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POLICY BRIEF
2026 (2)

Highlights

- Bangladesh faces increasing pressure to decarbonise its supply chains as access to the EU market depends on meeting newly evolved environmental compliance and sustainability requirements.
- Despite an ambitious emission reduction target set by Bangladesh in its NDC 3.0, greening supply chain is constrained by limited green financing schemes, technological gaps, weak regulatory enforcement, and inconsistent policies.
- Addressing these challenges requires a coherent industrial decarbonisation roadmap, stronger incentives for green investment, greater renewable energy deployment, targeted support for SMEs, and enhanced international cooperation through climate finance, technology transfer, and capacity-building initiatives.

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Greening Supply Chain

Balancing Export Competitiveness and Climate Commitments for Sustainable Development in Bangladesh

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1. Introduction

A supply chain is a system of interconnected entities that are involved in the flow of goods, services, and information from the raw material suppliers to the final consumer (Mentzer et al., 2011). Similarly, the green supply chain is a systematic approach which includes environmental considerations along the supply chain with the aim of minimising the resource consumption, pollution and environmental impacts. Modern approaches to green supply chain link three types of emissions, which can be separated into three scopes: direct operational emissions (Scope 1), indirect emissions from purchased energy (Scope 2), and value chain upstream and downstream emissions (Scope 3) (GHG Protocol, 2015). Multinational companies believe that the Scope 3 emissions are responsible for 70 - 90 per cent of their carbon footprint, (United Nations, 2015). Accordingly, responsibility to ensure compliance with green supply chain standards should not be considered as the obligation of the European buyers alone; instead, it must be understood as a shared responsibility extending across the entire global supply chains, including those in developing economies, particularly in South Asia, including Bangladesh.

Over the last couple of decades, a shift has occurred in environmental governance in global supply chain from voluntary codes of conduct to laws that are now binding. In 2015, for instance, the Paris Agreement was adopted, with a specific policy goal of supply chain decarbonisation (United Nations, 2015), which was a turning point. The European Union (EU) has been focusing on green supply chains, both in the corporate strategy and in the public space of international economic law, over the last couple of years. The introduction of the Corporate Sustainability Due Diligence Directive (CSDDD) is the most ambitious institutionalisation of the agenda so far. Climate policy is more embedded in new trade rules (Jones & Adam, 2023) which aim to shift the incentives for international trade and firms' production. Countries in South Asia have been benefiting from export-oriented manufacturing that has allowed them to be a part of labour-intensive low-cost manufacturing and success in joining in global value chains (Batool & Hiroyuki, 2025; Kumar et al., 2020; Erhan et al., 2019). Economies in South Asia are particularly vulnerable to market access fluctuations for their strong dependence on export-oriented manufacturing. One of the region's main markets for imports is the EU

and should any changes happen to their trade or regulation policy, it will have an instant effect on the export industry and development of the region.

In this context, Bangladesh's export sector must now meet new compliance requirements under the EU regulations. According to EPB (2023), readymade garment (RMG) industry exports 84.7 per cent of merchandise exports from the country. In 2024, 40 per cent of the country's exports of readymade garment products are exported to Europe (Khatun, 2025). In the coming days, Bangladesh may face multiple challenges including the CSDDD, Carbon Border Adjustment Mechanism (CBAM) and phasing out the preferential trade arrangement which will erode the tariff advantages and export competitiveness. Given that, the country's industrial supply chain and energy infrastructure remain underdeveloped and inadequate to meet the standards for implementation of these regulations, particularly in view of LDC graduation (European Commission, 2019). In this case, Bangladesh needs a substantial investment in cleaner production technologies, transparency in the supply chain, and building institutional capacities to meet the EU sustainability standards and deadlines set by the EU regulations (European Parliament and Council of the European Union, 2023). However, Bangladesh has limited fiscal capacity, low regulatory enforcement capacity, and high carbon intensity of the manufacturing industry, reducing its capacity to fulfil these requirements in the regulatory directives.

Against this backdrop, limited attention has been paid to examine how Bangladesh is responding to and adapting to this changing environment of regulation. The existing literature mainly focuses on either only the economic dimension of EU trade policy or the environmental dimension of the RMG sector individually and do not consider the policy, institutional or industrial changes needed to green supply chains (Rahman et al., 2025; Swazan & Das, 2025). To address this gap, this policy brief highlights the policy and institutional reforms required to integrate EU sustainability frameworks into Bangladesh's supply chains. It also explains how environmental compliance can be used to promote Bangladesh's sustainable development, rather than becoming a barrier to trade expansion.

The rest of the policy brief is structured as follows. Section 2 discusses the regulatory developments in the EU and evaluates the extent of exposure of South Asian countries, with a focus on export dependence as well as industrial emissions and the decreasing share of renewable energy in the region. Section 3 examines the Bangladesh emission reduction targets under the NDC 3.0, electricity generation mix, trend of current renewable energy use, and the consistency of the policy targets on energy in Bangladesh. Section 4 illustrates the structural challenges for greening supply chains in Bangladesh. Section 5 provides a set of recommendations based on analysis and finally Section 6 contains the concluding statements.

