

EXAMINING THE POLICY IMPLEMENTATION GAP AND OUTCOMES IN SOLID WASTE MANAGEMENT GOVERNANCE: CASE OF PAKISTAN'S MAJOR CITIES

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Abstract

The rising urbanisation rates, population growth and lack of institutional capacity have combined to make the solid waste management (SWM) one of the most visible and persistent governance problems in the main cities of Pakistan. Despite the increasing number of legislative and policy instruments (including the Pakistan Environmental Protection Act, provincial Solid Waste Management Board Acts, National Climate Change Policy 2021, municipal waste management companies, and current bans on single-use plastics), the effectiveness of collection, secure disposal, and recycling has not been close to the policy targets in most urban areas. This study explores the factors contributing to the failure of solid waste management policies in non-Pakistan, especially in the three main cities of Pakistan (Karachi, Lahore, Islamabad-Rawalpindi) and secondary cities. Lack of policy, resource-mandate mismatch, institutional tensions between provincial and local governments, poor contract enforcement and systematic exclusion of informal recycling actors from formal institutional processes are found to be more a problem of institutional disunity than of non-existence and are found to be more prevalent in the two countries that were studied. The research also documents some assessable, although less consistent, advances, especially in Lahore, which hold promise of lessening differences in implementation on the back of institutional stability and adequate funding over time. The document culminates with impartial, policy-oriented suggestions aimed at enhancing coordination, funding, and inclusivity within Pakistan's solid waste management framework.

1. INTRODUCTION

Pakistan's local institutions cannot cope the rapid urbanisation. Its 240 million population exceeds a third who resides in urban areas, and its biggest urban centres are expanding faster than the national average, generating more waste than most city halls can manage to collect, transport and dispose of, known as Municipal Solid Waste (MSW). In the country, approximately 30 very large tonnes of MSW is generated per year. Other

than Karachi, 16,500t of it, other cities also produce varying quantities of cement, the foremost among them Lahore with 7690t, Faisalabad with 5017t, Rawalpindi with 4500t, Peshawar with 2048t and Quetta with 716t. (<https://tribune.com.pk/author/54>, 2022). There is little accurate statistical data to capture a significant proportion of waste generation, particularly in peri-urban and low-income groups.

This study does not challenge the existence of policies but raises questions about "policy lessness. Pakistan has complex institutional and legal arrangements for solid waste governance with a federal act on environmental protection, provincial Solid Waste Management Board Acts in Sindh and other provinces, the provincial government has a number of specialised municipal waste companies in Punjab, a national climate change policy on waste and the 2019 single-use plastic ban. Waste collection coverage marginally ranges from almost 0% in low-income cities to 90% collection in rich cities of Pakistan with 31 to 49 per cent of generated waste remaining uncollected and polluting public spaces ((Ayub et al., 2024). So, what is missing is a law that is carried out, not one that does not exist. This separation has an analytical significance as it leads policy makers toward institutional and financial rather than laws.

There is cost and human resource impact on this implementation gap. When refuse is not collected or handled properly, it contaminates surface and groundwater resources, hamper drainage systems, contributes to urban flooding, and creates disease vectors (bank, 2022). Pakistan recycles only small percentage of its recoverable plastics, metal, glasses and organic waste and not only does it miss out on the environmental benefits of creating a circular economy, but it also misses out on livelihoods (Korai et al., 2017). They are directly impacting Sustainable Development Goals 11 (Sustainable Cities and Communities) and 12 (Responsible Consumption and Production) that have specified targets to reduce the environmental footprint of municipal solid waste.

