Innovative Business Models for Plastics Reuse and Recycling: A Study of West Bengal

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Abstract

The plastics sector in West Bengal is undergoing a significant structural transformation, driven by tightening environmental regulations, extended producer responsibility (EPR) norms, and a growing market demand for sustainable materials. This paper examines emerging business models in plastics reuse and recycling in West Bengal within the evolving framework of the circular economy. The study situates its analysis against recent policy developments, particularly the Government of India's mandate requiring a minimum of 25 per cent recycled plastic content in packaging from April 2025, which is expected to catalyze large-scale investments in recycling infrastructure. Drawing on secondary data from industry reports, government publications, and stakeholder insights, the paper identifies and analyses key business models such as organized collection and aggregation systems, decentralized recycling enterprises, producer-led take-back mechanisms, public–private partnerships, and value-added applications of recycled plastics in manufacturing and infrastructure. The findings indicate that supportive state-level initiatives, investor incentives, and the availability of skilled labour are positioning West Bengal as an emerging hub for plastics recycling and sustainable manufacturing. The study highlights how regulatory compliance, innovation, and entrepreneurship are collectively reshaping the plastics value chain, creating opportunities for economic growth while addressing environmental challenges. The paper concludes that the convergence of policy support, industry participation, and market demand is critical for scaling

viable reuse and recycling business models and advancing a sustainable plastics economy in West Bengal.

Keywords

Plastic reuse and recycling, Emerging business models, Circular economy, Extended Producer Responsibility (EPR), Plastic waste management.

Introduction

The rapid growth of plastic consumption has become a defining feature of modern economies, owing to plastics' versatility, durability, and cost-effectiveness. However, the extensive use of plastic materials has led to serious environmental challenges, including waste accumulation, ecosystem degradation, and public health concerns. In India, plastic waste management has emerged as a critical policy and developmental issue, particularly in densely populated and industrially active states such as West Bengal. Addressing these challenges requires a transition from the traditional linear model of "produce–use–dispose" towards a circular economy that emphasizes reuse, recycling, and resource efficiency. In recent years, regulatory interventions have played a decisive role in reshaping the plastics sector. The introduction of Extended Producer Responsibility (EPR) under India's Plastic Waste Management Rules has placed greater accountability on producers, importers, and brand owners for the post-consumer phase of plastic products. The mandate to incorporate a minimum of 25 per cent recycled plastic content in packaging from April 2025 represents a significant policy shift aimed at promoting recycling, reducing dependence on virgin plastics, and minimizing environmental impact. These regulatory measures are expected to stimulate substantial investments in recycling infrastructure and innovation across the plastics value chain.

West Bengal occupies a strategic position in India's plastics industry due to its strong manufacturing base, access to ports and logistics networks, and a large pool of skilled and semi-

skilled labour. The state government has increasingly emphasized sustainable industrial development by promoting investor-friendly policies, infrastructure expansion, and skill development initiatives. Recent industry–government interactions, including investment promotion seminars, reflect a growing commitment to making West Bengal a hub for plastics manufacturing and recycling. This evolving industrial ecosystem provides fertile ground for the emergence of innovative business models focused on plastics reuse and recycling. Against this backdrop, new business models are emerging that integrate environmental sustainability with economic viability. These include organized collection and aggregation networks, decentralized recycling units, producer-led take-back systems, public–private partnerships, and value-added applications of recycled plastics in sectors such as packaging, construction, and infrastructure. Such models not only enhance resource recovery and compliance with EPR norms but also create entrepreneurial opportunities, employment generation, and inclusive growth, particularly within the MSME sector.

This paper seeks to examine the nature, drivers, and implications of emerging business models in plastics reuse and recycling in West Bengal. By analyzing policy frameworks, industry practices, and market dynamics, the study aims to highlight how regulatory pressure, investment inflows, and innovation are collectively transforming the plastics value chain. The findings are expected to contribute to the existing literature on circular economy practices and provide policy-relevant insights for stakeholders seeking to promote sustainable plastic waste management and green entrepreneurship in the state.

