Green Jobs Created Through Composting of Organic Waste: a Case Study of Waste Concern

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Green Jobs Foundation Training for ILO Consultants & Partners, Dhaka, Bangladesh

Organized by:
ILO and Waste Concern Consultants

Supported by:
Aus Aid

Date: 18 - 19 April 2012
<table>
<thead>
<tr>
<th></th>
<th>Table of Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What is Green Job?</td>
</tr>
<tr>
<td>2</td>
<td>Definition of Decent Work</td>
</tr>
<tr>
<td>3</td>
<td>Decent Work Indicators</td>
</tr>
<tr>
<td>4</td>
<td>Potential Sectors for Green Jobs</td>
</tr>
<tr>
<td>5</td>
<td>Policy and Regulatory Issues</td>
</tr>
<tr>
<td>6</td>
<td>Sector Wise Distribution of Green Jobs in Bangladesh</td>
</tr>
<tr>
<td>7</td>
<td>National Laws and Policies</td>
</tr>
<tr>
<td>8</td>
<td>Green Job Example in Bangladesh: Case study on Waste Concern</td>
</tr>
<tr>
<td>9</td>
<td>Way Forward</td>
</tr>
</tbody>
</table>
“Green jobs” does not lend itself to a precise definition but includes the direct employment which reduces environmental impact ultimately to the levels that are sustainable.

This includes jobs that;

- help to reduce the consumption of energy and raw materials,
- decarbonizes the economy,
- protect and restore ecosystems and biodiversity,
- minimize the production of waste and pollution.
- Promotes decent work

Green jobs are thus both environmentally sound and also ‘decent’ in social terms.
Human Response to Climate Change

ADAPTATION

Adaptation involves developing ways to protect people and places by reducing their vulnerability to climate impacts.

MITIGATION

Mitigation involves attempts to slow the process of global climate change by lowering the level of greenhouse gas emission in the atmosphere.
Decent work has been defined by ILO representatives from governments, employers and workers’ organizations in over 180 countries as: ‘decent and productive work in conditions of freedom, equity, security and human dignity’.

Decent work combines adequate income from productive work with social security, respect for worker and social rights and the opportunity to voice and defend interests collectively.

“Decent work is relative and country-specific because countries differ socially and economically. None can aim for the same absolute conditions of work. Each country must set its own targets for decent work.”

Decent work can be assessed and measured using 10 broad Indicators

1. **Employment opportunities:** All persons (women and men) who want work should be able to find work, and the decision to work should be voluntary, in accordance with the minimum age of access to employment.

2. **Unforced paid work:** Work should be freely chosen and not forced on individuals. Certain forms of work are completely unacceptable (e.g. bonded labour, slave labour, and child labour). Workers should have the freedom to join workers’ organizations.

3. **Adequate earnings and productive work:** Workers must have acceptable livelihoods including remuneration for all work carried out. Remuneration — especially in the case of wage workers—should correspond to a fair and living wage. Work for equal value should ensure equal pay.

4. **Fair and equal treatment in employment:** Fair and equitable treatment and opportunity at work (coinciding with absence of discrimination) and in access to work on grounds of sex, national origin, race, and age (coinciding with absence of harassment on these same grounds).

5. **Decent work hours:** Working time arrangements concerning daily and weekly working hours, regular and overtime work, and breaks and rest periods should reflect fair and acceptable practices, and be compatible with social and family life. Work intensity leading to excessive hours threatens physical and mental health, and interferes with the balance between work and family.
Decent work can be assessed and measured using **10 broad Indicators**

6. **Fair balance of work and family life:** Workers with family responsibilities (those with young children or elderly and sick family to care for) should be able to exercise their right to engage in work if they wish to, without being subject to discrimination. Family responsibilities fall most heavily on women.

7. **Safe work environment:** The physical work environment should avoid extreme conditions (heat, dust, noise, workload, etc.) and ensure a safe working environment with appropriate prevention of work-related accidents, injuries, and occupational diseases.

8. **Stability and security of work:** This recognises workers’ needs to limit insecurity associated with the possible loss of work and livelihood.

9. **Social protection:** Work conditions should be conducive to safeguarding health, pensions, and livelihoods and provide adequate financial and other protection in the event of work-related injuries or health-related contingencies.

