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## Solid Waste Management In Dhaka City: Problems And Prospects

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### **Abstract:**

*This paper explores the problems and prospects of solid waste management in Dhaka city. It also mentions the trends of urban waste creation in Bangladesh. This inability to manage urban solid waste consists of failures in the following areas: inadequate services, inadequate financing, inadequate environmental controls, poor institutional structure, inadequate understanding of complex systems, inadequate sanitation and lack of implementation proper environmental laws. There is a good market for compost in Bangladesh. Waste concern helps the communities sell their compost to a number of businesses like fertilizer companies, and plant nurseries. Floating children are the victims of many social problems. The chemical waste of mills and factories, household waste, medical waste, sewage, dead animals, plastics, and oil are responsible for the Buriganga's pollutants. There is no single solution to improve solid waste management system in any city. It must be based on integrated systems with a combination of different methods.*

### **1.Introduction**

Bangladesh is the ninth most populous country and twelfth most densely populated country in the world. In particular, the projected urban population growth rate from 2010-2015 is 3% over the years of 2010-15 [12]. In Dhaka City, there an appalling number of floating populations, children suffer from various diseases due to lack of a balanced diet, pure drinking water and sanitation services. With this population growth, there is an increasing problem of waste management particularly in the larger cities. Currently, according to a UNFPA report, Dhaka is one of the most polluted cities in the world and one of the issues concerned is the management of municipal waste [4]. Municipal Solid waste in Dhaka city poses a serious problem with adverse effects on the environment and health of the citizens. Both quantity and volume of this waste have increased rapidly as the city population. According to Bangladesh Bureau of Statistics the population of Dhaka Metropolitan was 6,487,459 in 1991 and 9,672,763 in 2001 and 14,543,124 in 2011 [1].

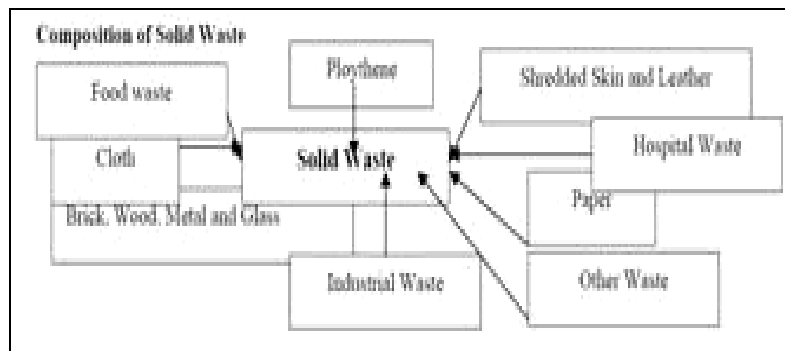


Figure 1: Composition Of Solid Waste  
Source [10]

The key objectives of the study are:

- To know about the activities of waste management of DCC
- To know Impacts of waste on the environment and the problems and prospects of solid waste management in Dhaka City.

## 2. Materials And Methods

The study was conducted following a variety of methodologies, techniques and tools to find-out appropriate and authentic information. The main method of the study is surveying method.

### 2.1. Sources Of Data

Data were collected from primary and secondary sources:

Sources of primary data: Primary data were collected from the study area. Valuable information was gathered by interviewing DCC officials and workers in this study.

### 2.2. Sources Of Secondary Data

Secondary data, mainly from research papers and study reports on solid waste management.

This study focuses mainly on domestic solid waste management under the jurisdiction of DCC. The collected information was analysed to develop an understanding the problems and prospects of existing solid waste management system in Dhaka City.

### 2.3. The Study Tools

A set of objective-based questionnaire was developed for data collection in the areas related to target respondents. A set of guidelines was also developed to provide for better understanding of the interviewer and the supervisors for systematic collection of data. The guidelines include the definitions and clarifications of critical areas of information. The questionnaire, duly pre-tested, was finalized though a thorough review of the test findings. The questionnaire was the combination of open-ended and close-ended questions. The assigned data collectors have been provided with adequate training on the methodologies used and also orientation on the tools.

### 2.4. Sampling

A total number of 100 respondents from DCC officials and workers were selected by purposive sampling. Among them 50 were officials and 50 were workers.

## 3. Trends Of Urban Waste Creation In Bangladesh

Waste generation was estimated at 5,650 tones per day or 2.06 million tons per annum in 2003. The daily waste generation is projected to be 8,280 tons and the annual generation 3.02 million tonnes by 2010. By 2021, the daily and annual generation will amount to 15,110 tons per day and 5.52 million tons per year. There is an increasing rate of waste generation in Bangladesh and it is projected to reach 47, 064 tones per day by 2025. The Waste Generation Rate (kg/cap/day) is expected to increase to 0.6 in 2025. A significant percentage of the population has zero access to proper waste disposal services, which will in effect lead to the problem of waste mismanagement [7]. The total waste collection rate in major cities of Bangladesh such as Dhaka is only 37%. When waste is not properly collected, it will be illegally disposed of and this will pose serious environmental and health hazards to the Bangladeshis [9].

Four types of waste streams i.e. Domestic (49%), commercial (21%), industrial (24%), and hospital (6%) constitute the total solid wastes of Dhaka city [6].

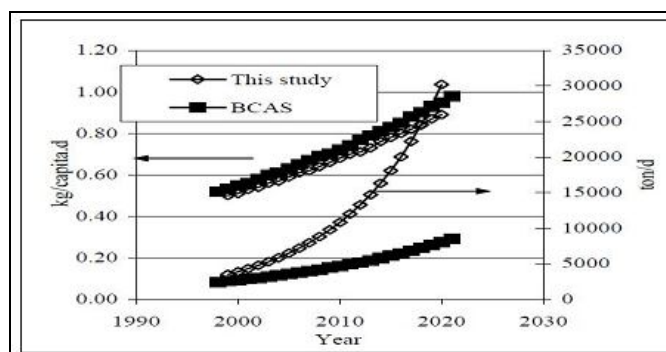


Figure 2: Projection Of Future Waste Generation By Bangladesh

Source: [6]

## 4. Results And Discussion

In the study the following obstacles and prospects have been identified and the necessary discussions are included.

### Waste Management Activities by DCC

40% DCC workers sweeps roads and drains are daily, 60% DCC worker sweeps roads & drain often.

According to the results the status of DCC sweeps roads and drains are not good.

65% DCC Cleaners Accumulates wastes from roadside & transfer to the nearest dustbin/container often, and 35% do these activities daily.

So, in this case, DCC cleaner's activities are not good enough.

Only 25% cases DCC's trucks dump to the dumping depots and Dressing by bulldozers, tire Dozers, pay loaders & excavators daily. On the other hand (75%) cases DCC's trucks dump to the dumping depots and dressing by bulldozers, tire Dozers, pay loaders & excavators often.

So, in this case DCC management couldn't maintain the regularity.

Waste collection is not efficiently planned and does not reach all communities

In most places, the municipality is collecting waste only once a week, a practice that has created illegal dumping [6].

So, it is clear that there is a big problem with regularity among the DCC waste management System.

#### *4.1.Obstacles To Solid Waste Management*

(60%) respondents said that financial problem is the main obstacles to Solid Waste Management, (25%) respondents said about institutional problem and (15%) said Legislation and regulation problem is the main obstacles.

#### *4.2.Financial Obstacles*

While people are willing to pay for water and other services that are essential to their survival, solid waste removal does not always fall into this category. Even if residents and businesses are willing to pay for waste removal, the municipal government is unlikely to know what its true costs are. When solid waste fees are calculated based on real estate assessments, there is no link between quantity generated and amount paid, and therefore no incentive to reduce the amount. Furthermore, there are also a number of barriers for the private sector to start operating in this area because private businesses, unlike municipal governments, may have difficulty raising capital for equipment and/or land purchase. Then there are foreseeable problems with collection of fees. Also, the tendency of municipal governments to pay their bills very slowly can cause financial hardship for contractors. Private and public services are under-financed and Households are reluctant to pay the monthly waste collection fees because of the services provided to them are inefficient [6].

#### *4.3.Institutional Obstacles*

The general lack of critical thinking in relation to solid waste systems is often a barrier to innovative solutions. Even in developed countries, the intellectual framework for understanding the relationships between consumption, disposal, and recycling, industrial activity and natural resource exploitation is seldom completely or adequate. Confusing and fragmented divisions of labour and responsibility may mean that activities which could be contracted out are administratively inseparable from each other, making it effectively impossible to split them off for a contractor. Staff incompetence and lack of interest often plays a role. Solid waste is frequently a 'dumping ground' for political patronage, which can lead to the appointment of supervisory or management personnel who lack the necessary skills to manage the department that is responsible for the environmental health of the city population. These departments are often overstuffed with unqualified workers, and lack mid-level management (or the recognition that it is necessary). Finally, public officials may receive attractive fringe benefits, ranging from free service to their own homes with profitable contracts with equipment suppliers. Collection services are unreliable usually due to insufficient and poor maintenance of equipment. Public awareness of the importance of waste disposal is lacking [6].

#### *4.4.Legislation And Regulations Problem*

These are set up for particular purposes, and are often difficult to adapt to new circumstances. In particular, the legislative and regulatory context of solid waste management is dispersed, fragmented, and incomplete, and so does not tend to facilitate the formation of cross-sectoral partnerships. But if such partnerships come into being, existing legislation normally provides few tools for coordinating or managing them, which ultimately reflects in our current waste management situation. Presently, the solid waste management system in Bangladesh is not organized well. However, efforts are under way to improve the organizational structure for solid waste management in different cities/towns. For instance, the waste management cell to improve the waste management services in the city. Solid waste management is organized and run by a conservancy section of the urban local bodies, whose prime responsibility is maintenance of the sanitation system. The number of staff for conservancy varies from city to town depending upon the size of the city and the workload. Some of the cleaners and sweepers are hired on a temporary basis. Although the organizational structure deals with the collection and storage of waste as well as street sweeping, separate departments in the city corporations and municipalities transports the waste. The chief conservancy officer or the conservancy officer in the municipalities has to coordinate with the transport department to get the waste transferred from collection points to designated waste disposal sites. In addition to the shortage of personnel, the staff is handicapped with a relatively small amount of resources.

Little sense of compliance in Dhaka city Cooperation with the Act and Rules: Most of the staff appears not to be aware of these provisions. Uncontrolled or unidentified dumping or disposal prevails. In some cases, this kind of dumping is done by Dhaka City Cooperation upon request of the landowners [5].

#### 4.5. Negative Impacts Of Poor Waste Management

This study finds out that (60%) respondents said that poor waste management is harmful for health, 30% respondents said about river pollution and 10% said that it is harmful for floating children.

One of the most adverse impacts of poor waste management, especially municipal waste, is the incidence and prevalence of diseases such as malaria and respiratory problems, as well as other illnesses through the contamination of ground water. Biomedical wastes pose great danger in Bangladesh too as a report estimated that 20% of the biomedical waste is "highly infectious" and is a hazard since it is often disposed of into the sewage system or drains [3]. Such poor sanitation has serious consequences for the health of the residents and a report suggests "most of the child mortality could be related with this problem". With regards to the living standards, solid waste leads to blockage in the drainage system, which leads to flooding in the streets. Consequently, mosquitoes and bad odor are among the negative impacts resulted [8]. Dhaka City is situated on the river Buriganga. The River is afflicted by the noisome problem of pollution. The chemical waste of mills and factories, household waste, medical waste, sewage, dead animals, plastics, and oil are some of the Buriganga's pollutants. The city of Dhaka discharges about 4,500 tons of solid waste every day and most of it is released into the Buriganga.

#### 4.6. Prospects Of Solid Waste Management

The result of this study shows that 50% respondents said that proper waste management is good for Fertilizer 30 said that it is good for Nurseries and (20%) said that it is good for compost market. Although tokais extract most of the readily available material, there still remains considerable value in what they leave behind. This value lies in the organic portion of the solid waste, which constitute about 70-80 percent of the total generated waste, having considerable potential value, if converted into compost. From the perspective of a municipality, organic waste recycling through composting not only reduces disposal costs and prolongs the life span of disposal sites, but it also reduces adverse environmental impacts caused by landfill sites. There is a good market for compost in Bangladesh. Waste concern helps the communities sell their compost to a number of businesses, such as fertilizer companies, and plant nurseries. Each 50kg bag of compost sells for between \$2.50 and \$4.50 according to Waste Concern dealing with wastes [3].

### 5. Conclusion

Waste disposal is an emerging problem in almost all urban areas of Bangladesh. The magnitude of the problem is relatively small and manageable in rural areas. Among the major environmental concerns confronted today in the urban areas of Bangladesh are problems relating to proper management of solid waste. Community-based SWM initiatives have grown across the country to offer a civic door-to-door garbage collection so that an environmental-friendly situation obtains in the neighborhood [11].

To eliminate this environmental problem, the following measures could be taken:

Increase the facility of house-to-house collection in all areas of DCC.

Assurance of regularity in collection and transportation of solid waste from the household, bins and primary dumping stations.

Separation and collection of separated waste separately from the house by increasing awareness.

Increase awareness for reduction of solid waste generation.

Implement proper environmental laws

Transportation of solid waste during nighttime instead of daytime. If it transport during daytime use cover on the waste transportation vehicle to reduce the odor pollution and other associated problems.

Increase the salary and safety of the labor who working in the solid waste management system.

It is unlikely that government agencies alone would be able to tackle this problem. A combined effort by NGOs like Waste Concern, Legal Organizations like BELA, External Support Agencies Institutional Member; (ESAs), entrepreneurs and communities is essentially needed.

### 6. Acknowledgements

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