Discussion paper issued without formal editing

FOR PARTICIPANTS ONLY
18 October 2016
ENGLISH ONLY

UNITED NATIONS
CENTRE FOR REGIONAL DEVELOPMENT

In collaboration with

Australian Government,
Office of Green Industries SA on behalf of the Government of South Australia,
Commonwealth Scientific and Industrial Research Organisation, and
Ministry of the Environment, Government of Japan

SEVENTH REGIONAL 3R FORUM IN ASIA AND THE PACIFIC,
2-4 NOVEMBER, 2016, ADELAIDE, SA, AUSTRALIA

Implications of 3R Policies and Programmes Towards Resilience of Dhaka City

(Short Background Paper for Plenary Session 7 of the Programme)

Final Draft

This background paper has been prepared by Mr. Md. Maqsood Sinha, for the Seventh Regional 3R Forum in Asia and the Pacific. The views expressed herein are those of the author only and do not necessarily reflect the views of the United Nations.

Seventh Regional 3R Forum in Asia and the Pacific
2-4 November 2016, Adelaide, SA, Australia

Short Background Paper
on
Implications of 3R Policies and Programmes Towards Resilience of Dhaka City

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1. Introduction

Bangladesh has a population of over 167.9 million people and the country is rapidly urbanizing. In 1995 urban population was 18.3% of country's total population (ADB, 2011), in 2010 it was about 26% of the country's total population and by 2030 it is expected to be 31.1% of the country's total population (Hossain Zillur Rahman, 2014). The total amount of waste generated every day in Bangladesh has been increasing annually since 1991. In 1991 the urban areas of Bangladesh were generating approximately 6,493 tons per day of municipal solid waste, by 2005 that figure had more than doubled to reach 13,330 tons per day. In 2014, it was estimated that Bangladesh generated 23,688 tons per day in its urban areas. The total urban population is estimated to be as high as 78.44 million by 2025, and the total waste generation is expected to reach 47,000 tons per day (Waste Concern, 2015). There is an obvious link between greater amounts of waste generated and a higher urban population. Availability of new landfill site is a challenge now for the local bodies. Bangladesh is a land hungry country. In 2014 land requirement for waste disposal site was 157.20 Ha/year and in 2025 the land demand for was disposal l is estimated to be 311.91 ha/year (Waste Concern, 2015)

Dhaka City Corporation (DCC) area with an estimated population of 7 million covers an area of 126.34 Sq. Km. Recently the DCC is divided into two city corporations in November 2011 - Dhaka South City Corporation (DSCC) and Dhaka North City Corporation (DNCC) covering 57 wards with an area of 43.96 sq. km (DSCC) and 36 wards with an area of 82.38 sq. km respectively (BRAC, 2015).

