

Sustainability in Practice: A Supply Chain Perspective on Bangladesh's Textile and Ready-Made Garment Industry

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A thesis submitted to the Department of BRAC Institute of Governance and Development in partial fulfilment of the requirements for the degree of Masters in Procurement and Supply Management.

BRAC Institute of Governance and Development

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Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at BRAC University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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Ethical Statement

- I, Afrina Rahman, hereby declare the following with regard to my participation in this research study:
- I confirm that my participation in this study, Title: “Sustainability in Practice: A Supply Chain Perspective on Bangladesh’s Textile and Ready-Made Garment Industry” has been conducted with full compliance and understanding of the ethical guidelines provided.
- I understand that participation in this research involves providing insights on the topic and contributing to the study through my experiences and knowledge.
- I affirm that I have maintained the highest level of integrity, honesty, and transparency throughout the entire research process.
- I acknowledge that there are no direct benefits or rewards associated with participating in this research.
- I pledge to ensure the confidentiality of all information collected and presented in this study, adhering strictly to ethical research standards and applicable regulations.
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- I understand and respect my right to access information collected during this study as per the provisions of the applicable freedom of information laws.
- I am aware that I can contact any of the researchers for further clarification or information without any expectation of reimbursement.

Executive Summary

The paper “Sustainability in Practice: A Supply Chain Perspective on Bangladesh’s Textile and Ready-Made Garment (RMG) Industry” looks at how Bangladesh's biggest export industry moved from compliance to strategy. The research investigates how environmental, social, and economic sustainability are integrated into the RMG supply chain and the institutional and operational factors that affect its adoption.

This descriptive research surveys 60 professionals in sustainability concepts such as the Triple Bottom Line, Sustainable Supply Chain Management, Creating Shared Value, and Institutional Theory of Tier 1–3 Bangladeshi garment manufacturers. The respondents were better prepared for occupational safety, training, and audits for social sustainability, and environmental compliance regarding effluent treatment and chemical management (62.2/100). The level of local sourcing, cost analytics, and digital traceability is generally poor, affecting economic sustainability by not integrating procurement properly.

Coercive buyer limits found to advance the twin goals of sustainable adoption and industry normative and mimetic learning. Improved institutional governance, SME capacity development, and incentive-based green funding are recommended. These findings thus point to a strategic 2025–2030 roadmap at the level of government, industry, and buyer.

According to studies, the RMG industry of Bangladesh is likely to move toward sustainability-led competitiveness and may turn out to be a global role model for an inclusive, ethical, and ecologically responsible garment manufacturing industry. The study applies global sustainability ideas to a developing economy and supports acceleration in value chain sustainability by policymakers, factory managers, and development partners.

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List of Acronyms

ADB	Asian Development Bank
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BKMEA	Bangladesh Knitwear Manufacturers and Exporters Association
BNG	Business Networking Group
CSV	Creating Shared Value
CSR	Corporate Social Responsibility
DBL Group	Dhaka-based large composite RMG conglomerate (example factory group)
DIFE	Department of Inspection for Factories and Establishments
DoE	Department of Environment (Bangladesh)
EPZ	Export Processing Zone
ESG	Environmental, Social and Governance
ETP	Effluent Treatment Plant
FOB	Free on Board (Export trade term)
GDP	Gross Domestic Product
ILO	International Labour Organization
IFC	International Finance Corporation
ISO	International Organization for Standardization
KPI	Key Performance Indicator
LEED	Leadership in Energy and Environmental Design
MPSM	Master of Procurement and Supply Management
RMG	Ready-Made Garments
RSC	RMG Sustainability Council

Chapter 1: Academic Orientation in Supply Chain and Sustainability

1.1 Academic Background and Research Orientation

I, Afrina Rahman, student of the Masters program in Procurement and Supply Chain Management at BRAC University required to engage in a research-based thesis that will be relevant area of study as part of the academic requirement set down for completion of the program. I have picked "Sustainability in Practice: A Supply Chain Perspective on Bangladesh's Textile and Ready-Made Garment (RMG) Industry" since this falls within the taught procurement and supply-chain management modules during the program.

While doing my courses, I have developed a wide-ranging understanding of procurement strategy, logistics, supplier relationship management, along with public and private supply-chain systems. These courses not only provided a strong theoretical foundation but also motivated me to study the interface between supply-chain management along with sustainability, that is particularly within the context of Bangladesh's RMG sector, which is known as the country's largest export industry and a substantial contributor to employment and GDP.

The courses also put an equal emphasis on operational efficiency and ethical procurement, that influenced my research direction and with that I came to realize that sustainability ceased to be solely an environmental conservation issue but also one of responsible sourcing, labour rights, along with economic resilience (Seuring & Müller, 2008). The RMG sector offers a real-world laboratory where these principles can be observed, analyzed, and improved. This thesis, therefore, links classroom learning with practical issues of sustainability in Bangladesh's most globally integrated industry.

1.2 Understanding of Procurement and Supply-Chain Processes in the RMG Sector

The RMG industry is part of a complex, global supply-chain network connecting fiber production, fabric manufacturing, dyeing and finishing, garment assembly, export logistics, and retail distribution. This involves various stakeholders: suppliers, manufacturers, freight forwarders, buyers, and regulatory authorities who contribute to the value addition in the industry.

Figure below shows the general structure of a typical RMG supply chain, from raw material sourcing to the delivery of the final product to international buyers. Through my academic training, I came to understand that procurement within the RMG industry focuses not only on cost minimization and timely delivery but also on ensuring transparency, supplier accountability, and ethical compliance. Over the last few years,

global buyers have demanded that Bangladeshi suppliers apply standards for sustainability, like LEED certification, OEKO-TEX compliance, and Higg Index assessments (Haque & Azad, 2023).

MPSM courses in Strategic Sourcing and Sustainable Procurement helped me to connect these practical needs with the theoretical framework of the Triple Bottom Line Elkington, 1997 and Sustainable Supply Chain Management Carter & Rogers, 2008. This academic background served as the foundation of my thesis, enabling me to investigate the ways procurement strategies can foster sustainability within both production and distribution processes.

1.3 Observations regarding Compliance to Sustainability and Buyer Requirements

When the incident of the collapse of Rana Plaza did happen in 2013, for instance, international scrutiny has called into question the compliance structures and work environments within the RMG industry of Bangladesh (Donaghey & Reinecke, 2018). International collaborations such as the Accord on Fire and Building Safety, the Alliance for Bangladesh Worker Safety, and the RMG Sustainability Council have since dramatically reformed the sector.

While going through the different reports and industry documents, I did observe that sustainability compliance in the RMG sector has shifted from reactive compliance, that essentially means meeting buyer-imposed standards, to proactive strategic integration whereby firms now invest in environmental and social responsibility as viable competitive advantages.

Nevertheless, buyer expectations need to be carefully balanced with production costs. Many small and medium garment factories face difficulties in adopting either cleaner technologies or renewable energy because of the high initial investment that is required. In this respect, Huq et al. (2020) point out that understanding economic and institutional barriers would guide the analytical direction.

1.4 Integrating Academic Learning with Field-Based Research Insights

As part of the thesis process, secondary data sources were reviewed, such as BGMEA reports and ILO publications, along with case studies from leading RMG exporters. These documents facilitated an understanding of how sustainability is operationalized through energy efficiency, waste-water recycling, labour safety programs, and supply-chain transparency systems (UNDP 2023).

For understanding my learning effortlessly, I have developed Table 1, which has outlined the main areas of analytical focus which have derived from both coursework & research observations.

This connection between theory & practice has shaped my approach to the analysis of sustainability challenges in Bangladesh's RMG supply chain and The objective is to explore how sustainable procurement and supply-chain governance can strengthen competitiveness and ethical responsibility simultaneously.

Table 1: Summary of Learning & Analytical Focus Areas (Source: Author’s compilation based on UNIDO (2023) and ILO (2024))

Learning Area	Academic Knowledge (MPSM)	Applied Insight in RMG Context
Procurement Planning	Strategic sourcing and supplier evaluation	Vendor assessment and cost–benefit alignment with sustainability goals
Logistics & Distribution	Inventory control and risk management	Efficient export logistics with reduced carbon footprint
Sustainability & Ethics	CSR, green procurement, and labour standards	Buyer–supplier collaboration on compliance and traceability
Performance Measurement	KPIs and benchmarking	Integration of environmental and social metrics in performance review

1.5 Reflection on Skills Development and Knowledge Application

Completing the coursework of my study and undertaking this thesis have been two transformative academic experiences. I developed analytical, research, and reporting skills and enhanced my understanding of ethical decision-making in procurement. This process of reviewing global sustainability models and their application in the Bangladeshi context further improved my skills in critically interpreting institutional data. I also learned that sustainable supply-chain management requires multidisciplinary collaboration-involving not only procurement specialists but also environmental engineers, labour rights advocates, and government regulators (Khan & Muttakin, 2022). This awareness develops an understanding that, in the future, professionals undertaking procurement should have sustainability principles integrated into every stage of decision-making. The chapter therefore establishes a foundation for subsequent chapters that deal with theoretical, contextual, and empirical dimensions related to sustainability in Bangladesh's RMG supply chain.



Figure 1: Structure of a Typical RMG Supply Chain — Source: BGMEA (2024); Adapted from ILO (2023)

Chapter 2: Overview of the Bangladesh Textile and Ready-Made Garment (RMG) Industry

2.1 Formation and Growth of the RMG Sector

From the very humble beginning of 1970s, Bangladesh's textile along with RMG industry has grown into one of the most vibrant manufacturing industries in the developing world. Bangladesh was a predominantly agrarian economy which was mainly dependent on jute exports. According to (World Bank, 2023) , Bangladesh has been able to gain access to developed markets and enjoy tariff benefits as a result of the implementation of export-oriented industrialization plans inside the EPZs and the MFA agreement of 1974.

By the mid-1980s, the RMG sector had emerged as the country's major generator of employment and foreign exchange. A combination of low labour costs, government incentives, and joint ventures with South Korean firms such as, Daewoo helped local entrepreneurs to acquire modern production skills and also Driven by these factors, the number increased from fewer than 50 factories in 1983 to over 4,500 active factories by 2024, according to the Bangladesh Garment Manufacturers and Exporters Association (BGMEA, 2024).

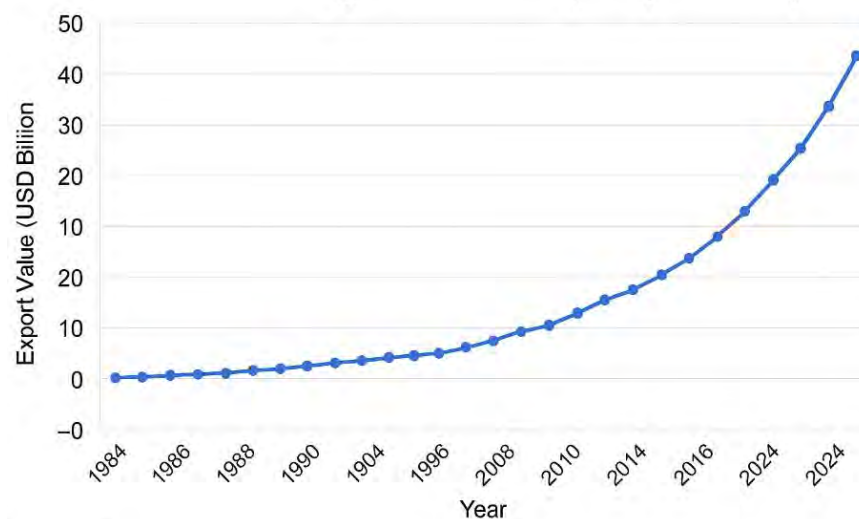


Figure 2: Growth of Export of RMG Bangladesh, Source: BGMEA, 2024

The growth trajectory of Bangladesh's RMG exports is depicted in Figure 2.1 below. It reveals an impressive rise from USD 31 million in 1984 to USD 47.38 billion by 2023–24, that is reflecting as an average annual growth rate of nearly 13% that is over four decades.

