

BEYOND THE BAN

UNPACKING POLYTHENE DEPENDENCY IN BANGLADESH



PLASTIC
SOLUTIONS
FUND

Beyond the Ban: Unpacking Polythene Dependency in Bangladesh



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About ESDO

Environment and Social Development Organization- ESDO is an action research-oriented non-profit and non-government organization based in Bangladesh. It is an environmental action research group dedicated to a toxic-free, zero-waste planet. This entails combating pollution and developing regenerative solutions in cities through local campaigns, policy and financial shifts, research and communication initiatives, and movement building. ESDO has been working relentlessly to ensure biological diversity since its formation in 1990. It is the pioneer organization that initiated the anti-polythene-shopping-bag campaign in 1990, which later resulted in a complete ban on polythene shopping bags throughout Bangladesh in 2002.

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Executive Summary

Bangladesh was the first nation to prohibit polythene (polyethylene or polypropylene) shopping bags, with the support from the Environment and Social Development Organization-ESDO, through the Bangladesh Environment Conservation Act (1995) amended in March 2002.¹ This landmark law positioned Bangladesh as a global norm entrepreneur. However, enforcement soon faltered. Limited monitoring, few affordable alternatives, and consumer dependence allowed illegal production and use to continue.

As a widely defied law in Bangladesh, there is a need to understand why a legal mandate is failing to influence civic behavior. This question is worth examining not only for what it reveals about national legal structures and practices, but also because much of the country's environmental vision depends on the successful implementation of the law. 2,042 consumer-retailer survey data across Bangladesh and multiple key national and regional stakeholder perspectives were used to analyze the factors driving the mass defiance of the ban.

The study presents a holistic picture by examining the socio-economic realities, administrative shortcomings, policy gaps, and coordination discrepancies that have reduced a paramount environmental law to a trivial choice for citizens. It further provides a framework for detailed strategic planning to address the gaps identified in the study report through comparative analysis of the scenario against global best practices. While different stakeholders offered nuanced perspectives from their respective fields, most consumers and retailers identified affordability, availability, and habit as the primary barriers. These demographic differences offer important insights, such as high levels of education not necessarily corresponding to strong environmental awareness—exposing a curriculum gap. Meanwhile, all interviewed stakeholders were well aware of why the law failed to materialize in practice; they clearly identified the barriers and often expressed frustration over gaps that cannot be resolved within their professional mandate. Overall, the findings reveal a significant coordination gap and a weak feedback mechanism among key actors. The study also explores alternatives and offers recommendations for strengthening existing policies and formulating new ones to ensure the phase-out of polythene shopping bags.

¹ The Bangladesh Environment Conservation Act, 1995, was amended by adding Section 6A in 2002, “imposing a ban on all kinds or any kind of polythene shopping bag, or any other article made of polyethylene or polypropylene”

Key Findings

- **The polythene ban has failed as a multistakeholder governance issue**, not because of the shortcomings of any single actor.
- **The ban was reactive rather than organic**, driven by the 1995 SMEC findings, resulting in a narrow focus on carry bags.
- **Exceptions in the legal framework allow manufacturers to circumvent the law**, signaling accommodation of powerful manufacturers.
- **Lack of consistent political commitment** enabled weak coordination and enforcement within the government specifically after regime transitions.
- **Vendor rehabilitation is absent**, undermining a **just transition** and excluding polythene-related actors from the sustainability pathway.
- **High dependence on polythene shopping bags persists among retailers**: half use 50+ bags daily, while only 1.8% report zero use.
- **Awareness does not translate into compliance**: over 63% of retailers know polythene shopping bags are banned, yet continue its use.
- **Affordability drives behavior**: 62.9% of retailers are willing to shift if alternatives are accessible and affordable.
- **Education does not guarantee behavior change**: despite high awareness among educated urban consumers, polythene shopping bag use remains widespread, and alternatives are rarely used exclusively.
- **Rural and informal economies rely heavily on polythene shopping bags** due to its convenience, durability, and low cost.

The persistence in polythene shopping bag use calls for immediate action. Despite two decades of efforts, the polythene shopping bag ban has been ineffective. Therefore, it is necessary to evaluate the effectiveness of this ban and take impactful actions. The alarming rise in this usage rate must be put to a stop by:

- **Designing a Comprehensive Approach to Environmental Education**: A comprehensive approach to environmental education is needed that encompasses solid theoretical knowledge that connects with practical harms and encourages green classroom practices.
- **Revising existing policies**: Reviewing the policy gaps and updating them to ensure clearer definitions and introduce measures so that polythene shopping bags are not generated as byproducts of legal plastic products.
- **Designing inclusive policies for just transition**: Including plastic factory workers in rehabilitation plans, ensuring alternative employment opportunities, and providing social protection for them.
- **Facilitate regional cooperation and commit to a legally-binding agreement**, such as the Global Plastics Treaty

Table of Contents

Executive Summary	1
1. Introduction.....	7
1.1 Context.....	7
1.2 Significance of the Study	8
1.3 Objectives	8
1.4 The Material Composition of Single-Use Polyethylene & Polypropylene Bags.....	9
1.5 The Short-Lived Polythene Shopping Bag Ban.....	10
1.6 Polythene Shopping Bags Threatening Human Lives	11
1.6.1 Effects of Additives in Polythene Shopping Bags.....	11
1.6.2 Effects of Microplastics and Nanoplastics.....	11
1.6.3 Indirect Effects of Polythene Shopping Bag Pollution.....	13
2. Research Methodology	16
2.1 Literature and Policy Review (Qualitative, Desk-Based).....	16
2.2 Survey Analysis (Quantitative).....	17
2.3 Key Informant Interviews (Qualitative).....	17
2.4 Data Triangulation	18
2.5 Limitations of the Study.....	18
3. Legal Framework.....	20
3.1 Legal Frameworks for Banning Polythene Shopping Bags in Bangladesh	20
3.2 Relevant Environmental Policies Linked to Polythene Shopping Bag Use	22
3.2.1 Mandatory Jute Packaging Act, 2010	22
3.2.2 National Plastic Industry Development Policy, 2020	23
3.2.3 Import Policy Order (2021-2024)	24
3.2.4 Solid Waste Management Rules (2021) & National 3R Strategy.....	24
3.3 The Implementation Wing of Environmental Policies	26
3.4 International Legal Bindings.....	27
3.4.1 Global Plastics Treaty	27
3.4.2 Transboundary Plastic Pollution.....	28
4. Governance Gap Analysis	31

4.1 Understanding Regional & Global Practices	31
4.1.1 Countries Close to Bangladesh in Proximity	31
4.1.2 Sri Lankan Case on Sili Sili Bag Ban	32
4.1.3 Best Global Practice: The Case of Rwanda	33
4.2 Achievements of the Polythene Shopping Bag Prohibition Policy	33
4.3 Key Drivers of the Polythene Prohibition Policy Failure	34
4.3.1 Workforce Capacity Constraints.....	34
4.3.2 Governance and Compliance Gaps	35
4.3.3 Failure of the Mandatory Jute Packaging Act (2010).....	35
4.3.6 Absence of a Just Transition	36
4.3.7 The Multi-Stakeholder Problem	36
4.3.8 Push and Pull Factors Leading to Limited Success of the Law	36
4.3.9 Lack of Political Goodwill.....	37
4.3.10 Narrow Focus and Skewed Ratio of Violation versus Consequences	37
4.3.11 Selective Implementation of Penalty	38
4.3.12 Lost Purpose of the Environment Court	38
4.3.13 Lack of Definitional Clarity within Government itself.....	39
4.3.14 Lack of Monitoring Mechanisms against Raw Material Import.....	39
4.3.15 Inspection Visibility and Nationwide Enforcement.....	40
4.3.16 Need for Complementary Measures and Alternative Promotion.....	40
4.4 Assessing Government Voices	40
5. Survey Findings and Field Assessment.....	43
5.1 Availability, Usage Patterns & Waste Volume.....	43
5.1.1 The Polythene Monopoly and Waste Volume Problem	43
5.1.2 Availability of Alternative Bags and Usage	43
5.1.3 Continued Defiance of Law Despite Knowledge of Ban.....	44
5.1.4 Level of Awareness and Attitude Towards Alternatives	45
5.1.5 Willingness to Shift towards Alternatives	46
5.2 Assessment of Awareness Levels of Consumers.....	46
5.2.1 Education Levels vs. Awareness: Is There a Strong Correlation?.....	46
5.2.2 Understanding of the Adverse Effects of Polythene on the Environment.....	48

5.2.3 Curriculum Gap: Education vs. Compliance	48
5.3 People vs. Policy: The Reach of Law	49
5.3.1 Willingness to opt for Sustainable Alternatives.....	49
5.3.2 The Informal Economy and the Popularity of Polythene Shopping Bags	49
5.3.3 Failure to Move on from Polythene Shopping Bags: Did Policies Fail People, or Did People Fail Policies?	50
6. The Way Forward.....	53
6.1 Assessment of Alternatives & their Feasibility	53
6.1.1 Shops and Retailers Promoting Alternatives	53
6.1.2 Businesses Working with Alternatives and their Stumbling Points	54
6.1.3 Scientific Scrutiny of Alternative Bag Materials.....	55
6.2 Future Implications with vs. without Policy Implementation.....	57
6.3 Recommendations to Combat the Polythene Dependency	59
6.3.1 Resketching Environmental Education.....	59
6.3.2 Recommendations for Educational Reform.....	59
6.3.3 Creating Robust Policies.....	61
6.3.4 Strengthening Implementation.....	62
6.3.5 Just Transition for Plastic Bag Manufacturers.....	62
6.3.6 Managing the Existing Polythene Shopping Bag Waste	63
6.3.7 Further Actions	64
7. Conclusion	66
8. Bibliography	67

Chapter 1

Introduction

- Context
- Why the Study Matters
- Objectives
- The Material Composition of Single-Use Polyethylene & Polypropylene Bags
- The Short-Lived Polythene Shopping Bag Ban
- Polythene Shopping Bags Threatening Human Lives



EXPLORING THE DARK SIDE OF
THE COLOURFUL CONVENIENCE.

1. Introduction

1.1 Context

The widespread violation of the polythene shopping bag ban is a problem we can no longer ignore. Our national development vision is heavily reliant on how we instrumentalize law. Therefore, ESDO is on a quest to critically assess why a law that was supposed to lead the path for a greener Bangladesh has drawn a bleak image instead. Bangladesh took a decisive step at a time when global policy debates largely ignored plastic pollution. In 2002, Bangladesh made global environmental history by becoming the first country to ban polythene shopping bags, a bold response to mounting urban flooding, drainage congestion, and public health risks caused by plastic pollution. Backed by strong advocacy from ESDO, the government amended the Bangladesh Environment Conservation Act, 1995 (hereafter, the Act) and included Section 6A regarding banning the production, distribution, and use of thin polythene shopping bags. The decision was globally praised as a pioneering environmental move by a Least Developed Country (LDC). However, there is now widespread defiance and disdain for this law. The Solid Waste Management Rules and the Mandatory Jute Packaging Act of 2010 later supplemented this law. Yet, the implementation has faced persistent challenges.

Plastic waste is now widespread across the country, with debris found in canals, streets, and open spaces. Bangladesh produces over 2500 types of plastics, including those for packaging, construction, textiles, consumer goods, pharmaceuticals, automotive, and electronics.² These single-use plastic wastes remain the most mismanaged and have been constantly contributing to blockages in drainage systems, floods, and adverse impacts on human and marine life.³

While the ban was a response to the anthropogenically induced flood of 1995,⁴ administrative capacity constraints, policy loopholes, and resistance to changing consumer and retailer behavior have resulted in suboptimal outcomes. According to the research results, several factors contributed to the failure of the ban, including insufficient manpower, superficial policy designs, and the absence of affordable alternatives.

This study examines the potential of the polythene shopping bags ban and its alternatives, identifies gaps in law and policy implementation, and offers recommendations to strengthen existing frameworks and support a phased transition away from polythene shopping bags. It reviews

² “Untapped Opportunities in Bangladesh’s Plastic Manufacturing Industry,” n.d., <https://investbangladesh.gov.bd/investment-sector/plastics#:~:text=Untapped%20Opportunities%20in%20Bangladesh's%20Plastic,25%2C%20reaching%20USD%20203.63%20million>.

³ “Meeting Bangladesh’s Plastic Challenge through a Multisectoral Approach,” *World Bank*, December 23, 2021, <https://www.worldbank.org/en/news/feature/2021/12/23/meeting-bangladesh-s-plastic-challenge-through-a-multisectoral-approach#:~:text=STORY%20HIGHLIGHTS,%2C%20marine%20life%2C%20and%20ecosystems>.

⁴ See, eg, SMEC International, *Strategic Environmental Assessment of the Dhaka Drainage System: Final Report* (Dhaka: Dhaka City Corporation and Ministry of Environment and Forest, 1995).

relevant legal instruments, analyzes surveys and Key Informant Interviews (KII) for situating them with the broader legal, policy, and environmental literature. While numerous studies have analyzed the law's constrained efficacy, this research advocates for a more comprehensive methodology that incorporates the varied viewpoints of essential stakeholders, including consumers, retailers, government representatives, legal scholars, and environmentally conscious entrepreneurs.

1.2 Significance of the Study

The study follows the success trajectory of a law that once garnered acclaim for its potential to shape environmental governance in Bangladesh. In contemporary social and policy discourse, a common claim is the rejection of the law's feasibility. However, the law demonstrated notable success at the time of its initial enforcement. The study's underlying contention is that if effective enforcement was once possible, it remains possible today. The ban on polythene shopping bags highlights the agency of environmental pressure groups in elevating environmental health issues within the policy arena. It also demonstrates the swift capacity for action exercised by the executive arm of the state. However, the initiation of a legal measure does not guarantee the continuity of its intended outcomes. This study cautions that recurrent violations may normalize the disregard for the law among individuals. It reveals a disconnect between curricular education and civic behavior and illustrates how the consistency of environmental law enforcement may fluctuate with shifts in governmental attention and political regimes. Furthermore, the interconnectedness of the environment and health cannot be overlooked. Therefore, we must reprioritize environmental issues like polythene dependence before a health crisis emerges. Most importantly, the study underscores a reactive policy culture: one that waits for environmental and public health crises before reconsidering the nation's dependence on polythene.

1.3 Objectives

This research primarily studies the gaps in environmental law enforcement and the reliance on polythene shopping bags of the local people of Bangladesh that has resulted in mass dependency on the single-use bags, putting forth recommendations to ensure proper implementation of the laws and policies. The objectives of this study are

- To understand the key reasons behind unhindered polythene shopping bag usage
- To distinguish the legal provisions that may be exploited by manufacturers and retailers
- To inform other environmental laws in Bangladesh by identifying implementation challenges
- To connect a wide spectrum of perspectives from key stakeholders and address coordination gaps
- To suggest policy amendments, behavioral shifts, and strategies for accomplishing the polythene shopping bag ban in Bangladesh

1.4 The Material Composition of Single-Use Polyethylene & Polypropylene Bags

Polyethylene is a material that is used for versatile purposes.⁵ It is the polymer that produces polyethylene bags, commonly known as polythene shopping bags. These plastics are flexible, durable, and affordable for packaging food, clothing, and medical applications.⁶

Based on the resin formulation, there are three types of polythene shopping bags:

- Low-Density Polyethylene (LDPE): Shiny, flexible, and puncture-resistant, often used for retail, food, and industrial purposes.⁷
- High-Density Polyethylene (HDPE): Stiffer, tougher, and water-resistant, usually found in grocery bags, medical packaging, and liners.⁸
- Linear Low-Density Polyethylene (LLDPE): A combination of flexibility and durability, best used for stretch films, heavy-duty industrial bags, and high-impact applications.⁹

Polypropylene bags, on the other hand, are strong, durable, and water-resistant. They are made of the polymer polypropylene, which contains links of long chains of monomer propylene. These materials can also be woven into fabric to make firm packaging bags.¹⁰

⁵ *Polyethylene*, ScienceDirect Topics, Elsevier B.V., accessed March 12, 2026, <https://www.sciencedirect.com/topics/materials-science/polyethylene>.

⁶ PAC Machinery, “The Ultimate Guide to Polyethylene Bags: Materials, Benefits & Sustainability - PAC Machinery,” *PAC Machinery*, March 18, 2025, <https://www.pacmachinery.com/blog/the-ultimate-guide-to-polyethylene-bags-materials-benefits-sustainability/>.

⁷ Ibid.

⁸ Ibid.

⁹ Ibid.

¹⁰ Sandeep Bapna, “Woven Polypropylene Bags: An Ultimate Guide,” *Anita Plastics Inc.*, August 11, 2025, <https://www.anitaplastics.com/blog/polypropylene-bags/>



Source: "Banning single-use plastic: lessons and experiences from countries" UN Environment report (2018)

Fig 1: Main polymers used to manufacture single-use plastic items. [Source: UNEP (2018), 6]¹¹

1.5 The Short-Lived Polythene Shopping Bag Ban

For a limited period of time, Bangladesh had advanced toward becoming a model polythene-free nation. The 2002 ban on polythene shopping bags was fully active from 2002 to 2006. However, the enthusiasm ultimately fizzled out, primarily due to a lack of consistent monitoring, regulation, and law enforcement by the government and Bangladesh lost its momentum in overcoming the reliance on polythene shopping bags.¹² The ban, though short-lived, had temporary but substantial socio-economic impacts in the country. According to data from the Directorate of Jute, the demand for jute rose from 577 million kg in the 2002-2003 period to 624 million kg the following year.¹³ However, under the authority of a caretaker government from 2007 to 2008, thicker polythene shopping bags were legalized for certain industries influencing a staggering fall in demand for jute around 2008-2009.¹⁴ These actions created an initial loophole in the implementation system. Soon after the next government was established in 2009, polythene shopping bags were further encouraged, as 40-micron polythene shopping bags were permitted in tea plant nurseries.¹⁵ The declining seriousness of the ban with changes in regime was evident. Though the government later introduced optimistic laws, such as the Mandatory Jute Packaging Act 2010, the discouragement

¹¹ United Nations Environment Programme (UNEP), *Single-Use Plastics: A Roadmap for Sustainability* (Nairobi: UNEP, 2018), 6, Figure 1

¹² Kamran Reza Chowdhury, "Analysis: Can Bangladesh's single-use plastic crackdown succeed?," *Eco-Business*, March 6, 2025, <https://www.eco-business.com/news/analysis-can-bangladeshs-single-use-plastic-crackdown-succeed/>

¹³ Kamran Reza Chowdhury, "Analysis: Can Bangladesh's single-use plastic crackdown succeed?," *Eco-Business*, March 6, 2025, <https://www.eco-business.com/news/analysis-can-bangladeshs-single-use-plastic-crackdown-succeed/>

¹⁴ Ibid.

¹⁵ Ibid.

toward polythene shopping bags was inconsistent with the promotion of jute packaging.¹⁶ Therefore, this Act did not aid in curbing polythene pollution. Consequently, the revolutionary polythene shopping bag ban fell short over the years. Therefore, the failure to insulate environmental issues from politics contributed to the failure of the ban.