10. **Social dialogue and workplace relations:** Workers should be treated with respect at work, and should be able to voice concerns and participate in decision-making about working conditions. Workers’ freedom to organize and collectively represent their interests is an essential ingredient of ensuring dignity.
## Potential Sectors for Green Jobs (Bangladesh)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Activities for Green Job</th>
</tr>
</thead>
</table>
| Agriculture | • Soil conservation  
               • Water efficiency in Irrigation  
               • Organic farming (tea cultivation)  
               • Reducing distance between farm and market |
| Forestry  | • Reforestation and afforestation  
               • Sustainable forestry management by community  
               • Halting of deforestation |
| Energy    | • Renewable Energy (solar, biogas, improved stove, biomass)  
               • Manufacturing of energy efficient appliances such as CFL, efficient air conditions etc. |
## Potential Sectors for Green Jobs (Global Scenario)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Activities for Green Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>• Fuel switching in vehicles (petrol, diesel to CNG)</td>
</tr>
<tr>
<td></td>
<td>• Use of hybrid or fuel efficient vehicles</td>
</tr>
<tr>
<td></td>
<td>• Mass transit</td>
</tr>
<tr>
<td></td>
<td>• Bus rapid transit (BRT)- modal shift,</td>
</tr>
<tr>
<td></td>
<td>• Car Pooling</td>
</tr>
<tr>
<td>Construction</td>
<td>• Cement factory (energy efficiency)</td>
</tr>
<tr>
<td></td>
<td>• Brick Manufacturing (energy efficiency)</td>
</tr>
<tr>
<td></td>
<td>• Concrete Blocks</td>
</tr>
<tr>
<td></td>
<td>• Green Building/Energy efficient Buildings</td>
</tr>
</tbody>
</table>
### Potential Sectors for Green Jobs (Global Scenario)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Activities for Green Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>• Pollution control technologies such as ETP</td>
</tr>
<tr>
<td></td>
<td>• Energy and materials efficiency</td>
</tr>
<tr>
<td>Waste Management</td>
<td>• Recycling of municipal organic and inorganic waste (composting, biogas, biogas to energy, RDF etc, plastic waste recycling)</td>
</tr>
<tr>
<td></td>
<td>• Recycling of lead acid battery</td>
</tr>
<tr>
<td></td>
<td>• Extended producer responsibility (product take back and remanufacturing)</td>
</tr>
</tbody>
</table>
National Laws and Policies

- The National Environment Policy, 1992 and Implementation Programme
- The National Energy Policy, 1996
- The Draft Renewable Energy Policy
- The National Agriculture Policy and Pesticide Rules
- The National Conservation Strategy
- The National Biodiversity Strategy and Action Plan
- The National Environment Management Action Plan (NEMAP), 1995
- The Environment Conservation Act (ECA), 1995 and its subsequent amendments
- The Environment Conservation Rules (ECR), 1997 and its subsequent amendments
- The Environment Court Act, 2000 and its subsequent amendments
- Ozone Depleting Substances (Control) Rules 2004
- A Gazette Notification under ECA on recycling of Lead Acid Battery
- National CDM Strategy 2003
- Poverty Reduction Strategy Paper (PRSP)
- Bangladesh Labor Act 2006
- National 3 R Strategy for waste sector
- Draft National Urban Policy
- Draft Solid Waste Management Rules 2010
- Draft Industrial Policy 2010
- Sixth Five Year Plan (FY 2011-FY2015)
  here under the theme Low Carbon Development 5 (five) programs were under taken
  (renewable energy, urban waste, aforesation and reforestation, energy saving devices and energy efficiency in
  transport sector)
- National Climate Change Strategy and Action Plan (2009)

Initial review under this study finds that most of the these policies are addressing the issues of pollution control, sustainable environment, renewable energy, sustainable agriculture, green house gas mitigation etc., occupational health and safety, wages etc with no direct link green jobs.
Green Job Example in Bangladesh
Present Situation

**Source of Waste**

- Mixed Waste
- Waste Bins Demountable Containers
- Transfer Stations

**PROBLEMS**

- Water Pollution
- Spread of Disease Vectors
- Green House Gas Emission
- Odor Pollution
- More Land Required for Landfill

**High**

- organic matter ▶️ (more than 70%)
- moisture content ▶️ (more than 50%)
- calorific value ▶️ (less than 1000 Kcal/Kg)

**New Types of Waste Emerging in the Waste Stream**

- Used Lead Acid Battery
- E-Waste
- Plastic Waste
- Bio-medical Waste

Rapidly changing consumption patterns are generating significantly increasing proportions of toxic chemicals in industrial waste, hazardous hospital waste, large quantities of electronic waste is a growing concern for Bangladesh.