Literature Review

Plastics have become ubiquitous in modern economies because of their versatility, low cost, and durability. Existing literature highlights that developing nations such as India face persistent structural inefficiencies in waste collection, segregation, recycling, and disposal due to inadequate infrastructure, limited funding, and high dependence on manual labour. Early

work on plastic pollution, such as Hossain et al. (2022) aims to examine the present status of plastic production, consumption patterns, and plastic waste generation in India. It seeks to critically assess existing data and practices related to plastic waste management, with particular emphasis on key challenges such as reverse supply chains, source-specific waste recovery, regulatory frameworks, and the implementation of plastic waste management rules. The study further intends to identify practical and policy-relevant strategies to strengthen plastic waste management systems and to highlight future research directions that support circular economy principles and the achievement of sustainable development goals in India. Singh and Ruj (2016) in his study emphasize the importance of improved product and packaging design to reduce dependence on virgin raw materials and support efficient resource utilization in businesses. It also seeks to examine the feasibility and limitations of existing alternatives to conventional plastics. Furthermore, the objective is to assess the economic challenges associated with the higher cost of recycled plastics while highlighting their environmental and social benefits as a sustainable substitute to virgin-grade plastics. Dijkstra et al. (2020) highlighted that most business models emphasize recycling initiatives and value creation from plastic waste, along with efforts toward the development of bioplastics. However, only a limited number of cases demonstrated true triple bottom line performance, as the majority highlighted environmental and economic gains while giving less attention to social benefits. Circular economy–oriented business models were identified in approximately one-fourth of the cases analyzed. Additionally, this study synthesizes the key challenges and emerging opportunities faced by private sector actors in advancing sustainable plastic management practices. Bazienė *et al.* (2024) in their study, the authors examine how emerging waste recycling technologies contribute to the transition toward a circular economy. These innovations are gradually replacing conventional linear production models based on “take, make, and dispose” by minimizing waste generation, prolonging the useful life of products,

and enabling efficient recovery of valuable resources from end-of-life materials. Ombis et al. (2015) highlighted the adoption of environmental innovation strategies to address plastic waste challenges in Kenyan cities, focusing on the interaction between solid waste management systems and plastic production processes. Using the Multi-Level Perspective on Technological Transitions as the analytical framework, the paper evaluates seven innovation pathways aimed at preventing plastic waste and promoting its reuse and recycling. In the Indian context, Kale and Jain (2024) emphasize the pivotal role of the informal sector in plastic-waste recovery, noting that informal waste pickers often outperform formal municipal systems in segregation efficiency and cost-effectiveness. According to Kale and Jain (2024) the informal sector plays a pivotal role in plastic-waste recovery across India. Informal waste pickers contribute significantly to material segregation and recycling rates, often outperforming formal municipal systems in efficiency and cost-effectiveness. Dennis Ike (2025) argue in his study that sustainable urban development requires the integration of informal settlements into formal urban planning frameworks, along with increased investment in basic infrastructure such as roads, electricity, and water services. The authors further emphasize the importance of including residents of informal communities in local governance processes, formulating adaptable policies that recognize and support informal enterprises, and expanding access to financial services and social security mechanisms. Collectively, these measures are expected to improve livelihood opportunities and overall well-being of informal workers while promoting more inclusive and sustainable urban growth. Abramenko et al. (2021) in their study aims to examine how the use of recycled plastics in garment manufacturing can help reduce plastic waste entering the world's oceans and lower the release of harmful pollutants into the atmosphere. It also seeks to assess the potential for cost reduction in clothing production through the substitution of virgin materials with recycled plastic inputs, thereby supporting environmentally sustainable and economically efficient apparel manufacturing practices. Singh

and Sharma (2016) in their study aims to address the growing challenge of plastic waste management arising from the large-scale production and short life cycle of plastic products. It seeks to examine the environmental impacts of plastic waste on ecosystems, particularly its effects on soil and groundwater quality in dump-site areas. The objective also includes exploring the need for planned disposal and sustainable design of advanced polymer-based products, such as adhesives and biomedical implants, that are durable, biocompatible, and environmentally responsible, thereby minimizing pollution while meeting future technological and healthcare demands. Banerjee and Srivastava (2012) point out that plastic waste management in India depends a lot on informal recyclers, who often find creative ways to recover resources even though they face health risks and lack recognition. Their work shows the paradox that this sector is both essential and yet insecure. The same situation is seen in Kolkata, where recycling workers are central to turning waste into useful materials but remain outside formal policy and regulation. Poyai et al. (2024) in their study aims to evaluate the environmental performance of the prevailing plastic waste management approach, which prioritizes the recycling of recyclable plastics and the incineration of non-recyclable plastics with energy recovery, in comparison to traditional practices such as landfilling and conventional incineration. The objective is to generate evidence-based insights to support the formulation of practical guidelines and policy interventions for sustainable plastic waste management and efficient resource utilization in urban areas of Thailand. Additionally, the study seeks to identify the scope for extending and validating these management practices across different urban contexts beyond Bangkok to ensure their long-term applicability and effectiveness.

The reviewed literature collectively highlights the complex and multifaceted nature of plastic waste management, particularly in developing economies such as India, where structural inefficiencies coexist with innovative practices. While policy frameworks, improved product

design, circular business models, and emerging recycling technologies offer promising pathways toward sustainability, their effectiveness is often constrained by economic, social, and institutional challenges. A recurring theme across studies is the critical yet under-recognized role of the informal sector in plastic waste recovery and recycling, which significantly contributes to material efficiency despite precarious working conditions. International experiences further demonstrate the potential of environmental innovation and integrated waste management approaches in reducing ecological impacts. Overall, the literature underscores the need for inclusive, technology-enabled, and policy-supported strategies that align circular economy principles with various business models.

Research Gap

An extensive review of existing literature reveals a growing body of research on plastic waste management, circular economy frameworks, and recycling technologies at global and national levels. However, several critical gaps remain, particularly in relation to region-specific business models and policy–industry linkages in emerging economies like India.

First, while numerous studies discuss circular economy principles and recycling strategies in a broad context, there is a **lack of state-level empirical research** focusing on how these concepts are operationalized through business models in specific regions such as West Bengal. Most Indian studies remain national in scope and do not adequately capture regional variations in industrial structure, governance capacity, and market dynamics.

Second, although Extended Producer Responsibility (EPR) has been widely analyzed as a regulatory tool, **limited research examines its direct impact on business model innovation** in plastics reuse and recycling, particularly under newly introduced recycled-content mandates. The implications of stricter EPR norms on investment patterns, entrepreneurial responses, and value-chain restructuring in West Bengal remain underexplored.

Third, existing literature recognizes the importance of the informal sector in plastic waste recovery; however, there is **insufficient analysis of integrated business models** that formally link informal actors with organized recyclers, producers, and government institutions. Empirical evidence on scalable and inclusive models that combine environmental compliance with livelihood security in the West Bengal context is scarce.

Fourth, studies on plastics recycling largely emphasize technological processes or environmental outcomes, with **relatively little focus on economic viability, market mechanisms, and value creation** through reuse and upcycling. The role of emerging business models in generating sustainable revenue streams, employment, and MSME growth has not been adequately documented.

Finally, there is a noticeable gap in understanding the **interaction between state-level industrial policies, investment promotion initiatives, and circular economy objectives**. How infrastructure development, incentives, and skill-building efforts in West Bengal influence the growth of plastics reuse and recycling enterprises has received limited scholarly attention.

Addressing these gaps, the present study seeks to provide a region-specific, policy-relevant analysis of emerging business models in plastics reuse and recycling in West Bengal, thereby contributing to both academic discourse and practical decision-making in sustainable industrial development.

Research Objective

The overarching objective of this research is to undertake a comprehensive analysis of the emerging business models in plastics reuse and recycling in West Bengal within the evolving paradigm of the circular economy. The study seeks to examine how recent regulatory developments, particularly the implementation of Extended Producer Responsibility (EPR) norms and mandatory recycled-content requirements, are reshaping the plastics value chain and

influencing business strategies across collection, segregation, processing, and value-added manufacturing activities. By situating the analysis within West Bengal's industrial and institutional context, the research aims to evaluate the extent to which policy interventions, investment incentives, infrastructure development, and skill availability are facilitating or constraining the growth of sustainable recycling and reuse enterprises.

Furthermore, the study intends to assess the economic viability and environmental effectiveness of these emerging business models, with specific attention to their potential for resource efficiency, waste reduction, and emissions mitigation. An important objective is to explore the integration of informal sector participants—such as waste pickers and small aggregators—into formalized business ecosystems, and to examine how inclusive models can contribute to both regulatory compliance and livelihood enhancement. The research also aims to identify key challenges, risks, and operational barriers faced by entrepreneurs and firms operating in the plastics reuse and recycling sector, including market volatility, technology adoption, and supply-chain constraints. Ultimately, the study seeks to generate policy-relevant insights and strategic recommendations that can support the scaling of viable, inclusive, and environmentally sustainable business models, thereby contributing to the long-term development of a circular plastics economy in West Bengal.