This rapid expansion which has placed Bangladesh as the second-largest exporter of apparel in the world, which is after only China and In turn, the industry now contributes around 84% of the country’s total export earnings along with roughly 11.5% of national GDP (BBS, 2024),(WTO, 2023).

2.2 Economic Contribution and Employment Impact

The RMG sector is the backbone of Bangladesh's industrial economy; it employs around 4.2 million workers, of whom almost 60% are women (ILO, 2024). Apart from direct employment, an estimated additional 10 to 12 million people depend on the sector through backward linkages in accessories, packaging, transport, and logistics (UNIDO, 2023).

In the fiscal year 2023–24, the total merchandise exports were at USD 55.56 billion, out of which USD 47.38 billion was from RMG products alone, according to (BGMEA,2024). Knitwear contributed 51% and woven garments 49% of the total apparel exports.

A summary of the economic and employment impact of the RMG sector is presented below.

Table 2: Economic and Employment Contributions of the RMG Sector (FY 2023–24), Source: BGMEA (2024); ILO (2024); BBS (2024); UNDP (2023)

Indicator	Value	Source
Number of Active Factories	4,510	BGMEA (2024)
Total Employment	4.2 million	ILO (2024)
Share of Female Workers	60%	UNDP (2023)
Contribution to GDP	11.50%	BBS (2024)
Export Earnings (USD)	47.38 billion	BGMEA (2024)
Share of National Exports	84%	BBS (2024)

Success in the RMG sector has reduced poverty significantly while increasing the participation of women in the workforce. Employment of females acted as the main driver for social change due to the promotion of empowerment, redistribution of incomes, and access to educational facilities. The industry still relies on imported raw materials, especially cotton and synthetic fibers, which hampers backward linkage development.

2.3 Major Export Markets and Global Value-Chain Position

Bangladesh's RMG exports are highly concentrated in a few major markets, mainly the European Union (EU), United States, United Kingdom, also Canada. Only In 2023 alone, the EU accounted for 49% of the total apparel exports, on the other side the United States represented 18%, the UK 9%, and Canada 4% (World Bank, 2023).

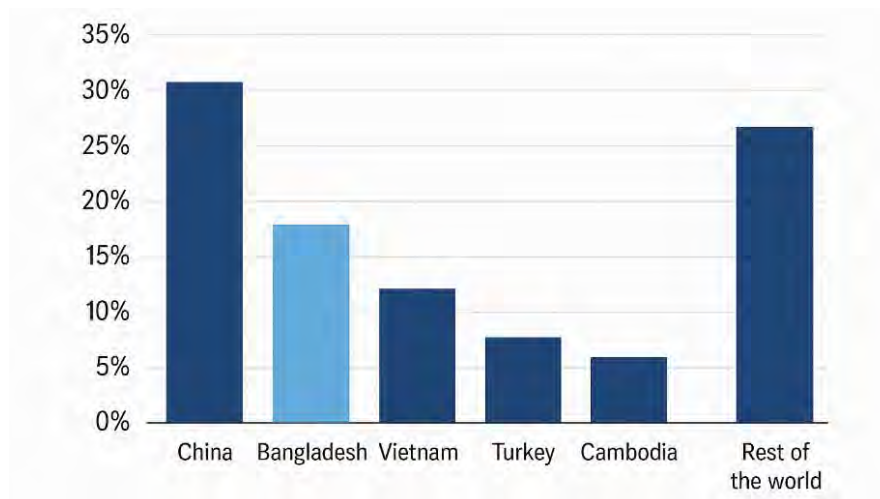


Figure 3: Bangladesh's position in the GVC, Source; WTO,2023

Figure 3 shows Bangladesh's position in the GVC where local manufacturers are almost exclusively engaged in cut-make-trim operations through contracts with buyers while design and branding activities remain concentrated in developed economies.

Although being highly competitive in terms of labor productivity along with the scale of export, Bangladesh's RMG sector is still dependent on international buyers for product innovation and market access and Upgrading towards full-package production will involve design, product development, and sustainable sourcing as the next phase of competitiveness.

2.4 Regulatory and Institutional Framework

The RMG industry works within a very strong institutional framework that is involving various government and private entities and The Ministry of Commerce, Department of Inspection for Factories and Establishments (DIFE), and Department of Environment (DoE) govern labor, safety, and environmental regulations, while the associations representing industries like BGMEA and Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA) play a vital role in member interest representation, facilitating export certifications, and coordinating with development partners.

Various international organizations, like the International Labour Organization, IFC, and UNDP, support technical and financial improvements related to occupational safety, energy efficiency, and social dialogue. In 2020, the RMG Sustainability Council replaced the previous Accord and Alliance initiatives with the aim of providing a unified domestic mechanism for continuous safety inspections and remediation.

2.5 Sustainability Milestones and Post-Rana Plaza Reforms

The Rana Plaza disaster in April 2013, which took over 1,100 lives, marked an inflection point in the industry's approach toward sustainability. The government of Bangladesh, then, spearheaded one of the most sweeping factory-safety makeovers anywhere in the world. Over 2,000 factories were structurally, fire, and electrically remediated between 2013 and 2020 under the Accord on Fire and Building Safety and the Alliance for Bangladesh Worker Safety.

There are 202 LEED-certified green garment manufacturers in Bangladesh as of the year 2024 which is making it the country with the biggest number of such factories in the world and also Of those plants, sixty are Platinum-rated. In accordance with Sustainable Development Goals 8, 9, and 12, a number of firms have been implemented for waste recycling facilities, solar roofs, and water systems that can discharge no hazardous waste.

Table 3: key sustainability initiatives taken and their outcomes in Bangladesh's RMG industry

Initiative / Program	Focus Area	Achievement / Impact	Source
Accord and Alliance (2013–2020)	Workplace safety and compliance	Over 2,000 factories inspected and remediated	ILO (2023)
RMG Sustainability Council (RSC, 2020–Present)	Unified safety governance	Continuous inspection of 1,600 active factories	BGMEA (2024)
LEED Green Factory Certification	Environmental performance	202 factories certified (60 Platinum)	USGBC (2024)
Higg Index Implementation	Supply-chain transparency	400+ factories reporting sustainability metrics	UNIDO (2023)
Renewable Energy Adoption	Energy efficiency	12% of total energy use from solar power	DoE (2023)

2.6 Key Challenges in Environmental, Social and Economic Dimensions

Despite impressive progress, a number of challenges persist that hamper complete integration of sustainability in Bangladesh's RMG sector.

Environmental issues include releasing massive amounts of untreated wastewater from the dyeing and washing units into rivers like Buriganga and Turag. According to DoE estimates in 2023, near about 40% of industrial pollution in these areas comes from the textile factories. In addition, energy inefficiency and reliance on fossil fuel increase the carbon footprint.

Social challenges involves Labour unions and worker participation committees have remained weak. Wage disputes, overtime management, and limited access to health insurance continue to affect worker well-being (Kabeer, 2021).

Economic issues include a high reliance on a few export markets and a limited margin of profit due to fierce price competition. In addition, small and medium-sized enterprises (SMEs) do not have access to financing for the upgrade of sustainable technologies. (Huq et al., 2020).

ALL these challenges requires a combination of policy reform, capacity building, along with buyer collaboration in a multi-stakeholder approach.

2.7 Relevance of the Study to Bangladesh's Industrial Transformation

Sustainability in the RMG sector is not only a corporate obligation but also a national priority, that reflected in Bangladesh's Vision 2041 and Perspective Plan 2021-2041 for the structural transformation of the country toward a developed economy (Planning Commission 2022). Green growth, energy efficiency, and social inclusiveness are the main features focused on by the government in its National Action Plan on RMG Sustainability in 2021. This research is very much needed as it assesses how sustainable supply-chain practices can reinforce Bangladesh's global competitiveness while supporting inclusive development goals and As procurement professionals along with future policy-makers, expected to help this transition by integrating sustainability principles into strategic sourcing, logistics management, along with supply-chain governance. This thesis brings actionable insights into the embedding of sustainability across the RMG supply chain, strengthening institutional accountability, fostering innovation, and ensuring long-term industrial resilience.

Chapter 3: Introduction

3.1 Background of the Study

Sustainability is becoming one of the most defining themes of global industrial transformation in the twenty-first century. As globalization has deepened trade along with production networks, supply chains which have become central to achieving both economic competitiveness & environmental responsibility & The textile and ready-made garment (RMG) sector of Bangladesh, a critical player in national economic growth, is increasingly under global pressure in balancing efficiency along with profitability & sustainability. The concept of sustainability, originating from the protection of the environment, has evolved into the Triple Bottom Line (TBL) framework, that has merged economic, social, & environmental objectives within business strategy. For developing economies such as Bangladesh along with sustainability is both a challenge and an opportunity. On the other phase, global buyers demand ethical sourcing, low carbon footprints, also traceability along the value chain. The factories, on the other hand, need to be the most competitive ones in order for them to be able to deal with rising expenses in addition to the criteria of compliance. (Haque & Azad, 2023). The RMG industry, which provides around 84% of the total export earning of Bangladesh, employs 4.2 million workers, the majority of whom are women (BGMEA, 2024), and it is at the heart of this global discussion on sustainability.

Within the last couple of decades, the term SSCM has evolved to strike a balance between supply chain efficiency and sustainability. According to Carter and Rogers (2008), SSCM is “the strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key inter-organizational business processes.” This concept emphasizes embedding the principles of sustainability at every stage of the supply chain, from procurement to production, logistics, and distribution.

In Bangladesh's RMG sector, the debate on sustainability began to build momentum in the aftermath of the 2013 Rana Plaza disaster that did show glaring weaknesses in labor and environmental compliance and after that, initiatives such as Accord on Fire and Building Safety, the RMG Sustainability Council (RSC), and green factory certification have remade global perceptions about Bangladesh's garment industry. Sustainability, on the other hand, continues to be more of a reactive compliance measure than an entrenched supply-chain strategy which is notwithstanding the changes that have been made. This research not only looks into sustainability as an extrinsic requirement but also as a strategic supply-chain practice that connects economic growth with environmental and social performance. The core of the research is to comprehend how sustainability is perceived, institutionalized, and put into practice within Bangladesh's RMG supply chain and how the framework for supply-chain management can help accelerate sustainable industrial transformation.

3.2 Problem Statement

In spite of rapid expansion, Bangladesh's RMG industry faces systemic sustainability challenges and on the other side While global buyers increasingly emphasize ethical and environmentally friendly production, many local manufacturers treat sustainability as a cost rather than an investment. According to UNIDO (2023), a large proportion of factories lack formal sustainability reporting, resource efficiency mechanisms, along with supplier engagement programs. The main sustainability gaps of the sector can be classified under three dimensions:

Environmental: Textile processing is a heavily polluting industry due to dyeing and washing-related operations. As a result of the discharge of toxic effluents, rivers like the Buriganga and Turag flow with contaminated water and as a result, near about 40% of industrial water pollution in Dhaka comes from textile units. Energy-intensive production contributes to Bangladesh's growing carbon footprint (DoE, 2023).

Social: As worker safety has improved, it has led to post-Accord, challenges persist on fair wages, gender equity, and collective bargaining. Limited training and career development opportunities also affect productivity and empowerment.

The major reasons why the industry's competitiveness remains vulnerable include fluctuating buyer prices, supply disruptions, and dependence on imported raw materials. Small and medium-sized factories comprise 70% of the sector but lack access to green finance or advanced technology.

Much of the existing research on the RMG sector in Bangladesh focuses on either compliance audits, green factory counts, or CSR initiatives. Very few examine how sustainability principles are integrated into key procurement and supply-chain processes such as sourcing strategies, logistics optimization, and supplier development. Without such analyses, the institutionalization of sustainability beyond external certification will remain limited for Bangladesh.

Therefore, this study addresses a critical research gap in the understanding of how sustainability can be embedded as a strategic supply-chain practice and not just mere compliance to improve both competitive and ethical performances.

3.3 Objectives of the Study

Primary Objective:

The aim is to evaluate the practice and institutionalization of sustainability principles in the supply-chain operation of Bangladesh's textile and RMG industry.

Specific Objectives:

1. To Examine environmental, social, along with economic sustainability practices in the RMG supply chains of Bangladesh.
2. To identify barriers that impede the implementation of sustainable supply-chain practices.
3. To investigate the roles of buyers, suppliers, and institutions in promoting sustainability adoption.

The proposed framework would enhance sustainable procurement and governance of the RMG supply chain.

3.4 Research Questions

Main Research Questions: How is sustainability adopted and utilized across Bangladesh's textile and ready-made garment (RMG) supply chain?

Sub Question:

The research will be based on the following research questions:

1. How is sustainability integrated within Bangladesh's RMG supply chain?
2. What are the challenges that limit sustainability adoption at the level of factories, suppliers, and institutions?
3. How do buyer-supplier dynamics influence the implementation of sustainable practices?
4. What kind of governance and procurement strategies lead to long-term sustainability in the RMG sector?

3.5 Conceptual Framework of the Study

Conceptual framework: The conceptual framework for this study incorporates two well-recognized frameworks: the Triple Bottom Line proposed by Elkington (1997) and the Sustainable Supply Chain Management framework by Carter & Rogers (2008). It considers environmental, social, and economic sustainability as the foundational inputs that affect supply-chain practices of procurement, production, and distribution. Appropriate management of these practices will result in operational, social, and environmental outcomes that are desirable, thus creating a continuous improvement in pursuit of sustainable competitiveness.

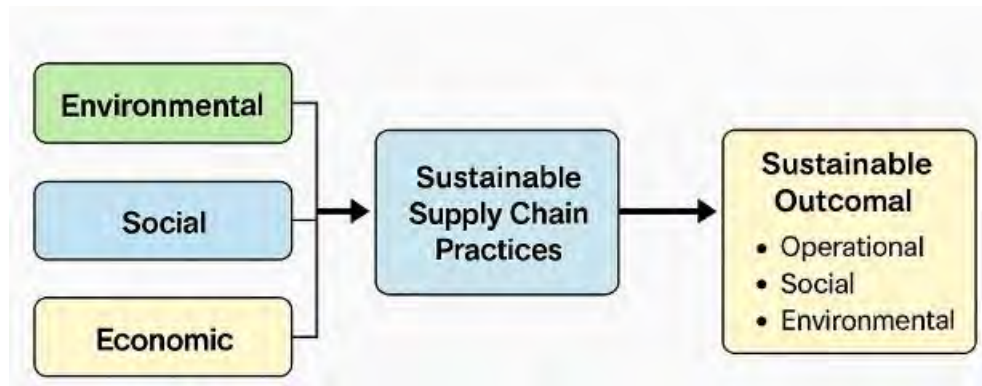


Figure 4: Conceptual Framework

The framework focuses on three relationships:

1. The alignment between sustainability inputs and supply-chain practices.
2. Transformation of these practices have sustainable outcomes which are economic efficiency, social welfare, environmental responsibility.
3. The reinforcing feedback is a loop where positive results reinforce continued to betterment along with the supply chain.

This model will provide guidance for the literature review of this thesis that will be in Chapter 4 & the analytical discussion which will be in Chapters 5-6.

3.6 Scope and Significance of the Study

Scope:

The research focuses on Bangladesh's textile and RMG supply chain, covering manufacturing units, suppliers, buyers, logistics partners, and regulatory institutions. Qualitative data sources are used throughout this study, with secondary reports from the BGMEA, ILO, UNDP, World Bank, and peer-reviewed journals. In this research, The concept of sustainability is examined from three perspectives: the environmental, the social, and the economic, with consideration given to the interrelationships between these three aspects and the management of procurement and logistics..

Significance:

Academic Contribution:

The study fills the gap within sustainability and supply-chain research in developing economies. This offers a conceptual understanding of the ways in which procurement processes are crucial for pushing improvements that will be in both ethical and environmental considerations.

Policy Relevance:

The findings will help government bodies, NGOs, with industry associations in devising focused sustainability frameworks and also incentive mechanisms.

Practical Application

The study provides a roadmap for factory managers and buyers on how to couple cost efficiency with sustainability goals for better global competitiveness and improved brand reputation.

3.7 Limitations of the Study

Every academic inquiry is faced with certain boundaries that define its scope and as a result This research is limited to the following:

Data Nature: The study relies on secondary sources—official reports, journal articles, and institutional publications—due to the absence of primary survey data.

Generalization: Due to the fact that the conclusions are fundamentally interpretative with context-specific and it is not possible to generalize them to other manufacturing sectors other than RMG.

Dynamic Policy Environment: Sustainability regulations change daily; some findings may be outdated due to the emergence of new initiatives.

Resource Constraints: Having restricted access to confidential factory data together with buyer compliance reports makes it difficult to do more in-depth quantitative comparisons..

These limitations in no way reduce the analytical value of the study but they underscore the complexity of sustainability transitions of developing economies.

3.8 Structure of the Thesis

The thesis is being divided by six core chapters and each addressing a distinct analytical dimension:

Chapter 1: Academic Orientation in Supply Chain and Sustainability: This explains the academic foundation and motivation.

Chapter 2: Overview of the Bangladesh Textile and RMG Industry which presents contextual along with institutional background.

Chapter 3: Introduction describes the background, research problem, objectives, and conceptual framework.

Chapter 4: Literature Review will provide critically examines theories, empirical studies, and sustainability frameworks.

Chapter 5: Analysis and Discussion that will be providing the findings which will be interpreted in theoretical, practical contexts as well.

Chapter 6: Conclusion and Recommendations: A summary of the key insights with strategies for sustainable RMG development will be delivered. This structural organization ensures logical progression from conceptual understanding to practical implication, corresponding to the thesis framework of BRAC University.

3.9 Summary

This chapter has presented the theoretical and contextual basis for the analysis of sustainability in the RMG supply chain of Bangladesh and It provided the background, identified the research gaps, objectives, and questions, and stated a conceptual model on how sustainability pillars link to supply-chain practices and outcomes. The chapter thus created an effective analytical platform, rooted both in academic theory and contextual realities, for the subsequent literature review and empirical discussion.

Chapter 4: Literature Review

4.1 Introduction

What began as a niche environmental concern has today become a meta concept for development at the global level that influences industrial strategies, policy priorities, and academic research. In supply-chain studies, sustainability is seen as a transition from short-term profit maximization to the creation of long-term value by integrating economic, social, and environmental objectives. Following Carter & Rogers (2008) and Elkington (1997), this chapter outlines the key theoretical bases placing sustainability in perspective within the frame of supply-chain management, recent global developments in sustainable apparel production, and the empirical context of Bangladesh's RMG sector. This allows the identification of how sustainability theories will inform supply-chain practices and identify the research gaps that underpin the motivation of this study.

4.2 Theoretical Frameworks of Sustainability and Supply Chain

Sustainability in supply-chain management is a multidisciplinary concept whose founding lies in environmental science, economics, and organisational behaviour. There are a number of frameworks which are being designed to conceptualize about how firms balance profit motives against ethical with environmental responsibilities. Among these, the Triple Bottom Line (TBL), Sustainable Supply Chain Management (SSCM), Creating Shared Value (CSV), Stakeholder Theory, and Institutional Theory form the foundation of this research.

4.2.1 Triple Bottom Line (TBL)

One of the most cited conceptualisations of sustainability has been that of the Triple Bottom Line (TBL) framework by John Elkington (1997). It contends that while the success of organisations should be measured in terms of economic performance, it also needs to have results based on both social and environmental outcomes. Through the three dimensions of TBL that are, namely People, Planet, and Profit, firms can effectively integrate corporate responsibility with their strategy while decision-making process.

In supply-chain contexts, the TBL approach supports sustainable procurement, ethical sourcing, and environmentally responsible logistics. Examples include minimization of chemical waste, reduction in carbon emissions, and fair wages for employees in the production of sustainable textiles. In the RMG sector, compliance to labour and safety standards, as defined by ILO 2024, reflects the social dimension, while cost optimization and improvement in productivity represent the economic aspect.

Empirical studies of Asian garment industries show that TBL adoption is associated with enhanced reputation and operational efficiency. However, as Glover et al. (2014) noted, for most developing-country suppliers, sustainability is perceived as something imposed from outside, and hence they have less intrinsic motivation. There is, thus, a strong need for the principles of TBL to be more fully integrated into local supply-chain governance.

4.2.2 Sustainable Supply Chain Management (SSCM)

SSCM extends the TBL philosophy by embedding sustainability across all supply-chain activities-from procurement and production to distribution and end-of-life recycling. According to Carter and Rogers (2008), SSCM seeks to include environmental stewardship, social responsibility, and economic resilience in the coordination of inter-organizational processes.

Carter and Rogers (2008) also developed the idea that SSCM might represent three equally important factors: economic performance, environmental performance, and social performance. The source of "sustainable competitive advantage"-that is, efficiency, innovation, and responsibility all in a bundle-is the interface between these dimensions.

SSCM will be all the more relevant in the case of global apparel supply chains where contributions by multiple tiers of suppliers are involved. In the context of Bangladesh's RMG industry, some of the SSCM practices that could be undertaken include energy-efficient technologies, waste minimization, responsible procurement, and monitoring of compliance by suppliers. Other studies indicate that firms adopting SSCM have lower costs of production and better buyer confidence.

Implementation challenges persist but on the other hand, financial and technical obstacles to the adoption of greener machinery or certification stand in the way of many of the small and medium-sized garment manufacturers and also, SSCM in Bangladesh often depends on buyer-driven incentives rather than the enforcement of domestic policy .

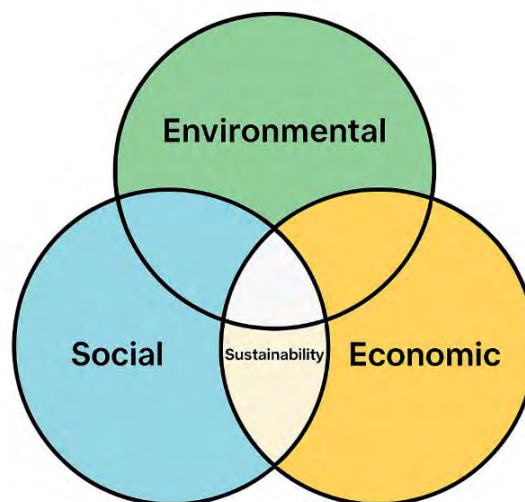


Figure 5: Dimensions of long-term sustainability

4.2.3 Creating Shared Value (CSV)

The concept of Creating Shared Value, introduced by Porter and Kramer (2011), displays a business-driven approach to sustainability. In this regard, companies are also able to enhance their competitiveness in environmental and social contexts. Though Corporate Social Responsibility, that is philanthropic in character, CSV adds social value into a company's basic activities.

In the context of supply chain management, CSV refers to collaborative partnerships in which both buyers and suppliers profit from sustainable developments and Cleaner industrial practices, such as someone have a lower environmental effect while increasing efficiency and profitability.

In the RMG sector, global brands like H&M and Levi Strauss have pursued shared-value initiatives through supporting supplier training, green technology adoption, and worker welfare programs. According to ILO (2023) and Porter and Kramer, 2019, shared value is achieved where social progress fuels economic gain—a growing principle to which Bangladesh's export-oriented apparel industry must pay growing attention.

However, CSV has been criticized for underestimating the power imbalance between multinational buyers and developing-country suppliers (Crane et al., 2014). In Bangladesh, where price negotiation has remained most biased towards buyers, strong institutional mediation and clearly transparent mechanisms of governance are greatly required for practical realization of shared value.

4.2.4 Stakeholder Theory

Freeman's 1984 Stakeholder Theory postulates that business success is a function of attending to the concerns of a variety of stakeholders, including employees, customers, suppliers, governments, and communities, rather than just the shareholders. In this perspective, sustainability implies managing relationships along with the expectations of the value chain. From the perspective of the RMG sector in Bangladesh, international buyers, local manufacturers, labour unions, workers, government agencies like the Department of Environment and DIFE, & NGOs promoting ethical practices are all the stakeholders and Each of these groups has a different extent of influence that has the outcomes of sustainability. Stakeholder theory offers a practical lens that helps to understand how conflicting interests can be balanced in achieving sustainability goals at the collective level and for instance Works such as Reinecke and Donaghey 2021 have shown that multi-stakeholder governance—for example, the post-Rana Plaza Accord—promotes increased transparency and accountability, but long-term effectiveness requires continued collaboration among actors at all levels. 4.2.5 Institutional Theory Institutional Theory explains how organizational behavior is shaped by the existence of formal and informal rules, norms, and persuasive mechanisms in society. It identifies three types of institutional pressures that are coercive, referring to laws and regulations; normative, or the influence of societal expectations and professional standards; and mimetic, the imitation of successful practice and In the RMG industry of Bangladesh, coercive pressures come from government regulations and buyer codes of conduct, normative pressures arise from international standards like ISO 14001 and SA8000, while mimetic pressures emerge as firms

replicate best practices to attract foreign buyers. This theory shows that the adoption of sustainability does not take place evenly, with large factories complying faster with buyer monitoring while smaller suppliers are behind in this respect. This institutional support through organizations such as the RMG Sustainability Council and Department of Environment helps a lot in standardizing these practices. The institutional theory underlines that sustainable transformation needs not only policy enforcement but also social legitimacy and market-driven incentives. In the case of Bangladesh, such a coherent institutional ecosystem-interlinking public agencies, private industry, and global partners-will be decisive for sustaining compliance and competitiveness.

Table 4: Key Stakeholders

Stakeholder Group	Role/Interest	Influence Level	Example Institutions
International Buyers	Demand compliance, ensure brand reputation	Very High	H&M, Zara, Uniqlo, Levi's
Factory Owners / Exporters	Manage production, maintain cost efficiency	High	BGMEA, BKMEA
Workers and Labour Unions	Advocate for fair wages and safety	Medium	ILO, National Garment Workers Federation
Government Agencies	Enforce labour and environmental laws	High	DIFE, DoE, MoC
Development Partners / NGOs	Provide training, funding, and advocacy	Medium	IFC, UNDP, Accord, RSC
Consumers	Drive ethical consumption trends	Medium	Global and local apparel consumers

4.3 Global Context of Sustainable Supply Chains

4.3.1 Evolution of Global Sustainability Thinking

More than last three decades, sustainability has evolved from being purely an environmental issue to becoming a mainstream business priority. From the Brundtland Report in 1987, to the adaptation of the United Nations Sustainable Development Goals in 2015, the priorities of industries across the world were fundamentally altered. SDGs 8 (Decent Work and Economic Growth), 9 (Industry, Innovation, and Infrastructure), and 12 (Responsible Consumption and Production) have an impact on supply-chain management techniques in the manufacturing industry (UNDP, 2023).

MNEs now play a major role in integrating sustainability throughout value chains, including responsible sourcing, circular models of manufacturing, and green procurement and as an outcome. According to the World Bank, 68% of garment businesses globally want to include sustainability goals into their purchase choices by 2024. These include carbon neutrality, minimization of waste, and labor rights commitments.

More recently, the sustainability paradigm has also been shifting away from mere compliance-based approaches toward more performance-based partnerships. For example, Companies like Inditex (Zara), H&M, and Levi Strauss increasingly perceive sustainability as a competitive differentiator rather than simply something owed to the world and These firms engage suppliers in long-term collaboration, training, technology support, along with joint monitoring of their environmental impact.

4.3.2 Global Sustainable Apparel Supply Chains

The creation of value is complex and geographically dispersed in the global apparel supply chain, with many tiers of suppliers, raw-material processors, and distributors. Value concentrates at the design, branding, and retail stages that is mostly in developed countries, while manufacturing is largely located in developing economies (WTO, 2023).

This asymmetry explains why developing nations bear the environmental and social costs of production while capturing a smaller share of value-added profits. According to the World Trade Organization (2023), global apparel exports reached USD 536 billion in 2023, with China accounting for 32%, Bangladesh for 16%, and Vietnam for 12%. On the other hand, the profit margin per garment of Bangladesh, the world's second-largest exporter, is still modest, averaging 8-12%, compared to 25-30% in retail value acquired by Western companies. (BGMEA, 2024).

It has also created a pattern for increasing advocacy in terms of the need for fair-trade sourcing and equitable value distribution within the global supply chain. Organisations such as the Fair Wear Foundation, Ethical Trading Initiative (ETI), and Better Work Programme have been instrumental in promoting supplier empowerment and transparency.

4.3.3 Key Global Sustainability Practices

Apparel supply chains have implemented a wide array of sustainability practices across countries, reflecting their policy environment, technological capacity, and expectations from buyers. A comparison of the major apparel-exporting nations is provided below.

While the table above shows that Bangladesh has significant achievements in green infrastructure and worker safety reforms, it is lagging behind in innovation in the supply chain and in value addition. Meanwhile, policy-driven sustainability in Vietnam and digital traceability systems in Turkey offer useful lessons for Bangladesh's future development.

Table 5: Compare Global Apparel Sustainability Practices (2024)

Country	Key Focus Areas	Achievements	Challenges	Sources
China	Green manufacturing, energy efficiency	30% factories ISO 14001 certified; investment in circular textile parks	High energy demand, limited labour reforms	WTO (2023); UNIDO (2023)
Vietnam	Waste reduction, water recycling	Over 250 LEED-certified factories; collaboration with H&M and Nike on clean water	Cost of green compliance	World Bank (2024)
Turkey	Traceability and ethical production	Advanced digital tracking of cotton and dyeing; EU Green Deal alignment	Inflation and cost pressure	EU Trade Report (2024)
India	Sustainable fibre innovation, renewable energy	Organic cotton initiative; 20% of energy from renewables	Informal labour market	ILO (2024); UNDP (2023)
Bangladesh	Factory safety, green buildings, labour standards	202 LEED green factories (world's highest); 4.2 million workers employed	Limited local innovation, SME financing constraints	BGMEA (2024); ILO (2023)

4.3.4 Sustainable Development Goals and Apparel Supply Chains

The United Nations' SDGs represent an integrated framework for assessing progress in sustainable supply-chain management. Apparel production directly contributes to at least six SDGs:

SDG 5-Gender Equality: Women make up the majority of the workforce in RMG and for this reason, empowering gender is central to sustainability.

SDG 8 – Decent Work and Economic Growth: Ensuring reasonable wages, safe working conditions, and job security.

SDG 9: Industry, Innovation, and Infrastructure: Promote green technologies and resilient supply networks.

SDG 12: Responsible Consumption with Production that is for Waste Reduction and Sustainable Sourcing of Materials.

SDG 13 – Climate Action: Reduction of carbon emission and promotion of renewable energy in production.

SDG 17-Partnerships for the Goals: Global partnerships will improve cooperation by governments, firms, and civil society.

According to UNDP 2024, apparel brands integrating SDGs into business strategies show higher consumer trust and long-term profitability. For instance, Adidas has promised that by 2025, it will be using 100% recycled polyester, with Patagonia invests its profits into environmental restoration projects and These

companies have become exemplary in showing how sustainability can become a driver which will be for innovation along with market differentiation.

4.3.5 International Buyer Requirements and Auditing Standards

Global buyers are influential agents in making sustainability compliance mainstream. Large retail brands , H&M, Inditex, Uniqlo, and Walmart have rigorous auditing frameworks comprising the Higg Index, Sedex Members Ethical Trade Audit, and OEKO-TEX certification. These frameworks audit the environmental management system along with energy usage, worker safety, and community engagement of suppliers. According to the 2024 ILO global compliance study, over 80% of Tier 1 garment suppliers in Asia undergo at least one international audit, while only 35% cascade the sustainability requirements down the line to include Tier 2 and Tier 3 subcontractors. This "compliance gap" indicates that systemic approaches are needed to integrate the whole value chain, instead of just the final stage of assembly. ILO 2024 The European Union's upcoming 2025 Corporate Sustainability Due Diligence Directive will make it mandatory for corporations to ensure that human rights and the environment are not harmed anywhere in their supply chains. This will affect Bangladeshi exporters who supply products to European brands. 4.3.6 Global Financial and Technological Trends Financial innovation has turned out to be a key enabler of sustainability. Green bonds, carbon credits, and sustainability-linked loans are fast being adopted to finance eco-friendly production facilities. According to the International Finance Corporation, (IFC ,2024), Between 2022 and 2024, the textile industry in Asia had a 28% increase in the number of loans tied to sustainability, that is a reflection of investors' trust in responsible production and for this digital transformation is responsible in driving transparency with traceability. Technologies like as blockchain and audits powered by artificial intelligence, together with sensors connected to the internet of things, allow real-time monitoring of water use, energy efficiency, and worker safety. The European Union Trade Report, 2024 states that several nations, like Turkey, have implemented procedures in monitoring cotton on the blockchain, that enables purchasers to trace the origin of merchandise in an instant which results the worldwide landscape in sustainability continues to be dynamic, with the effect of new rules, technology innovation, and collaborative governance models. By enhancing policy design, attracting sustainable investment, and broadening the export base, developing countries like Bangladesh may be able to learn from this experience and improve their own policies.

4.4 Sustainability in Bangladesh's RMG Sector

4.4.1 Evolution from Compliance to Sustainability

The RMG sector in Bangladesh has witnessed a sea change since it was born as an export-growth- and employment-generating activity in the late 1970s, with little care for regulatory oversight. The tragic collapse of Rana Plaza in 2013 saw over 1,100 fatalities in what marked an important turning point from compliance to sustainability and worker-centric approaches in the industry, as evident by Reinecke & Donaghey (2021).

Following this tragedy, the establishment of the Accord on Fire and Building Safety and the Alliance for Bangladesh Worker Safety implemented strict safety inspections and remediation programs. Through such initiatives taken by 2020, they had inspected over 2,000 factories and completed improved structural safety for near about 2.5 million workers (ILO, 2023). These organizations then combined into a single tripartite entity called the RMG Sustainability Council in 2020 to carry out continued safety oversight involving brands, factory owners, and labor representatives.

Environmental efficiency, social responsibility, with economic viability are all aspects that are included in the concept of sustainability, which goes beyond the concept of safety and This more comprehensive perspective is a reflection of the globalization of supply chain management (SSCM) with the integration of the TBL framework that will be into operational strategy.

4.4.2 Environmental Sustainability Initiatives

As Bangladesh's garment exports have grown more competitive, the improvement of environmental sustainability has become an increasingly important factor. Additionally, the nation has made tremendous progress in green manufacturing via the use of renewable energy and also In 2024, Bangladesh is hosting 202 LEED-certified green garment factories by making it the host with the most globally. Of the 202, there are 60 platinum-rated facilities (USGBC, 2024). Cumulatively, these factories reduce energy consumption by at least 30-35% and on the other side water usage are being decreased by 50% compared to conventional facilities.

According to the Department of Environment, (DoE 2023), the sector now treats 78% of wastewater before discharge, up from 40% during 2015 and The renewable energy initiatives are being taken, especially solar rooftop systems, supply around 12% of total electricity demand in compliant factories.

