

EXAMINATION OF SOLID WASTE MANAGEMENT ISSUES IN QUETTA CITY

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Abstract

For cities that are seeing rapid urbanization and population increase, solid waste management is a major concern. Due to population growth and an influx of migrants and refugees, Quetta, the capital of Pakistan's Balochistan Province, has a lot of trouble managing and disposing of its waste. Poor waste management procedures in Quetta have resulted in environmental damage, health risks, and a decline in the quality of life for the city's citizens. The key problems and shortfalls of the city's current waste management system are examined in this study, along with the effects it has on the environment and public health and an examination of the underlying socioeconomic and political causes that contribute to the inefficiency of trash disposal. In order to offer workable ideas for sustainable waste management, the research takes a thorough approach that includes site visits, interviews with stakeholders and government officials, and data collection. The results highlight the urgent need for efficient legislation, more funding, public awareness initiatives, and cutting-edge machinery to handle Quetta's solid waste management issues. The city may work toward becoming a leader in sustainable waste management by putting the suggested action plan into practice, which would result in a cleaner, healthier, and more ecologically conscious metropolitan environment.

Keywords: Solid wastes, Solid Waste Management, Waste Disposal, Quetta City, Environmental Degradation.

INTRODUCTION

Since the rate of urbanization and population growth poses major problems to efficiently handling and disposing of waste, solid waste management is a crucial concern for contemporary cities (Singh et al., 2020). Quetta, the capital of Pakistan's Balochistan Province, is not exempt from these difficulties. Quetta's garbage creation has increased, placing a tremendous strain on its waste management system as the city suffers an inflow of individuals looking for better economic prospects and the settlement of Afghan refugees (Baloch et al., 2019). Quetta's people face significant health hazards as a result of the city's poor waste management procedures, which have also contributed to environmental degradation (Khan et al., 2018).

This study examines the critical problem of solid waste management in Quetta City. It intends to investigate the main issues and shortcomings with the city's current waste management system while also looking at the effects on the environment and human health (Rasool et al., 2017). Additionally, the article aims to shed light on the underlying socio-economic and political issues that prevent effective waste management as well as the variables that contribute to the inefficiency of garbage disposal (Khan & Ahmed, 2020).

The main goals of the study are to identify the main difficulties that Quetta's government faces in managing solid waste, examine the effects of poor infrastructure on waste collection, transportation, and disposal, and evaluate the city's current policies and regulations in this area (Hussain et al., 2019). Additionally, the study seeks to offer workable suggestions and solutions that may be put into practice to enhance Quetta's general cleanliness, environmental health, and sustainable waste management practices (Jan et al., 2018).

The research employed a thorough approach that included site visits, interviews with stakeholders and government officials, and data gathering from various parts of Quetta City in order to accomplish these goals (Khan et al., 2021). The study region included important landfills, recycling facilities, residential areas, and other pertinent locations to obtain pertinent data.

It is imperative that Quetta's solid waste management problems be addressed. In addition to degrading the environment, inappropriate waste management exposes the populace to a number

of diseases and health risks (Mukhtar et al., 2016). An organized and effective waste management system is required more and more urgently as the city expands.

The results of this study are essential in assisting policymakers, local governments, and interested parties in implementing sensible decisions and efficient waste management plans (Ahmed et al., 2022). Quetta City is hoped to work towards being an example for sustainable waste management techniques, contributing to a cleaner, healthier, and more ecologically conscious urban landscape by comprehending the difficulties and potential solutions.

A fast expanding 2.8 million people live in Quetta, the capital of Balochistan, which has a sizable territory of 3501 square kilometers and a high population density of 1143 people per square kilometer. Due to the city's high population and urbanization, successfully managing solid waste is extremely difficult. Diverse materials, including plastic and rubber, metal, paper and cardboard, glass, food scraps, animal waste, leaves, grass straws, fodder, bones, wood, and stones, make up the solid waste in Quetta City. Plastic trash dominates this list because it is produced at every stage of the process and then released after use.

Additionally, Quetta experiences a significant stream of visitors, with roughly 0.3 million coming each day for various events, business meetings, and official obligations. The daily generation of solid garbage has significantly increased as a result of this continuous inflow.

An typical family in Quetta City is thought to produce 2.64 kilos of solid garbage every day, compared to 0.33 kilograms produced by each individual. As a result, the city generates an astounding 1600 metric tons of solid waste every day. However, the infrastructure for managing solid waste currently in place is inadequate to deal with this enormous amount of waste. The Metropolitan Corporation Quetta (MCQ) is in charge of waste collection, transportation, and disposal, however the expanding demand exceeds the capacity of its resources.

