Role of the Informal Sector in Recycling Waste in Eastern Lahore

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Abstract

In Shalimar Town (ST) and other areas of Lahore, sorting of waste is carried out by an informal sector comprised of junkyards, household waste collectors, street hawkers, and scavengers. This study explains the role of this informal sector in recycling of waste in eastern Lahore. People working in the informal sector belong to different socio-demographic and socio-economic groups. Recyclables are collected by males and females of all age groups. They are migrants, minorities, and poor refugees. Purchased and collected recyclables are later sold at slightly higher prices to junkyards located at different places in town. The total estimated quantity of recyclable material recovered by all junkyards working in ST is about 15.30 tons/day and worth 681.8 €/day. People comprising the informal sector suffer from both health and safety issues during working hours because of their poverty. Not only is this informal sector helpful in reducing waste from highly populated urban areas of a third world country like Pakistan, but it also makes important economic contributions. Better results could be obtained if local government authorities improve the working environment for people working in the informal sector by providing better facilities for health care and environmental safety.

Keywords: household waste collectors, informal sector, junkyards, recycling, scavengers, street hawkers

Introduction

Municipal solid waste (MSW) recycling has been recognized as the most effective environmental solution for solving MSW problems [1]. Even countries like the USA recover 30% of total waste through recycling [1]. Due to rapid urbanization, the population of the world continues to rise and it is estimated to be 7.2 billion by 2015 [2]. This results in greater generation of MSW and in a greater challenge to deal with MSW in urban areas of the world [3-5]. The haphazard and unplanned urbanization in major cities of Pakistan is causing serious MSW management problems. The recycling of MSW is carried out to a large extent in most developing countries like Pakistan.

In developing countries, most of the recyclables are collected from generated MSW by poor people. These poor people are given different names in different languages, depending on the material they collect [6]. In Pakistan these people are given names like *Kabarias* (junkyard owners and workers), *Pheriwalas* (street hawkers) and *Korreywalas* (waste collectors or scavengers) [7]. Recycling of MSW is also acknowledged as a sustainable waste management strategy [8].

Informal recycling can improve waste management services if the importance of this sector is realized by municipalities [9]. "Informal waste recycling involves urban poor and marginalized social groups that use waste picking as a source of income, and often as their only survival strategy" [10]. Different types of waste collectors are playing an important role in conservation of resources, protection of the environment, and waste reduction, but

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Table 1. Total number of houses in three different socio-economic levels and the types of recyclables generated by the household.

Income groups	Total houses	Generated recyclables
High	28,842	bones, cardboard, metal, newspaper, different types of plastic, stationery, PET, textiles, batteries and battery cells, tetra packs, shoes, metal cans
Middle	43,681	paper, plastic, stationery, cooking oil cans, PET, tetra pack, shoes, textiles
Low	61,352	plastics bags, stationery, PET, tetra packs, plastic shoes

these people are often looked down upon and their work remains unacknowledged [11]. They get no support from the government and private sector. Therefore, it remains an activity within the informal sector.

Most of the junkyards are located in small shanty towns in Lahore and the working environment is very polluted and unhealthy, mainly due to the lack of funds to handle the escalating problem of MSW management.

The reason is that the municipalities in developing countries do not have funds to handle the increasing problem of solid waste management [12]. The private sector companies and local governments responsible for managing waste must take initiatives to take in recyclers into formal working environments by resolving the lack of labour [13-14]. There is no formal recycling of waste in Pakistan, including the largest cities like Karachi and Lahore [15]. The statistics show that 21.2% of total recyclable waste in Lahore is being used for recycling [15]. The waste recyclers are important members with an important role in the waste management sector of developing countries [16]. Many authors have shown

the importance of suitable economic, political, and social setting in achieving recycling goals [17-21].

MSW management is becoming a major issue [14-22] for many large urban areas of Pakistan. In the years to come, improvements have to be made by the government of Punjab in large cities like Lahore to achieve the targets of MSW collection, recycling, and disposal [23]. Therefore, this study focuses on the role of the informal sector and problems faced by the main characters comprising the recycling of MSW.

Study Area

The city of Lahore is the capital of Punjab province and is also the second largest city in Pakistan. The city is estimated to have a population of more than 10 million. So far due to haphazard urbanization and political instability, the government and private sector has been unable to develop an economically and environmentally sustainable management program for MSW collection, recycling, and disposal. The area selected for this study is Shalimar Town (ST), Lahore. There are nine administrative towns in Lahore and ST is one of the largest administrative towns. The total estimated population of ST is 1,344,000, further divided into 17 administrative Union councils. ST is economically very active as there are lots of garment markets, general stores, tailoring shops, medical stores, food stalls, restaurants, fruit and vegetable markets, chicken, fish and meat shops, schools, and colleges.