Please remember, this is not a broad negligence affair. These changes reflect institutional sensitivity in tackling waste issues and include the establishment of Lahore Waste Management Company (LWMC) in 2010, Sindh Solid Waste Management Board (SSWMB) in 2014 and construction of the first (engineered) Sanitary Landfill in 2015 near Lahore, introduction of Clean Green Pakistan Index in 2019, and de-politicization of waste board to divisional level in 2024 due to previous corruption. Fragmented mandates across governmental layers, inadequate

allocation of resources in relation to the mandates assigned, poor enforcement of contracts in outsourced service contracts, and a lack of formalisation of the informal economy in recycling approximately half the country's municipal waste limit the capabilities of municipalities to manage solid waste in federations with limited resources.

This research does not just give a broad picture of SWM policy failure in Pakistan; it narrows it down for an investigable example: How does SWM Policy in the Majority Cities of Pakistan translate or not translate into measurable services and what institutional conditions impact this? The document goes on in this manner. The Theoretical framework of the study, and literature study relating to solid waste management policy at global and national level (Pakistan) is studied in section 2. The objectives and research enquiries are in Section 3. In Section 4 an explanation is being given of the technique used in the study. Section 5 assesses the four cities of Karachi, Lahore, Islamabad-Rawalpindi and smaller cities in terms of financing, inclusion in the informal sector and plastic regulations. The results of the study are presented in terms of the topics of the study as outlined in Section 6, recommendations for the policies have been given in Section 7, limitations of the study have been noted in Section 8 and conclusion of the study is in Section 9.

2. Literature Review

2.1 The Global Policy Implementation Gap in Solid Waste Management

Many studies have been carried out in other countries across the world, and 'inadequate implementation of solid waste policy' is a concern they all share. Based on the PRISMA framework, Dharmanu Yudartha et al. (2026) later conducted a systematic review of 25 peer-reviewed, published studies on how the SWM policy has been implemented in Asia, Africa and Latin America and found that conceptual problems in implementing the policy could be attributed to two common structural challenges across the highly varied national context: institutional fragmentation, in which aims are assigned to municipalities, without any coordinating body;

and mismatch of resources, or laws which create high expectations for municipalities but offer them neither budgets, staffing nor technical capacity. The outcome in the authors' own terms is the "ceremonial compliance" represented by the policy documents that purport to look like compliance with the global norm, including the SDGs, but are more surface level than actual ground-level action.

Another important finding relevant to this research is the reduction of the 'implementation gap' through a hybrid method or co-production approach, explicitly bringing non-state actors such as private contractors, cooperatives and, crucially, informal waste-picker organisations into the approved waste management system. Brazil's National Waste Policy Law mandates that municipalities prioritise contracts with waste-picker cooperatives, whereas Indonesia's community-oriented Waste Bank system exemplifies the success of this hybrid model in contrast to ineffective administrative, top-down strategies. The informal sector significantly contributes to waste recovery efforts in Pakistan, although operates almost totally outside the formal governing framework (Dharmanu Yudartha et al., 2026).

2.2 Solid Waste Management in the Pakistani Context

A scholarship tailored for Pakistan aligns with this global trend while incorporating country-specific nuances. In the nearly complete lack of engineered landfill facilities, the majority of Pakistani urban areas depend on open dumping at either officially designated or informally managed locations, with only Lahore and Rawalpindi's waste management firms implementing even rudimentary route and collection optimisation technologies, resulting in most municipalities lacking systematic planning resources (bank, 2022). Although in principle possible, Korai et al. (2017) found that there is limited interest in waste-to-energy production in Pakistan, particularly after the city of Lahore has recently undergone partial privatisation in circumstances where energy or material recovery has been undertaken but appears to be lacking. According to Ayub et al. (2024), the key challenges

that contribute to MSWM problems in metropolitan cities of Pakistan are typically low collection efficiency as a function of income status and the weak policy implementation.

There is a lesser, but pertinent, literature that treats Lahore as a negative case. Lahore achieved 84% collection efficiency of waste management in the city, which places it as the top performer amongst all SAARC countries and the fifth in the world amongst 54 cities performing similar functions in low and middle-income countries after institutional continuity, international outsourcing experience and commissioning of the country in 2015, (Iqbal et al., 2023). This study presents the findings that the implementation gap witnessed elsewhere in Pakistan is not an inevitable one and this is directly related with institutional and financial continuity.