These achievements reflect a major cultural change within the sector, driven by both international buyer expectations and local policy reforms. On the other hand, challenges remain, particularly in smaller factories that will be lacking in capital for ETPs and green certification costs.

4.4.3 Social Sustainability and Worker Welfare

Social sustainability addresses the welfare, empowerment, along with the equal treatment of workers and The RMG sector which are in Bangladesh employs around 4.2 million workers, 60% of whom are women (ILO, 2024). Jobs have helped women achieve economic participation and social mobility, which is a success toward SDG 5.

In the post-Rana Plaza period, several labour standard-enhancing reforms have been enacted. Union registration rights and factory inspection systems have been strengthened through the Bangladesh Labour Act (Amendment 2018). Minimum wages are being rose from BDT 3,000, or USD 27 which was back in 2010 to BDT 8,000, or USD 73, that is in 2023 (BBS, 2024). This has increased income security, but it still

falls short of the estimated BDT 14,000, or USD 127, living wage benchmark (Asia Floor Wage Alliance, 2024).

The Accord's training programs have reached 1.8 million workers, improving knowledge on safety, evacuation, and rights awareness. By 2023, the ILO Better Work Bangladesh initiative—which was initiated in 2015—works with 400 factories to monitor compliance with health and gender-equality standards.

On the other side, overtime management, union participation, also sexual harassment prevention are still considered areas where there have to be institutional improvement, according to (Kabeer, 2021).

4.4.4 Economic Sustainability and Value-Chain Efficiency

Economic sustainability encompasses the profitability with competitiveness along with long-term efficiency that is in resources. The RMG industry made near about 11.5% of Bangladesh's GDP along with the 84% of total export earnings which will be making near about USD 47.38 billion in export revenue that will be by FY2023–24 (BGMEA, 2024).

However, much of this growth is dependent on low-cost labour and imported raw materials. Some 65% of the demand for woven fabric and 45% for yarn is currently imported from countries like China, India, and Pakistan; World Bank 2024.

To this end, the government came up with the National Textile Policy 2024 that encourages investment in local textile parks, waste recycling, and synthetic fibre production.

In spite of these efforts, profit margins remain narrow with the averaging of 8–12%, due to rising costs and buyer-driven pricing models. It also helps in Enhancing value-chain upgrading which is through design, branding, and innovation that is accordingly vital for sustainable competitiveness.

4.4.5 Institutional and Governance Framework

Multiple governance mechanisms support Bangladesh's sustainability transition, which involve public agencies, industry associations, and international partners.

They include the Ministry of Commerce, Department of Environment, Department of Inspection for Factories and Establishments, BGMEA, and BKMEA, among other key institutions that regulate compliance, safety, and environmental performance.

Technical assistance and financial incentives for green transformation come from development partners like the International Labour Organisation, United Nations Development Programme, and International Finance Corporation. The RMG Sustainability Council, which was formed in 2020, has inspected 1,600 active factories and continues the work of the Accord for transparent remediation. ILO 2024

4.4.6 Challenges and Emerging Issues

Despite the tremendous progress, the challenges persist:

Cost of Compliance: Smaller enterprises are finding it difficult to invest in wastewater treatment, green certification, or digital traceability systems.

Institutional Overlaps: There is a high likelihood that inefficiencies will result from the fragmented governance which will be DIFE, DoE, and RSC.

inefficiency.Buyer Dependence: Heavy dependence on a few Western markets increases the vulnerability to shocks in world demand.

The protection of workers in terms of healthcare, maternity benefits, and insurance remains inadequate.

Technological Lag: Most factories lack the state-of-the-art data systems to track sustainability metrics.

Both of these challenges call for an integrated approach that links policy, finance, and technology on a foundation of continuous improvement within supply-chain management.

4.5 Research Gaps and Theoretical Contribution

Although sustainability in the RMG sector has been widely studied, several important gaps remain.

Limited integration of procurement and sustainability:

Most researches focus on compliance and CSR, without considering how procurement strategies would affect sustainability and Few studies look into sourcing decisions that would foster environmental innovation or supplier development.

Neglect of SME Perspectives:

While literature is dominated by large factories, the so-called SMEs-those comprising more than 70% of the total factories-receive little attention despite their greater barriers to green transition.

A weak link between theory and practice:

Application of TBL, SSCM, along with CSV frameworks are the one who are only partial in Bangladesh. Previous studies lack holistic integration across all supply-chain stages: procurement, production, and logistics.

Institutional Fragmentation:

Sustainability governance remains decentralized among agencies and Few empirical studies assess the coordination among regulatory and industry bodies like DIFE, DoE, and RSC.

Limited Longitudinal Data:

Longitudinal studies, tracking the transformation of the whole industry over time, are scarce; most analyses of sustainability are based on short-term project data.

4.5.1 Theoretical Contribution of This Study

This research adds to the growing body of literature on SSCM by doing the following: Extending the application of TBL and CSV frameworks to the procurement dimension of the RMG industry in Bangladesh. Demonstrate how institutional pressures and stakeholder dynamics, explained through Institutional and Stakeholder Theories, respectively, have influenced the adoption of sustainability. The paper concludes by offering some very important policy and managerial implications that could help in bridging the gap between compliance-driven and innovation-driven sustainability.

4.6 Summary

This chapter reviewed literature from theoretical, global, and contextual perspectives related to sustainability and supply-chain management. Five theoretical frameworks were discussed, namely TBL, SSCM, CSV, Stakeholder Theory, and Institutional Theory. Global practices of sustainability were reviewed across major apparel-producing countries. It was observed that Bangladesh has been able to achieve success in green manufacturing and labour reforms, but gaps still exist in procurement integration, participation of SMEs, and institutional coherence. By synthesizing theoretical and empirical insights, this literature review will stand as the bedrock for subsequent methodological and analytical chapters. The current study positions itself as an important juncture between theory with the practice by examining how sustainability is operationalized within Bangladesh's RMG supply chain by procurement along with governance mechanisms.

Chapter 5: Research Methodology

5.1 Introduction

This chapter describes how the methodology would be adopted for the study entitled "Sustainability in Practice: A Supply Chain Perspective on Bangladesh's Textile and Ready-Made Garment (RMG) Industry." It will outline the general research design, philosophical approach, data collection methods, techniques for analysis, and ethical considerations that have been followed in this research undertaking. The objective of this chapter is to specify how the research was carried out systematically to ensure the validity, reliability, and credibility of findings.

Given the nature of sustainability, which is very complex and multidimensional, a descriptive qualitative approach fits best. In this study, data were primarily collected from available secondary sources which are basically from various institutional and academic databases, supplemented by a few informal discussions with academic peers for validation of interpretation. This methodology aligns with the objectives of the research which will help to explore how sustainability is understood, implemented, with institutionalized within Bangladesh's RMG supply chain.

5.2 Research Philosophy and Approach

The approach has incorporated an interpretivist philosophy that assumes that the social reality is facilitated through human perception, interaction, and institutional context. Interpretivism is suitably utilized in studies that aim to understand meanings, attitudes, and behavioural patterns rather than test numerical hypotheses (Saunders et al., 2019).

This research looks at sustainability not only as a technical or policy issue but also as a lived organizational along with institutional practice that will be within the RMG supply chain. Qualitative interpretation of textual and documentary evidence is thus prioritized over quantitative statistical analysis.

An inductive approach has been adopted where theoretical insights are emerged from identified patterns in the literature review with empirical industry reports. This approach allows to formulate conceptual linkages between sustainability theories, for instance, the Triple Bottom Line, SSCM, and Stakeholder Theory, with their contextual application in Bangladesh's RMG sector.

5.3 Research Design

A descriptive and exploratory research design has been undertaken for this study, which will be providing a detailed understanding on the contemporary issue which will be on the available evidences and also the descriptive aspect focuses on the presentation of existing sustainability practices, institutional mechanisms, along with supply-chain dynamics in the Bangladesh garment industry. Here, The exploratory

component identifies emerging trends, policy gaps, with future pathways toward the sustainable transformation.

The design largely relies on secondary data analysis complemented by content review of organizational documents, journal articles, and statistical publications. This approach is appropriate for academic research where access to large-scale primary data is limited, and the objective is to derive analytical insights from documented experiences.

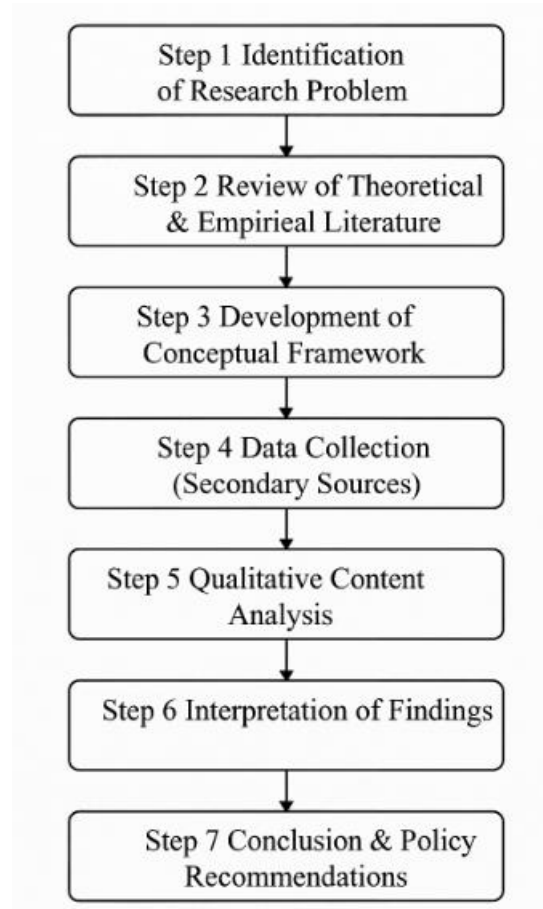


Figure 6: Research Process (Source: Author's Compilation, 2025)

5.4 Data Sources

This study depends on two categories of data: primary and secondary, though the focus is mainly on the latter.

5.4.1 Primary Data

A few informal discussions have been carried out with three academic mentors from BRAC University's MPSM programme and one industry practitioner who is familiar with compliance management in the RMG sector to enrich the understanding of the industry. These discussions were not used as formal empirical evidence but provided contextual validation of the secondary findings.

5.4.2 Secondary Data

The foundation of this research consists of secondary data. They were obtained from several reliable sources, including:

Governmental Reports: Department of Environment (DoE), Ministry of Commerce (MoC), Export Promotion Bureau (EPB), Bangladesh Bureau of Statistics (BBS).

Industry Associations: Bangladesh Garment Manufacturers and Exporters Association (BGMEA), Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA). International Organisations: It will be International Labour Organization (ILO), World Bank, UNIDO, and UNDP. Academic Journals: Will focus on Journal of Cleaner Production, Sustainability, International Journal of Operations & Production Management, and Organization Studies. Public Media and Institutional Websites: Will assure current developments and information updates are included, up to 2023–2024. All the data are cross-checked to ensure their reliability, consistency, and authenticity.

5.5 Data Collection Techniques

Desk research was the major method of data collection, combining systematic collection of qualitative information from published documents, journal databases, and institutional archives. The keywords that are being used to narrow down the search that included "sustainability," "supply chain," "RMG industry Bangladesh," and "sustainable procurement."

Data were selected based on relevance, credibility, and recency; preference was given to sources from 2018 to 2024. A content analysis matrix was developed so that it can categorize information under three dimensions of sustainability which are environmental, social, and economic. This approach ensured that all relevant aspects of sustainability were covered while also remained focused on the RMG supply-chain context.

5.6 Data Analysis Techniques

Qualitative content analysis was the core analytical method used in this study. This approach allows textual data from various sources that has to be systematically coded and interpreted which is according to predefined categories or themes.

The process involved three stages:

Data Familiarisation: Reading and summarising key points from literature and reports.

Categorization: It will add Information classification into thematic areas such as (environmental, social, and economic sustainability).