Types of Recyclables Generated From Different Sources

A field survey of ST was carried out in March 2012 to find the different sources and types of generated recyclables. The survey has revealed that recyclables are generated by three different residential groups as well as commercial and area sources. Table 1 shows the total number of houses in three different socio-economic levels and the types of recyclables generated by the households, and Table 2 shows the different types of commercial areas in ST and the types of recyclables generated. Similarly, Table 3 shows the recyclables generated from area sources in ST.

Table 2. Different types of commercial areas in ST and the types of recyclables generated.

Commercial areas	Numbers	Generated recyclables
Garment markets	12	cardboard, packing material, plastic bags, textiles, polyethene bags
General stores	457	cardboard, cartons, cooking oil cans, packing material, old newspaper, PET, polyethene bags
Tailoring shops	359	pieces of textile cuttings
Medical stores	118	cartons, cardboard, packing material
Food stalls	>500	old newspaper, wrapping paper
Restaurants	>100	bones, bread, dry bread
Fruit and vegetable markets	10	wooden baskets, old newspaper, plastic wrapping
Meat shops	>700	bones

Table 3. Recyclables generated from areas sources in ST.

Area sources	Total numbers	Generated recyclables
Schools	102	paper, newspaper, stationery, PET, cardboard, polyethene bags, wrappers
Colleges	38	paper, newspaper, stationery, pet bottles, cardboard, polyethene bags, wrappers
Offices	>150	PET, newspaper, advertisements, paper

Description of Recycling Activities

As far as sorting of waste is concerned, there is no formal government and private sector involvement in ST. MSW sorting is carried out by people described as street hawkers (*Pheriwalas* in Urdu and Punjabi), and scavengers or waste collectors (*Korreywalas*). The house-to-house waste collection in high income areas is carried out by household waste collectors (are called *Korreywalas*).

Household waste collectors use donkey carts for collection and transport. The collected MSW is sorted for good quality recyclables during transport by these collectors, and remaining waste is dumped into the roadside steel containers. In low and middle income groups, the households sort the recyclables themselves and throw away the remaining waste, either in a nearby steel container, in open areas, and sometimes along roads. Later on, scavengers further sort the waste from steel containers as well as from streets and roads. The high -value recyclables like metals, paper, packing materials, stationary, etc. are sorted by the servants, workers, and waiters. These recyclables are sold to itinerant buyers and street hawkers.

There are more than 500 itinerant buyers and street hawkers who wander from street to street in all three socio-economic groups of ST. They purchase the recyclables from households as well as from commercial areas and educational institutes. The household waste collectors, itinerant buyers, street hawkers, and scavengers sell these recyclables at a slightly better price to different junkyards. These junkyards are scattered in all parts of ST. There are a total of 128 junkyards operating in ST, out of which 57 are quite large and purchase all types of recyclables. Each big junkyard owner has employed an averagely of up to 8 to 10 people who separate, shred, load, and unload the recyclable items.

These workers are employed at low wages on average, up to 2.72 € to 4.54 €/day. The small junkyards are located mostly in shanty areas of the town. The small junkyard owners mostly employ children. The working environment is even worse compared to large junkyards. Most of these children are either Afghan refugees or come from distant areas of Pakistan. These children often suffer from social issues like drug addiction and sexual harassment. The total estimated amount of recyclables recovered by the
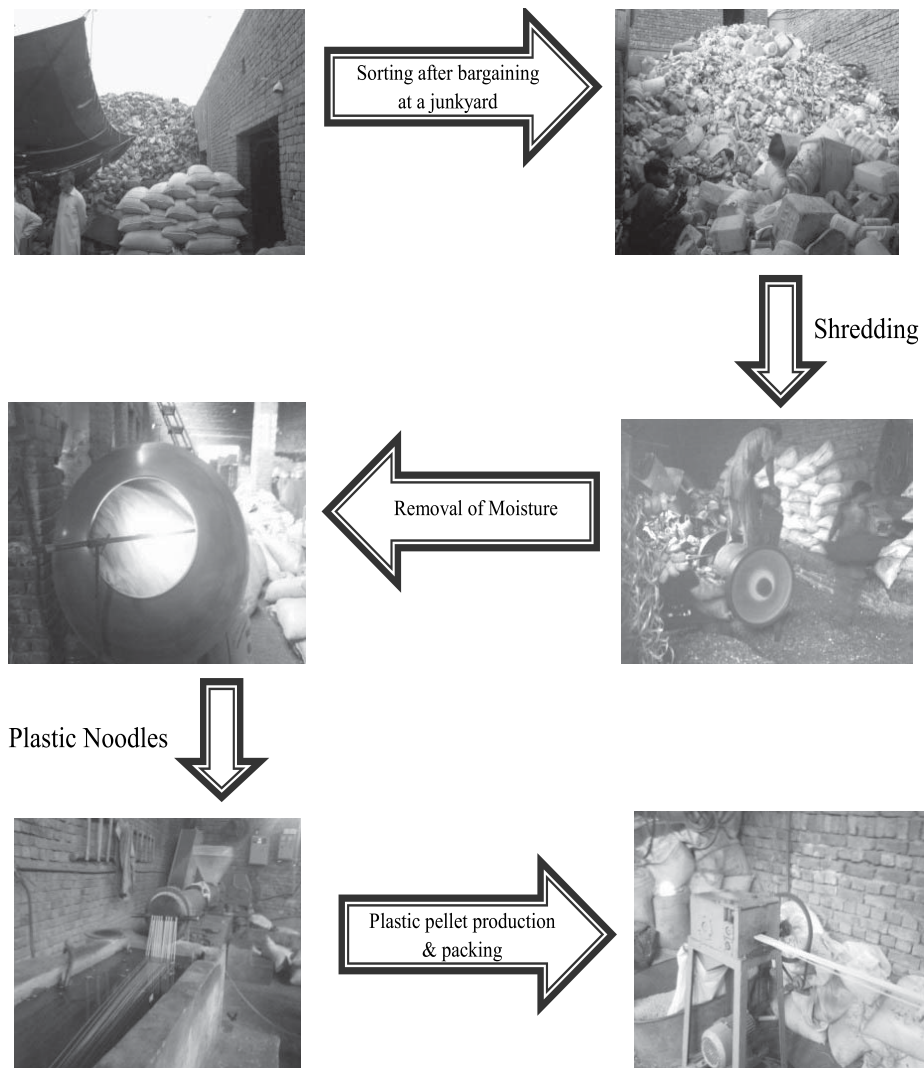

Fig. 1. Recycling of plastic waste in Shalimar Town, Lahore.

Table 4. Number of junkyard workers, household waste collectors, scavengers, and street hawkers included in the survey.

Attribute	Household waste collector	Itinerant buyer	Junkyard worker	Street hawker	Scavengers	Overall	% age
Gender							
Male	16	45	100	70	70	301	71.66
Female	4	0	0	0	28	32	7.61
Family	5	0	0	0	82	87	20.71
Age							
1 to 10	0	0	4	0	18	22	5.23
11 to 20	2	9	41	15	38	105	25
21 to 30	8	17	29	18	25	97	22.36
31 to 40	6	8	15	16	40	85	20.24
41 to 50	7	9	11	13	46	86	20.48
above 50	2	2	0	8	13	25	5.95
Marital status							
Married	18	34	55	43	162	312	74.28
Single	7	11	45	27	18	108	25.71
Religion							
Muslim	28	39	89	64	142	362	86.2
Christian	7	6	11	6	28	58	13.81
Other	0	0	0	0	0	0	0
Housing							
Own House	0	6	7	4	0	17	4.01
Rent	4	23	53	36	0	116	27.62
Hut	21	16	40	30	180	287	68.33
Citizenship							
Local	9	26	47	17	0	99	20.57
Migrant	11	17	27	31	88	174	41.43
Refugee	5	2	26	22	92	147	35
Education							
Literate	0	8	23	18	5	54	12.86
Illiterate	25	37	77	52	175	366	87.14

Table 5. Average collection and income of different workers in the informal sector recycling ST.

Worker type	Total workers	Average amount per day (kg)	Working days per month	Average per month collection (kg)	Daily average income (€)*	Monthly average income (€)**
Household waste collector	25	58	26	1508	4.35	113.1
Itinerant buyer	45	68	30	2040	5.22	156.6
Street hawker	70	41	30	1230	3.48	104.4
Scavengers	180	44	30	1320	2.61	78.3

*1 € = 115.1 Rs, **229.4 € is the monthly average income of junkyards

informal sector in ST is 15.3 tons/day and 459 tons/month. The total estimated price of these recyclables is 681.8 €/day and 20,454 €/month (Fig. 1).

Objectives

1. To evaluate the socio-economic and socio-demographic characteristics of different types of people comprising the informal sector.
2. Using qualitative and quantitative methods for optimizing the recycling of MSW in ST.
3. Highlighting the problems faced by the people working in the informal sector.
4. To suggest an improved system for integrating the informal sector into the formal sector as well as for the recovery of recyclables from collected MSW.
5. To promote general public awareness for realizing the importance of workers involved in the informal sector.

Material and Methods

Both qualitative and quantifiable approaches are applied to complete the study.

Questionnaire Survey

The qualitative method comprises questionnaire development and surveys. On the basis of these surveys, an open-ended questionnaire was developed. The main focus of the questionnaire was on the amount of collected recyclables, earning, and expenses of different characters comprising the informal sector, their socio-economic characteristics, prices of different items, and problems faced by the people working in the informal sector. As most junkyards owners, workers, waste collectors and scavengers belong to different social demography and speak different languages, the interviews were carried out in different languages, including Urdu, Punjabi, Pushto, and Hindko. Finally, the questionnaires were filled out by interviewing the various characters of the informal sector in March 2012.
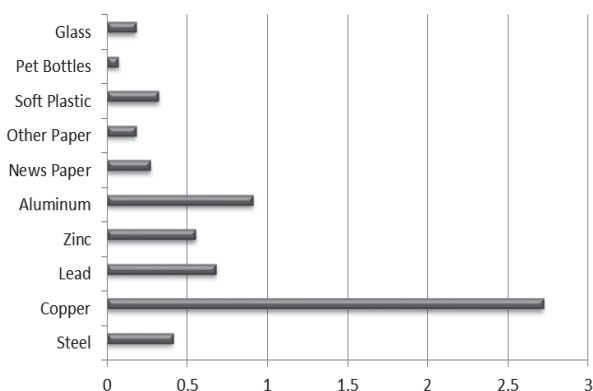
Quantitative Approach

For authenticity of the study, a quantitative method is used. The declarations given by the different people were confirmed from different government departments. Randomly 25 household waste collectors, 45 itinerant buyers, 100 junkyard workers, 180 scavengers, and 70 street hawkers were selected for this phase of the study. After skipping the doubtful and incomplete information providers, the sample size was reduced to the following numbers given in Table 4.

Waste Trading and Working Practices of Informal Sector

Recyclable collectors work typically in groups like children and parents, brothers and sisters, wives and husbands or relatives. They all perform their assigned duties like waste segregation, cleaning, washing, drying, and classifying. Itinerant buyers, street hawkers, and scavengers also work in groups by dividing the different areas and steel containers among themselves. Some scavengers work for different junkyards as junkyard workers, too. The junkyard owners provide them different means of transportation (a bicycle or a donkey cart), shelter in the form of a hut, and complementary lunch for doing work for them. Junkyards and junkshops play an important role in recycling of waste material as these recyclables are purchased by scrap dealers located mostly on the Bund Road near the Ravi River [10-15]. People working in the informal sector always have a choice to vend recyclables to any junkyards or an unambiguous dealer, or come in into an agreement with junkyard owners to work as their workers. Most of the junkyards in the study area were surveyed thrice for finding in-depth details about the types of sold recyclables and also for confirmation of the prices of different recyclables. The junkyard owners further sell these recyclables to small-scale cottage industries, to middlemen, and waste dealers who eventually sell the recyclables to reprocessing and manufacturing industries.

Results and Discussion

Recyclables collected by household waste collectors, itinerant buyers, street hawkers, and scavengers are ultimately sold at different junkyards located in ST. Recyclables collected by the above categories of people working in the informal sector and junkyards are worth around 681.8 €/month. Table 5 shows the averages of collection and income of different workers in the informal sector recycling of ST.

Residents of low and middle income groups in ST sell the recyclable items to itinerant buyers and street hawkers. The price of recyclables depends on their quality and type. Itinerant buyers and street hawkers further sell these items to junkyards at slightly higher prices. In high income groups recyclables are often given to maids and

Fig. 2. Prices (€) per kg of main recyclables collected in ST.

servants. These people directly sell these recyclables to nearby junkyards. Household waste collectors sort the collected waste for recyclables and once again sell these items to different junkyards. During this study it is
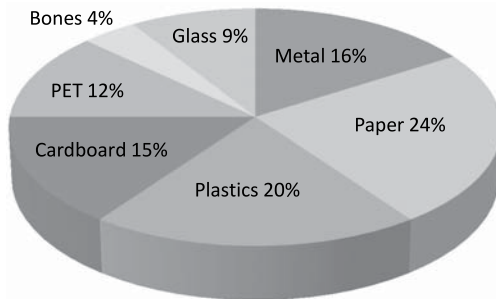

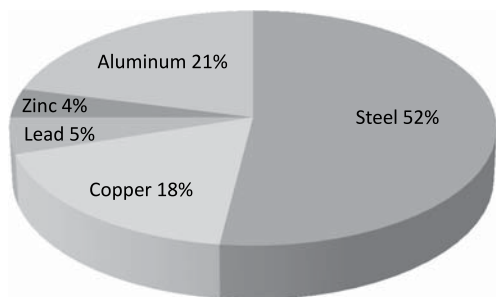Fig. 3. Percentages of collected recyclables in ST.
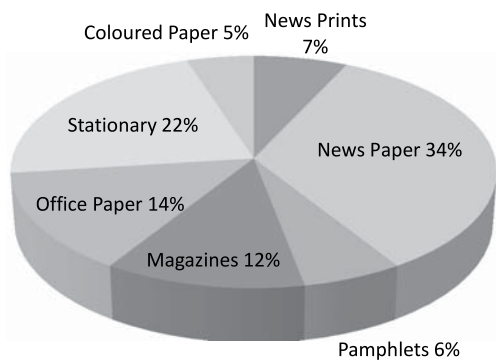

Fig. 4. Percentage of recovered metals in ST.

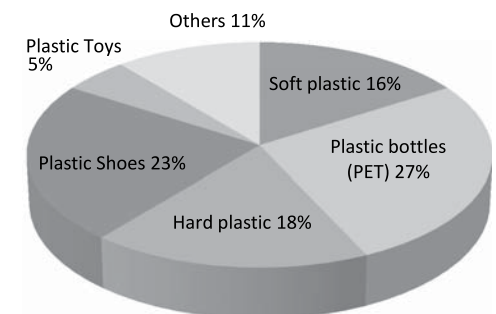Fig. 5. Percentages of collected paper in ST.

Fig. 6. Percentage of collected plastic in ST.

observed that there is also a mutual agreement among the junkyard owners and all previously mentioned characters of the informal recycling sector. The junkyard owners have given bicycles to street hawkers as well as carts and donkey carts to household waste collectors for collecting recyclables. The junkyard workers segregate all types of received recyclable items. Among all the collected metals, copper is the most valuable item, followed by aluminum, lead, zinc, and steel. Fig. 2 shows the prices (€) per kg of main recyclable fractions.

Among all the recyclables collected in ST, paper is the highest at 24%, followed by 20% plastic, 16% metal, 15% cardboard, 12% PET, 9% glass, and 4% bones. Among different fractions of collected metals, steel is the highest with 52%, 21% aluminum, 18% copper, 5% lead, and 4% zinc. The overall percentage of metals collected in ST remains low, up to 16%, because more than 50% of the population lives in low and middle income groups. Fig. 3 shows the percentages of collected recyclables in ST. Fig. 4 shows percentages of recovered metals in ST.

From different fractions of collected paper, fractions like newspaper 34%, stationery 22%, office paper 14% and, magazines 12% are major, while newsprint 7%, pamphlets 6%, and coloured paper 5% are minor fractions. Similarly among different fractions of plastic, PET is at highest with 27%, plastic shoes are second at 23%, and hard plastic (HDPE) is at third with 18%. Thin layer or soft plastic is at fourth with 16%. The percentage of collected plastic toys is very low, at 5%, as most of the discarded plastic toys remain with children of different people working in the informal sector. Other forms of different recyclable plastic are 11% of the total collected recyclable plastic. Fig. 5 shows the percentages of collected paper in ST. Fig. 6 shows the percentage of collected plastic in ST.

Conclusions

– Most of the people working in the informal sector belong to poor and low social groups [10] facing health, social, and economic destitution like abuse and harassment. Both qualitative and quantitative methods were used and 25 randomly selected household waste collectors, 45 itinerant buyers, 100 junkyard workers, 180 scavengers, and 70 street hawkers were interviewed and different recycling items collected by these people were classified.
– The study concludes that the quantity of recyclable material recovered by the informal sector in ST is about 15.30 tons/day and worth 681.8 €/day.
– It is concluded that the informal sector is the key to recycling waste in ST, as in many cities of developing countries [16-24], and in also helps MSW management authorities in many different ways, like house-to-house primary collection of the waste, sorting, and recycling.
– People working in the informal sector, despite different socio-demographic and socioeconomic characteristics, have made important contributions in the recycling

of waste. The informal sorting of waste in the area contributes a lot in the recycling industry and it can be improved if local governments and companies managing waste should take steps to integrate the informal sector into formal work by enabling better working conditions, adding values to the sorted recyclables, removing pestering from the traders, and providing basic amenities of life.

Acknowledgements

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