2. The Changing Global Trade and Environmental Landscape: Implications for South Asian Industrial Competitiveness

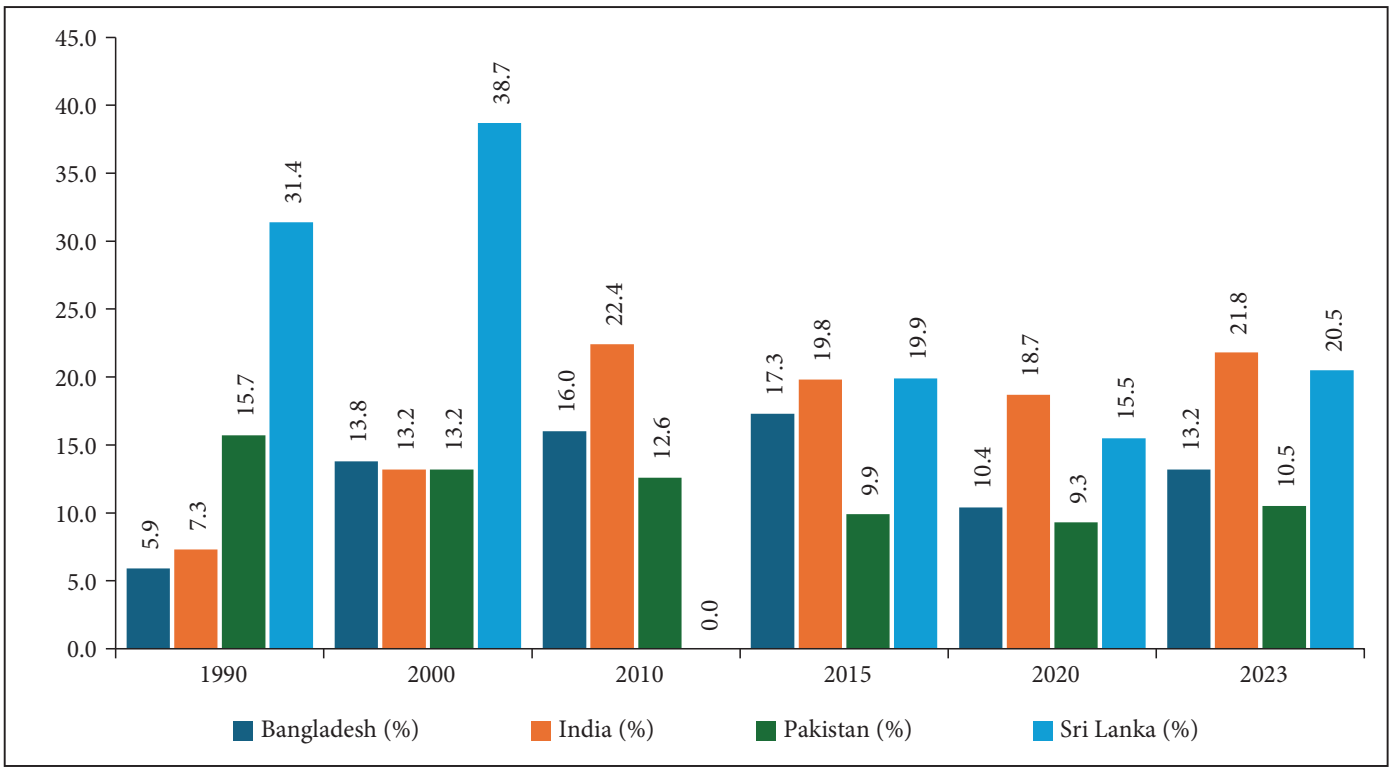
Over the past decades, export-led industrialisation contributed to economic growth and employment generation in South Asia. Growing industrialisation and urbanisation also increased use of fossil fuel creating a dependency on fossil fuel-based energy system, which ultimately resulted in an increased carbon footprint in the region. At the same time, evolving international environmental regulations such as the CBAM and CSDDD are introducing new environmental compliance requirements for businesses engaged in global trade. These developments are transforming environmental sustainability from a predominantly ecological concern into an increasingly important determinant of trade competitiveness and market access.

Against this backdrop, this section analyses four interrelated dimensions: the changing global trade and environmental regulatory landscape; South Asia's growing export-led industrialisation and employment trends; the rising carbon footprint of industrial activities; and the region's renewable energy gap. Together, these dimensions highlight the structural challenges facing South Asian economies in transitioning towards greener and more sustainable supply chains while maintaining their export competitiveness.

2.1 The Changing Global Trade and Environmental Landscape

The EU's CBAM is one of the most forward-looking changes in international trade dynamics in recent time. Similar to the EU Emissions Trading Scheme (ETS) which is applicable for domestic suppliers, CBAM will be imposed on domestic suppliers of carbon intensive products, including those operating outside the EU. CBAM will also be expected to have a similar impact on the carbon intensive product suppliers in the country compared to the EU ETS (European Parliament and Council of the European Union, 2023) which has affected carbon intensive product exporters from outside the EU. In the short-term, the export basket of Bangladesh (UN COMTRADE, 2024) is larger than the scope of CBAM, but in the long-term the scope of CBAM is much larger. The EU will expand the CBAM coverage in 2030 and by the time of the full CBAM coverage (2034) is expected to cover more than 50 per cent of its emissions. CBAM's total liabilities per all CBAM sectors could amount to EUR 22 billion by 2035 and more than 70 per cent of CBAM covered imports would be subject to effective levies of over 10 per cent of the import value (European Commission, 2019). It is also evident that this regulation has a certain direction: it is a sectoral policy, it will be part of the global trading system, and it will impose responsibility on the businesses for the carbon-intensive production (Centre for European Reform, 2024).

Figure 1: Exports of Goods and Services as a Percentage of GDP



Source: Authors' calculation based on data from World Development Indicators (2026).