Waste Collection Efficiency (urban areas) : 50% (Average)
PROBLEMS FROM PRESENT PRACTICE

Solid Waste Management is based on end-of-pipe solution which is only focused on collection, transportation and final disposal...

VERMINS
Spreading more than 40 Diseases

METHANE GAS
Bad Odor & Green House gas

LEACHATE Polluting Ground & Surface Water

Open dumping practiced in most of the cities and towns, which is the cheapest and easiest solution for them...
Waste City Authorities Collecting

Decentralized Approach of Composting Using Carbon Credits

Baseline Situation

Methane Emission

CDM project

No Methane Emission

Existing Practice: land filling of waste

130 tons/day Compost Plant with UNFCCC

The project is recycling organic vegetable waste and instead of disposing in landfill, it is converted into compost.
Project based carbon trading (CER/VER) between industrialized and developing countries

Industrialized country

Dutch Company WWR and Banks, FMO and Triodos

Emission reduction credits (CER)

CDM investment $$

Project Reducing GHG emissions in Dhaka

web: www.wasteconcern.org
Examples of 3R practice: Dhaka experience CDM

NOTE: The following project activities are required to make the PDD publicly available as per the guidance in paragraph 29 of the report of twenty seventh meeting of the Board:
1. those that use mechanical process to produce refuse-derived fuel (RDF) from waste and its use for energy generation.

Revision to the approved baseline methodology AM0025

“Avoided emissions from organic waste through alternative waste treatment processes”

Source

This baseline methodology is based on the proposed methodologies submitted for the project, “Organic waste composting at the Matuail landfill site Dhaka, Bangladesh,” whose baseline study, monitoring and verification plan and project design document were prepared by World Wide Recycling B.V. and Waste Concern. It has been revised to include elements from the methodology for the PT Navigat.

Obtained UNFCCC approval on Sept 2005
Different Steps of Composting Process

Collection

- Weighing of Waste
- Sawdust
- Cowdung/ Bokashi
- Water
- Screening residue

Sorting

- Water

Piling

Composting

Maturing and Compost

Screening

Bagging

Marketing
Parameters to be Monitored During Implementation

Collection
- Weighing of Waste

Sorting
- Sawdust
- Cowdung/ Bokashi
- Water
- Screening residue

Piling
- Water

Composting

Maturing and Compost

Screening

Bagging

Marketing

Weighing of Waste Input
Parameters to be Monitored During Implementation

Unloading of Incoming Waste and Preliminary Sorting
Parameters to be Monitored During Implementation

- Collection
  - Weighing of Waste
  - Cowdung/ Bokashi
  - Sawdust
  - Water
  - Screening residue

- Sorting
  - Piling

- Composting
  - Water

- Maturing and Compost

- Screening

- Bagging

- Composting

- Marketing

Piling of Waste in the Pre-composting Box
Weighing of Waste

Parameters to be Monitored During Implementation

Collection

Sorting

Piling

Composting

Maturing and Compost

Screening

Bagging

Composting

Marketing

Moisture Control

Reuse of leachate water
Leachate Treatment System Introduced in the **Compost Plant at Bulta, Roopganj, Greater Dhaka**

- Dark color leachate stored in the tank as input.
- A part of leachate transformed into Steam *(10% of input)* coming out from the machine.
- About *80%* of the dark leachate water input is transformed into clear distilled water within few seconds.
- About *10%* of the dark leachate water input is transformed into sanitized liquid which can be sold as liquid fertilizer.

