

Addressing Economic Barriers to Sustainable Packaging in Lahore's Kiryana Stores

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Executive Summary

Plastic pollution is a widely known recurring problem that is harming our planet. Despite increasing restrictions on single-use plastics, adoption of sustainable packaging among Pakistan's small retailers remains limited. Existing research has largely focused on the environmental impacts of plastic pollution and improvements in waste management systems (*Jambeck et al., 2015; Mukheed et al., 2020*), while comparatively little attention has been given to the economic constraints influencing packaging decisions at the retail level. Studies on environmental policy consistently suggest that regulations are more effective when paired with economic incentives that reduce the costs of compliance (*OECD, 2021; World Bank, 2022*). However, there is limited research examining how such incentive-based approaches could be applied within Pakistan's kiryana sector. This study investigates the financial and operational barriers preventing kiryana stores in Lahore from adopting sustainable packaging and evaluates the feasibility of an SME-sponsored packaging model as a public-private policy intervention. By integrating environmental sustainability with economic incentives, the research aims to provide evidence-based recommendations that are both environmentally effective and financially viable for small retailers. The findings will help policymakers, local governments, environmental organizations and small business stakeholders to design practical interventions that reduce plastic waste while remaining financially feasible.

Introduction

Single-use plastic bags remain deeply embedded in Pakistan's retail economy despite imposing significant environmental, health, and economic costs. Pakistan consumes an estimated 55 billion plastic bags annually and generates approximately 30 million tonnes of solid waste, of which around 9% consists of plastics (*Mukheed & Khan, 2020*). Poor waste management has contributed to the contamination of land, waterways, irrigation channels, and urban drainage systems, creating long-term environmental and public health risks (*Mukheed & Khan, 2020*). More recent estimates indicate that Pakistan discards approximately 3.3 million tonnes of plastic waste each year, while only 3% is recycled, highlighting the limited capacity of existing waste management systems (*UNCTAD, 2025*). Although provincial governments have introduced restrictions on single-use plastics, evidence suggests that legislation alone is insufficient to change consumption patterns without practical and economically viable alternatives (*Zaheer, 2021*). Similarly, Pakistan's National Plastic Action Roadmap advocates for evidence-based and economically inclusive solutions that engage both the public and private sectors (*UNDP & Ministry of Climate Change and Environmental Coordination, 2025*).

Kiryana stores occupy a central role in Pakistan's retail sector, serving as the primary source of everyday household goods for millions of consumers. Their widespread presence means that even minor changes in packaging practices could substantially reduce plastic bag consumption nationwide. However, unlike supermarkets and larger retail chains, kiryana stores typically operate on narrow profit margins and have limited purchasing power, making the higher cost of sustainable packaging a significant barrier to adoption. Research on small and medium-sized enterprises (SMEs) consistently shows that financial constraints are among the most significant obstacles to adopting environmentally sustainable practices, particularly where policy compliance increases operating costs without providing immediate economic benefits (*OECD, 2021; World Bank, 2022*).

Existing literature has extensively examined the environmental impacts of plastic pollution, improvements in waste management systems, and the effectiveness of regulatory measures such as plastic bag bans (Mukheed et al., 2021; Zaheer, 2021). International policy research further emphasises that environmental regulations are most effective when accompanied by economic incentives that reduce the costs of compliance and encourage voluntary adoption (OECD, 2021; UNEP, 2023). Taken together, current evidence suggests that reducing plastic bag consumption requires policies that address both environmental objectives and the economic realities of small retailers, particularly those operating at the neighbourhood level.

Background and Literature

Existing literature suggests that reducing single-use plastic consumption requires more than restricting its use. A review of international plastic policies by Xanthos and Walker (2017) found that governments have adopted combinations of bans, levies and other market-based instruments, demonstrating the importance of policy design alongside regulation. Bharadwaj, Baland and Nepal (2019) similarly found that the effectiveness of plastic-bag bans depends strongly on enforcement and the perceived likelihood of sanctions. More importantly for this study, research involving approximately 1,300 retailers in Nepal found that compliance varies according to shop type, retailer perceptions and local implementation conditions, supporting the need for retailer-specific interventions (Bharadwaj, Subedi & Rai, 2023).

Economic and circular-economy research broadens this argument. The OECD (2022) finds that existing plastic policies remain fragmented and highlights the role of economic instruments alongside regulation, while UNEP (2023) argues for market transformation through reuse, recycling and diversification towards alternative materials. However, comparatively little research examines how these approaches translate to Pakistan's neighbourhood retail sector. In particular, evidence remains limited on how packaging costs and retailers' financial constraints influence adoption among kiriyana stores. This retailer-level economic gap forms the focus of this brief

Methodology

This study adopted a mixed-methods approach, combining qualitative interviews with secondary policy and academic research to examine the economic barriers preventing kiriyana stores from adopting sustainable packaging. Qualitative methods were selected because they provide a deeper understanding of the financial and operational considerations influencing retailers' packaging decisions, while secondary sources provide the broader environmental, economic, and policy context necessary to evaluate potential interventions.