A comparable study examines Pakistan's informal recycling economy's size and marginalisation. In one of the first empirical investigations of korreywalas and pheriwalas, scavengers in southwestern Lahore, Akhtar (2012) documented their central but economically insecure role in material recovery. Recent estimates suggest that formal institutions manage only half of Pakistan's municipal waste, while an estimated 200,000 to 333,000 informal waste pickers recover, sort, and sell the rest, reclaiming 13% of all recyclables. Section 5.4 addresses the fact that none of Pakistan's major provincial SWM Acts recognise or contractually incorporate waste-picker cooperatives, notwithstanding their size.

2.3 Theoretical Framework

This paper is studied using a framework developed by Dharmanu Yudartha et al. (2026)) which includes Actor-Institution-Resource (AIR). Actors of the implementing phase (policy entrepreneurs, organised informal sector representation, coalitions of institutions within and/or across sectors of government, market, and community) and institutions (coherence of the legal and regulatory framework, its enforceability, and coordination) and resources all affect SWM policy implementation. The framework is derived from the ambiguity-conflict model developed by Matland (1995) and predicts the type of outcome

of implementation based on the nature of the policy problem: negotiated, collaborative implementation is needed for policies with high political conflict, such as landfill siting or waste collection contract reallocation, while administrative implementation is needed for policies with low ambiguity and political conflict. This framework structures comparisons in Section 5 between Karachi, Lahore and Islamabad-Rawalpindi.

3. Research Questions and Objectives

Based on the literature and theoretical framework, this study has three research questions (RQ) and research objectives.

RQ1: What are the institutional and governance challenges which Pakistan's key cities face in implementing solid waste management policies?

RO1: To identify institutional and governance challenges in implementing SWM policy in Karachi, Lahore and Islamabad-Rawalpindi and critically examine administrative and institutional challenges.

RQ2: How Federal, Provincial and governments' solid waste management legislations and regulations influence the payers of services in the big cities of Pakistan?

RO2: Evaluate the consistency and disconnect of SWM legal-regulatory frameworks and services delivery (such as the collection efficiency, safe disposal and environmental regulation compliance).

RQ3: This explores whether and how the structure of financing, participation of public-private partnerships and integration of the informal sector in SWM influence the achievement of SWM policy impacts.

RO3: To review the impact of finance mechanism and public private partnership models and of informal sector integration on the outcomes of SWM policy making, and to offer science-based, feasible recommendations.

4. Methodology

This is a qualitative document-based comparative case study which pursues a policy-implementation question, documenting and tracking the process and outcome of policy implementation over time,

rather than measuring one variable. The research draws on pedigree academic literature sourced through targeted searches on academic databases and on publisher platforms, primary policy and legal documents, such as the Sindh Solid Waste Management Board Act 2014, Pakistan Environmental Protection Agency polythene bag regulations, and National Climate Change Policy 2021, and verifiable data.

Three cities were selected as prime examples to capture the maximum fluctuation at institutional level: Karachi, where the provincial SWM Board is facing conflicts of jurisdiction from local authorities, Lahore, where the SWM Board is an autonomous company and has been outsourced for long duration, and Islamabad – Rawalpindi, where there is no national SWM statute applicable. The comparisons of Peshawar, Quetta and Faisalabad reveal institutional investment gap between Pakistan's main metropolitan centres and provincial cities. The Actor-Institution-Resource paradigm from Section 2.3 was used to analyse data using thematic content analysis, with conclusions triangulated across at least two independent sources for each factual assertion or figure. The limitations of this document-based approach as opposed to primary field research are discussed specifically in Section 8.