2.2 South Asia's Growing Export-Led Industrialisation and Employment Trends

The South Asian nations have significantly become a part of the global value chains, especially in textiles, garments and agricultural processing over the last 30 years. Since the 1990s, export-led industrialisation has been the major factor in the economic growth and job creation of these regional economies, leading them to be integrated into the production pattern of their key import markets that now have increasingly stringent environmental compliance measures (Erhan et al., 2019; World Bank, 2026). The proportion of exports of goods and services to GDP has changed in four South Asian economies between 1990 and 2023, as shown in Figure 1.

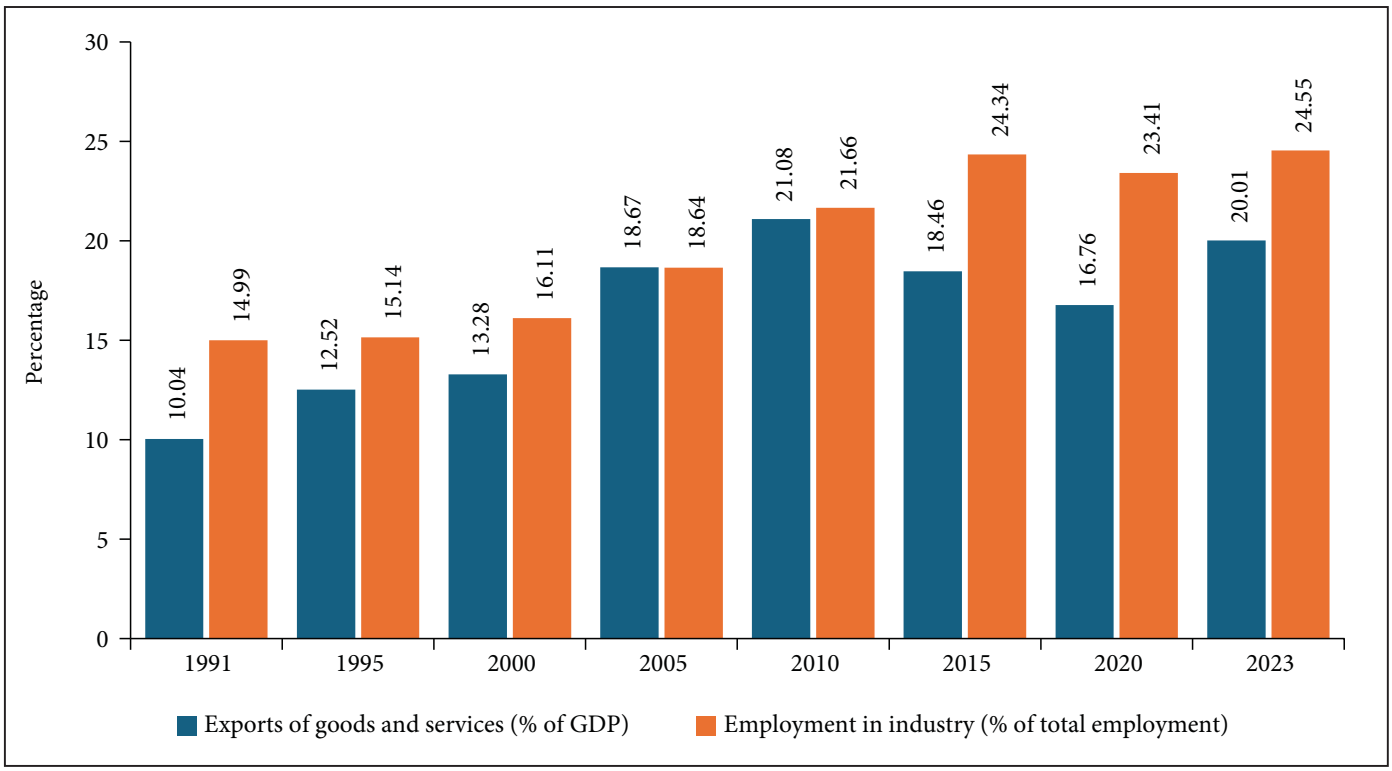
There is significant cross-country and over time variation in the data. In the early 1990s, Sri Lanka had the highest export intensity of 31 per cent, but the figure decreased significantly in the following years, which is attributable to the country's extended period of economic instability (World Bank, 2026). India exhibited a general increase from about 7 per cent in 1990 to around 22 per cent in 2023. On the other hand, Pakistan showed a slow rate of decline during the same time frame, which reflects its decreasing export competitiveness. Bangladesh, on the other side, experienced a slight but steady rise, from about 6 per cent in the 1990s to approximately 13 per cent in 2023, largely due to the growth of the RMG industry (FICCI Bangladesh, 2024; Export Promotion Bureau, 2023).

Besides, the contribution of export earning to GDP in South Asia increased to two-fold during 1991 to 2023 (Figure 2). In 1991, the share of exports of goods and services to GDP was 10.04 per cent. It increased to 21.08 per cent in 2010 and 20.01 in 2023. At the same time, share of employment in industry also increased over times. The share of total employment in industry was around 15 per cent in 1991. It increased to 21.66 per cent in 2010 and 24.55 per cent in 2023. This indicates that export earning industry is critical for economic growth and employment for South Asian countries.

2.3 CO_2 Emissions from Industrial Processes

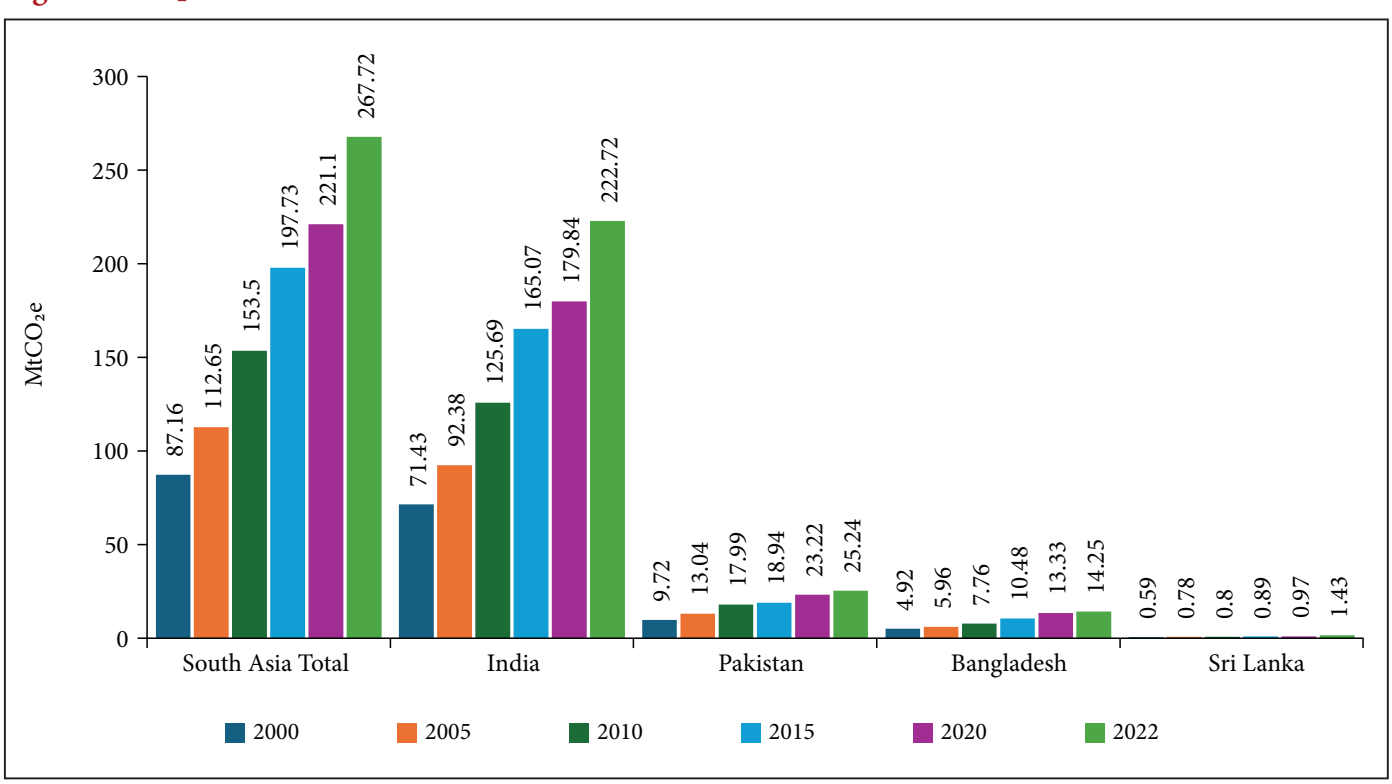
Industrial development across South Asia has been the engine of export-led economic growth. This industrial growth has also caused rising environmental costs. Historically, the region heavily depends on fossil fuel-based energy systems, and it faces challenges such as week environmental regulation, and limited adoption of resource-efficient production technologies (International Energy Agency, 2025). As a result, the environmental footprint has evolved from being primarily an ecological concern into an escalating economic challenge, particularly for major importing markets, which face growing pressure to invest in mitigating the environmental impacts of carbon-intensive industrial production. The figure 3 shows the trend of CO_2 emissions from industrial processes in four South Asian economies.

Figure 2: Trend of Export and Employment in Industry in South Asia



Source: Authors' calculation based on data from World Development Indicators (2026).

Figure 3: CO_2 Emissions from Industrial Processes in South Asia



Source: Authors' calculation based on data from World Development Indicators (2026).

Figure 3 shows a steady rise in CO_2 emissions from industry in the region over the last 20 years, and that all four countries have had a steady rise during this time. The industrial process emissions in Bangladesh have increased significantly in line with the rest of the region, as a result of rapid industrialisation. The data shows that India has the highest share of total final industrial energy consumption in the region at 41 per cent, Sri Lanka at 31 per cent and Bangladesh at 30 per cent (International Energy Agency, 2025). As the industries need higher amount of energy for production, the industrial sector has a significant and increasing CO2 impact, with high dependency on fossil fuels in the region.

Hence, a green supply chain transition is essential as environmental due diligence is now legally obligatory on EU Buyers. Suppliers, who fail to comply with these requirements, are under risk of significant commercial consequences, including restricted market access, loss of business opportunities, and reputational damage (European Parliament and Council of the European Union, 2023; Felbermayr et al., 2024).

2.4 The Renewable Energy Gap

Transforming the energy supply chain to clean and low carbon energy is one of the largest components in creating a green supply chain for the South Asian countries. This transition is becoming increasingly urgent as EU frameworks such as the CSDDD and the CBAM imposes to increase the use of renewable energy (Felbermayr et al., 2024; CDP, 2024; European Parliament and Council of the European Union, 2023). This connection has become increasingly acknowledged in several studies which show that carbon footprint reduction is directly related to green supply chain practices (Wang & Zhao, 2023; Alam et al., 2024). Therefore, the transition to low-carbon energy sources is a prerequisite for the compliance of the supply chain (European Commission, 2019). Despite the growing international trend of greater uptake of renewable energy, the proportion of renewables to final energy consumption has been gradually decreasing in South Asia since 1990. This reduction is not the result of a planned decarbonisation pathway; it is, rather, a continuous shift away from traditional biomass energy sources to fossil fuel-based energy sources for growing urbanisaton and industrialisation (Hossain et al., 2024; Jie & Rabnaw, 2024). Table 1 shows the shares of renewable energy in the total final energy consumption in four South Asian economies over time.

