

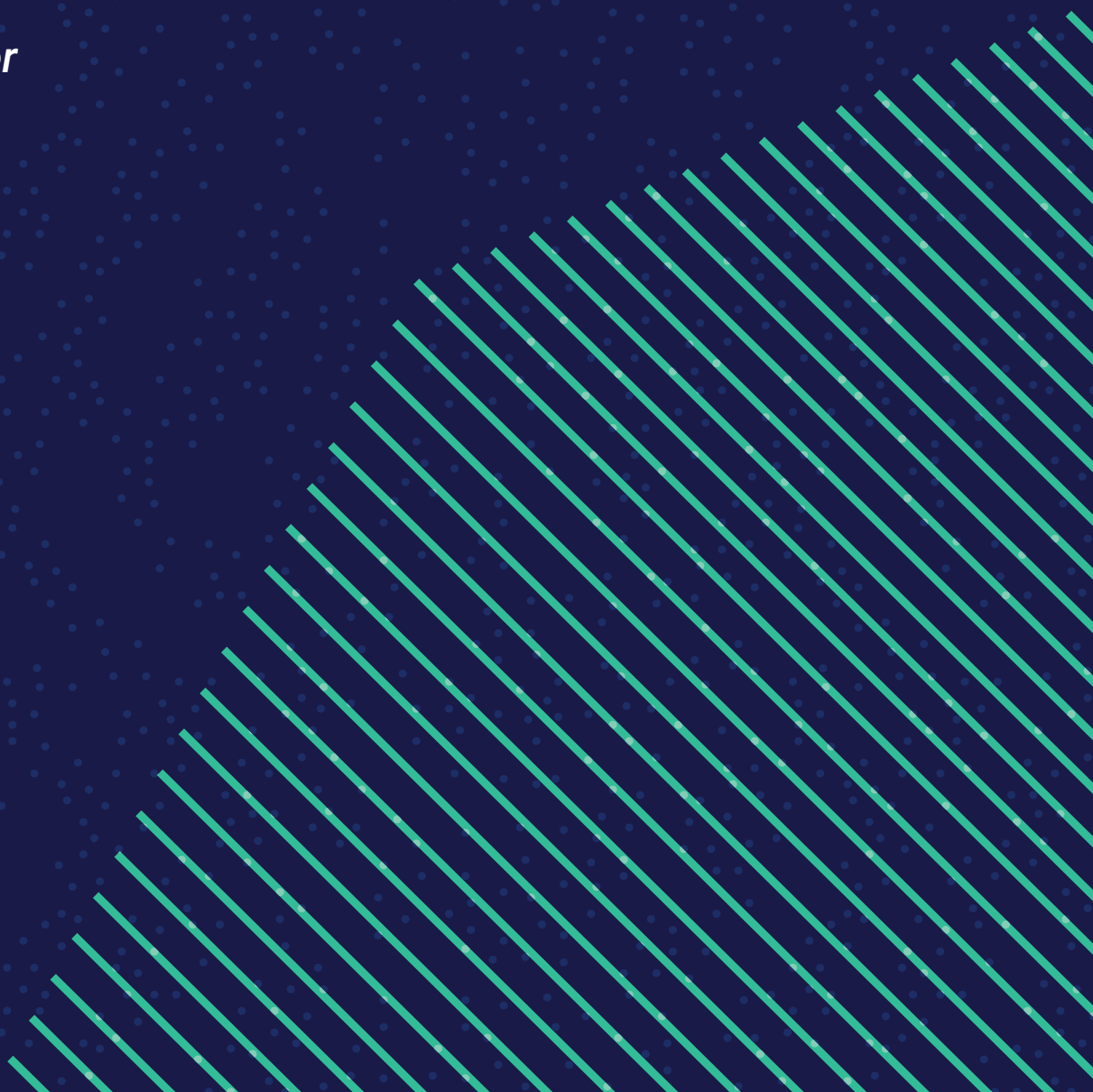


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Circular Economy and Sustainable Consumption and Production in Bangladesh's NDC 3.0

**Opportunities to Leverage Investments, Market
Transformation and Scale up Climate Ambitions**

Policy Paper



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List of Abbreviation

ACoD	Anaerobic Co-Digestion
AFD	Agence Française de Développement (French Development Agency)
AFOLU	Agriculture, Forestry, and Other Land Use
AWD	Alternate Wetting and Drying
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BDP2100	Bangladesh Delta Plan 2100
BSEC	Bangladesh Securities and Exchange Commission
BTMA	Bangladesh Textile Mills Association
C&D	Construction and Demolition
CAMELS	Capital Adequacy, Asset Quality, Management, Earnings, Liquidity, Sensitivity to market risk
CE	Circular Economy
CIMMYT	International Maize and Wheat Improvement Center
CO₂	Carbon Dioxide
CO₂e	Carbon Dioxide Equivalent
CTFF	Circular Textile Finance Facility
DEG	Deutsche Investitions- und Entwicklungsgesellschaft (German development finance institution)
DFI	Development Finance Institution
EIB	European Investment Bank
EPR	Extended Producer Responsibility
ERPA	Emission Reduction Purchase Agreement
ESG	Environmental, Social, and Governance
EU	European Union
EUR	Euro
EV	Electric Vehicle
FCDO	Foreign, Commonwealth and Development Office (UK)
FICCI	Foreign Investors' Chamber of Commerce & Industry (Bangladesh)
FSG	Foundation for Social Goals (consulting firm)
FY	Fiscal Year
GCF	Green Climate Fund
GDP	Gross Domestic Product
GGBI	Global Green Bond Initiative
GHG	Greenhouse Gas
GSCM	Green Supply Chain Management
GTF	Green Transformation Fund
H&M	Hennes & Mauritz (fashion company)
HBRI	Housing and Building Research Institute
IFRS	International Financial Reporting Standards
IMMF	Impact Measurement and Monitoring Framework
IRR	Internal Rate of Return

ISSB	International Sustainability Standards Board
KfW	Kreditanstalt für Wiederaufbau (German development bank)
LCA	Life Cycle Assessment
LDC	Least Developed Country
LT-LEDS	Long-term Low Emission Development Strategy
MCPP	Mujib Climate Prosperity Plan
MEAT	Most Economically Advantageous Tender
MoU	Memorandum of Understanding
MRV	Monitoring, Reporting, and Verification
MSME	Micro, Small, and Medium Enterprise
Mt	Million tonnes
MtCO₂e	Million tonnes of carbon dioxide equivalent
NAP	National Adaptation Plan
NBFI	NonBank Financial Institution
NBR	National Board of Revenue (Bangladesh)
NDC	Nationally Determined Contribution
NITWRR	National Industrial TechWaste Recycling & Resource Recovery Project
OPC	Ordinary Portland Cement
PM_{2.5}	Particulate Matter (diameter 2.5 micrometres or less)
PSC	Policy Support Component (SWITCH-Asia)
R&D	Research and Development
RBU	Recycling Business Unit (UNIDO pilot)
RCT	Randomised Controlled Trial
RDF	RefuseDerived Fuel
REDD+	Reducing Emissions from Deforestation and Forest Degradation
RMG	ReadyMade Garments
S1/S2	IFRS Sustainability Disclosure Standards (S1 general, S2 climate)
SBA	Sugarcane Bagasse Ash
SCF	Standardized Crediting Framework (World Bank)
SCM	Supplementary Cementitious Material
SCP	Sustainable Consumption and Production
SME	Small and Medium Enterprise
TA	Technical Advisory
Tk	Bangladeshi Taka (currency)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
VAT	Value Added Tax
WEEE	Waste Electrical and Electronic Equipment

Executive Summary

The world's interconnected triple planetary crisis, climate change, biodiversity loss, and pollution, is not three separate emergencies but a single symptom of a fundamental driver: unsustainable consumption and production. As the *Global Resources Outlook 2024* makes clear, the extraction and processing of material resources account for over half of global greenhouse gas emissions. For too long, climate policy has focused predominantly on supply-side measures—renewable energy, production efficiency, electric mobility—while neglecting the demand-side drivers of material-intensive consumption. Climate mitigation cannot succeed without transforming *how* we consume and produce materials at every stage of the value chain.

It is against this backdrop that the SWITCH-Asia Programme has undertaken targeted Technical Advisory work across South Asia, including Bangladesh, to support the integration of Sustainable Consumption and Production (SCP) and Circular Economy (CE) principles into Nationally Determined Contributions (NDCs) and long-term low-emission development strategies. This policy paper builds on the analytical foundation of the 2025 SWITCH-Asia white paper for Bangladesh and addresses three interconnected challenges facing NDC 3.0 implementation: leveraging investment, driving market transformation, and scaling climate ambitions.

Bangladesh has progressively enhanced its NDC targets over three cycles. NDC 3.0, submitted in September 2025, adopts a wholeofeconomy approach and pledges a significant emissions reduction by 2035. For the first time, the plan explicitly recognises the circular economy as a transition pathway, encourages circular economy for lubricants, commits to a national Circular Economy Strategy, and champions wastetobusiness models. Waste management is the most comprehensively referenced CE sector, while agriculture, transport, and just transition are also included. Enabling frameworks, including a national MRV system, Article 6 carbon market readiness, a green taxonomy under development, and Bangladesh Bank's green finance schemes, are mentioned but remain under development.

Despite this progress, implementation faces severe financing constraints. The country has received only a fraction of pledged foreign climate finance, creating a substantial annual financing gap. Weak institutional coordination, inadequate planning, unreliable baseline data, and fragmented MRV systems remain critical barriers.

Bangladesh is scheduled to graduate from LDC status in November 2026, bringing both pride and pressure as preferential trade benefits diminish. Recent macroeconomic headwinds have moderated growth projections, while inflationary pressures, banking sector stresses, and constrained fiscal space persist. Against this backdrop, decoupling economic growth from increasing resource use is essential. The country has developed a portfolio of climate commitments beyond its NDCs, including the National Adaptation Plan, the Mujib Climate Prosperity Plan, and the Bangladesh Delta Plan 2100. However, a critical gap remains: Bangladesh lacks a national material flow accounting framework, constraining evidencebased SCP policymaking.

