

Solid Waste Management Problems in Mingora City, District Swat

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Abstract: Any priceless material which comes from domestic, commercial and industrial sources arising from human activities which can be categorized according to its sources like industrial, domestic, commercial, construction or institutional and also according to its contents such as glass, metals, plastics, paper or organic materials etc. is termed as solid waste. Poverty is the main problems for environmental degradation. The recycling of the wastes is the first beneficial step in solid waste management. This study is based on the primary data which has been collected from the Mingora City, District Swat during March-April, 2015. This study and survey was under the direct supervision of Department of Environmental Sciences, Shaheed Benazir Bhutto University, Sheringal, District, Dir Upper Khyber Pakhtun Khwa and TMAs supervisors in the light of sufficient knowledge. This study comprises local participants, commercial establishment interviews, institutions interviews, household interviews, official interviews and physical observations. Primary data were collected through questionnaire and interview. This research provides overview about solid waste management situation in Mingora, District Swat. The following factors which were identified are, Un availability of land filling site, Least community interest, Un awareness, Scare resources and Least government. It concluded, that improper solid waste management is a solemn problem in Mingora Swat for public health and environment. Recommendations were made for effective management. Awareness through mass media, political interest should be improved proper land filling site away from the city.

Key words: Poverty • Tmas • District Swat • Awareness And Solid Waste Management

INTRODUCTION

Solid waste is any material which comes from domestic, commercial and industrial sources arising from human activities which has no value to people and can be categorized according to its sources like domestic, industrial, commercial, construction or institutional and also according to its contents such as organic materials, glass, metals, plastics, paper etc. [1].

It is predictable that human beings are naturally determined to generate certain quantity of solid waste by their day-to-day life activities. The ascending rate of population contributes in generating high amount of solid waste. Although a lots of hard work is done by government and non government organizations in the field prevention, decreasing, collection, transportation and disposable treatment methods but still more need to be done as the amount of generation of solid waste

exceeds than amount of disposal and proper treatment. In developing countries where unplanned settlements exist, the useless solid waste act as a major and primary contributory factor in increasing environmental pollution. Hence, more crucial efforts are considered necessary to be done for the well-organized and effectual solid waste management system, as it is a main challenge in urban areas of developing countries [2]. The craze of human society for modernization and industrialization leads to increase in the concentration of waste in urban residential areas and are frequently discharged in natural sites. Such amount of solid waste make ecosystem imbalance and affect each and every life in the vicinity by causing environmental pollution [3].

Solid waste management problems are growing in developing countries because of growing population each year open dumping, a typically accumulation of solid waste is responsible for many environmental problems in

small areas of developing countries. In our country improper management of solid waste, least community interest, unawareness among people and poverty are the main problems for environmental degradation [4].

Solid Waste Management Situation in Pakistan:

Town/Tehsil municipal Administration (TMA) is responsible to deal with solid waste problems according to promulgation of Local Governments Ordinance 200. Despite of this, upto 31% to 49% waste lies haphazard in open areas, roads and streets in Pakistan, while various municipal authorities have the waste efficiency between 51 to 69% [5]. Improper solid waste management is one of the major causes of environmental degradation in Pakistan. Improper/poor solid waste management cause hazards to human being. Recent literature on current SWM practices in few major cities of Pakistan has been reviewed and effort has been made to provide a comprehensive review on the total amount of municipal solid waste generation, storage, collection physical composition, transfer, processing and disposal of solid waste. There is overall fragmented approach to the SWM in Pakistan. Improper waste collection system exist as it is collected only 51-69 % of the total waste generated in a few cities. Municipal collection of house hold waste is a quite irregular and limited. Even high income areas generally inadequate disposal service and no weighing facilities at most of the disposal site. There is a poor management of waste and under the current disposal practices no proper method is being employed. The review of the legal framework indicates that there is a need for detailed and cleared regulation dealing specifically with solid waste. In addition promotion of public awareness legislation financial and economic calculation strengthen institutional capacity and regulation enforcement and establishment of a proper sanitary land filling are considered to be principal remedial measure to ensure sound environmental maintenance. According to PEPA that collection, transportation, disposal and dumping of house hold solid waste is not manage regularly in scientific way. According to the size of cities in Pakistan due to miss management of solid waste in Pakistan the environmental condition in the country are damaging year by year which is creating enormous problem for the people in the form of poor health and dangerous diseases. The problem caused by poor solid waste management services are enormous and need both direct and indirect consideration of all aspects of solid waste and its management [6].