Table 1 represents the trend of renewable energy consumption as a share of total final energy consumption in South Asia. Among the countries, Bangladesh experienced the highest decline in renewable energy share, from 71.7 per cent in 1990 to 25.0 per cent in 2021, a drop of 46.7 per cent, which is the largest regional case of renewable energy. Sri Lanka saw the second highest reduction of 29.3 percentage points in the renewable share of energy supply, which remained relatively high at 48.8 per cent in 2021. However, India (18.1 percentage points) and Pakistan (15.9 percentage points) also saw decreases but less pronounced, indicative of comparatively more diversified energy transition pathways (World Bank, 2026)

Table 1: Renewable Energy Consumption as a Share of Total Final Energy Consumption, South Asia

Country	1990 (%)	2021 (%)	Change (percentage point)	Trend
Bangladesh	71.7	25.0	-46.7	Steep decline
India	53.0	34.9	-18.1	Gradual decline
Pakistan	57.5	41.6	-15.9	Gradual decline
Sri Lanka	78.1	48.8	-29.3	Moderate decline

Source: Authors' calculation based on data from World Development Indicators (2026).

The reduction in the usages of renewable energy is due to the use of commercial fossil fuels instead of traditional biomass in the process of industrialisation and urbanisation of economies (Hossain et al., 2024; Jie & Rabnaw, 2024). Especially in Bangladesh, the share of conventional fossil fuels in total electricity generation remains around 85 per cent, with natural gas accounting for more than 42 per cent, and renewables account for a marginal share of the total installed capacity (Hossain et al., 2024; Khatun et al., 2026). Notably, even though Bangladesh and Sri Lanka had the highest share in renewable energy in 1990, their share of renewable energy decreased the most. This is in line with the greater global evidence that 7 per cent of global clean energy investment in 2022 went to low and lower middle-income countries, irrespective of the fact that these countries cover 40 per cent of the world's population (World Resources Institute, 2025).

3. Bangladesh's Emission Trajectory and Green Transition Ambitions

The emission trajectory for Bangladesh is particularly salient following the increasing trend of emission in the region. Rapid industrialisation and integration in export-oriented supply chains have created a growing dependence on export growth and vulnerability to environmental compliance requirements in Bangladesh. A lack of mitigation ambition has been identified as one of the main challenges in balancing growth and climate commitments (Raihan, et al., 2022; Das et al., 2024). The Greenhouse Gas (GHG) emission scenario information for

Bangladesh is presented for all major GHG emitting sectors (Table 2), showing a pattern of sectoral ambition.

Table 2 shows that total GHG emissions under the BAU scenario are projected to reach 418.40 $MtCO_2eq$ by 2035, with the energy sector emerging as the overwhelmingly dominant source, projected to account for 264.00 $MtCO_2eq$ under BAU. Within the energy sector, manufacturing industry - the sub-sector most exposed to EU supply chain compliance requirements - carries a combined mitigation target of only 25 per cent. Construction, driven primarily by brick kiln emissions, similarly records a substantial projected increase (Ministry of Environment, Forest and Climate Change, 2025). Beyond the energy sector, the Agriculture, Forestry and Other Land Use (AFOLU) sector constitutes the second-largest emitting category under the BAU scenario, at 110.89 $MtCO_2eq$, with livestock and agriculture as its principal contributors, both of which record comparatively low mitigation ambitions of 8.98 per cent and 10.13 per cent respectively. The waste sector, whilst modest in absolute terms at 35.21 $MtCO_2eq$, records zero unconditional reduction commitment, reflecting limited domestic mitigation capacity in this area. Altogether, these sectoral trajectories paint a deeply concerning picture. Whilst NDC 3.0 sets an overall combined mitigation target of 20.30 per cent below BAU by 2035, the ambition within individual sub-sectors varies considerably (Rahman et al., 2025; Das et al., 2024).