This paper provides a systematic sectoral mapping of where SCP and CE interventions could deliver material climate and economic co-benefits. Sectors are categorised into those explicitly acknowledged in NDC 3.0, waste management, transport, cement and steel under energy, agriculture, AFOLU, and plastics, and those where integration could be substantially strengthened. The textile and ready-made garments sector, Bangladesh's economic backbone, is only partially included despite generating significant annual waste with substantial recyclable value. The construction and built environment sector is almost entirely absent, despite being a major consumer of resources and source of embodied carbon. Brick manufacturing, representing one of the most significant emission sources with proven low-cost mitigation solutions, is not explicitly targeted. E-waste, representing substantial annual recoverable value, is not explicitly referenced. The leather and tannery sector, with emerging circular economy models, is also absent.

While NDC 3.0 represents a major advance in mainstreaming SCP and CE, its sectoral coverage remains incomplete. The financing architecture emerging, Bangladesh Bank's refinancing schemes, the first commercial green bond, the Sustainable Finance Taxonomy under development, the National Climate

Finance Strategy, and Article 6 carbon market readiness, provides foundational building blocks. Yet significant gaps remain in operationalising these tools for SCP/CE investments, which often face higher perceived risk due to novel technologies, unproven business models, fragmented value chains, and policy uncertainty.

This paper suggests a model “Circular Textile Finance Facility” as an example model for market transformation. Using a blended finance structure with first-loss guarantees, concessional debt, commercial participation, technical assistance, and carbon credit monetisation, the facility demonstrates how strategic finance and investment can facilitate gradual market transformation through appropriate policy, financing, and demand-side signals. This model can be adapted across other priority sectors. The paper concludes with a set of prioritised strategic, financial, regulatory, policy, tax, implementation, and monitoring recommendations. These include adopting a National SCP Strategy, establishing an institutionalised SCP Platform, integrating absent priority sectors into the next NDC revision, operationalising sectorspecific blended finance facilities, finalising the Sustainable Finance Taxonomy, expanding low-cost refinancing schemes, developing Article 6 carbon market infrastructure, introducing mandatory recycled content targets, implementing Extended Producer Responsibility schemes, and building professional capacity ahead of LDC graduation.

For international partners, Bangladesh offers a first-mover opportunity: a country politically and institutionally ready to leapfrog linear development pathways. For private investors and development financiers, the combination of clear policy direction, quantified investment needs, emerging blended finance vehicles, carbon market readiness, and growing international alignment creates a favourable environment for catalytic investment. The challenge now lies in moving from intent to implementation—turning waste from an environmental liability into an economic asset across the entire economy.

1. Introduction

The world faces an interconnected triple planetary crisis: climate change, biodiversity loss, and pollution and waste. These three interlinked global emergencies, driving extreme weather events, species extinction, and widespread environmental degradation, are not separate phenomena but symptoms of a single, fundamental driver: *unsustainable consumption and production*. As UNEP's landmark report *Making Peace With Nature* concluded, "Climate disruption, biodiversity loss and pollution that threaten our viability as a species are caused by unsustainable production and consumption". Put simply, *how* we produce goods and services and *how much* we consume lie at the root of the environmental emergencies that now imperil humanity.

1.1 Material Resources and Climate Change

For far too long, climate policy has focused predominantly on energy-related emissions including power generation, transport, and industrial energy use. While these are essential, they represent only part of the problem. According to the International Resource Panel's *Global Resources Outlook 2024*, the extraction and processing of material resources, fossil fuels, minerals, non-metallic minerals (such as sand and gravel), and biomass, account for over 55 per cent of global greenhouse gas emissions and 40 per cent of health-related impacts from particulate matter pollution¹. When land-use change is included, climate impacts from resource extraction and processing exceed 60 per cent of total global emissions. Material extraction has tripled in the past five decades, from 30 to 106 billion tonnes annually, and is projected to rise by a further 60 per cent by 2060 if current trends continue, a trajectory that would derail not only global climate targets but also biodiversity goals, pollution targets, and economic prosperity.

Biomass extraction (In Bangladesh, this includes rice straw, jute sticks, and forest residues) alone accounts for 90 per cent of land-related biodiversity loss and water stress, alongside onethird of greenhouse gas emissions. Fossil fuels, metals and nonmetallic minerals together account for 35 per cent of global emissions². These figures reveal a powerful, yet still underexploited, nexus: climate change mitigation cannot succeed without transforming how we consume and produce materials at every stage of the value chain, from extraction to design, manufacturing, use and end-of-life management.

The prevailing approach to climate action has been overwhelmingly supplyside—focusing on renewable energy deployment, energy efficiency in production, and electric mobility. While indispensable, this approach addresses only part of the problem. It does little to reduce *demand* for materialintensive goods and services, or to shift consumption patterns toward circular, lowmaterial lifestyles. The *Global Resources Outlook 2024* emphasizes that supplyside measures must be supplemented with a much stronger focus on demandside (consumption) measures, addressing questions of global equity and sufficiency. For climate ambition to be genuinely scaled up, consumption patterns and material resource efficiency must be brought into the heart of national climate plans.

1.2 The SWITCH-Asia Technical Advisory

It is against this backdrop that the SWITCH-Asia Programme, a flagship European Union initiative operating across Asia and the Pacific to promote Sustainable Consumption and Production (SCP) and the Circular Economy (CE), has been working upstream at the policy level to support countries in integrating SCP and CE into their Nationally Determined Contributions (NDCs) and Long-Term Low Emissions Development Strategies (LT-LEDS). Recognising that SCP and the circular economy hold significant and compelling cobenefits for climate action, SWITCH-Asia has undertaken targeted Technical Advisory (TA) work across six South Asian nations: India, Sri Lanka, Bhutan, Maldives, Bangladesh, Nepal, and Pakistan. The objective has been to gain insights into the present status and the potential for integrating SCP and circular economy principles into their NDC commitments, and to support the development of more ambitious, pragmatic SCP-linked targets for the next NDC cycle.

1 International Resources Panel, <https://www.resourcepanel.org/news-events/global-resources-outlook-2024-press-release>

2 International Resources Panel, <https://www.resourcepanel.org/news-events/global-resources-outlook-2024-press-release>

An output of this TA has been a set of country specific white papers for Bangladesh³, Bhutan⁴, Nepal, Pakistan⁵, and Sri Lanka⁶ presenting strategic pathways to integrate SCP and CE into climate ambition targets. These papers, developed through deep incountry policy assessments and inclusive stakeholder consultations, provide practical, sector specific integration guidance tailored to each country's economic structure, development priorities and institutional landscape.

This policy paper has been developed under the TA implemented by SWITCH-Asia PSC, titled "Integrating SCP and CE aspects into the NDC 3.0 and Long-term Low Emission Development Plans (LT-LEDS in South Asia", drawing directly on the findings, methodologies and recommendations generated through its South Asian TA work. It builds on the analytical foundation established in the SWITCH-Asia white paper Integrating Sustainable Consumption and Production (SCP) and Climate Change Policy: A Strategic Contribution to Strengthening Bangladesh's Nationally Determined Contributions (NDC 3.0) published in 2025. That white paper explored the SCP opportunities and challenges in Bangladesh's climatespecific plans and strategies, reviewed relevant national documents, and developed an analytical proposition based on 27 interviews with key informants. It identified that while SCP holds significant mitigation potential across key sectoral value chains, the current NDCs remain conservative, many SCPrelevant opportunities are being overlooked, and strengthening integration of SCP into the NDC framework could offer significant scope for emissions reductions, particularly in the private sector. However, existing policy and institutional barriers must first be addressed.

This policy paper takes those findings forward. Its purpose is to provide a comprehensive, evidence-based analysis of how Bangladesh's NDC 3.0—submitted in 2025, can become a platform for leveraging investments, driving market transformation, and scaling up climate ambitions through the systematic integration of SCP, CE principles, and material resource efficiency. The report analyses what SCP and CE elements are already present in NDC 3.0, identifies highpotential sectors where circularity could generate significant climate and economic cobenefits but remains underaddressed, and offers actionable policy, finance and institutional recommendations to close those gaps.

This policy paper addresses three interconnected challenges facing Bangladesh's NDC 3.0 implementation: leveraging investment (the USD 2.86 billion annual financing gap and 1.25% disbursement rate of pledged climate finance); market transformation (moving from project-based circular initiatives to systemic economy-wide changes across nine priority sectors); and scaling climate ambitions (moving beyond supply-side energy measures to demand-side consumption and material efficiency). Without explicit SCP/CE integration addressing these three dimensions, NDC 3.0's circular economy provisions risk remaining declaratory rather than transformative.

1.3 Structure of the Paper

The paper is organised as follows:

Section 1 examines Bangladesh's NDC 3.0 as a climate commitment, tracing the evolution of national ambition, the financing gap, and alignment with complementary frameworks.

Section 2 analyses what SCP, CE and material efficiency aspects are already reflected in the NDC—explicit recognition, sectoral coverage and enabling frameworks.

Section 3 identifies high potential but missed out areas: sectors where circular interventions could deliver substantial returns but remain absent or underrepresented in the NDC, and systemic gaps in consumption side measures, material flow accounting, and financing.

3 <https://switch-asia.eu/resource/integrating-sustainable-consumption-and-production-scp-and-climate-change-policy-a-strategic-contribution-to-strengthening-2/>

4 <https://switch-asia.eu/resource/integrating-sustainable-consumption-and-production-scp-and-climate-change-policy-a-strategic-contribution-to-strengthening/>

5 <https://switch-asia.eu/resource/integrating-sustainable-consumption-and-production-scp-and-climate-change-policy-a-strategic-contribution-to-strengthening-1/>

6 <https://switch-asia.eu/resource/integrating-sustainable-consumption-and-production-scp-and-climate-change-policy-a-strategic-contribution-to-strengthening-sri/>

Section 4 concludes with a set of prioritised recommendations to capture missed opportunities, unlock investment, derisk circular markets, and scale up climate ambitions in the next NDC cycle.

The paper is intended for policymakers, development partners, investors, industry associations, civil society organisations and researchers working at the intersection of climate change, sustainable consumption and production, circular economy and industrial development in Bangladesh and South Asia. It aims to provide a practical roadmap for turning NDC 3.0's foundational recognition of circularity into transformative outcomes—demonstrating that material resource efficiency is not a niche environmental concern but the central lever for a climate-resilient, prosperous and just transition.