Three Major outputs from leachate water are shown in...
Parameters to be Monitored During Implementation

Temperature Control
Process Quality Control

Regular Oxygen Monitoring
Forced Aeration by Blowers to Provide Oxygen in the Compost Pile
Different Steps of Composting Process

1. Collection
2. Weighing of Waste
3. Sorting
   - Sawdust
   - Cowdung/Bokashi
   - Screening residue
   - Water
4. Piling
5. Composting
6. Maturing and Compost
7. Screening
8. Bagging
9. Composting
10. Marketing

Maturing of Compost
Different Steps of Composting Process

- Collection
  - Weighing of Waste
  - Sawdust
  - Cowdung/ Bokashi
  - Water
  - Screening residue

- Sorting
  - Water

- Piling

- Composting
  - Water

- Maturing and Compost

- Screening

- Bagging

- Marketing

Screening of Compost
Weigh bridge is required to collect the data regarding amount of waste composted. **CALIBRATION of Weigh Bridge is MUST**

Temperature meter is required to record temp data and to prove that the process is aerobic. **CALIBRATION of Temp Meter is MUST**

Gas meter is required to record % of oxygen in the pile and to prove that the process is aerobic. Oxygen level must be > 10% in the pile. **CALIBRATION of Gas Meter is MUST**

Weigh bridge is required to collect the data regarding amount of compost sold. **CALIBRATION of Weigh Bridge is MUST.** Sales Invoice and name of the dealer marketing compost and location of use of compost is also required.

Electricity and Diesel Bill. This data is required to calculate on plant emission to produce compost.
### Comparative Analytical Results of Fertilizer Samples

**Name of Product:** Waste Concern, Jaiba Sar  
**Company:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Analytical Results</th>
<th>Guaranteed analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BARI</td>
<td>BINA</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>Dark grey to black</td>
<td>Very dark greyish brown</td>
</tr>
<tr>
<td>Physical condition</td>
<td>Non-granular form</td>
<td>Soft body, Granular in size</td>
</tr>
<tr>
<td>Odour</td>
<td>Absence of foul odour</td>
<td>Not smell</td>
</tr>
<tr>
<td>Moisture</td>
<td>Max. 15%</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>Chemical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>6.0 – 8.5</td>
<td>8.3</td>
</tr>
<tr>
<td>Organic Carbon</td>
<td>10 – 25%</td>
<td>23.8</td>
</tr>
<tr>
<td>Total Nitrogen (N)</td>
<td>0.5 – 4.0%</td>
<td>2.01</td>
</tr>
<tr>
<td>C : N</td>
<td>Max. 20:1</td>
<td>11.8:1</td>
</tr>
<tr>
<td>Phosphorus (P)</td>
<td>0.5 – 1.5%</td>
<td>1.7</td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>1.0 – 3.0%</td>
<td>2.68</td>
</tr>
<tr>
<td>Sulphur (S)</td>
<td>0.1 – 0.3%</td>
<td>0.30</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>Max. 0.1%</td>
<td>0.04</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>Max. 0.05%</td>
<td>0.009</td>
</tr>
<tr>
<td>Arsenic (As)</td>
<td>Max. 20 ppm</td>
<td>19.3</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>Max. 50 ppm</td>
<td>*</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>Max. 5 ppm</td>
<td>3.81</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Max. 30 ppm</td>
<td>27.4</td>
</tr>
<tr>
<td>Mercury (Mg)</td>
<td>Max. 0.1 ppm</td>
<td>*</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>Max. 30 ppm</td>
<td>16.85</td>
</tr>
<tr>
<td>Inert material</td>
<td>Max. 1%</td>
<td>*</td>
</tr>
</tbody>
</table>

*Not analysed*

Complies with GoB Compost Standards of 2008

Quality Control Laboratory
FIELD TRIAL EXPERIENCE

Field trail carried out by the Bangladesh Rice Research Institute (BRRI) of the Govt. of Bangladesh shows that Waste Concern’s compost reduces the use of chemical fertilizer 25-30 increase yield by 30%
Compost Produced in Composting Plants at Dhaka (8mm 40kg bag @ Tk.6kg) Factory Gate Price US $ 87/ton)

PURCHASING AGENCY ACI FERTILIZER

MARKETED BY ACI Fertilizer

Retail Price (8mm 40kg bag @ Tk.6kg)

DISTRIBUTION CHANNEL

MARKETING OF COMPOST BY WASTE CONCERN (INDIRECT DISTRIBUTION)

FARMERS AT RURAL AREA

US $130/ton)
Packaging and Branding of Compost
Mitigation-Adaptation Loop
URBAN-RURAL SYMBIOSIS

City Generating Organic Waste and producing compost

How?