5. Findings and Discussion

5.1 Legal and Institutional Fragmentation

The 18th Constitution Amendment delegated the responsibility of solid waste management to provincial and local governments, and the Pakistan Environmental Protection Agency (PEPA) will coordinate and regulate solid waste management services but not offer services itself. Since 2010, the City District Government Lahore established Lahore Waste Management Company as semi-autonomous company under the Companies Ordinance 1984 and since 2014 Sindh Solid Waste Management Board (SSWMB) was formed to supersede the functions of KMC regarding solid waste.

This provincial variation has created perpetual disputes, the most recent being in Karachi over the role of the parallel structure and how it affects the Karachi Metropolitan Corporation along with its

District Municipal Corporations. In 2024, the Sindh government accepted a partial solution, pledging to have divisional level boards with elected mayors in Karachi, Hyderabad and Sukkur that will run the SSWMB and have the province board develop policies. This reform is a good example of the 'institutional fragmentation' phenomenon identified in the global literature: a coordination failure acknowledged and partially solved by the policy makers, but the actual effectiveness of the devolved boards depends on the amount of financial and administrative powers given to them.

Islamabad is institutionally rather unique. The federally administered capital is not part of the normal provincial local government system and there is no specific national level SWM statute to cover the void. Those that do apply (a variety of local government acts, public health engineering rules and Capital Development Authority (CDA) regulations) were drafted at a provincial/district level and do not adequately cover solid waste at capital city scale, which is over 2,000,000 people. The CDA recycles only 60% to 70% of the 1,535 tonnes of trash that is produced every day in Islamabad, transferring the rest to the Rawalpindi Waste Management Company (RWMC) which in turn sends it to the Losar dumpsite, which suffers from chronic operational inefficiency and a shortage of resources.

5.2 City Case Studies

5.2.1 Karachi: Devolution, Political Contestation, and Recurrent Crisis

Normally, Karachi generates 12,000-16,500 tonnes of solid waste daily with SSWMB having capacity to collect 9,000-10,000 tonnes on a regular basis which makes an average of 2,000 tonnes surplus. Given the very hot temperature, it was possible for the SSWMB to collect waste at the major traffic routes and establish 99 waste collection points across the city and some neighbourhoods with residential buildings had uncollected and decomposing waste hanging around for several days during Eid-el-Adha in 2026. No, these events are not a sign of the unresponsive administrations: The SSWMB provides a good indication of the number of large

and well-organized events that have taken place. On the contrary, the city's typical collection and disposal system is not sufficient to manage seasonal fluctuations in waste, a resource allocation issue. The institutional conflict in Karachi dates to this itself. In 2014, the city's biggest waste management task left to the city was assigned to the provincially appointed board, raising questions in the Sindh High Court about its unconstitutional nature, as some claimed locally elected Karachi Metropolitan Corporation (KMC) is unfit to handle the management of city waste (Dawn.com, 2019). This parallel authority's phenomenon was further strengthened when the province decided to ignore the municipal structures and engage Chinese firms directly for the collection of solid waste at the district level in Malir and West Karachi in 2016. Marine ecosystems such as the extinction of several economically important marine species or azoic coastal zones are affected by this persistent capacity shortfall, which has serious consequences.

5.2.2 Lahore: A Partial Success Model, With Caveats

Lahore is the most informative example of SWM in Pakistan which is a counter example. The city started the LWMC in 2010 and implemented contracts for collection through international tenders, which led to an 84% collection efficiency, across the cities of the South Asian Association of Regional Cooperation (SAARC) region, and fifth in the list of 54 comparable cities in low- and middle-income countries worldwide. It constructed Pakistan's first engineered sanitary landfill in 2015 at Lakhodair with an area of 200 acres accepting 5000-6000 tonnes of garbage daily. In 2023, LWMC was disposing with more than 1.5 million tonnes of waste; the organization used a helpline to handle nearly 60,000 citizen complaints and a month-long reduction of fuel usage of 150,000-200,000 litres with the help of AI-assisted vehicle route optimization by the Lahore University of Management Sciences (LUMS), and social-security coverage to around 10,000 sanitary workers.

The contributions of a model should not be forgotten for the sake of the fragility of the model.

LWMC is in debt to the provincial government for Rs. 96 billion, and its leadership and focus changes in tune with the political leadership of the province, making it difficult to undertake multi-year planning and budget continuity. This financial exposure reinforces the mismatch in the literature between resource and political commitment, even a well-designed institutional model requires political commitment which must have a proper financial momentum and is not a self-supporting project. However, implementation gaps is not always the case in Pakistan's institutional environment as Lahore's experience has revealed that long-term contractual continuity, dedicated engineered disposal infrastructure and commitment to financing, though not flawlessly, especially at the provincial level is interlinked

5.2.3 Islamabad-Rawalpindi: No Landfill, No National Framework

As the wastes and pollutants are not being collected in the landfills, there is no National Framework in Islamabad-Rawalpindi.

Islamabad and Rawalpindi display the failure of governance, in the federal capital, where there is neither a unified legal framework nor disposal infrastructure. Two planned sites, in Kurri and Sangjani, 30 kilometres from Islamabad, never came to fruition because of concerns regarding the management of the leachate, greenhouse-gas emissions and risk of vectors. CDA waste is sent to the unmanaged dumpsite of Losar through the RWMC, which has been observed as an inefficient transfer. The siting of landfills is an issue fraught with conflict that cannot be fixed simply by fiat and placing one or multiple landfills without an accompanying community engagement and compensation plan has led to over 10 years of institutional stasis.

5.2.4 Secondary Cities: Peshawar, Quetta, Faisalabad, and the Investment Gap

The Secondary Cities have been grouped under three categories: investment gap, Peshawar, Quetta, and Faisalabad. The Secondary Cities are further divided into three categories: Investment Gap, Peshawar, Quetta, and Faisalabad.

Outside the three major cities in Pakistan, the amount of investment in institutional solid waste management drops significantly. The generated waste in Faisalabad is 5,017 tonnes per day, Rawalpindi 4,500 tonnes per day and Peshawar 2,048 tonnes per day.

While Lahore has 706 tonnes and Quetta has 716 tonnes, the Asian Development Bank's (ADB) sector-wide review indicated that most cities lacked even basic planning tools, with only two, Lahore and Rawalpindi, having route- and collection-optimization technologies. Although there are no waste-management facilities in the province of Balochistan, the Water and Sanitation Services Peshawar is currently planning to build a sanitary landfill in KPK. Although there are formal legal institutional frameworks, solid waste investments are focused on the localities with the greatest political visibility and the capacity of the provinces. Structurally, small scale urban centres are at disadvantage in the fiscal federal system of Pakistan, as solid wastes investment is targeted towards those urban centres which are visible in the political realm and have fiscal capacity.

5.3 Financing Gaps and Public-Private Partnership Performance

From the point of public-private partnership, most of the SWM capacity limits have been resolved, along with the outsourcing that has been undertaken; however, results have been variable. The contract of Sindh with garbage collector, Sukkur is a formal complaint on serious contractual default of the garbage collector and the failure to take corrective action by the SSWMB. while Lahore developed strong performance record with its international outsourcing experience. Contrasting the literature from around the world, the capacity of the contracting authority, in monitoring, imposing penalties and conducting audit seemed to be a critical constraint for PPP success in the SWM sector in Pakistan.

Potential one of the recurrent financial challenges in Pakistan is that of having a separate revenue stream for MSW management, such as local cesses in some of its counterparts. But whether it's the most successful waste utility, LWMC's liability of

Rs 96 billion on the Punjab government tells us that it is dependent on discretion instead of on a stable, guaranteed revenue, even if it has proven to be the most successful waste utility to date.

5.4 The Informal Sector: An Unintegrated Backbone of Pakistan's Waste Economy

The failure to give adequate attention to informal recycling system in Pakistan in the context of SWM policy framework could be the most prominent issue. Only 50% of Pakistan's municipal waste is handled by formally registered institutions, the rest is recovered, sorted and sold by an informal labour force of 200,000 to 333,000 who recycle 13% of the country's total municipal waste – paper, cardboard, metal, glass, plastics etc – many of whom work under hazardous conditions and receive low wages. The study of Akhtar (2012) of scavengers in the south-western area of Lahore revealed a well-developed, locally organized recovery economy has existed for more than a decade, which is parallel to the formal waste-management system.

Pakistan's provincial SWM Acts do not consider waste-picker cooperatives as contracting partners, nor do they provide for access to reserved municipal contracts, safety equipment or social protection, which are central to effective hybrid governance models such as those exemplified in Brazil through the waste-picker cooperative-integration system, or in Indonesia using the community Waste Bank system. A group of workers already does a significant proportion of the country's material recovery work is not formally incorporated into the policy architecture that is supposed to regulate material recovery, so they miss out on gains from efficiency and poverty reduction.

5.5 Plastic Waste Regulation: A Case Study in Enforcement Deficit

The implementation of the single use plastic ban in Pakistan is a case in point. The Pakistan Environmental Protection Agency and the Islamabad Capital Territory (ICT) administration banned the manufacture, import, sale and usage of single use polythene bags in the federal capital in 2019 as one of 128 countries, which banned the

use of single use polythene bags that same year. The ban was accompanied by public awareness campaigns and graduated fines. Following implementation, 80% of respondents said they had seen an improvement in their awareness of plastic pollution in one year, and all retailers had changed the material of their bags.

However, enforcement failed. The ban was renewed in 2023, an unusual move which indicates that the original ban is not having the expected effect. The second survey revealed that over 60% of the household waste collected in Islamabad was polythene bags and 30% was plastic bottles. An initial policy that was conceived and initially embraced as a promising regulation, followed by a lapse in enforcement to the extent that the policy had to be reissued as the same ban four years later, is a classic case of the “ceremonial compliance” pattern found in the global policy implementation literature: a policy that on paper signals international alignment, but is not maintained in operational monitoring and compliance with the intent to change behaviour on the ground. Pakistan produces 3.9 million tonnes of plastic waste every year, with only 33% of this waste being recycled while the remaining 66% is left in landfills, waterways and open dumps.

5.6 Outcomes: Health, Environmental, and Economic Costs

Uncollected waste is sitting in public spaces, drains and waterways across the country, causing vector-borne and waterborne diseases, especially in the poorer communities which are most likely to have poor waste collection services. Outside of Lahore, there are no engineered landfills in Pakistan, and near total dependence on open dumping and burning of waste is causing uncontrolled methane emissions, water pollution and a measurable degradation of coastal areas in the marine ecosystem in Karachi. Although the feasibility studies were carried out for waste to energy (WTE) projects and material recovery opportunities, but not much investor interest was observed in waste recovery even in Lahore where privatisation could have attracted waste recovery investors and thus, a continuous and measurable

loss of waste resource-recovery value has been experienced which can be captured with a more fully integrated circular-economy policy.

6. Discussion: Synthesis Against the Research Questions

The key institutional challenges to ensure effective implementation of SWM in the major cities of Pakistan are provincial-federal government fragmentation (as in Karachi's conflict between the SSWMB and KMC), absence of a national-level institutional framework for the federally administered areas (as in Islamabad's decade-long deadlock over landfills), and low contract enforcement capacity. These institutional and political challenges confirm the overall conclusion that SWM implementation failures are a governance problem, rather than an engineering problem.

Comparative research indicates that legal-regulatory consistency is a requirement but not sufficient for good results in relation to RQ2. Despite a more defined structure than the controversial model of Sindh, the LWMC model has performed better for collection, and its considerable provincial debt indicates that even the more unified model is financially fragile and politically sensitive. The devolution reform in Sindh in 2024 demonstrates a level of institutional learning as officials are actively making changes in the legal framework in response to implementation failures, although a final verdict on its success is not available.

RQ3 revealed that the performance of PPPs is more related to financing adequacy and capacity to implement through contract, rather than public-private delivery, and that the largest untapped resource for reducing the national implementation gap is the lack of formalisation of Pakistan's large informal recycling industry. International hybrid-governance models suggest that formalization of WPCs, reserved municipal contracts and provision for some basic social protection measures may support collection and recovery rates, and allow to tackle urban poverty and occupational safety.

7. Policy Recommendations

Rather than faulting policy, these suggestions expand on the federal and provincial policy changes.

- Improve intergovernmental coordination. A standing technical working group in the Council of Common Interests or ministerial coordination body can standardize data reporting, technical assistance and performance indicators between provinces, to avoid the coordination failures at the provincial level that turn into bureaucratic hurdles without adding to the burden.
- Performance-linked, ring-fenced finance. Financial fragility can be reduced with transparent provincial payments based on verifiable performance metrics (collection percentage, safe-disposal percentage, contract-compliance audits) or dedicated local cesses. Even in the presence of Lahore's successful model, dedicated local cesses or transparent provincial payments based on verifiable performance measures (collection percentage, safe-disposal percentage, contract-compliance audits) can reduce financial fragility.
- Include informal recycling in formal recycling. Legal recognition of waste-picker cooperatives, as well as the adoption of reserved contracting, following international models, and the implementation of basic occupational safety and social protection, could make informal resource-recovery network more accountable and productive.
- Improve governance of PPP contracts. The introduction of standardised provisions for penalties, independent audit mechanisms and public reporting of outsourced collection contracts could help overcome contractual issues of contractor default in Sukkur and emulate Lahore's success in implementing such mechanisms.
- Make community-led landfill siting a priority. Islamabad has been without any engineering landfill for around 10 years, which could be solved by engaging with the community in a proactive manner that pays them for their involvement, instead of waiting for a landfill to be officially identified.

- Continue plastics regulation. Periodic re-announcements of ban are not enough; continuous monitoring and tiered enforcement is required to maintain the behaviour-change benefits of the 2019 polythene ban.
- Increase secondary city planning and data infrastructure. The waste characterisation studies should be extended to provincial capitals such as Peshawar, Quetta and Faisalabad and transfer-station planning should be integrated with GIS for evidence-based investment decisions.

8. Limitations

This study relies on peer-reviewed literature, government and multilateral policy documents, and verified news reporting rather than on the primary household surveys, or interviews with municipal officials and informal-sector workers. Some organisational elements could change after this analysis (through mid-2026) due to Sindh's devolution reform process and the changing political leadership in the province affecting entities like LWMC. The research could be improved and updated with primary field information gathered from household surveys on waste generation, with structured interviews with actors in the informal sector and in the municipalities, and with independent waste audits.

9. Conclusion

The management of solid wastes in the biggest cities of Pakistan is not exempt from any policy. In the last 15 years, there has been a considerable volume of federal, provincial and municipal legislation and institutional changes that are progressive and significant. The paper has identified a recurring problem in the implementation of an inter-institutional division of responsibility among levels of government, the mismatch between the allocation of resources and the requirements for recycling, uneven capacity for contract-governance, and especially the lack of participation by the informal recycling sector, which already processes a significant share of the country's waste. When institutional consistency, engineered disposal infrastructure, and consistent financing, though not necessarily perfect, are

present, Lahore's excellent performance demonstrates this. The national gap will be narrowed less with new laws than with investments in coordination and financing predictability and formal integration of the informal sector into the governing system that speaks of waste management in the sector, which is already recovering.

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