2. Bangladesh's Nationally Determined Contributions

Bangladesh has progressively enhanced its NDC targets over three cycles. NDC 1.0 (2015) targeted a 5 % unconditional GHG reduction from the business-as-usual scenario by 2030. NDC 2.0 (2021) raised this to 6.73 % (Government of Bangladesh, 2021). NDC 3.0, submitted in September 2025, adopts a whole-of-economy approach covering energy, transport, agriculture and industry. Using 2022 as a baseline year (total emissions: 252.04 MtCO₂e), it pledges to cut GHG emissions by **20.3 %** (418.4 MtCO₂e) by 2035, 6.4 % unconditional (26.74 MtCO₂e) and 13.9 % conditional (58.23 MtCO₂e) on international support⁷.

In 2022, emissions were distributed as: energy 48.81 %, Agriculture, Forestry and Land Use (AFOLU) 37.83 %, waste 10.69 %, and industrial processes 2.67 %. The plan establishes a national MRV system to track progress and open carbon market opportunities. A notable feature of NDC 3.0 is its quantification of the real cost of climate action. The plan estimates that delivering its climate goals will require approximately USD 116 billion by 2035 (USD 25.95 billion domestic, USD 90.23 billion from international partners). It also reports approximately USD 3 billion in annual climate-induced losses. This transparency is essential for leveraging investments and scaling ambitions.

Despite ambition, implementation faces severe financing constraints. A study by the Change Initiative found that Bangladesh received only 1.25 % of pledged foreign climate finance under NDC 2.0, creating an annual financing gap of USD 2.86 billion (Change Initiative, 2025). While Bangladesh requires over USD 8.5 billion annually to meet NDC targets, it receives less than USD 1.5 billion per year, mostly as loans (New Age, 2026). Weak institutional coordination, inadequate waste and transport planning, unreliable baseline data, and fragmented MRV systems are critical barriers (Change Initiative, 2025). Addressing these gaps is essential to leverage investments and scale climate ambitions⁸.

2.1 Explicit recognition of SCP and CE as transition pathways

For the first time, NDC 3.0 states: “Transition pathways cover key sectors, including energy, industry, transport, agriculture, forestry, land use, waste, and the circular economy through measures like renewable energy deployment, **industrial efficiency, electric mobility, climatesmart agriculture, and formalization of waste workers**”. **The plan explicitly encourages circular economy for lubricants (collection, rerefining, reuse), promotes biobased and synthetic lubricants**, and commits to a **national Circular Economy Strategy** to strengthen recycling industries and resource recovery. It also champions “waste-to-business models” led by youth entrepreneurship in recycling, composting and upcycling.

A SWITCH-Asia white paper notes that SCP holds significant mitigation potential across key value chains, though many opportunities remain overlooked due to data gaps, resource constraints and policy barriers. NDC 3.0's explicit recognition of CE therefore creates a foundation for scaling ambitions.

2.2 Sector specific SCP/CE provisions already included in NDC 3.0

Waste management is the most comprehensively referenced CE sector. The waste sector accounted for 10.69 % of national emissions (≈27 MtCO₂e) in 2022. NDC 3.0 commits to integrated municipal systems, wastetoenergy, CE approaches, markets for compost and RDF, and safe e-waste and battery management.

Agriculture (AFOLU) – second largest emitting sector (37.83 %) – includes climate smart agriculture and supports Alternate Wetting and Drying (AWD) irrigation, which can reduce methane emissions from rice by 30-50 % while maintaining yields. Bangladesh has explicitly included methane reduction in its revised NDC.

Transport includes electric mobility (450 electric buses, EV charging stations) and an integrated multimodal transport plan. The transport sector is the second largest carbon source after power generation.

⁷ Government of Bangladesh (2025). *Nationally Determined Contribution 3.0 (NDC 3.0)*. Submitted to UNFCCC

⁸ The Climate Watch: Bangladesh unveils positive list to boost carbon market <https://theclimatch.com/bangladesh-unveils-positive-list-to-boost-carbon-market/>

Just Transition is a dedicated chapter in NDC 3.0, committing to a national Just Transition Policy Framework with social protection, reskilling, formalisation of waste workers, and support for youth-led waste-to-business enterprises. This mainstreaming of social equity within SCP/CE is a foundational step for scaling ambitions inclusively.

2.3 Enabling frameworks mentioned in NDC 3.0

- **National MRV system** for tracking emissions.
- **Article 6 carbon market readiness** – Host Country Agreement with World Bank (November 2025) establishing a Standardized Crediting Framework (SCF); first ERPA for 3.3 million solar home systems valued at USD 16.76 million. Bangladesh has potential to earn ≈USD 1.0 billion annually from carbon markets (Light Castle Partners, 2025).
- **Green taxonomy** – BSEC-UNDP Memorandum of Understanding (MoU) (January 2026) to develop a Sustainable Finance Taxonomy aligned with EU Global Green Bond Initiative (UNDP, 2026).
- **First commercial green bond** – UNDP-City Bank MoU (March 2026).
- **Bangladesh Bank green finance** – Green Transformation Fund (USD 200 million + EUR 200 million + Tk5,000 crore) for export-oriented textile and leather sectors; Green Products Fund (Tk1,000 crore); mandatory 5 % green financing requirement for banks (Bangladesh Bank, 2026; Green Finance Platform).

These frameworks are essential for leveraging investments, but they remain under development and not yet fully anchored in binding NDC targets.

3. Bangladesh's Economic and Development Context

3.1 Economic Growth Trajectory and LDC Graduation

Bangladesh has achieved remarkable economic progress over the past two decades, transitioning from one of the poorest nations at independence to a development model admired for its consistent growth, human-development gains and poverty-reduction success. The country is scheduled to graduate from UN LDC status in November 2026⁹. Graduation will bring both pride and pressure: preferential trade benefits will diminish, concessional loans will shrink, and international competitiveness will become the ultimate test for the country's export sectors. This transition makes the need for structural economic reform even more urgent—particularly enhancing industrial resource efficiency and competitiveness through circular economy models¹⁰.

However, recent macroeconomic and political headwinds have moderated growth projections. The World Bank's *Bangladesh Development Update* forecasts GDP growth at 4.8% for FY 2025–26, with a modest acceleration to 6.3% anticipated for FY 2026–27. The World Bank revised Bangladesh's GDP growth for FY 2025 slightly downward, from 4.2% to 4.0%, citing political unrest, investment stagnation, higher production costs, and elevated interest rates influencing economic activities. Inflationary pressures remain persistent, with expected rates around 8.5% in the near term. The country's banking sector faces ongoing stresses related to non-performing loans. The fiscal position is constrained by weak revenue mobilisation (tax-to-GDP ratio among the lowest in the region) and high subsidy outlays, while private investment has stagnated due to policy unpredictability and infrastructure gaps¹¹.

The country had set targets under Bangladesh Vision 2041 to transform into an upper middle-income nation by 2031 and a high-income economy by 2041. Achieving these milestones will require sustained annual growth of 7–8%, which in turn demands massive infrastructure investment, industrial modernisation, and a shift to higher value production. Against this backdrop, carbon-intensive growth is neither environmentally nor economically sustainable. Decoupling economic growth from increasing resource use and environmental impacts must become the main aim in moving away from wasteful linear production¹².

3.2 Decarbonisation and Green Growth Commitments Beyond NDCs

Bangladesh has developed a portfolio of climate and environmental commitments extending well beyond its NDC submissions. A 2025 report by the International Maize and Wheat Improvement Center (CIMMYT) identifies key frameworks that encompass climate change adaptation and mitigation: the National Adaptation Plan (NAP 2023–2050), the Mujib Climate Prosperity Plan (MCPP 2022–2041), the Bangladesh Climate Change Strategy and Action Plan (BCCSAP), and the Bangladesh Delta Plan 2100 (BDP2100) alongside the Nationally Determined Contributions.

The Mujib Climate Prosperity Plan reflects a shift in framing from climate “vulnerability” to “prosperity”, positioning climate action as an opportunity for economic transformation rather than a burden. The plan outlines priority projects across renewable energy, blue economy, sustainable urbanisation, and low-carbon industries. Together with the Bangladesh Delta Plan 2100, these frameworks estimate necessary investments of around USD 471.72 billion to implement identified priority projects. The Delta Plan 2100—approved in 2018—harnesses the country's potential as a delta through water resource management, ensuring food and water security and tackling disasters. The General Economics Division has adopted the Delta Appraisal Framework to effectively implement the Plan.

9 Bangladesh Graduation Readiness Assessment - <https://www.un.org/ohrlls/news/bangladesh-graduation-readiness-assessment>

10 Circular Economy in Bangladesh's Textile Industry - <https://www.scribd.com/document/715578285/Circular-Economic-Model-for-Bangladesh-Textile-Industry>

11 Bangladesh Growth Update, The World Bank Group, <https://www.worldbank.org/en/news/press-release/2025/10/07/strong-and-timely-reforms-needed-to-sustain-inclusive-growth-in-bangladesh>

12 Making Vision 2041 a Reality: Perspective Plan of Bangladesh 2021-2041 <https://oldweb.lged.gov.bd/uploadeddocument/unitpublication/1/1049/vision%202021-2041.pdf>

Recent financing commitments show growing international recognition of Bangladesh's green transition needs. In April 2026, Bangladesh received USD 900 million from the World Bank to improve environmental sustainability, reduce air pollution, improve enforcement, expand access to carbon markets, enhance sustainable water and sanitation services, and improve the efficiency of the Bangladesh Delta Plan 2100. Earlier in March 2026, the World Bank approved three projects worth USD 1.16 billion, including a USD 500 million Second Bangladesh Green and Climate Resilient Development Credit to support the country's transition to green and climate-resilient development¹³.

The Government of Bangladesh has also formed the Bangladesh Climate Development Partnership to coordinate among development partners. In 2026, Bangladesh initiated development of its first National Climate Finance Strategy, aiming to bridge the gap between ambitious climate commitments and the financing needed to protect vulnerable communities.

On energy transition, the Renewable Energy Policy 2025 sets ambitious goals of 20% renewable electricity generation by 2030 and 30% by 2040. The government will introduce 450 electric buses and establish EV charging stations at existing petrol and gas stations, aiming to streamline road, rail and waterways with data-driven logistics. A shift towards an integrated multimodal transport plan emphasises cost and time efficiency, and the government is preparing for the transition to electric mobility, including electric trains.