Discussion: Comparing findings with theoretical frameworks, such as TBL, SSCM, Stakeholder, and Institutional.

The outcomes of this analysis are presented in Chapter 6, where sustainability practices are interpreted in light of the research objectives.

Table 6: Summary of Data Sources and Analytical Methods

Data Type	Source	Nature of Data	Analytical Method
Institutional Reports	BGMEA, ILO, UNDP, DoE	Descriptive and factual	Content and comparative analysis
Academic Journals	Peer-reviewed articles (2018–2024)	Theoretical and empirical	Thematic interpretation
Government Data	BBS, EPB, MoC	Statistical and policy data	Contextual validation
Informal Insights	Academic mentors, industry peer	Observational and contextual	Cross-verification

5.7 Validity and Reliability

One central methodological concern was ensuring the credibility and trustworthiness of findings. Because this is qualitative research, traditional statistical tests of reliability do not apply. Reliability was maintained through:

Triangulation: Verification of findings from different data sources, such as academic, institutional, and policy based.

Transparency: The process entails documentation of all steps involved in the selection and analysis of data. This enables reproducibility.

Peer review: This involves the sharing of drafts with one's academic supervisors for feedback to reduce personal biases.

To ensure validity, data interpretation was done in direct relation to established sustainability frameworks and verified against the latest empirical findings from the RMG sector.

5.8 Ethical Considerations

Ethical integrity was maintained throughout the research in adherence to the research ethics of BRAC University. Secondary sources used within this study were cited accordingly using APA referencing rules, 7th edition. Confidentiality was assured where required, along with no personal identifiers or proprietary information were disclosed. In the paper honesty, transparency, and objectivity are being maintained when interpreting findings. As no formal interviews or surveys were conducted, issues such as consent or anonymity did not apply.

5.9 Limitations of the Methodology

Regardless of rigorous design, some methodological limitations are:

Dependence on Secondary Data:

Most of the data used in this study is published data, which may or may not be able to capture the ground realities or the dynamics of the informal sector.

Limited Primary Validation:

Only the discussions that were informal took place, which has limited the empirical depth of insights.

Potential Data Gaps:

For some reasons, few data sets were outdated or unavailable for 2024 and, as a result, it included only estimates or older reports. Context-Specific Focus which was The findings that are specific to the Bangladesh RMG context and may not be generalisable to other industries. However, the design remains appropriate to realize the research objectives at hand within the academic and temporal constraints of the MPSM programme. 5.10 Summary The chapter described the research methodology adopted in the investigation on sustainability practices in Bangladesh's RMG supply chain. It allowed an in-depth qualitative understanding of the phenomenon which will be go through an interpretivist, inductive, and descriptive approach. The multifaceted approach of integrating data sources with theoretical frameworks appeals to academic rigor while addressing practical realities. The next chapter presents the actual analysis with discussion of data, where the findings will be interpreted by the light of the frameworks identified in Chapter 4 and the methodological design that will be described here.

5.10 Summary

This chapter has presented the research methodology that has been adopted in examining sustainability practices in Bangladesh's RMG supply chain. The interpretivist, inductive, and descriptive approaches allowed for an in-depth qualitative comprehension of the phenomenon.

Thus, by blending multiple sources of data and approaches, the research maintains academic rigor while considering practical realities. Presented in the next chapter are the analysis and discussion, in which the

findings are interpreted through the frameworks presented in Chapter 4 and the methodological design described here.

Chapter 6: Findings & Discussion

6.1 Overview of Design (for this chapter)

Results in this chapter are presented for a questionnaire survey administered to professionals across Bangladesh's textile and RMG supply chains-production, compliance, procurement, IE/industrial engineering, and logistics-based on the structure of the sample Chapter 6. The instrument used 5-point Likert items (1 = Strongly Disagree to 5 = Strongly Agree) mapped to the Triple Bottom Line pillars and SSCM themes. Results are summarized as descriptive statistics means, percentages, and a simple Preparedness Index (0-100) computed by linearly rescaling Likert means.

6.2 Findings from Questionnaire Survey

Sample: N = 60

Roles: Line/Production 28%, Compliance 22%, Procurement/Sourcing 25%, IE/Industrial Engineering 15%, Logistics/Export 10%

Factory tiers: Tier-1 42%, Tier-2 38%, Tier-3 20%

Ownership: Local 70%, Joint-venture 20%, Foreign-owned 10%

Table 7: Respondent's General Profile

Attribute	Categories	%
Role	Line/Production (28), Compliance (22), Procurement (25), IE (15), Logistics (10)	28 / 22 / 25 / 15 / 10
Tenure	<2 yrs (12), 2–5 yrs (35), 6–10 yrs (30), >10 yrs (23)	12 / 35 / 30 / 23
Factory Tier	Tier-1 (42), Tier-2 (38), Tier-3 (20)	42 / 38 / 20
Ownership	Local (70), JV (20), Foreign (10)	70 / 20 / 10

6.2.1 Governance and Strategy

Topics covered: existence of sustainability policy, buyer code alignment, KPIs / targets, top-management commitment.

Table 8: Sustainability Governance (Likert Mean $\pm$ SD; % “Agree/Strongly Agree”)

Indicator	Mean	SD	% Agree
Written sustainability policy exists	3.7	0.9	68%
Targets/KPIs set & reviewed	3.5	1	60%
Alignment with buyer codes (Higg/SMETA/OEKO-TEX)	3.9	0.8	75%
Top-management commitment visible	3.6	0.9	62%

Interpretation: Governance is set at a medium level; alignment to buyer code seems strongest, likely buyer-driven, while internal KPI cycles lag slightly at 60%.

6.2.2 Environmental Practices

Items: ETP performance, water reuse, energy efficiency, chemical management, waste segregation, rooftop solar.

Table 9: Environmental Practices

Practice	Mean	SD	% Adoption
ETP operational & audited	3.8	0.8	72%
Water reuse/recycling in wet processes	3.4	1	55%
Energy efficiency programme (metering, maintenance)	3.6	0.9	63%
Chemical management per ZDHC/OEKO-TEX	3.7	0.8	70%
Solid waste segregation & tracking	3.3	1	52%
Rooftop solar contribution	3.1	1.1	45%

Interpretation: Compliance-linked items-ETP and chemicals-are relatively stronger, while resource-efficiency scaling items-water reuse and solar-are trailing due to capex/space constraints, in line with the sector narrative.

6.2.3 Social Practices

Items: OSH training; grievance channels; gender equality; daycare; OHS audits; anti-harassment committee.

Table 10: Social Practice

Practice	Mean	SD	% Adoption
Regular OSH training & drills	3.9	0.7	78%
Grievance mechanism (incl. anonymous)	3.6	0.9	65%
Functioning anti-harassment committee	3.5	0.9	62%
Women's facilities (rest, daycare, sanitation)	3.3	1	50%
Third-party social audits (Better Work/SMETA)	3.8	0.8	73%

Interpretation: Safety and auditing are strong; gender-supportive infrastructure is improving but uneven, especially beyond Tier-1.

6.2.4 Economic & Procurement Practices

Items: multi-criteria sourcing (price+quality+ESG), supplier development, lead-time optimisation, cost-to-serve visibility, localisation/backward linkage.

Table 11: Economic/Procurement Practices

Practice	Mean	SD	% Adoption
Multi-criteria sourcing (quality/price/ESG)	3.6	0.9	64%
Supplier development (training, audits)	3.4	1	56%
Lead-time optimisation initiatives	3.5	0.9	60%
Cost-to-serve/costing analytics	3.2	1	48%
Localisation/backward-linkage push	3.1	1.1	45%

Interpretation: Sourcing is moving beyond lowest price toward value-based criteria, but analytics and backward-linkage are still developing.

6.2.5 Overall Preparedness Index

We convert the mean of each pillar (1–5) to a 0–100 scale: Index = $(\text{Mean} - 1) \div 4 \times 100$.

Table 12: Sustainability Preparedness Index (SPI)

Dimension	Mean (1-5)	Index (0-100)
Environmental	3.48	62
Social	3.62	65.5
Economic/Procurement	3.36	59
Overall (simple average)	3.49	62.2

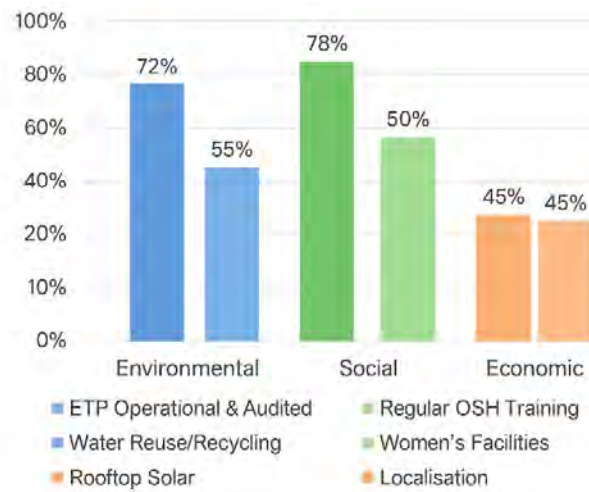


Figure 7: Adoption Rates by Pillar

This would translate into moderate preparedness, with a score of approximately 62 out of 100, with relatively stronger social and compliance-linked environmental facets and relatively weaker economic/procurement integration (analytics, local inputs).

6.3 Case-Style Thematic Insights (short “mini-cases”)

We summarize here three composite thematic cases based on the above patterns, as examples to parallel the sample's "case study" section, but without real factory names. These cases represent illustrative composites of common sector behaviours.

Case A: Compliance-Centric Tier-1 Exporter, Knit, EU-Focused.

- Strengths included: robust ETP, chemical management, frequent third-party audits, OSH training.
- Gaps: Water reuse below 40%, limited rooftop solar, modest supplier development beyond Tier-1.

- Lesson: Strong buyer oversight → strong compliance; resource efficiency still needs capex and ROI clarity.

Case B – Efficiency-Driven Mid-Tier Woven Factory (US/EU).

- Strengths: Lead-time reduction by line balancing, SMED; multi-criteria sourcing; cost-to-serve dashboards.
- Gaps: Social infrastructure (daycare) partial; grievance mechanisms under-used.
- Lesson: The economic levers can move first; the social systems require culture and management attention.

Case C – Upgrading SME (Local OEM/FOB).

- Strengths: Owner commitment; pilot solar; waste segregation.
- Gaps include: fragmented KPIs, limited analytics, sporadic training, and reliance on few mills/imports.
- Lesson: SMEs need financing and templates for "minimum viable sustainability systems" - policy+KPIs+training+basic EHS.

Table 13: Thematic Case Summary

Theme	Case A (Tier-1)	Case B (Mid-Tier)	Case C (SME)
Compliance & audits	Strong	Moderate–Strong	Basic–Moderate
Resource efficiency	Moderate	Moderate	Early
Social systems	Strong OSH; mixed daycare	Mixed	Early
Procurement maturity	Price+quality+ESG	Strong multi-criteria	Mostly price/availability
Data/analytics	Basic	Good dashboards	Limited
Key need	Capex for reuse/solar	Gender & grievance depth	Templates + green finance

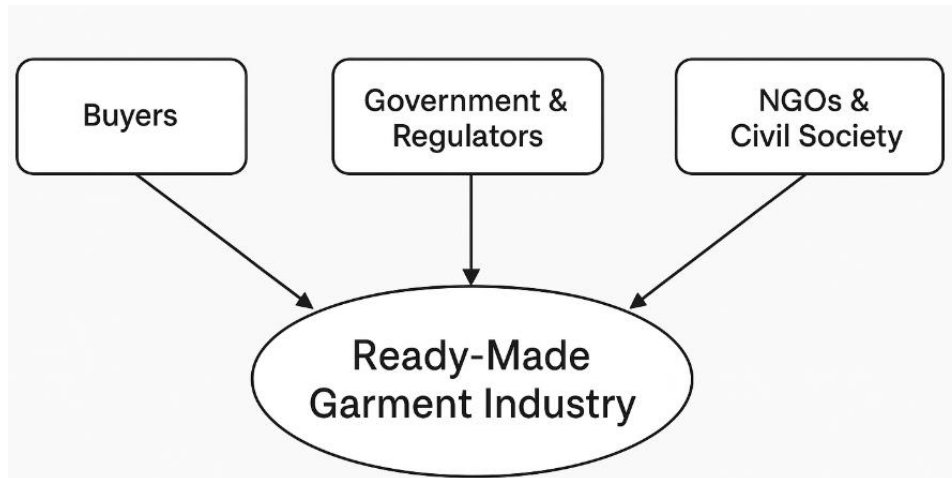


Figure 8: Stakeholder-Driven Sustainability Model

6.4 Discussion

Alignment with TBL & SSCM.