In Taxila city the most common and frequent problems solid waste management are the urbanization, industrial development, lack of municipal committee funds available and less efficiency of committee workers to collect solid wastes in-time. In Taxila city 54850 tons waste are generated daily but less than 50% are collected and remaining are found here and there [4]. Solid waste management is essential part of human society [7].

The first and beneficial step in solid waste management is the re-cycling of the wastes such as, in district Lahore (Pakistan) about 21.2% recyclable wastes are recycled. Some statistics shows that 4.5 million dollar per year is the income only on informal recycling level, if recycling is started in industries it can be upto 8 crore 80 lack dollar per year [8]. Improper solid waste management is a great cause of environmental damage in Pakistan. In this way it creates a serious threat to human health and environment [9].

The Environment Protection Department of Punjab, Pakistan highlighted some of the health hazardous effects of solid waste on human and other's animal lives. These effects are due to lack of proper management system and disposable strategies.

Common health threats in Pakistan from wastes are "breathing problems, diarrhea, malaria, cholera, skin infections, yellow fever, typhoid, flea born fever, eye infections, dysentery, plague, hepatitis, in addition workers are often suffering from parasitic, skin and intestinal like serious medical complications. Such health threats are mainly accomplished by flies, mosquitoes, dogs, cats, rats and dust in air [10].

Policies for Solid Waste Managements in Pakistan:

Policies documentation for solid waste management and environmental protection in Pakistan consist of National Environmental Action Plan of 2001 and conservation Strategy of 1992 [5]. The first Policy for Environment was formulated in the year of 2005 in Pakistan in which environmental related matters were integrated in development planning. This policy included prevention and reduction of pollution caused by solid waste [11]. The main objectives of the policy included: (1) Environmental Quality Standards (2) Cleaner production centres and techniques (3) Reduction, recycling and reuse of municipal and industrial waste (4) Rules, regulations and strategies for the management of municipal, industrial, hazardous and hospital waste at local, provincial and national level (5) Financial and other incentives for technology upgrades, adoption of cleaner technology, implementation of pollution control measures and

compliance with environmental standards. In 1993 national Environmental Quality Standards was issued and was amended, control various aspects of municipal and industrial discharging hazardous particles, liquid, semi-liquid waste and even smoke but do not cover pollution due to municipal solid waste and its improper disposal. Later on, rules have been designed under the Pakistan Environmental Protection Act 1997: to deal mainly with solid municipal and other hazardous waste [12].

The present study explored problems generated by solid waste in community, type of SWM in the present area, sites of dumping, efforts/policies of government, availabilities and requirements of tools/machineries, adopted strategies, required strategies and challenges facing solid waste management initiatives in Mingora City, District Swat and recommended measures for improvement.

MATERIALS AND METHODS

Profile of Study Area: Swat has been inhabited for over 2000 years and historical accounts of this region are available from the time Alexander the Great arrived here en route to India.

Present Estimated Population: Swat, by area, is the fourth-largest district of Khyber Pakhtunkhwa, covering 7.16% of the total area (74,521 sq. km) of the province and stood third in terms of comparative population in 1998, contributing 7.09% of the total population (1,257,602 individuals) of the province for that year.

Since there are no current official statistics available, the present populations of Swat and adjoining districts have been estimated by applying the calculated growth rates as of 1998, to the figures for that year 2014 the present estimated population is 2, 96,506 [13].

Location and Boundary: Swat is an administrative district in the Khyber Pakhtunkhwa (Old name: North-West Frontier Province) of Pakistan, located at 34°-40' to 35°-55' North Latitude and 72°-08' to 74°-6' East Longitude. It is one of the districts comprising the NWFP's Malakand Division, i.e., the Provincially Administrated Tribal Area (PATA) and is bounded by Chitral and Ghizer districts in the North, Kohistan and Shangla districts in the East, Buner district and Malakand protected area in the South and by the districts of Upper and Lower Dir in the West (Fig: 1) [14].



Fig. 1: Map showing the location of Mingora City, District Swat

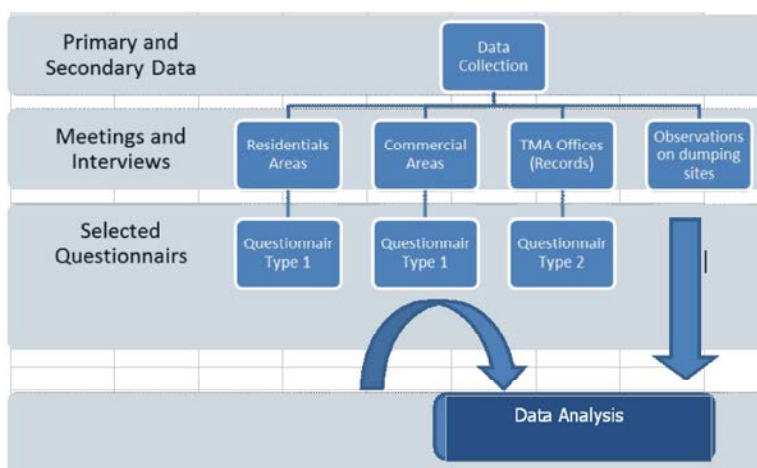


Fig. 2: Demonstration of Primary and Secondary Data Collection through Flow-chart

Field Survey and Data Collection

Field Study: This study is based on the primary data which has been collected from the Mingora city Swat during March-April 2015. This study and survey was under the direct supervision of our departmental and TMAs supervisors in the light of sufficient knowledge. This study comprises local participants, commercial establishment interviews, institutions interviews, household interviews, official interviews and physical observations.

Standard Questionnaires: Primary data were collected through questionnaire and interview. Two types of questionnaires were prepared with help of experts, one for local community and the other for TMA department so that cover all the important variables. A reasonable detail was given on various aspects of SWM in the questionnaire so that its administration in the field would not take too much time. Town and district offices were visited for the purpose of collecting secondary data.

Data Analysis: With the help of SPSS software latest version 22.0.0 the responses of various variables and graphical representation were analyzed (Fig: 2).

RESULTS AND DISCUSSIONS

Solid waste generation rates are varies from house to house due to household size and economic condition. For information about that how much solid waste generates in Mingora district swat per day, questionnaire was distributed among the people. The result comes in such a way that average house hold waste generation rate is 2.65 Kg per day. The total waste generation was 61.77

tons per day from house hold size activities with the current population of 296504 with average of 12 households. This study is in agreement with the report of Abbottabad in which both urban and rural area generate 2.17 Kg/house/day and 2.07 Kg/house/day respectively.].

There are different types of solid waste producing from house hold activities. In the present study plastic ratio was as high as (30%) followed by Food/organic waste (26.67%), Paper (16.67%), Glasses (10%) and the lowest was Ashes (3.33%) observed. In Abbottabad (Pakistan) the organic kitchen waste contribute up to 46% and inorganic 43% in urban residence [12]. The present study showed similarity in composition of solid waste materials with the composition recorded in Juba (Sudan). In Nigeria the food waste was 52-65%, in India it was 40-60% and in Jordan it was 54-78%. The difference may be due to sample size or geographic conditions. Although in Juba report it was mentioned that people drink distilled bottled water to avoid and minimize bacterial infections. So it was the prime cause of high percentage of plastic contribution in solid municipality wastes [15].

There were no proper places for solid waste accumulation. People throw their waste in different places. The current study showed that most of the people throw the waste materials near to their houses (55%), in the house dustbin (28.33%), on road sides (5%) and near gutter (11.67%).

The solid wastes are not properly managed; therefore they create various disturbances in society. In the current study different disturbances were observed as the health effects (28.33%), Pollution (18.33%), Smell (16.67%), Mosquito's Production (20%) and Biodiversity loss was 16.67%.

Table 1: Solid Waste Types, Storage Sites, Effects, Equipments Availability, Mismanagement Reasons

Parameters	N	%	P Value
Types of solid waste			
Plastic	18	30.00	0.0000
Food waste	16	26.67	
Paper	10	16.67	
Glasses	6	10.00	
Ashes	2	3.33	
Other	8	13.33	
Storage Sites			
Near house	33	55.00	0.0053
House Dust Bin	17	28.33	
Road Sides	3	5.00	
Near gutter	7	11.67	
Solid Waste Effects			
Health	17	28.33	0.0000
Pollution	11	18.33	
Smell	10	16.67	
Mosquito's	12	20.00	
Biodiversity loss	10	16.67	
Waste Collecting Equipments			
Yes	7	11.67	0.7299
No	53	88.33	
Reasons of Mismanagement of Solid wastes			
TMA Availability	21	35.00	0.0000
Community interest	18	30.00	
Unawareness	9	15.00	
Poverty	12	20.00	