- Through Decentralized Composting
- Public-Private Partnership
- Using Appropriate Technology
- Use of CDM Financing

Rural Area Producing Food and Agricultural Products

www.wasteconcern.org
Informal Sector Given Better working Environment

- 6% of the operational expenditure spent for welfare of the workers in the plant
- Day care center for female workers
- Free meal for the workers
- Health insurance for the workers

Informal sector working in unsafe working condition
**Partnership Model**

- **BOI** (Board of Investment)
- **CDM Board**
- **DCC** (Dhaka City Corporation)

**Project Investment**
- Harnessing CDM

**Project Approval**
- Signed concession agreement for 15 years

**DCC**
- Attracted 12 Million Euro Foreign Direct Investment

**CER (carbon credits)**
- BOI

**Compost**
- Community
  - Direct Collection from Vegetable markets
  - Waste Collected from Households
  - Promoting source separation and community participation

**ACI Fertilizer**
- Private Waste Collector

**Joint Venture**
- WCC-WWR, FMO, Hightide

**Organic Waste**
- Rural Farmers
- Urban Population

**COMPOST PLANT**
- Attracts urban population

**PRIVATE**
- Attracts 12 Million Euro Foreign Direct Investment

**PUBLIC**
- Attracts rural farmers

**COMMUNITY**
- Attracts international market

BOI-Board of Investment; DCC-Dhaka City Corporation; PPCP- Public Private Community Partnership
## Sector Wise Distribution of Green Jobs in Bangladesh

(Estimated by Waste Concern, 2009, for ILO)

<table>
<thead>
<tr>
<th>Sl.</th>
<th>Sector</th>
<th>Green Jobs (numbers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture &amp; Forestry</td>
<td>8725</td>
</tr>
<tr>
<td>2</td>
<td>Transportation</td>
<td>147987</td>
</tr>
<tr>
<td>3</td>
<td>Manufacturing (energy Efficiency, Brick Klins)</td>
<td>11,081</td>
</tr>
<tr>
<td>4</td>
<td>Renewable Energy</td>
<td>14966</td>
</tr>
<tr>
<td>5</td>
<td>Waste Recycling (compost, production, sales and distribution)</td>
<td>29942</td>
</tr>
<tr>
<td>6</td>
<td>Building Construction</td>
<td>536,000</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>748,701</strong></td>
</tr>
<tr>
<td>Core environment-related jobs</td>
<td>Green jobs</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Sustainable agriculture</td>
<td>41,548</td>
<td>n.p. Not possible to estimate</td>
</tr>
<tr>
<td>Sustainable and participatory forestry</td>
<td>28,813</td>
<td>n.p.</td>
</tr>
<tr>
<td>Sustainable energy</td>
<td>18,823</td>
<td>18,823</td>
</tr>
<tr>
<td>Waste management and recycling</td>
<td>189,180</td>
<td>n.p.</td>
</tr>
<tr>
<td>Collection purification and distribution of water</td>
<td>8,441</td>
<td>n.a.</td>
</tr>
<tr>
<td>Climate adaptation activities</td>
<td>1,726,755</td>
<td>n.p.</td>
</tr>
<tr>
<td>Manufacturing and energy efficiency</td>
<td>10,934</td>
<td>10,934</td>
</tr>
<tr>
<td>Sustainable transportation</td>
<td>178,510</td>
<td>178,510</td>
</tr>
<tr>
<td>Sustainable construction</td>
<td>1,340,000</td>
<td>536,000 – 670,000 a</td>
</tr>
<tr>
<td>Total</td>
<td>3,543,004</td>
<td>811,268</td>
</tr>
</tbody>
</table>

Sector Wise Distribution of Green Jobs in Bangladesh (Estimated by GHK Consultants for ILO, 2010)
• As per Bangladesh Bureau of Statistics (BBS) Labour Force Survey 2005-06, total employed labor force is **47.4 million**

• Number the green jobs (estimated) in Bangladesh varies between **748,701- 811,268** which is **1.6%-1.72%** of the total employed labor force.

Source: Field Survey by Waste Concern (July 2008)
Constraints and Challenges

- Lack of awareness and capacity building to understand the concept of Green Jobs.

- Insufficient incentives & promotional measures.

- Inadequate research and development initiatives; and

- Insufficient Public Private Partnerships.

- Too many permits and license requires for project approval. For example Waste Concern CDM based project required more than 56 permissions for establishing the facility in Bangladesh.
Why this Project is Promoting Green Jobs?

- It is minimizing the production of waste and pollution from unmanaged waste.
- Reducing Greenhouse Gas thus decarbonizing the waste sector.
- It helps to avoid excessive use of chemical fertilizer use in the soil and as a result reducing CO2 emission during the production of chemical fertilizer.
- It is protecting the ecological system by reducing harmful chemicals and pesticide uses in the agriculture.
- Compost improve the quality of soil and improves food security.
- Compost use in soil reduces the need for irrigation.
- As a result by promoting decent jobs, it improves the working conditions of the workers.
A universal social ‘floor’ applies to all countries, and includes respect for the following basic human rights:

- Freedom of association and the effective recognition of collective bargaining rights;
- Elimination of all forms of forced or compulsory labour;
- Effective abolition of child labour and the right of children to learn and develop rather than work; and
- Elimination of discrimination in respect of employment and occupation.

Gaps between people’s decent work aspirations and reality exist everywhere. The challenge is to reduce these gaps. Progress towards decent work should be the central goal of all economic and social policies and strategies.

Way Forward

- Sufficient baseline information including inventory on Green Jobs and Regular Update of Inventor
- Capacity building and training.
- Promotion of cleaner technologies including R & D.
- Measures to include existing informal sector operators.
- Promotion of Public-Private Partnerships.
- Mobilization of resources (CDM, GoB and others).
- Target setting for increased Green Jobs.
Thanks
## Preliminary Sectors Identified Under this Study

<table>
<thead>
<tr>
<th>SECTORS</th>
<th>PROJECTS/PROGRAMMES</th>
<th>INVOLVED ORGANIZATION/ENTERPRISES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Transportation</td>
<td>CNG use as fuel</td>
<td>• RPGCL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Dept. of Explosive, GOB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• BERC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• BRTA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Importers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Conversion &amp; filling station owners</td>
</tr>
<tr>
<td>2 Agriculture &amp; Forestry</td>
<td>Nursery</td>
<td>Nursery Association</td>
</tr>
<tr>
<td></td>
<td>Organic Tea</td>
<td>Kazi &amp; Kazi Tea</td>
</tr>
<tr>
<td>3 Waste Recycling</td>
<td>Composting of Organic Municipal Waste</td>
<td>Waste Concern</td>
</tr>
<tr>
<td></td>
<td>Lead acid Battery recycling</td>
<td>Informal sector</td>
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<tr>
<td></td>
<td>Municipal solid waste recycling</td>
<td>Informal sector</td>
</tr>
<tr>
<td>4 Electricity, gas, water</td>
<td>Renewable energy</td>
<td>Rahimafrooz</td>
</tr>
<tr>
<td></td>
<td>Solar Power generation</td>
<td>Grameen Shakti</td>
</tr>
<tr>
<td></td>
<td>Biogas</td>
<td>BCSIR</td>
</tr>
<tr>
<td></td>
<td>Biomass</td>
<td>Dreams Power Ltd</td>
</tr>
<tr>
<td></td>
<td>Electricity generation from Rise husk</td>
<td></td>
</tr>
<tr>
<td>5 Manufacturing</td>
<td>Green technology</td>
<td>Energy Pac</td>
</tr>
<tr>
<td></td>
<td>Compact Fluorescent Lamp</td>
<td></td>
</tr>
</tbody>
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Source: Field Survey by Waste Concern (July 2008)
# General Profile of Industries Creating Green Jobs

<table>
<thead>
<tr>
<th>Industry</th>
<th>Surveyed organization</th>
<th>Production Capacity</th>
<th>Number of beneficiaries</th>
<th>Number of green jobs created</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td><strong>Bangladesh CNG Filling Station &amp; Conversion Workshop Owners Association</strong> (250 filling station, 121 conversion centres)</td>
<td>32 filling stations /yr 14333 vehicles /yr (estimated from the average of 2002-2007 data)</td>
<td>Users of 137987 vehicles</td>
<td>147987</td>
</tr>
</tbody>
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<tr>
<td>Agriculture &amp; Forestry</td>
<td>Kazi &amp; Kazi Tea</td>
<td>2,30,000 kg (40% increase rate)</td>
<td>0.84% of local consumers (27.5 million kg tea consumed locally)</td>
<td>725</td>
</tr>
<tr>
<td></td>
<td>National Nursery Consortium</td>
<td>1,50,00,000 Saplings/year</td>
<td>-</td>
<td>8000</td>
</tr>
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<tr>
<td>Electricity</td>
<td>Dreams Power Ltd (biomass generated electricity production &amp; distribution)</td>
<td>300 KW</td>
<td>500 households</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Grameen Shakti (Solar Home Systems &amp; Improved cooked stove)</td>
<td>32MW/yr.</td>
<td>1500000</td>
<td>2500</td>
</tr>
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<th>Number of green jobs created</th>
</tr>
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<tbody>
<tr>
<td>Electricity</td>
<td>IFRD, BCSIR (Biogas plant &amp; stove)</td>
<td>3,73,889</td>
<td>11994</td>
</tr>
<tr>
<td></td>
<td>Rahimafrooz (solar power generation)</td>
<td>30,000</td>
<td>450</td>
</tr>
</tbody>
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Source: Field Survey by Waste Concern (July 2008)
General Profile of Industries **Creating Green Jobs**

<table>
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<tr>
<td>Manufacturing</td>
<td>Energy Pac</td>
<td>CFL 20,00,000 Pcs</td>
<td>147</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EB 10,00,000 Pcs</td>
<td></td>
</tr>
</tbody>
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## General Profile of Industries Creating Green Jobs

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<tr>
<td>Waste recycling</td>
<td>Waste Concern (ACI, Baraka, dealers) Others (waste collection, composting, marketing and distribution)</td>
<td>16425 tons/year compost produced</td>
<td>4,50,000</td>
<td>1150 28, 792</td>
</tr>
<tr>
<td>Plastic Recycling Industries (informal sector)</td>
<td></td>
<td>244833 tons/year recycled resin processed</td>
<td></td>
<td>22792</td>
</tr>
<tr>
<td>Used Lead Acid Battery recycling (Informal Sector)</td>
<td></td>
<td>6000 tons/year lead recycling from used lead acid battery</td>
<td></td>
<td>5000</td>
</tr>
</tbody>
</table>

Source: Field Survey by Waste Concern (July 2008)
## Contributions from Green Jobs: Examples

<table>
<thead>
<tr>
<th>Sl.</th>
<th>Surveyed organization/industries</th>
<th>Potential Impact</th>
</tr>
</thead>
</table>
| 1   | Plastic Recycling Industries     | **Process:** 2,44,833 tons/year recycled resin  
Jobs Created: 22792 nos.  
**Saving Foreign Currency:** US$ 350 million/year  
by avoiding import of virgin plastic resin |
| 2   | Used Lead Acid Battery by Informal Sector | **Process:** 6000 tons/year  
(lead recycled from used lead acid battery)  
**Jobs Created:** 6000 nos.  
**Saving Foreign Currency:** US$4.73 million/year  
By avoiding import of imported lead |
| 3   | Energy Pac                        | **Energy Saved:** lamp ensures 80% of energy saving  
**Can Save:** 960 MW electricity Nationally |
| 4   | Waste Concern                     | **Process:** 700 tons/day organic waste process  
**Produce:** 50,000 tons/year compost production  
**Green House Gas Reduced:** 89,000 tons/year  
**Saving DCC Expenditure:** 36,500 tons per day saving of disposal cost at dumpsite by avoiding it  
(Within the year 2010) |

Source: Field Survey by Waste Concern (July 2008)