3.1 Electricity Generation Mix, and the Risk of Fossil Fuel Lock-in

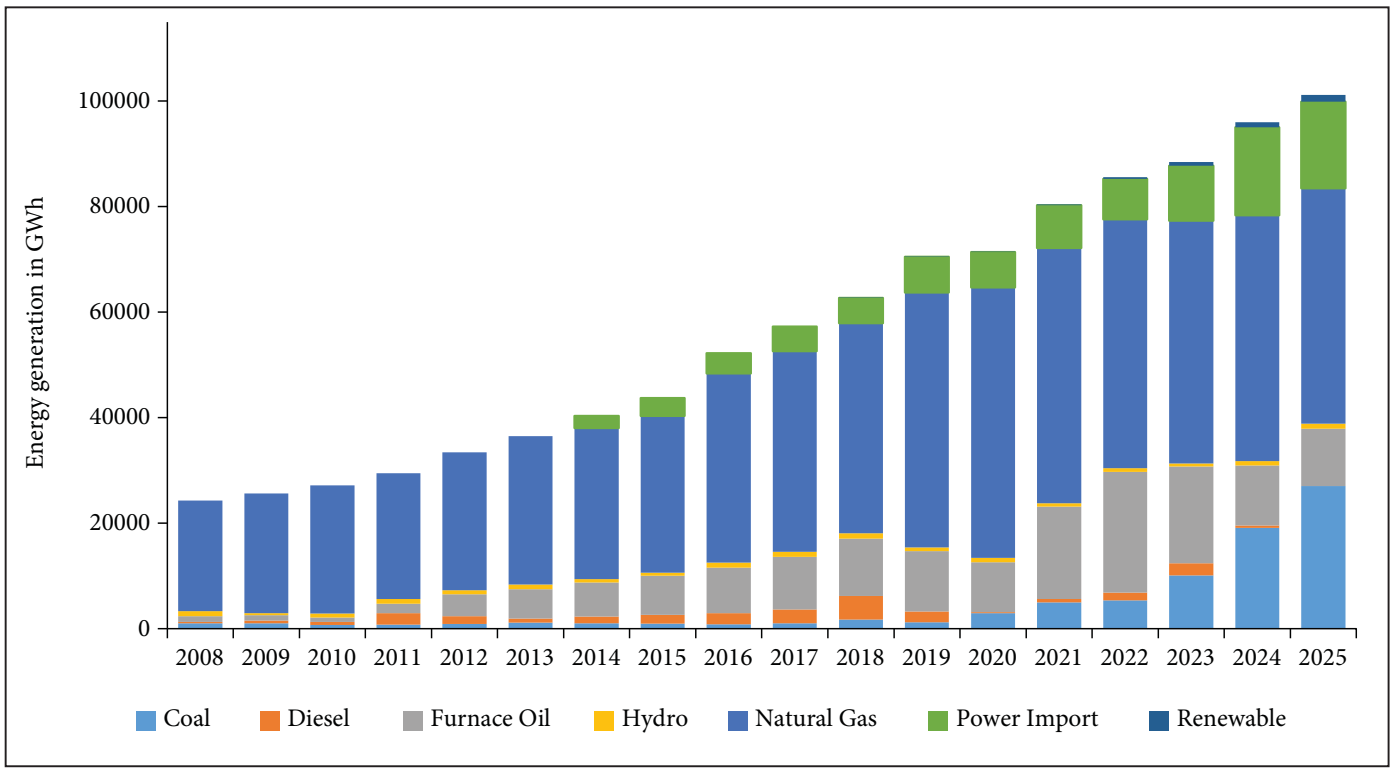
Because of the rapid urban population growth and economy expansion in Bangladesh, electricity demand has risen sharply, by over 526 per cent between 2000 and 2021, compelling the government to diversify its generation sources beyond the traditional reliance on natural gas (Debnath & Mourshed, 2022). This diversification has created opportunities for the gradual expansion of renewable energy, it has also enabled the introduction of coal-fired power generation, raising serious concerns about the long-term carbon intensity of Bangladesh's power sector. The energy landscape is therefore characterised by a fundamental tension between the imperatives of energy security and affordability, which have historically driven investment towards fossil fuel-based generation, and the increasingly urgent requirements of climate policy and green supply chain compliance, which demand a decisive shift towards low-carbon alternatives (Hossain et al., 2024). Figure 4 presents the trend in electricity generation by fuel type from 2008 to 2025, compiled from Bangladesh Power Development Board (BPDB) annual reports, illustrating the structural

Table 2: GHG Emission Scenario — Base Year 2022 Versus BAU 2035, Selected Energy Sub-Sectors

Sub-sector	BAU 2035 ($MtCO_2eq$)	Unconditional Reduction ($MtCO_2eq$)	Unconditional (%)	Conditional Reduction ($MtCO_2eq$)	Conditional (%)	Total Reduction (%)
Power	61.66	6.16	9.99	11.48	18.61	28.60
Transport	30.00	2.32	7.74	4.21	14.03	21.77
Energy Usage in Mfg Industry	108.82	10.03	9.22	17.17	15.78	25.00
Construction (Brick Kilns)	25.59	2.56	9.99	4.30	16.79	26.78
Households	18.87	1.14	6.04	2.21	11.71	17.76
Commercial	0.83	0.04	4.48	0.08	9.94	14.42
Energy Usage in Agriculture	8.43	0.66	7.81	1.55	18.44	26.24
Fugitive	9.80	0.00	0.00	5.94	60.62	60.62
Energy Total	264.00	22.90	8.70	46.94	17.80	26.50
IPPU Total	8.30	0.00	0.00	0.64	7.71	7.71
Agriculture	38.69	1.19	3.08	2.73	7.06	10.13
Livestock	53.57	1.18	2.20	3.63	6.78	8.98
Forestry and Other Land Use	18.63	1.47	7.89	2.51	13.47	21.36
AFOLU Total	110.89	3.84	3.50	8.87	8.00	11.50
Solid Waste and Wastewater	35.21	0.00	0.00	1.78	5.06	5.06
Grand Total	418.40	26.74	6.40	58.23	13.90	20.30

Source: Authors' calculation based on data from Ministry of Environment, Forest and Climate Change (2025).

Figure 4: Energy Generation by Type of Fuel (in GWh)



Source: Authors' calculation based on data from BPDB Annual Reports.

transformation of the country's power sector over nearly two decades (Bangladesh Power Development Board, 2008-2026). The data show that total electricity generation expanded nearly fourfold over the period, reflecting rapid economic growth and rising industrial energy demand (Figure 4). Natural gas has historically constituted the primary source of power generation, though its dominance has gradually diminished since 2019 as the overall generation mix has diversified. As of 2025, Bangladesh's electricity mix comprises approximately 43 per cent gas, 28 per cent coal, and 11 per cent unspecified fossil fuels, with low-carbon sources accounting for a negligible share of total supply (Low Carbon Power, 2025). Coal, by contrast, has grown substantially as a component of the generation mix—Bangladesh nearly tripled its coal-fired power output in 2023 alone (Energy Tracker Asia, 2024)—and power imports have also increased visibly since 2020.

