Australian Government
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TOWARDS A JOB-READY GREEN SKILLS ECOSYSTEM IN BANGLADESH

Priority Sectors, Gaps, and Action Options

MAY 2026

Commissioned by the Department of Foreign Affairs and Trade under the Australian Government and Conducted by Swisscontact

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LIST OF ABBREVIATIONS

4IR	4th Industrial Revolution
AAC	Autoclaved Aerated Concrete
AFOLU	Agriculture, Forestry and Other Land Use
AI	Artificial intelligence
AWD	Alternate Wetting and Drying
B2B	Business-to-business
B2G	Business-to-government
BARC	Bangladesh Agricultural Research Council
BAU	Business-as-usual
BBS	Bangladesh Bureau of Statistics
BD	Bangladesh
BDP	Bangladesh Delta Plan
BDT	Bangladeshi Taka
BERC	Bangladesh Energy Regulatory Commission
BESS	Battery Energy Storage System
BIDS	Bangladesh Institute of Development Studies
BMS	Battery Management System
BPDB	Bangladesh Power Development Board
BREB	Bangladesh Rural Electrification Board
BRTA	Bangladesh Road Transport Authority
BSREA	Bangladesh Solar and Renewable Energy Association
BSTI	Bangladesh Standards and Testing Institution
BUET	Bangladesh University of Engineering and Technology
CAD	Computer-Aided Design
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenditure
CBAM	Carbon Border Adjustment Mechanism
CC	Cubic Centimetre
CCB	Concrete Compressed Block
CPD	Continuing Professional Development
CSA	Climate-Smart Agriculture
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
DC	Direct Current
DESCO	Dhaka Electric Supply Company Limited
DoE	Department of Environment
DPDC	Dhaka Power Distribution Company Limited
DPP	Digital Product Passports
DTE	Directorate of Technical Education
EDGE	Excellence in Design for Greater Efficiencies
EPB	Export Promotion Bureau
EPC	Engineering, Procurement, and Construction
ERD	Economic Relations Division

ESG	Environmental, Social, and Governance
ETP	Effluent Treatment Plant
EU	European Union
EV	Electric Vehicle
FGD	Focus Group Discussion
FSSC	Food Safety System Certification
GAP	Good Agricultural Practice
GESI	Gender Equality and Social Inclusion
GST	Global Stocktake
GW	Gigwatt
Ha	Hectare
HR	Human Resources
HVAC	Heating, Ventilation, and Air Conditioning
ICE	Internal Combustion Engine
ICT	Information Communication & Technology
IDCOL	Infrastructure Development Company Limited
IE	Industrial Engineering
ILO	International Labour Organisation
IOE	International Organisation of Employers
IoT	Internet of Things
IPM	Integrated Pest Management
IPP	Independent Power Producers
IPPU	Industrial Processes and Product Use
ISO	International Organisation for Standardization
ITF	Industrial Training Fund
KII	Key Informant Interview
kW	Kilowatt
LEED	Leadership in Energy and Environmental Design
M&E	Monitoring & Evaluation
MENA	Middle East and North Africa
MEP	Mechanical, Electrical, Plumbing
MFI	Microfinance Institution
MoEF	Ministry of Environment and Forests
MoEFCC	Ministry of Environment, Forest and Climate Change
MoI	Ministry of Industries
MoPEMR	Ministry of Power, Energy and Mineral Resources
MPP	Merchant Power Producers
$MtCO_2eq$	Million metric tons of carbon dioxide equivalent
MW	Megawatt
M&V	Measurement and Verification
NBFI	Non-Bank Financial Institution
NBR	National Board of Revenue
NDC	Nationally Determined Contribution
NECA	Nigeria Employers' Consultative Association
NSDA	National Skills Development Authority
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
OPEX	Operating expenditure

PPP	Public Private Partnership
PV	Photovoltaic
QA	Quality Assurance
QC	Quality Control
RAJUK	Rajdhani Unnayan Kartripakkha
RE	Renewable Energy
REI4P	Renewable Energy Independent Power Producer Procurement Programme
RESCO	Renewable Energy Service Company
RMG	Ready Made Garments
ROI	Return on Investment
RPL	Recognition of Prior Learning
SENAC	National Service for Commercial Apprenticeship
SENAI	National Service for Industrial Apprenticeship
SIDS	Small Island Developing States
SME	Small and Medium-sized Enterprise
SREDA	Sustainable & Renewable Energy Development Authority
TICI	Technical Institute for Chemical Industries
TVET	Technical and Vocational Education and Training
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organisation

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DISCLAIMER

The findings, interpretations, forecasts, and recommendations contained in this document do not necessarily reflect the official positions, policies, or views of the Australian Government, the Department of Foreign Affairs and Trade, or Swisscontact as an institution.

The green jobs forecasts presented in this report are indicative estimates derived from scenario modelling using internationally adapted methodologies and publicly available data sources. They are intended to inform strategic planning and investment decisions and should not be interpreted as definitive projections. Actual employment outcomes will depend on a range of factors including policy implementation rates, technology cost trajectories, private sector investment flows, regulatory developments, and macroeconomic conditions, many of which remain subject to significant uncertainty over the 2026 to 2035 forecast period.

The qualitative findings in this report are based on purposive stakeholder engagement and are intended to inform strategic decision-making rather than provide nationally representative estimates. Sector and firm-level insights reflect conditions and perceptions at the time of data collection and may not capture subsequent developments in rapidly evolving areas such as electric vehicles, battery technology, and digital agriculture.

All interviewee contributions have been treated in accordance with informed consent principles. Individual responses have been anonymised in analysis and no attributable statements have been made without explicit permission. The list of interviewees in Annex 3 reflects participation in the research process and does not constitute endorsement of the findings or recommendations by any individual or organisation listed therein.

EXECUTIVE SUMMARY

Bangladesh is highly exposed to climate risks while simultaneously facing increasing global pressure to decarbonise production, comply with ESG standards, and meet traceability and sustainability requirements in export markets. This convergence of climate vulnerability and trade transformation makes green skills a strategic necessity.

Green skills are defined as the layered competencies that enable individuals to contribute to climate mitigation, adaptation, and environmental sustainability- regardless of whether their occupation is traditionally labelled "green".

For Bangladesh, green skills are central to sustaining export competitiveness, attracting green finance, supporting just transition pathways for youth and women, and operationalising national climate commitments. Without a job-ready green workforce, climate ambition cannot translate into productivity gains, industrial upgrading, or inclusive growth.

Study Objectives, Methodology and Sector Selection

The study aimed to identify priority sectors, assess systemic green skills gaps, and recommend practical pathways to strengthen Bangladesh's green skills ecosystem in line with climate commitments and industrial transformation.

A systems-based diagnostic approach was applied, combining desk review with key informant interviews across demand and supply actors. Employers, industry associations, regulators, financial institutions, training providers, and certification bodies were engaged to assess skills demand, training delivery capacity, and institutional constraints.

Primary data collection included key informant interviews, focus group discussions, and enterprise consultations across shortlisted sectors. Findings were triangulated to identify cross-cutting gaps in technical capability, certification systems, digital integration, compliance readiness, and inclusion.

A structured prioritisation matrix assessed sectors based on relevance (climate alignment and inclusion), opportunity (growth and employment potential), and feasibility (policy support and ecosystem readiness), resulting in six priority sectors for targeted green skills reform: Renewable Energy, Electric Vehicles, RMG & Textiles, Green Construction, Agribusiness, and Tourism.

Key Green Skills Needs Emerging from the Study

The study identifies a consistent shortage of job-ready, mid-level technical and supervisory professionals across all priority sectors. While entry-level labour is available, employers face gaps in certified technicians capable of installing, operating, maintaining, and optimising green technologies and compliant production systems. Critical roles include solar O&M technicians, EV high-voltage specialists, industrial engineering supervisors in RMG, green construction site supervisors, climate-smart agriculture advisors, and sustainable operations managers in tourism.

Beyond technical functions, demand is rising for compliance-oriented skills such as carbon accounting, ESG reporting, traceability systems, and environmental documentation—especially in export-facing sectors. Digital and diagnostic capabilities are increasingly essential, as green systems rely on data monitoring, software-based tools, and performance optimisation.

Overall, the key need is for hybrid competencies that integrate technical proficiency, regulatory awareness, digital literacy, and financial understanding- supported by credible certification and practical training.

Systemic Challenges

Bangladesh's green skills ecosystem faces structural bottlenecks.

- A persistent policy–implementation gap means that climate strategies are not yet translated into occupation-level standards or coordinated delivery systems.
- Certification mechanisms remain fragmented

and often informal, with limited independent assessment or national recognition.

- Training delivery is frequently theory-heavy, constrained by outdated equipment, insufficient practical labs, and weak apprenticeship pipelines.
- Demand-side signals are inconsistent. Regulatory enforcement, green procurement standards, and finance mechanisms are not yet systematically linked to certified skills requirements, reducing incentives for firms to invest in workforce upgrading.
- Inclusion remains a challenge. Female participation in technical tracks is low, progression pathways to supervisory roles are limited, and youth often lack structured transition mechanisms from training to employment.

These constraints indicate that green skills development must be embedded within broader industrial, financial, and governance reforms rather than treated as a standalone TVET intervention.

Scale of Green Employment Opportunity

Across the six priority sectors, the study forecasts between 1.43 million and 2.12 million new direct green jobs by 2035 under conservative to accelerated deployment scenarios. Renewable energy dominates this potential, contributing an estimated 714,000 to 896,000 jobs, followed by green construction at 389,000 to 685,000 jobs, and climate-smart agriculture at 210,000 to 285,000 jobs. Electric vehicles, RMG, and eco-tourism collectively add a further 128,000 to 265,000 jobs. These figures reflect direct employment only, excluding indirect and induced effects, meaning the broader economic impact is likely considerably larger. Realising this potential, however, is contingent on coordinated investment in certified workforce development, regulatory clarity, green finance accessibility, and structured inclusion pathways for women and youth. Where these enabling conditions are absent, skills shortages are likely to emerge as the primary bottleneck to Bangladesh's green transition.

Recommendations and Way Forward

A coordinated, systems-based approach is required to operationalise green skills at scale.

- National climate and industrial targets should be translated into occupation-level green skills plans aligned with sector investment pipelines. Clear skills-to-jobs tracking mechanisms should be introduced.
- Certification systems must be strengthened and embedded within market incentives. Linking certification to green finance, export compliance, procurement standards, and regulatory approvals can generate demand-side pull for quality training.
- Practical training infrastructure requires upgrading. Priority investments include renewable energy labs, EV diagnostic facilities, carbon accounting and traceability systems training, construction compliance labs, and agriculture testing facilities. Structured apprenticeships should be institutionalised.
- Policy and finance signals must be aligned to ensure that green investments are accompanied by workforce upgrading.
- Inclusion should move beyond enrolment targets to focus on certification, placement, safe facilities, and structured youth progression pathways.

With coordinated reform, green skills can drive quality employment, strengthen export resilience, accelerate decarbonisation, and advance inclusive green growth in Bangladesh.

1. INTRODUCTION

1.1 BACKGROUND AND CONTEXT

Climate change is already exerting profound and measurable impacts on human lives, livelihoods, and development trajectories worldwide. Rising global temperatures have intensified the frequency and severity of heatwaves, floods, droughts, cyclones, and after sealevel, disrupting food systems, public health, infrastructure, and economic activity across all regions (IPCC, 2023). Climate-related hazards have increasingly undermined human security, with adverse impacts observed on water availability, agricultural productivity, labour capacity, and settlement patterns (IPCC, 2023). An estimated 3.3 to 3.6 billion people currently live in contexts that are highly vulnerable to climate change, the majority of whom are in low and middle-income countries and have contributed least to cumulative greenhouse gas emissions (IPCC, 2023). Climate change thus acts as a powerful multiplier of existing inequalities, disproportionately affecting poorer populations, informal workers, and climate-exposed communities.

Mitigating these impacts requires a rapid and economy-wide reduction of greenhouse gas emissions. Limiting global warming to 1.5°C above pre-industrial levels demands a 43% reduction in global emissions by 2030 relative to 2019 levels, alongside deep structural changes in energy, industry, transport, buildings, and agriculture (IPCC, 2023). This scale of mitigation cannot be achieved through marginal efficiency gains alone. Instead, it requires a fundamental transformation of production systems, technologies, and labour markets, supported by coherent public policy, private investment, and workforce adaptation.

The green transition of manufacturing and service industries is central to this transformation. Industry, transport, construction, and services together account for over 70% of global greenhouse gas emissions and the majority of global employment (IEA, 2022; ILO, 2023). Decarbonising these sectors through renewable energy adoption, resource efficiency, circular economy models, lowcarbon materials, and climate-smart services is essential to achieving national and global climate targets. At the same time, these sectors represent critical engines of job creation and economic growth, particularly in developing economies, making their green transformation a defining development challenge.

Importantly, demand for green skills has continued to rise even during periods of economic slowdown. While overall global hiring declined between February 2022 and February 2023, job postings requiring green skills increased by a median of 15.2%, underscoring the structural and resilient nature of green labour demand. Workers possessing at least one green skill experience a 29% higher hiring rate than the overall workforce median, highlighting the strong labour-market premium associated with green competencies (Global Green Skills Report, 2023).

For vulnerable workers and climate-exposed economies, these trends carry significant implications. Without targeted investment in green skills development, workers risk displacement or exclusion from emerging opportunities, while firms face constraints in adopting low-carbon technologies due to skills shortages. Conversely, equipping workers-particularly youth, women, informal workers, and those in climate-vulnerable regions-with relevant green skills can accelerate decarbonisation while safeguarding livelihoods. Green skills development therefore plays a dual role: it is both a critical enabler of the green transition and a cornerstone of a just transition, ensuring that climate action generates inclusive employment, enhances resilience, and reduces inequality rather than exacerbating it.

1.2 GREEN SKILLS: DEFINITION & CONCEPTUAL FRAMEWORK

Despite the increasing recognition of green skills development as a key building block facilitating green transition, the concept of green skills is not understood uniformly. Across global institutions and applied research, definitions emphasise different priorities - environmental sustainability, competitiveness, workforce adaptability, and social inclusion - reflecting that green skills relate not only to *"new green jobs"* but also to greening existing work through upgrading, reskilling, and productivity improvement.

The ILO (International Labour Organisation) defines green skills as the knowledge, abilities, values, and attitudes needed for sustainable, resource-efficient societies, highlighting that the transition requires structural change in skill profiles across the economy (not just additional training for a few occupations). UNIDO (United Nations Industrial Development Organisation) frames green skills as "skills for sustainable development," linking them to industrial upgrading through energy efficiency, cleaner production, and circular economy practices. The World Bank broadens the lens by stressing that green skills combine generic and specialised technical capabilities with managerial and socioemotional competencies (e.g., planning and coordination), and that education systems must adapt through curricula, qualifications, and lifelong learning. The European Commission similarly distinguishes between job-specific technical skills and transversal skills such as systems thinking and problem-solving, while the UNFCCC (United Nations Framework Convention on Climate Change) foregrounds inclusion - especially youth and women - so that the transition does not reinforce existing inequalities. While these definitions provide valuable policy guidance, they often remain broad and sector-based.

For the purpose of the study, we adopt the Swisscontact definition of Green Skills, an outcomeoriented perspective that moves beyond job titles or sectors and instead focuses on tangible environmental contributions.

To operationalise this definition, Swisscontact adopts a three-tier conceptual framework that builds on the unified definition developed by the Inter-Agency Working Group on Work-Based Learning and the work of Pavlova (2017). Green skills are conceptualised as a pyramid, consisting of three interdependent layers:

1.3 SIGNIFICANCE OF GREEN SKILLS FOR BANGLADESH

Bangladesh is widely recognised as one of the most climate-vulnerable countries in the world. The Intergovernmental Panel on Climate Change (IPCC AR6) identifies South Asia as a hotspot for extreme heat, flooding, sea-level rise, and cyclones, with deltaic countries like Bangladesh facing compounded risks. The Germanwatch Climate Risk Index consistently ranks Bangladesh among the countries most affected by extreme weather events over the past decades. These climate stresses directly threaten agriculture, fisheries, infrastructure, and informal urban employment—sectors that employ a large share of the workforce (IPCC, 2022; Germanwatch, 2021).

Swisscontact Definition of "Green Skills"

A layered set of competencies that enable individuals to make meaningful contributions to climate change adaptation, climate change mitigation, and environmental conservation and restoration — regardless of whether the occupation itself is traditionally classified as "green".

FIGURE 1: Defining Green Skills: Two Core Principles

This definition reflects two core principles that guide how we identify and apply green skills for a sustainable and resilient future.

Outcome-Based Lens

A skill is considered "green" when its application contributes to:

Climate change adaptation
(e.g., resilience-building, disaster risk reduction, climate-adaptive business models).

Climate change mitigation
(e.g., low-emission technologies, energy efficiency, sustainable agriculture, cleaner production).

Environmental conservation and restoration
(e.g., biodiversity protection, ecosystem services management, circular and regenerative business models).

Contextual Relevance

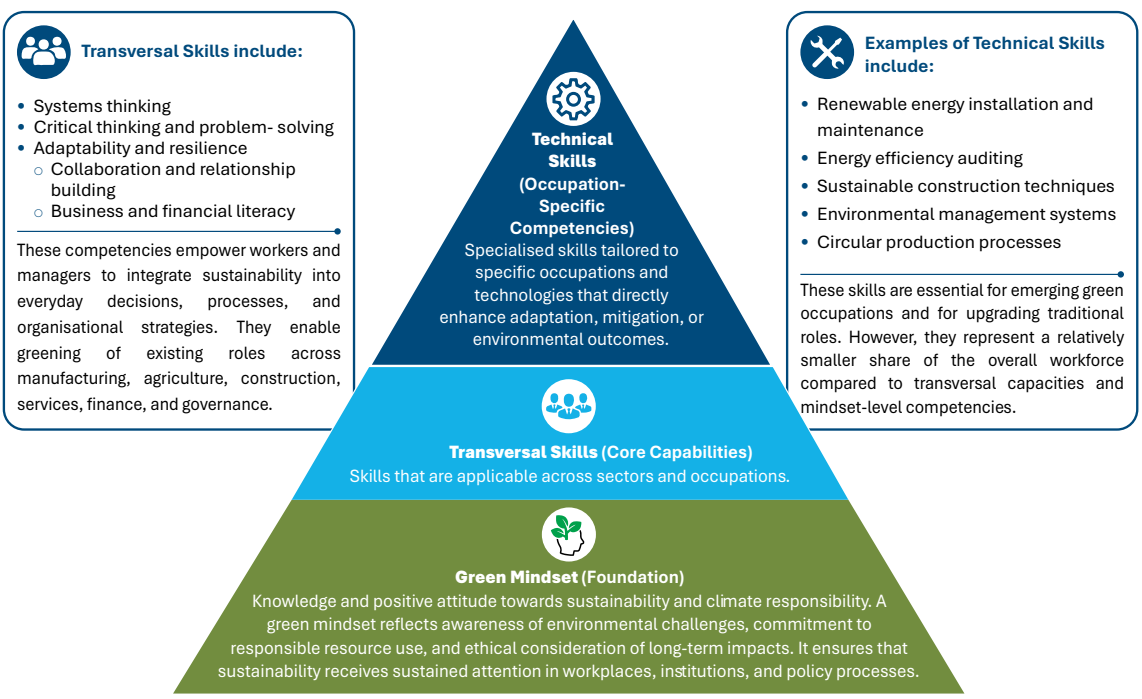
Skills themselves are not inherently green. It is the context of their application that determines their relevance to the green economy.

For example, finance, marketing, or management skills become green when they support sustainable investments, circular supply chains, or climate-resilient enterprises.

Conceptual Framework: The Green Skills Pyramid

In this context, adaptation-related green skills are essential economic safeguards. Skills in agribusiness, resilient infrastructure, water resource management, disaster risk reduction, and ecosystem restoration reduce productivity losses, protect supply chains, and stabilise incomes in climate-

FIGURE 2: Green Skills Pyramid



exposed communities. Evidence from the World Bank and the Asian Development Bank shows that resilience investments-particularly in agriculture and infrastructure- generate strong economic returns by reducing future damage and income volatility (World Bank, Climate and Development Report: Bangladesh, 2022; ADB, 2023). Building adaptation skills therefore protects jobs, strengthens business continuity, and reduces fiscal pressure from disaster recovery.

At the same time, Bangladesh's economy is highly integrated into global markets. Export-oriented sectors, particularly ready-made garments (RMG), agro-processing, and light manufacturing, are embedded in global value chains. According to the World Trade Organisation and the World Bank, sustainability standards, carbon disclosure requirements, and traceability regulations are increasingly shaping trade competitiveness. Emerging measures such as carbon border adjustment mechanisms and ESG-linked procurement standards in major markets (e.g., the EU) require firms to improve energy efficiency, environmental compliance, and emissions reporting. Without a workforce capable of implementing cleaner production, resource efficiency, circular practices, and sustainability documentation, Bangladesh risks erosion of market access. Green skills therefore underpin productivity, export competitiveness, and investment attraction (World Bank, 2022; WTO, 2023).

Bangladesh is also an active participant in the United Nations Framework Convention on Climate Change and the Paris Agreement. Through its updated Nationally Determined Contributions (NDC 2025 update), the country has committed to reducing greenhouse gas emissions by 20.31% by 2035 (conditional and unconditional combined) (Government of Bangladesh, NDC 2025; NDC Partnership). Achieving these targets requires scaling renewable energy, improving industrial efficiency, modernising transport, strengthening waste management, and advancing agribusiness. The International Labour Organisation emphasises that such structural transitions demand systemic skill transformation across the economy—not only new technical roles but also upgraded competencies within existing occupations (ILO, Skills for a Greener Future, 2019).

Finally, the green transition carries distributional risks. The United Nations Development Programme and the International Labour Organisation highlight that without deliberate skills pathways, climate action may widen inequality, leaving women and disadvantaged youth concentrated in low-wage, climate-vulnerable roles. Targeted green skills development supports a just transition by enabling reskilling, upward mobility, and broader participation in emerging low-carbon sectors (UNDP, 2023; ILO, 2018).

In sum, green skills in Bangladesh are central to four interconnected priorities: climate resilience, global competitiveness, low-carbon transformation, and inclusive growth. For a climate-vulnerable and export-dependent economy, investing in green skills is not only an environmental strategy- it is a strategic economic necessity supported by global evidence and aligned with national climate commitments.

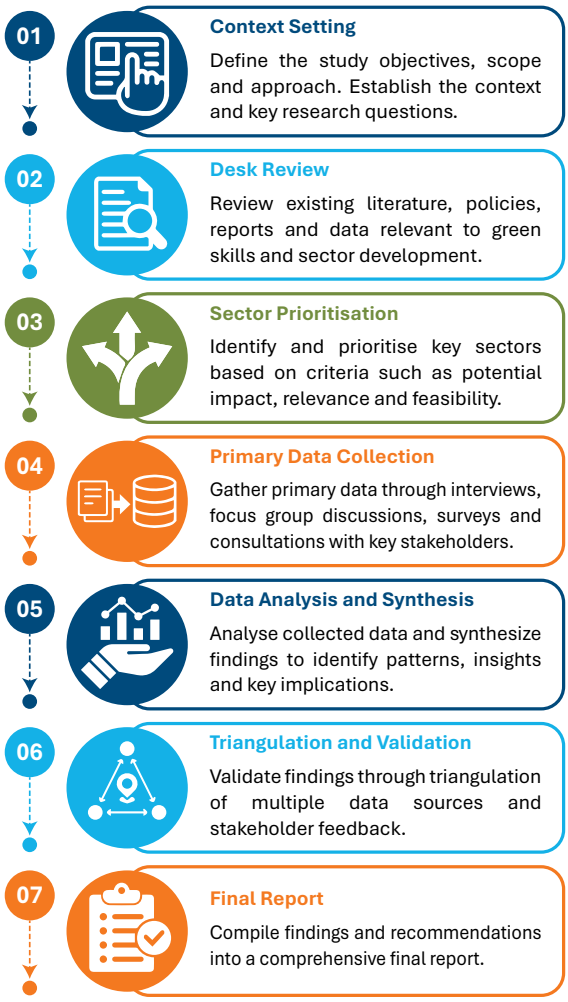
2. APPROACH AND METHODOLOGY

This study uses system-based research design. It recognises that developing green skills involves more than just providing training. It is the result of interactions among different factors like policy frameworks, market demand, education and training systems, and labour market institutions. Simply having skilled workers does not ensure job opportunities. Skills need to match what employers want, be supported by effective policies, and be part of functioning labour markets. Weaknesses in any part of this system, including unclear policy signals, limited demand from the private sector, or outdated training programmes, can hinder the conversion of green skills into good jobs. With this understanding, this study assesses Bangladesh's green skills ecosystem to inform programmatic and investment decisions that can produce measurable jobs and productivity outcomes. Specifically, it aims to:

- Identify green skills demand and supply in priority sectors and occupations, linked to Bangladesh's economic and environmental priorities.
- Generate gender-disaggregated insights on occupations and pathways with strong potential for women's inclusion.
- Map private sector initiatives providing green skills-related services and assess constraints and scaling potential.
- Identify policy and institutional gaps that limit effective public-private coordination and PPP models for green skills development.
- Assess sector transition readiness and recommend where skills investments are most likely to convert into employment and performance improvements.

The research design employs qualitative and diagnostic approaches, structured to facilitate policy dialogue, inform program design, and guide implementation planning.

FIGURE 3: Study Methodology and Workflow



2.1 LITERATURE REVIEW

A structured review of national policies, strategies, action plans, and regulatory frameworks related to climate change, green growth, skills development, and employment was conducted as part of the literature review. It assessed the coherence between climate commitments (including Bangladesh's NDC 3.0), employment strategies, skills development policies, and sectoral plans. The analysis also explored institutional roles, coordination mechanisms, and overall sector readiness to absorb and deploy green skills. In addition, international policies, strategies, and

regulatory frameworks were analysed to explore global trends in green skills demand and supply and best practices to foster green skills and employment further.

2.2 SECTOR PRIORITISATION

Building on the literature and policy review outlined, sector prioritisation was undertaken as a structured analytical step to identify where green skills investments are most likely to generate measurable climate, employment, and productivity outcomes. This longlist comprised eight sectors: Renewable energy (RE); Electric vehicles(EV); RMG and textile; Green construction; Agribusiness; Tourism; Leather; and Waste management. To narrow this list systematically, the study applied a comparative screening framework based on three core criteria: relevance, opportunity, and feasibility.

TABLE 1: Criteria and Sub-Criteria for Prioritising Sectors in Green Skills Development and Workforce Transformation

Criterion	Sub-criterion	Description and rationale
Relevance	Alignment with Climate Priorities	Assesses the extent to which the sector is relevant with national and international climate priorities, including the NDC, NAP, Renewable Energy targets, and obligations under the Paris Agreement. Priority is given to sectors identified as strategic for mitigation, adaptation, or low-carbon transformation in national policy frameworks.
	Just Transition & Inclusive Employment Potential	Assesses whether green transformation in the sector can generate decent, climate-resilient employment for low-income, informal, and marginalised populations, while minimising risks of displacement from high-emission activities. This ensures green skills development contributes to poverty reduction, resilience, and equitable transition outcomes.
	Youth relevance	Examines the sector's potential to absorb young workers into emerging green occupations and provide clear entry-level, vocational, and progression pathways. This includes opportunities for hybrid skills (technical + environmental + digital) aligned with Bangladesh's youthful demographic profile.
	Gender & Social Inclusion Leverage	Assesses whether green upgrading can expand participation of women and excluded groups through new occupations, safer work conditions, or formalisation pathways.
	Green Transformation Potential	Evaluates the sector's capacity to contribute meaningfully to environmental sustainability through decarbonisation, energy efficiency, climate adaptation, resource efficiency, circular economy practices, or environmental compliance. Priority is given to sectors where skills development directly supports measurable environmental outcomes.
Opportunity	Green Competitiveness & Value Addition	Assesses whether green skills can enhance productivity, export competitiveness, ESG compliance, and long-term value addition within the sector. This includes alignment with global sustainability standards and access to climate-linked investment.
	Green Growth Momentum	Evaluates the likelihood of sustained sector expansion driven by climate policy commitments, market shifts, technological change, or environmental regulation. This helps identify sectors where future demand for green skills is expected to increase structurally.
	Quality Green Employment	Examines whether sector growth is likely to generate significant decent employment relative to capital investment, including opportunities for formalisation, wage progression, and gender inclusion. Emphasis is placed on the quality—not only quantity—of green jobs created.
	Green Entrepreneurship & Self Employment Potential	Assesses the sector's potential to generate green micro, small, and medium enterprises (MSMEs), selfemployment pathways, and service-based business models linked to environmental sustainability.

Criterion	Sub-criterion	Description and rationale
	Demand for Green Skills	Assesses evidence of current or emerging employer demand for specific green skills, including those driven by regulatory compliance, environmental standards, renewable technologies, energy efficiency practices, climate-smart production, or ESG reporting requirements. Strong demand signals increase absorption potential for trained workers.
	Green Investment Leverage Potential	Evaluates whether the sector is positioned to mobilise or leverage public and private investment for green upgrading, technological adoption, and expansion. Sectors with strong investment leverage are more likely to generate sustained demand for green skills.
Feasibility	Presence of Market Actors	Evaluates the availability of firms, industry associations, service providers, and lead actors actively investing in green upgrading, sustainability compliance, or environmental innovation. A critical mass of engaged market players enhances implementation viability.
	Policy & Institutional Alignment	Assesses coherence between sector development and national climate strategies, NDC commitments, green industrial policies, and TVET reform initiatives. Strong institutional backing increases the sustainability and scalability of green skills interventions
	Skills Ecosystem & Scaling Capacity	Examines whether the training ecosystem (TVET institutes, private providers, certification bodies, industry partnerships) has the capacity to develop, deliver, and scale relevant green curricula. This includes infrastructure readiness, trainer capacity, accreditation systems, and linkages with employers.

Each sector was then assessed using a structured traffic-light methodology to distinguish relative readiness and transformation potential across these dimensions. The traffic-light assessment matrix is provided in Annex 1.

2.3 PRIMARY DATA COLLECTION AND ANALYSIS

Selected priority sectors were analysed in depth to understand how green transitions are unfolding at the sector and firm level. This stage focused on identifying current and emerging employer demand for green skills, the responsiveness and capacity of training providers, and the strength of linkages between training systems and labour market outcomes. Attention was given to practical constraints faced by employers and workers during transition processes. Data collection deliberately covered both demand-side stakeholders (employers, enterprises, and industry associations) and supply-side stakeholders (Technical and Vocational Education and Training (TVET) institutions, certification bodies, and academic institutions). Standardised interview guides and discussion tools were used to ensure consistency and comparability, while maintaining flexibility to capture sector-specific dynamics and emerging issues. To conduct this analysis, the study employed following data collection tools to collect primary data:

Key Informant Interviews (KIIs): KIIs were conducted with government regulators, industry associations, employers, training providers, and sector specialists. KIIs were used to capture strategic insights, institutional perspectives, and implementation challenges related to green skills development.

Focus Group Discussions (FGDs): FGDs were held with trainees, workers, and industry representatives to capture workforce-level experiences, perceptions of skills relevance, barriers to employment, and inclusion considerations (including youth and gender dimensions where applicable).

Enterprise case studies: In-depth case studies were undertaken with selected firms undergoing green or low-carbon transitions. These included interviews with management and technical staff, and where possible, site visits. Case studies provided practical insights into firm-level skills demand, training practices, and constraints to adoption.

Stakeholder consultation roundtables and workshops: Multi-stakeholder consultations were organised to facilitate cross-sector dialogue, test preliminary findings, and build consensus around priorities and recommendations. These forums supported validation and strengthened the ownership of findings among key actors.

2.4 DATA ANALYSIS, SYNTHESIS AND VALIDATION

Primary data were analysed employing a range of qualitative and analytical techniques appropriate for policy-oriented research:

FIGURE 4: Data Analysis, Synthesis and Validation Framework

Comparative policy analysis: Policy commitments and strategic objectives were systematically compared with observed sectoral readiness and implementation capacity. This analysis helped identify misalignments between policy ambition and operational realities.

Thematic analysis: Qualitative data from KIIs, FGDs, and case studies were analysed to identify recurring themes, skills gaps, institutional bottlenecks, and opportunities for intervention. Particular attention was given to constraints affecting employment outcomes and scalability.

Triangulation and validation: Findings were cross-checked across multiple data sources and stakeholder groups to enhance reliability. Validation workshops and consultations were used to test assumptions, refine interpretations, and ensure findings are credible and usable for policy and programme decision making.

2.5 LIMITATIONS AND ASSUMPTIONS

The study acknowledges the following limitations and assumptions:

- **Methodological scope:** The qualitative and purposive nature of the research limits statistical generalisability across all regions and sectors. Findings are intended to inform strategic decision-making rather than provide nationally representative estimates.
- **Evolving policy and market context:** Green skills demand is influenced by rapidly evolving technologies, regulatory changes, and market conditions. Findings reflect current and near-term dynamics and may require updating as conditions change.
- **Data constraints:** Limited availability of firm-level data and longitudinal employment tracking constrained the detailed analysis.
- **Stakeholder and policy assumptions:** The analysis assumes that stakeholders provide informed and accurate insights and that public policy documents reflect official intent, while recognising that implementation capacity and enforcement may vary.

Despite these limitations, the use of multiple data sources, systematic triangulation, and structured validation processes strengthens the credibility, robustness, and practical relevance of the findings for the Australian High Commission and other development partners.

3. PRIMARY RESEARCH FINDINGS

3.1 SECTOR PRIORITISATION RESULTS

Before presenting the primary research findings, this section summarises the outcome of the sector prioritisation process, with the detailed traffic-light matrix and full policy and sectoral analysis provided in Annex 1 and Annex 2. The brief interpretations that follow synthesise the traffic-light results and draw on the broader policy and sector review outlined in Annex 2.

Based on the combined scoring across relevance, opportunity, and feasibility criteria, six sectors emerged as strategic priorities for green skills investment:

Renewable Energy: Renewable Energy scored consistently high across all three criteria. It demonstrates strong alignment with national climate and energy transition commitments (relevance), sustained investment momentum and clear demand for technical occupations (opportunity), and a relatively structured market ecosystem with active SMEs and institutional support (feasibility). The assessment indicates that Renewable Energy provides one of the most scalable and policy-backed platforms for green skills expansion.

Electric Vehicles: The EV sector scored high on future opportunity and strategic relevance, reflecting its structural importance in transport decarbonisation and emerging policy support. While feasibility is currently moderate due to ecosystem fragmentation and training gaps, the assessment suggests strong growth momentum and increasing demand for new occupational profiles such as EV technicians, battery management specialists, and charging infrastructure installers. Targeted skills system adaptation will be critical to unlock this potential.

RMG & Textile: RMG & Textile ranks highly due to its economic centrality and exposure to international sustainability compliance pressures. The sector scored particularly strong on relevance and opportunity, driven by energy efficiency, environmental compliance, ESG reporting, and buyer-led standards. Feasibility is also high due to dense market participation and firm-level incentives to upgrade. Despite moderating growth, the sector's employment scale and upgrading trajectory justify prioritisation.

Green Construction: Green Construction demonstrates strong long-term relevance due to rapid urbanisation and climate-resilient infrastructure needs. Opportunity is moderate to high, with growing demand for energy-efficient building practices and sustainable materials. Feasibility remains moderate, as training systems require adaptation and standards integration; however, the large existing workforce and active SME base provide a scalable foundation for green upgrading.

Agribusiness: Agribusiness scored strongly on relevance due to its central role in rural livelihoods and climate resilience. Opportunity is high given labour intensity, value chain upgrading, and expanding sustainability standards. Feasibility is moderate to high, supported by policy alignment and existing institutional presence, though certification systems and practical training infrastructure require strengthening. The sector offers substantial scope for entrepreneurship and servicebased employment.

Tourism: Tourism scored high on inclusion potential and moderate on environmental transformation depth. The sector offers strong youth and women employment pathways (relevance) and growing demand for sustainable destination management, resource-efficient operations, and service quality upgrading (opportunity). Feasibility is moderate due to geographic concentration and uneven standards adoption, but targeted certification and skills alignment can strengthen competitiveness.

Waste and leather remain important from an environmental perspective; however:

- Waste, while strong in relevance, faces structural formalisation and governance challenges that may limit short-term scaling of formal green skills systems.

- Leather demonstrates strong environmental urgency but more constrained growth momentum and employment transformation potential relative to selected sectors.

The prioritisation results above establish the analytical basis for sector selection. The following sections draws on primary data collected across these six sectors to examine current and emerging green skills demand, supply-side constraints, and labour-market readiness.

3.2 PRIMARY DATA FINDINGS

3.2.1 RENEWABLE ENERGY (RE)

Sector Overview: Renewable Energy in Bangladesh
Bangladesh's renewable energy sector is undergoing steady expansion, with solar energy emerging as the dominant technology across rooftop, utility-scale, irrigation, and increasingly agrivoltaics applications. Growth is driven by rising industrial demand under net metering, corporate sustainability commitments, and the declining cost of solar technologies. Rooftop solar has scaled particularly quickly in industrial and commercial segments, while utility-scale projects face land acquisition and regulatory bottlenecks.

The sector operates largely through EPC (Engineering, Procurement, and Construction) contractors and Independent Power Producers (IPPs), supported by a mix of CAPEX, OPEX (RESCO), leasing, and power purchase agreement models. However, value chain localisation remains limited. Core components, including solar panels, inverters, DC cables, and specialised mounting structures—are primarily imported, with only partial domestic capability in selected electrical equipment segments.

Institutional and policy frameworks have evolved—particularly through net metering and renewable energy targets—but implementation challenges persist. Lengthy approval processes, multi-agency coordination requirements, grid constraints, and financing costs continue to affect project timelines and investor confidence.

As the sector transitions from pilot-scale deployment to mainstream energy infrastructure, the need for structured workforce development, standardisation, and technical specialisation has become increasingly critical. The following section presents primary research findings on renewable energy skills and competency requirements.

Primary Research Findings: Renewable Energy Skills and Competency Requirements

Overall Skills Needs in the RE Sector

Across EPC firms, IPPs, and equipment suppliers, demand spans the full project lifecycle: feasibility assessment, system design, engineering, procurement, installation, commissioning, grid integration, monitoring, operations and maintenance (O&M), and performance optimisation.

Employers report three critical pressure points:

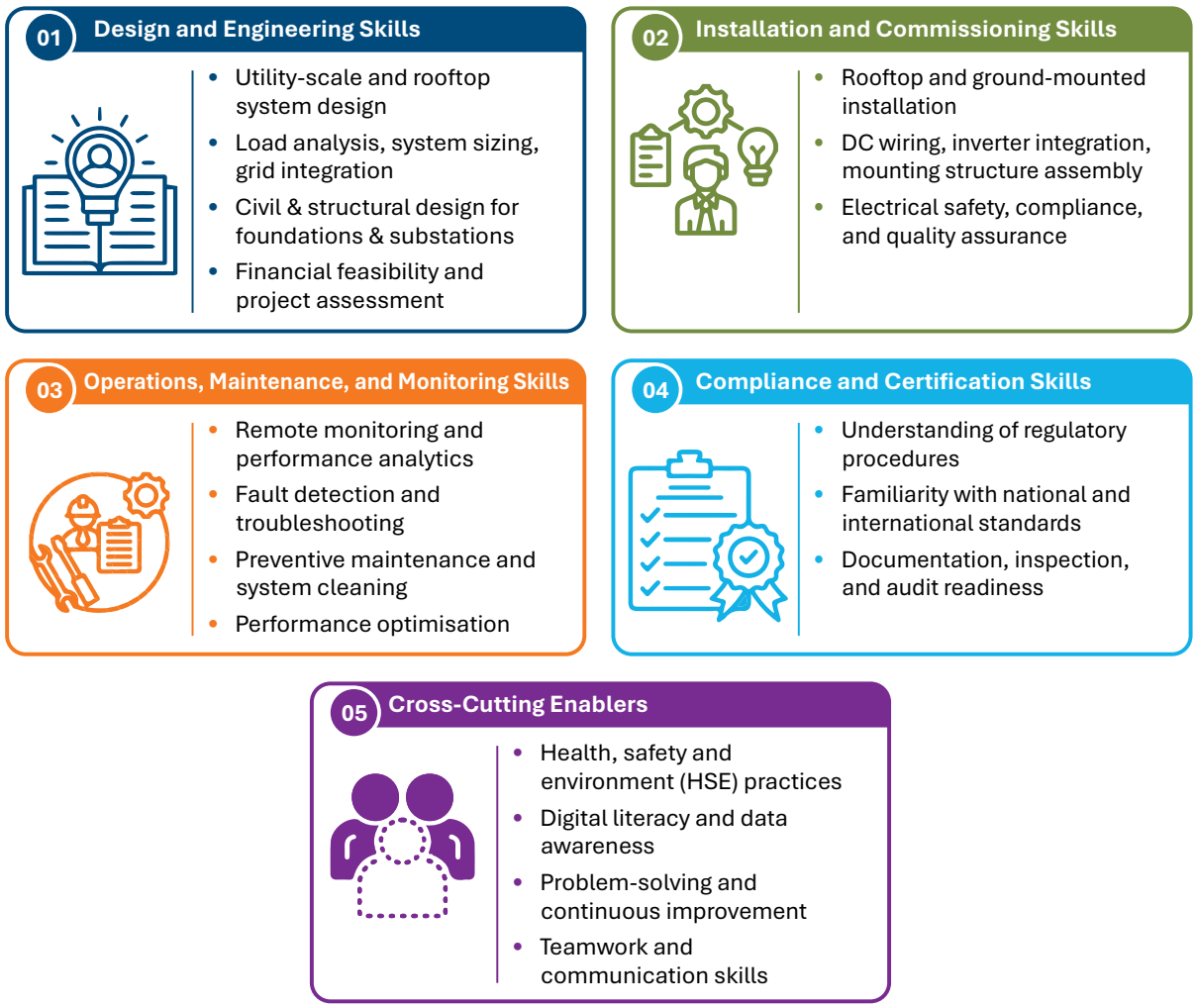
1. **Design and engineering capacity**, particularly for utility-scale solar. Local expertise in detailed system design remains limited, with some projects relying on foreign technical support.
2. **Installation workforce shortages,** especially as rooftop and industrial systems scale.
3. **O&M and lifecycle management gaps,** which are expected to intensify as the installed base matures.

In addition, a less visible but significant bottleneck lies in project feasibility and financial assessment skills. There is a shortage of professionals who can combine engineering knowledge with financial modelling, BOQ preparation, payback analysis, and long-term return estimation—capabilities essential for unlocking private and industrial solar investment.

What "Green Skills" Mean in the RE Context

In the renewable energy sector, green skills extend beyond environmental awareness. They encompass the technical, operational, financial, and compliance competencies required to design, implement, and sustain renewable energy systems safely and efficiently. The sector increasingly requires hybrid profiles that integrate technical competence with commercial and regulatory understanding. As shown in Figure 5, green skills in RE can be grouped into four interlinked categories:

FIGURE 5: Green Skills in the RE Sector



Current Status of Skills Development in the RE Sector

The training ecosystem remains largely engineering-centric and theory-heavy, with limited solarspecific content integrated into mainstream university or TVET curricula. Graduates generally require significant retraining upon recruitment. Private firms have responded by establishing in-house training systems, often in collaboration with equipment manufacturers. These internal programmes differentiate between high-skilled engineers, semi-skilled supervisors, and low-skilled installers. While effective at firm level, this approach results in fragmented capability development and uneven workforce quality across the sector.

From the supply side, TVET institutions such as UCEP Bangladesh demonstrate strong marketoriented training models and employer linkage systems. However, renewable energy–specific programming remains limited in scale and largely pilot-based. Although conceptual Green TVET frameworks exist, implementation remains gradual and resource constrained. Green skills integration faces constraints related to:

- Shortage of qualified trainers,
- Limited practical lab facilities and updated equipment,
- Resource dependence on donor-driven initiatives,
- Emerging but not yet fully institutionalised industry demand signals.

Current Challenges

1. **Installation and O&M Workforce Gaps:** The most immediate shortage lies in field-level installation and maintenance roles. As project volumes increase, informal on-the-job learning is insufficient to ensure safety, quality, and performance standards.

2. **Design and Utility-Scale Engineering Constraints:** Bangladesh lacks sufficient utility-scale design expertise, leading to reliance on foreign technical input. Strengthening local design capacity is critical for reducing dependency and improving project turnaround.
3. **Weak Standardisation and Certification Systems:** The absence of a comprehensive national certification framework for renewable energy technicians undermines workforce quality and employer confidence. While short installer courses exist, structured competency pathways and formal role recognition remain limited.
4. **Hybrid Skill Shortages (Engineering + Finance):** A major bottleneck for scaling investment lies in the shortage of professionals capable of conducting solar feasibility studies, financial structuring, and long-term performance assessment. This gap directly affects private sector uptake and project bankability.
5. **Misalignment Between Policy Ambition and Workforce Planning:** National renewable energy targets have been revised upward, yet workforce planning has not been systematically aligned with these ambitions. Skills development remains reactive rather than forecast-driven.
6. **Institutional Capacity Constraints:** TVET institutions face shortages of trained instructors and practical training infrastructure required for installation and O&M simulation. Scaling green skills requires investment in equipment, trainer upskilling, and structured industry attachment models.
7. **Inclusion Barriers:** Female participation remains limited due to structural and socio-cultural constraints. However, opportunities exist in system design, supervision, monitoring, and daytime O&M roles, provided supportive workplace environments are ensured.

Future Skills Needs (3–5 Year Horizon)

Looking ahead, demand is expected to increase in:

- Certified installation and rooftop solar technicians
- O&M specialists and digital monitoring technicians
- Utility-scale design engineers
- Solar performance auditors and inspectors
- Renewable energy finance and project development analysts
- Agrivoltaic system integrators
- Solar panel recycling and circular economy roles (emerging segment)

As technology continues to evolve—particularly with higher-efficiency panels and potential energy storage integration—human capital development must accelerate accordingly.

Key Findings

The renewable energy sector in Bangladesh is technologically advancing and commercially expanding, yet workforce development systems remain fragmented and under-scaled. Green skills in this context require integrated competencies across design, installation, monitoring, maintenance, finance, and compliance. Without coordinated investment in competency-based curricula, instructor capacity, hybrid skill development, and a national certification framework, human capital constraints risk becoming a primary bottleneck to achieving Bangladesh's renewable energy targets.

National Case Illustration: Enterprise-Level Skills Ecosystems

The case of rooftop solar deployment by Omera Solar illustrates how enterprise-level transition is progressing when commercial viability aligns with technical capability. Omera's model integrates design, EPC implementation, remote monitoring, and structured O&M teams. However, these competencies are largely built through internal systems rather than formal national pipelines. The absence of standardised certification and structured public–private training pathways means firms must

invest heavily in internal capability building. While effective at firm level, this approach limits scalability and creates uneven quality across the broader solar value chain.

3.2.2 ELECTRIC VEHICLES (EV)

Sector Overview: EV in Bangladesh

Bangladesh has articulated an ambitious decarbonisation pathway for the transport sector under its NDCs, targeting 30 percent EV adoption by 2030 and an estimated reduction of 3.39 million tonnes of CO_2 emissions. However, implementation remains at an early and uneven stage.

The EV ecosystem is highly segmented. Three-wheelers dominate numerically, with an estimated 5–6 million battery-run vehicles operating nationwide, mostly informally and powered by lead-acid batteries. Two-wheelers are expanding rapidly, driven by rising fuel costs, lower operating expenses, and improved availability of electric models. Four-wheelers remain small in volume but are gaining visibility, particularly among premium and urban consumers. Electric buses are emerging through pilot programmes and development partner-supported initiatives, though large-scale deployment remains limited.

Policy incentives have improved in recent years, including reduced import duties relative to internal combustion engine vehicles and proposals for further tariff rationalisation. However, high EV registration fees—arising from current classification formulae remain a significant barrier. Charging infrastructure is limited nationwide, and the financial viability of standalone charging stations remains weak due to high capital costs and low utilisation rates.

Overall, the EV ecosystem reflects strong environmental rationale and policy intent, but is constrained by regulatory inconsistencies, infrastructure gaps, financing bottlenecks, and skills deficits.

Primary Research Findings: EV Skills and Competency Requirements

Primary research across manufacturers, assemblers, charging network operators, training providers, development partners, and focus group participants indicates that the EV sector is constrained less by initial entry and more by workforce quality, standardisation, and safety readiness.

Overall Skills Need in the EV Sector

Primary research indicates that Bangladesh's EV sector is not constrained by the absence of activity, but by the quality, standardisation, and future-readiness of its workforce. EV-related work is already taking place across three-wheelers, two-wheelers, four-wheelers, battery assembly, charging stations, and informal repair ecosystems. However, skills development has not kept pace with technological complexity or regulatory needs. Skills demand varies by segment:

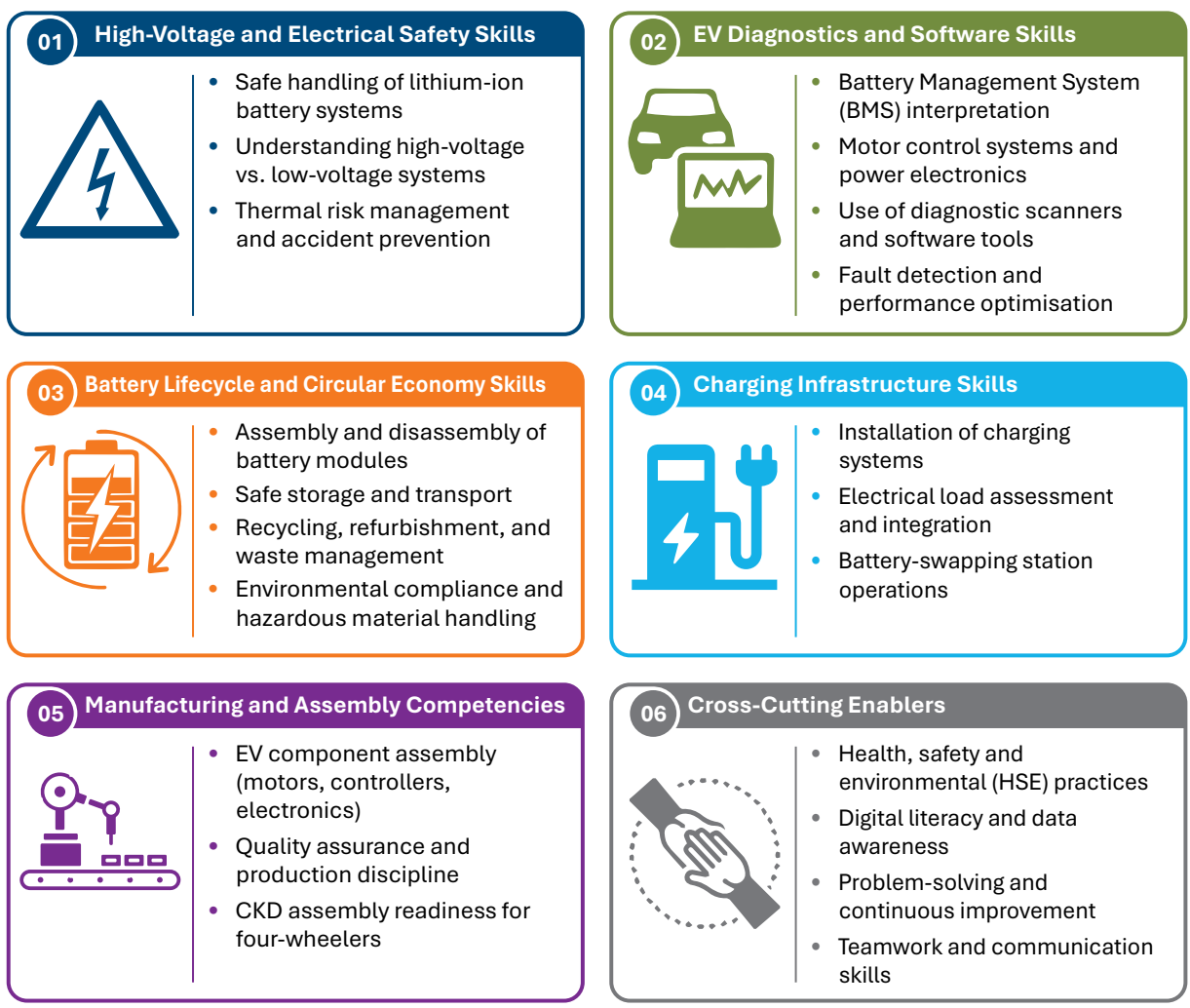
- **Three-wheelers:** Large informal workforce engaged in assembly, battery replacement, and basic repair, mostly without certification or safety compliance.
- **Two-wheelers:** Rapidly growing segment requiring technicians for assembly, diagnostics, and battery servicing.
- **Four-wheelers:** Smaller but technologically advanced segment requiring high-voltage diagnostics, software-based troubleshooting, and OEM-standard servicing.
- **Charging infrastructure:** Technicians for installation, load management, and maintenance.
- **Battery recycling and lifecycle management:** Emerging but critical area with severe safety and environmental implications.

Unlike conventional automotive repair, EV systems are electromechanical and software-driven, requiring integration of electrical, electronic, digital diagnostic, and safety competencies. The sector therefore requires both upskilling of existing mechanics and development of new technical specializations.

What "Green Skills" Mean in the Context of the EV Sector

In the EV sector, green skills refer to the competencies required to support low-emission mobility systems safely, efficiently, and sustainably across the full lifecycle of vehicles and batteries. As shown in Figure 6, green skills in the EV context include:

FIGURE 6: Green Skills in the EV Sector



Green skills in EV therefore extend beyond vehicle repair. They encompass environmental compliance, safe battery handling, circular economy practices, and system-level integration across the EV ecosystem.

Current Status of Skills Development in the EV Sector

The current EV skills ecosystem is fragmented and largely informal. Repair and assembly work is already happening across the country, particularly in the three-wheeler segment. However:

- Battery and motor repairs are often conducted without standardised safety protocols.
- No nationally recognised certification framework exists for EV technicians or battery recyclers.
- High-voltage handling skills are limited.
- Informal recycling practices create environmental and health risks.

Private training providers have begun offering EV and hybrid modules, typically structured as shortterm, hands-on courses. These programmes emphasise applied electricity foundations, diagnostics, and high-voltage awareness. However, scaling remains constrained by:

- High cost of advanced diagnostic tools and EV units for training.
- Limited access to real vehicles for repeated troubleshooting practice.
- Insufficient lab infrastructure for safe high-voltage training.
- Revenue limitations under tuition-based models.

Public sector capacity gaps also exist. Institutional readiness for certification, standard-setting, and EV regulatory implementation remains limited. There is no structured national workforce forecasting model to align training supply with projected EV growth. Overall, the skills development system is reactive rather than strategically planned.

Current Challenges

1. **Lack of Standardised Certification and Regulation:** No structured certification pathways exist for EV servicing, battery recycling, or charging system technicians. This weakens safety, employer confidence, and workforce mobility.
2. **Weak Foundational Technical Skills:** Many technicians lack strong grounding in applied electricity, measurement tools, waveform analysis, and safety procedures, making high-voltage EV work risky.
3. **Inadequate Training Infrastructure:** Training institutes lack advanced labs, EV units, diagnostic scanners, and protective equipment required for industrial-level training.
4. **Battery Recycling Crisis:** Informal lead-acid recycling practices are environmentally hazardous. Lithium-ion recycling capacity is minimal, and technicians lack training in safe disassembly and thermal risk management.

Future Skills Needs (3–5 Year Horizon)

Over the next three to five years, workforce demand is expected to rise in the following areas:

- High-voltage EV diagnostics specialists
- Battery assembly and refurbishment technicians
- Certified charging infrastructure installers
- Battery recycling and hazardous waste management professionals
- EV workshop supervisors with safety compliance training
- Quality control specialists for local assembly

Additionally, systemic capabilities are needed in:

- National EV certification framework development
- Instructor upskilling and industry attachments
- Forecast-based workforce planning aligned with EV adoption targets
- Integration of EV modules into polytechnic and diploma curricula
- Development of circular battery economy skill pathways

Battery recycling and lithium-ion transition will likely become one of the most urgent skill domains due to environmental risk and market expansion.

5. **Financial Barriers to Training Scale-Up:** Building modern EV training labs requires significant capital investment, which tuition revenue alone cannot sustain.
6. **Policy–Skills Disconnect:** EV policy ambition is not yet matched by structured workforce planning, certification design, or industrial skill forecasting.

Key Findings

Bangladesh's EV sector is expanding across multiple vehicle segments, yet its workforce development system remains informal, fragmented, and under-standardised. Green skills in the EV context require integrated competencies in high-voltage safety, diagnostics, battery lifecycle management, charging infrastructure, and manufacturing quality systems. Current training provision is limited in scale and depth, with weak certification systems and insufficient lab infrastructure. Without coordinated policy alignment, standardised competency frameworks, and targeted investment in practical training capacity, workforce constraints may become a primary bottleneck to safe and scalable EV transition in Bangladesh.

Developing a Workforce for EV Industry: A Case Study of Auto Logic:

AutoLogic Bangladesh plays a key role in the automotive training sector, focusing on Hybrid and Electric Vehicle (HEV) technology. AutoLogic's focus on EV servicing and hybrid vehicle systems directly addresses a growing skills gap in the transport sector. It provides modular, hands-on training designed in consultation with employers, targeting both local and international job markets.

However, like other private providers, AutoLogic operates without formal integration into national certification bodies or industry-wide standards. Scaling such models will require blended financing, recognition of non-state credentials, and alignment with national EV policies.

3.2.3 RMG & TEXTILE

Sector Overview: RMG & Textile in Bangladesh

The Ready-Made Garments (RMG) sector remains the backbone of Bangladesh's economy, contributing the majority of export earnings and employing millions of workers. However, the sector is entering a new phase of structural transition driven by external compliance pressure, evolving global regulations, and rising sustainability expectations from buyers.

Since 2018–2019, widely used as a baseline year for greenhouse gas emissions, factories have increasingly been required to demonstrate measurable progress toward 2030 climate and sustainability targets. The shift toward greener production is primarily driven by the following:

- European Union regulatory reforms (e.g., Digital Product Passport, Carbon Border Adjustment Mechanism)
- Increasing buyer requirements for carbon reporting, circularity, and traceability
- Consumer demand for transparency and responsible sourcing
- Competitive pressure favoring high-performing, sustainability-compliant suppliers

While Bangladesh has made progress in water efficiency and green building certification, energy efficiency, renewable energy integration, waste management systems, and digital traceability infrastructure remain uneven.

The sector is consolidating toward larger, compliant factories, while SMEs face growing difficulty in meeting compliance expectations due to financial and skills constraints. Sustainability is no longer limited to infrastructure (e.g., green buildings or Effluent Treatment Plant (ETP)); it now requires data systems, digital reporting, cross-functional management capacity, and integrated operational efficiency.

The transition toward sustainability is therefore reshaping workforce requirements across all levels; from worker behavior and supervision to industrial engineering, ESG reporting, and strategic management.

Primary Research Findings: Green Skills and Competency Requirements in the RMG Sector

Overall Skills Needs in the RMG & Textile Sector

Primary research indicates that the RMG sector's sustainability transition is constrained less by physical infrastructure and more by uneven workforce capability. Skills demand is evolving in three interconnected dimensions:

1. **Operational Efficiency and Industrial Engineering (IE):** Production efficiency in many factories remains significantly below that of competitor countries. Weak IE capability, limited linebalancing skills, and inadequate supervisory management reduce resource optimisation and productivity.
2. **Compliance, ESG, and Traceability Skills:** Carbon accounting, sustainability reporting, ESG disclosure, Digital Product Passport (DPP) readiness, and product-level traceability are becoming mandatory, especially for EU markets. Many factories, particularly SMEs, lack structured data systems and trained personnel to meet these requirements.

3. **Digital and Data-Driven Sustainability Skills:** Buyers increasingly require real-time reporting on emissions, energy use, and environmental performance. However, digital literacy and data management capacity remain weak across factories.

The sector therefore requires a shift from compliance-driven documentation to integrated sustainability management embedded in operations, finance, IE, marketing, and senior leadership.

What "Green Skills" Mean in the Context of the RMG Sector

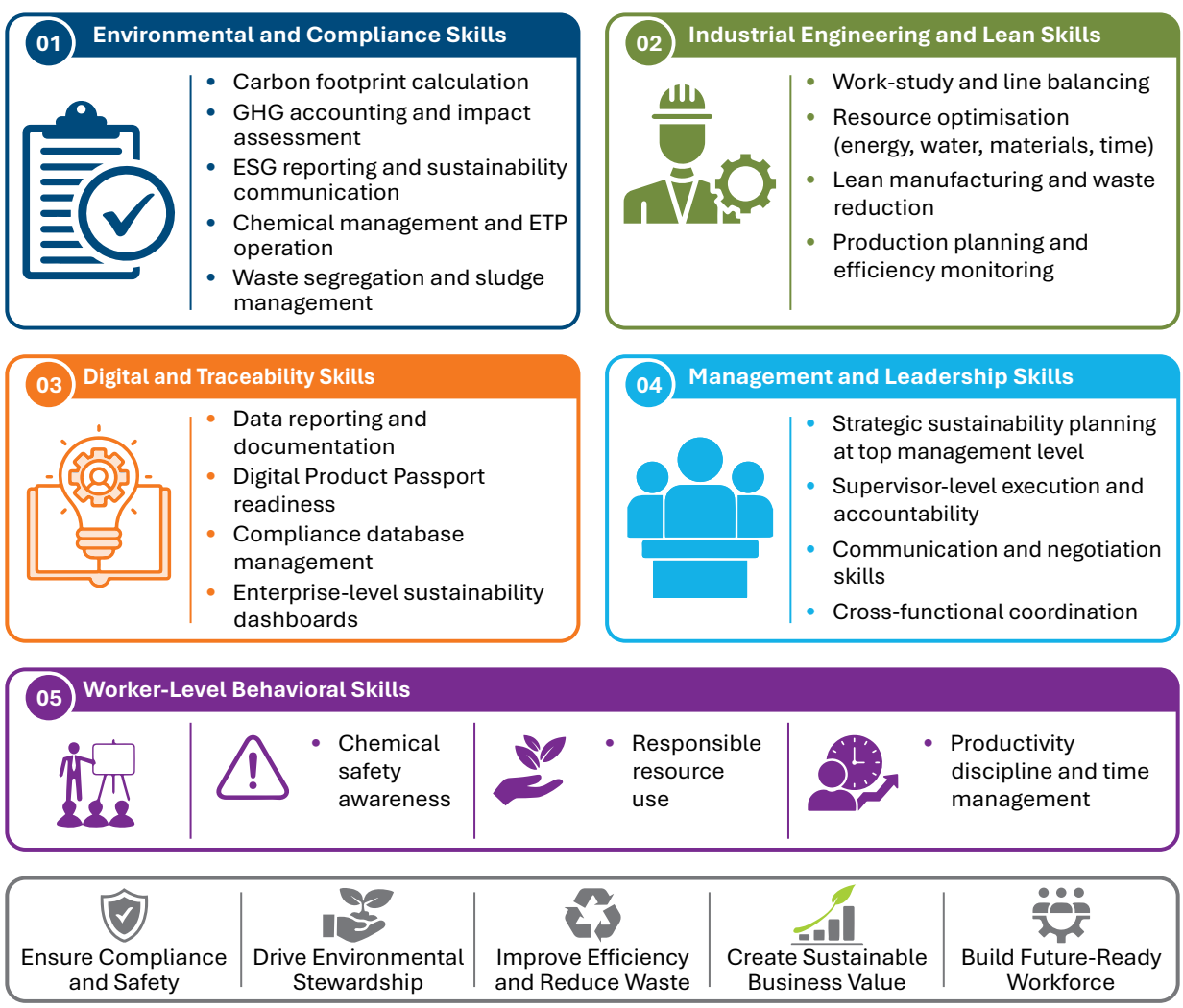
As shown in Figure 7, green skills in the RMG sector extend beyond environmental awareness or technical upgrades. Green skills in the RMG sector extend beyond environmental awareness or technical upgrades. They encompass the knowledge, practical competencies, and behavioral capabilities required to produce garments efficiently, responsibly, and competitively within evolving global standards.

Current Status of Skills Development in the RMG & Textile Sector

The skills development ecosystem in RMG faces several structural gaps:

1. **School-to-Factory Transition Gap:** Graduates entering factories often require six months or more of on-the-job training before becoming fully productive. Universities provide theoretical knowledge but limited practical exposure to sustainability systems, digital reporting, and real-world factory operations.
2. **Weak Supervisor and Mid-Level Management Capacity:** Supervisor-level capability is widely identified as a bottleneck. Supervisors serve as the operational bridge between management and workers, yet many lack strong IE knowledge, efficiency awareness, or structured leadership training.

FIGURE 7: Green Skills in the RMG Sector



3. **Fragmented Data and Digital Systems:** Factories often maintain separate reporting formats for different buyers. Weak digital infrastructure and limited data literacy increase reporting costs and reduce transparency.
4. **Limited Industry–Academia Collaboration:** Collaboration between universities and factories remains weak. Industry delivery pressures and confidentiality concerns limit joint curriculum development and applied research.
5. **SME Readiness Gap:** Large factories are gradually building sustainability departments and ESG expertise. SMEs, however, show limited engagement and lack both financial and technical capacity to meet emerging reporting requirements.
6. **Gender and Youth Inclusion Constraints:** Female representation in sustainability leadership roles remains extremely low. Training access is open but constrained by timing and safety considerations. Youth retention is also declining due to slow career progression and limited professional growth pathways.

Overall, training provision remains reactive and compliance-driven rather than strategically aligned with long-term competitiveness.

Current Challenges

1. **Institutional and Policy Gaps:** Although environmental and labour policies exist, implementation remains inconsistent. Coordination gaps between ministries, regulators, and industry bodies reduce policy effectiveness.
2. **Financial Constraints:** SMEs face difficulty financing compliance upgrades, renewable energy integration, and workforce development. Current financing systems do not sufficiently reward higher sustainability performance.
3. **Management Mindset and Leadership Gaps:** Sustainability adoption depends heavily on topmanagement recognition. Without leadership commitment, workforce-level training has limited impact.
4. **Technological and Infrastructure Limitations:** Solar scalability is constrained by rooftop space, capital cost, and building compliance issues. Waste management infrastructure is limited, with few licensed vendors and limited transparency in downstream disposal.

5. **Skills Fragmentation:** Sustainability skills are often siloed within compliance departments rather than integrated across finance, IE, marketing, and operations.

Future Skills Needs (3–5 Year Horizon)

Over the next three to five years, priority workforce areas include:

- ESG reporting and carbon accounting specialists
- Digital traceability and data management professionals
- Industrial engineering and lean transformation leaders
- Energy managers and green building operators
- Chemical safety and waste management supervisors
- Sustainability-focused middle managers and future CXO-level leaders

System-level priorities include:

- A national RMG sustainability and skills roadmap
- Structured supervisor development programmes
- Industry-oriented short courses (3–6 months) for graduates
- Stronger academic–industry co-design of curricula
- Preferential financing mechanisms linked to sustainability performance
- Gender-inclusive upskilling pathways

Early exposure at school and college levels to industrial sustainability concepts was also highlighted as important for long-term workforce transformation.

Key Findings

Bangladesh's RMG sector is undergoing a compliance-driven but structurally transformative shift toward sustainability. While infrastructure investments have progressed, workforce capability remains uneven; particularly at mid-management and digital-reporting levels. Green skills in the RMG context integrate environmental compliance, industrial engineering, digital data systems, lean manufacturing, and leadership capability. The most critical bottleneck lies in supervisor-level execution and management-level strategic capacity. Without coordinated investment in competency-based training, digital readiness, academic modernisation, and inclusive career pathways, the sector risks losing competitiveness as global compliance standards tighten. Sustainability in RMG is no longer optional; it is becoming a prerequisite for market access. Workforce transformation will determine whether Bangladesh remains competitive in the next phase of global apparel trade.

3.2.4 GREEN CONSTRUCTION

Sector Overview: Green Construction in Bangladesh

Bangladesh's construction sector is gradually transitioning toward greener and more sustainable practices, driven primarily by international certification systems, industrial demand (particularly from RMG), and growing awareness among large developers and consultancy firms. Green construction in Bangladesh is currently shaped by:

- International certification frameworks such as LEED and EDGE
- Industrial and export-oriented clients seeking green-certified facilities
- Emerging government expectations (e.g., green certification for public buildings)
- Increasing attention to energy efficiency, water use, and compliance standards

However, green construction remains uneven. While professional design firms and internationally linked consultancy firms increasingly integrate sustainability principles at the design stage, implementation at contractor and site levels remains inconsistent. Adoption is largely client-driven rather than policy-enforced, and sustainability decisions are often influenced by branding and longterm cost considerations rather than regulatory mandates.

The sector is characterised by a growing design-level capability in green building principles but a persistent gap between design intent and execution quality. As Bangladesh urbanises and infrastructure projects expand, aligning design innovation with site-level competence will be critical to achieving scalable green outcomes.

Primary Research Findings: Green Construction Skills and Competency Requirements

Overall Skills Needs in the Green Construction Sector

Stakeholder interviews indicate that the principal bottleneck in green construction is not awareness of green design, but implementation capacity.

Skills demand spans three interconnected layers:

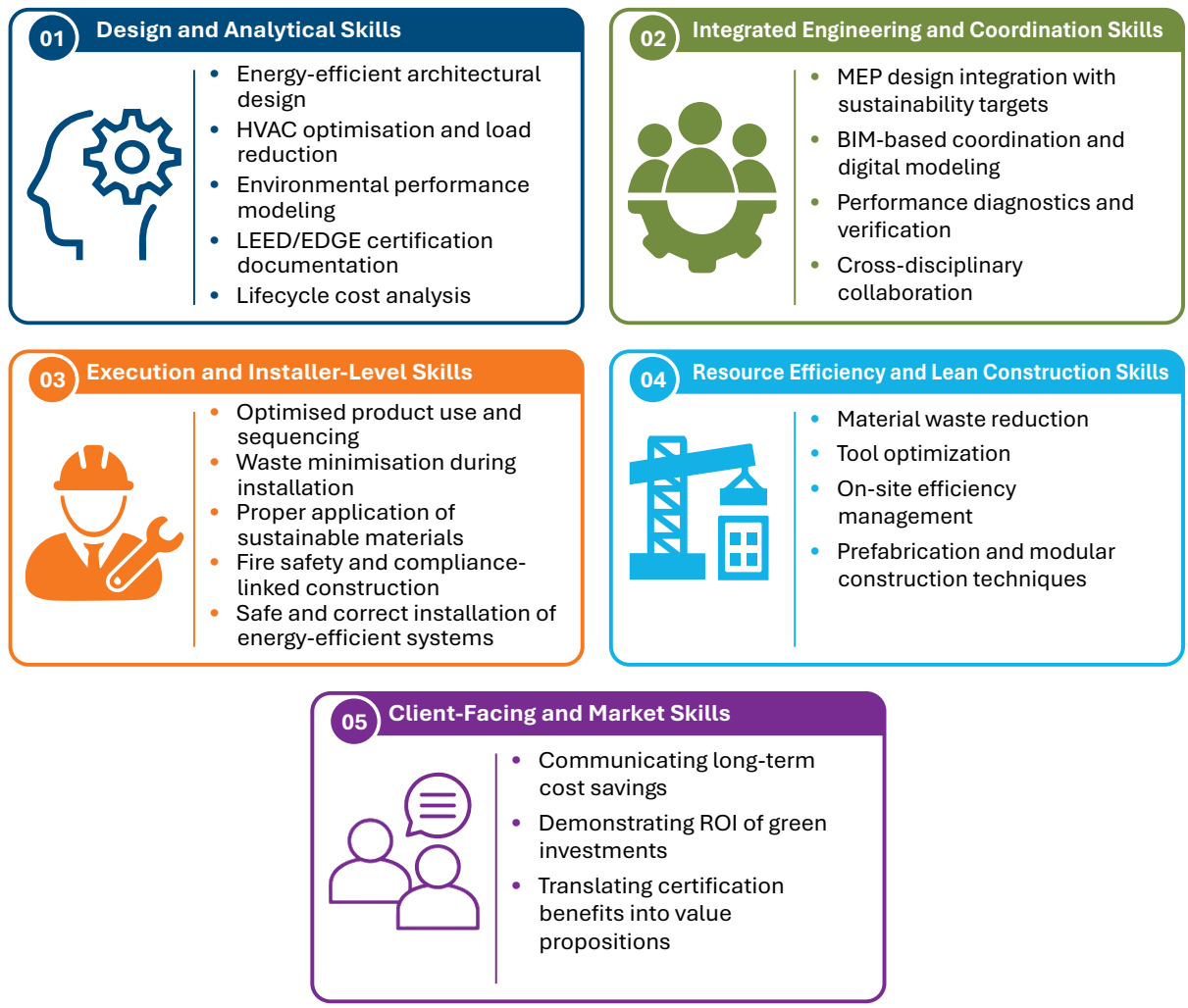
1. **Design-Level Green Competence:** Architects and engineers increasingly require capabilities in energy optimisation, environmental performance diagnostics, certification documentation, and cross-disciplinary design coordination. Green certification processes can involve more than 80–100 criteria, requiring analytical, documentation, and performance evaluation skills from the earliest project stages.
2. **Project Management and Coordination Skills:** Successful green building delivery requires integrated collaboration among architecture, structural engineering, MEP (Mechanical, Electrical, Plumbing), and project management teams. Cross-functional coordination is often weak, leading to inconsistencies between design targets and execution outcomes.
3. **Site-Level and Trade-Level Execution Skills:** The most significant gap lies at the installer and contractor levels. Sustainable materials, optimised installation practices, sequencing discipline, waste minimisation, and compliance-oriented execution require hands-on skills that are not yet systematically embedded in training systems.

While professional green design capability is emerging in large consultancy firms, the downstream workforce, including contractors, supervisors, and blue-collar installers, remains underprepared for low-carbon and resource-efficient construction at scale.

What "Green Skills" Mean in the Context of the Construction Sector

As shown in Figure 8, green skills in construction refer to the technical, managerial, and behavioral competencies required to design, build, and operate structures that reduce environmental impact, optimise resource use, and ensure long-term sustainability.

FIGURE 8: Green Skills in the Construction Sector



Green skills in construction are therefore multi-layered: they combine technical design capacity, operational efficiency, execution discipline, and market communication.

Current Status of Skills Development in the RMG Sector

The current green construction skills ecosystem reveals significant asymmetry:

1. **Design-Level Capability Is Growing but Concentrated:** Large consultancy firms and internationally connected architectural practices demonstrate strong green design competencies, including certification-oriented planning and digital coordination tools such as BIM. However, this expertise is concentrated in urban centers and larger projects.
2. **Absence of a Unified National Framework:** Green construction standards in Bangladesh are largely guided by international certification systems. The absence of a strong, localised national framework creates inconsistency in interpretation and implementation.
3. **Weak Contractor-Level Incentives:** Recognition and branding benefits typically accrue to project owners rather than contractors. As a result, construction firms often deliver only what clients demand, limiting proactive green execution.
4. **Trade-Level Training Gaps:** Training institutes provide construction trade skills (e.g., plumbing, rod binding, tiling, wiring), but integration of sustainability principles into these modules remains limited and largely conceptual. Trainee awareness of green practices is still low, and translating sustainability concepts into day-to-day site behavior is challenging.
5. **Outdated Training Pathways:** Learning pathways for installers and mid-level supervisors remain outdated relative to emerging low-carbon construction requirements. Structured certification systems for green installers and technicians are limited.

6. **Inclusion and Regional Disparities:** Regional training institutions outside major urban centers face resource constraints. While some providers actively promote female participation in construction trades, structured green skill integration remains nascent.

Current Challenges

1. **Institutional and Governance Gaps:** The sector lacks a unified national body to localise and harmonise green building standards. Policy signals exist, but delivery mechanisms and enforcement remain weak.
2. **Financial Barriers:** High upfront costs discourage green adoption, especially when long-term benefits are not clearly demonstrated. Limited fiscal incentives, tax benefits, and fast-track approval mechanisms reduce market motivation.
3. **Design–Execution Gap:** Green ambitions are often embedded at the design stage but diluted during construction due to weak site-level skills and coordination gaps.
4. **Limited Availability of Sustainable Materials and Systems:** Even when green design intent exists, consistent access to sustainable materials and execution-supportive solutions remains uneven.
5. **Training Infrastructure Constraints:** Trade-level training institutions are only beginning to conceptualise green construction, and curricula modernisation requires time, resources, and technical guidance.
6. **Client Awareness and Demand-Side Mindset:** Green construction adoption depends heavily on owner commitment. Without demand-side prioritisation, contractors rarely go beyond minimum compliance.

Future Skills Needs (3–5 Year Horizon)

Over the next three to five years, the following competencies will become increasingly critical:

- Certified MEP professionals with green building expertise
- LEED-accredited and certification-focused technical teams
- Energy-efficiency specialists and HVAC optimisation experts
- BIM-based sustainability coordination professionals
- Prefabrication and modular construction technicians
- Site supervisors trained in lean and low-waste execution
- Certified installer-level green technicians

System-level priorities include:

- Development of localised green construction guidelines
- Incentive-linked policy mechanisms (e.g., fast-track approvals, tax benefits)
- Structured installer-level certification systems
- Stronger industry–training institution partnerships
- Integration of green modules into trade-level curricula
- Expanded regional and inclusive training access

Prefabrication and digital coordination tools are expected to play a growing role in reducing material waste and improving energy performance, increasing demand for technically competent mid-level professionals.

Key Findings

Bangladesh's green construction transition is progressing at the design level but remains constrained by execution bottlenecks. Green skills in construction encompass analytical design competence, integrated engineering coordination, site-level execution discipline, and market-facing sustainability communication. The most significant constraint lies at the installer and supervisory levels, where outdated training pathways and weak incentives limit consistent implementation.

Without localised standards, structured certification systems, aligned policy incentives, and competency-based upskilling across the value chain, green construction risks remaining certification-driven rather than operationally embedded. Closing the design–execution gap will be the defining challenge in mainstreaming green construction across Bangladesh's rapidly expanding built environment.

3.2.5 AGRIBUSINESS

Sector Overview: Agribusiness in Bangladesh

Bangladesh's agribusiness sector spans primary production, input supply, processing, contract farming, food manufacturing, export-oriented supply chains, and compliance-driven certification systems. It plays a foundational role in food security, rural employment, and export diversification.

However, the sector is entering a structurally transformative phase shaped by three converging pressures:

1. **Climate Vulnerability and Resource Stress:** Climate risks—flooding, salinity, drought, erratic rainfall—are increasingly destabilising production systems. While climate-resilient varieties exist, scaling them requires skilled technicians, trained extension agents, and informed farmers.
2. **Compliance and Global Market Integration:** Large processors exporting to EU and US markets face growing demands for food safety, traceability, carbon accounting, waste management, and internationally recognised certification systems (ISO, HACCP, FSSC, GAP standards). Sustainability is becoming a market-access requirement rather than a voluntary improvement.
3. **Resource Efficiency and Circular Economy Transition:** Waste-to-value systems, organic fertilizer production, renewable energy integration (e.g., solar irrigation), efficient irrigation technologies, and post-harvest loss reduction are emerging as strategic competitiveness drivers.

Despite significant production growth, agribusiness remains characterised by:

- High post-harvest losses (20–30% in some value chains)
- Fragmented farmer–market linkages
- Weak data systems and digital infrastructure
- Policy incentives that still favor chemical-intensive production

The transformation challenge is therefore not labour availability, but workforce capability and institutional alignment across the value chain.

Primary Research Findings: Green Skills and Competency Requirements in Agribusiness

Overall Skills Needs in the Agribusiness Sector

Primary research across demand-side firms, academia, extension systems, certification bodies, consultants, and farmer FGDs indicates that agribusiness skill gaps are concentrated in five structural areas:

1. **Farm-Level Production Competence**
   - Integrated pest and disease management (timing, resistance, dosage)
   - Soil testing and nutrient optimisation
   - Irrigation decision-making based on crop–soil–climate parameters
   - Climate-resilient crop management
   - Efficient fertilizer application

Farmers frequently rely on informal advice from input dealers, leading to overuse of chemicals and reduced environmental sustainability.

2. **Post-Harvest and Cold Chain Skills**
   - Grading and sorting
   - Cold storage operations
   - Packaging and quality maintenance
   - Loss minimisation techniques

Post-harvest management remains one of the largest productivity and competitiveness bottlenecks.

3. **Waste and Circular Economy Skills**
   - Organic fertilizer production
   - Composting and vermiculture
   - Agricultural waste transformation into value-added inputs
   - Decentralised waste collection systems

Waste management represents both a major environmental challenge and a green enterprise opportunity.

4. **Compliance and Certification Skills**
   - GAP compliance from harvesting to packaging
   - ISO 22000, HACCP, FSSC 22000 implementation
   - Environmental management systems
   - Carbon footprint awareness
   - Export documentation and traceability

Certification knowledge is becoming mandatory for export participation

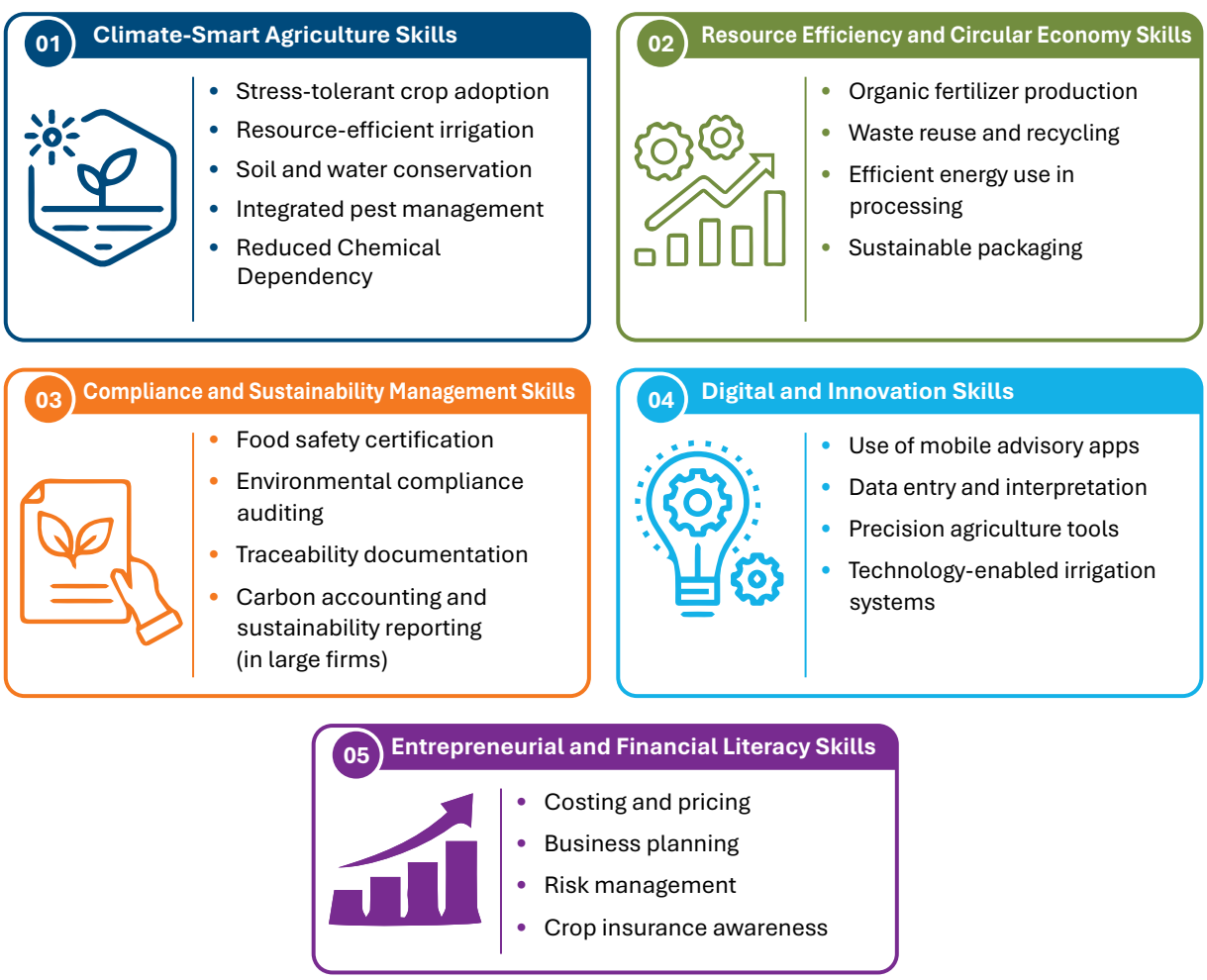
5. **Digital and Data-Based Advisory Skills**
   - ICT-enabled farm advisory systems
   - IoT-based monitoring
   - AI-enabled decision support
   - Agriculture database development
   - Market forecasting and crop planning

Without reliable data systems, digital agriculture cannot scale meaningfully.

What "Green Skills" Mean in the Context of Agribusiness

Green skills in agribusiness go beyond environmental awareness. They represent the ability to produce, process, and distribute food within ecological limits while maintaining profitability and competitiveness. As shown in Figure 9, green skills in Bangladesh's agribusiness context include:

FIGURE 9: Green Skills in the Agribusiness Sector



Current Status of Skills Development in Agribusiness

Green skills are therefore multi-dimensional: technical, managerial, behavioral, and increasingly digital. The agribusiness skills ecosystem shows active engagement but structural fragmentation.

1. **Extension Systems Operate at Scale:** The Department of Agricultural Extension trains approximately 500,000 farmers annually through a cascade model. However, alignment with export-driven compliance, digital agriculture, and value chain competitiveness remains limited.
2. **Large Corporates Provide Structured Training:** Firms such as PRAN and ACI deliver mandatory training for contract farmers and internal staff. However, advanced modules and sustainability specialisation require internal investment and are unevenly scaled.
3. **Certification and Compliance Training Exists but Is Cost-Constrained:** Institutions like Bureau Veritas provide structured training on ISO, HACCP, environmental management, and sustainability systems. However, financial barriers limit SME participation.
4. **Academic Institutions Are Updating Curricula but Face Constraints:** Universities are gradually integrating climate-smart agriculture into curricula. However:
   - Laboratory infrastructure is outdated.
   - Funding is limited.
   - Master trainer capacity is insufficient.
   - Demonstration plots are inadequate.
   - Climate-resilient technologies often remain confined to research environments rather than scaled through skilled workforce deployment.
5. **Informal Workforce Gaps Persist: Many farmers and low-income producers:**
   - Lack productivity optimisation knowledge.
   - Have weak financial literacy.
   - Have limited familiarity with technology.

Behavioral barriers—such as hesitation to ask questions—also hinder skill absorption.

Future Skills Needs (3–5 Year Horizon)

Over the next three to five years, priority workforce areas include:

- Climate-smart agriculture technicians
- Integrated pest and soil health advisors
- Cold chain and post-harvest specialists
- Organic fertilizer and waste transformation operators
- ESG and compliance officers in agro-processing firms
- Digital agriculture data technicians
- Solar irrigation and mechanisation technicians
- Value chain coordinators and market intelligence analysts

System-level priorities include:

- Establishing a national agriculture database
- Expanding demonstration farms and innovation hubs
- Modernising ATIs and university labs
- Creating public–private skill councils
- Linking financial incentives to sustainability adoption
- Strengthening crop insurance and risk-sharing mechanisms
- Supporting commercialisation of waste-based inputs

Demonstration-based learning and continuous follow-up models will be essential to overcome behavioral resistance

Current Challenges

1. **Policy and Incentive Misalignment:** Subsidies favor chemical fertilizers, while organic inputs receive limited support. Crop diversification policies remain weak, and coordination across ministries is inconsistent.
2. **Financing Barriers:** Organic transition reduces yield initially and requires higher investment. Low-interest loans, crop insurance expansion, and collateral reform are insufficient.
3. **Post-Harvest Infrastructure Gaps:** Cold storage distribution is uneven. Testing facilities for soil, water, and residues are limited. Logistics systems are weak.
4. **Data and Digital Infrastructure Deficit:** There is no robust agriculture database to support IoT and AI-enabled decision systems. Market forecasting systems are weak.
5. **Weak Industry–Academia Collaboration:** Private sector engagement in sustainable extension and curriculum co-design remains limited.
6. **Limited Continuous Learning Culture:** Compliance knowledge and sustainability frameworks are not yet internalised across all actors.
7. **Gender and Youth Transition Gaps:** Women participate significantly in operations but remain underrepresented in leadership roles. Youth engagement is rising but lacks structured guidance and financial support mechanisms.

Key Findings

Bangladesh's agribusiness sector stands at a decisive inflection point. Productivity growth alone is no longer sufficient. Climate resilience, sustainability compliance, waste reduction, digital transformation, and value chain efficiency define the next phase of competitiveness. Green skills in agribusiness integrate climate-smart production, post-harvest management, circular economy systems, certification literacy, and digital advisory capabilities. The most critical gaps lie at farm and last-mile levels, where practical execution determines sustainability outcomes. Without coordinated policy reform, financing innovation, curriculum modernisation, infrastructure investment, and ecosystem-level collaboration, green transformation will remain partial and uneven. A future-ready agribusiness workforce requires alignment between farmers, extension systems, universities, corporates, certification bodies, financiers, and policymakers. Only through integrated action can Bangladesh secure both food security and environmental sustainability in the coming decade.

Reaching The Last Mile of Farmers: A Case Study of Dr. Chashi:

Dr. Chashi is Bangladesh's first comprehensive digital agriculture platform that leverages AI-driven tools to optimise crop health. Dr. Chashi demonstrates the potential for digital platforms to bridge technical knowledge gaps in agriculture, particularly for smallholders. The platform enables climate-smart decision-making through AI-driven diagnostics and agricultural extension services. While this model increases the reach and timeliness of agronomic advice, it also generates demand for new skills, from agri-digital service agents to technicians maintaining sensor and AI systems. These roles are not currently recognised within the national TVET framework.

3.2.6 TOURISM

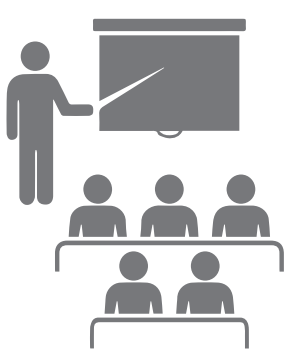
Sector Overview: Tourism in Bangladesh

Bangladesh's tourism sector is gradually expanding, with increasing attention to ecotourism, cultural tourism, and destination-based services. The sector spans hotels and resorts, food and beverage services, tour operations, travel management, and community-based tourism initiatives.

Three structural trends are shaping the sector:

1. **Rising Service Standards and Global Benchmarks:** Hotels and tourism enterprises increasingly operate under international service expectations. