European Commission

SUNYA – Towards Zero Waste in South Asia

Introduction of 3R Principles and Structured Waste Collection in Banani Market: Case Study of North Dhaka

City Profile

The Dhaka North City Corporation (DNCC) is located in the Northern part of Dhaka city and is the second largest city of Bangladesh covering an area of 82.638 sq. Km. Standing on the East bank of the Buriganga River, Dhaka is the political, economic, scientific and cultural centre of Bangladesh. Dhaka experiences a hot, wet, and humid tropical climate.

- Area: 82.638 sq.km
- No of Wards: 36
- No of Zones: 5
- Population: 3773004 (2011)
- No of holdings: 156086
- No of markets: 43

In recent decades, Dhaka has been experiencing widespread immigration from all over Bangladesh, making it one of the fastest growing metropolitan areas in the world. The city is attracting huge foreign investment and trade and is undergoing rapid modernization of transport and communications. However, the city continues to face substantial challenges of congestion, poverty, overpopulation and pollution.

The DNCC is the administrative body which is responsible for all basic services to its citizens, such as water supply, waste management, social welfare, transport, among others. The waste management department takes care of solid waste in the city, providing facilities of door to door collection, street sweeping, and drain cleaning.

Rationale for Selection of this Pilot Project

The city faces severe challenges regarding solid waste management, because of the sheer volume of waste generated in the city. A majority of this waste is organic, but the lack of segregation and segregated collection of waste leads to all the waste ending up at the landfill. This not only creates more emissions from the landfill but also results in the loss of valuable materials from the waste. The city also faces a challenge in door step collection of waste due to lack of sufficient manpower. Littering is very common making the streets dirty and blocking the drainage system. There is no provision of bins/containers on the streets where people can deposit

Location of Dhaka in Bangladesh

their waste. Initiatives taken up by private agencies for putting up bins and streamlining collection have often failed due to lack of community support and municipal participation.

This is especially true for market areas, where waste is indiscriminately dumped in drains, regularly blocking them. Moreover, markets generate a huge amount of wet waste that can be composted and used, but at present is lost because there is no segregation and mixed waste is dumped in secondary bins, from where it goes to the landfill.

Under the SUNYA Project supported by the European Commission, it was decided to streamline and regularize the collection of waste from the Banani Kitchen Market area. The organic waste was planned to be collected separately and converted into compost.

This market, previously known as Banani Hawker Market, was established in 1970. In 2006, the market was shifted to its present location by the Dhaka City Corporation and the open air market was replaced with a shopping complex. The Banani Food Market is a covered market for fruits, vegetables, meat, poultry and fish and some dry goods combined with a square for other small commercial activities including the selling of meats. Some tea-stalls and fruits shops are located in front of the market The market also has a parking area in front. There was no solid waste collection centre in the market. The generated waste would be thrown out into the open drains in the market, often choking them. The drains were cleaned twice a day and the collected waste is transferred to the corporation vehicles for dumping at the Sanitary Land Fill (SLF) site.

To manage the waste generated in the Banani Market Area, a pilot project was developed under SUNYA to organize the waste collection in the area, segregating waste, converting organic waste into compost and using it for roof top gardening in the market area.

Current Situation of Banani Hawker Market

- Area: 2 sq. km
- Number of different types of shops:
  - Vegetable: 30
  - Fish: 8
  - Meat: 4
  - Grocery: 8
  - Other daily needed product shops: 20
- Number of people visit to the market : 2000/day

Objective

The overall aim of the project was to close the loop for management of organic waste material from the market and immediate surroundings. The specific objectives of the pilot projects were:

- Enhancing public awareness about sustainable waste management
- Ensuring collection of segregated waste material
- Material recovery from biodegradable waste through composting
- Use of compost within the area
- Making market place cleaner in general;

Approach

The DNCC formed a steering committee for undertaking the pilot intervention in the city. The committee discussed with the Banani Kitchen market association and initiated the project to attain zero waste in the Market through adoption of 3R principles.

The DNCC engaged the public to create awareness regarding segregation of waste and using bins for waste collection. Baseline situation was mapped through surveys and meetings. Public consultations helped to design the bin collection system. Rag pickers and cleaners were involved in the project for creating the linkage with secondary recyclable buyers.

The project has a two pronged approach – with focus on segregation and segregated collection of waste from the entire area on one hand and composting of wet waste from the food market to generate compost on the other.

Methodology

Implementation of the 3R principle within the Banani kitchen market and adjacent areas consisted of the following components:

Rotary composting and roof top gardening

(i) Organizing waste collection in Banani area
(ii) Enhancing awareness about waste management amongst the users of the market place
(iii) Collection of organic waste from the Kitchen Market and Banani area and converting into compost on the rooftop area of the market complex
(iv) Roof top gardening using the compost and rain water harvesting.