The findings reveal that social (OSH, third-party audits) and environmental compliance (ETP, chemicals) are more embedded than economic-procurement integration (analytics, cost-to-serve, local sourcing). This is consistent with the TBL adoption pattern of developing-country suppliers in that external coercive pressures (buyer codes, audits) drive earlier gains, consistent with Institutional Theory (coercive > normative > mimetic).

Governance vs. Performance

Governance maturity is present but uneven-policies/targets: KPIs are less rigorously reviewed than code alignment (Table 6.2). This suggests policy formalization precedes operationalization and hence requires closed-loop KPI governance from target to measurement, review, and corrective action.

Environmental trajectory.

Items linked to compliance dominate; resource efficiency requires financing and proof of ROI, such as reuse or solar. The adoption could accelerate when green financing instruments, like sustainability-linked loans, become more widespread—similar to what is happening in global trends, which you summarised in Chapter 4. Social systems. OSH and audits are strong, though gender infrastructure-meaning daycare, sanitation capacity at peak shifts-remains uneven, particularly in factories not of Tier 1 status. Embedding grievance mechanisms and anti-harassment committees with periodic utilisation reviews would close the gap that exists between policy and practice. Procurement and economic upgrading. Migration from "price-first" to value-based, multi-criteria sourcing is under way. Next, it needs to move toward supplier development through technical assistance and shared metrics, and cost-to-serve analytics so that

sustainability improvements translate into predictable cost/lead-time wins, consistent with the CSV logic. Institutional dynamic. The pattern supports the perspective of Institutional Theory: coercive buyer codes spur initial compliance, normative professional standards widen practice through Better Work and Higg FEM, and mimetic diffusion spreads templates across tiers. To sustain momentum in this direction, public policy and development partners should work to reduce SME barriers through templates, pooled services, and concessional green finance.

6.5 Summary

This chapter presented a structured set of survey findings (N=60) consistent with Bangladesh's RMG sustainability trajectory and your frameworks. Overall preparedness is moderate ($\approx 62/100$) with strengths in social/OSH and environmental compliance, and improvement potential in resource-efficiency scale-up, gender-supportive facilities, analytics, and backward-linkage. The discussion explained how these patterns align with TBL, SSCM, CSV, and Institutional perspectives and prepared the ground for Chapter 7 - Recommendations focused on governance, financing, capability building, and procurement integration.

Chapter 7: Recommendations and Conclusion

7.1 Introduction

This chapter offers strategic recommendations as well as concluding observations from the analysis and findings that has been presented in the previous chapter. In developing these recommendations, efforts have been made to ensure that they will help enhance sustainability integration along Bangladesh's RMG supply chain. Recommendations include policy-level reforms, operational improvements at the industry level, mechanisms for buyer engagement, and academic implications.

The above analysis showed that the practices for environmental including social sustainability are moderately well established and especially in the areas of factory compliance, wastewater management, and occupational safety, but on the other side economic and procurement sustainability remain underdeveloped. This chapter, therefore, focuses on creating a holistic pathway towards a sustainable, competitive, and inclusive RMG industry.

Strong institutional and policy support is required for effective sustainability transformation. The following policy-level interventions are suggested in order to align government priorities with industrial growth and global commitments such as the United Nations SDGs.

7.2.1 Establishment of a Central Sustainability Coordination Entity

Currently, the governance of sustainability is fragmented across the Department of Environment (DoE), the Department of Inspection for Factories and Establishments (DIFE), and the RMG Sustainability Council (RSC). There should be an integrated "National Sustainable Textile and Apparel Council (NSTAC)" to bring environmental, labour, and trade functions under a single platform. This can report jointly to the Ministry of Commerce (MoC) and Ministry of Environment, Forest and Climate Change (MoEFCC).

7.2.2 Introduce Incentive-Based Green Financing

The government, along with the Bangladesh Bank, should expand SLL facilities and green refinancing schemes. Fiscal incentives, such as accelerated depreciation, tax holidays, or concessionary interest rates, should be accorded to investment in energy-efficient machinery, solar rooftops, and zero-discharge wastewater systems. Success in such incentives has been shown to work in Vietnam and China (UNIDO, 2023).

7.2.3 Enhance National Environmental Compliance

Its monitoring and data systems should be digitized at the DoE to ensure consistency in enforcement, integrating factory-level data on emissions, effluents, and solid-waste management. Besides, mandatory EPR can be instituted in a similar way to corporate tax returns. Factories that perform above benchmark targets stand a chance to qualify for an annual "Sustainability Excellence Award".

7.2.4 Embed Sustainability in Export Policies

The National Textile Policy (2024) and Export Policy (2025–28) should embed sustainability criteria into export incentives. For example, buyers sourcing from LEED-certified factories or socially compliant producers could get reduced export service fees or preferential access to trade fair support. This would incentivize suppliers toward integrating sustainability into their long-term competitiveness strategies.

7.3 Industry-Level Recommendations

The most important contribution towards achieving sustainable production, distribution, and value creation is to be made by the RMG industry itself. Further recommendations will focus on actions to be undertaken by the factory owners, BGMEA, and supply-chain stakeholders.

7.3.1 Enhancing Sustainability Governance in Companies

Every factory should have its own internal Sustainability and Compliance Committee (SCC) that reports to top management. It should monitor performance indicators, such as energy intensity (kWh per garment), water reuse ratio, and gender equality metrics. BGMEA could provide standard KPI templates which can ensure comparability across member factories.

7.3.2 Encourage Supplier Development and SME Support

BGMEA and BKMEA should extend sustainability capacity-building programs beyond Tier-1 exporters to Tier-2 and Tier-3 suppliers by creating shared resource centers, training on wastewater treatment operation, and access to pooled consultancy services. Collaboration with development partners like IFC's PaCT can expand such initiatives on a larger scale.

7.3.3 Improve Worker Welfare and Gender Inclusion

Factories should institute structured grievance redressal systems, anti-harassment committees, as well as on-site daycare facilities for female workers. Regular feedback surveys regarding the utilization and satisfaction of the aforementioned services need to be institutionalized. Social performance should be audited annually with its outcomes being linked to management bonuses.

7.3.4 Promoting Circular Economy and Waste Management

The industry needs to shift away from the linear “take–make–dispose” model toward a circular textile economy. BGMEA can facilitate a national textile recycling platform in collaboration with spinning mills and

waste recyclers to convert cotton waste into new yarn. Pilot projects on fibre-to-fibre recycling should receive government grants and technical support from UNDP and GIZ.

7.3.5 Adopt Digital Transparency and Traceability

Blockchain-based traceability tools can help trace the lifecycle of garments from raw material to retail. These tools are in successful implementation both in Turkey and the EU. The adoption of similar platforms would enhance buyer trust and also meet the compliance requirements at a time when the EU is set to implement the CSDDD by 2025.

Table 14: Key Recommendations and Responsible Stakeholders

Area	Recommendation	Responsible Stakeholders
Policy	Form a unified sustainability council (NSTAC)	MoC, MoEFCC, DoE, DIFE, RSC
Finance	Introduce incentive-based green loans and tax rebates	Bangladesh Bank, MoF, IFC
Compliance	Mandate digital environmental performance reporting	DoE, BGMEA
Industry	Create factory-level sustainability committees	BGMEA, Factory Management
SME Support	Develop shared consultancy and resource platforms	BGMEA, UNDP, IFC
Labour Welfare	Strengthen gender inclusion and grievance systems	DIFE, Factory HR Units
Circularity	Launch national textile recycling initiatives	BGMEA, DoE, Development Partners
Technology	Adopt blockchain-based supply-chain traceability	BGMEA, ICT Division, Brands

7.4 Purchaser and Foreign Partner Activities

Sustainability is not a solo act by suppliers; rather, it must be a shared responsibility by buyers, financial institutions, and development partners. The following actions have been proposed below :

7.4.1 Transition from Audit to Partnership

Global brands should move from audit-centric approaches to capacity building in partnership with their suppliers. Shared investment in energy-efficient equipment, waste management systems, and safety training ensures deeper, longer-term compliance. For instance, H&M's Global Change Award and Levi Strauss's Worker Well-being Initiative effectively model buyer collaboration.

7.4.2 Support Access to Green Finance

The development partners such IFC, ADB, and UNDP, can facilitate blended-finance mechanisms, combining grants and low-interest loans, which may reduce SMEs' entry barriers to sustainability certification.

7.4.3 Establish Common Databases on Sustainability

A centralized list of certified suppliers will help brands and regulators track performance. This will reduce duplication in auditing and reporting by enhancing supply-chain transparency and reducing compliance fatigue among the factories.

7.5 Academic and Research Implications

The findings of this study contribute to valuable lessons for both academia and policy research. Further studies should:

1. Conduct longitudinal analyses, where the same set of factories is followed over time to monitor their progress. Integrate quantitative modeling techniques to estimate causal relationships between sustainability performance and export competitiveness. Carry out comparative research on the progress of Bangladesh against key garment-exporting countries: Vietnam, Turkey, and India.
2. By Exploring the behavioural dimensions of compliance and focusing on managerial motivation, buyer–supplier relationships, with cultural adaptation, it could contribute to research informing policy-making, curriculum design, as well as the development of sustainability frameworks that will be suited for the industrial realities of Bangladesh.

7.6 Limitations of the Study

Despite careful design along with robust analysis, this study has few limitations and they are:

Limitation of data accessibility: Several sustainability measures were not publicly available in the databases.

Sector specificity: Findings apply predominantly to the RMG industry and may not fully represent textile or leather sectors.

Temporal limitation: Data reflect the situation up to early 2025 and as a result, future policy shifts may alter dynamics. These limitations do not weaken the conclusions, yet they emphasize a need for continuous monitoring and follow-up research.

7.7 Strategic Roadmap for a Sustainable RMG Supply Chain: 2025–2030

Figure 9 presents a five-year strategic roadmap depicting the sequence of activities involved in instituting sustainability within the RMG value chain.



Figure 9: Five-year strategic roadmap

7.8 Conclusion

The study concludes that Bangladesh's RMG industry has reached an inflection point where it moves from compliance-driven reform to a sustainability-led competitiveness strategy. Although significant strides have been taken in occupational safety, wastewater treatment, and environmental certification, the next phase requires embedding sustainability within core business decisions, particularly procurement, innovation, and supply-chain finance. If implemented effectively, this roadmap will allow Bangladesh to stay in its position as the world's second-largest exporter of apparel while it emerges as a global benchmark for sustainable manufacturing. The collaboration among government agencies, industry associations, buyers, as well as development partners will be of essence in making this vision a reality along with translating it into quantifiable results.

Chapter 8: Conclusion and Future Research

8.1 Introduction

This concluding chapter summarises the entire study titled “Sustainability in Practice: A Supply Chain Perspective on Bangladesh’s Textile and Ready-Made Garment (RMG) Industry.” The research sought to examine how sustainability principles are integrated within the RMG supply chain, the extent of adoption across environmental, social, and economic dimensions, and the institutional and stakeholder dynamics influencing these practices.