1.6 Polythene Shopping Bags Threatening Human Lives

The massive threat polythene shopping bags pose on human health is beyond comprehension. Though there is substantial evidence of adverse impacts of microplastics through lab experiments, the effects only represent the surface of the whole picture while much remains unresolved to date.¹⁷ From 2010 to 2020, scientists detected microplastics in the bodies of fish and shellfish, packaged meats, processed foods, sea salt, soft drinks, and conventionally grown fruits and vegetables sold in supermarkets and food stalls. The microplastics (1µm to 5mm in size), derived from larger polythene shopping bags, find their way into the bodies of aquatic animals, traveling through the food chain into the bodies of humans and other animals and posing a massive threat to health.¹⁸ The reason behind such health issues can be linked to the effects of polythene-bag-producing chemicals¹⁹ and the possible effects of degraded micro- and nano-particles from the polythene shopping bags.²⁰

1.6.1 Effects of Additives in Polythene Shopping Bags

There is evidence that additives used in the making of single-use plastic bags are carcinogenic and endocrine-disrupting compounds, which can seep from the polythene shopping bags at any point in their life cycle and enter the human body, causing serious health issues. Researchers worldwide have found that plastic additive exposure can lead to higher cardiovascular risk, obesity, diabetes, prostate and breast cancers, miscarriages, infertility, and neurodevelopmental issues.²¹

1.6.2 Effects of Microplastics and Nanoplastics

Ingestion and inhalation are the main methods of human exposure to microplastics and nanoplastics coming from polythene shopping bags. Inside the body, these substances interact with

¹⁶ Ibid.

¹⁷ Yongjin Lee et al., “Health Effects of Microplastic Exposures: Current Issues and Perspectives in South Korea,” *Yonsei Medical Journal* 64, no. 5 (January 1, 2023): 301, <https://doi.org/10.3349/ymj.2023.0048>.

¹⁸ Pilapitiya, P. G. C. N. T., & Ratnayake, A. S. (2024). The world of plastic waste: A review. *Cleaner Materials*, 11, 100220. <https://doi.org/10.1016/j.clema.2024.100220>.

¹⁹ Raj Kishor Sharma, Usha Kumari, and Sudhir Kumar, “Impact of Microplastics on Pregnancy and Fetal Development: A Systematic Review,” *Cureus* 16, no. 5 (May 20, 2024): e60712, <https://doi.org/10.7759/cureus.60712>.

²⁰ Sona Alungal Sadique, Muxina Konarova, Xufeng Niu, Istvan Szilagyi, Nilesh Nirmal, and Li Li, “Impact of Microplastics and Nanoplastics on Human Health: Emerging Evidence and Future Directions,” *Emerging Contaminants* 11, no. 3 (2025): 100545, <https://doi.org/10.1016/j.emcon.2025.100545>.

²¹ Raj Kishor Sharma, Usha Kumari, and Sudhir Kumar, “Impact of Microplastics on Pregnancy and Fetal Development: A Systematic Review,” *Cureus* 16, no. 5 (May 20, 2024): e60712, <https://doi.org/10.7759/cureus.60712>.

water, ions, and molecules to disrupt chemical compositions.²² Doctors assume an increased risk of brain stroke, heart attack, and early death among people whose blood is infiltrated by microplastics.²³

- Microplastics can cause intestinal toxicity by affecting the tight junctions of the colon, damaging the intestinal mucosal barrier and inducing oxidative stress, inflammation, and apoptosis of intestinal epithelial cells through the mitochondrial pathway.²⁴
- Wind can carry micro- and nano-plastic aerosols formed from biodegradation of plastics that are sized smaller than 10 µm. Humans inhale these substances, which end up in the nasopharyngeal airway, exposing the harmful particles to the lungs.²⁵ Microplastics and nanoplastics can also be deposited in the intrathoracic regions of the respiratory system. Microplastics and nanoplastics smaller than 1 µm can even pass into the bloodstream by entering the alveolar wall; as a result, the circulatory system carries them around the body.²⁶
- Possible impacts of these particles at high concentrations (>250 mg/L) on the human brain include changes in the mitochondrial activity and lactate dehydrogenase leakage in neuronal cells. Older nanoplastic compounds are said to have greater effects as such than fresh ones.²⁷
- The pollutants can induce morphological changes, disrupt cellular metabolism, and interfere with cell-cell interactions in kidneys. The primary mode of toxicity in kidneys is oxidative stress.²⁸
- Microplastics and nanoplastics have the ability to damage male reproductive organs. Upon testing 23 human testicle samples by researchers, all were found with microplastic and nanoplastic contamination.²⁹ Besides, microplastics and nanoplastics greatly affect

²² Sona Alungal Sadique, Muxina Konarova, Xufeng Niu, Istvan Szilagyi, Nilesh Nirmal, and Li Li, “Impact of Microplastics and Nanoplastics on Human Health: Emerging Evidence and Future Directions,” *Emerging Contaminants* 11, no. 3 (2025): 100545, <https://doi.org/10.1016/j.emcon.2025.100545>.

²³ Damian Carrington, “Microplastics Found in Every Human Semen Sample Tested in Study,” *The Guardian*, January 15, 2026, <https://www.theguardian.com/environment/article/2024/jun/10/microplastics-found-in-every-human-semen-sample-tested-in-chinese-study#:~:text=Recent%20studies%20in%20mice%20have,be%20finding%20the%20contaminants%20everywhere>.

²⁴ Sona Alungal Sadique, Muxina Konarova, Xufeng Niu, Istvan Szilagyi, Nilesh Nirmal, and Li Li, “Impact of Microplastics and Nanoplastics on Human Health: Emerging Evidence and Future Directions,” *Emerging Contaminants* 11, no. 3 (2025): 100545, <https://doi.org/10.1016/j.emcon.2025.100545>.

²⁵ Ibid.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid.

²⁹ Damian Carrington, “Microplastics Found in Every Human Semen Sample Tested in Study,” *The Guardian*, January 15, 2026, <https://www.theguardian.com/environment/article/2024/jun/10/microplastics-found-in-every-human-semen-sample-tested-in-chinese-study#:~:text=Recent%20studies%20in%20mice%20have,be%20finding%20the%20contaminants%20everywhere>.

pregnant women's placenta and breastmilk, posing a risk to fetuses.³⁰ More than 60% of placenta samples analyzed in a research work tested positive for microplastic contamination.³¹ They diminish microbiome diversity, reduce birthweight of fetuses, and affect gestational age and fetal growth.³²

- The particles derived from polythene shopping bags can even cause diseases, like cancer. They additionally adsorb monomers degraded from other microplastics and chemical toxins. Not only do they cause cancer, they can also develop potential resistance in the body to cancer therapies.³³

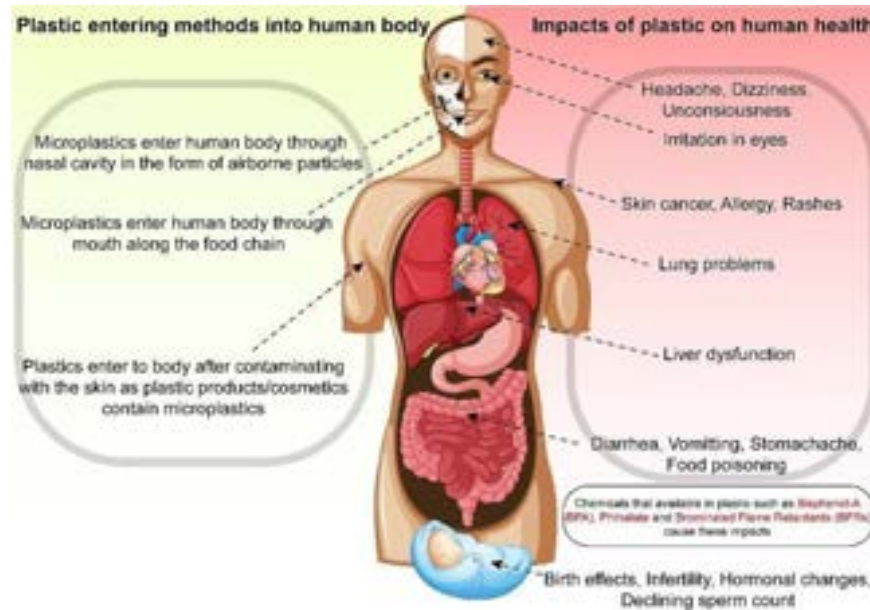


Fig. 2: Entrance of microplastics into human body and impacts on health ³⁴

1.6.3 Indirect Effects of Polythene Shopping Bag Pollution

a) Proliferation of Diseases

Plastic waste blocks the sewage systems by distorting natural channels and disrupting drainage systems. It leads to flooding across Bangladesh. Inundation is a major source of the rise of vector-

³⁰ Ibid.

³¹ Beth Kitt, "Microplastics in Pregnancy: What Parents Need to Know," *The Bump to Baby Chapter*, June 12, 2025, <https://thebump2obabychapter.co.uk/microplastics-in-pregnancy/>.

³² Raj Kishor Sharma, Usha Kumari, and Sudhir Kumar, "Impact of Microplastics on Pregnancy and Fetal Development: A Systematic Review," *Cureus* 16, no. 5 (May 20, 2024): e60712, <https://doi.org/10.7759/cureus.60712>.

³³ Sona Alungal Sadique, Muxina Konarova, Xufeng Niu, Istvan Szilagyi, Nilesh Nirmal, and Li Li, "Impact of Microplastics and Nanoplastics on Human Health: Emerging Evidence and Future Directions," *Emerging Contaminants* 11, no. 3 (2025): 100545, <https://doi.org/10.1016/j.emcon.2025.100545>.

³⁴ A. Franklin-Cheung, "Is It Possible to Recycle Plastics an Infinite Number of Times?" *BBC Science Focus Magazine*, July 1, 2024, <https://www.sciencefocus.com/science/is-it-possible-to-recycle-plastics-an-infinite-number-of-times>.

borne diseases, such as dengue and malaria.³⁵ Research suggests that plastic waste, including dumped polythene shopping bags, retain rainwater, providing favorable conditions for the growth of mosquito larvae, particularly the principal vector species for dengue illness, *Aedes aegypti*.³⁶

b) Declining Tourism

A study reports the unenthusiasm among tourists to visit sea-beaches and cities, where plastic waste, including single-use plastic debris, diminishes the aesthetic beauty of the locations. This repulsion affects the local economy, which involves tourism businesses, including hotels and restaurants.³⁷

³⁵ Fahmida Khatun, Syed Yusuf Saadat, and Afrin Mahbub, *Wrapped in Plastic: The State of Plastic Pollution in Bangladesh* (International Growth Centre [IGC] / Centre for Policy Dialogue [CPD], April 30, 2023), <https://www.theigc.org/sites/default/files/2023-11/Wrapped-in-Plastic-The-State-of-Plastic-Pollution-in-Bangladesh.pdf>.

³⁶ MD Rezanur Rahman Howlader Emu, “The Effect of Plastic Pollution on Human Health in Coastal Area: A Comparative Analysis of Bangladesh and India,” *Preprints.org*, posted November 15, 2024, <https://www.preprints.org/manuscript/202411.1118>.

³⁷ Ibid.

Chapter 2

Research Methodology

- Literature Review
- Survey
- Key Informant Interviews
- Data Triangulation
- Limitations of the Study



2. Research Methodology

The study uses an explanatory mixed-methods research design to understand the factors contributing to ineffectiveness and create meaningful linkages that can inform policymakers and implementers where to reorient their focus. The survey was conducted across rural and urban zones to understand people's awareness and attitude towards polythene shopping bags. Besides comprehensive desk reviews, quantitative consumer and retailer survey data had been synthesized with qualitative legal and stakeholder analysis for triangulation of findings.

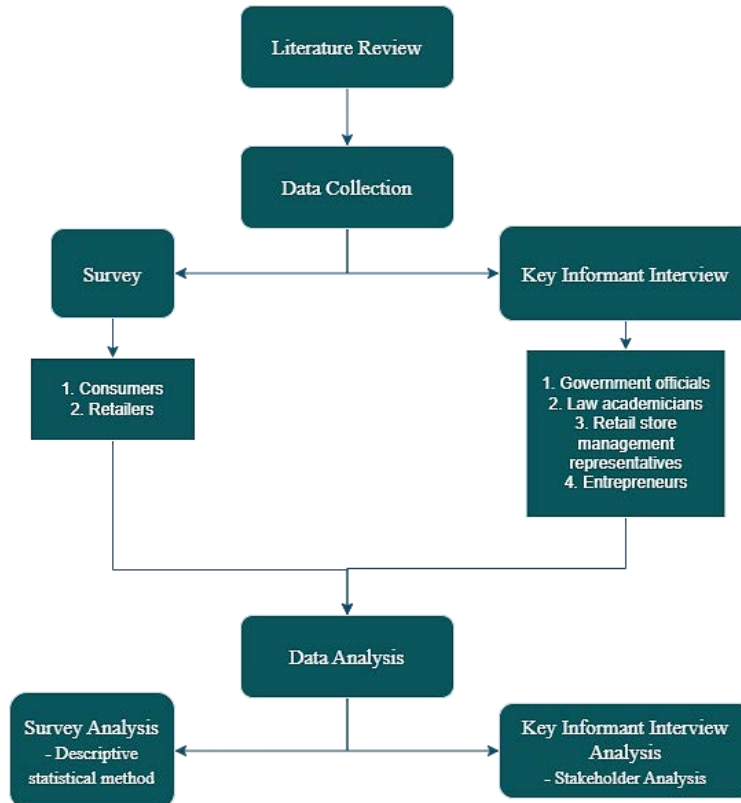


Fig. 3: Research methodology framework

2.1 Literature and Policy Review (Qualitative, Desk-Based)

A systematic review of relevant laws, statutory regulatory orders, gazette notifications, policy documents, research papers, and news articles related to the polythene shopping bag ban was conducted. The review aimed to identify legal loopholes, ambiguities, enforcement, and institutional gaps that may have undermined implementation. It additionally created a comprehensive picture of the possible outcomes of polythene shopping bag pollution.

- **Systematic Literature Review:** Relevant academic, policy, and institutional sources on Bangladesh's 2002 polythene shopping bag ban were systematically reviewed to trace its evolution, assess implementation efforts, and identify key gaps and lessons.

- **Policy Review:** Legal and regulatory changes since the 2002 ban were analyzed to evaluate compliance, enforcement, and alignment with national environmental goals and sustainable alternatives.

2.2 Survey Analysis (Quantitative)

The quantitative data was collected by surveying 1,850 consumers from certain regions and a number of retailers equal to 5% of the consumer sample size from respective areas, totaling 92 retailers. Survey data were analyzed using descriptive statistical methods to examine differences among consumers and retailers across different locations and demographic groups.

Locations:

1. Urban- Dhaka, Chittagong
 - Dhaka: 1000 consumers,
 - Chittagong: 200 consumers
2. Sub-Urban- Ashulia, Dhamrai, Manikganj, Narayanganj
 - Ashulia: 200 consumers
 - Dhamrai: 50 consumers
 - Manikganj: 150 consumers
 - Narayanganj: 200 consumers
3. Rural- Rangpur, Manikganj
 - Rangpur: 200 consumers
 - Manikganj: 50 consumers

Demography:

Ages, genders, and educational levels were taken into consideration during the survey. Overall, a structured survey of 1,850 consumers and 92 retailers from both urban and rural areas was undertaken to assess:

- Public awareness of the ban
- Acceptance and attitudes toward polythene alternatives
- Usage behavior and compliance patterns
- Compliance with laws and regulations

2.3 Key Informant Interviews (Qualitative)

Key Informant Interviews (KIIs) were conducted with:

- Law academicians
- Government officials

- Retail store management representatives
- Entrepreneurs working with sustainable alternatives
- Regional government representatives

The KII followed a semi-structured format that mostly used open-ended questions. The study aimed to capture legal and political goodwill, obstacles to enforcement, and market dynamics related to the limited success. This helped identify barriers to compliance and draw on lessons from successful cases outside Bangladesh. The data was analyzed using thematic analysis after identifying recurring themes and factors.

2.4 Data Triangulation

Findings from legal review, KIIs, and consumer surveys were triangulated to validate results and link legal and institutional weaknesses with on-the-ground behavioral outcomes.

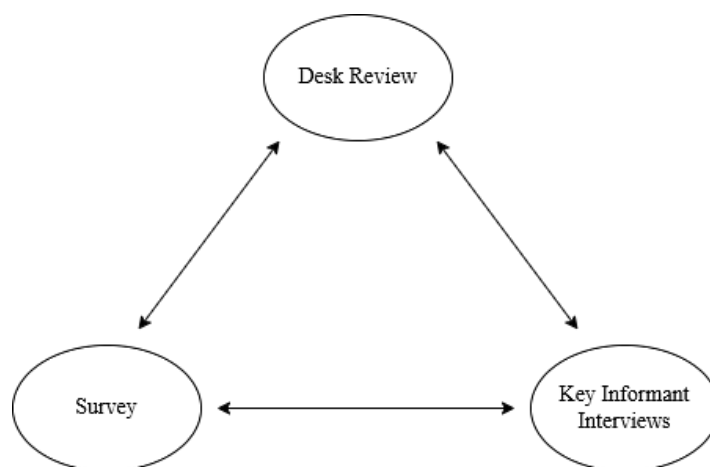


Fig. 4: Data triangulation

Findings from legal document review, KIIs, and consumer surveys have been triangulated to link legal and institutional gaps with the behavioral patterns of consumers.

2.5 Limitations of the Study

- The study produces concrete data from almost 2000 survey responses and assumes the scenario to be true for the entire population of Bangladesh. Therefore, this research assumed the socio-economic distinctions among the districts were negligible.
- The government was unable to provide clear statistics of the current plastic recycling rate under the Dhaka City Corporation. Furthermore, the quantity of single-use polythene shopping bag waste generated is not accurately known. Therefore, the study has considered previous study data to portray the polythene recycling scenario in Dhaka.

Chapter 3

Legal Framework

- Legal Frameworks for Banning Polythene Shopping Bags in Bangladesh
- Relevant Environmental Policies Linked to Polythene Shopping Bag Use
- The Implementation Wing of Environmental Policies
- International Legal Bindings



3. Legal Framework

3.1 Legal Frameworks for Banning Polythene Shopping Bags in Bangladesh

The socio-economic dynamics of Bangladesh enable policy priorities to focus on community and individual suffering that is most visible and whose impacts are most tangible. This is why the environment, as an agenda, gained traction once it was connected with health (environmental health). Similarly, to acknowledge environmental harms in national law and enable the effective use of legal remedies, a new article was introduced in 2018. The Constitution of the Republic of Bangladesh included Article 18A, establishing the responsibility of the State to protect and improve the environment for the sake of present and future generations. Additionally, within the interpretive scope of the “right to life” under Articles 31 and 32 of the Constitution, environmental and health protection has been recognized as providing remedies to people victimized by environmental disruption caused by various actors, from a human rights perspective, as established in *Dr. Mohiuddin Farooque v. Bangladesh* (1996).³⁸

This, in turn, ensured that domestic laws are enforceable in courts and more closely aligned with global environmental norms. A human rights approach also helped justify public interest litigation (PIL) and reinforced the State as the ultimate actor responsible for broadening the scope of safety and dignity for citizens.

a) Bangladesh Environment Conservation Act, 1995

The Bangladesh National Environment Conservation Act was initially formulated in 1995.³⁹ It involved regulations and protocol instructions to protect the environment and maintain ecological balance in Bangladesh.⁴⁰

The main strategies of the Act can be summarized as:

- Declaration of ecologically critical areas and restriction on the operation and process, which can or cannot be initiated in the ecologically critical area⁴¹
- Regulation in respect of vehicles emitting smoke, harmful to the environment⁴²
- Requirements of environmental clearance⁴³
- Regulation of industrial and other development activities- discharged permit⁴⁴
- Setting of quality standards for air, water, and noise for different areas for different purposes⁴⁵

³⁸ *Dr. Mohiuddin Farooque v. Bangladesh*, 48 (1996) DLR 438

³⁹ Bangladesh Environment Conservation Act 1995

⁴⁰ *Ibid.*

⁴¹ *Ibid.*

⁴² *Ibid.*

⁴³ *Ibid.*

⁴⁴ *Ibid.*

⁴⁵ *Ibid.*

- Setting of standard limits for discharging and emitting waste ⁴⁶
- Formulation and declaration of environmental guidelines ⁴⁷

b) Bangladesh Environment Conservation Act, 2002 Amendment

The government of Bangladesh has taken several actions to reduce plastic pollution and protect the environment. The Act of 1995, revised in 2002, incorporated **Section 6A**, making Bangladesh the first nation in the world to implement a national ban on polythene shopping bags.⁴⁸ According to the amended Act, manufacture, import, marketing, sale, demonstration for sale, stock, distribution, commercial carriage or commercial use of all kinds or any kind of polythene shopping bag, or any other article made of polyethylene or polypropylene have been banned.⁴⁹

- ◆ Section 6A placed limitations on the production, distribution, and other activities of environmentally harmful products.⁵⁰
- ◆ The government may issue a directive forbidding the manufacture, import, marketing, sale, demonstration for sale, stock, distribution, commercial carriage, or commercial use of any type of polythene shopping bag, or any other item made of **polyethylene or polypropylene**, if it is convinced that such items are harmful to the environment.⁵¹
- ◆ The government may permit the operation or management of such activities under the conditions outlined in the notification, and everyone will be required to abide by the directive.⁵²

c) Bangladesh Environment Conservation Rules, 2023

The Act, passed in 1995, aimed to reduce environmental pollution in Bangladesh in order to promote environmental protection, raise environmental standards, and exercise control. To determine the requirements and set the standards of air, water, sound, soil, and other environmental components, the government later passed the Environment Conservation Rules in 1997, in accordance with Section 20 of the Act of 1995. However, it was not accepted at that time. In 2023, the government finally passed the Bangladesh Environment Conservation Rules.⁵³ These rules have widely defined the criteria for disposing of waste from other categories of industry regarding the management of toxic and hazardous substances.