Research Methodology

The present study adopts a mixed-method research design to analyze emerging business models in plastics reuse and recycling in West Bengal within the framework of the circular economy and Extended Producer Responsibility (EPR) regulations. The methodology integrates both qualitative and quantitative approaches in order to capture the structural, economic, regulatory, and operational dimensions of the plastics recycling ecosystem. The study is primarily descriptive and analytical in nature. It seeks to examine existing practices, identify evolving business models, and assess their economic and environmental implications

rather than testing a narrowly defined causal hypothesis. A regional focus on West Bengal is adopted to enable an in-depth understanding of state-specific industrial policies, market dynamics, and institutional arrangements.

Research Approach

The research focuses on the entire plastics reuse and recycling value chain, encompassing collection, aggregation, sorting, recycling, and value-added manufacturing activities. Enterprises operating at different stages of this value chain are identified and studied to ensure a holistic perspective on business model evolution. This value-chain-wide focus allows for the examination of interdependencies among actors and highlights how regulatory frameworks such as Extended Producer Responsibility (EPR) influence business practices across multiple levels. Exploratory desk-based research is conducted to identify emerging plastic reuse and recycling enterprises in West Bengal. This stage involves the examination of company reports, industry publications, government databases, and digital platforms to document business activities and preliminary business model characteristics. Based on this mapping exercise, selected enterprises are categorized according to their position within the value chain and the nature of their business operations.

In-depth, semi-structured interviews are then conducted with entrepreneurs, managers, and key stakeholders associated with selected enterprises at each stage of the plastics value chain. These interviews are designed to elicit detailed information on business model structure, revenue mechanisms, compliance with EPR norms, investment requirements, technological adoption, and perceived challenges and opportunities. The interview-based approach facilitates the generation of new insights that can be further examined and interpreted within the broader theoretical framework.

Data Collection and Analysis

Data Collection

Data for the present study were collected in two sequential phases, combining desk-based research with in-depth qualitative interviews in order to develop a comprehensive understanding of emerging business models in plastics reuse and recycling in West Bengal. The first phase involved an extensive online and document-based search to identify emerging enterprises engaged in plastic reuse and recycling. Multiple sources were consulted to ensure broad coverage and reliability. These included sustainability rankings, reports and websites of organizations working on industrial sustainability and circular economy initiatives, and systematic Google searches using predefined keywords such as plastic waste startups, sustainable plastic packaging enterprises, circular economy plastic initiatives, and plastic recycling businesses in West Bengal. Industry portals, government databases, and publications of national and international organizations working in waste management and sustainability were also reviewed. This process resulted in the identification of a large pool of enterprises engaged in plastics reuse and recycling activities.

From the initial pool, enterprises were screened based on relevance to the scope of the study. Firms that were not directly involved in plastic reuse or recycling, or for which sufficient and reliable information was not available, were excluded. After this screening process, a final set of selected enterprises was retained for detailed analysis. Information on these enterprises was primarily collected from company websites, industry reports, policy documents, and supplementary sources where available. In cases where information gaps existed, partial descriptions were retained with appropriate acknowledgement of data limitations. Each selected enterprise was then systematically described using a predefined analytical framework, with particular attention to its position in the plastics value chain—such as reuse, collection, aggregation, sorting, mechanical recycling, chemical recycling, and intermediary services. This value-chain-based classification enabled structured comparison across business models and facilitated the identification of distinctive operational and strategic characteristics.

In the second phase, in-depth semi-structured interviews were conducted with selected enterprises to gain deeper insights into their business models, operational practices, and regulatory experiences. Interviewees were purposively selected to ensure representation across different stages of the plastics reuse and recycling value chain. A limited but focused number of interviews was considered appropriate given the exploratory nature of the research and its emphasis on depth rather than statistical generalization. Interviews were conducted with enterprise owners, senior managers, and key decision-makers, and each interview lasted between approximately 45 and 90 minutes.

Data Analysis

The analysis of data followed a qualitative, inductive approach. Secondary data collected during the desk research phase were first analyzed to compare business models across enterprises and to refine their categorization within the plastics value chain. This comparative analysis helped in identifying common patterns as well as unique features across different types of business models.