13 The World Bank Project Documents - Second Bangladesh Green and Climate Resilient Development Credit - <https://documents1.worldbank.org/curated/en/099093025050517365/pdf/P180439-5cdad15d-4698-421e-9299-714c66cafc62.pdf>

4. Sectoral Mapping: Integrating SCP and CE in Bangladesh's Climate Framework

One of the areas to improve in Bangladesh's existing climate policy discourse is the absence of a systematic mapping of economic sectors where SCP and CE interventions could deliver material climate and economic co-benefits. This section provides a sectoral typology based on explicit inclusion in NDC 3.0 and identifies additional sectors where SCP/CE integration could generate high impact.

Table 1 provides a summary overview before detailed sector-by-sector analysis:

Table 1: Sectoral Mapping of SCP/CE Integration Potential in Bangladesh

Sector	Status in NDC 3.0	SCP/CE Opportunity	Potential Actions
Textile & Ready-Made Garments (RMG)	Partially included (renewable energy). Circular economy for lubricants referenced	Textile-to-textile recycling of the 577,000 tonnes, approximately 250,000 tonnes is pure cotton waste that is 100% recyclable. Recycling this amount could reduce cotton imports by about 250,000 tonnes, equivalent to a 15% import reduction. Post-consumer collection systems underdeveloped	National Circular Textile Strategy (targeted for 2026 completion); EPR for textile waste; recycled content mandates
Waste Management	Explicitly included (integrated municipal systems, waste-to-energy, CE approaches)	Circular economy as climate priority. Methane reduction from landfills (waste sector 10.7% of emissions)	Extended Producer Responsibility for plastics; RDF markets; formalisation of informal recycling
Construction & Built Environment	Not explicitly mentioned; related to building codes referenced	Embodied carbon in cement, steel, brick (steel 60% higher embodied carbon than concrete). Green building certification under development by Housing and Building Research Institute (HBRI). Low-carbon geopolymers cement, unfired bricks, circular C&D waste management	National Green Building Certification System; Public Works Dept low-carbon material rate schedule; C&D waste recycling regulation, Development of Green Directory for Procurement
Brick Manufacturing	Indirectly covered under industry energy efficiency	8,000 kilns; 276 kiln RCT showed 23% energy reduction, 20% emission reduction via low-cost operational changes; 2.4 Mt CO ₂ seasonal reduction potential	Rapid scaling of Zigzag 2.0 technology; national kiln modernisation programme

Sector	Status in NDC 3.0	SCP/CE Opportunity	Potential Actions
Agriculture (Rice Methane)	Included (climate-smart agriculture)	Methane reduction in rice paddy via Alternate Wetting and Drying (AWD). 34% staple food loss annually	Methane reduction targets under NDC; circular bioeconomy (compost, biogas from residues, improved storage, review of fertilizer incentives, Government procurement programmes)
Cement & Steel Industries	Included (energy efficiency)	Supplementary cementitious materials (fly ash, slag) reduce CO ₂ ; green cement innovation (INSEE ECO Plus+). High embodied carbon in steel production	Industrial decarbonisation roadmap; RDF co-processing; green cement fiscal incentives; Government procurement programmes
AFOLU / Forestry	Included (carbon sinks, land use)	Forest carbon sink (estimated removal 0.81 MtCO ₂ e/year, net 0.37 MtCO ₂ e/year). Afforestation/reforestation carbon credits potential (1.44% reduction from 1% forest land increase)	REDD+ readiness; agroforestry; carbon sink accounting for NDC tracking
Plastics	Implicitly covered under waste management	3,000+ tonnes daily plastic waste generation; Dhaka recycles only 37.2% formally; remainder burned/dumped/polluted. Youth-led waste-based businesses emerging	EPR for plastics; target 50% recycling by 2025, 50% virgin plastic reduction by 2030
E-Waste	Not explicitly included; potentially covered under waste management	USD 500 million annual recoverable value; 2.2 kg e-waste per person; but 97% bypasses formal recycling. Formalisation could create sustainable recycling industry and jobs	National e-waste management system; Producer Responsibility for electronics
Leather & Tannery	Not explicitly included	Significant chromium-contaminated sludge and untreated tannery effluents. Tannery solid waste can be valorised into valuable byproducts (gelatin, industrial protein) under circular model	Circular economy model for tannery solid waste; Savar industrial estate remediation

The table above categorises sectors into those explicitly acknowledged in NDC 3.0 (waste management, transport, cement/steel under energy, agriculture, AFOLU, plastics under waste) and those where CE/SCP intervention could be substantially strengthened (textile/RMG deeper circular inclusion, construction, brick kilns, e-waste, leather/tannery, food loss reduction). Each sector is examined in detail below.

4.1 Textile and ReadyMade Garments (RMG) – *Partially Included in NDC 3.0, High Potential*

The RMG and textile sector is Bangladesh's economic backbone. It contributes more than 13% of Bangladesh's GDP, with textile and clothing exports exceeding USD 43 billion for the entirety of the fiscal year 2023–24 and RMG earnings at about USD 39.35 billion in FY 2024–25. The sector supports over 4.4 million workers, approximately 60% of whom are women, making it one of the most important sources of industrial employment¹⁴.

The sector's waste profile is both a challenge and an opportunity. Textile and apparel factories in Bangladesh generate approximately 577,000 tonnes of waste annually, of which nearly half (approximately 250,000 tonnes) is pure cotton waste that is 100% recyclable. If recycled domestically, cotton imports could decrease by approximately 15% (around 250,000 tonnes), saving an estimated half a billion USD in import costs. More recent source estimates suggest up to USD 700 million in annual savings potential through expanded local recycling, with the textile recycling sector alone holding a potential market value of up to USD 5 billion. Seven local mills in Bangladesh have already set up plants investing Tk 1,670.73 crore collectively to produce recycled yarn from waste plastic bottles¹⁵.

The circular economy has strong potential to make the RMG sector more sustainable, particularly by turning pre-consumer waste like cutting scraps and post-consumer leftovers into feedstock for recycling and new garments, aligning with buyer and policy demands for circularity. Waste-to-value through sorting, resale, reuse, and recycling of factory waste can recover material value and reduce landfill, dumping, and incineration. Circular practices such as Eco-design, industrial symbiosis, and renewable energy can lower emissions, water use, and material intensity in production. Circularity can also help respond to tightening market requirements, especially from the EU, where traceability and sustainable textiles are becoming increasingly important for competitiveness. Bangladesh would benefit from a national circular economy strategy for RMG, stronger waste segregation rules, incentives for recycling investment, and support for technology transfer and skills development.

4.2 Construction and Built Environment – *Not Explicitly Included in NDC 3.0, Urgent Priority*

The buildings and construction sector are major consumer of resources, making it a primary driver of raw material extraction and processing. The sector is also a significant source of Construction and Demolition (C&D) waste and carbon emissions, with environmental and construction legislation in Bangladesh not yet modernised to control the adverse impacts of construction activities.

Green supply chain management practices in the construction industry have been investigated, revealing that GSCM helps in waste minimization and carbon reduction, but widespread adoption remains limited. A 2025 FSG report developed with support from the H&M Foundation and Laudes Foundation and inputs from 100+ Bangladeshi and international stakeholders outlines opportunities to accelerate just transitions in the textile and apparel, and construction sectors. The report highlights that both sectors are critical for employment and economic development but pose significant environmental challenges requiring coordinated climate action¹⁶.

The embodied carbon profile of construction materials in Bangladesh requires urgent attention. A “cradle-to-gate” Life Cycle Assessment of an industrial building in Bangladesh found that steel structures produce 60% more embodied carbon than reinforced concrete counterparts, primarily due to raw material emissions. Concrete building emits 73% of total life cycle CO₂ emissions during the cradle-to-gate phase, whereas

14 The Garments and Textile Sector: A Change Maker For Bangladesh's Economy, 2025, Foreign Investors' Chamber Of Commerce & Industry (FICCI) - <https://www.ficci.org.bd/ficci-stories/the-garments-and-textile-sector-a-change-maker-for-bangladeshs-economy>

15 Understanding Bangladesh's Textile Waste Supply Chain: Through Material Flow and Senario Analysis. <https://hb.diva-portal.org/smash/get/diva2:1892343/FULLTEXT01.pdf>

16 Just Climate Transitions in Bangladesh: Accelerating Multistakeholder Action in Textile and Apparel and Construction Industries - <https://www.laudesfoundation.org/latest/news-and-stories/press-releases/2025/advancing-just-climate-transitions-in-bangladesh/>

steel building emits 53.7% of total emission during the construction phase; concrete building is more sustainable than steel building from the perspective of Bangladesh. Environmental Life Cycle Analysis of residential building materials in Bangladesh indicates that concrete, steel, brick and electricity consumption exert significant impacts on the environment, highlighting the need for steps to be adopted in the supply chains of steel, cement and ceramic materials. Steel consumption has grown rapidly: the current annual consumption of steel is estimated to be around 4 million tonnes, which is five times the 2008 level¹⁷.

Potentially transformative low-carbon innovations are emerging. Modern techniques such as geopolymers, rapid-hardening cement, and bamboo composites can cut construction emissions. The construction industry in Bangladesh holds great potential to shrink the nation's carbon footprint. From using low-carbon materials and better insulation to recycling waste and enforcing green standards, every step can make a difference. Low-carbon materials are considered essential in Bangladesh's housing and office construction sectors to meet growing development needs and rapid urbanisation. "Circularity will help ensure proper use of materials, reduce waste and increase the durability of infrastructure," noted experts.

Significant policy and institutional initiatives are underway to address this gap. The Housing and Building Research Institute (HBRI) is developing a National Green Building Certification System, while the Public Works Department is working to include low-carbon materials in its rate schedule. The initiative forms part of broader efforts to support Bangladesh in adopting low-carbon materials, strengthening green building frameworks, and aligning the construction sector with national climate commitments, including the upcoming NDCs. The Federal Ministry for Economic Cooperation and Development (Germany) is financially supporting sustainable materials and circular economy practices in Bangladesh through enabling policies and local innovation initiatives, aimed at building resilient, low-carbon cities aligned with Bangladesh's climate commitments and Vision 2041. Speakers at a workshop in Dhaka in April 2026 stressed the need for circular building materials designed for longevity, reuse and recycling, aiming to reduce carbon emissions, promote sustainable growth and ensure resource-efficient practices in Bangladesh's construction sector¹⁸.

Academic research has begun to identify enablers of circular economy implementation in the built environment of developing countries, including Bangladesh. Evidence from peer-reviewed studies reveals that the adoption of innovative materials and technologies, as well as the implementation of circular design principles, significantly reduces the demand for virgin resources and energy consumption during the construction process. Research also highlights the potential for entrepreneurial initiatives in recycling materials like concrete, brick, mortar, metal, ceramics, and timber, leading to reduced CO₂ emissions and energy consumption.

The Public Procurement (Amendment) Bill 2026, recently passed by the National Parliament, officially integrates sustainability into the legal framework for the first time. The Bangladesh Public Procurement Agency now has the legal authority to reject tender documents that include conditions harmful to the environment. This shift moves the entire system away from a "Lowest Cost" model toward the Most Economically Advantageous Tender (MEAT), which allows for the evaluation of environmental and social benefits alongside price. Requiring waste management plans in contracts ensures that construction and demolition debris are treated as resources for future projects rather than landfill waste.

Given the absence of explicit construction sector inclusion in NDC 3.0, Bangladesh should prioritise formal CE/SCP integration for construction in the next NDC cycle, with specific targets for C&D waste recycling rates, low-carbon material procurement shares, and green building certification coverage.

17 Comparative Study of Cradle-to-Gate Carbon Emissions from Steel and Concrete Structures of Bangladeshi Industrial Projects - <https://matjournals.net/engineering/index.php/JoRAIS/article/view/1088>

18 Circular economy in construction for sustainable Bangladesh - <https://www.bssnews.net/others/372564>

4.3 Brick Manufacturing – Indirectly Covered in NDC 3.0, NearTerm Low-cost Wins

Bangladesh’s approximately 8,000 brick kilns represent one of the most significant sources of both air pollution and carbon emissions in the country. Brick kilns contribute anywhere from 10 to 40% of the tiny particles that make up air pollution. However, recent peer-reviewed research has demonstrated that simple, low-cost operational modifications can achieve substantial environmental gains without requiring capital-intensive technology replacement¹⁹.

A randomised controlled trial (RCT) in 276 “zigzag” brick kilns in Bangladesh introduced operational practices to improve energy efficiency and reduce emissions. The interventions led to a 23% reduction in energy use, a 20% reduction in both carbon dioxide and PM 2.5 emissions, improved brick quality, and lower fuel cost per brick. Intriguingly and importantly, 65% of kiln owners adopted these improvements voluntarily—without being forced by law—because they also saved money and improved brick quality. If all kiln owners in Bangladesh switch to the proposed firing and stacking technologies, seasonal CO₂ emissions could go down by 2.4 million tons, which is approximately 2% of all annual emissions in the country²⁰.

Further innovation in unfired bricks is emerging. Research confirms that unfired bricks display all the properties of conventional bricks and do not require any burning or even any curing in water. They have the same strength, robustness and durability as clay and cement varieties, thus saving coals and timbers and reducing air pollution and carbon emission.

The brick sector represents a quintessential “quickwin” SCP opportunity: low-cost operational changes with high emissions reduction potential, voluntary adoption driven by economic self-interest, and clear alignment with NDC mitigation objectives. However, the sector remains only indirectly covered under industry energy efficiency provisions in NDC 3.0. Formal integration with specific emission reduction targets for brick kilns, linked to SCP interventions, would accelerate the scaling of these proven solutions.

4.4 Waste Management – Explicitly Included in NDC 3.0, Substantial CE Potential

Waste management is perhaps the most explicitly and comprehensively referenced sector for circular economy in NDC 3.0. The plan commits to strengthening waste management as a climate priority by expanding integrated municipal waste management systems, promoting wastetoenergy solutions, and advancing circular economy approaches. Policies will focus on developing sustainable markets for compost and Refuse Derived Fuel, ensuring safe e-waste and battery management, and mobilising climate finance to scale methane reduction initiatives. As of the baseline year 2022, the waste sector accounted for 10.69% of national emissions (approximately 27 MtCO₂e). Methane from landfills and open dumping sites represents a significant share of these emissions and offers high mitigation potential through capture and conversion²¹.

Within the broader waste management category, **plastics** represent a particularly urgent subsector. Bangladesh faces a formidable challenge, generating over 3,000 tonnes of plastic waste daily, with a significant portion ending up in rivers and the Bay of Bengal. By 2025 government targets, 50% of plastics should be recycled by 2025, virgin material consumption should be reduced by 50% by 2030, and 90% of targeted single-use plastics should be phased out by 2026. However, current performance lags: only about 37.2% of plastic in Dhaka is currently recycled; the remainder is burned, dumped or left to pollute ecosystems. A large part of Bangladesh’s recycling system depends on the informal sector, which is a major barrier to building an organised circular economy.

Despite these challenges, opportunities abound. A number of youth-led initiatives and businesses are emerging that are transforming waste into commercially viable products. UNIDO has piloted a circular

19 National Strategy for Sustainable Brick Production in Bangladesh - https://www.ccacoalition.org/sites/default/files/resources/2017_strategy-brick-production-bangladesh.pdf

20 Practical Solution to Reduce Emissions and Improve Air Quality from Brick Manufacturing in Bangladesh - <https://www.bu.edu/sph/news/articles/2025/researchers-develop-practical-solution-to-reduce-emissions-and-improve-air-quality-from-brick-manufacturing-in-bangladesh/>

21 NDC 3.0 of Bangladesh (2025) - [https://unfccc.int/sites/default/files/2025-09/Bangladesh%20Third%20Nationally%20Determined%20Contribution%20\(NDC%203.0\).pdf](https://unfccc.int/sites/default/files/2025-09/Bangladesh%20Third%20Nationally%20Determined%20Contribution%20(NDC%203.0).pdf)

ecosystem in Barisal where a factory transforms up to 1.2 tons of plastic waste per day into thick, durable sheets used for waterproofing, low-cost roofing, and construction barriers, with the project connecting businesses to city plastic waste flows to create a more structured and inclusive value chain. The RBU (recycling business unit) pilot in Dhaka offers a robust, adaptable framework for formalising labour, ensuring transparency, and achieving traceability in waste management, principles highly relevant for a region grappling with rapid urbanisation and climate vulnerability. Looking ahead, this sector has huge potential if supported with the right infrastructures, policies, and funding. The National Industrial TechWaste Recycling & Resource Recovery Project (NITWRR) is a national initiative aiming to transform industrial waste into resources through modern technology, which will significantly advance Bangladesh towards a robust circular economy.

The cement industry's potential to utilise Refuse Derived Fuel (RDF) from municipal solid waste remains largely untapped. In Bangladesh, the use of RDF in the cement industry is not popular yet; cement kilns typically use gas, oil, fossil fuel or coal as the main source of fuel and also use electricity in their kilns. RDF produced from hazardous wastes and biomass mixture represents an alternate energy source for cement industries with very low production cost. Developing RDF markets would simultaneously address waste management challenges and reduce fossil fuel consumption in energy intensive industries, a classic circular economy win-win.

4.5 Agriculture and Food Systems – Included in NDC 3.0, Methane and Circular Bio-economy Focus

Bangladesh's agriculture, forestry, and other land use (AFOLU) sector accounted for 37.8% of national emissions in 2022, making it the second largest emitting sector after energy (48.8%). Agriculture (primarily rice cultivation and livestock) and landuse change (deforestation) are the dominant sources within this category.

National emissions from the agriculture and other land use sectors were 53% of domestic GHG emissions in 2005, yet no specified measures for climate change mitigation had been designated nationally in these sectors as of that time. In the AFOLU sector, the current GHG emission is 13.44% of the national total. The estimated emission from the forestry sector is 1.19 MtCO₂e/year, and the estimated removal is 0.81 MtCO₂e/year, with net change of 0.37 MtCO₂e/year. Afforestation and reforestation offer opportunities for carbon credits, subject to the enduse of forest products, and may be the best option, as well as conserving the existing carbon sink offered by Bangladesh for mitigating global warming. Econometric research finds that a 1% increase in agricultural value added and forest land may lead to GHG emissions reduction by 0.32% and 1.44% in the long run (NDC 3.0 of Bangladesh).

Rice production is a particular priority for methane reduction. Bangladesh, together with Cambodia and Vietnam, has included methane reduction in its revised NDC. There are numerous technological win-win solutions to simultaneously reduce methane emissions in paddy rice production, increase resource use efficiency and farmer incomes through circular economy approaches, and increase resilience of farmers to climate change impacts. Alternate Wetting and Drying (AWD) irrigation techniques can reduce methane emissions by 30-50% while maintaining or increasing yields and reducing water consumption.

The circular bioeconomy is gaining traction in Bangladesh. On the farm, circularity means closing nutrient loops: composting crop residues and processing animal manure into biogas both return valuable nutrients to fields and reduce dependency on imported chemical fertilizers. By incentivising farmers to adopt sustainable feeding systems, improved manure management and biogas technology, Bangladesh can simultaneously enhance rural incomes, food security, and environmental integrity. Anaerobic co-digestion (ACoD) of cow dung and maize cob may be envisaged as the best way to enhance biomethane formation and production of nutrient rich digestate in Bangladesh.

Precision farming in Bangladesh shows promise for reducing water use by 30-40 per cent and significantly lowering fertilizer waste. These developments signal a shift towards a circular bioeconomy in which residues become resources: compost, biogas, or heat rather than pollutants or landfill fodder. According to recent analysis, converting agricultural waste, such as rice husks and jute byproducts, into bioenergy and

organic fertilizers promotes sustainable farming practices. Bangladesh produces an estimated substantial quantity of agricultural residues annually, offering a significant feedstock for bioenergy production. The circular economy model, centered on eliminating waste, prolonging product life cycles, and regenerating natural systems, offers a pathway to sustainable growth.

Given that agriculture and land use constitute 37.8% of national emissions but have historically received less mitigation attention than the energy sector, integrating SCP and circular bioeconomy approaches more explicitly into the AFOLU provisions of NDC 3.0, with quantified targets for methane reduction, organic waste valorisation, and afforestation, would significantly strengthen Bangladesh's mitigation portfolio.

