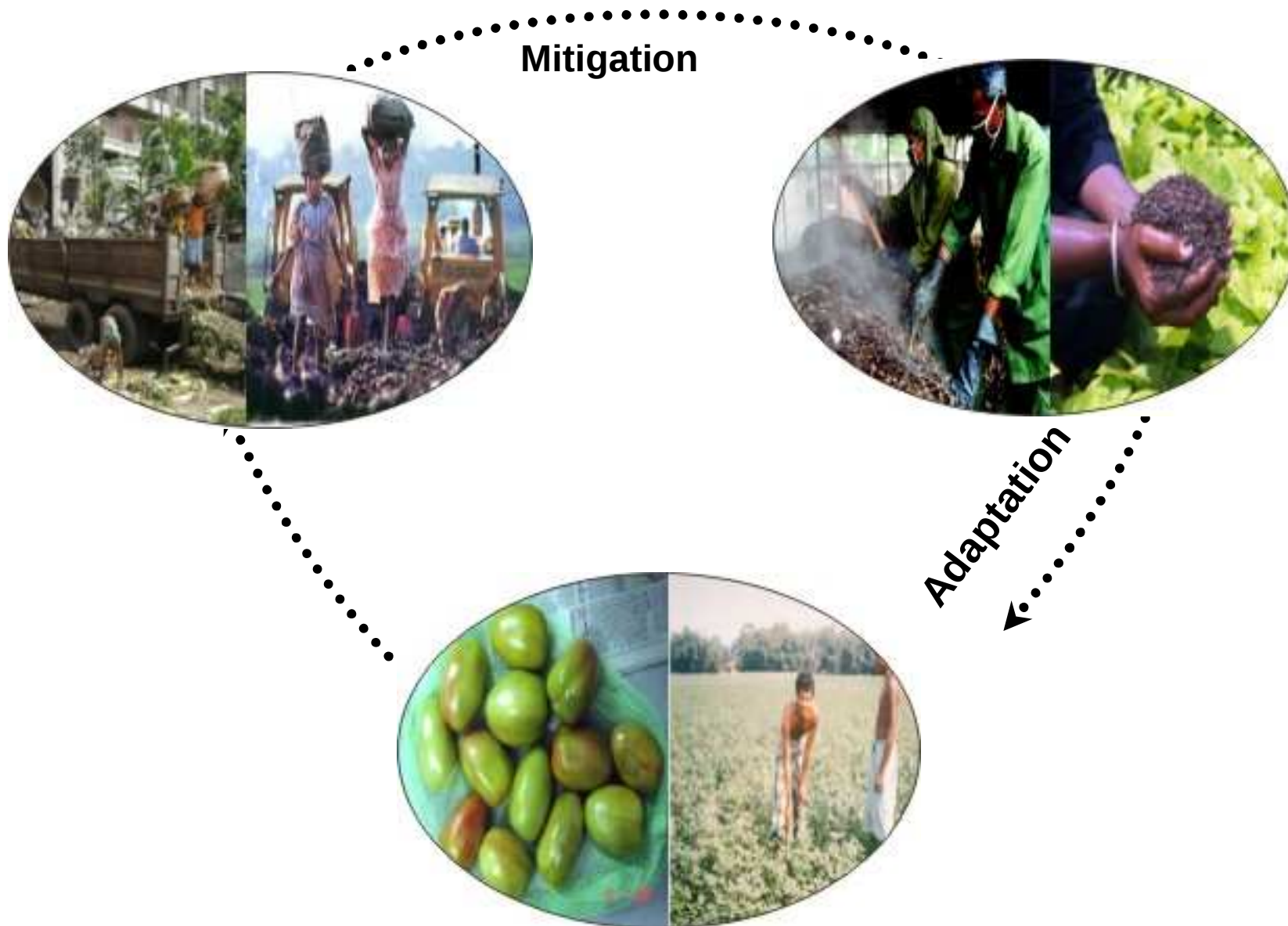
PARTNERSHIP MODEL UNDER CDM PROJECT



Opportunity of **Green Jobs from Composting**



Mitigation-Adaptation Loop



Landfill Gas Extraction



CDM Based Landfill Gas Extraction Utilization at Matuail Landfill Site in Dhaka, Bangladesh (approved by GoB and UNFCCC)

❑ This project will recover methane gas which is a major Green House Gas (GHG) from waste dumping site at Matuail and also to generate **3 MW (minimum) and 6 MW (maximum) of electricity**, using the recovered methane gas.

❑ CDM project will create at least **250 new jobs** for the urban poor.

❑ Enhance the life of the Matuail landfill site upto 2020, with no financial cost to DCC.

❑ Promote technology transfer and capacity building of DCC in solid waste management.

❑ Promoting Public-Private Partnership in solid waste management.



Plastic Waste Recycling



Plastic Waste Recycling

With no Intervention/ Promotion by Public Agency

Plastic Waste
Disposed
130 tons/day
47,450 tons/year

70% Recycled
and used in the
country (Except PET)
33,215 tons/year

BENEFITS:

- Generating 21,000 jobs
- Saving DCC expenditure of Tk. 3.08 crore by avoiding plastic waste
- Saving Foreign currency of US \$ 51 million/ year by avoiding import of virgin plastic.

Existing Scenario in Dhaka

- Promotion of separation of waste
- Separate collection (two bin system)
- Promotion of EMS (mentioned in PRSP)

Plastic Waste
Disposed
130 tons/day
47,450 tons/year

95% Recycled
efficiency

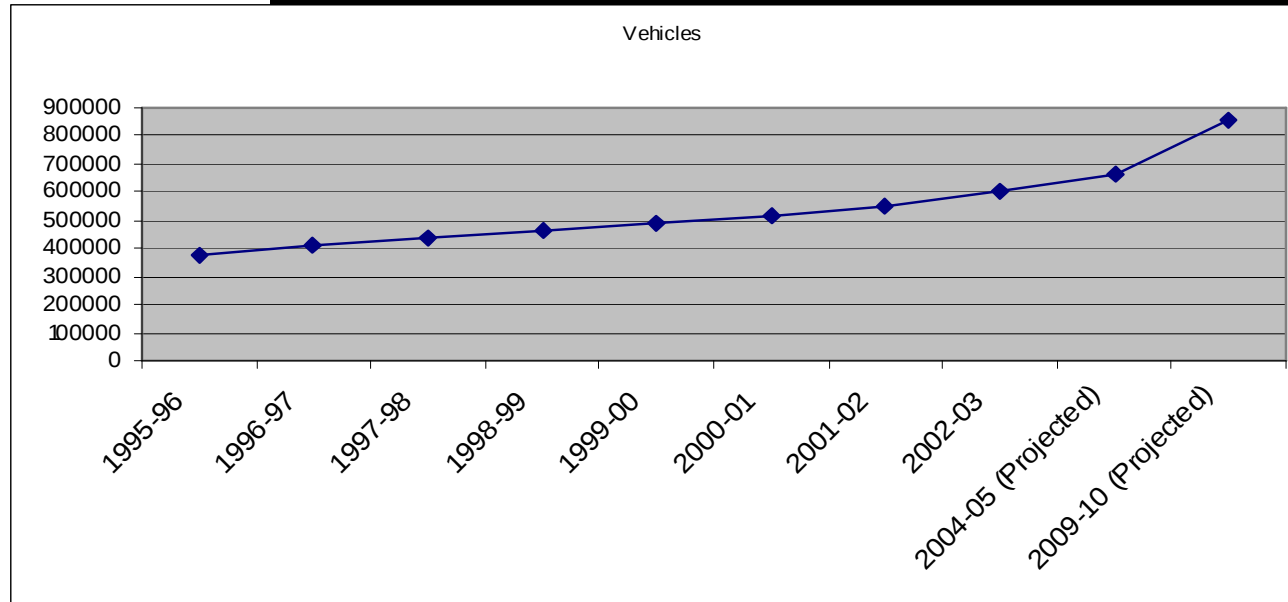
BENEFITS:

- Create Additional Jobs
- Saving DCC Expenditure 4.2 Crore/year
- Saving foreign currency of US \$ 69.35/year
- Less Plastic waste disposed in land and reduced environmental pollution.
- Better working environment and income for people involved in recycling trade.
- Surplus pellets may be exported like PET if local market demand is met.

No Financial Requirement from Government. Requires only policy support

Proposed Intervention

Lead Acid Battery Recycling



Number of Vehicles on Road and Their Projection

Recovered Lead: 6000 ton/Year

Savings: 4.73 million US\$/year

(avoiding lead import using foreign currency (60% recycling rate at present))

Jobs Created: 6000 new jobs



National Policies and Rules **Linked with Green Jobs**

POLICY

- ❑ **National Policy for Water Supply and Sanitation, 1998**
According to this policy the government shall take measures for recycling of waste as much as possible and use organic waste materials for compost and bio-gas production;
- ❑ **Draft National Urban Policy- 2006**
CDM and Recycling has been emphasized in this policy

RULES

- ❑ **Lead Acid Battery Recycling and Management Rules, 2006**: Under this rules collection and recycling has been improved. This rules is based on a detail study carried out by Waste Concern on 2005 under SEMP.
- ❑ **Draft National Solid Waste Management Handling Rules, 2005**: 3R principal has been used. This rule has been prepared by Waste Concern under SEMP.

STRATEGY

- ❑ **Poverty Reduction Strategy Paper (PRSP) 2005**: Here EMS has been promoted. To improve the solid waste management situation, special focus is given to segregation of waste at source along with the promotion of recycle, reduce and reuse of industrial and other solid waste etc.
- ❑ **National Sanitation Strategy 2005**: Its goal is to achieve 100% sanitation coverage by 2010. Here emphasis on resource recovery and recycling has been given as top priority to improve urban sanitation situation instead of disposal.

ACTION PLAN

- ❑ **Dhaka Environment Management Plant 2005**
Waste recycling has been promoted, less land filling encouraged, EMS promoted among industries.
- ❑ **National Environmental Management Action Plan (NEMAP) (1995)**:
This is a plan of the Government of Bangladesh (GoB), prepared by the Ministry of Environment and Forest (MoEF) in consultation with people from all walks of life. Waste Concern is promoting 3R, under the Sustainable Environment Management Programme (SEMP) of NEMAP.
- ❑ **Solid Waste Management Action Plan for Eight Secondary Towns in Bangladesh (2005)**: Under the Secondary Towns Integrated Flood Protection (Phase-2) Project of Local Government Engineering Department, 31. This strategy is based on based on 4 R principle i.e. reduce, reuse, recycle and recover of the waste.

DECLARATION

- ❑ **Dhaka Declaration 2004 on Waste Management by SAARC countries during 10–12 October 2004**. SAARC countries agree to encourage NGOs and private companies to establish community based composting, segregation of waste at source, separate collection and resource recovery from wastes with particular focus on composting.

Barriers Faced

- ✓ At present there is no clear policy or tax incentive package offered by the government to encourage private sectors to go for Green Jobs
- ✓ Regulatory barriers should be removed.
For Example we needed 44 (forty four) permissions/clearance required for this project before implementation and 2 (two) are required after the production compost.
- ✓ Lack of awareness, knowledge and capacity about Green Jobs
- ✓ Lack of Public Private & Community Partnership
- ✓ Lack of Easy financial support by Banks/financing/grants
- ✓ R & D should be promoted by government and external support agencies considering the local socio-economic and climatic condition.

Way Forward

- Carbon Financing is the driving force to promote Green Jobs;
- *We need to simply lengthy process/barrier required for implementation of projects creating green jobs (example CDM based projects) ;*
- Many projects such as composting, biogas, improved stove, forestry can be implemented having pro-poor elements. *We need to identify these kind of projects through baseline inventory which has both the adaptation and mitigation benefits; and*
- There are many investors keen to invest in projects which has both mitigation and adaptation benefits