Currently, the MCQ has difficulties because to a lack of funding, equipment, and personnel resources. The workforce is overburdened with only 800 regular sanitary workers and 800 daily wagers. Additionally, the equipment that is already in use, such as loaders, compactors, and dumping trucks, lacks the capacity needed to accommodate the growing demand for garbage disposal.

The MCQ is facing significant financial difficulties as a result of the budget remaining flat at 2017 levels and a resulting monthly shortage of about Rs. 40 million. The city's efforts to develop efficient waste management procedures are greatly hampered by this cash shortfall.

The MCQ's efforts, which can only hoist 650 metric tons of rubbish each day out of the total created, are the main component of the city's present waste management system. Around 200 to 250 metric tons are sorted and picked up by scavengers, but an alarming 700 metric tons of rubbish is left untreated and builds up around the city every day. The current trenching site at Quetta's Eastern Bypass is overburdened, resulting in open dumping and creating safety and environmental risks.

Despite the difficulties, Quetta City does not have a thorough and efficient solid waste management policy. Lack of particular legislation or regulations makes the issue worse by encouraging waste disposal, recycling, and reduction strategies that are ineffective.

The objective of the study is to examine, to analyze the issue of solid waste management in Quetta city, its causes, effects, and shortcomings at the policy and operational level and to propose solutions for its improvement to make Quetta look cleaner and more beautiful.

STUDY AREA:

Quetta City, is the capital of Balochistan Province in Pakistan. With an expansive territory of 3501 square kilometers, it is a rapidly urbanizing city that faces numerous challenges related to solid waste management. The city's population stands at approximately 2.8 million, resulting in a high population density of 1143 persons per square kilometer. The rapid urbanization, coupled with the settlement of Afghan refugees and an inflow of about 0.3 million daily visitors for various activities, has led to a substantial increase in the production of solid waste.

Solid waste in Quetta City comprises a variety of materials, including plastic and rubber, metal, paper and cardboard, glass, food waste, animal waste, leaves, grass, straws, fodder, bones, wood, and stones. Among these, plastic waste is the dominant component, released throughout all stages of production and post-consumption. The large volume of solid waste generated daily has put immense strain on the city's waste management system.

Despite its significance, solid waste management in Quetta City faces numerous challenges. The Metropolitan Corporation Quetta (MCQ), responsible for waste collection, transportation, and

disposal, is grappling with insufficient resources, including human workforce, machinery, and funding. The budget has been stagnant since 2017, resulting in a monthly shortfall of approximately Rs. 40 million. The existing machinery and equipment are inadequate to meet the growing demand for waste disposal, leading to an accumulation of approximately 700 metric tons of untreated waste in the city every day.

Moreover, Quetta City lacks a comprehensive and effective solid waste management policy, which further exacerbates the issue by promoting inefficient waste disposal, recycling, and reduction strategies. The absence of specific legislation and regulations for waste management has hindered the city's progress in addressing its waste-related challenges.

METHODOLOGY/ROAD MAP:



Site Visits:

The study team visited a number of significant areas in Quetta to get a personal understanding of the issues and practices associated with solid waste management. We went to the following websites:

- a) Metropolitan Corporation, Quetta: The municipal authority in charge of the city's trash management.
- b. Balochistan Environmental Protection Agency (BEPA), Quetta: To

understand the regulatory framework and environmental concerns related to waste management.

- b) Balochistan Environmental Protection Agency (BEPA), Quetta: To comprehend the legal system and environmental issues connected to waste management.
- c) Balochistan University of Health and Management Sciences: Consultations with authorities to examine the effects of poor waste management on human health.d. Balochistan Institute of Nephrology Urology: Interviews with medical professionals to assess the impact of waste on public health.
- d) Interaction with locals in residential areas (Kili Gashkori, Gousabad, and Rahim Colony, Quetta): to learn about their views on garbage disposal.
- e) Eastern Bypass, Sariab, Quetta's Main Dumping Site: Observations of the main disposal region to assess its effectiveness.
- f) Solid trash Recycling Plant, close to the dump, Sariab, Quetta: Examine trash recycling methods and their efficacy.
- g) Examination of Solid Waste Storage Facilities and Transfer Points at Joint Road, Near the Passport Office.
- h) Solid Waste Storage/Transfer Point in GOR Colony, Quetta: Another location for evaluating storage and transfer procedures.