Primary data was collected through five unstructured interviews with kiriyana store owners located within Union Council (UC) 127, Model Town, Lahore. An unstructured interview format was selected to encourage open-ended discussion and allow participants to describe their experiences, financial constraints, and packaging decisions in their own words rather than being limited by predetermined response options. To ensure accessibility and facilitate more natural conversations, all interviews were conducted in Urdu, with questions simplified where appropriate.

Participants were selected using simple random sampling within a clearly defined geographical boundary. The study area was first mapped using Google Maps, with the boundaries of UC 127 identified to establish a consistent sampling frame. Kiriyana stores located within this area were then identified through field observation and mapped into a list of eligible participants. Each store was assigned a unique numerical identifier, and a random number generator was used to select the stores invited to participate in the study. If a selected store declined to participate or was unavailable at the time of data collection, another store was randomly selected from the remaining list using the

same procedure. Restricting the sample to a single Union Council helped maintain consistency in the local economic and regulatory context while reducing selection bias through random participant selection.

Secondary data was collected through a systematic review of peer-reviewed academic literature, government publications, international policy reports, and industry research relating to plastic pollution, sustainable packaging, environmental economics, and public policy. Foundational studies by Jambeck et al. (2015) were used to examine global plastic waste generation and leakage into the environment, while Xanthos and Walker (2017) provided evidence on the effectiveness of policy instruments used internationally to reduce plastic pollution. Pakistan-specific literature, including Mukheed et al. (2021) and Zaheer (2021), was analysed to understand the environmental and health impacts of plastic pollution, waste management practices, and the effectiveness of Pakistan's plastic bag regulations. To strengthen the policy analysis, the study also reviewed *Turning off the Tap: How the World Can End Plastic Pollution and Create a Circular Economy* (UNEP, 2023), which evaluates global policy pathways towards eliminating plastic pollution, and the *Global Plastics Outlook: Policy Scenarios to 2060* (OECD, 2024), which examines the economic impacts of plastic production and compares policy instruments such as taxes, Extended Producer Responsibility (EPR), and circular economy strategies. Pakistan-specific policy and economic evidence was further obtained from the National Plastic Action Roadmap (UNDP & Ministry of Climate Change and Environmental Coordination, 2025), UNCTAD's Pakistan Plastics Sector Study (2025), reports published by the Pakistan Bureau of Statistics (PBS), and publications from the Punjab Environmental Protection Department (EPD). Collectively, these sources provided the environmental, economic, and policy evidence used to evaluate existing interventions and develop recommendations for increasing the adoption of sustainable packaging among kiriyana stores.

Findings

Financial barriers, rather than environmental awareness, remain the primary obstacle to sustainable packaging adoption

Across all interviews, the most consistent finding was that affordability, rather than environmental awareness, is the principal barrier preventing kiriyana stores from adopting sustainable packaging. All participating retailers relied on plastic bags despite acknowledging concerns surrounding plastic pollution and existing provincial restrictions. Interviewees explained that biodegradable or reusable alternatives were considerably more expensive than conventional plastic bags and difficult to justify within businesses operating on narrow profit margins. Several participants reported distributing hundreds of plastic bags daily, meaning that even a small increase in unit cost would substantially increase monthly operating expenses.

This finding is strongly supported by the literature. Research consistently demonstrates that SMEs are less likely to adopt environmentally sustainable practices when compliance imposes additional financial costs without corresponding economic benefits (OECD, 2024; World Bank, 2022). Environmental economics further suggests that businesses operating with limited financial flexibility prioritise short-term cost minimisation over long-term environmental considerations. Since shopping bags generate no direct revenue for retailers, investing in more expensive alternatives represents an additional operating expense rather than a commercial opportunity. Consequently, unless sustainable packaging becomes economically competitive with plastic bags, adoption among kiriyana stores is likely to remain limited regardless of environmental awareness.

Existing policy has increased awareness but has not addressed the economic realities of small retailers

Both the interviews and secondary research suggest that Pakistan's current approach to reducing plastic bag consumption has focused primarily on regulation rather than enabling transition.

Retailers were generally aware of provincial plastic bag restrictions and recognised the environmental harms associated with single-use plastics. However, this awareness had not translated into widespread behavioural change. Participants consistently identified high costs, customer expectations, and limited access to affordable alternatives as the main reasons for continuing to use plastic bags.