Table 2: Methodology, Management Institution, Views and Responses of People about Solid Waste Managements

Parameters	N	%	P Value
Methods for Solid Waste Management			
Recycling	33	55.00	0.0028
Land filling	10	16.67	
Burning	10	16.67	
Reuse	7	11.67	
Solid Waste Management Institution			
TMA	57	95.00	0.7907
NGO,s	3	5.00	
Views of Community about Solid Waste Management			
Clean Environment and Health	57	95.00	0.7907
No Ideas	3	5.00	
Response of Community Against Solid Waste Management			
Satisfaction	18	30.00	0.1447
Well Satisfaction	2	3.33	
Un Satisfaction	40	66.67	

In various regions of developing and underdeveloped countries a large amount of daily generated solid waste materials are not properly collected and treated [16]. Health hazards associated with solid municipal wastes are explained by World Health

Organization Eastern Mediterranean region, which are eye diseases, dog bites, accident, skin diseases, parasitic infestations, diminished vision, Respiratory diseases, enterica and heat exhaustion in hot weather [17]. A study in Sierra Leone (China) revealed that people living in 50 meter vicinity of dumping sites were most affected with various diseases. The most frequent diseases were diarrhea, malaria, cholera, skin irritation, eyes disease, chest pains and nose diseases [18].

Materials are not available (88.33%) for waste collection and storage in the study area. The current study also showed the causes of mismanagement of Solid Waste Management are TMA availability (35%), Community Interest (30%), Unawareness (15%) of the people about Solid Waste Management and Poverty was 20% as shown in Table 1. Regardless of the importance of this area in tourism have poor collection management, functionless administrative authorities and uncertain solid management disposable system. In developing countries solid waste management has acknowledged negligible consideration from academics and policymakers [19].

In the present study most of the people (55%) suggested that the solid wastes should be recycled, while few suggested Land filling (16.67%), Burning (16.67%) and Reuse (11.66%). In some area different organizations/departments like NGOs (5%) and government TMA (95%) work together for solid waste managements. Different views and suggestions were also taken from the people during the study 95% of them describing that the due to Solid Waste Management the Environment become clean and healthy while other 5% have no idea about Solid Waste Management. During the study responses of the people were also observed that most of the people (66.67%) were not significantly satisfied from the current Solid Waste Management in the research area, 30% people were significantly satisfied and 3.33% of the people were well satisfied as shown in Table 2.

In Bangladesh the collection efficiency was reported up to 70-90%, however it is not true estimation due to proper and scientific recording system. Collection from door to door and each and every spot of deposition is not done on daily basis except few markets, roads and houses. Many areas are neglected due to lack of and disorganization of authorized services [20].

Major factors responsible for triggering the municipal solid waste (MSW) generation level are economic growth, elevating population levels, rapid and rise in community living standard which eventually leads to failure of management of MSW and causes hazards to inhabitants.

CONCLUSION

Improper solid waste management is a serious problem in Mingora Swat for environment and public health. The factors which effect solid waste management was identified during study were least community interest, unawareness among people unavailability of resources, diverse area and less worker, population growth, land site problems and government not interest. The great problems for solid waste management are land filling site. Therefore, collected wastes are found in water bodies and open spaces which decrease the attraction and beauty of Swat valley. Plastic were major contribution in solid waste of houses. Therefore, majority of people wanted to recycle solid waste and local people were not satisfied from government departments in this matter.

Recommendation: The following measures are recommended for effective waste management from research finding.

Awareness: Awareness should be provided to people through seminars, radio and television programs to reduce the generation of solid waste and to know about problems created from solid waste to cooperate with government.

Resources: Government should provide resources for waste collection; storage separation and compression to reduce the volume and government should provide specific disposal site & technique.

Regularity: Government servants whether sweepers or officers, should do their duty regularly and honestly.

Less Use of Plastic: People and industries should use paper and cloth bags instead of plastic packing and for material supplying.

Reuse and Recycling: Government and community should not throw waste but it should be reuse or recycled for other purposes.

Use and Making of High Quality Products: Industries should buy high quality products which do not break and damage for long time.

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