4.6. E-waste – Not Explicitly Included in NDC 3.0, Billion Dollar Opportunity

Bangladesh generates an estimated 2.2 kilograms of e-waste per person, with a total financial value of over USD 500 million if 100% is recycled formally. However, of the estimated 117,000 tons of electronic waste generated annually, a staggering 97% bypasses the formal recycling system, ending up in landfills and polluting the urban environment. The industry is now able to collect only 3% of the total e-waste; collection of e-waste needs to be systematised, according to expert analysis²².

Despite its high potential, e-waste is not explicitly referenced in Bangladesh's NDC 3.0 except potentially under waste management (e-waste management is mentioned in waste sector commitments). A comprehensive nationwide e-waste management system involving government agencies, private sector stakeholders, and citizens is urgently needed, with emphasis on reducing waste as a primary solution and promoting and regulating the recycling industry. E-waste management offers significant resource recovery potential and economic benefits, including job creation and the development of a sustainable recycling industry. Making informal recycling practices safer and more systematic, and building recycling capacity for valuable metals and components, would create a new industrial sector while reducing environmental and health hazards from improper disposal.

4.7. Leather and Tannery – Not Explicitly Included, High Circular Economy Potential

The leather industry in Bangladesh significantly contributes to the national economy but also generates extensive environmental pollution through chromium contaminated sludge and untreated tannery effluents. The Savar Tannery Industrial Estate faces significant waste management challenges. However, emerging research and practice are identifying circular economy models for tannery waste.

A 2025 peer-reviewed study provides a thorough overview of tannery solid waste management into valuable products in terms of circular economy benefits. Segregating tanned and non-tanned solid waste may aid in resource recovery, recycling, and sequential management²³. A 2026 review explores sustainable management and valorisation strategies for tannery solid waste, proposing a circular economy model for Bangladesh. A Chinese company has initiated a project in Savar turning leather waste into gelatine and industrial protein powder—Bangladesh's first and only foreign-invested business devoted to turning leather waste into these valuable items. By replacing dangerous opendumping practices, this initiative could prevent further contamination of agricultural lands and groundwater. Leather industry stakeholders are also building digital e-traceability systems for sustainable leather production²⁴.

Given that the leather industry is a significant foreign exchange earner for Bangladesh (leather and leather goods exports contribute approximately 23% of total exports), integrating circular economy provisions for the sector into the next NDC cycle would simultaneously address environmental pollution and enhance export competitiveness in sustainability-conscious global markets.

22 The Formal E-Waste Management 2024, (WEEE Seminar Outcome) - <https://investbangladesh.co/news/recycling-e-waste-bangladesh/>

23 Circular economy advantages of tannery solid wastes as valuable by-products: An effort towards environmental sustainability - <https://www.sciencedirect.com/science/article/abs/pii/S3050475925008590>

24 Tannery solid waste generation trend and sustainable management techniques for commercialization - <https://pubs.rsc.org/en/content/articlehtml/2026/ra/d5ra09580h>

4.8. Cement and Steel Industries – Included in NDC 3.0, Industrial Decarbonisation Priority

Cement and steel production, while included under industrial energy efficiency in NDC 3.0, represent significant emission sources requiring dedicated SCP/CE integration beyond energy efficiency alone. The industries have begun demonstrating circular innovation.

In cement: INSEE ECO Plus+ is a green cement launched by Siam City Cement (Bangladesh) Limited in 2024, specifically engineered to withstand the aggressive salinity and corrosive soil conditions of Bangladesh's coastal regions while having a lower carbon footprint than traditional Ordinary Portland Cement. SHAH Cement has positioned itself as a pioneering ReadyMix Concrete producer in Bangladesh, utilising waste materials such as 'Fly Ash' as a sustainable substitute in its ReadyMix Concrete production, reducing cement usage by 25 kg per cubic meter. Research on green cement factories explores the potential use of sugarcane bagasse ash (SBA) as replacement of Ordinary Portland Cement and development of a pilot reactor to make the cement factory green. An ideal way to reduce CO₂ emissions from concrete production is the utilization of industrial byproducts like class F fly ash, slag, etc. as supplementary cementitious materials (SCMs)²⁵.

In steel, while the industry has grown rapidly with annual consumption of approximately 4 million tonnes (five times 2008 levels), the high embodied carbon of steel structures relative to concrete (60% higher) suggests significant mitigation potential through material substitution, design optimisation (reducing steel intensity without compromising structural integrity), and steel recycling (which has substantially lower energy requirements than primary steel production). However, scrap-based steel production and material efficiency in steel-intensive construction remain underdeveloped.

Cement kilns offer a complementary waste valorisation pathway: RDF from municipal solid waste and industrial hazardous waste and biomass mixture could be co-processed, replacing coal and gas. RDF production cost is very low, but its use in Bangladesh's cement industry is not yet popular. Developing RDF markets would simultaneously address waste management challenges and reduce industrial fossil fuel consumption.

The cement and steel industries' relatively large-scale, formalised structure makes them amenable to industrial decarbonisation programmes, carbon pricing mechanisms, and green finance instruments. Bangladesh's Green Transformation Fund (GTF) specifically targets export-oriented textile and leather sectors; a similar facility for cement and steel could accelerate low-carbon technology adoption.

4.9. Summary Assessment

The sectoral analysis reveals a two-tier picture: waste management, transport, agriculture, AFOLU, cement and steel, and plastics are at least partially covered in NDC 3.0. However, several sectors critical to both economic development and environmental performance remain underrepresented or entirely absent from the NDC framework:

- **Textile and RMG:** Only indirect inclusion through renewable energy for industry, missing the transformative potential of textile-to-textile recycling, eco-design, and closed-loop value chains despite the sector's economic centrality and large waste stream.
- **Construction and built environment:** Almost entirely absent, despite being a major consumer of resources and source of embodied carbon, waste, and C&D emissions. Policy frameworks (green building certification, low-carbon material procurement) are emerging but have not been integrated into NDC 3.0.
- **Brick manufacturing:** One of the most significant emission sources in the country, with proven low-cost mitigation solutions (23% energy reduction, 20% emission reduction from operational improvements alone), yet not explicitly targeted in NDC 3.0.

²⁵ INSEE ECO PLUS+ pioneering green cement in Chattogram - <https://www.tbsnews.net/economy/corporates/insee-eco-plus-pioneering-green-cement-chattogram-1063861>

- **E-waste:** USD 500 million annual recoverable value lost due to 97% informal handling; not explicitly mentioned in NDC provisions despite waste sector inclusion.
- **Leather and tannery:** Significant pollution and resource recovery potential, with emerging circular economy models (leather waste to gelatine, circular economy frameworks), but absent from NDC 3.0.

This sectoral gap suggests that while NDC 3.0 represents a major advance in mainstreaming SCP and CE, its sectoral coverage remains incomplete. The next NDC revision cycle (due 2030) should systematically integrate all high-impact sectors identified above, with quantified SCP targets (material efficiency, waste valorisation rates, secondary material input shares) aligned with CE principles.

5. Financing and Investment Architecture for Market Transformation

5.1 The Climate Financing Gap

Bangladesh's climate financing needs are substantial and growing. A study by research organisation Change Initiative found that Bangladesh received only 1.25% of foreign climate finance pledged under NDC 2.0, severely limiting the country's capacity to achieve its full carbon reduction potential. The study estimates that Bangladesh needs USD 270.12 billion per year for conditional NDC implementation but secured only USD 3.39 billion. The report identified weak institutional coordination, an annual USD 2.86 billion financing gap, inadequate waste and transport planning, unreliable baseline data, and fragmented MRV systems as critical barriers.

While Bangladesh requires over USD 8.5 billion annually to implement its NDCs by 2030, it receives less than USD 1.5 billion per year on average, mostly as loans, not grants. This financing architecture must be fundamentally restructured to support the systemic transition that SCP and CE require.

5.2 National Sustainable Finance Architecture

Bangladesh Bank's Green Finance Framework

Bangladesh Bank has pioneered green finance among South Asian central banks, establishing four major refinancing programmes:

- 1. Green Products and Initiatives Fund:** Tk1,000 crore supporting 70 products across 11 categories. Since inception in 2009, Tk1,482.42 crore has been disbursed up to 31 March 2025.
- 2. Technology Development/Upgradation Fund:** Tk1,000 crore.
- 3. Shariah-Based Refinancing Schemes for Green Products:** Tk125 crore.
- 4. Green Transformation Fund (GTF):** Combined size of USD 200 million, EUR 200 million, and Tk5,000 crore.

Under these schemes, banks can access funds at concessional rates of 12%, and customers receive loans at a maximum of 5%—significantly lower than the prevailing average lending rate of over 10%. The GTF specifically targets export-oriented textile and leather sectors, and was expanded in 2019 to cover all manufacturer-exporters for importing capital machinery and accessories for green initiatives. In 2026, Bangladesh Bank tightened sustainable finance reporting to prevent greenwashing, reclassifying certain products from "Green Finance" to other categories to reflect their actual impact more accurately. The central bank has also mandated that banks and NBFIs disburse 5% of their term loans for green financing, with failure to achieve targets affecting CAMELS²⁶ ratings, creating a powerful regulatory incentive that could be extended to include a specific circular economy subtarget.

Capital Market Development

The Bangladesh Securities and Exchange Commission signed a Memorandum of Understanding with UNDP in January 2026 to develop a Sustainable Finance Taxonomy, an Impact Measurement and Monitoring Framework (IMMF), and a ThirdParty Verification Mechanism, aligned with international standards including the EU-supported Global Green Bond Initiative (GGBI) backed by the Green Climate Fund. Bangladesh's first commercial green bond is being launched through an MoU between UNDP and City Bank PLC signed on 31 March 2026²⁷.

²⁶ Capital Adequacy, Asset Quality, Management, Earnings, Liquidity, and Sensitivity to market risk.

²⁷ Just Climate Transitions in Bangladesh: Accelerating Multistakeholder Action in Textile and Apparel and Construction Industries - <https://www.fsg.org/resource/just-climate-transitions-in-bangladesh-accelerating-multistakeholder-action-in-textile-and-apparel-and-construction-industries/>

The National Climate Finance Strategy, currently under development by the Finance Division with UNDP technical assistance and AFD financing, will cover blended finance, green bonds, sustainability-linked loans, insurance solutions, and public-private partnerships.