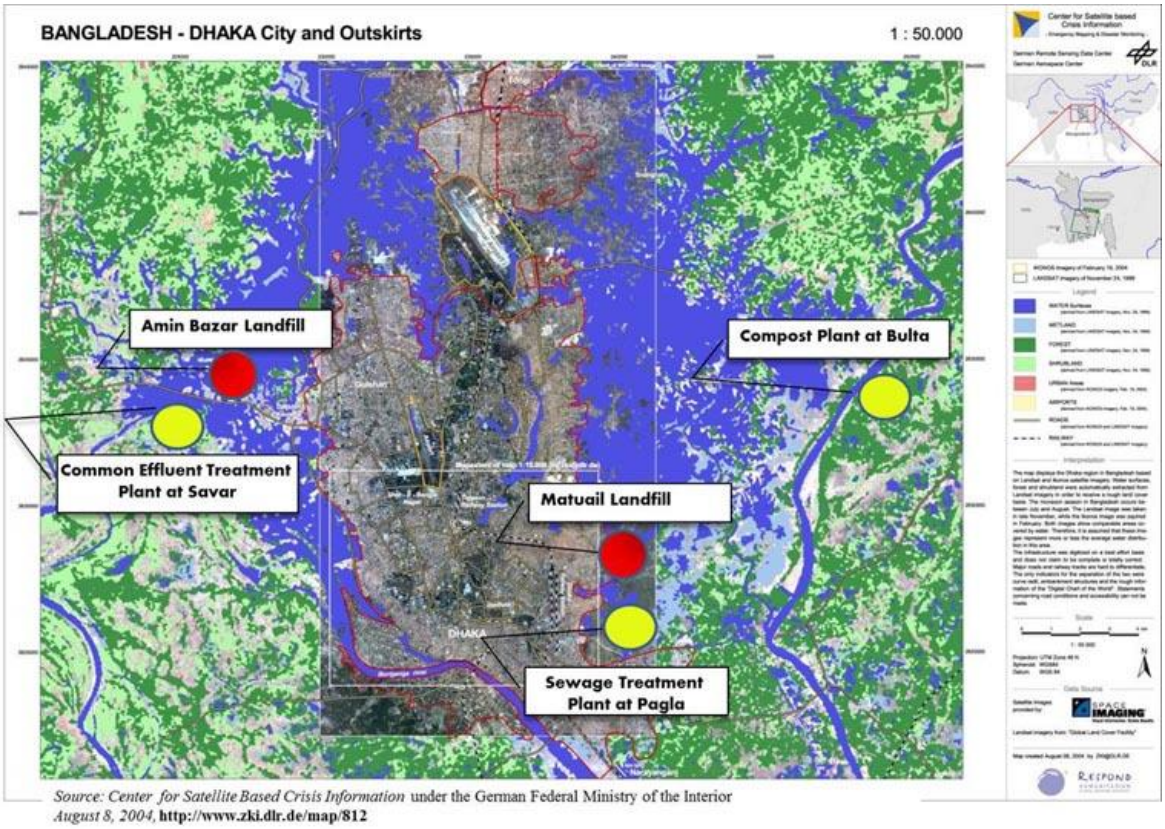

Figure 1: Map showing two locations of the official landfill sites, the only sewage treatment plant at Pagla and large organic waste compost plant in the fringe of Dhaka city located in the satellite image. [source of the satellite image: (ZKI, 2004)].

2. Present Situation

At present due to lack of proper management of municipal waste, industrial waste and faecal sludge the overall environmental and health condition of Dhaka city has deteriorated. Uncollected solid waste is clogging drains and polluting water bodies. Dhaka city generates 4000-5000 tons/ day of waste and only 50-60% of this waste can be collected by the city and the rest remains uncollected which means that the rest of mixed waste is dumped daily in the city's roadsides, drains or lakes (which used to be flowing canals) and rivers. Dhaka city has two official landfill sites which are located at the fringe of the city. Dhaka city's Solid Waste Management (SWM) is landfill based, solid waste is simply collected transported and dumped in landfill sites. According to a study about 99.7% of faecal waste is entering the local water bodies via drains or discharged directly in the drains, water bodies and rivers (World Bank Group & Water and Sanitation Program, 2016).

Most of the industrial establishments located around the river Buriganga have no sewerage treatment plants of their own as a result more than 60,000 M^3/day of untreated toxic waste is discharged in the river. These industries include textile, dying, printing, washing and pharmaceuticals (Kibria, M.G, Md. S Alam and Nurul Kadir, 2015)]. About 250 tanneries are clustered in the Hazaribagh area of Dhaka city (UNEP 2001) and discharging 22,000 M^3/day untreated liquid toxic effluents in the nearby rivers, drains and canals (Kibria, M.G, Md. S Alam and Nurul Kadir, 2015). Government recently took an initiative to relocate the existing tannery industries outside the Dhaka city.

2.1 Problems with the Present SWM Practice

- No Segregation of waste, resulting low-level of recycling.
- Increasing amount of non-recyclable packaging materials are accumulated in waste.
- Multiple Handling of Waste (4 to 5 times from the source to disposal)
- Low level of awareness on 3R/Source Separation of waste
- Crude method of waste collection and disposal.
- Low collection efficiency of waste is a one of the cause of drainage problem
- Environmental pollution from waste causing health hazards.
- Increasing amount of Land required for landfilling
- Increasing waste management cost
- Greenhouse gas emission

Photo 1: No segregation and littering of waste resulting clogging drains of the Dhaka city. [source: (Waste Concern, 2016)]

Photo 2: Uncontrolled disposal of waste, faecal sludge and industrial toxic waste are polluting the water bodies, canals and rivers inside and around the Dhaka city. [source: (SOS-arsenic.net, 2015)].

2.2 Impact of Waste on the Resilience of Dhaka City

Indiscriminate disposal of waste in the drainage system is one of the reasons for flooding and pollutions in Dhaka city. Due to lack of segregation of waste, a large portion of waste with economic value is becoming soiled and contaminated. Contamination of surface and ground drinking water is prevailing due to unmanaged waste and sewer of the city. Low income people especially poor slum dwellers who account more than 37.4 percent of the city's total population, (CUS, 2005) are most affected by unmanaged waste and floods as they are concentrated on the fringes and low lying areas of the City. To make the city resilient, a number of initiatives are taken by the Government of Bangladesh which has been discussed in the following sections.

3. Implementation of the `National 3R Strategy for Waste Management, 2010'

To improve the situation the National 3R (Reduce, Reuse, Recycle) Strategy for waste was launched in 2010. Under this strategy a National 3R Wing has been proposed for the Ministry of Environment and Forests to properly implement waste prevention activities with the help of an inter-ministerial committee to coordinate activities across ministries. A 3R Cell has been constituted within the Department of Environment to monitor implementation of 3R strategies,

The national 3R goal for waste management is to achieve complete elimination of waste disposal on open dumps, rivers, flood plains by 2015 and promote recycling of waste through mandatory segregation of waste at source as well as create a market for recycled products and provide incentives for recycling of waste. Some of the recommendations of 3R strategy are as follows:

- Encouraging public private partnerships to improve public services with regard to environmental management system,
- Collaboration with scientific research bodies to promote recycling and recovery of waste.
- To develop a mechanism to correspond between services received and payments made by citizens.
- Supporting informal sector for recycling, (DoE, 2010).

3.1 Policies Related to 3R Principle

- **National Renewable Energy Policy- 2008:** This policy seeks to promote production of biogas and other green energy from waste and also providing incentives for development of CDM to promote green energy projects.

- **Bangladesh Climate Change Strategy and Action Plan 2009:** Mitigation and low carbon development is one of the key pillars of this strategy, and waste sector has been considered potential contributor towards achieving the mitigation objectives of the country.

- **Bangladesh Environment & Climate Change Outlook 2012:** Waste management has been considered one of the priority issues under this report.

- **Seventh Five Year Plan (FY 2015 – FY 2020):** endorsed low carbon path of development and to build resilience of the poor and reduce their exposure and vulnerability to geo-hydro-meteorological hazards, environmental shocks, man-made disasters, emerging hazards and climate related extreme events to make our cities, human habitat and resources safe, resilient and sustainable".

- **Solid Waste Master Plan of Dhaka City (2005)** with financial and technical assistance from the Japan International Cooperation Agency, Dhaka designed a Solid Waste Master Plan in 2005 that set out to transform the municipal solid waste management system by 2015.

- **Bangladesh Environment Conservation Act 1995 (Amended in 2010) Rules**

- **Bangladesh Environment Conservation Rules 1997**

- **Medical Waste (Management & Handling) Rules 2008**: Source Separation, transportation, treatment and disposal of all kinds of hospital wastes

- **Hazardous Waste and Ship Breaking Management Rules 2011**

- **Electronic Waste Handling Rules, 2012 (Draft)** To ensure proper management of E-Waste and Solid Wastes and involve private sectors in waste management

- **Solid Waste Management Handling Rules (2005)** (yet to be enacted)

- **Intended Nationally Determined Contributions (INDC) (2015):** A number of mitigation actions are set out to help limit the country's GHG emissions. These mitigation actions will play a key role in realizing the move to a low-carbon, climate-resilient economy and to becoming a middle-income country by 2021.

3.2 Projects Relevant to 3R Principle

- Using governments own fund from Climate Change Trust Fund, the Ministry of Environment and Forests (MoEF) initiated 2 projects:

- **Programmatic CDM using organic Wastes of Urban Centers (Pourashava/ Municipalities) throughout Bangladesh (in 64 Districts):** Pilot Phase Fund (2012). At present a number of 3R related activities are being carried out under this in Narayanganj, Mymensign, Rangpur and Cox's Bazar cities and towns. The project activities are concentrated on source separation of waste, introduction of specially designed waste collection vehicle with two compartments (for organic and inorganic waste), compost plant along with a series of awareness generation programs are carried out.

- **Implementation of 3Rs (Reduce, Reuse and Recycling) Pilot Initiative in Dhaka and Chittagong Cities to Reduce Green House Gas Emission (Phase 1) (2012).** This project aims at promoting the concepts and practices of 3Rs in order to raise public awareness about the benefits of source segregation of wastes and recycling.

- **Co-composting Project based on Faecal Sludge and Organic Waste (2012)** Initiated by Waste Concern, UNESCAP, Local Government Engineering Department and Kushtia Municipality.

- **CDM Based Composting Project (capacity 130 tons/day) In Dhaka (2008).**

- **Local Government with ADB (2012)** Adopted 3R Concept in Waste Recycling Projects in 6 city corporations.

- **Purbachal New Town Project by RAJUK (Capital Development Authority of Dhaka)** incorporated the National 3R Strategy in their master plan. They kept the provision of source separation of waste and earmarked land for waste recycling projects.

- **Coastal Towns Environmental Infrastructure Improvement Project (CTEIP) and City Region Development Project (CRDP),** projects being implemented by the Local Government Engineering Department (LGED) funded by Asian Development Bank aims to adopt integrated approach for municipal waste management using 3R principal and integrated landfill and resource recovery concept.

- **Bangladesh Bank's (Central Bank of Bangladesh) Green Banking Initiatives** to promote Green Projects and Products in the country and introduced Taka 2 billion refinance line for these project.

- **UNICEF initiated Composting Initiative and Promoting 3Rs in 19 towns of Bangladesh.**

- **Feasibility Study On Conversion of Multi-technology Poa-DD on Solid Waste Management into NAMA in Bangladesh** Study supported by KfW and UNESCAP, Waste Concern and W2RF.

- **Valuing the Sustainable Development Co-benefits of Climate Change Mitigation Actions: A case of Waste Sector and Recommendations for the Design of Nationally Appropriate Mitigation Actions (NAMAs):** with the support from UNESCAP, UNFCCC, SOUTH POLE and Waste Concern.

- **Relocation of Tannery Industries from Dhaka city:** This relocation is expected to be completed within the 2016. For this relocation government has dedicated its own financial resources to bear the entire cost of the Common Effluent Treatment Plant (CETP), and 80% of the total project cost that is estimated at BDT 1078 crore (US$ 130.82 million).

3.3 Opportunity of Co-benefits from 3R related projects

Opportunity of co-benefits from 3R related projects needs attention. Projects using the 3Rs principle can harness co-benefits apart from income opportunity from emission reductions. Today income from emission reduction has become unattractive due to the present low market value of Certified Emissions Reduction (CER). Calculations show that savings from co-benefits in both public and private sector can be many folds higher compared to present carbon price. A study shows that for Bangladesh this amount can be as high as US$ 93.82 by reducing 1 (one) tons of CO2eq for composting municipal organic waste. There are number of co-benefits such as creation of new jobs, savings in solid waste management cost of city authority, savings from reduced use of chemical fertilizer in agriculture and subsidy, additional income from increased crop yield etc. (UN ESCAP, 2015).

3.4 Integrated Landfill and Resource Recovery Facility (IL&RRF) for Medium and Large Cities

IL&RRF can be implemented in the cities and towns of Bangladesh. The primary objective of the proposed IL&RRF is to provide effective control measures to prevent, or reduce as far as possible, negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, as well as the resulting risks to human health arising from land filling of waste. The IL&RRF can utilize significant portion of the incoming waste into economic outputs (compost, biogas and recyclables for sale) and a small proportion goes to controlled landfill cells. Figure below shows that an Integrated Landfill and Resource Recovery Center (IL&RRC) can convert waste inputs into different economic outputs