Meetings with Officers/Officials:

To learn more about the policies, difficulties, and potential solutions, the study team spoke with important officers and representatives from pertinent departments. The following people were questioned:

- a) To comprehend the present waste management techniques used by the Metropolitan Corporation of Quetta, ask Mr. Abdul WaheedBadini, Chief Metropolitan Officer, a multiple-choice question (MCQ).
- b) Mr. Khalid, Advisor, MCQ: Discussions about policy efforts and strategic planning for solid waste management.
- c) Mr. Ibrahim Baloch, Director General, BEPA, Quetta: A look at how environmental laws are put into practice in the waste management industry.

- d) Dr. Fareed Sumalani, MS BMCH, Quetta: To understand the medical implications of poor garbage disposal and the health problems that can result from it.
- e) Information on waste incineration procedures and their efficacy provided by Engineer Bashir Ahmad, Deputy Director, Incineration Center.

Telephonic Conversations:

The study team spoke over the phone with pertinent parties who could provide useful information but were unable to meet in person:

- a) Mr. Gul Muhammad, Director of the Local Government Department, GOB: To learn more about the function of the government in the management of solid waste.
- b) Mr. Shah Saud, APS, QMC: Discussions on the administrative difficulties and waste management regulations.
- c) Information on finance and project development for waste management from Mr. Nadir Naseer, Director P&D, Quetta.
- d) Mr. Aamir Shah, P&D, Quetta: Additional perspectives on waste management development-related issues.

Interviews Conducted:

The research team interviewed a range of stakeholders to get their viewpoints on managing solid waste:

- a) To comprehend the function of informal waste pickers and their difficulties.
- b) Owner of a dairy farm: To investigate how waste disposal affects agricultural activity.
- c) Conversations on waste generation, collection, and disposal from business facilities with shopkeepers.

These study techniques made it possible to analyze the solid waste management problems in Quetta City in great detail and from several angles. Site visits, official meetings, telephone talks, and interviews all contributed significant information and points of view to the research work.

Results Analysis

Quantitative Analysis:

Direct Observation and Pictorial Presentation of Various Solid Waste:

Direct observations were made during the investigation at numerous sites in Quetta City to visually evaluate the solid waste condition. To help people visualize the waste management situations, pictorial representations were taken. The pictures showed numerous dump sites, scavengers gathering organic waste, and animals eating the trash.



Figure 1 Direct Observation

Waste Dumping Sites:

The research team visited several waste dumping sites in Quetta City. The following locations were assessed:

a. Land Filling/Dumping site at Eastern Bypass, Quetta. b. Waste storage/Transfer site near Passport Office, Joint Road, Quetta. c. Mali Bagh, Sirki Road, Quetta. d. GOR Colony, main gate near Girls High School, Quetta.

The sites were found to have municipal waste trucks, scavengers collecting organic waste, and animals scavenging in the waste. RAG-3 noted that the presence of garbage dumps is influencing the feeding habits of visiting animals and potentially contributing to the spread of diseases through these animals.

Data Collection:

On July 8 and 9, 2023, the research team weighed rubbish at 63 homes in various parts of Quetta City. The average amount of solid garbage produced daily by each household was calculated after data analysis:

- 18 houses of Rahim Colony, Sariab road: 03 to 4 kgs.
- 20 houses at KilliGishkoriSabzal road: 02 to 3 kgs.
- 10 houses at Gousabad, Satellite Town: 01.5 to 2 kgs.
- 15 houses at GOR Colony Killi Shabo Road: 03 to 5 kgs.

Considering the population density of 8 to 14 persons per house, the average solid waste generation per person per day was calculated to be 0.017 kgs.

Qualitative Analysis:

Qualitative data was collected from various sites, and the following findings were noted:

Raheem Colony, Quetta:

- 20% of houses wait for MCQ workers, 80% of families rely on private scavengers for rubbish collection, which causes delays and waste accumulation in drains owing to wind, rain, or human activity.

Gishkori Town, Quetta:

- 40% of households dump solid waste at open/vacant plots, while 60% rely on scavengers and MCQ staff for waste disposal.

Ghousabad, Quetta:

- 35% of houses, predominantly populated by Afghan refugees, dump waste at points nearest to them and burn some of their waste. 70% of people dispose of waste at vacant places/plots.

Data Collection from Recycling Plant:

The plant's daily recycling capacity is 1000 MT, it was discovered during a visit to the Public Private Partnership Project of Solid Waste Recycling Plant on July 12, 2023. Due to the MCQ's inadequate provision of organic waste material, it is currently non-operational. Segregated organic trash is delivered to the plant by QMC employees and private scavengers. As a result, waste continues to be dumped at the primary disposal site, which is now completely full.