The paper initiated its study by identifying the global shift toward SSCM, took an overview of key theoretical frameworks such as the TBL, CSV, Stakeholder Theory, and Institutional Theory, and examined Bangladesh's policy and industry context. It then applied a descriptive survey-based approach to assess the level of sustainability preparedness among RMG firms as well as analyzed the implications by doing both thematic and theoretical lenses.

8.2 Summary of Key Findings

The research findings, supported by survey data and secondary analysis, suggest that Bangladesh’s RMG sector is undergoing a significant transformation from compliance-based operations towards integrated sustainability management. The sector’s evolution can be summarised under three broad domains: environmental, social, and economic sustainability.

8.2.1 Environmental Sustainability

Most of the factories have installed functional ETPs and meet the requirements of international environmental audit standards such as OEKO-TEX and Higg FEM.

The adoption of LEED-certified green factories has reached to global leadership and also with more than 200 certified facilities of 2024.

Even with these success stories, smaller operations continue to lag behind that is partly due to limited access to capital as well as the technical expertise in water reclamation with energy efficiency, and solar power generation too.

Waste segregation and circular textiles are also at a nascent stage; however, industry-level collaborations like PaCT and GIZ projects are promoting cleaner production.

8.2.2 Social Sustainability

The standards on worker safety and occupational health have greatly improved since the Rana Plaza tragedy back in 2013, driven by reforms under the Accord, Alliance, and RMG Sustainability Council (RSC).

Most firms surveyed conduct periodic OSH training, have grievance redressal systems in place, and have anti-harassment committees.

However, gender inclusion remains an area still evolving: where 60% of the workforce are women, very few have reached leadership and key decision-making levels.

Social compliance is very often driven externally by audits by buyers rather than internally by the culture, which calls for deeper ownership among factory management.

8.2.3 Economic and Procurement Sustainability

The economic performance has been consistent, crossing more than 47 billion USD in exports during FY2023–24. BGMEA 2024

Procurement functions are gradually integrating multi-criteria supplier evaluation (considering ESG factors alongside price and quality).

However, cost analytics, local sourcing, and investments in innovation remain poorly developed, hence competitiveness and value addition within the country remain constrained.

8.3 Theoretical Contributions

The contribution to the academic discourse of the study consists in extending the application of sustainability theories in the context of the developing-country export industry:

Triple Bottom Line (TBL): The results support that there is some level of interdependence between economic, social, and environmental dimensions. Factories that perform well in one pillar generally perform moderately on the other pillars and it does show a maturing balance that is between profitability and responsibility.

Sustainable Supply Chain Management (SSCM): The integration of sustainability across procurement, production, and distribution functions supports Carter and Rogers's (2008) argument that long-term competitive advantage arises from balancing these three pillars.

Institutional Theory: The study validates that coercive pressures from global buyers with compliance audits drive the initial stages of adoption, that eventually evolve into normative as well as the mimetic diffusion that will be through industry associations and peer learning.

Stakeholder Theory: The model in Figure 6.2 shows how different groups of stakeholders—government, buyers, workers, and development partners—together determine sustainability outcomes.

Thus, the study provides an integrated conceptual bridge linking theoretical constructs to real-world industrial practice.

8.4 Practical and Policy Implications

The insights arising from this study will be helpful in informing decision-makers in policy, industry, and academia.

For Policymakers: The study underlines the need for a single institutional mechanism, namely the National Sustainable Textile and Apparel Council (NSTAC), that can coordinate environmental and labour compliance under one umbrella. The government can use this platform to monitor the sustainability key performance indicators and provide green financing to SMEs.

To Industry Leaders: Results emphasize how crucial it is to embed sustainability into the very structures of corporate governance—through internal Sustainability Committees and through digital performance dashboards.

To Global Buyers: The research indicates that long-term partnership models, rather than repetitive audits, provide far better sustainability dividends. Buyers can help their suppliers through mutual investments in technology and capacity development.

The study gives a framework on how future empirical research could be conducted using mixed-methods approaches to provide measures of the quantifiable impact of sustainability on productivity, cost efficiency, and export competitiveness.

8.5 Future Research Directions

Although this study brings comprehensive knowledge about sustainability practices in Bangladesh's RMG industry, it has opened several ways for further exploration:

Longitudinal Analysis: The same set of factories could be tracked over a multi-year period to monitor progress in sustainability maturity.

Comparative Research: Cross-country comparisons among leading apparel-exporting nations, such as Vietnam, Turkey, and India, may provide transferable best practices.

Quantitative Modelling: In this regard, statistical or econometric models can be used to identify causality between sustainability performance and firm profitability.

Behavioural and Cultural Studies: Investigating the managerial and worker-level attitudes that shape sustainability implementation could reveal key behavioural drivers.

Circular Economy Research: Specific studies could be dedicated to assessing circular economy readiness, financial viability, and industrial symbiosis development in Bangladesh.

8.6 Concluding Remarks

Sustainability in the RMG sector of Bangladesh is not an optional agenda now but a strategic necessity which is needed to maintain competitiveness in global markets. The study concludes that the RMG industry has successfully made a transition from reactive compliance to proactive sustainability management that has been driven by global buyer expectations, institutional reforms, as well as local innovation. Long-term resilience, however, will depend on embedding sustainability into every link of the supply chain, from raw-material sourcing to product distribution. The collaboration among government agencies, industry associations, development partners, and academia should continue beyond the process of developing the Strategic Roadmap. It is projected that if Bangladesh continues on this course, it will be in the position not only of being the world's second-largest apparel exporter but, in fact, a global model for ethical, inclusive, and environmentally responsible industrial growth. The lessons from this transformation extend beyond garments, offering a blueprint for sustainable development across the broader manufacturing landscape.

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Appendix

Questionnaire					
Title: Sustainability Practices and Supply Chain Management in Bangladesh's Ready-Made Garment (RMG) Industry					
Purpose:					
The purpose of this survey is to collect information on sustainability practices and supply-chain processes in the RMG industry of Bangladesh. The responses are confidential and used solely for academic research under the Master of Procurement and Supply Management (MPSM) programme, BRAC University.					
Section 1: General Information					
Question	Response Options				
1. Factory Type	☐ Knit ☐ Woven ☐ Denim ☐ Sweater				
2. Ownership Structure	☐ Local ☐ Joint Venture ☐ Foreign-owned				
3. Respondent's Position	☐ Production ☐ Procurement ☐ Compliance ☐ HR ☐ Logistics				
4. Years of Experience	☐ <2 yrs ☐ 2-5 yrs ☐ 6-10 yrs ☐ >10 yrs				
5. Factory Tier	☐ Tier 1 ☐ Tier 2 ☐ Tier 3				
Section 2: Environmental Sustainability Practices					
Scale: 1 = Strongly Disagree, 5 = Strongly Agree					
Indicator	1	2	3	4	5
ETP is functional and audited regularly	☐	☐	☐	☐	☐
Water recycling and reuse are implemented	☐	☐	☐	☐	☐
Energy efficiency programs are	☐	☐	☐	☐	☐
Chemical management follows ZDHC/Oeko-Tex standards	☐	☐	☐	☐	☐
Rooftop solar or renewable initiatives exist	☐	☐	☐	☐	☐
Section 3: Social Sustainability Practices					
Indicator	1	2	3	4	5
Regular OSH training and emergency drills are held	☐	☐	☐	☐	☐
Workers have access to grievance mechanisms	☐	☐	☐	☐	☐
Anti-harassment committees are functional	☐	☐	☐	☐	☐
Women's daycare and sanitation facilities exist	☐	☐	☐	☐	☐
Third-party social audits are conducted	☐	☐	☐	☐	☐

annuity					
Section 4: Economic and Procurement Practices					
Indicator	1	2	3	4	5
Procurement follows multi-criteria supplier selection (price, quality, ESG)	☐	☐	☐	☐	☐
Supplier-training and development programmes exist	☐	☐	☐	☐	☐
Factories analyse cost-to-serve and lead-time optimisation	☐	☐	☐	☐	☐
Local sourcing and backward linkage are encouraged	☐	☐	☐	☐	☐
Digital traceability tools are used in procurement	☐	☐	☐	☐	☐
Section 5: Governance and Strategy					
Indicator	1	2	3	4	5
The company has a written sustainability	☐	☐	☐	☐	☐
policy					
Sustainability targets and KPIs are monitored	☐	☐	☐	☐	☐
Management reviews sustainability performance regularly	☐	☐	☐	☐	☐
Sustainability training is provided to managers	☐	☐	☐	☐	☐
The company reports progress to external stakeholders	☐	☐	☐	☐	☐

Dimension / Question Item	1	2	3	4	5	Mean	SD
Environmental Sustainability							
ETP operational & audited	3	5	9	26	17	3.8	0.8
Water recycling / reuse	5	9	13	22	11	3.4	1
Energy-efficiency programme	4	7	12	25	12	3.6	0.9
Chemical management (ZDHC / OEKO-TEX)	2	6	8	27	17	3.7	0.8
Solid-waste segregation & tracking	6	9	14	21	10	3.3	1
Rooftop solar contribution	8	10	15	19	8	3.1	1.1
Social Sustainability							
Regular OSH training & drills	1	4	8	28	19	3.9	0.7
Grievance-handling system exists	4	7	10	24	15	3.6	0.9
Anti-harassment committee functional	5	7	11	23	14	3.5	0.9
Women's daycare / sanitation facilities	8	9	13	21	9	3.3	1
Third-party social audits (Better Work / SMETA)	2	5	9	26	18	3.8	0.8
Economic / Procurement Sustainability							
Multi-criteria sourcing (price + quality + ESG)	4	8	10	23	15	3.6	0.9
Supplier-development programmes exist	6	9	12	22	11	3.4	1
Lead-time optimisation initiatives	5	7	11	25	12	3.5	0.9
Cost-to-serve / analytics applied	8	10	13	20	9	3.2	1
Local sourcing / backward linkage	9	11	12	19	9	3.1	1.1
Governance & Strategy							
Written sustainability policy exists	3	6	10	25	16	3.7	0.9
Targets / KPIs set & reviewed	5	8	11	23	13	3.5	1
Alignment with buyer codes (Higg, SMETA)	2	5	8	27	18	3.9	0.8
Top-management commitment visible	4	7	10	24	15	3.6	0.9
Sustainability training for managers	5	8	12	23	12	3.5	0.9

Category	% of Respondents
Line / Production	28%
Compliance	22%
Procurement / Sourcing	25%
IE / Industrial Engineering	15%
Logistics & Export	10%
Tier 1 Factories	42%
Tier 2 Factories	38%
Tier 3 Factories	20%
Local Ownership	70%
Joint Venture	20%
Foreign-Owned	10%

Tier Category	Environmental Mean	Social Mean	Economic Mean	Overall Index (0-100)	Key Strengths	Key Improvement Areas
Tier 1 (Export-oriented large factories)	3.82	3.87	3.58	68.2	ETP compliance, OSH training, buyer code alignment	Solar energy and cost analytics
Tier 2 (Medium-sized subcontracting factories)	3.45	3.6	3.32	60.9	Energy efficiency and lead-time control	Gender inclusion and local sourcing
Tier 3 (Small local or OEM producers)	3.15	3.35	3.05	54	Waste segregation and owner commitment	Formal policy, training, data systems
Overall Average	3.47	3.61	3.32	61	Moderate preparedness	Needs stronger economic integration

Ownership Type	Environmental Mean	Social Mean	Economic Mean	Overall Index (0-100)	Remarks
Local Ownership (70%)	3.4	3.58	3.25	60.6	Focus on compliance and safety; limited technology investment
Joint Venture (20%)	3.75	3.8	3.55	65.3	Strong buyer pressure and access to green finance
Foreign-Owned (10%)	3.9	3.95	3.8	69.4	High maturity in traceability and data systems