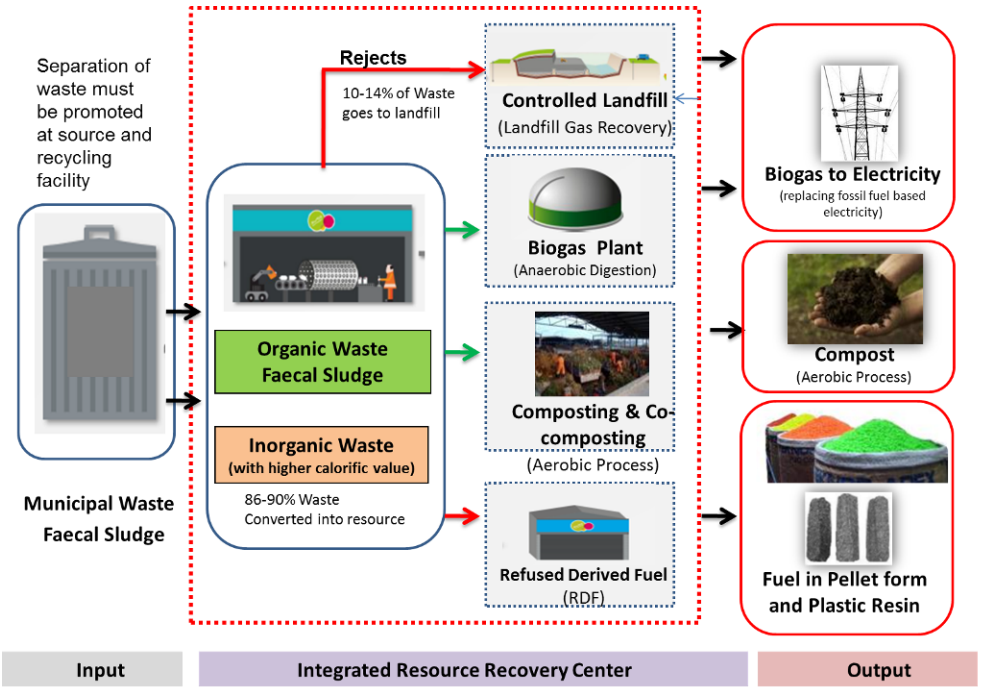

Figure 2: Shows the Concept of Integrated Landfill and Resource Recovery Center (IL&RRC)

4. Major Challenges

- Significant portion of solid and liquid hazardous waste disposed untreated in the drains, low-lying areas, water bodies and rivers are the cause of drainage blocking, flooding, environmental and health hazards.
- Lack of proper collection, transportation and treatment system in every stage is hindering proper source separation and containment of waste.
- Lack of legal Policy/Rules on solid waste, source separation and recycling is delaying the success.
- Gap between policy and ground situation of implementation. Lack of incentives for private investment in waste and sanitation sectors is hindering the progress.
- Public Private Partnerships (PPP), incentives linked with land for facility, TAX & VAT incentives, soft loan, and free delivery of waste to recycling / treatment facilities needs more attention.
- Lack of level playing field for recycled green products.
- Lack of capacity of private sector and government sector to implement 3R related projects.
- Extended Producers Responsibility (EPR) is not addressed.

- Level of public and private awareness on waste related issues still needs proper attention
- Attention needed for harnessing climate financing in waste and sanitation sector (co-benefits, NAMA etc. and similar initiatives)
- Lack of R&D prevailing in Waste sector.
- Need for strengthening of inter-ministerial co-ordination.

5. Way Forward:

After launching of 3R Strategy in Bangladesh a number of positive changes happened since 2010. Government endorsed and adopted the 3R Strategy in a number of projects, programs and policies. Government of Bangladesh utilized its own fund like `Climate Change Trust Fund' to initiate pilot projects which are directly relevant to source separation and recycling of waste. It is also observed that international development banks like Asian Development Bank (ADB) & World Bank, United Nations, GiZ and other External Support Agencies (ESA) are financing waste management projects which are linked with the idea of 3R principles and integrated landfill and resource recovery facility. In addition to this more attention needed to be given to co-benefits issues.

- Waste recycling and treatment services can be a profit making industry. Waste recycling and treatment services can be a profit making industry.
- Minimization of gap between existing relevant policies and barriers faced during project implementation phase at the ground level.
- Legal Policy backing to promote source separation and recycling.
- Prepare action plans on waste for each cities and towns based on 3R.
- Promote Public-Private and Community (PPCP) partnership in recycling initiatives with incentives from government.
- Extended Producers Responsibility (EPR) needs to be implemented.
- Promote capacity building and training for municipal staffs and private sector.
- Strengthening inter-ministerial co-ordination to increase the recycling rate
- Promote NAMA and Co-benefit to harness climate financing.

With proper attention in the following 3 (three) areas, a win-win situation can be created. A number of issues are identified below to improve the situation:

5.1 At Source of Waste:

- Promotion of 3Rs (Reduce, Reuse and Recycling)
- Waste Segregation of waste at the source.
- Containment and Treatment of Waste at Source as far as possible.
- Raising awareness on source separation of waste
- Reduction of Multiple Handling of Waste.

5.2 For Recycling Facility:

- Promotion of Integrated Resource Recovery Centers
- Provision to Land by Government
- Free delivery of waste to recycling facilities
- Incentivize composting and recycling initiatives (with lower VAT &, TAX, Land etc.).
- Easy access to soft loans.

5.3 For Recycled Product:

- Create level playing field (for example chemical fertilizer is subsidized)
- Facilitate Marketing of recycled products/recyclables/renewable energy by the government.
- Green procurement i.e., procurement of compost or recycled product, renewable energy etc.

6. Two (2) policy driven discussion questions

1. How government can make a city sustainable and resilient by improving the waste, sanitation and environmental issues with the active participation of all the stakeholders?

2. How government can encourage investment and participation by private sector and community in 3R related projects by incentivizing and creating level playing field?

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