These findings align with previous studies arguing that regulatory measures alone are unlikely to achieve lasting behavioural change when businesses face significant economic constraints (Zaheer, 2021; UNEP, 2023). Pakistan's National Plastic Action Roadmap similarly emphasises that successful plastic reduction strategies require collaboration between government, manufacturers, and businesses rather than relying solely on bans and enforcement (UNDP & Ministry of Climate Change and Environmental Coordination, 2025). International experience also demonstrates that policies combining regulation with financial incentives, industry partnerships, and market-based mechanisms generally achieve higher levels of compliance than enforcement alone. Together, these findings indicate that future policy should focus not only on restricting plastic use but also on making sustainable alternatives financially viable for small retailers.

Sustainable packaging should be approached as both an environmental and an economic transition

Interview findings suggest that retailers are not fundamentally opposed to adopting sustainable packaging; rather, their decisions are shaped by economic incentives and business practicality. Several participants indicated they would be willing to transition if sustainable bags were similarly priced or if additional costs were reduced. This suggests that resistance stems less from unwillingness than from financial and operational constraints.

Secondary research reinforces this perspective by highlighting the broader economic opportunities associated with the transition to sustainable packaging. Investment in biodegradable packaging can stimulate local manufacturing, encourage innovation, create employment opportunities, and support the development of a circular economy while simultaneously reducing plastic pollution (OECD, 2024; UNCTAD, 2025; UNEP, 2023). Rather than viewing sustainable packaging solely as an environmental obligation, policymakers should recognise it as an opportunity to align environmental objectives with economic development. Policies that reduce costs for retailers while creating commercial value for manufacturers and SMEs are therefore more likely to produce lasting reductions in single-use plastic consumption than approaches based solely on regulation.

Environmental and Economic Analysis

The continued reliance on single-use plastic bags extends beyond individual purchasing decisions, contributing to broader environmental challenges across Pakistan. Plastic bags are manufactured from non-renewable fossil fuels and can persist in the environment for hundreds of years, breaking down into microplastics that contaminate soil, rivers, and agricultural land. In urban centres such as Lahore, improperly disposed plastic bags frequently block drainage systems, increasing the severity of flooding during monsoon seasons and placing additional pressure on already strained waste management infrastructure. These impacts demonstrate that the environmental cost of plastic bags extends far beyond their point of sale. Consequently, improving access to affordable sustainable packaging is not solely a retail issue but an important component of reducing pollution, strengthening climate resilience, and supporting Pakistan's broader environmental commitments outlined in the National Plastic Action Roadmap (UNDP & Ministry of Climate Change and Environmental Coordination, 2025).

The findings also reveal that the widespread use of plastic bags represents a market failure in which the private cost of plastic packaging is significantly lower than its true social cost. While plastic bags remain the cheapest option for retailers, the costs associated with environmental degradation, blocked drainage systems, flood damage, waste management, and pollution-related health impacts are ultimately borne by governments and society rather than producers or consumers. Economists describe this as a negative externality, where market prices fail to reflect the full costs of production and consumption. Addressing this imbalance requires policy interventions that better align private incentives with public interests, ensuring that environmental costs are more accurately reflected in market decisions. Moreover, supporting the transition to sustainable packaging has broader economic benefits, including stimulating domestic manufacturing, encouraging innovation, strengthening green industries, and reducing the long-term public expenditure associated with plastic pollution. Viewing sustainable packaging as both an environmental and economic priority therefore strengthens the case for targeted policy interventions that promote sustainable development while supporting long-term economic resilience.

Policy Recommendations

Policy Recommendation 1: One of the primary barriers preventing kiriyana stores from transitioning to sustainable packaging is the additional cost associated with environmentally friendly alternatives. While existing policies largely rely on restrictions and enforcement, they do little to address the financial realities of small retailers operating on narrow profit margins. To overcome this challenge, the Punjab Environmental Protection Department (EPD) should establish an SME-Sponsored Sustainable Packaging Partnership, a public-private initiative that enables local small and medium-sized enterprises (SMEs) to finance sustainable shopping bags in exchange for advertising space. Rather than transferring the cost of sustainable packaging to kiriyana stores, the policy would redirect a portion of local advertising expenditure towards funding biodegradable or reusable bags, creating an incentive structure that benefits all stakeholders.

Under this model, SMEs would sponsor the production of sustainable bags displaying their branding, promotional offers, or QR codes. Approved manufacturers would produce and distribute these bags to participating kiriyana stores at no additional cost to the retailer. Government involvement would primarily focus on certifying manufacturers, establishing quality standards, monitoring compliance, and coordinating the programme rather than directly subsidising the bags. This approach reduces the financial burden on retailers while simultaneously creating an affordable, hyper-local advertising platform for SMEs.