Primary data from interviews were transcribed and systematically examined to identify recurring themes related to business model structure, regulatory compliance (particularly EPR norms), investment requirements, technological adoption, and market challenges. Key statements and narratives from the interviews were coded and compared across respondents to identify shared experiences, barriers, enabling factors, and perceived change requirements within the plastics reuse and recycling ecosystem.

The interview findings were then integrated with insights from the secondary analysis to deepen the understanding of how emerging business models operate in practice and how they respond to regulatory and market pressures. Particular emphasis was placed on identifying enabling conditions, operational constraints, and strategic adaptations that influence business sustainability and scalability. The findings were interpreted in light of existing literature to

assess consistency with previous research and to highlight context-specific insights relevant to West Bengal.

The objective of the analysis was not to statistically generalize findings but to build analytical depth and conceptual understanding of emerging business models in plastics reuse and recycling. The convergence of findings across interviews and secondary sources enhances the credibility of the results and provides a robust basis for drawing conclusions regarding the opportunities and challenges shaping the sector in West Bengal.

Empirical Findings

The empirical investigation reveals that emerging business models in plastics reuse and recycling in West Bengal are diverse and interconnected, reflecting the complexity of the plastic waste value chain. The findings highlight multiple business model typologies operating across reuse, recycling, intermediary services, and logistics, each shaped by regulatory requirements, market forces, and infrastructural conditions.

Reuse-Oriented Business Models:

Reuse-based business models focus on extending the life cycle of plastic products through refill systems, returnable packaging, and durable container solutions. These models are primarily concentrated in urban and institutional markets, including hospitality, retail, and corporate supply chains. Empirical evidence suggests that reuse models reduce dependency on virgin plastics but face operational challenges related to reverse logistics, consumer participation, and standardization of packaging formats. Despite these challenges, firms adopting reuse strategies report long-term cost efficiency and strong alignment with circular economy goals.

Collection and Aggregation Models:

Collection and aggregation models form the foundation of the plastics recycling ecosystem. The study finds that organized aggregators increasingly collaborate with informal

waste collectors to ensure material recovery at scale. Digital platforms, buy-back centers, and contractual arrangements with municipalities are commonly used to stabilize supply. Enterprises that integrate informal actors through incentive-based or cooperative structures demonstrate higher collection efficiency, though income volatility and occupational risks remain key concerns.

Transportation and Logistics Models:

Transportation has emerged as a critical standalone business model within the plastics reuse and recycling value chain. Empirical findings indicate that specialized transportation enterprises facilitate the movement of segregated plastic waste from collection points to sorting centers, recycling units, and manufacturing hubs. These models operate through hub-and-spoke systems, bulk aggregation routes, and route-optimized logistics services to reduce transportation costs and emissions. Several recycling enterprises outsource transportation to third-party logistics providers, while larger firms maintain in-house fleets to ensure material quality and timely delivery. However, high fuel costs, fragmented waste sources, and inadequate transfer stations increase operational expenses, particularly for low-value plastics. The study finds that transportation inefficiencies significantly affect the economic viability of recycling operations. Emerging solutions include decentralized processing units, shared logistics platforms, and public–private partnerships aimed at improving last-mile connectivity and reducing material leakage during transit.

Sorting and Pre-Processing Models:

Sorting and pre-processing enterprises enhance the value of plastic waste by improving material purity and consistency. The findings show a gradual shift towards semi-mechanized and mechanized sorting systems, driven by EPR compliance requirements and quality standards demanded by recyclers. However, inconsistent source segregation and high capital investment requirements limit widespread adoption, especially among small enterprises.

Mechanical Recycling Models:

Mechanical recycling remains the dominant processing model in West Bengal. These enterprises convert plastic waste into flakes, granules, or pellets for downstream manufacturing. The recycled-content mandate under EPR norms has increased demand for recycled plastics, encouraging capacity expansion. Nonetheless, recyclers face challenges such as feedstock contamination, energy costs, and price volatility, which affect profitability and scalability.

Chemical Recycling and Advanced Processing Models:

Chemical recycling enterprises represent an emerging but limited segment, primarily targeting multi-layered and contaminated plastics unsuitable for mechanical recycling. Empirical evidence suggests that while these models offer long-term potential for closing material loops, they are constrained by high capital requirements, technological complexity, and regulatory uncertainty.

Intermediary and Compliance-Based Business Models:

Intermediary models, including Producer Responsibility Organizations (PROs) and compliance management firms, have expanded significantly following the formalization of EPR norms. These entities coordinate collection, recycling, transportation, and reporting activities on behalf of producers. While they improve traceability and regulatory compliance, smaller recyclers report increased dependency on intermediaries and additional transaction costs.

Conclusion

The present study provides a comprehensive examination of emerging business models in plastics reuse and recycling in West Bengal within the evolving framework of the circular economy and Extended Producer Responsibility (EPR) regulations. The findings demonstrate that the plastics sector in the state is undergoing a significant transformation, driven by

regulatory mandates, increasing demand for recycled materials, and growing investment interest in sustainable industrial practices. The transition from a linear to a circular plastics economy has encouraged the emergence of diverse and interconnected business models spanning reuse, collection, transportation, sorting, recycling, and compliance-oriented services.

Empirical evidence suggests that no single business model is sufficient to address the complexity of plastic waste management. Instead, an integrated ecosystem has emerged in which reuse-oriented enterprises reduce material consumption at source, collection and aggregation models ensure feedstock availability, transportation and logistics models enable value-chain connectivity, and recycling enterprises convert waste into economically valuable secondary resources. Intermediary and compliance-based models, particularly Producer Responsibility Organizations, play a critical coordinating role by linking producers with recyclers and facilitating EPR compliance. The effectiveness of this ecosystem is strongly influenced by the efficiency of transportation networks, quality of waste segregation, and the degree of coordination among stakeholders.

The study further highlights the continued importance of the informal sector in plastic waste recovery, particularly in collection and preliminary sorting activities. Business models that actively integrate informal actors through partnerships, incentive mechanisms, and formal contracts demonstrate higher operational efficiency and social inclusivity. At the same time, persistent challenges—such as inconsistent segregation at source, high logistics costs, market volatility for recycled plastics, and limited access to finance—continue to constrain the scalability and long-term sustainability of many enterprises, especially MSMEs.

Overall, the research underscores that regulatory interventions such as EPR and recycled-content mandates have acted as strong catalysts for business model innovation and investment in West Bengal’s plastics recycling sector. However, the success of these models depends on supportive policy implementation, infrastructure development, technological

upgrading, and effective governance across the entire value chain. The study concludes that strengthening collaboration among government agencies, industry players, and informal-sector stakeholders is essential for fostering a resilient, inclusive, and economically viable circular plastics economy in West Bengal. By providing region-specific insights, this research contributes to the broader discourse on sustainable waste management and offers practical implications for policymakers and entrepreneurs seeking to scale plastics reuse and recycling initiatives in emerging industrial regions.

Future Scope

The present study opens several avenues for future research on plastics reuse and recycling within the broader framework of the circular economy. As regulatory frameworks such as Extended Producer Responsibility (EPR) and mandatory recycled-content requirements continue to evolve, future studies can undertake longitudinal analyses to assess how business models adapt over time and how regulatory enforcement influences investment, technological adoption, and market stability in the plastics recycling sector. Further research may focus on quantitative assessments of the economic, environmental, and social impacts of different business models identified in this study. Detailed cost–benefit analyses, life cycle assessments (LCA), and carbon footprint evaluations can provide empirical evidence on the relative efficiency and sustainability of reuse, mechanical recycling, chemical recycling, and transportation-based models. Such studies would strengthen the evidence base for policy formulation and private-sector decision-making. There is also significant scope for exploring technological innovation in plastics reuse and recycling, particularly in the areas of advanced sorting technologies, chemical recycling processes, and digital platforms for waste tracking and logistics optimization. Future research can examine the scalability and commercial feasibility of these technologies in the context of small and medium enterprises in West Bengal.

Another important direction for future research lies in examining inclusive and socially sustainable business models that integrate informal-sector actors into formal recycling systems. In-depth studies on livelihood outcomes, occupational health, gender dimensions, and skill development within plastics recycling value chains would contribute to a more holistic understanding of sustainability beyond environmental and economic metrics. Comparative studies across Indian states or between India and other emerging economies could further enrich the literature by identifying best practices, policy innovations, and institutional arrangements that support successful circular economy transitions. Additionally, future research may investigate the role of financial instruments, green investments, and public–private partnerships in accelerating the growth of plastics reuse and recycling enterprises.

Overall, expanding research along these dimensions will not only enhance academic understanding of circular business models but also support the development of robust, inclusive, and scalable strategies for plastic waste management and sustainable industrial development in West Bengal and beyond.

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