According to the rules, industrial projects and units have been classified based on their activities, pollution, and potential harm to the environment and health. The categories are:

- Δ **Green** - Units or projects that have a low impact on the environment or health
- Δ **Yellow** – Industrial units or projects that have a moderate impact on the environment or health

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Ibid.

⁵³ Environment Conservation Rules 2023, SRO No 53-Law/2023

- Δ **Orange** – institutions or projects that have a significant impact on the environment or health
- Δ **Red** – units or projects that have a strong impact on the environment or health. this impact must be reduced by protecting the environment and by taking pollution control measures.

The rules also mandate obtaining the Location Clearance and Environmental Clearance Certificates for the industries or projects to operate. The requirements for each category of units or projects vary. Likewise, the period of validity of the certification is different for each category.⁵⁴ The Bangladesh Environment Conservation Rules ensure environmentally sound operations of industries and the scope for sustainable development. However, many plastic industries in Bangladesh operate without the Location Clearance Certificate or the Environmental Clearance Certificate. Otherwise, they often obtain the certificates by unlawful means.⁵⁵ Therefore, necessary actions need to be taken to strengthen these rules.

3.2 Relevant Environmental Policies Linked to Polythene Shopping Bag Use

3.2.1 Mandatory Jute Packaging Act, 2010

In an attempt to regain the industry's lost dominance and ensure its most diverse and ideal use, the Mandatory Jute Packaging Act of 2010 (amended in 2013) was enacted.⁵⁶ This Act specifies jute packaging for authorized products.⁵⁷

- ◆ **Section 4** states that no one is permitted to sell, distribute, or supply the commodities listed in the rules issued under this Act unless they are wrapped in jute wrappers⁵⁸
- ◆ Under **Section 5**, an Advisory Committee is formed to offer suggestions regarding the application of jute wrapping for any kind of goods⁵⁹
- ◆ The Director-General of the Jute Department is authorized by **Section 8** of the Act to enter and inspect any location, confiscate items and documents, and take other actions concerning violations of the Act⁶⁰
- ◆ **Section 14** penalizes the use of fake wrapping, while Section 13 permits the disposal of seized items⁶¹

⁵⁴ Ibid.

⁵⁵ Sarkar, A. 2021. "Despite Environmental Clearance Certificate, Industrial Pollution Continues." *News71* (নিউজ ৭১). <https://www.news71.com/features/85255#:~:text=Therefore%2C%20it%20requires%20proper%20enforcement.and%20Management%2C%20North%20South%20University.>

⁵⁶ Mandatory Jute Packaging Act 2010

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Ibid.

Under the aforementioned regulation, the distribution of the following six items must be done in jute packaging:⁶²

- Paddy
- Wheat
- Rice
- Fertilizer
- Sugar

11 additional products have been added to the list as a result of this rule's amendment.⁶³

- Chilli
- Turmeric
- Onion
- Ginger
- Garlic
- Pulses
- Coriander
- Potato
- Flour
- Husk

The Jute Packaging Act has the potential to largely reduce the dependence on polythene packaging by requiring certain items to be packed using jute bags. Therefore, if implemented successfully, this strategy would cut down single-use polythene waste generation in our country in notable amounts.

3.2.2 National Plastic Industry Development Policy, 2020

The policy was mainly introduced to revitalize plastic industries and accelerate economic growth in Bangladesh.⁶⁴

- *Section 3.1.1. Priority of the Local Industries* does not mention the reduction of the environmental impact of plastics, including single-use plastics. Though it states to enable an economic industrial development system that creates sustainability and improves the capacity of the industries, the direction is not clear with regard to the achievement of sustainability.⁶⁵
- *Section 2 of the Strategy 3.5* mandates building Centres of Excellence in educational and research institutions that research for the inclusion of the complete product lifecycle, incorporating the circular economy concept into the industrial operations. It also requires the adoption of innovative technologies to enhance product design, segregation process, recycling procedures, post-recycling clean-up, and the development of recycled products.⁶⁶
- The government offers financial assistance like microfinance, credit guarantee schemes, hire-purchase, two-step loans, trade credit, and foreign direct investment in *Strategy 3.6. Section 5* of the Strategy further states that eligible entities to receive “special incentives” from the government are obligated to limit their waste generation in the following steps:

⁶² Ibid.

⁶³ Ibid.

⁶⁴ J. Chakma, “Plastic Industry Policy Aims to Expand Domestic Market,” *The Daily Star*, 2023, <https://www.thedailystar.net/business/economy/industries/news/plastic-industry-policy-aims-expand-domestic-market-3421461>.

⁶⁵ National Plastic Industry Development Policy 2020

⁶⁶ Ibid.

- a. Planning and/or limiting waste pile dumped by industries and/or caused by their activities; and/or
- b. Producing products that are easily degradable through natural processes and producing as little waste as possible
- (ii) Producers must recycle waste by doing the following:
 - a. Planning a program to recycle waste dumped from industries and/or caused by their activities
 - b. Using degradable raw materials
 - c. Recollecting waste from products or packaging to be recycled

Furthermore, tax relief and exemption in this Strategy do not take environmentally sound operations into account.⁶⁷

- According to *Section (b)* of the *Strategy 3.8*, besides introducing an Environmental Management System (EMS), the plastic manufacturing factories must track the energy use and greenhouse gas emissions regularly to monitor the progress of implementing the energy efficiency programme in the production sector.⁶⁸

As per regulations, the National Council on Plastic Industries Development must review and monitor at least twice annually. The progress of policy implementation must be evaluated and reviewed at a five-year interval or at any time based on requirements.⁶⁹

- The National Steering Committee (NSC) has been set up to hold regular consultations with experts from the private sector, trade bodies, think tanks, and officials from the line Ministries and Agencies.⁷⁰

3.2.3 Import Policy Order (2021-2024)

The list of banned items for import in the Import Policy Order (2021-2024) specifically mentions the prohibition of the import of polypropylene and polyethylene bags, which have been banned across Bangladesh according to the Act.⁷¹

3.2.4 Solid Waste Management Rules (2021) & National 3R Strategy

Around 25,000 to 30,000 tons of solid trash are produced daily in Bangladesh. Over 6,500 tonnes of trash were produced every day in urban areas in 1991. By 2021, it had increased to more than

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ Ibid.

⁷⁰ Sarkar, A. 2021. “Despite Environmental Clearance Certificate, Industrial Pollution Continues.” *News71* (নিউজ ৭১).

<https://www.news71.com/features/85255#:~:text=Therefore%2C%20it%20requires%20proper%20enforcement,and%20Management%2C%20North%20South%20University>

⁷¹ Import Policy Order 2021–2024, SRO No 92-Law/2022

33,000 tons. A growing population and shifting consumer behavior are the main drivers of this expansion.⁷²

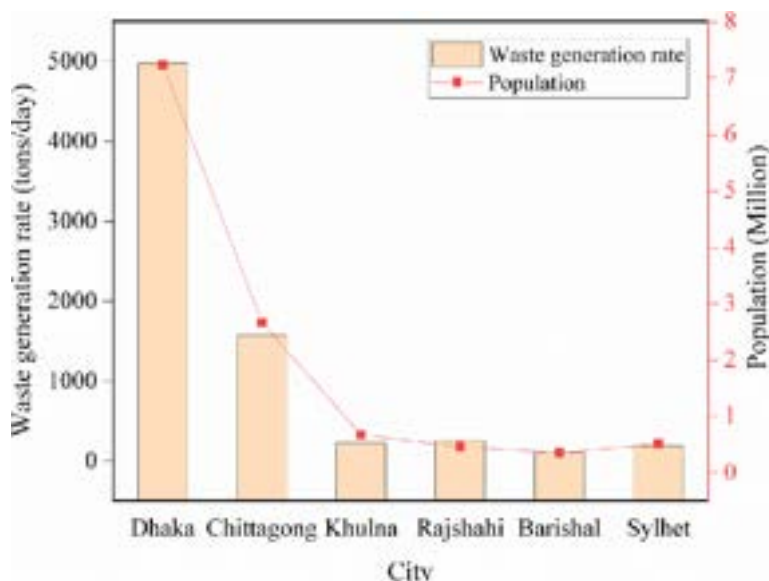


Fig. 5: Waste generation rate against population in divisions of Bangladesh⁷³

Due to Bangladesh's rapid industrialization, population expansion, and urbanization, solid waste management has become a major challenge. The Government of Bangladesh has implemented a number of laws and initiatives to improve waste collection, disposal, and recycling systems in order to solve this issue.⁷⁴ Among them, the Solid Waste Management Rules 2021 introduced the concept of Extended Producer Responsibility (EPR) in Bangladesh. EPR makes producers responsible for managing waste (e.g., packaging or e-waste). The rules also mandate waste source segregation at the household level.⁷⁵

National 3R Strategy (Reduce, Reuse, Recycle)

The National 3R Strategy for Waste Management (Reduce, Reuse, Recycle) was introduced in 2010 and emphasizes the promotion of sustainable waste management techniques as well as the

⁷² Sarkar, A. 2021. "Despite Environmental Clearance Certificate, Industrial Pollution Continues." *News71* (নিউজ ৭১).

<https://www.news71.com/features/85255#:~:text=Therefore%2C%20it%20requires%20proper%20enforcement,and%20Management%2C%20North%20South%20University>

⁷³ P. Fahmida and S. Tareq, "Impact of Landfill Leachate Contamination on Surface and Groundwater of Bangladesh: A Systematic Review and Possible Public Health Risks Assessment," *Applied Water Science* 11 (2021), <https://doi.org/10.1007/s13201-021-01431-3>

⁷⁴ Sarkar, A. 2021. "Despite Environmental Clearance Certificate, Industrial Pollution Continues." *News71* (নিউজ ৭১).

<https://www.news71.com/features/85255#:~:text=Therefore%2C%20it%20requires%20proper%20enforcement,and%20Management%2C%20North%20South%20University>

⁷⁵ Solid Waste Management Rules 2021, SRO No 356-Law/2021

reduction of garbage production.⁷⁶ In addition to offering thorough guidelines for the separation, collection, transportation, and disposal of waste, the Environment Conservation Act of 1995 created the Solid Waste Management Rules 2021, which outline the responsibilities and duties of citizens, companies, and local government organizations.⁷⁷ The 3R strategy can be broadly described as:

1. **Reduce:** It is the first pillar of the 3R concept, which encourages waste reduction at its source.⁷⁸
2. **Reuse:** By allowing products to be used as often as possible before recycling or discarding them, the 3R model promotes product reuse and longevity.⁷⁹
3. **Recycle:** The final pillar of the 3R theory, "recycle," promotes turning waste into new resources that may be used. It involves mixing plastics with virgin materials to make them useful for another purpose.⁸⁰

However, the term 'Recycle' designated here does not serve waste management objectives, as plastic products can be recycled only two to three times, ending up in dumpsites or landfills as a result. Furthermore, the recycling process generates a substantial amount of microplastics, which deteriorate the environment and human health.⁸¹ Therefore, in recent times, the 5R (Refuse, Reduce, Reuse, Repair, and Repurpose) approach is being adopted worldwide. Similarly, 7R, 9R and 10R concepts have been developed.

Additionally, municipalities and city corporations are advised to create decentralized waste management systems, promote public-private partnerships, and engage communities through awareness campaigns.⁸²

3.3 The Implementation Wing of Environmental Policies

The laws and policies related to plastic pollution are primarily overseen by the Department of Environment (DoE), Ministry of Environment, Forest and Climate Change (MoEFCC). DoE works systematically to monitor national environmental issues, manage them, and instigate policy-making.

⁷⁶ National 3R Strategy for Waste Management 2010

⁷⁷ Solid Waste Management Rules 2021, SRO No 356-Law/2021

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ A. Franklin-Cheung, "Is It Possible to Recycle Plastics an Infinite Number of Times?" *BBC Science Focus Magazine*, July 1, 2024, <https://www.sciencefocus.com/science/is-it-possible-to-recycle-plastics-an-infinite-number-of-times>.

⁸² Ibid.

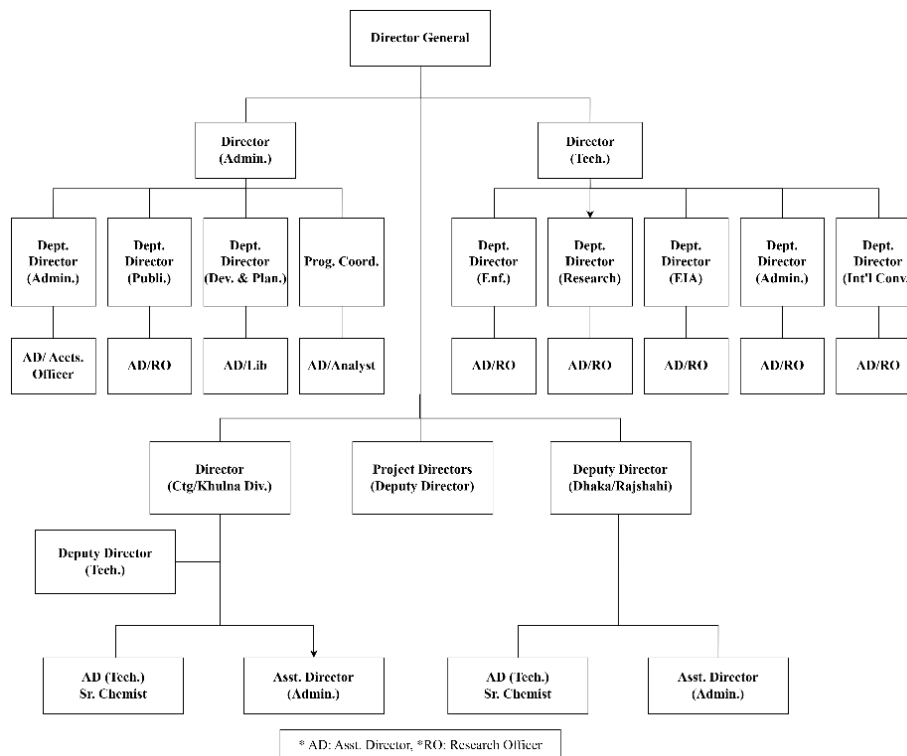


Fig. 6: Organogram of the Department of Environment (DoE), Government of Bangladesh

Powers and Functions of DoE:

Powers and functions of the DoE are also regulated under the Act as well as the rules and regulations passed by the government. The powers and functions of the department are:

1. Policy Analysis
2. Planning and Evaluation
3. Programme Coordination
4. Monitoring and Evaluation
5. Environmental Awareness

3.4 International Legal Bindings

3.4.1 Global Plastics Treaty

The Global Plastics Treaty is a global initiative taken to tackle the ever-rising concern of plastic pollution worldwide. It mandates governments to take a legally binding, comprehensive approach in addressing the entire lifecycle of plastics. Negotiations on the Global Plastic Treaty are carried out through the Intergovernmental Negotiating Committee on Plastic Pollution (INC). The INC process has been a six-year-long struggle from INC 1 to INC 5.3 to reach a unified decision to reduce plastic pollution and manage plastic waste. The final negotiation round (INC-5.2) was held in August 2025 at Geneva, Switzerland; still lacking a global agreement to date.⁸³ INC 5.3 was

⁸³ Andrea Willige, "INC-5.2: The Global Plastics Treaty Talks – Here's What Just Happened," *World Economic Forum*, August 15, 2025, <https://www.weforum.org/stories/2025/08/global-plastics-treaty-inc-5-2->

recently held on 7 February 2026 in Geneva, Switzerland to elect a new chair for the Global Plastics Treaty.⁸⁴

National laws and policies in Bangladesh address plastic control in a fragmented manner, lacking clear goals for circularity and plastic lifecycle monitoring and management. In contrast, the INC process advocates a holistic approach that integrates the full life cycle of plastic items, starting from production through distribution and import to consumption to disposal, into national policies. It calls for global commitment and accountability, Extended Producer Responsibility (EPR), and harmonized reporting standards.⁸⁵ Bangladesh's current framework does not yet align with these principles. Bridging this gap will require Bangladesh to update and interconnect its existing laws, establish enforceable targets aligned with the Treaty, and strengthen coordination among ministries, producers, law enforcement agencies, and other stakeholders. A proactive sync with the Global Plastics Treaty will not only enhance compliance but also position Bangladesh as a regional leader in sustainable plastic governance and circular economy transition.

3.4.2 Transboundary Plastic Pollution

International law recognizes the sovereignty of states but also balances power with principles of cooperation.⁸⁶ States have the right to use their own territory but also have an obligation to protect shared resources and ecosystems. Rooted in the Trail Smelter Arbitration, the “No Harm Principle” is a cornerstone of customary international law.⁸⁷ The arbitration asserts that activities conducted within the jurisdiction of a state do not cause significant harm to other states. The spread of water networks across geography significantly increases the likelihood of carrying floatable pollutants across state borders, particularly to lower-riparian countries. In other words, a polythene shopping bag from country A may end up in country B if the waste is not managed properly. Transboundary pollution becomes particularly relevant for states sharing a common drainage basin,⁸⁸ such as the Ganges-Brahmaputra-Meghna shared by China, India, and Bangladesh.⁸⁹

Therefore, waste management designs in local governance must recognize the extensive transboundary mobility of waste generated within local boundaries. This principle is stated in

[explainer/?gad_source=1&gad_campaignid=22228224717&gbraid=0AAAAAoVy5F574t_UZn_e3P0m-h1_5oLOG&gclid=Cj0KCQiA2bTNBhDjARIsAK89wIFmy6mYM7DKuJVwTXVf_7tLpKqtYCDuW9aC0SfGKCsDMMSisHlled0aAi55EALw_wcB](https://www.iisd.org/articles/explainer/inc5.3-global-plastics-treaty-talks-why-meeting-matters)

⁸⁴ Tallash Kantai, “INC-5.3: Where the Global Plastics Treaty Talks Stand, and Why This Meeting Matters,” *International Institute for Sustainable Development (IISD)*, February 4, 2026, <https://www.iisd.org/articles/explainer/inc5.3-global-plastics-treaty-talks-why-meeting-matters>.

⁸⁵ “Intergovernmental Negotiating Committee on Plastic Pollution,” *UNEP - UN Environment Programme*, n.d., <https://www.unep.org/inc-plastic-pollution>.

⁸⁶ Loewenstein, Karl. “Sovereignty and International Co-Operation.” *The American Journal of International Law* 48, no. 2 (1954): 222–44. <https://doi.org/10.2307/2194372>.

⁸⁷ Wright, Claire. “BLUEPRINT FOR SURVIVAL: NEW PARADIGM FOR INTERNATIONAL ENVIRONMENTAL EMERGENCIES.” *Fordham Environmental Law Review* 29, no. 2 (2017): 221–319. <https://www.jstor.org/stable/26413304>.

⁸⁸ Sharon A. Williams, “Public International Law Governing Transboundary Pollution,” *University of Queensland Law Journal* 13, no. 2 (1984): 112–134.

⁸⁹ Food and Agriculture Organization of the United Nations, *AQUASTAT Transboundary River Basins – Ganges-Brahmaputra-Meghna River Basin* (Rome: FAO, 2011)

UNCLOS Article 194 (2). A general obligation (Articles 192 and 194) exists that requires states to take necessary actions to prevent, reduce, and limit pollution originating from any source.⁹⁰ The following articles from UNCLOS are also related to the transboundary movement of polythene shopping bags:

Land-Based Sources (Article 207): To reduce pollution from land-based sources, states must enact laws and restrictions.⁹¹

Dumping (Article 210): States are required to regulate the disposal of waste, including plastic, from vessels and platforms.⁹²

Cooperation and Notification (Article 197 & 198): States shall work together to develop marine conservation regulations (Article 197) and alert other states to imminent or actual pollution damage (Article 198).⁹³

Monitoring and Environmental Assessment (Article 204 & 206): States must monitor pollution concerns and evaluate the possible effects of actions that could result in serious pollution.⁹⁴

Liability (Article 235): States are in charge of carrying out their responsibilities and guaranteeing compensation for harm caused by pollution.⁹⁵

⁹⁰ United Nations Convention on the Law of the Sea (adopted 10 December 1982) 1833 UNTS 397

⁹¹ Ibid.

⁹² Ibid.

⁹³ Ibid.

⁹⁴ Ibid.

⁹⁵ Ibid.

Chapter 4

Governance Gap Analysis

- Understanding Regional & Global Practices
- Achievements of the Polythene Prohibition Policy
- Key Drivers Behind the Limited Success
- Assessing Government Voices



Governance

4. Governance Gap Analysis

4.1 Understanding Regional & Global Practices

4.1.1 Countries Close to Bangladesh in Proximity

South Asian countries share many challenges in terms of phasing out polythene shopping bags and are taking varied initiatives to accomplish in the mission.

Single-use plastic items, along with thickness-based regulations for carry bags, are regulated under Indian law.⁹⁶ India's approach reflects a relatively broad policy scope. However, enforcement remains inconsistent across states, and informal markets continue to demonstrate widespread non-compliance (See, for example, Toxics Link, 2025; Centre for Science and Environment, 2024). Pakistan has introduced both federal and provincial bans supported by punitive measures (See, Single-use Plastics (Prohibition) Regulations, 2023). Nevertheless, the approach remains fragmented rather than holistic, as it does not adequately incorporate a lifecycle-based framework. This lack of a comprehensive strategy contributes to weak compliance and continued unregulated production.⁹⁷ Similar to Bangladesh, Nepal and Bhutan primarily rely on bans and penalties; however, public compliance challenges remain significant, and waste management systems are still underdeveloped.⁹⁸

Sri Lanka distinguishes itself from other South Asian countries by introducing Extended Producer Responsibility (EPR) alongside restrictive regulatory measures (See, National Environmental Act, 1980). Our interviews with government representatives from Sri Lanka further support this observation. However, this advancement does not imply the absence of limitations. Enforcement gaps persist, and challenges such as illegal production and limited availability of alternatives continue to hinder effective implementation.⁹⁹ The interviews also indicate that limited enforcement capacity often undermines monitoring and compliance objectives.

A review of South Asian country cases reveals that there is no legislative vacuum in addressing single-use plastics. However, most countries lack a comprehensive approach that integrates production control, waste management infrastructure, and circular economy principles. This fragmented policy landscape creates a persistent gap between well-intentioned regulations and limited on-the-ground implementation outcomes.¹⁰⁰

⁹⁶ Government of India, Ministry of Environment and Forests, The Environment (Protection) Act, 1986, No. 29 of 1986, Gazette of India, 1986.

⁹⁷ World Bank, *Pakistan: Plastic Waste Management and Policy Framework Review* (Washington, DC: World Bank, 2021); World Wide Fund for Nature Pakistan (WWF-Pakistan), *Plastic Pollution in Pakistan: Challenges and Policy Responses* (Lahore: Author, 2020).

⁹⁸ United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). (2020).

⁹⁹ Asian Development Bank. *Marine Plastic Debris in Sri Lanka: A Review of National Policies and Recommendations*. Manila: Asian Development Bank, 2020; Institute of Policy Studies of Sri Lanka (IPS), *Plastic Waste Management in Sri Lanka: Policy Gaps and Opportunities* (Colombo: Author, 2025).

¹⁰⁰ United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). (2020).

4.1.2 Sri Lankan Case on Sili Sili Bag Ban

Over the last 10 years, Sri Lanka has made substantial progress in reducing the use of single-use plastics, especially polythene shopping bags. Sri Lanka's National Environmental Act 1980 first mandated the ban on polythene shopping bags and polythene products of 20 microns or below in thickness, popularly known as 'sili sili' bags in Sri Lanka in 2007.¹⁰¹ The government formed the National Environmental Action Plan (2022-2030) aiming to reduce plastic pollution. According to the action plan, the government called for the implementation of the National Action Plan on Plastic Waste Management (2021-2030), introduction of Extended Producer Responsibility (EPR), and controlling plastic pollution through recycling, upcycling, circularity principles, and nationwide awareness programs.¹⁰²

Upon conducting a Key Informant Interview with a government official from the Ministry of Environment of Sri Lanka, the route to achieving the phase-out of polythene shopping bags was analyzed. The analysis shows that Sri Lanka has developed strategic visions for combating single-use plastic pollution and has advanced immensely in implementing strict regulation compared to other South Asian countries. High-level committees have been established for different environmental agendas. The overall procedure and organizational structure suggest a highly streamlined approach to environmental governance.

The implementation of the polythene ban law faced several challenges, which were carefully addressed. Protests were handled peacefully through community awareness campaigns and making affordable alternatives available to the public. According to the official, the government is aware that the supermarket has reduced the supply of 'sili sili' bags in Sri Lanka, by 50%. This was achieved by replacing them with reusable bags at low prices in retail shops. These stores also offered discounts and monetary rewards or a partial refund policy for those who comply. Factories were not abruptly shut down; rather, the manufacturers were provided with a transition period of a few months to integrate the circular economy concept into their industry. The government and international organizations also motivate producers through grants and rewards.

Sri Lanka is also leading among the South Asian countries in matching the pace of global discussions. The Sri Lankan government official asserted that to achieve their goals, the Central Environmental Authority, local governments, and other ministries support the initiatives of the Ministry of Environment upon request, indicating healthy interdepartmental coordination. However, lack of advanced technology, insufficient manpower, and financial barriers remain the prime obstacles in effective implementation of the ambitious goals.

Closing the loop on plastic waste in South Asia. Bangkok, Thailand: Author; United Nations Environment Programme (UNEP), *Single-Use Plastics: A Roadmap for Sustainability* (Nairobi: Author, 2018).

¹⁰¹ The National Environmental Act 1980 (Act No. 47 of 1980).

¹⁰² National Environmental Action Plan 2022–2030: Pathway to Sustainable Development (2022).

Sri Lanka, despite being similar to Bangladesh in geographical proximity¹⁰³ and facing similar challenges, has made speedy implementation of the polythene shopping bag ban compared to Bangladesh. The analysis suggests that the turning point in implementation occurred with the increased availability of affordable alternatives. This strategy essentially alleviated the outrage among the public and facilitated environmental governance in the country. Producer complaints were further addressed with grants and tax-relief, which motivated them highly to end polythene supply at the source. These functional policies and practices can be adopted by Bangladesh to stop the normalization of polythene shopping bag use, instill environmental responsibility in society, and influence effective law enforcement around the country.

4.1.3 Best Global Practice: The Case of Rwanda

Bangladesh's initiative motivated global countries to establish an obligation to use plastic and formulate efficient waste management plans. Bangladesh, being the first nation to address the rising concern regarding plastic pollution, lagged in terms of progress compared to the developed countries that followed its path.¹⁰⁴

The Rwandan government is widely commended for enacting one of the strongest plastic bag bans in the world. It is considered the most successful nation to ban polythene shopping bags to date.¹⁰⁵

Initiatives:

- Command and Control (C&C), including bans on single-use plastic bags¹⁰⁶
- Market-based Instruments (MBIs), including taxes and fees that recognize the social and/or environmental production or consumption costs; provision of subsidies to encourage the manufacture or uptake of a sustainable product¹⁰⁷
- Severe fines for infractions with extensive public education initiatives¹⁰⁸

4.2 Achievements of the Polythene Shopping Bag Prohibition Policy

Based on the findings of this research and pre-existing information, a number of achievements of the polythene shopping bag ban were found.

¹⁰³ Georank, "Bangladesh vs Sri Lanka Comparison: 78 Facts & Rankings," *Georank*, January 3, 2026, [https://georank.org/facts/bangladesh/sri-lanka#:~:text=Bangladesh%20vs%20Sri%20Lanka%20statistics%20compared&text=Bangladesh%20has%20a%20population%20of,124/197%20\(\\$4%2C516\)](https://georank.org/facts/bangladesh/sri-lanka#:~:text=Bangladesh%20vs%20Sri%20Lanka%20statistics%20compared&text=Bangladesh%20has%20a%20population%20of,124/197%20($4%2C516).).

¹⁰⁴ G. Kibria, "Plastic Waste, Plastic Pollution—A Threat to All Nations! Pollution and Climate Change Impacts," accessed August 4, 2022, https://www.researchgate.net/publication/319391174_Plastic_Waste_Plastic_Pollution-A_Threat_to_All_Nations

¹⁰⁵ Al. (2025, March 11). *Bangladesh: the first country to ban polythene, 23 years on – NPF packaging*. <https://npfpackaging.co.uk/bangladesh-polythene-ban-impact/>

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

- ✓ Today, over 100 nations have some form of plastic bag regulation in place, and Bangladesh's leading role is often cited as an inspiration. The ban led to a temporary reduction in polythene use within Bangladesh, and in the early years, there was a noticeable decline in plastic bag littering.¹⁰⁹
- ✓ In 2020, the High Court issued an order to strictly implement the countrywide ban on plastic bags, additionally banning the sale, distribution, and promotion of plastic carrier bags and other single-use plastics such as straws, cotton swabs, cutlery, bottles, food containers, and plastic plates in coastal hotels and restaurants across the country.¹¹⁰
- ✓ The government restored its nationwide boycott on polythene shopping bags in all supermarkets in October 2024.¹¹¹
- ✓ As part of its efforts to curb pollution and to safeguard the environment, the Government of Bangladesh recently formally classified 17 items as single-use plastics in order to enforce the prohibitive law.¹¹² These items include chocolate wrappers, disposable cutlery, plastic invitation cards and banners, styrofoam food containers, thin plastic packaging, and plastic bottles and caps.¹¹³
- ✓ The government banned all single-use plastic items at the Secretariat from October 2, 2025.¹¹⁴
- ✓ This research discloses that the government is currently formulating the guidelines of the Extended Producer Responsibility (EPR) policy that would hold producers accountable for the entire life cycle of the plastic products they manufacture. If brands could be incorporated under the EPR framework, decentralization of responsibility could be ensured. However, the concept of decentralized responsibility that we propose depends largely on individual and institutional environmental stewardship.

4.3 Key Drivers of the Polythene Prohibition Policy Failure

4.3.1 Workforce Capacity Constraints

The inadequacy of regulation is mainly conditioned by the insufficient number of staff responsible for the highly complex and nuanced work at the Department of Environment, which needs to be

¹⁰⁹ Bangladesh Environment Conservation Act 1995

¹¹⁰ CSOS v. Government of Bangladesh, Writ Petition No. 18263 of 2019, High Court Division (Supreme Court of Bangladesh, Jan. 6, 2020).

¹¹¹ Environment and Social Development Organization (ESDO), "Bangladesh Set to Enforce Ban on Polythene Bags in Supermarkets from October 1st," *BAN SUP*, September 10, 2024, <https://bansup.esdo.org/bangladesh-set-to-enforce-ban-on-polythene-bags-in-supermarkets-from-october-1st/>.

¹¹² The Financial Express, "17 Single-Use Plastic Items Categorised Hazardous," *The Financial Express*, July 11, 2024, <https://today.thefinancialexpress.com.bd/last-page/17-single-use-plastic-items-categorised-hazardous-1720635745#:~:text=The%20government%20has%20categorised%2017,filter%2C%20plastic%20bottles%2C%20cups.>

¹¹³ Ibid.

¹¹⁴ "Single-Use Plastic to Be Banned in Secretariat from Oct 2: Cabinet Secretary | News," *BSS*, July 8, 2025, <https://www.bssnews.net/news/290378#:~:text=03%20March%2C%202026-.Single%2Duse%20plastic%20to%20be%20banned%20in%20Secretariat%20from%20Oct.future%20for%20the%20next%20generation.>

streamlined to achieve the desired result. The government thus struggles to control the polythene shopping bag production that mostly happens away from the administrative radar.

4.3.2 Governance and Compliance Gaps

There is a lack of compliance among factory owners since they largely produce plastic products and packaging materials for local brands and for trading, bound by contractual agreements and owing to economic benefit, but produce illegal polythene shopping bags as by-product. This underscores a lack of monitoring and governance which give rise to a means of evasion for plastic product producers. Additionally, the local *Kacha Bazaar Shomiti* is not very sympathetic to the polythene cause. The committee refuses to switch to sustainable practices as it is confident that consumers would reject the alternatives.

4.3.3 Failure of the Mandatory Jute Packaging Act (2010)

Apart from inadequate enforcement of the prohibition of polythene shopping bag usage, the government faces a setback without a feasible substitute. Though the Mandatory Jute Packaging Act (2010) encourages jute bags to be used for certain items, it has not necessarily reduced polythene shopping bag use. Due to the limited supply of jute bags, the government has failed to entirely replace polythene shopping bags with them in the market. Thus, the polyethylene- and polypropylene-use prohibition law's objectives are still far from being met.

4.3.4 Single-Focused National Plastic Industry Development Policy (2020)

2026 marked six years of enactment of the policy, no evaluation or monitoring reports by the National Council on Plastic Industries Development have been publicized to ensure transparency of the industrial emissions of greenhouse gases and the industries' energy usage. Therefore, it is difficult for the public and policy experts to track the progress of this policy to date. The national policy needs to explicitly address the hazards of scaling up plastic manufacturing industries across the country, which involves the harmful effects of single-use plastics, such as polythene shopping bags, on the environment and human health. Such prominent enforcement of accountability has been found to be missing in the formation of this policy. As a result, a massive gap remains in the policy, enabling plastic production without much responsibility imposed on manufacturers toward society.

4.3.5 Interministerial Coordination Gap

The Import Policy Order (2021-2024) strictly banned polythene shopping bags from being imported into Bangladesh. However, the import of plastic (polythene) raw materials allows production in the country despite the ban.

Based on data gathered by Volza, 533 shipments of plastic raw materials, such as polypropylene bags and polyethylene products, have been imported to Bangladesh from May 2024 to Apr 2025.¹¹⁵

¹¹⁵ Volza, "Plastic Raw Materials Imports in Bangladesh – Market Size & Demand Based on Import Trade Data," last modified December 12, 2025, *Volza*, accessed January 18, 2026, <https://www.volza.com/p/plastic-raw-materials/import/import-in-bangladesh/>

Bangladesh primarily imports plastic raw materials from three influential plastic material exporters, namely, Vietnam, India, and Japan. The recorded shipments were supplied by 16 foreign exporters to 17 buyers in Bangladesh, denoting a growth rate of 2323% compared to that in the previous year.¹¹⁶ In fact, Bangladesh notably imported 30 of these shipments in April 2025 alone, marking an annual inclination of the import rate by 900% and a 43% sequential rise compared to the preceding month, March 2025.¹¹⁷ The National Board of Revenue (NBR) made the import of raw plastic materials duty-free for certain export-oriented industries under the Customs Bond Management System (CBMS) using bank guarantees.¹¹⁸ This policy can easily be misused by plastic manufacturers. In fact, Mr. Md. Ziaul Haque, Assistant Director General at the Department of Environment (DoE) confirmed at the stakeholder consultation conducted by ESDO that the tax on raw plastic materials for export-oriented plastic industries has been curtailed annually since 2010, which has increased the import even further, influencing polythene shopping bag production. Therefore, the operations of the Ministry of Commerce have not aligned with the mandates given by the Ministry of Environment, Forest, and Climate Change. As a result, an immense imbalance between ministerial operations prevails, which leads to irregularities and careless breach of the Act.

4.3.6 Absence of a Just Transition

To begin, the shift from polythene shopping bags to jute bags would require just rehabilitation of plastic industries. Current plastic policies do not include backup employment support for factory workers in case of the cessation of the plastic manufacturing industry. Without the provision of incentives or a safety net, the shutdown of factories would lead to socio-economic turmoil around the country. Moreover, it adds to the just transition concern of exclusivity.

4.3.7 The Multi-Stakeholder Problem

When interviewing academics in environmental law, the authors reaffirmed their multi-stakeholder approach as interviewees explained the complex interplay of various actors in the law regarding the polythene shopping bag ban. “It’s not just law, trade practices, consumer culture, government practices, or political inclinations; it’s a complex problem warranting collaborative efforts from multiple sectors.” They highlighted that multiple perspectives are vital to understanding how these forces are shaping our approach towards pollution.

4.3.8 Push and Pull Factors Leading to Limited Success of the Law

There are push factors such as civil society voices and rights groups exerting pressure on the administration to act against plastic pollution. On the other hand, pull factors include ‘economically vital’ industries that can’t be upset by laws that affect them. This balancing act results in suboptimal outcomes. On one side, there is a reasonable law produced to appease the demands by

¹¹⁶ Ibid.

¹¹⁷ Ibid.

¹¹⁸ Tt Report and Textile Today, “NBR Clarifies Eligibility for Duty-Free Raw Material Imports under Bank Guarantee,” *Textile News, Apparel News, RMG News, Fashion Trends*, October 12, 2025, <https://www.textiletoday.com.bd/nbr-clarifies-eligibility-for-duty-free-raw-material-imports-under-bank-guarantee>.

environmentalists; on the other hand, there are provisions to allow certain manufacturers to continue their usage. The result is a law limited by the duality of appeasement. For example, despite being banned, the Third Notification allows its use as wrapping material for certain specific products: biscuits, chanachur, flour, lachacha semai, tea, chocolate, milk (powder and liquid), and naphthalene. This exemption had created avenues for widespread misuse.¹¹⁹

4.3.9 Lack of Political Goodwill

The law academic emphasized, “There is a lack of goodwill behind the ban.” If the ban were organic—imposed with the core purpose of tackling pollution—the laws would reflect on more than just one category of single-use plastic. The specific selection of Low-Density Polyethylene (LDPE) is a reactionary measure taken against the backdrop of the 1998 flood that damaged upscale neighborhoods. An early 2000s SMEC study attributed black polythene shopping bags to the water clogging that led to flooding in Dhaka. The administration’s reaction to this finding was to ban the black polythene shopping bags, only to have them later be replaced by light blue and white polythene shopping bags. The following reasons indicate the law’s superficiality, which summarizes the limited legal success:

- The singling out of polythene shopping bags out of all the categories indicates a reaction to the alarming finding of the SMEC finding, not an organic, thorough and comprehensive law aimed at protecting the environment and human health
- The provisions for exceptions allow certain manufacturers to be exempt from this law when using packaging materials.
- The provisions for exceptions that allow production for the purpose of export.
- The strength of the law exhibits commitment—such as appeasing environmental pressure groups; on the other hand, the disproportionate targeting of SMEs in terms of implementation of the law indicates intentional avoidance of bringing the real offenders under the radar of the law.

To summarize, the law is reactionary, not organic; it is not diverse or comprehensive; it aims to appease industrialists; and the application is selective and disproportionately used against socio-economically disadvantaged people, while mass producers and syndications remain unscathed. This indicates the lack of ‘goodwill’ behind the law. These factors led to the wanting of a comprehensive law aimed at protecting the environment, not pressure groups.

4.3.10 Narrow Focus and Skewed Ratio of Violation versus Consequences

When asked about the range of laws needed to tackle polythene shopping bag use, one of the academics responded, “Why has only one kind of polythene shopping bag been addressed? UNEP, for example, shows 6 categories; however, only one category has been banned. In other words, the law does not address the root cause.” This perspective further reaffirms our argument that the law

¹¹⁹ Government of the People’s Republic of Bangladesh, Third Notification on Polythene Shopping Bags (11 August 2002), Ministry of Environment and Forest, in Poribesh Ain Sankalan, no. 5, p. 298 (ban does not apply to use as wrapper for certain products including biscuits, chanachur, flour, lachcha semai, tea, chocolate, milk (powder and liquid), and naphthalene).

was created to neutralize the public outrage in the aftermath of a crisis, not with the goodwill intent of addressing environmental-health concerns. When discussing implementation, it was identified that the Department of Environment accounts for the number of cases where the law has been enforced to charge individuals for violations. However, the ongoing crackdown is proving to be insufficient to tackle polyethylene and polypropylene pollution. The study suggests that the reason for the continuation may be a skewed ratio of violations versus consequences. In other words, compared to the number of people disregarding the law, only a few are facing the consequences. We can also connect this argument to the struggles of government officials who assert they lack sufficient staff. The respondent also noted an increase in cases since the interim government assumed power. This signifies enhanced environmental focus and transparency mechanisms compared to previous years. Environment-related transparency and accountability mechanisms should not depend on any political regime.

4.3.11 Selective Implementation of Penalty

While discussing the implementation of the law, academics have asserted that the penalties are faced by socio-economically disadvantaged people, while culprits associated with manufacturing and distribution remain strategically untouched. After discussing the issue with both law academics and the Department of Environment, it was noted that enforcement officials mostly steer clear of the manufacturing industry. In other words, law is applied against people with the least power. Steamrolling small entrepreneurs with law will not solve the polythene shopping bag crisis; if there is an avoidance strategy against violators because of real or perceived power, it will be seriously injurious to implementation. Writ petition number 6970, Abu Jafar Md. vs. Nurul Islam, she was induced to understand the intersection of nepotism, power, and law. A Muri Puffed Rice factory was relocated due to environmental concerns after the court ruled in favor of relocation. After the case, it was found that the plaintiff was related to a DoE official. An environmental law was exploited to empty a piece of land that he was eyeing for ownership.

4.3.12 Lost Purpose of the Environment Court

With the aim of speedy trials regarding the environmental issues, the Environment Court Act 2010 was introduced as a progressive step toward strengthening environmental justice in Bangladesh, yet several structural weaknesses undermine its effectiveness. Based on the Environment Court Act (2010), “All trials related to the environment and the amendment and consolidation of the existing laws relating to matters incidental thereto must be held in the Environment Court.”¹²⁰ While the Act of 1995 allows affected individuals to seek remedies and compensation for environmental harm, the Environment Court Act significantly limits this access when it comes to victim reparation. In the legal letter of the Act, the responsibility for initiating proceedings is largely shifted away from victims, limiting their direct participation and creating a procedural veil that weakens the promise of effective redress. Although the act mandates the establishment of environment courts and special magistrate courts, their jurisdiction is functionally constrained

¹²⁰ The Environment Court Act 2010 (Act No 56 of 2010).

because proceedings depend almost entirely on investigation reports prepared by inspectors appointed by the Department of Environment (DoE). Sections 6 and 7 of the Act effectively require courts to rely on these official reports before recognizing offenses. This framework concentrates substantial discretionary authority in the hands of the director general of the DoE, thereby vesting excessive power in the executive branch. This kind of concentration is bad for the rule of law because it makes the courts less independent and limits their ability to look into environmental violations on their own. Ironically, people can only go to court if an inspector doesn't file a report on time without a good reason. However, the Act does not clearly outline the procedural steps for citizens to file complaints in such circumstances. The absence of detailed guidance on standing, evidentiary requirements, and procedural access creates uncertainty and discourages public engagement. Consequently, despite its ambitious design, the Act limits meaningful access to environmental justice and weakens accountability mechanisms.

4.3.13 Lack of Definitional Clarity within Government itself

There have been challenges in interpreting the definition for which implementation success remains limited. A senior official from the Department of Environment (DoE) claimed that the legal definition of polythene shopping bags remains overly broad and lacks specificity as many count handle-free polythene shopping bags as legal since they believe that those with handles are the only ones that are banned. However, the Act clearly imposes “absolute ban on all kinds or any kind of polythene shopping bag, or any other article made of polyethylene or polypropylene.”¹²¹ The paper argues that the polythene law is often misinterpreted. Many people believe that only ‘polythene shopping bags’ are banned, while any and all articles of the materials are outlawed.

4.3.14 Lack of Monitoring Mechanisms against Raw Material Import

Tracking must start at the source. We need to distinguish all plastic raw materials that are imported for export-oriented production and domestic polythene shopping bag manufacturing. In this regard, digital tracking and verification methods may be introduced. Documentation and certification mechanisms should be in place to prevent polyethylene or polypropylene products from misusing imported materials. Even in the production of legal plastic commodities, there should be a documented breakdown of the number of raw materials imported, the raw materials used in production, and the remaining amount or residue. The plastic byproducts and residues must have clear accountability, as they may otherwise redirect for illegal use. Targeted interventions must redirect plastic waste toward authorized recycling facilities and circular economy initiatives. To ensure systematic waste processing, we must address the significant institutional gap caused by the absence of a fully functional plastic management plant.

¹²¹ Bangladesh Environment Conservation Act 1995.

4.3.15 Inspection Visibility and Nationwide Enforcement

In Bangladesh, enforcement power becomes stronger when it has a visible presence. Although DoE is tasked with enforcement, they do not have any visible identifier that informs the general public that they are law enforcers. In other words, people can identify a police officer as a law enforcer but not a DoE official. Therefore, DoE officials require a badge or field uniform that creates an atmosphere of authority over law violators. Moreover, inspections need to be systematic, not scattered. Inspections need to be visible in all 64 districts of the country. A visible presence will signal the seriousness of environmental offenses and empower officials to take decisive action against violators.

4.3.16 Need for Complementary Measures and Alternative Promotion

To ensure the success of plastic regulation, complementary policy initiatives are required. For example, Solid Waste Management Rule 9 requires revision. The establishment of a fully operational plastic management plant remains a core priority. At the same time, sustainable alternatives need to be popularized. Jute and cotton bags need to be distributed for free and at subsidized prices to aid in reducing the dependency on polythene shopping bags while also supporting local industries.

4.4 Assessing Government Voices

Bangladesh has its own waste management strategies. The **National Action Plan for Sustainable Plastic Management (2022–2030)** aims to phase out targeted single-use plastics by 2026 and reduce overall plastic waste generation by 30% by 2030.¹²² Yet, the Dhaka City Corporations have been unable to reach the targets.

Voices from City Corporation

The implementation of the waste management strategies heavily depends on the city corporation as a government-sanctioned authority with the resources and authorization to act. Though source segregation of recyclable plastics exists, there is no existing mechanism to manage single-use plastics that are discarded in landfills. After prolonged discussions with relevant government officials, it was found that the Dhaka South City Corporation has signed an MoU with a Korean company called BNF to utilize these plastic wastes in the production of bitumen for road construction, as a substitute for coal, as the base for landfilling, and for composting in composting plants. Though the project has gained environmental clearance, the possible adverse impact of

“The first step for dealing with existing plastic pollution is the waste segregation phase, which is almost non-existent in our solid waste management system. Even if segregated, at one point, all the waste is eventually combined at the final destination,” **Dr. Abdullah Al Mamun**, Deputy Director, Department of Environment, Ministry of Environment, Forest and Climate Change of Bangladesh

¹²² Department of Environment (DoE), Government of the People’s Republic of Bangladesh, *Multi-Sectoral Action Plan for Sustainable Plastic Management in Bangladesh*, accessed April 28, 2026, <https://doe.gov.bd/pages/publications/multi-sectoral-action-plan-for-sustainable-plastic-management-in-bangladesh-c9f642-6922da8a81fc96cef9eb684e>.

microplastics on the soil, water, and air is still unclear. Road construction and landfill bases made of plastics distribute nanoplastics in the soil that can be carried to soil and waterways via rainwater, ultimately leading to soil and water pollution. On the other hand, replacing coal with plastics in industries would burn and spread microplastics in the air, which may end up in human lungs.

It was further found that, as per the Solid Waste Management Rules 2021, an Effluent Treatment Plant (ETP) and a compost plant have been established so far in Dhaka South, but neither has begun operation yet.

As discussions deepened, a stalemate was identified. Although household waste is generated by individual homes, the lack of participatory interest from the community compels authorities to shift to a strategy that is almost entirely dependent on government efforts. However, several government officials have variously cited the issue of being understaffed. This highlights a deep-rooted contradiction of needing a community-based participatory approach to environmental issues, especially waste management, but designing interventions that shift responsibility to the government authorities.

Chapter 5

Survey Findings and Field Assessment

- Availability, Usage Patterns & Waste Volume
- Assessment of Awareness Levels
- People vs. Policy: The Reach of Law



5. Survey Findings and Field Assessment

5.1 Availability, Usage Patterns & Waste Volume

5.1.1 The Polythene Monopoly and Waste Volume Problem

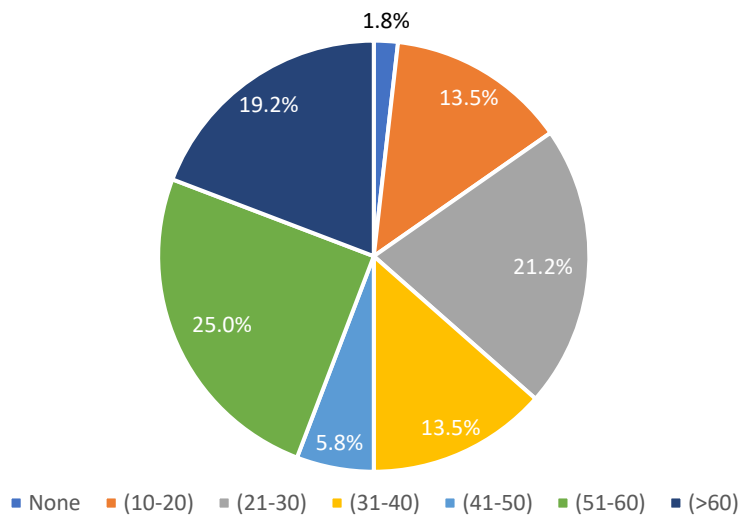


Fig. 7: Sale of polythene shopping bags in retail shops

Half of the retailers require an average of 50 or more bags per day. About 34.7% use between 10 and 30 polythene shopping bags daily, while only 1.8% reported not using any at all. When asked why they preferred polythene, retailers most frequently cited its ability to protect wet groceries and unwanted spilling, in addition to its affordability and

foldability. However, even dry items that do not need such protection are often placed in polythene shopping bags. The wet grocery problem is not circumstantial to Bangladesh; countries around the world struggle to find sustainable wrapping alternatives for wet groceries. However, the findings suggest that in Bangladesh, polythene is treated as an all-purpose bag, not exclusive to wet groceries. This multiplies the nondegradable waste volume, subsequently making waste management a monumental task while also discouraging eco-friendly alternatives.

5.1.2 Availability of Alternative Bags and Usage

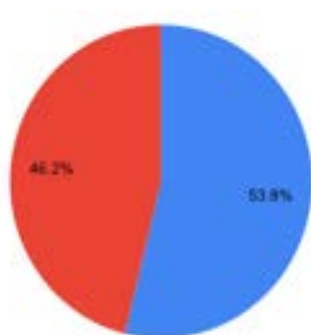


Fig. 8: Availability of Alternative Bags

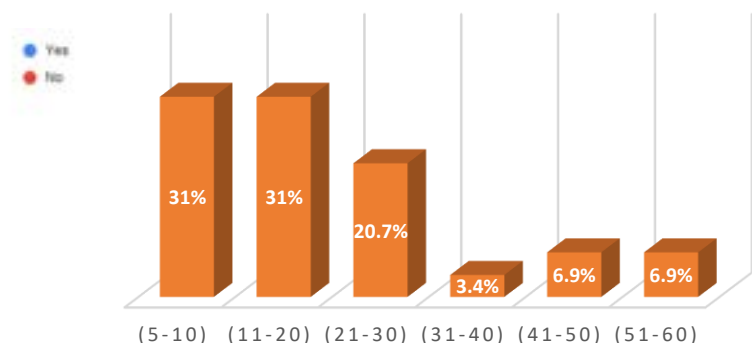


Fig. 9: Usage of alternative bags for packaging daily

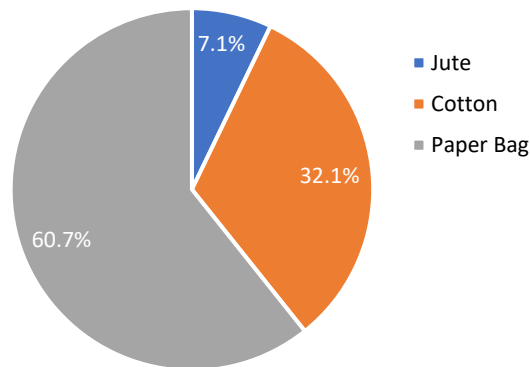


Fig. 10: Types of alternative shopping bags used by retailers daily

Even though 53.8% of the retailers own other bags, such as jute, cotton, or paper bags, the number of polythene shopping bags used is surging annually. This means they are providing more polythene shopping bags despite owning alternatives. Of the three options, paper bags are used the most (60.7%). Cotton bags are less commonly used, but jute bags are provided to consumers the least often. The bar chart shows that these alternatives are used.

Survey data reveal how alternative bags are often available yet infrequently used compared to polythene shopping bags. 53.8% of retailers stated that they had at least one of the three alternative packaging options mentioned in the study—jute, cotton, and paper bags.

Among retailers, paper bags were seen to be the most popular, signifying a preference for disposable bags, not reusable ones.

5.1.3 Continued Defiance of Law Despite Knowledge of Ban

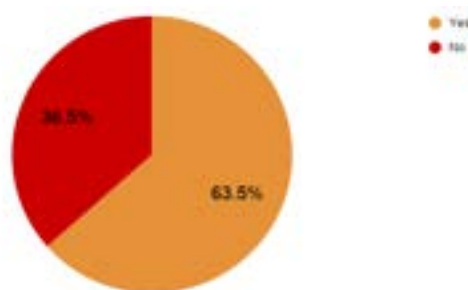


Fig. 11: Knowledge on ban of polythene shopping bags among consumers

63.5% of retailers had knowledge of the polythene ban. This reflects that the majority of the people are aware of the law but do not adhere to it. Therefore, focus needs to be directed toward implementation rather than just spreading the knowledge of the law. Continued production, selling, and use of a banned item reflect the lack of deference for law and order. Usually, illegal or banned goods are sold under the radar,

away from public eyes and law enforcement. However, polythene shopping bags are openly sold and used in public places even in the presence of law enforcement agents. This culture contributed to the normalization of a banned item. More specifically, the lack of legal consequences or punitive measures taken against open defiance is a key reason why retailers continue to use polythene shopping bags.

5.1.4 Level of Awareness and Attitude Towards Alternatives

About 84.6% of retailer respondents reported having some level of knowledge about the harmful effects of polythene shopping bags on the environment. More than half of the retailers stated that they do not sell eco-friendly alternatives (such as cotton or jute bags) in their shops. When asked why they do not use or offer alternatives, most cited cost as the major challenge and explained that they simply respond to consumer demand. If consumers keep asking for polythene shopping bags, the market continues to supply them.

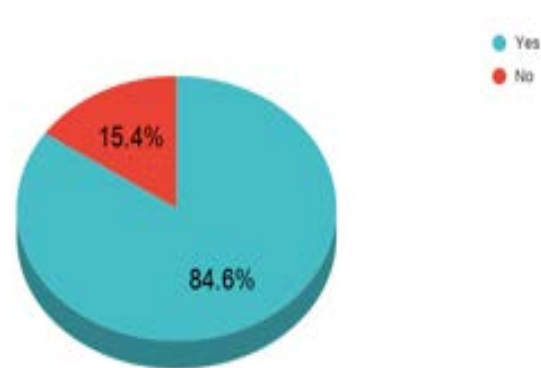


Fig. 12: Awareness of the harmfulness of polythene shopping bags to the environment

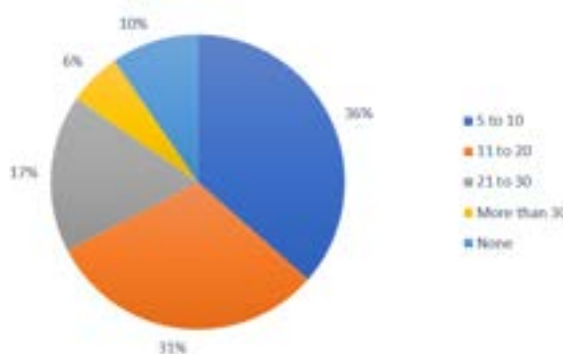


Fig. 13: No. of consumers who specifically ask for polythene shopping bags daily

The survey data reinforces this bleak picture: approximately 95% of retailers reported that customers specifically request polythene shopping bags. This highlights not only the limited availability of alternatives in the market but also retailers' lack of motivation to promote them. Since Bangladesh lacks a 'bring your own bag' culture, shoppers depend heavily on retailers to handle their packaging needs. In many developed countries, stores are responsible for packaging

goods, but consumers are responsible for carrying them.¹²³ In contrast, Bangladeshi retailers must bear the burden of meeting customers' carrying needs, which drives them to choose cheap, disposable options like polythene shopping bags. Bazaars (local markets) routinely use these bags to wrap and carry greasy or wet groceries.¹²⁴

From a disposability standpoint, paper bags may seem like a more reasonable alternative to polythene, but their environmental footprint can only be mitigated through large-scale plantation and reforestation, which is an already challenging undertaking. Only 62.9% of retailers said they would be willing to use alternatives if they were made available and affordable. Meanwhile, 37.1% remained uncertain about whether polythene alternatives could become normalized or whether their business practices could adapt to such a shift.

¹²³ Adam Vaughan, "Shoppers in England Now Far More Likely to Use Their Own Bags," *The Guardian*, September 29, 2016, <https://www.theguardian.com/environment/2016/sep/29/shoppers-in-england-now-more-likely-to-use-their-own-bags-plastic>.

¹²⁴ Mintu Deshwara, "Polythene Bag Use in Moulvibazar Rampant," *The Daily Star*, December 28, 2024, <https://www.thedailystar.net/news/bangladesh/news/polythene-bag-use-moulvibazar-rampant-3786776>.

5.1.5 Willingness to Shift towards Alternatives

According to survey data, 37.1% of retailers expressed explicit skepticism regarding a shift away from conventional plastics. This hesitation is deeply rooted in long-term behavioral habits, specifically the multi-generational reliance on polythene bags, which has firmly established their use as an unchallenged social norm. Conversely, a significant majority of 62.9% of retailers demonstrated a clear willingness to adopt eco-friendly alternatives. However, this vast market segment conditions its transition on macro-environmental factors, emphasizing that widespread adoption will only be viable once critical barriers surrounding affordability and supply chain availability are fully resolved.

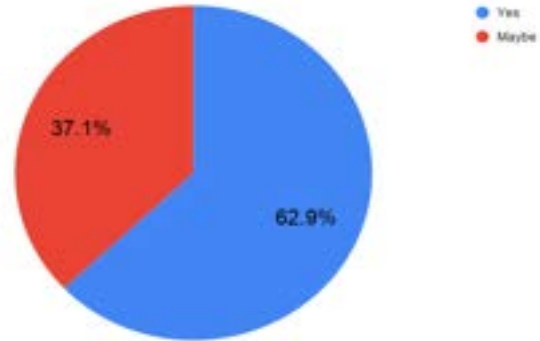


Fig. 14: Willingness to shift towards alternatives if affordability and availability factors are resolved

5.2 Assessment of Awareness Levels of Consumers

5.2.1 Education Levels vs. Awareness: Is There a Strong Correlation?

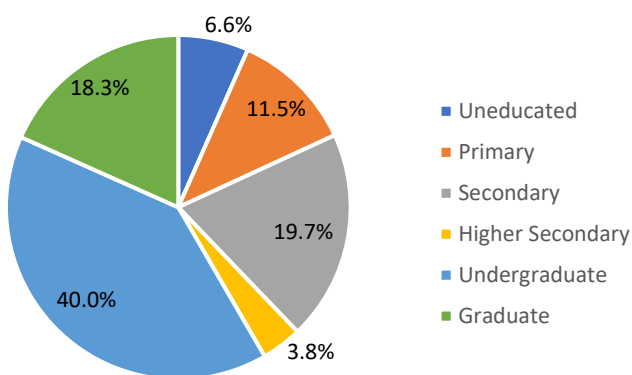


Fig. 15: Education level of urban consumers

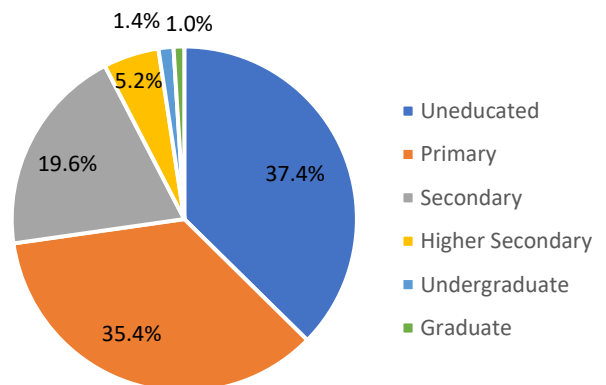


Fig. 16: Education level of rural consumers

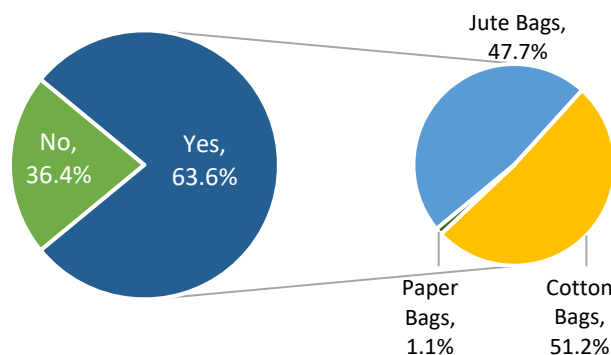


Fig. 17: Use of alternative bags and preference of urban consumers

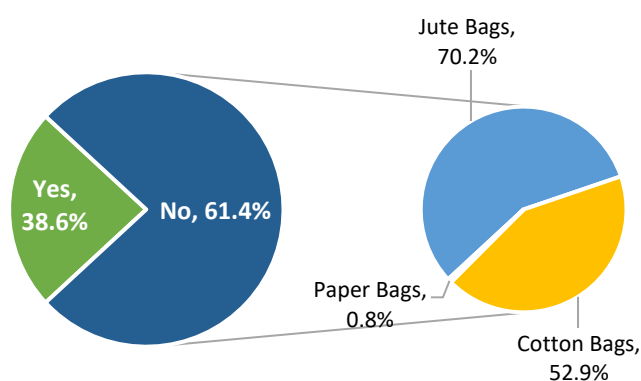


Fig. 18: Use of alternative bags and preference of rural consumers

The survey findings show that lack of awareness among consumers is very high. 81.1% of urban consumer respondents who had a moderate to high educational background (secondary to post-graduation) knew about the banned status of polythene shopping bags. Yet, 36.4% of the consumers stated that they did not use alternatives. On the other hand, 63.6% of those who use alternatives do not use them exclusively. In other words, the use of alternatives does not indicate the non-use of polythene. Instead, it shows the coexistence of both sustainable and polluting packaging in everyday life. Among rural consumer respondents, 72.8% either lacked any level of formal education or only studied up to primary. However, contrary to popular assumption, 79.1% of respondents in rural areas are aware of the ban on polythene. When asked whether they know about the harms of polythene for the environment and health, most respondents defied a widely believed correlation: *low educational background corresponds to low environmental awareness*.

Urban vs. Rural: Knowledge on Ban

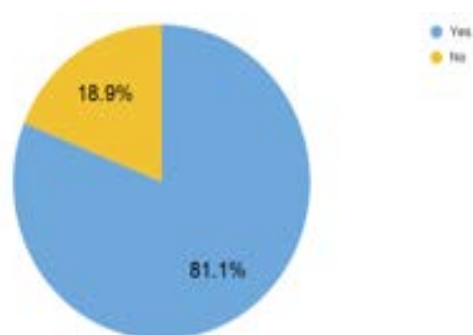


Fig. 19: Knowledge on the polythene ban of urban consumers

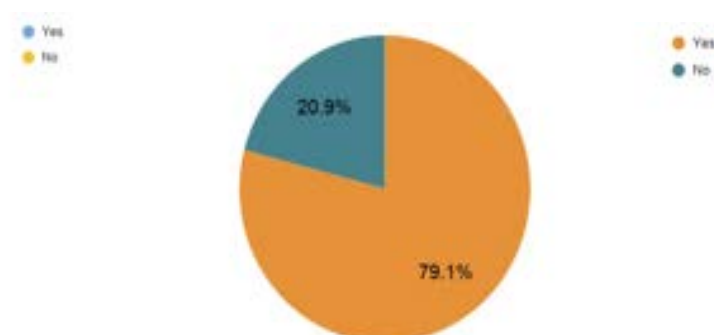


Fig. 20: Knowledge on the polythene ban of rural consumers

5.2.2 Understanding of the Adverse Effects of Polythene on the Environment

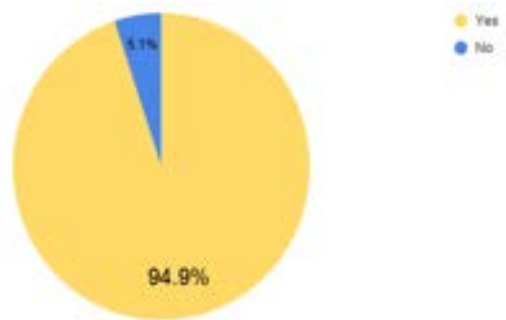


Fig. 21: Knowledge of environmental harms of polythene of urban consumers

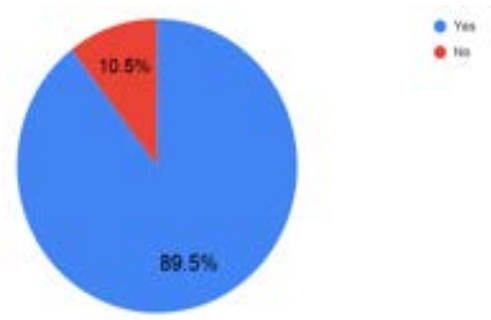


Fig. 22: Knowledge of environmental harms of polythene of rural consumers

Most rural respondents were aware of the environmental and health impacts of polythene. Speaking from practical experience, one respondent stated, “Crops and trees do not grow where the soil contains polythene. These bags do not decompose, clog water systems, and render soil non-arable.” Compared to rural respondents, most urban respondents could not detail the practical impacts on the environment, such as the impact on soil health. However, urban respondents were aware of polythene/plastics being a major concern for the environment and its subsequent policy weight.

5.2.3 Curriculum Gap: Education vs. Compliance

The survey results indicate that despite relatively high educational qualifications among respondents, compliance with the polythene ban remains low.

Although many participants held university-level degrees, few were able to clearly explain the practical environmental and health harms caused by polythene. Most degree holders demonstrated a general awareness of environmental policies and understood that polythene does not biodegrade easily. However, their knowledge rarely extended beyond this basic fact. Importantly, none of the respondents explicitly connected polythene use to the broader concept of environmental health, even though it is fundamentally linked to it. This suggests a gap between theoretical awareness and practical understanding. The limited depth of understanding among highly educated individuals points to a significant gap in environmental education curricula.

Teaching abstract concepts about complying with bans or broadly associating polythene use with environmental harm appears insufficient. Such approaches do not foster meaningful reflection or behavioral change.

5.3 People vs. Policy: The Reach of Law

5.3.1 Willingness to opt for Sustainable Alternatives

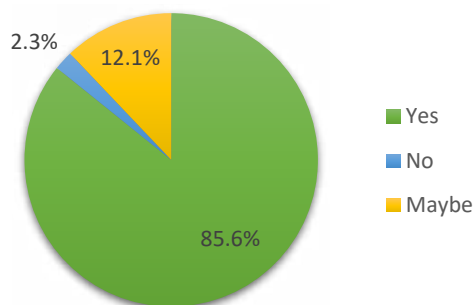


Fig. 23: Willingness to shift toward alternatives of urban respondents

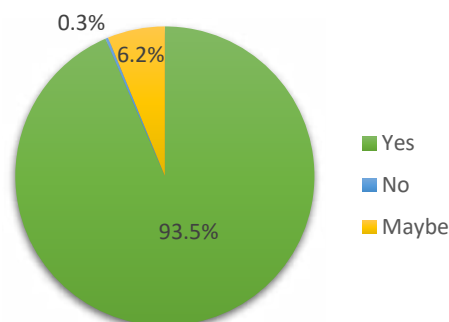


Fig. 24: Willingness to shift toward alternatives of rural respondents

When asked about their willingness to replace polythene with sustainable alternatives such as jute or cotton, over 93% of rural consumers agreed to use alternatives on the condition that it will be made affordable and widely available. 85.6 % urban consumers also agreed on using alternatives if similar conditions are met.

5.3.2 The Informal Economy and the Popularity of Polythene Shopping Bags



Fig. 25: Micro-retailing in Bangladesh ¹²⁵

Both rural and urban respondents stated that polythene shopping bag remains uncontested for its affordability, availability, and foldability (overall convenience) in the case of everyday grocery shopping in *Bazaar*. Rural respondents explained that unlike purchase units in urban areas, the rural economy runs on micro-retailing, or small unit selling. Unlike super shops, one does not have to purchase one liter

of milk or one dozen eggs, as people opt to buy smaller units—half a liter of milk or two eggs. The informal economy—a major makeup of the rural economy—is heavily reliant on micro-retailing in response to the socio-economic condition of the people. As these consumers have a pattern of frequent small-unit buying instead of standard bulk buying, an affordable alternative is a major concern. One rural respondent highlighted, “We are poor; we will use whatever is affordable and available; concern for health and environment is secondary.” These pleas reflect that affordability

¹²⁵ Alan de Brauw, “Micro-, Small and Medium-sized Enterprises Day: Lessons from Research on the Food Environment in Bangladesh, Ethiopia, and Viet Nam,” *IFPRI Blog*, June 26, 2025, <https://www.ifpri.org/blog/micro-small-and-medium-sized-enterprises-day-lessons-from-research-on-the-food-environment-in-bangladesh-ethiopia-and-viet-nam/>

is the biggest driver of purchasing behavior among rural respondents. Although most urban respondents had a comparatively comfortable socioeconomic background, reasons for preferring polythene shopping bags remain similar among both categories of respondents.

5.3.3 Failure to Move on from Polythene Shopping Bags: Did Policies Fail People, or Did People Fail Policies?

Both urban and rural respondents have stated that a ‘force of habit’ compels them to use polythene. This indicates that major lifestyle changes often encounter resistance. If policymakers want to phase out polythene shopping bags through shifting behavioral patterns of citizens, they need to design policies that make alternatives easy to attain and attractive as a choice. Both rural and urban respondents believed that the law is not strict enough and that the government needs robust enforcement mechanisms. Most rural respondents believed that strict government enforcement of a law would compel people to comply. Generally speaking, trust in the government to steer the nation in the right direction was higher among rural respondents. Regarding solutions, most respondents outsourced it to the government. Many say, "The government should do what they deem fit"—these statements reflect how many rural respondents were aware of their technical knowledge-based limitations. This reveals an important pattern: rural people with a low education background heavily depend on the government to act on problems. On the other hand, urban respondents, on the topic of solutions, redirected the initiatives to themselves and the community. Many believed that educational institutions should take a plastic-free pledge. Others believed that all government facilities and offices should be plastic-free to set an example. In other words, the educated urban population tends to be more enthusiastic about decentralizing the responsibility of solving the polythene shopping bag crisis. Better policies with strict follow-up mechanisms are warranted by both categories.

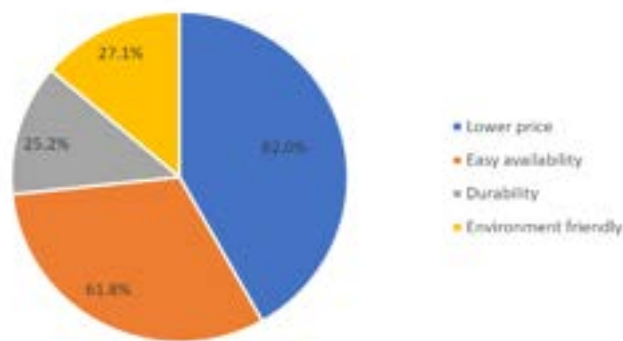


Fig. 26: Factors that would encourage the customers the most to switch to alternatives

Consumers and retailers both express concern over the cost and availability of alternatives. The results below also show that a small group of people specify durability and environmental compatibility as important factors driving their decision.

When inquired about why the ban on polythene shopping bags could not translate into action, all categories of respondents cited lack of awareness as a major reason. The second most cited reason was the weak implementation of the law. Others have cited issues relating to the high cost of production related to alternatives.

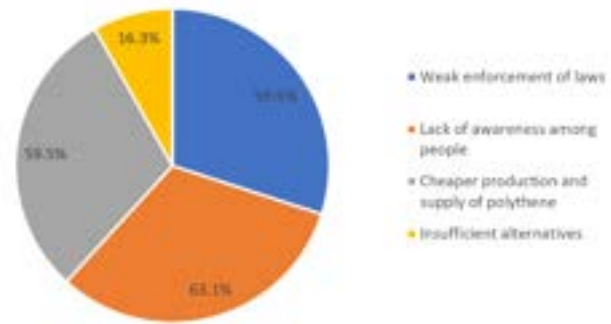


Fig. 27: The public's take on the shortcomings of the polythene shopping bag ban (urban and rural)

When asked about why the ban on polythene shopping bags could not translate into action, all categories of respondents cited lack of awareness as a major reason. The second most cited reason was the weak implementation of the law. Others have cited issues relating to the high cost of production related to alternatives.

Chapter 6

The Way Forward

- Assessment of Alternatives & Their Feasibility
- Future Implications with vs. without Policy Implementation
- Recommendations to Combat the Polythene Dependency



6. The Way Forward

6.1 Assessment of Alternatives & their Feasibility

6.1.1 Shops and Retailers Promoting Alternatives

In October 2024, the government reinforced the ban on polythene shopping bags in all supermarkets nationwide.¹²⁶ Soon, most supermarkets had quit supplying polythene shopping bags as per the regulations from the government. KIIs with market management staff in the study confirm that supermarkets have quit the supply of polythene shopping bags by shifting to jute and fabric bags, or introducing new alternatives, such as wax-coated paper bags, biodegradable polythene shopping bags, and their own branded thick fabric bags.

While studying the use of government-mandated sustainable alternatives, it was found that many popular super-shops replaced their single-use plastic bags with jute bags, fabric bags, and innovative alternatives, like wax-coated paper bags, biodegradable polythene shopping bags, and their own branded thick fabric bags.

- Though the wax-coated bags can be used to carry wet items, they are non-recyclable and non-biodegradable, proving to be unfit as alternatives to single-use plastic bags.
- Claims of the rapid dissolving ability of the biodegradable polythene shopping bags have been proven inaccurate after testing. Therefore, these options cannot be considered biodegradable, reusable, and recyclable alternatives. Also, false marketing of such so-called alternatives may derail customers and raise profits in businesses without serving the real purpose.



Fig. 28: Bioplastic immediately after soaking



Fig. 29: Bioplastic after soaking for 24 hours

¹²⁶ Staff Correspondent, “Poly Bags Banned in Superstores from Today,” *The Daily Star*, n.d., <https://www.thedailystar.net/news/bangladesh/news/poly-bags-banned-superstores-today-3716591>.

- Jute bags, despite being biodegradable, cannot be supplied in quantities large enough to meet the consumer demand.
- Fabric bags are suitable for dry items, but are not ideal for carrying wet products. This implies that further research and innovation are necessary to bring sustainable alternative bags to the market.

6.1.2 Businesses Working with Alternatives and their Stumbling Points

1. Alternatives accepted abroad but rejected at home

KIIs with several business entrepreneurs brought an ironic picture forward. Many companies producing alternatives to polythene shopping bags have failed to gain popularity in Bangladesh despite being accepted in different developed countries, such as Spain. For instance, Ecovia is a startup based in Bangladesh that produces and supplies compostable biodegradable packaging made from clothing waste. The biodegradable packages take around 180 days to degrade in compostable conditions, while their shelf life is approximately 1.5 years. Ecovia's products meet international standards as the company has been certified compostable by DIN Certco and ULVS (ISO 14855-1:2012). These bags were further tested in the Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh, to verify their safe contact with food as food packaging. The interview revealed that Ecovia has made attempts to expand its business globally since its founding in 2020. Ecovia's bags are much pricier than their polythene shopping counterparts found in the market. The minimum order quantity (MOQ) for Ecovia's bags is also higher than for polythene shopping bags. Ecovia is not struggling with scaling their business, rather with encouraging people to invest in forming sustainable lifestyles. Their formula has been well received by environmentally conscious organizations across the globe. However, they have limited success due to the low interest of stores/shops in buying eco-friendly but 'expensive plastic bags.' A drastic reduction in production costs is impractical while the government's support in mainstreaming this product remains limited. A small margin of environmentally conscious people may appreciate the product, but the vision of normalizing it remains distant due to a lack of feasibility compared to the economy of Bangladesh.