Findings of Analysis:

The results of the study show that Quetta City's solid waste management is a persistent problem that has a bad effect on the environment and people's general quality of life. The general public's improper attitudes and actions, MCQ's financial limitations, and the absence of cutting-edge garbage disposal technology are the main causes. Garbage buildup in public spaces not only harms the environment, but it also poses major health hazards and diseases.

These findings emphasize the critical need for comprehensive and successful solid waste management methods to address the city's environmental and sanitary problems.

CONCLUSION:

The issue of solid waste management in Quetta City has become a serious challenge. This daily waste generation in the city is about 1600 MTs out of which only 600 MTs is being lifted by the MCQ. The issue becomes the challenge of lack of political will, unattended by the Government, lack of resources, lack of policy and rules, regulations and policy. It is injurious to the public health environment, and animals. There are no proper landfill sites. No scientific method or regulations are not available. Poor data management. Lack of capacity. No mechanism for recycling exists and there are no solid waste plants. Lack of capacity of QMC to handle the challenge. It has also serious impacts on the ecosystem. It is enough time that the GOB takes to implement the proposed action plan for a waste-free city.

RECOMMENDATIONS

Legislation: There is a dire need of legislation on efficient disposal of solid waste management in Quetta city, as presently there are no specific rules or regulations for solid waste management in Quetta city.

Public Awareness: Usually the public is indifferent and they are least bothered to keep things and area clean. The MCQ/Government should Sensitize and educate the community about SWM and launch public awareness campaigns through print media electronic and social media and through JumaKhutbas for behavioral change.

Curriculum Improvement: The topic of Cleanliness and proper / efficient disposal of solid waste management be incorporated in the curriculum of educational institution.

Public Incentive/Encouragement: There shall be a reward/appreciation or penalty for disposal of waste management. initiatives that focus on community engagement and awareness about solid waste management leading to behavioural change and sustainable waste management practices for quality of life in the city.

Community Engagement The Government shall take steps towards engaging the community for proper disposal and management of solid waste, as it has been painfully observed that the public itself is least interested in disposing of their litter in a civilized way. Therefore, effective engaging campaigns shall be carried out to enhance public awareness.

Enhancement of Budget of MCQ: The government shall at least the budget double the budget on war footing to the capacity of MCQ. The existing machinery with MCQ is unable to make the requirements, as the last purchase of equipment was made in 2017. The Government Shall undertake efforts for the provision of modern machinery.

Improvement of Drainage System: The drainage system in Quetta City shall be revamped and restructured according to the needs of its increased population and modern times.

Segregation of solid Waste: Segregation/grading of solid waste is required to be made by MCQ sanitary staff to bifurcate the waste in bio-degradable and non-biodegradable, combustible and non-combustible, hazardous and non-hazardous forms for its proper and efficient disposal.

Utilization of Solid Waste: Solid waste can be recycled and utilized to manufacture goods of daily use like paper towels, newspapers, etc.

Will of the Government: With the passage of time, the will of the Government has been weakened considerably. The will of the Government is needed and the Government should pay special attention to waste management. The Government should legislate on the issue and approve and implement the action plan proposed by this RAG.

ACTION PLAN:

Based on the recommendations above, the following action plan is proposed to address the issues and challenges:

Sr	Proposed Action	Responsibility	Resources required	Time Line
1	Increase in Budget	Provincial Government / Finance Department and Local Govt: & Rural Dev: Department	Double the annual non – development Budget and increase the rent.	50% increase in the Budget in 2023-24 50% Budget Increase in the Budget in 2024-25
2	Provision of Modern Equipment & Machinery	-do-		50% increase in the Budget in 2023-24 50% Budget Increase in the Budget in 2024-25
3	Filling of Vacant Posts.	MCQ and LG & RD Deptt	No additional budget required	
4	Increase of Number of daily wagers	Provincial Government / Finance Department and Local Govt: & Rural Dev:	Rs. 15000 x 2000 x 12 = 3,600,000,000	50% increase in the Budget in 2023-24 50% Budget

		Department		Increase in the Budget in 2024-25
5	Legislation	Provincial Government / Local Govt: & Rural Dev: Department and EPA	No additional budget required	
6	Mass Public Awareness	LG &RD Deptt: Information Deptt: and District Administration	Nominal budget	
7	Curriculum/ Syllabus	Education Department	No additional Budget required.	

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