Notwithstanding the growth of renewables, Bangladesh's electricity generation mix remains structurally dependent on fossil fuels. Between FY2020–21 and FY2024–25, the country's primary energy imports surged from 47.7 per cent to 62.5 per cent of total energy supply (Institute for Energy Economics and Financial Analysis, 2025).

3.2 Current Status of Renewable Energy

Bangladesh's renewable energy landscape has achieved internationally recognised success in expanding off-grid solar access, yet industrial energy system remains overwhelmingly fossil fuel-dependent. Bangladesh's off-grid solar home system programme represents one of the world's most extensive rural electrification initiatives (Hossain et al., 2024; Swazan & Das, 2025). The country's industrial energy requirements, however, present a fundamentally different challenge: large-scale manufacturing demands reliable baseload power supply, which the intermittent character of solar generation cannot readily meet without substantial complementary investment in grid infrastructure and energy storage (Debnath & Mourshed, 2022). This structural mismatch between the strengths of Bangladesh's renewable energy programme and the demand of its industrial sector constitutes one of the most significant barriers to greening its supply chains. Table 3 presents a disaggregated breakdown of Bangladesh's installed renewable energy capacity by technology as of 2026. The data show that total installed renewable capacity stands at 1,694.94 MW, of which solar photovoltaic (PV) installations account for the overwhelming majority, at 1,401.85 MW or 82.7 per cent of the renewable total (Table 3). Of this solar capacity, 377.17 MW is deployed off-grid and 1,024.68 MW is connected to the national grid. Wind energy contributes a modest 62 MW, whilst hydropower accounts for 230 MW, or 13.6 per cent of renewable capacity. Biogas and biomass to electricity together contribute a negligible 1.09 MW. The dominance of solar in Bangladesh's renewable portfolio reflects both the country's considerable solar resource endowment - with an average theoretical solar potential of approximately 4.59 kWh/m^2/day - and the comparative cost-effectiveness of solar PV deployment

Table 3: Electricity Generation from Renewable Sources, Bangladesh

Sectors	Off-grid (MW)	On-grid (MW)	Total (MW)	Share of Renewables (%)
Solar	377.17	1,024.68	1,401.85	82.7
Wind	0	62.00	62.00	3.7
Hydro	0	230.00	230.00	13.6
Biogas to Electricity	0.69	0	0.69	0.04
Biomass to Electricity	0.40	0	0.40	0.02
Total	378.26	1,316.68	1,694.94	100

Source: Authors' calculation based on data from Sustainable and Renewable Energy Development Authority (2026).

relative to other renewable technologies (Energy Tracker Asia, 2024; Sustainable and Renewable Energy Development Authority, 2026). Whilst the expansion of solar capacity represents a significant policy achievement, Bangladesh's total renewable capacity of less than 1,700 MW remains modest relative to the country's growing industrial energy demand and projected emission trajectory. As Hossain et al. (2024) demonstrate, more than 85 per cent of Bangladesh's total electricity generation continues to be sourced from conventional fossil fuels.

3.3 Bangladesh's Renewable Energy Targets: Ambition and Incoherence

The current government's energy policy framework, as set out in its 2026 election manifesto, establishes a series of targets for the power and energy sector: a total installed generation capacity of 35,000 MW by 2030; a renewable energy share of 20 per cent in the overall energy mix by 2030; 25,000 circuit-kilometres of transmission infrastructure by 2030; and the establishment of waste-to-energy facilities in major urban and industrial centres (Bangladesh Nationalist Party, 2026). On the conventional energy side, the government targets to strengthen the Bangladesh Oil, Gas and Mineral Corporation and to pursuing an expansion of both onshore and offshore gas exploration, alongside the development of cross-border gas pipeline infrastructure.

This combination of targets exhibits a degree of structural incoherence, as the simultaneous pursuit of an expanded renewable energy share and expanded fossil fuel extraction creates conflicting investment incentives within the energy sector. New commitments to gas exploration and gas-fired generation capacity may displace renewable energy investment, extend the operational lifespan of carbon-intensive infrastructure beyond the 2035 NDC target horizon, and thereby undermine the decarbonisation trajectory that Bangladesh's export sectors require to maintain EU market access (Gregory, 2000). Hence, without a comprehensive roadmap, Bangladesh's green transition ambitions will be challenging to fulfil.

4. Structural Barriers to Greening Supply Chains

Transitioning towards greener supply chains is not simply a matter of policy intention. Despite growing international pressure and regulatory requirements, Bangladesh faces deep-rooted structural barriers that hinder its transition towards greener supply chain. These barriers are not isolated in nature; rather, they are interconnected and mutually reinforcing, operating simultaneously across financial, technological, regulatory, informational, and policy dimensions.

i. Financial constraints: The substantial capital investment required for the adoption of clean production technologies, energy-efficient industrial machinery, and waste treatment infrastructure presents a prohibitive cost threshold (Rahman et al., 2025). Whilst green finance instruments have expanded considerably at the international level, in Bangladesh this process remains severely constrained by high transaction costs, limited access to credit, and the absence of adequate risk guarantee mechanisms, all of which effectively exclude smaller manufacturers from the green financing ecosystem despite the availability of funds globally (World Bank, 2026).
ii. Limited technological capacity: Domestic technological capability in energy efficiency, cleaner production, and environmental management systems is insufficient to support the pace and scale of transition required. Industrial training and skills development infrastructure has not been configured to build the technical competencies necessary for the widespread adoption of low-carbon production practices.
iii. Regulatory and institutional weaknesses: The enforcement of domestic environmental regulations in Bangladesh has historically been inconsistent, generating insufficient commercial incentive for voluntary green (Das et al., 2024).
iv. Information and awareness asymmetries: A significant proportion of SMEs within Bangladesh's export supply chains, particularly those operating at the second and third tiers with no direct relationship with EU buyers, have limited awareness of what CSDDD compliance practically requires or how the CBAM carbon pricing system operates

(Khatun et al., 2025). This information asymmetry is particularly important because lower-tier suppliers often undertake the most environmentally intensive stages of production.

v. Inconsistent policy and lack of incentives: The continuation of energy subsidies that artificially lower fossil fuel prices for industrial consumers, alongside planned investments in gas exploration and gas-fired infrastructure, reinforces economic incentives that run counter to the objectives of the green transition. Whilst such policies may serve short-term industrial competitiveness objectives, they perpetuate the structural reliance on carbon-intensive energy that constitutes Bangladesh's primary competitive liability under emerging EU compliance frameworks.

These five categories of barrier are mutually reinforcing. Financial constraints limit firms' capacity to adopt green technologies; weak regulatory enforcement reduces incentives for voluntary environmental investment; informational asymmetries prevent firms' ability to identifying and pursue compliance pathways; and macroeconomic policy misalignment makes the energy system increasingly difficult and costly to decarbonise with each year of deferred action.

5. Pathways to Sustainable Supply Chains

The analysis presented a set of structural barriers that collectively constrain Bangladesh's capacity to undertake the green supply chain transition that international compliance requirements now and in future. Addressing these barriers requires coordinated interventions at the national, regional, and institutional levels. Accordingly, this policy brief proposes a set of recommendations focused on reforming trade and industrial policies, establishing regional certification mechanisms, enhancing cross-border renewable energy cooperation, and strengthening support frameworks for Small and Medium-sized Enterprises (SMEs).

5.1 Integrating Environmental Criteria into Trade and Industrial Policy

Integrating environmental and climate component into Bangladesh's trade and industrial policy frameworks is a fundamental prerequisite for a credible and sustained transition towards greener supply chain. Besides, countries with stronger domestic climate policy frameworks attract large green investment, as regulatory certainty and financial incentives reduce investment risk and improve returns (Jaumotte et al., 2024). Bangladesh's current policy environment, however, continues to favour carbon-intensive industrial activity through energy subsidies that suppress fossil fuel prices and investment incentives that do not systematically prioritise low-carbon alternatives. As long as these structural misalignments persist, private sector actors will lack sufficient financial incentives to invest in the green technologies and practices that EU supply chain compliance increasingly demands.

5.2 Operationalising the Renewable Energy Target Through a Sector-Specific Roadmap

The current elected government committed to achieving a 20 per cent renewable energy share in its overall energy mix by 2030 (Bangladesh Nationalist Party, 2026), this target remains a broad policy aspiration rather than an operationalised programme of action. The absence of a binding, sector-specific industrial energy decarbonisation roadmap—one that specifies investment milestones, technology deployment targets, and regulatory enforcement mechanisms—significantly undermines the credibility and achievability of this commitment. Without such a roadmap, the renewable energy target risks remaining a headline figure that fails to translate into the concrete industrial energy transition that Bangladesh's NDC commitments and green supply chain compliance obligations increasingly demand.

5.3 Strengthening SME Support Mechanisms for an Inclusive Green Transition

Small and Medium-sized Enterprises (SMEs) form the backbone of Bangladesh's export supply chain, yet they are disproportionately disadvantaged in meeting green supply chain compliance requirements relative to their larger counterparts. Larger enterprises typically benefit from dedicated sustainability teams, established buyer relationships, and greater access to green finance. In contrast, SMEs—particularly those operating at lower tiers of the supply chain—often lack the financial resources, technical expertise, and regulatory know-how required to initiate and navigate across the compliance processes. Addressing this disparity is essential to ensuring that the green transition is inclusive and does not result in the progressive marginalisation of smaller suppliers from global value chains (Rahman et al., 2025).

6. Conclusion

With the EU's CSDDD and CBAM, green supply chains are becoming a mandatory condition for exports, Bangladesh faces a narrowing window of opportunity to align its production and export processes with emerging international low-carbon requirements (European Parliament and Council of the European Union, 2023; Felbermayr et al., 2024). The stakes are high as the RMG industry contributes to 84.7 per cent of merchandise export and approximately 40 per cent of the RMG exports are shipped to the EU (Khatun, 2025; EPB, 2023). But the nation's energy system is heavily dependent on fossil-fuel. The renewable energy share in Total Final Energy use in Bangladesh decreased from 71.7 per cent in 1990 to 25.0 per cent in 2021 (World Bank, 2026); fossil fuels still contribute more than 85 per cent of electricity being produced; and the installed capacity of renewable energy is still low at 1,700 MW (Sustainable and Renewable Energy Development Authority, 2026). Meanwhile, the government's plans to boost renewables and gas exploration could result in the locking in of the

carbon-intensive infrastructure (Bangladesh Nationalist Party, 2026; Gregory, 2000). This will need a coherent policy reform, a binding roadmap on industrial decarbonisation, incentives for green investment and targeted support for SMEs, who are most likely to face financial and technical challenges (Jaumotte et al., 2024; Rahman et al., 2025). But that is not something that Bangladesh can do alone. Developed countries and multilateral institutions have an obligation to ensure that environmental compliance is a driver of sustainable development and not a driver of economic exclusion (United Nations, 2015), by providing adequate climate finance, technology transfer and capacity building.

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October 2026