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Assessment of Green Jobs in Waste Management Sector

Prepared by: Waste Concern Consultants

Address: House 21 (side B), Road 7, Block G, Banani Model Town, Dhaka 1213, Bangladesh.Tel: (88-02) 9873002, 9873067, 9873110, Fax: 9884774 Email: office@wasteconcern.org Web: www.wasteconcern.org

Executive Summary

Although a number of policies, acts, rules, and other regulatory documents do have some reference or implication for waste management, there is a need of more specific policy for promoting green jobs through the waste management sector.

Pioneering Initiatives:

Waste Concern itself has pioneered many good examples of green jobs in its both dimensions. Its initial work has been on OHS aspect since many young boys and girls have been involved as waste pickers. Having created good examples by introducing the practice of wearing protective gears on the part of waste pickers, Waste Concern has now moved to GHG reduction through organic composite production and by undertaking waste-based CDM projects. Examples of such green jobs practices by Waste Concern and similar social & environmental entrepreneurs in Bangladesh are:

- Source Separation of Waste at Uttara Model Town (Sector 5)
- Community Based Urban Solid Waste Management in Bangladesh
- Composting of Waste in Slums
- Plastic Waste Recycling in Dhaka by Informal Sector
- Lead Acid Battery Recycling by Formal and Informal Sector
- Battery Buy Back for Recycling by Rahimafrooz
- Agricultural Waste Used for Biogas Generation and Improved Cook Stoves
- Biomass Used for Commercial Power Generation
- Biomedical Waste Collection and Disposal
- Environmental Management System (EMS) Practices in Several Industries
- Use of Biomass in Boiler by of a Private Furniture Manufacturer
- Recycling Training Center in Katchpur, Narayangang
- Promotion of 3Rs (Reduce, Reuse and Recycling) in Bangladesh
- Programmatic CDM using organic Wastes of Urban Centers (Pourashavas/Municipalities) throughout Bangladesh – Pilot Phase

Other than the Waste Concern, the NGOs, private sectors and ESAs providing their services in the waste management sector are Rahimafrooz Batteries Ltd., RUSTIC (an NGO), PRISM Bangladesh (an NGO), PRODIPAN (an NGO), SAPNO (an NGO), Bandhan Society (an NGO), Prottoy (an NGO), NOWZUAN (an NGO), Dushtha Shasthya Kendra (DSK) (an NGO), Sylhet Partnership and CleanTech (an NGO). Most of the organizations are involved with composting projects too.

Concerns and Suggestions:

As a labour-abundant and capital-scarce economy, Inorganic waste recycling has been common in Bangladesh for long. Organized organic waste recycling however is relatively a new phenomenon. The main concern on Waste management is about general health status and the disease incidence among the waste workers.

Points that fared prominently in the focus group discussions reflect this concern. Participants in the discussion suggested that:

- *Contribution* of the work associated with waste management reduction, resource recovering and recycling need to be recognized.
- · Awareness campaign is necessary on health hazards associated with waste-related work.
- *Personal Protective Equipment (PPE)* must be made available for waste-related work and their use must be mandatory.
- Huge potential of composting need to be realized by promoting *source separation* and incentive measure for using organic compost instead of chemical fertilizer.
- New opportunity of CDM should be used to undertake more 'waste to energy' projects.
- Capacity building on CDM in waste management sector.
- · Landfill site management should incorporate methane gas capture capacity.
- Laws and regulations need to be tightened and/or promulgated for stopping mixing of *hospital/clinical wastes* with municipal wastes. *Separate disposal system* ought to be required for hazardous industrial and medical wastes.
- · Ship-breaking industry wastes also require separate waste management system.
- OHS facility needs to be in place in all public, private and NGO sector activities in waste management and recycling.
- Informal sector targeted OHS services need to be provided by the municipalities or national government for comprehensive courage. Presently such services are provided by a few NGOs.

Barriers to Green Job Expansion and their Policy Implications

Findings on the waste management sector from green job perspective are simultaneously optimistic and distressing. The main source of optimism is the extent of reuse and recycling. Much of the inorganic waste is recovered and reused because of overall material-resource scarcity in the country. This is possible because of involvement of the informal sector labour and enterprises.

Since large proportion of waste in Bangladesh is still organic, manufacturing compost fertilizer for its agricultural sector bears huge potential. Although organized compost manufacturing is still limited, social and environmental entrepreneurs are playing a vital vanguard role in attracting the private sector, which is becoming more and more real with time. Some barriers however impede the progress in this direction. These barriers were identified by the participants in the Focus Group Discussions, which allowed exchanges their individual experience in doing the work with waste in general and promoting waste reuse and recycling

Experience shared by the participants in the FGD as well as problems observed during the field study have much to do with the risks and health hazards to which waste workers are exposed to, particularly the informal sector waste workers. Of all three sectors investigated for this study, OHS deficit fared most prominently with regard to the waste sector. Overall, the barriers that impede the full realization of the green job in the waste sector and corresponding ways and means to address them, as emerged from the study's various investigating components, are as follows:

Institutionalizing for upscaling: National level policy is necessary to institutionalize and upscale the existing good examples of waste reduction, reuse and recycling established by the social & environmental entrepreneurs and some municipalities.