2. Unverified alternatives globally approved but nationally discarded

KIIs with manufacturing company owners uncovered the types of unverified alternatives that are rejected by the government of Bangladesh yet are outsourced successfully globally. Sonali Bioplastics is such an initiative that promotes alternatives to single-use plastic items, such as polythene shopping bags. The company provides two types of products—polymer pellets and flexible films made of resin and jute that can replace thin polythene shopping bags. The items made from these substances do not contain polypropylene, according to the founder. The flexible films are claimed to be biodegradable, which are said to degrade within 90 days, while polymer pellets have a much longer shelf life. Though the company collaborates with international partners, such as Nestlé, and has conducted pilot projects in Europe, it could not find any motivated investors in Bangladesh. The inability to scientifically prove the complete biodegradability of the products posed a significant obstacle to the company's expansion in the country. Consequently, the

government rejected the proposal. Without the support from the government, Sonali Bioplastics is unable to manufacture and sell its products in Bangladesh.

6.1.3 Scientific Scrutiny of Alternative Bag Materials

1. Bioplastics:

According to the Global Alliance for Incinerator Alternatives (GAIA), ‘Bio-based plastic’ is a material partly or entirely produced using biological feedstocks, such as starch in corn or potato. Though made from biodegradable components, it often still contains fossil fuel, which makes it functionally and/or even chemically similar to conventional plastics.¹²⁷ This definition implies that bioplastics tend to have the same end-of-life effects as conventional plastics due to the similarities in their properties. So, the soil, water, and air would ultimately be polluted with microplastics, without serving the cause of replacing single-use plastics.

2. Biodegradable plastic:

GAIA defines biodegradable plastics as plastics that can be broken down into water, carbon dioxide, and naturally occurring minerals by microorganisms like bacteria and fungi. However, this breakdown process may involve the formation of fragments called microplastics that pose the same health risks as polythene shopping bags. On the other hand, ‘compostable plastic’ is a kind of biodegradable plastic that can fully biodegrade under the specific conditions of an industrial composting facility.¹²⁸ So, compostable plastics stand out as a more sustainable alternative, given that the segregation and composting facilities are available and functional at city corporation levels.

3. Banana leaves:

Bananas are largely grown in Narshingdi, Bogra, Rangpur, Pabna, Nator, Faridpur, Noakhali, and Khulna, which have the most fertile soil for banana farming. Banana trees can actually be grown throughout the year and on any type of land, though a moist, loamy soil will yield the best trees.¹²⁹ Therefore, banana leaves can be widely used as an alternative packaging material. Food items, such as rice, fish, meat, fruits, and vegetable-based products, can be easily packaged using banana leaves. Additionally, it is recyclable, biodegradable, customizable, and has a higher shelf life after processing.¹³⁰ This also

¹²⁷ GAIA (Global Alliance for Incinerator Alternatives), *UNEA Publication Packet: Bioplastic* (April 2022), https://www.no-burn.org/wp-content/uploads/2022/04/UNEA-publication-packet_bioplastic.pdf.

¹²⁸ Ibid.

¹²⁹ HishabPati Team, “কিভাবে বাংলাদেশে একটি কলার খামার শুরু করবেন,” HishabPati, January 8, 2026, <https://www.hishabpati.com/en/how-to-start-banana-harvesting-in-bangladesh/#:~:text=Profitability%20of%20Banana%20Farming%20in,of%20banana%20that%20farmers%20cultivate>.

¹³⁰ Achchi Mohamed Rikasa and Mohamed Mufeez, “*Banana Leaf Food Packaging: An Alternative and Ecofriendly Solution for Food Industry in Sri Lanka*,” in *Multisectoral Approaches to Accelerate Economic Transformation in the Face of Crisis in Sri Lanka*, ed. (Colombo: National Science and Technology Commission, 2023), 104–122, accessed February 18, 2026, https://www.researchgate.net/publication/367963376_Banana_Leaf_Food_Packaging_An_Alternative_and_Ecofriendly_Solution_for_Food_Industry_in_Sri_Lanka.

recognizes a rare form of crafting in Bangladesh. So, more research is required on the affordability and feasibility of using banana leaves as alternatives.

4. **Bamboo paper:** Bamboo usually grows in tropical and subtropical regions. Bangladesh is geographically a lowland. However, the forests of Sylhet, Chittagong and Cox's Bazar majorly comprise around 9 genera and 33 species of bamboos.¹³¹ Due to political tension around the borders and the necessity for the conservation of these forests in the country, deforestation in the hilly forests for bulk production of paper bags is largely discouraged. However, recycled paper bags can be considered a sustainable alternative to polyethylene and polypropylene packaging bags.
5. **Jute:** Bangladesh is the second-largest producer of jute across the world, contributing to 70% of global demand.¹³² According to Bangladesh Jute Mills Corporation (2021), there are around 220-245 private and 22 government-owned jute mills operating in the three zones of Bangladesh, namely Dhaka, Chittagong, and Khulna.¹³³ Bangladesh is the largest exporter of jute, owing 42% of jute products worldwide. The most common jute products are jute baskets, hessian, jute mats, jute rolls, and jute webbing. In recent times, jute products have been diversified into home textiles, household furniture and home decor, jute geotextiles, lifestyle products like apparel and accessories, footwear, stationery, storage items, paper or packaging products, and gardening materials.¹³⁴ With the option of a wide range of jute products made in Bangladesh, the fiber can be adopted as a sustainable alternative to single-use polythene shopping bags for daily life.

Jute is one of the most affordable natural fibers and the main cash crop of Bangladesh. However, research has shown that the price of raw jute has hiked, potentially because of a gap between supply and demand. In the peak harvesting season (July-August) of 2025, the price of raw jute increased astonishingly by 120% from Tk2200-2400 per maund to Tk5000-5500 per maund. The reason behind the rising price is the high demand for jute that cannot be met by the supply available.¹³⁵ In 2015, scientist Mubarak Ahmad Khan and

¹³¹ Mohd. Imran Hossain Chowdhury, "Present Bamboo Status in Bangladesh Contiguous with Demand and Supply," Preprint, August 2022, https://www.researchgate.net/publication/362812814_Present_Bamboo_status_in_Bangladesh_contiguous_with_demand_and_supply#read.

¹³² Bangladesh Investment Development Authority (BIDA), "Diversified Jute Products," October 30, 2023, Bangladesh Investment Development Authority, accessed February 19, 2026, <https://bida.portal.gov.bd/details/diversified-jute-products>.

¹³³ Md. Asaduzzaman, *Jute Industry of Bangladesh: An Overview of Production and Export* (Dhaka: Emerging Credit Rating Limited, October 2022), https://emergingrating.com/wp-content/uploads/2022/10/Jute-Industry-of-Bangladesh_An-Overview-of-Production-and-Export.pdf.

¹³⁴ "Exploring the Versatility and Benefits of Jute Products in Modern Living « Indarsen Shamlal Pvt. Ltd.," n.d., <https://www.jutegoods.com/exploring-the-versatility-and-benefits-of-jute-products-in-modern-living/#:~:text=The%20fashion%20industry%20is%20also,greener%20and%20more%20sustainable%20future.>

¹³⁵ Tt Report and Textile Today, "Raw Jute Price Surges to Tk 5000 From Tk 2200, Millers Warn Shutdown From February 1," *Textile News, Apparel News, RMG News, Fashion Trends*, January 28, 2026, <https://www.textiletoday.com.bd/raw-jute-price-surges-to-tk-5000-from-tk-2200-millers-warn-shutdown-from-february-1>.

his team invented the ‘Sonali bag’ at the Bangladesh Atomic Energy Commission that showed promise but could not be mass-produced.¹³⁶ So, while the demand is high, jute supply needs to be increased to ensure a coherent supply and to replace polyethylene bags.

6.2 Future Implications with vs. without Policy Implementation

According to a 2020 report by the World Bank, Bangladesh generates around 800,000 tonnes of plastic waste annually, of which only about 36% is recycled. Dhaka alone contributes over 646 tonnes of plastic waste per day.¹³⁷ Presently, Bangladesh generates about 977,000 tons of plastic waste annually, 70% of which is non-recyclable.¹³⁸ A large portion of this waste is due to single-use polythene shopping bag disposal. About 14 to 15 million polythene shopping bags are used and thrown away in Dhaka alone per day.¹³⁹ So, if the national policies are implemented effectively, a significant amount of the 70% of the non-recyclable, single-use plastic waste will be curtailed.

¹³⁶ A. Sayed, “Sonali Bag: A Sustainable Solution to Greener Packaging,” *Textile Apex*, March 20, 2024, <https://textileapex.com/sonali-bag/>.

¹³⁷ Mission Green Bangladesh, “Plastic Waste Management in Bangladesh: Challenges and Opportunities” June 12, 2025, <https://missiongreenbd.com/blog-details/plastic-waste-management-in-bangladesh-challenges-and-opportunities>.

¹³⁸ Md. Al Arfin Rokon, “Sustainable Recycling of Plastic Waste: Context in Bangladesh,” April 21, 2025, <https://www.meet-bangladesh.com/post-details/sustainable-recycling-of-plastic-waste-context-in-bangladesh#:~:text=Bangladesh%20is%20now%20at%20a,material%20by%2050%25%20by%202030>.

¹³⁹ Md. Mehedi Hasan, Md. Atik Fayshal, H. M. Fairouz Adnan, and Farin Tasnuva Dhara, “The Single-Use Plastic Waste Problem in Bangladesh: Finding Sustainable Alternatives in Local and Global Context,” in *Proceedings of the WasteSafe 2023 – 8th International Conference on Integrated Solid Waste and Faecal Sludge Management*, Khulna, Bangladesh, February 25–26, 2023, September 2023, <https://doi.org/10.6084/m9.figshare.24225550.v1>.

A Global Scenario

Globally, single-use plastic pollution is increasing, threatening all life forms across the planet. It is predicted that the rate of pollution will escalate further in the coming decades if current mismanagement continues. Phasing out certain practices and implementing effective strategies is necessary to control current levels of waste generation. The following scenarios correspond to the three possible outcomes that may be visible in the future.¹⁴⁰

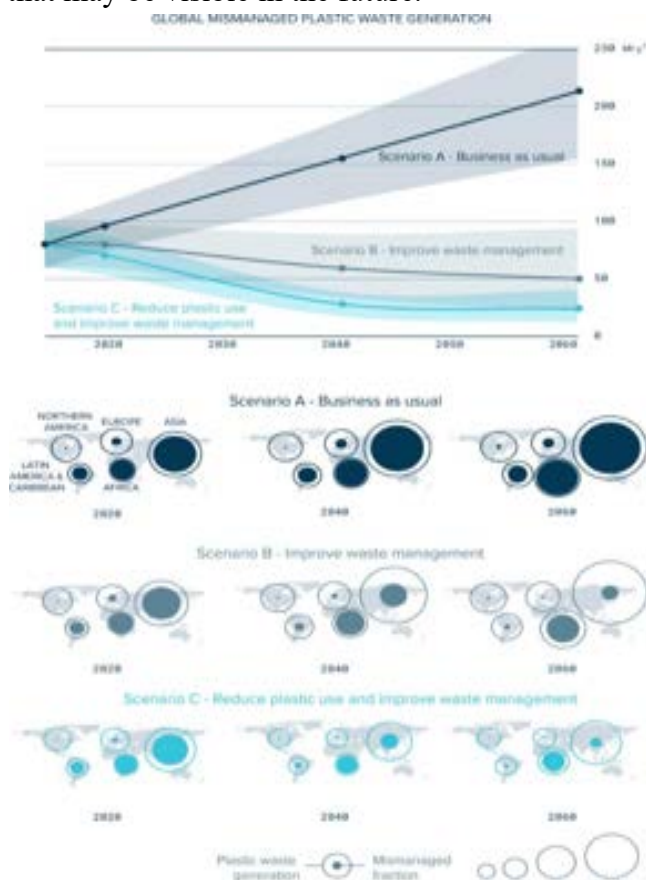


Fig. 30: Future projections of global Mismanaged Plastic Waste (MPW) generation and distribution per continent under three scenarios¹⁴¹

It is estimated that approximately 0.5 kg of municipal waste is generated by each person in urban regions. This amount is predicted to increase by more than twofold to 1.1-1.2 kg by the year 2041. The need to boost waste management capacity is highlighted by the roughly sixfold rise in waste generation, which could reach 142,000 tonnes per day by 2041 if current conditions continue.¹⁴²

¹⁴⁰ Laurent Lebreton and Anthony Andrady, “Future Scenarios of Global Plastic Waste Generation and Disposal,” *Palgrave Communications* 5, no. 1 (2019), <https://doi.org/10.1057/s41599-018-0212-7>.

¹⁴¹ Pilapitiya, P. G. C. N. T., & Ratnayake, A. S. (2024). The world of plastic waste: A review. *Cleaner Materials*, 11, 100220. <https://doi.org/10.1016/j.clema.2024.100220>.

¹⁴² Ibid.

6.3 Recommendations to Combat the Polythene Dependency

6.3.1 Resketching Environmental Education

Environmental education must move beyond general statements and provide:

- Detailed explanations of the specific harms of polythene shopping bags
- Clear connections between the use of polythene shopping bag and its impacts on humans, animals, and ecosystems
- Practical illustrations of long-term environmental and public health consequences

Merely identifying the problem is not enough. Education must also introduce viable alternatives and solutions.

6.3.2 Recommendations for Educational Reform

To improve environmental literacy and compliance, a comprehensive educational strategy is needed:

a) Early engagement and innovation

Children should be encouraged from an early age to design and propose sustainable alternatives to polythene shopping bags and plastic bags. Creative problem-solving should be integrated into classroom activities.

b) Integration of key environmental concepts

Curricula should incorporate and simplify essential concepts such as:

- The 5Rs (Refuse, Reduce, Reuse, Repair & Repurpose)
- Environmental health
- Circular economy
- Waste segregation

These topics should be tailored to students' cognitive levels and presented in engaging, interactive formats to maximize retention and interest.

c) Institutional practice and modeling

Plastic-free practices should be normalized within classrooms. Furthermore, plastic-free principles should extend beyond the classroom to the broader school environment, including the school perimeter and surrounding areas.

- Most importantly, teachers need to receive thorough training first. Visuals, demonstrations, field visits, and lab work are essential in developing clear knowledge in students.

COMPREHENSIVE APPROACH TO ENVIRONMENTAL EDUCATION



Understanding the Law as a historical milestone in environmental governance



Portraying the current alarming position of Bangladesh in terms of pollution with data



Clearly specifying the practical harms of polythene- on humans, animals and environment



Encouraging innovation to substitute Plastic/Polythene



Include supplementary concepts in the curriculum such as 7Rs, environmental health, and circular economy



Incorporate plastic free principles in classroom, school perimeter and vicinity



Activate earth and environment clubs in school and encourage volunteerism

6.3.3 Creating Robust Policies

- a) **Rehabilitation and just transition:** Just transition is not an intent; it's a guiding framework.¹⁴³ Workers displaced by a polythene shopping bag crackdown must not be left empty-handed. For example, they may be provided with skills-training programs with certification to help them find employment. Polythene shopping bag manufacturers may also be given monetary incentives upon proof of successful transition to a sustainable avenue. A reward-based policy structure is a necessity for successful transition in the context of Bangladesh.
- b) **Measurable targets, enforcement coverage, and publicity:** Reduction targets must be set district-wise according to the area and population they need to cover and in relation to the manpower in each DoE office. Enforcement coverage must be clearly defined and shared publicly. Alternative productions must be tracked, supported, and publicized. The number of people recovered from polythene shopping bag distribution channels and rehabilitated must also be documented. Publicizing innovations and initiatives taken by the government: To maintain transparency and accountability, governmental initiatives must be made available on their online websites and other platforms.
- c) **Revisiting existing national policies for effective enforcement:** The Bangladesh Environment Conservation Rules need to specifically include plastic industries to ensure a just and transparent environmental clearance procedure. Strengthening the National Plastic Industries Development Policy 2020 by involving the National Council and NSC in monitoring and consultations will enhance data management and ensure industry operations meet standards. A revision of import policy orders is needed to prevent the illegal import of plastic raw materials for polythene shopping bag manufacturing using loopholes. The Act requires taking account of the total supply chain and and complying with the Global Plastics Treaty.
- d) **Planning the rehabilitation of single-use plastic manufacturing industries:** A clear plan to transform the industries that mainly generate single-use plastics and polythene shopping bags as by-products. The plan must also engage workers in green professions, securing their employment during transition. Employment opportunities for the plastic manufacturing industry workers.
- e) **Pursuing the EPR mechanism and designing a comprehensive implementation strategy:** The EPR mechanism being developed must impose accountability on single-use plastic manufacturers. The government should simultaneously devise strategies to implement the mechanism.

¹⁴³ Gerrard, Elanor, and Peter Westoby. "What Is a Just Transition?" In *Coal and Energy in South Africa: Considering a Just Transition*, edited by Lochner Marais, Philippe Burger, Maléne Campbell, Stuart Paul Denoon-Stevens, and Deidré van Rooyen, 22–33. Edinburgh University Press, 2022. <http://www.jstor.org/stable/10.3366/jj.7358700.10>.

6.3.4 Strengthening Implementation

- a) **Combating syndicate culture:** The stakeholder consultation workshop and Key Informant Interviews reaffirmed the presence of a powerful syndicate group working as a resistance force against the crackdown on polythene shopping bags. Many government officials expressed concern over the threats and intimidation faced by law enforcers. Firstly, state agents at risk of assault, resistance, opposition, obstruction, intimidation, or interference while performing their duties require legal protection. Incorporating workers affected by illegal production into the rehabilitation framework will likely decrease resistance against law enforcers.
- b) **Polythene shopping bag confiscation at metrorail checking points:** Law enforcers present at Metro Rail checking points may prevent anyone from explicitly carrying goods in a polythene shopping bag, just like they prevent those carrying water bottles, raw groceries, and flowers. They may either be asked to remove the polythene shopping bag or purchase a cotton/jute bag on the spot. As thousands of citizens use metro rail each day, this will train people toward a culture of using alternative bags.
- c) **Exploring the 5R concept** and its effectiveness in Bangladesh, thus enforcing modified policies based on the approach
- d) **Providing incentives (tax breaks/green loans) for SMEs**, such as cotton, jute, and other businesses manufacturing bags made from natural fiber. However, these incentives cannot This should be provided for so-called bioplastics and biodegradable plastics, as the risk of polymer particles contaminating natural environments remains.
- e) **Updating DoE procedures:** DoE requires sufficient manpower allocated to each DoE office relative to the area they must cover and the number of responsibilities they manage. The government also needs to ensure 24/7 surveillance, monitoring, and action and to make Environment Court accessible to all
- f) **Identifying the producers and sources of polythene shopping bags:** Unidentified producers and sources must be found through regular door-to-door inspection.

6.3.5 Just Transition for Plastic Bag Manufacturers

A Just Transition approach ensures that the phase-out of single-use plastic bag production does not disproportionately harm workers, small manufacturers, or local economies. Rather than imposing abrupt shutdowns, the transition should include gradual production reduction, financial incentives for shifting to jute or biodegradable products, and reskilling programs for affected workers.

By combining environmental regulation with social protection and economic diversification strategies, policymakers can achieve sustainable environmental outcomes while maintaining economic stability and social equity.

6.3.6 Managing the Existing Polythene Shopping Bag Waste

According to a World Bank report, 646 tons of total plastic waste are collected by Dhaka City Corporations in a day, which has a recycling rate of 37.2%.¹⁴⁴

Although many countries have adopted recycling, incineration, and construction strategies to manage plastic waste, these options cannot be considered sustainable. Recycling is not a true solution since plastic items can be recycled only two to three times,¹⁴⁵ leaving additional microplastic residues that finally reach rivers and groundwater and end up in the food chain.¹⁴⁶ As both incineration and construction pollute the environment much more than solid waste landfills, these so-called waste management initiatives ultimately add up to the pollution rather than reducing it.¹⁴⁷ The consequences of these activities are therefore far more hazardous for human health and the environment, and so, cannot be acceptable as sustainable solutions to managing the uncontrolled plastic waste.

Proposed Waste Management Strategy

A comprehensive approach is needed to tackle the massive waste volume consisting of organic, inorganic, recyclable, and hazardous waste. Waste needs to be separated at the source.

- **Organic or biodegradable waste** should go to a composting plant.
- **Inorganic and non-biodegradable waste** should be stored in a temporary storage facility. The space must be engineered to facilitate a non-leaching and waterproof storage facility.
- **Recyclable waste** should go into a recycling plant.
- **Hazardous waste** must be incinerated securely.

The remaining open space in the landfill may be repurposed as a recreational space, like a park or a general community garden. The space may also be used as a plastic museum, similar to the one in Madrid.

¹⁴⁴ “Meeting Bangladesh’s Plastic Challenge through a Multisectoral Approach,” *World Bank*, December 23, 2021, <https://www.worldbank.org/en/news/feature/2021/12/23/meeting-bangladesh-s-plastic-challenge-through-a-multisectoral-approach>.

¹⁴⁵ A. Franklin-Cheung, “Is It Possible to Recycle Plastics an Infinite Number of Times?” *BBC Science Focus Magazine*, July 1, 2024, <https://www.sciencefocus.com/science/is-it-possible-to-recycle-plastics-an-infinite-number-of-times>.

¹⁴⁶ Pilapitiya, P. G. C. N. T., & Ratnayake, A. S. (2024). The world of plastic waste: A review. *Cleaner Materials*, 11, 100220. <https://doi.org/10.1016/j.clema.2024.100220>.

¹⁴⁷ Okon Team, “Incineration vs Landfill: Which Waste Disposal Method Is Better? | Okon Recycling,” *Okon Recycling*, November 27, 2025, <https://www.okonrecycling.com/consumer-recycling-initiatives/learn-about-recycling/incineration-vs-landfill/#:~:text=Which%20Method%20Has%20a%20Greater,favor%20landfilling%20over%20burning%20waste>.

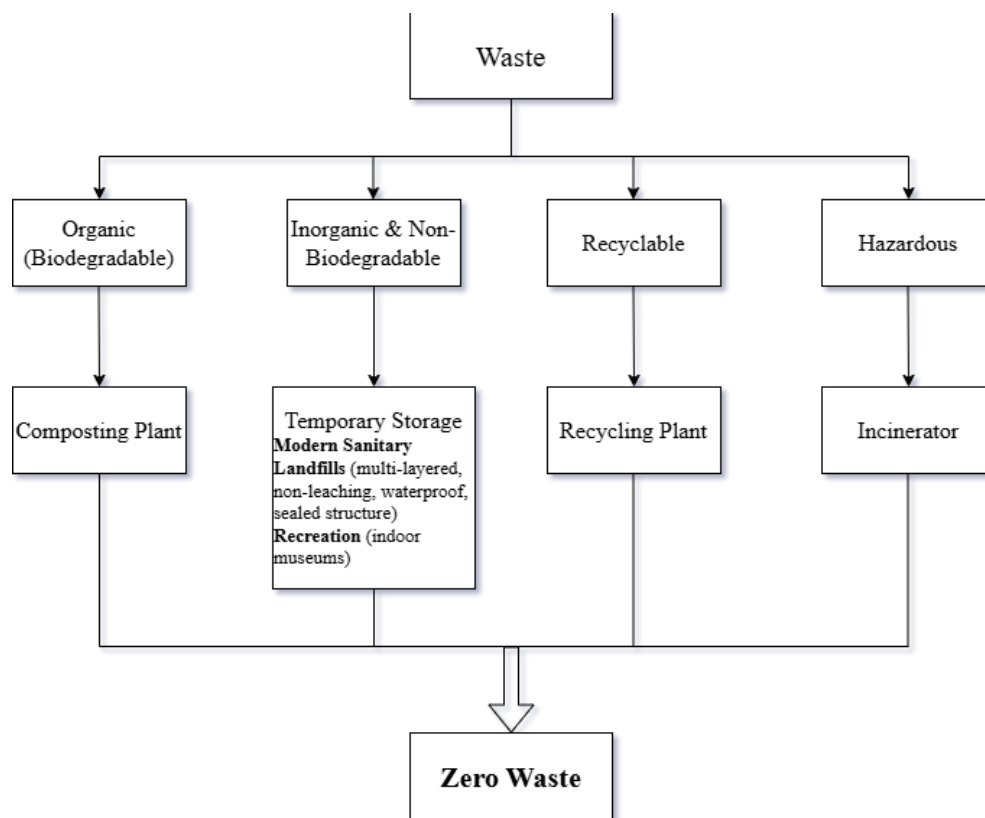


Fig. 31: Achievement of zero waste through sustainable waste management practices

6.3.7 Further Actions

- Raising awareness and discouraging polythene shopping bag use** through local and regional-level awareness campaigns
- Devising a more affordable, reusable, and biodegradable alternative material** to single-use plastics, such as diversified jute, banana tree, potato starch, commonly found straws
- Rejecting false solutions:** Recycling and incineration of plastic waste, or the construction of roads using them, cannot be considered true solutions as they end up polluting the environment with higher quantities of microplastics, which ultimately have a much more hazardous effect on soil, water, air, and human health.
- Facilitate global cooperation and commit to a legally-binding agreement:** Polythene shopping bag dependency is not only a national crisis but a global issue. It needs to be tackled through regional and international commitments and legally-binding agreements, such as the Global Plastics Treaty.

- e) **Unique recreation options:** Plastic museums have been gaining popularity recently as some countries have taken the initiative to store and exhibit plastic pollution in museums to raise awareness. Many institutions additionally showcase art using plastic debris to motivate repurposing plastic waste creatively.



Fig. 32: Plastic museum in Indonesia ¹⁴⁹

China, on the other hand, regularly displays recycled plastics in museums and art exhibitions organized by different institutions and organizations.¹⁵⁰ Therefore, this is a strategy that Bangladesh can adopt without hesitation in addressing the uncontrollable single-use plastic pollution.

Indonesia has taken an innovative step toward plastic waste management by establishing **indoor plastic museums**.¹⁴⁸ This museum not only showcases spellbinding artwork but also gathers plastic waste and prevents its adverse effects on the environment.



Fig. 33: Plastic Art Exhibition in China ¹⁵¹

- f) **Promoting traditional livelihood practices** that do not involve microplastic proliferation, contaminating our food chain and causing serious human diseases and death of animals.

¹⁴⁸ Adrian Murphy, "Plastic Museum in Indonesia Highlights Catastrophic Marine Pollution," MuseumNext, December 24, 2024, <https://www.museumnext.com/article/plastic-museum-in-indonesia-highlights-catastrophic-marine-plastic-pollution/#:~:text=The%20Plastic%20Museum%20in%20Gresik%2C%20East%20Java%2C,goddess%20of%20prosperity%2C%20made%20from%20plastic%20sachets.>

¹⁴⁹ Ibid.

¹⁵⁰ 胡哲, "Plastic Art Goes on Show at Shanghai Science and Technology Museum," Chinadaily.com.cn, July 15, 2019, https://www.chinadaily.com.cn/a/201907/15/WS5d2beef5a3105895c2e7d735_2.html; 顾馨, "Exhibition Makes Art From Trash to Raise Awareness," Chinadaily.com.cn, June 30, 2017., <https://global.chinadaily.com.cn/a/201706/30/WS59bbf8b2a310ded8ac1906ca.html#:~:text=Entitled%20Plastic%20Is%20Not%20Cool,colleges%20and%20universities%20around%20China.>

¹⁵¹ 胡哲, "Plastic Art Goes on Show at Shanghai Science and Technology Museum," Chinadaily.com.cn, July 15, 2019, https://www.chinadaily.com.cn/a/201907/15/WS5d2beef5a3105895c2e7d735_2.html.

7. Conclusion

Bangladesh was the first nation to take the revolutionary step of banning polythene shopping bags and steering the world to follow in its footsteps. The country, despite being a pioneer in developing such policies, lagged in implementation in comparison with the countries that adopted the mission. Though the ban initially alarmed the public, the lack of inclusive policies, monitoring, and implementation, as well as political indifference enabled the law to falter. The research connects a variety of stakeholders' perspectives, leading to the conclusion that the failure of the polythene shopping bag ban is a multi-stakeholder issue.

Important factors underlying the failure of the ban are habitual choices and a curriculum gap. The study reveals that a majority of people—regardless of their background, gender, age, and geographic location—extensively rely on polythene shopping bags while shopping. The study findings further break the common misconception of assuming environmental awareness within people based on educational levels. It has also been found that most people, despite being highly educated, have little-to-no knowledge of the health hazards caused by single-use plastic pollution, which underscores a gap in the curriculum.

In 23 years, the production of polythene shopping bags has only skyrocketed, leaving little space for alternatives. The ineffective law enforcement stands as one of the key reasons of this. The hidden truth behind this is the invisible bias for economically vital actors, lack of coordination, and insufficient manpower in the government.

Based on the history of attempts to cease single-use plastics completely in Bangladesh, it can be deduced that the policies lack a socio-economic perspective. The employment shortage, economic loss, and lack of affordable alternatives are rarely taken into account during the formulation of the prohibitive policies. The findings show that micro-retailing (a part of the informal economy) has further raised the demand for polythene shopping bags.

Case studies on neighboring countries substantiate the significance of a systemic implementation strategy. The top-down approach to policymaking is proving to be insufficient in Bangladesh. Neither the economy nor the environment should progress at the cost of citizens' social safety and dignity. Policy needs to reorient towards rehabilitating polythene industries, not push them away from the regulatory radar.

Though many alternatives have come into the limelight over the years, none have proved to be true solutions to the 'polythene shopping bag' problem. So, it is essential to gather funds, adopt new innovative technologies, and introduce environmentally sustainable alternatives to polythene shopping bags.

Even decades later, plastic manufacturing industries and suppliers remain adamant about continuing single-use plastic production and distribution, while consumer demand hiked due to the absence of affordable alternatives and nescience. Therefore, more attention needs to be paid to these aspects to achieve the objectives of the Act and other related policies.

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0452

604

1. 3. Short title and commencement
- 2A. Definitions
3. 4. Overriding effect of the Act
- 4A. Department of Environment
5. 6. Power and functions of the Director General
- 6A. Assistance from law enforcing agencies and other authorities
7. 8. Declaration of ecologically critical area
9. Restrictions regarding vehicles resulting undue injuries to environment
10. Restrictions on manufacture, sale etc. of articles injurious to environment
11. Remedial measures for injury to ecosystem
12. Information to the Director General regarding environmental degradation or pollution
13. Discharge of excessive environmental pollutant etc.
14. Power of entry etc.
15. Power to collect samples etc.
- Environmental clearance
- Formulation of environmental guidelines
- Appeal
- Punition
- 15A. Confiscation of materials and equipments involved in offence
- 15A. Claim for compensation
16. Offences committed by companies
17. Cognizance of offence and claim for compensation
18. Action taken in good faith
19. Delegation of Power
20. Power to make rules
21. Renewal and service

Updated on 19-06-2019

[illegible]

ପରିଚାଳନା ଏବଂ ବି.ଏ.ସି. "ଆମେ ନିଜ ମଧ୍ୟ ଏକ ସ୍ୱାଧୀନ ସଂଗଠନ
ସଂଗଠନିତ ହେବା ପାଇଁ ଯତ୍ନ ନେଉଛୁ"



ଅନୁଷ୍ଠାନିକ ନାମ
ଅନୁଷ୍ଠାନ ଅନୁଷ୍ଠାନ ନାମ

सुभाषिणी, विद्युत् २३, २०२१

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सद्विषय, ज्ञान & कर्मयोगी सद्विवर्धन संस्थानम्।

100

संविदः २७ अक्टूबर, १९५७ तमस्य दिनेषु, १९५७, स्थितः

১৭. মোঃ, এ. এম. ১০৬-১০৭/১০৮—সরকারের পরিচালিত কারখানা প্রতিষ্ঠা, ১৯৬৬
১৯৬৬ সালের ১ নং আইন; এম মোঃ ১০-এ প্রথম অধ্যাক্ষেপের অধীনে, বিদ্যমান বিধিমালা প্রণয়ন
করিতে হইবে—

2) विद्यमान ६ प्रकार—(1) श्री विद्यानाथ स्त्री महा अस्पताल विद्यानाथ, 2012 वर्ष
आरंभित स्त्री;

124 **श्री कविप्रसाद कानिका टीका**

१. कक्षाएँ—(क) विद्यार्थी का सामान्य परिवारिक (अथवा विद्यार्थी का परिवारिक) (ख) विविधताएँ—

100. "अविनाश" का अन्तिम पात्र है कि. पात्र (ii) कि. अविनाश अविनाश

[illegible]

(2011-11-11)
 100 : 1000 : 10000

collected in 1991-1992.



ଅନୁସନ୍ଧାନ ଶାସ୍ତ୍ର

संविदाव, भाग २, २०२०

समस्तभारतीय ब्राह्मणसंघ संघटिका

पत्रिकाएत, कल क कामकासु पत्रिकानेन सङ्गणक

1000

कविता, २५ अंगु, २००५-०६, अंगु, अंगु, अंगु

১৭. **নাম, ঠিকানা ও মোবাইল নম্বর**—**স্বাক্ষরকারী** পরিচালক, **তারিখ**, ১৯৯৮
১৯৯৮ সালের ১ নং তারিখ। এই নথি ৯০ ১ প্রকৌশল বিভাগের নথি, **সিদ্ধান্ত** বিবেচনা প্রকল্প
কমিটি, **নথি** —

3) *विद्युत्तः न गृह्यते*—(3) अथ विद्युत्तः न विद्युत्तः न विद्युत्तः, २००० अथ विद्युत्तः न गृह्यते।

(a) The following table shows:

॥ ॐ नमो भगवते वासुदेवाय ॥

(2) "अविष्कृत" का अर्थ होगा अविष्कृत आविष्कार अधिनियम, 1984 (अवि. अधिनियम 24) के

आर्ति(१) एवं संध्या (२) एवं मकर (३) एवं आकाशिक अभिषेक(४);

(1) "सहित" का अन्वयानुसार "सहित" शब्द का अर्थ, 1997 (1997) में है।

9740

(16) “अग्निमि बभूवन्” एवं विभे २४ एवं एव विभे ३३। अतएव एते अग्निमि बभूवन्।

(4) "weather" and all following weather;

— (2000) —
— (2001) —



ଅଭିଯୋଗ ନାମ:
ଅନୁମତି ଦେବା ପାଇଁ

मकलमार्ग, अक्टोबर १२, २०१०

बोधभाषणम् आर्यस्य भाषणम्

1999, 2118-2126, doi:10.1006/j.1096-0265.99.00199

सत्यमेव जयते इति श्रुतिमिति श्रुतिं नैव श्रुतिम्, १-२० (१२०० अक्षि, १२०१) अक्षिम्
श्रुतिमिति श्रुतिम् नैव श्रुतिम् १-२० (१२०० अक्षि, १२०१) अक्षिम्
श्रुतिमिति श्रुतिम् नैव श्रुतिम् १-२० (१२०० अक्षि, १२०१) अक्षिम्

2020-2021 100% 100% 100%

জাতির শাসন ক্ষমতায় ৬ সিক্সে ভূমি মন্ত্রণালয়কে অসহযোগিতার কারণে দুই প্রতিবেশ
দুশমনের মতো বাধ্যতামূলকভাবে পশ্চিম মৌলুদ শাসনের বিধিভঙ্গ করা হবে।
একদম্পরের বিরুদ্ধে বিদ্রোহ প্রত্যাহার করে তুলে দেওয়া হবে।

ମାତ୍ର କିନ୍ତୁ ସାମାଜିକ ସମସ୍ୟା ଏ ବିଷୟ କୃତ୍ରିମ ଅପେକ୍ଷା ସମାଜବାଦିନ ସହଜ ଭାବେ ଗ୍ରହଣ କରାଯାଇପାରେ। ସମାଜବାଦିନଙ୍କ ଗଣିତର ଅନ୍ତରାଳ ସମସ୍ୟା ବିଶେଷତଃ ଏହି ଅପେକ୍ଷାରେ ସମାଜ ସମସ୍ୟା ସମାଧାନ କରିବା ପାଇଁ ଗୁରୁତ୍ୱ ଦେଇଥାଏ।

(continued from page 60)

1. यदि $f(x)$ निम्नलिखित है, तो $f(x)$ का $x=0$ पर अवकलन ज्ञात करें।

(1) જાણ, જાણી પ્રગટી જાણના રાજ, (2) જાણ જાણના જાણ (જો જાણના જાણ જાણના જાણ) :
જાણના જાણ :

३.५. आकाश ॥—विश्व का अनात्मक सत्त्विकी रूप। विश्व का सत्त्विकम्, अर्थात् अविनाशकम्...

(2) "इच्छापूर्वक कर्तृत्व" का अर्थ है—जहाँ कर्तृत्व पूर्णतः इच्छापूर्वक कर्तृत्व है।

1. 2004年9月 3日

www.elsevier.com/locate/jmb



National 3R Strategy for Waste Management



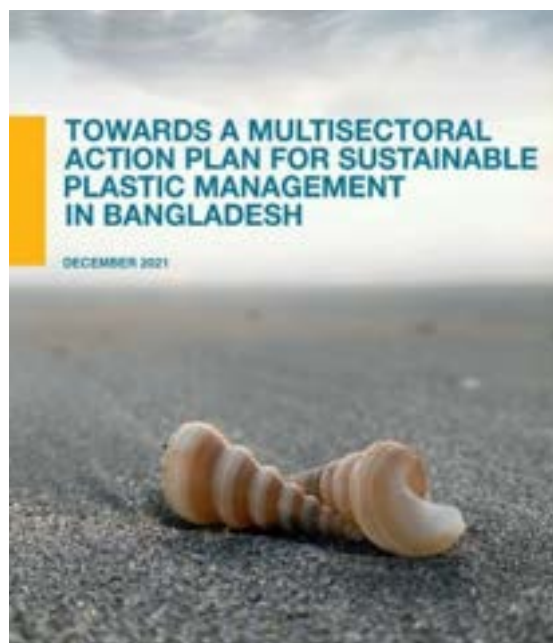
Department of Environment
Ministry of Environment and Forests
Government of the People's Republic of Bangladesh

December 2013
Issue

Evidence Paper

Plastic Pollution in Bangladesh Drivers, Impacts and Solutions

Fahmida Khatun
Syed Yusef Samad
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