Multilateral and Bilateral Development Finance

Bangladesh benefits from Team Europe Initiatives on green energy transition and participates in SWITCH-Asia, which promotes SCP across South Asia including circular practices. The European Investment Bank is providing a EUR 60 million loan (12-year tenor) to BRAC Bank to finance green and circular projects of the private sector and has indicated plans to expand its portfolio from €900 million to €2 billion in energy, water, and related sectors²⁸.

The DEG (German development finance institution) signed a USD 25 million senior secured long-term loan to Banga Building Materials Limited in December 2025²⁹. Denmark has allocated an additional USD 5 million to support Bangladesh's democratic transition and has expressed interest in developing new strategic sectoral cooperation for circular economy, with particular focus on the RMG sector³⁰.

5.3 Carbon Markets: Article 6 Readiness

Bangladesh holds the potential to earn approximately USD 1.0 billion annually from the global carbon market. However, a lack of clear national policy limited investment historically: Bangladesh generated only USD 17 million since 2006 through initiatives like improved cooking stoves and solar home systems, which is far below its potential³¹.

Significant progress has been made on Article 6 readiness. Bangladesh signed a Host Country Agreement with the World Bank in November 2025, confirming government authorization for the country's Standardized Crediting Framework (SCF), a country-owned crediting mechanism to help access carbon markets under the Paris Agreement. Verified emission reductions generated from 3.3 million Solar Home Systems will be purchased through an Emission Reduction Purchase Agreement valued at USD 16.76 million, with payments expected in early 2026³².

The waste and circular economy sectors hold particular promise for carbon credits. Experts have identified waste management and forestry as priority areas for leveraging carbon financing opportunities. However, operationalising these opportunities requires clear SCF methodologies, robust MRV systems, and capacity building across public and private stakeholders. Carbon finance presents an opportunity to reduce the overall cost of capital for CE-linked climate change mitigation actions which also has the potential to leverage private capital and blended-finance flows.

5.4 Derisking Instruments for SCP/CE Investments

SCP/CE investments often face higher perceived risk than conventional projects due to novel technologies, unproven business models, fragmented value chains, and policy uncertainty. Derisking through blended finance mechanisms is essential to attract commercial capital at scale.

- **First-Loss Guarantees:** DFIs and philanthropic capital absorb a defined proportion of portfolio losses (e.g., first 20%), protecting commercial lenders. This structure has been used by the World Bank for plastic waste reduction outcome bonds in Ghana and Indonesia and could be replicated in Bangladesh.
- **Blended Finance Vehicles:** Concessional capital from DFIs (EIB, DEG, FCDO, Green Climate Fund) lowers the risk-adjusted cost of capital for commercial investors. The proposed Circular Textile Finance Facility (Section 5) exemplifies this approach.

28 <https://www.eib.org/en/projects/all/20240407>

29 https://www.deginvest.de/Newsroom/News/News-Details_889472-2.html

30 <https://today.thefinancialexpress.com.bd/trade-market/denmark-keen-to-invest-more-in-rmg-port-and-green-sectors-1747071782>

31 <https://www.thedailystar.net/business/news/bangladesh-can-earn-1b-year-carbon-market-analysts-3904236>

32 <https://www.ci-dev.org/result-stories/bangladesh-signs-host-country-agreement-strengthening-pathway-carbon-markets>

- **Outcome-Based Bonds:** Investor returns linked to verified environmental outcomes (e.g., tonnes of plastic waste recycled, tonnes of CO₂ reduced). The World Bank's outcome bond for plastic waste reduction in developing countries provides a replicable model.
- **Green Guarantee Schemes:** Multilateral development banks or bilateral agencies provide partial guarantees on green loans, reducing commercial banks' risk exposure. This mechanism has been used effectively by the Asian Development Bank in other emerging economies.
- **Technical Assistance Grants:** SWITCH-Asia (EUR 25 million current allocation), EIB technical assistance under the SWITCH to Circular Economy Initiatives program, and UNIDO project preparation facilities reduce transaction costs and build bankable project pipelines.
- **Policy Derisking:** Policy certainty—clear EPR regulations, recycled content mandates, green procurement requirements, and carbon pricing signals—reduces regulatory risk and improves investment viability.

5.5 Recommendations for Strengthening Financing Architecture

While the building blocks of a sustainable finance architecture exist, significant gaps remain. Priority recommendations include:

1. **Finalise and adopt the Sustainable Finance Taxonomy** with clear circular economy eligibility criteria to enable green bond issuance for CE projects.
2. **Expand Bangladesh Bank's low-cost refinancing schemes** to cover a wider range of CE activities including textile recycling, plastic upcycling, construction material recovery, and e-waste formalisation.
3. **Operationalise Article 6 carbon market infrastructure** under SCF with priority methodology development for waste management, textile recycling, and brick kiln efficiency which are the recognized sectoral interventions within the NDC 3.0.
4. **Develop a dedicated green guarantee scheme** for SCP/CE SME projects, reducing commercial bank risk exposure.
5. **Scale technical assistance for bankable project pipeline development** across high-potential sectors as indicated in the NDCs (textile recycling, C&D waste, e-waste, leather waste valorisation).
6. **Leverage Bangladesh's GTF and green bond mechanisms** to create a dedicated "Circular Economy Window" within existing green finance facilities.

6. Model for Market Transformation: Circular Textile Finance Facility

The section proposes an example how a market transformation process can be initiated taking Textile as a model sector. This model is to show the potentials of using strategic finance and investments to facilitate the gradual transformation of the market through appropriate policy, financing and generating demand-signals.

6.1 Sector Context and Imperative

The RMG and textile sector is Bangladesh's economic backbone, generating approximately 577,000 tonnes of waste annually, nearly half of which is pure cotton waste that can be recycled. If recycled domestically, cotton imports could decrease by approximately 15% (around 250,000 tonnes), saving an estimated half a billion USD in annual import costs. Recent estimates suggest up to USD 700 million in annual savings potential through expanded local recycling. The textile recycling sector alone holds a potential market value of up to USD 5 billion³³.

Despite these economically compelling figures, systemic transformation remains constrained by financing barriers (high upfront capital requirements, perceived high risk by commercial banks), policy gaps (absence of mandatory waste segregation and EPR regulations, national circular textile strategy completion targeted for end of 2026), market failures (no premium pricing mechanism for recycled content products in domestic market, limited offtake agreements for recycled yarn), and technical barriers (limited domestic recycling technology, absence of standardised quality specifications for recycled materials).

6.2 Proposed CTFF Structure

Figure 1: Example for Circular Textile Finance Facility Structure

Layer	Participant	Role
Catalytic Capital (First-loss)	DFIs (EIB, DEG, FCDO), EU Global Gateway, Green Climate Fund	Absorb first 20% of portfolio losses; provide technical assistance
Concessional Debt	EIB, World Bank, KfW, Bangladesh Bank refinancing (GTF)	Provide long-term (10-12 year) debt at below-market rates (4-5% ³⁴)
Commercial Debt	Local commercial banks (BRAC Bank, DutchBangla, City Bank)	Standard commercial loans at market rates (8-10% ³⁵) with partial guarantees
Private Equity/ Impact Investors	Development equity funds (e.g. Acumen, responsAbility)	Equity investments in recycling enterprises
Technical Assistance	SWITCH-Asia, UNIDO, Chatham House	Capacity building, feasibility studies, MRV systems development

33 Recycling International - <https://recyclinginternational.com/business/bangladesh-cotton-waste-worth-us-100-million/36258/>

34 Estimated figures based on the current interest rates

35 Example only

Financial Derisking Mechanisms:

- **First-Loss Guarantee:** DFIs cover first 20% of portfolio losses, protecting commercial lenders.
- **Outcome-Based Interest Reductions:** Borrowers with verified recycling outcomes receive interest rate reductions (e.g., 12% step-down).
- **Recycled Content Offtake Agreements:** Major brands commit to purchasing fixed volumes of recycled yarn at premium prices, providing revenue certainty.
- **Carbon Credit Monetisation:** Recycling activities generate verified emission reductions under Article 6 SCF framework, creating an additional revenue stream (estimated USD 5-10 per tonne CO₂e).

Eligible Project Pipeline: *(This is an example only. The figures given here are not actual but examples)*

Project Type	Investment Range	Expected Returns	Key Barriers Addressed
Textile-to-textile recycling plants	USD 5-20 million	12-18% IRR	High CapEx, technical complexity
Post-consumer collection and sorting infrastructure	USD 2-5 million	8-12% IRR	Fragmented informal sector
Eco-design and circular product development centers	USD 1-2 million	6-10% IRR	Lack of design capacity
Industrial symbiosis platforms (waste exchange)	USD 0.5-1 million	5-8% IRR	Coordination failures
Reverse logistics systems for post-industrial waste	USD 2-8 million	10-15% IRR	Transport/aggregation costs

The CTFF will provide concessional terms only for a certain period which must be decided based on the market transformation trajectories and realities. Thereafter, the facility must revert to fully commercial terms. No additional public subsidy will be provided

6.3 Enabling Policy Framework Required

For CTFF to achieve market transformation rather than isolated project impacts, complementary policy reforms are essential:

1. **National Circular Economy Strategy for Textile and RMG Sector** – targeted for completion by end of 2026, this strategy must set mandatory recycled content targets (e.g., 10% by 2028, 25% by 2035) and establish EPR schemes for textile waste.
2. **Sustainable Public Procurement** – Government to mandate recycled content in all textile purchases (uniforms, hospital linens, etc.), creating domestic demand anchor.
3. **Green Taxonomy Alignment** – BSEC-UNDP Sustainable Finance Taxonomy to include clear definitions and eligibility criteria for circular textile projects, enabling green bond issuance.
4. **Duty Adjustments** – NBR to heed BTMA request for duty waivers on imported recycled fibres and yarns to make local recycled products cost competitive.
5. **Carbon Market Methodologies** – Standardised crediting methodologies for textile recycling under SCF to unlock carbon credit revenues.

6.4 Expected Outcomes

The CTFF must have quantified target outcomes with key performance indicator. Below is again an example of a quantified outcome target where the numbers are arbitrary

Successful implementation of CTFF (scaled over 5-7 years) could deliver: recycling rate increase from current <5% to 25-30% of textile waste; USD 150-200 million investment mobilised; 1-2 million tonnes CO₂e reduction annually; 50,000-100,000 jobs created; USD 500-700 million annual import savings; and USD 2-4 billion additional circular apparel exports to EU markets.