Informal Sector: Supportive policy towards the informal sector for transforming their work towards decent work. Utilizing social and environmental entrepreneurs and/or trade unions to organized the informal waste workers to improve their working and living conditions.

Incentives/Disincentives: Suitable pricing policy of fertilizer for promoting compost fertilizer vis-a-vis chemical fertilizer.

Waste Management at Neighbourhood Level: Policy to involve the ward commissioners, city councilors, unemployed youth, community leaders or school children or college/university students to promote waste separation at source and neighborhood level. Municipal waste management must be scaled-down to small spatial scale, if necessary by lane and sub-lane.

CDM Opportunities: Dissemination of information that CDM is an opportunity for improving waste management.

Waste Collection Fee: Waste collection and disposal charge should be levied.

Mandatory Use of PPE: Requiring Personal Protective Equipment (PPE) in waste related work.

3R and CDM: Utilizing the media to promote 3R and for awareness campaign. Public, private and community partnership for bringing investment in 3R projects as well as for municipal waste management infrastructure. Mobilizing international support for technology transfer and financial assistance is improving waste management infrastructure, promoting 3R and undertaking CDM projects.

Intervention Points

Although each of the above tasks is essential, this study would suggest adoption of the following as entry or intervention points to bring the necessary change to turn the waste management to a sector of green jobs from its both dimensions - reducing GHG emissions and improving OHS facilities.

Labeling of recycled product: Eco-labeling is growing worldwide. Awareness and interest will grow if recycled products are labeled as such.

Tax incentives to recycling plant operators: Social and environmental entrepreneurs have been steadily growing centering waste management. To make their work more fruitful, recycling plant operators can be provided with tax incentives.

OHS training program for the informal recycling operators: The informal sector waste workers have discovered waste as resource and they have done so and are still doing at their health and life expectancy cost. The minimum that the state and the elites can do is to organize training program on OHS for the informal sector workers to become aware of the OHS know-how.

Recycled product as part of green purchase program: Green purchase program by governments is becoming an important measure in many countries to promote recycled products and other green job agenda. Bangladesh government can consider using this means as a fiscal measure for promoting recycled products and thereby stimulating green job creation in the waste management sector.

GLOSSARY

Aerobic: Composting environment characterized by bacteria active in the presence of oxygen.

Biogas: A mixture of methane and carbon dioxide produced by bacterial degradation of organic matter and used as a fuel.

Biomedical Waste: Also known as infectious waste or medical waste, is defined as solid waste generated during the diagnosis, testing, treatment, research or production of biological products for humans or animals.

Biomass: Renewable organic materials, such as wood, agricultural crops or wastes, and municipal wastes, especially when used as a source of fuel or energy. Biomass can be burned directly or processed into biofuels such as ethanol and methane.

Biodegradable: Any material that can be reduced into finer particles (degraded or decomposed) by microbiological organisms.

Clean Development Mechanism (CDM): Under the Kyoto Protocol, CDM is a mechanism that allows developed countries to achieve part of their green house gas emissions reduction obligations through investment in projects in developing countries that reduce green house gas, fix, or sequester carbon dioxide from the atmosphere.

Certified Emission Reduction (CERs): Green house gas reduction of any CDM project is measured according to internationally agreed methods and are quantified in standard units called Certified Emission Reductions (CERs). These are expressed in tons of carbon dioxide (CO₂) equivalents.

Community: A group of users of a service who live in the same area and have access to, and use the same service.

Community Participation: Comprises of varying degree of involvement of the local community. It may range from contribution of cash and labor to consultation, changes in behavior, involvement in administration, management and decision-making.

Community Based Solid Waste Management: Activities carried out by the members of the local communities to clean up their neighborhood and /or to earn an income from solid waste. Examples are collection of solid waste, sale of recyclables, recycling and composting activity at neighborhood level.

Composting: The controlled biological decomposition of organic solid waste under aerobic conditions.

Co-composting: Co-composting means composting of fecal sludge (after dewatering using drying beds) and municipal organic waste together using aerobic method.

Compost: The relatively stable decomposed organic material resulting from the composting process. Also referred to as humus.

Cytotoxic: Possessing a specific destructive action on certain cells; used in particular in referring to the lysis (disintegration or dissolution) of cells brought about by immune phenomena and to antineoplastic drugs that selectively kill dividing cells.

Decentralized Composting: Means composting of carefully segregated biodegradable local wastes in limited quantities at individual, neighborhood, or ward level with the cooperation of local residents, as close to the source of wastes as possible.

Feriwallas: It is a locally used name for the person who purchase or barter wastes and old materials from different sources by investing a capital or taking loans from the owner of the buying shop. They usually carry a cane basket on their head to carry the load.

