

## A STUDY ON PAPER REUSING IN DHAKA CITY

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### ABSTRACT

*Reusing paper conserves natural resources, saves energy, reduces greenhouse gas emissions, and keeps landfill space free. The purpose of this study is to view the paper reusing scenario in Dhaka city. A structured questionnaire survey has been carried out in the five study areas were surveyed. Each day 3000 tons household waste are producing in Dhaka city. About 9.73% of total waste are paper waste. In the studied location about a total of 61400 kg paper waste are prepared for reusing. To acknowledge more about the reusing system information was collected from feriwalas and retailers. The result shows i) informal reusing pattern of paper, ii) generation of paper waste in each study area, iii) people involved in this reusing process have no idea of its environmental benefits, iv) people perform this reusing on economic issues.*

**Keywords:** Reus, paper waste, informal sector, old used books, cartoon

### 1. INTRODUCTION

Solid waste management is now becoming one of the major problems because of the social, economic and environmental implementations are not properly managed (Riyad, 2014). Studies show that only 30-50% of the waste generated in developing countries is collected and managed properly (Dawit and Alebel, 2003). Reusing and recycling is a waste management strategy. Thus, an appropriate solid waste management process is necessary to face the global environmental challenges. More specifically, solid waste problems in developing countries are aggravated by the malfunctioning of traditional waste management systems due to the rapid development and the concentration of the population (Deshmukh et al., 2002). Dhaka is one of the largest city of Bangladesh with a large population has been a place of commercial importance for more than 400 years. Each day Dhaka city is producing over 3000 tons of household waste, whereas Dhaka City Corporation collects almost less than half of it (Chowdhury and Afza, 2006). Paper waste forms almost 9.73% of this total waste (Waste concern, 2009). Average total per capita waste generation rate of Dhaka city is estimated at 0.45 kg/cap/day. The main purpose of this study is to depict a picture of the overall scenario of the reusing paper waste in five study areas. The study areas are Mohakhali, Nakhalpara, Farmgate, Agargaon and Lalmatia.

### 2. METHODOLOGY

Dhaka, is one of the largest city of Bangladesh, is located in the middle part of the country, having latitude 23°40'N and longitude 90° 23' E. The area of Dhaka city is 270 square km with a population 7 million. With regards to investigating the activities of paper waste reuse, a field survey was conducted in the Dhaka city area. The selected study sites for collecting data in Dhaka city were includes Mohakhali, Nakhalpara, Farmgate, Agargaon and Lalmatia. Figure 1 shows the location of the survey area. The data were collected in doing this research. Primary data, such as the opinion from waste collectors, recyclable dealers, industry workers through in depth interview.

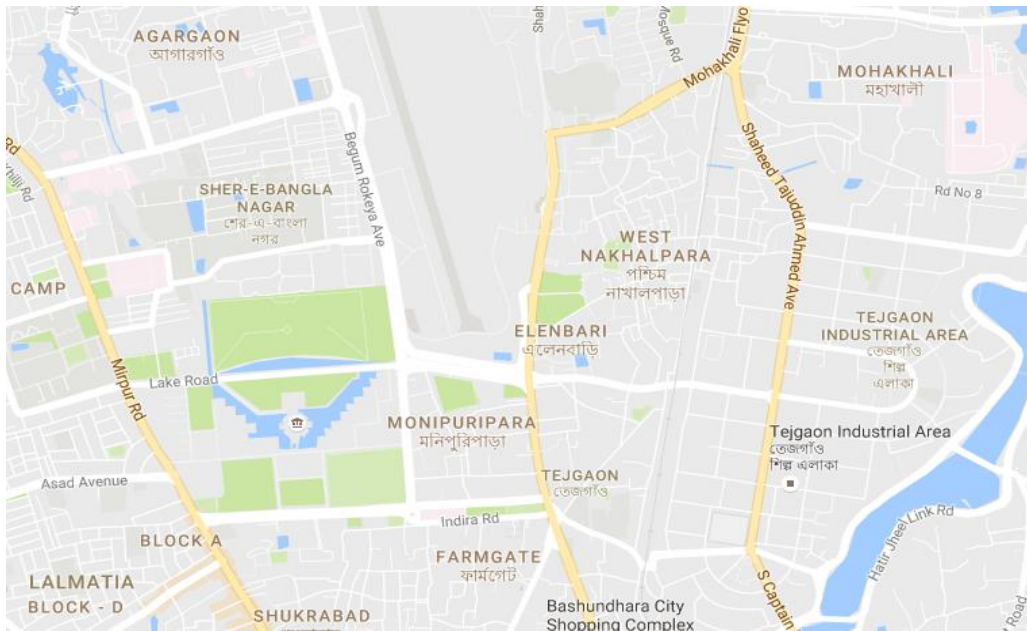


Figure 1: Location of the sites (Google map)

### 3. REUSE AND RECYCLING TRADE CHAIN IN DHAKA CITY

Private sectors are responsible for reusing and recycling of solid waste in Dhaka city. The waste collectors from private sectors are playing a vital role in collection of recyclables as a main source of income. They are known as tokais and are visible in every community of the city and come from nearby slums and squatter settlements. It is estimated that at present 6500 tokais are working in Dhaka city area. Feriwallas are the buyers of separated recyclable items stored for selling at the primary source. This study reveals that there are around 3600 feriwallas involved in the chain of recycling network of Dhaka. The small recyclable dealers (SRDs) purchase waste materials from tokais and feriwallas in exchange of money. All types of waste from tokais and fer-iwallas and sell the recovered materials to medium recyclable dealers (MRDs). The MRDs usually deals with more than two kinds of specific wastes and passes these recyclable to the large recyclable dealers (LRDs) that essentially specialize in specific wastes. They clean and sell the recovered materials to industries both in the formal and the private sectors. Table 1 shows the average waste collected per day by different collectors.

Table 1: Average waste collected per day by different collectors

Collectors	Average quantity collected per day (kg)
Wastebin Tokais	30
Feriwallas	50
Vangari Shops	200
Wholesale shops	500

From the field survey in the selected location it was found that the major reusable materials were different types of cartoons, books, papers etc. The average number of vangari and wholesale shops for Mohakhali is 60, Nakhhalpara is 30, Farmgate is 65, Agargaon is 45 and Lalmatia is 50.

### 3.1 Cartoons

Different types of cartoons are seen for reusing. Table 2 represents the total amount of cartoon collected per day and their buying and selling price. They used to buy cartons about @Tk 15 per kg and sale @ Tk 18 per kg. The activities had been continuing smoothly under a systematic chain which gradually increased the reuse of the materials and hence reduced the total waste generation.

Table 2: Total amount of cartoon collected per day and their buying and selling price

Locations	Average number of vangari and wholesale shops	Total amount collected (kg/d)	Buying price (Tk/d)	Selling price (TK/d)
Mohakhali	60	12000	180000	216000
Nakhalpara	30	3200	38400	57600
Farmgate	65	13000	195000	234000
Agargaon	45	4600	69000	82800
Lalmatia	50	8000	120000	144000
Total	205	40800		

### 3.2 Old Books

Most of the old books were found in close proximity to Railway market area and footpath. Table 3 represents the total amount of old books collected per day and their buying and selling price. They used to buy books about @Tk 30 per kg and sale @ Tk 40 per kg. The activities had been continuing smoothly under a systematic chain which gradually increased the reuse of the materials and hence reduced the total waste generation. Figure 2 depicts the scenario of the old books selling shops.

Table 3: Total amount of old books collected per day and their buying and selling price

Locations	Average number of vangari and wholesale shops	Total waste collected (kg/d)	Buying price (Tk/d)	Selling price (TK/d)
Mohakhali	45	6000	180000	240000
Nakhalpara	25	1200	36000	48000
Farmgate	75	9000	270000	360000
Agargaon	20	1000	30000	40000
Lalmatia	40	3400	102000	136000
Total	205	20600		



Figure 2: Scenario of the old book shops

### 3.3 Paper Reuses

Paper packets have been used traditionally by all the shop keepers to sell consumer goods. These packets were made of new papers or used papers (including newspaper, books and used office paper) by informal cottage industries. Used papers were collected directly from the community in residential areas and offices. The total number of different sizes of paper packets per kg for the selected five locations was given in Table 4. The number of packets varied widely according to their size. The price of the packet was not assigned according to the sizes, but to the weights. The price of different sized paper packets were approximately Tk 40-60 per kg.

Table 4: Different sizes of packets made of waste paper

Different sizes of packets	Number of packets per kg
Tiny	17000
Small 1	13500
Small 2	1100
Medium 1	8300
Medium 2	5550

## 4. CONCLUSIONS

In Bangladesh, Solid waste generation scenario in urban area has changed due to population growth, urbanization and ignorance. Municipal waste management services are unable to cope with over-burden Solid waste generation and its management facility due to lack of manpower, insufficient materials and support. Among the different types of solid waste, 30% of all municipal waste covers residential, household and industrial waste. The solid waste production rate has increased where it may reach 0.49 kg/person/day to 0.6kg waste by 2025. Therefore a proper management is needed. Reusing of paper is not a new term in this modern technology. In case of Bangladesh reusing of paper, or anything is not well developed like other countries. But with the time being it is improving day by day. Reusing of paper plays an important part in environmental benefits. It reduces the production of solid wastes. A total of solid paper waste 61400 kg per day from 5 locations in Dhaka city is reusing. It indicates the reusing of paper waste. Another important part is that many families are depended in this reusing process. They take it as their career. Therefore unemployed persons are reducing. Details research should be carried out. New technologies should be bring. Paper collection process should be improved. Separated bin can be established. Traing to the collector can also be carried out. They should understand the importance of what they are doing.

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