The Dhaka North City Corporation (DNCC) implemented the project while the shop owners and business associations played a monitoring role. The different steps in the pilot implementation project include:

(i) Organizing waste collection in Banani area

In the Banani area, in the Kamal Ataturk Avenue, 20 single street bins were installed. In front of the commercial establishments, 10 double bins (Blue for dry waste and Green for wet waste) were installed. The bins are covered for protection from rainwater, hinged in steel rings to prevent theft, and provided with a tilt mechanism for easy unloading and cleaning. In the commercial areas where two bins were provided, the dry waste was collected by the CBO collection crew for recovering the recyclable materials and the wet wastes were put in the municipal waste collection vans. The waste was collected twice a day by the collectors.

Segregation of waste at market

(ii) Enhancing awareness about waste management

DNCC conducted a series of capacity building programmes for waste collectors responsible for the Banani Market, shop owners as well as members of the local business association. Additionally, continuous awareness generation programme were conducted through one to one communication, posters, and other IEC. The IEC focused on the importance of sustainable waste management, waste segregation, material recovery and recycling, segregated collection and transport and scientific disposal. Information leaflets and posters were developed. Pictorial instruction on bins informed people regarding segregated disposal of wastes, where and what types of wastes have to be put in the bins etc.

(iii) Processing of the waste

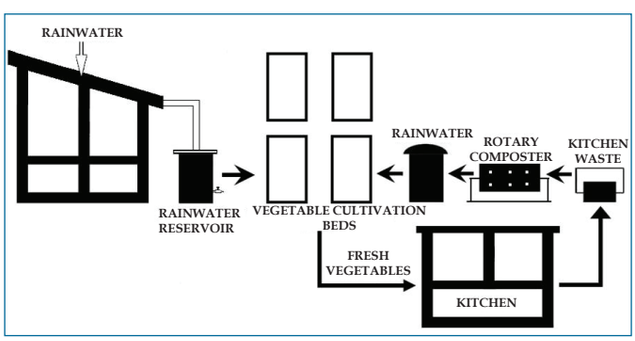
Organic waste collected from the Banani area and the Kitchen Market was composted to recover waste material in the form of compost and reduce the amount of organic waste going to the landfill. Composting was

IEC Material

done through a rotary composter. The waste was put into two rotary perforated drums, with steel blades fitted inside for chopping up waste and facilitating aeration – the whole units is mounted on a steel frame. After 7 days, the waste is transferred into perforated vertical drums; the perforations allow for passive aeration. . Waste is stored in the drums for 20 days after mixing with cow dung and water and is turned occasionally. Composting is completed in 20 days and the compost is taken out and kept for maturation for 3 days.

(iv) Rooftop Gardening

A roof top garden has been developed on the roof of the Market Complex under this pilot initiative. The garden consists of fruit and flower plants. The compost is used in the garden. Rainwater captured on the roof is used to water the garden.



Results/Outcomes

- The amount of organic waste generated has been reduced through the project
- The cleanliness of the market has increased significantly and complaints of blocked drains have reduced
- The roof top garden not only produces fresh fruit and flowers, but also keeps the top floor cool
- Awareness campaigns helped encourage people to start using bins for waste disposal and segregation of waste
- General cleanliness of the Banani area increased significantly

Lessons Learnt

The pilot initiative faced several challenges including no cooperation from citizens, specifically with regard to the creation of a roof top garden, fearing damage to the roof due to extra load. Issues of theft of bin covers and questioned benefits of segregation were also found to be concerns that had to be addressed. These challenges were overcome through sustained campaigning and awareness generation activities.

Involvement of the community at the planning stage helped the corporation to identify areas which needed bins. It also helped to create greater acceptance of the solid waste management plan of the corporation because of detailed discussions with local stakeholders. The use of decentralized composting of organic waste from the market helped the corporation greatly by reducing the cost of transportation of waste to the landfill, reducing pressure on the landfill, and increasing cleanliness of the area in general.

Sustainability and Replication

DNCC has appointed one garden supervisor and a gardener to run the process in the Banani area. This model has been appreciated by all departments of DNCC including the Administrator. In the steering committee meeting, a resolution has been passed to replicate the same model in nearby markets such as Gulshan, Baridhara as well. The DNCC will bear all costs for replicating this model, taking into consideration the benefits of reduced costs of transporting waste to landfill and increasing pressure on it. Learning from this initiative, Dhaka South City Corporation has installed street bins in Dhaka University Area to collect waste.

Apart from this, DNCC plans to integrate this initiative with the National 3R Action Plan and showcase it as an exemplary model for all cities in the country.

Project Partners

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About SUNYA

SUNYA - Towards Zero Waste in South Asia is a project supported by the European Commission conducted in the South Asian countries of India, Nepal, Bhutan, Bangladesh and Sri Lanka. The seven cities of Shimla, Coimbatore, Hetauda, Tansen, Phuentsholing, North Dhaka and Matale partnered in the project, which was led by Municipal Association of Nepal and technically supported by ICLEI South Asia, VVSG (Association of Flemish Cities and Municipalities, Belgium) and ARGE (Association of Waste Prevention, Austria). The project focused on introduction of principles of 3R for municipal solid waste management, promoting reduction, reuse and recycling of waste through community mobilization and involvement, and scalable pilot demonstrations of reduction of waste generation and sustainable management. For more information, please visit: http://www.sunyaproject.org/

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