Green House Gas (GHG): Many gases present in the atmosphere are known as green house gases (GHG) because these prevent heat from escaping from the earth. The gases are: carbon dioxide, methane, nitrous oxide, hydroflurocarbons, perflurocarbons and sulphur hexafluoride. If the amount of these gases increases in the atmosphere, earth's temperature will increase. Scientists have named this phenomenon `Global Warming' and the associated changes to the atmosphere are known as `climate change'.

Improved Cook Stove: An improved cooking stove is a stove that needs far less biomass to cook the same amount of food than a traditional one and consequently produces also far less smoke than a traditional stove.

Informal Sector: Extensive economic activity, which is usually small-scale, labour-intensive, unregulated and competitive.

Inorganic Material: Materials, which are not degraded by microorganisms

Leachate: Liquid that has percolated through solid waste or another medium and has extracted, dissolved, or suspended materials from it, which may include potentially harmful materials. Leachate collection and treatment is of primarily concern at municipal waste landfills

Lead Acid Battery: A storage battery in which the electrodes are grids of lead containing lead oxides that change in composition during charging and discharging, and the electrolyte is dilute sulfuric acid.

Organic Material: Materials Waste material containing carbon. The organic fraction of municipal solid waste derived from animal or vegetable sources, and can generally be degraded by microorganisms

Pourashava: It is a local term for municipality.

Recyclable: Materials that still have useful physical or chemical properties after serving their original purpose and that can, therefore, be reused or remanufactured into additional products.

Recycling: The process by which waste materials are transformed into new products in such a manner that the original products may lose their identity

Residue: Materials remaining after processing incineration, composting or recycling has been completed. Residues are usually disposed of in landfills.

Resource Recovery: It is a general term referring to any productive use of what would otherwise be waste material requiring disposal

Sanitary Landfill: Landfill waste disposal site designed to minimize water pollution from runoff and leaching. Waste is spread in thin layers, compacted and covered with a fresh layer of soil each day to minimize pest, aesthetic, disease, air pollution, and water pollution problems.

Source Separation: The segregation of specific materials at the point of generation for separate collection, Residences source separate recyclables as part of recycling program.

Tokais: The word 'Tokai' means 'I pick'. It is locally used name for those who collects wastes from wastebins, roadsides and dumpsite and consider wastes as ore. Wastebin tokais and dumpsite tokais fall in this group

Transfer Station: where transfer of collected waste from one vehicle to another may be undertaken to optimize vehicle productivity and reduce overall system costs. All refuse collection vehicles have an operational radius within which they are cost effective. Here waste collected in one vehicle might also be transferred to another energy-efficient vehicle, with the objective of reducing overall operational cost. Recycling and some processing may also take place at transfer stations.

Small Scale Composting Plants: Generally labor intensive and involves less capital and produces compost less than 50 ton per day

Solid Waste Management: Systematic control of generation, storage, collection, transport, separation, processing, recycling, recovery and final disposal of solid waste

Urban Solid Waste: Means all solid waste generated in an urbanized area except industrial and agricultural waste

Vangari Dokan: The word 'vangari' means scrap and 'dokan' means shop. Altogether the meaning is small shops which deal in buying and selling of recyclable wastes, old and scrap items

Wastebin Tokais: Pickers who are engaged in recovering recyclable from the waste bins and roadsides.

ABBREVIATIONS

3R	Reduce, Reuse, Recycle
4R	Reduce, Reuse, Recycle and Recovery
AISD	American International School Dhaka
ADB	Asian Development Bank
BBS	Bangladesh Bureau of Statistics
BCSIR	Bangladesh Council of Scientific & Industrial Research
BNBC	Bangladesh National Building Code
CBOs	Community Based Organizations
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
DCC	Dhaka City Corporation
DNA	Designated National Authority
ECA	Environmental Conservation Act
ECR	Environmental Conservation Rules
EMS	Environmental Management System
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GHG	Green House Gas
GoB	Government of Bangladesh
HCW	Health Care Waste
IDCOL	Infrastructure Development Company Limited
IFRD	Institute of Fuel Research & Development
ILO	International Labor Organization
ITUC	International Trade Union Confederation
JICA	Japan International Corporation Agency
LAB	Lead Acid Battery
LGED	Local Government and Engineering Department
LFS	Labor Force Survey
LIFE	Local Initiative Facility for Environment
MoA	Ministry of Agriculture
MoEF	Ministry of Environment and Forest
MSWM	Municipal Solid Waste Management
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NEMAP	National Environmental Management Action Plan
NGO	Non Government Organization
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
PRSP	Poverty Reduction Strategy Paper
RTC	Recycling Training Center
ROAP	Regional Office for Asia and the Pacific
SEMP	Sustainable Environment Management Programme
SMA	Statistical Metropolitan Area
TWG	Total Waste Generation
ULAB	Use of Lead Acid Battery
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WCC	Waste Concern Consultants

Conversion Equivalent

1 Acre	43,560 sq.ft
1 A oro	0 40469E6 Heater

- 0.4046856 Hectare 1 Acre
- 14,400 square feet (20 Katha) 1 Bigha
- 720 square feet 100,000 1 Katha
- 1 Lac
- 1 KW-hr 1 Unit
- Approximately Taka 60 1 US Dollar

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