Expected Benefits

The proposed partnership aligns environmental objectives with economic incentives instead of treating them as competing priorities. By removing the cost barrier associated with sustainable packaging, the policy is expected to increase adoption rates among kiriyana stores while reducing reliance on single-use plastic bags. Increased demand for biodegradable packaging would also encourage investment in sustainable manufacturing and strengthen local supply chains. Beyond its environmental benefits, the policy offers economic advantages for multiple stakeholders. SMEs gain access to an inexpensive form of targeted advertising that reaches customers directly within their local communities, while kiriyana stores avoid additional operating costs that could otherwise discourage compliance with environmental regulations. For government agencies, the programme represents a lower-cost complement to traditional regulatory approaches by encouraging voluntary participation rather than relying solely on enforcement.

Expected outcomes include:

- Increased adoption of sustainable packaging among kiriyana stores.
- Reduced consumption of single-use plastic bags.
- Greater participation of local SMEs in environmental initiatives.
- Lower plastic waste entering drainage systems and waterways.

- Increased demand for sustainable packaging manufacturers.

Implementation Considerations

A pilot programme should initially be implemented within Union Council (UC) 127, Model Town, Lahore, where this research was conducted, allowing the policy to be tested in a real-world setting before being expanded to neighbouring Union Councils and eventually across Lahore. Approximately 15–20 kiriyana stores, selected in collaboration with the Punjab Environmental Protection Department (EPD) and the Lahore Waste Management Company (LWMC), would participate in the pilot alongside local SMEs and certified sustainable packaging manufacturers. SMEs would sponsor biodegradable or reusable bags featuring their branding, while participating retailers would receive these bags free of charge. The pilot should be monitored over a three- to six-month period using measurable indicators such as the number of sponsored bags distributed, reductions in plastic bag purchases, retailer adoption rates, SME participation, customer acceptance, and estimated reductions in plastic waste.

Several implementation challenges should also be considered. Local SMEs may initially be hesitant to invest in a new advertising model without evidence of its effectiveness, while manufacturers must be able to meet increased demand for certified sustainable packaging. In addition, the short duration of the pilot may not fully capture long-term behavioural change among retailers or consumers. These risks can be mitigated through phased implementation, regular stakeholder feedback, government certification of participating manufacturers, and periodic monitoring and evaluation before scaling the programme to additional Union Councils and districts across Punjab.

Policy Recommendation 2: The Punjab Government should introduce temporary tax incentives or production subsidies for certified sustainable packaging manufacturers to reduce production costs and increase the affordability of biodegradable and reusable bags. Lower manufacturing costs would make sustainable alternatives more accessible to kiriyana stores while encouraging investment and innovation within Pakistan's sustainable packaging industry. The incentives should be temporary and linked to production, pricing, and quality targets to ensure long-term market competitiveness rather than permanent reliance on government support.

Expected Benefits

- Reduces the production cost of biodegradable and reusable packaging.
- Narrows the price gap between plastic and sustainable alternatives.
- Encourages investment and innovation in Pakistan's sustainable packaging industry.
- Expands the availability of affordable sustainable packaging for kiriyana stores.
- Supports the long-term growth and competitiveness of local manufacturers.

Policy Recommendation 3: The Government of Punjab should strengthen Extended Producer Responsibility (EPR) regulations by requiring plastic bag manufacturers and importers to contribute financially to the transition towards sustainable packaging. Rather than placing the burden solely on kiriyana stores, producers would be required to support a dedicated transition fund that helps finance certified biodegradable alternatives for small retailers and supports investment in sustainable packaging infrastructure. By shifting part of the environmental cost back to producers, this approach follows the internationally recognised "polluter pays" principle while reducing the financial burden on small businesses.

Expected Benefits

- Reduces the financial burden on kiriyana stores.
- Encourages plastic manufacturers to invest in more sustainable alternatives.

- Creates a stable source of funding for long-term packaging transition programmes.
- Aligns Pakistan's plastic management policies with international best practices.
- Ensures the environmental costs of plastic production are more fairly distributed across the supply chain.

Conclusion

This research demonstrates that the continued use of plastic bags among kiriyana stores is driven primarily by economic constraints rather than a lack of environmental awareness. While existing regulations have increased recognition of the environmental impacts of plastic pollution, they have not sufficiently addressed the financial barriers preventing small retailers from adopting sustainable alternatives. Creating an economically viable transition will therefore require policies that align environmental objectives with business realities. By reducing the cost of sustainable packaging and encouraging collaboration between government, manufacturers, and retailers, Punjab can accelerate the adoption of environmentally responsible practices while supporting the long-term competitiveness and resilience of its small business sector.

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