6.5 Replicability for Other Sectors

The CTFF blended finance model can be adapted to other priority sectors identified in Section 3:

- **Construction and C&D waste:** Recycling plants for concrete, brick, mortar, metal, ceramics, and timber; national green building certification system; low-carbon material procurement mandates.
- **E-waste:** Formal recycling infrastructure; producer responsibility compliance; valuable metals recovery.
- **Plastics waste:** Formalisation of informal recycling sector; EPR implementation; RDF production facilities.
- **Leather tannery waste:** Valorisation into gelatine, industrial protein, biofertilisers; treatment infrastructure for chromium and effluents.
- **Brick kilns:** Financing for Zigzag 2.0 conversion; micro loans for kiln owners to access low-cost operational improvements; carbon credit monetisation of emission reductions.
- **Agriculture circular bioeconomy:** Anaerobic co-digestion facilities targeting cow dung and crop residues for biomethane; compost and biofertiliser production; supply chain infrastructure to reduce food waste.

Each sector would require tailored risk assessment, technology transfer mechanisms, policy derisking, and technical assistance—but the blended finance template with first-loss protection, concessional debt, commercial participation, carbon credit monetisation, and enabling policy reforms is broadly replicable.

This systematic sectoral mapping demonstrates that Bangladesh's NDC 3.0, while a significant advance, has only partially integrated SCP and CE principles across the economy. The highpotential sectors absent or underrepresented—construction, e-waste, leather, brick kilns, agricultural circular bioeconomy, and deeper textile circular integration—represent critical opportunities for the next NDC revision cycle (2030). By embedding SCP/CE systematically across all high-impact sectors, with quantified targets aligned with financing architecture (CTFF as a model), Bangladesh can transition from a project-based CE approach to economy-wide systemic transformation.

7. Key Recommendations

7.1 Strategic and Institutional Recommendations

1. **Adopt a National SCP Strategy** as legal basis for institutionalizing and integrating SCP into NDC and other relevant plans, with quantifiable targets for material productivity, waste reduction, and consumption-based emissions, and sectoral subtargets for all nine high-priority sectors identified in this paper.
2. **Establish an institutionalised SCP Platform** (digital “SCP Toolbox”) co-managed by government agencies and large companies, disseminating best practices, tools, and case studies to all stakeholders including MSMEs, civil society, and local governments.
3. **Mandate sectoral hotspot identification and resource mapping** covering all priority sectors (textile, construction, cement/steel, brick, waste, e-waste, leather, agriculture transport) to identify highest material use intensity and associated GHG emissions.
4. **Align CE commitments with LT-LEDS** to ensure circular economy strategy embedded in long-term low-carbon development planning.
5. **Mainstream SCP across national plans** including the upcoming 9th Five Year Plan, National Industrial Policy, and Trade Policy, with sectoral annexes for each priority sector.
6. **Integrate absent priority sectors into next NDC revision** (2030): construction, brick kilns, e-waste, leather/tannery, and deepened textile circular provisions.

7.2 Financial and Regulatory Recommendations

7. **Operationalise the Circular Textile Finance Facility (CTFF)** as a replicable model for other high-priority sectors (construction C&D waste, e-waste, plastics, leather waste, brick kilns, agriculture circular bioeconomy).
8. **Finalise and adopt BSEC-UNDP Sustainable Finance Taxonomy** with clear circular economy eligibility criteria across sectors.
9. **Complete the National Climate Finance Strategy** and ensure circular economy integration across its pillars: blended finance, green bonds, sustainability-linked loans, insurance solutions, and public-private partnerships.
10. **Scale up Bangladesh Bank’s low-cost refinancing schemes** to cover CE activities beyond current GTF sectors, including textile recycling, plastic upcycling, C&D waste recovery, e-waste formalisation, agriculture bioeconomy, and brick kiln modernisation.
11. **Expand regulatory requirement for banks** for green financing (already 5% of term loans) and introduce a specific circular economy sub-target (e.g., 1-2% of term loans for CE projects³⁶).
12. **Develop and operationalise Article 6 carbon market infrastructure** under SCF, with priority methodology development for textile recycling, waste management, brick kiln efficiency, and agriculture methane reduction.
13. **Introduce duty adjustments** on imported recycled fibres, machinery, and materials to create price competitiveness for locally produced circular products.

7.3 Policy and Tax Recommendations

14. **Develop a National Green and Sustainable Procurement Policy** mandating recycled content and resource efficiency criteria for government purchases—textiles (uniforms, hospital linens), construction materials (for public works), and office consumables.

36 Example only. The indicated percentages are arbitrary figures

15. **Introduce Extended Producer Responsibility (EPR) schemes** for textiles, plastics, and electronics (e-waste).
16. **Consider carbon taxation** as a fiscal instrument for large-scale industries (cement, steel, RMG) to internalise environmental costs and fund CE subsidies, calibrated to avoid competitiveness loss.
17. **Introduce fiscal incentives** including accelerated depreciation for CE capital investments, VAT exemptions on recycled materials, tax credits for R&D in recycling technologies, and reduced corporate tax rates for CE enterprises.
18. **Introduce mandatory recycled content targets** for priority materials (e.g.: textiles: xx% by 20XX, XX% by 20XX; plastics: XX% by 20XX; construction aggregates: increasing percentages for public works).

7.4 Implementation and Monitoring Recommendations

19. **Implement “quick-win” SCP and CE actions** in collaboration with industry stakeholders: e.g. brick kiln operational improvements (Zigzag 2.0—XX% energy reduction, XX% emission reduction proven in RCT) across all 8,000 kilns; textile waste segregation at source in RMG factories; plastic waste collection and sorting pilots scaling formalisation; rice methane reduction through AWD irrigation scaling; food waste reduction supply chains targeting XX% loss reduction.
20. **Establish clear achievement milestones and monitoring indicators** for each priority sector, harmonised with national climate reporting mechanisms to the UNFCCC.
21. **Induce and support innovations from SMEs and startups** via dedicated CE innovation fund (blended finance window), demonstration projects, and technical assistance.
22. **Build professional capacity** on ESG reporting, carbon management, sustainable finance, and CE business modelling ahead of LDC graduation (November 2026) and IFRS S1/S2³⁷ implementation in 2027.
23. **Strengthen project preparation capacity** to develop bankable pipelines aligned with NAP and NDC priorities.

³⁷ IFRS S1 and S2 are the new global sustainability disclosure standards introduced by the International Sustainability Standards Board (ISSB). They aim to simplify sustainability reporting by creating consistent guidance for how companies disclose their climate and sustainability-related risks and opportunities.

8. Conclusion

Bangladesh's NDC 3.0 represents a fundamental reorientation of climate policy—recognising that Sustainable Consumption and Production and circular economy are not marginal add-ons but core transition strategies requiring systemic redesign of material flows, production systems, and consumption patterns. For a country transitioning from LDC status in November 2026, with rapid industrialisation and decarbonisation ambitions, this is a strategic opportunity to leapfrog linear development pathways.

However, mainstreaming SCP and CE in national commitments is only the first step. The real transformation requires addressing a multidimensional financing and market challenge. Bangladesh faces an annual climate financing gap of USD 2.86 billion, having received only 1.25% of pledged foreign climate finance, and requires over USD 8.5 billion annually to implement NDC targets. Yet the financing architecture emerging—Bangladesh Bank's low-cost refinancing schemes (Tk1,000 crore Green Products Fund, GTF at USD 200m + EUR 200m + Tk5,000 crore), the first commercial green bond (UNDP-City Bank), the Sustainable Finance Taxonomy (BSEC-UNDP), the National Climate Finance Strategy (Finance Division-UNDP-AFD), and Article 6 carbon market readiness (World Bank SCF, USD 16.76m ERPA)—provides the foundational building blocks.

Crucially, Bangladesh must go beyond the waste management framing of CE to embrace economy-wide consumption and production transformation across all high-impact sectors. Nine priority sectors have been systematically identified in this paper, spanning those included in NDC 3.0 (waste management, transport, cement/steel, agriculture, AFOLU, plastics) and those requiring urgent integration (textile deeper circularity, construction, brick kilns, e-waste, leather/tannery, agriculture circular bioeconomy). Each offers distinct but mutually reinforcing SCP/CE investment opportunities, from Textile-to-textile recycling (USD 5 billion potential market) to e-waste formalisation (USD 500 million annual recoverable value) to brick kiln operational improvements (2.4 Mt CO₂ seasonal reduction with near-zero capital cost).

The Circular Textile Finance Facility presented in this paper offers a concrete, replicable model for how these building blocks can be assembled into a coherent market transformation mechanism—with catalytic capital, concessional debt, commercial loans, equity, technical assistance, and enabling policy reforms. This model can be adapted across priority sectors: construction C&D waste recycling, e-waste formalisation, plastic waste structured recovery, tannery waste valorisation, brick kiln modernisation, and agriculture circular bioeconomy.

For international partners, Bangladesh offers a rare first-mover opportunity: a country that is politically and institutionally ready to leapfrog linear development pathways in favour of resource-efficient circular systems. The country's LDC graduation provides political momentum; the NDC 3.0 provides policy framework; the emerging sustainable finance architecture provides financial tools; and the systematic sectoral mapping presented in this paper provides an operational roadmap.

For private investors and development financiers, the combination of clear policy direction, quantified investment needs (USD 26 billion annual climate needs, USD 116 billion NDC 3.0 implementation cost), emerging blended finance vehicles, carbon market readiness, and growing international alignment (EU Global Gateway, EIB green credit line, DEG investment, SWITCH-Asia grants) creates a favourable environment for catalytic investment with measurable climate and development outcomes.

The challenge—and opportunity—now lies in moving from intent to implementation: finalising the National SCP Strategy and sectoral CE strategies by the end of 2026; operationalising the Sustainable Finance Taxonomy; scaling carbon market participation under Article 6; converting the financing architecture into actual capital flows on the ground; and systematically integrating all nine priority sectors into the next NDC revision cycle. With strategic policy action, targeted financing, and inclusive multistakeholder implementation, Bangladesh can demonstrate how a climate vulnerable, rapidly developing economy can transform the imperative of climate action into a driver of market transformation, decent jobs, and sustainable prosperity—turning waste from an environmental liability into an economic asset across the entire economy.



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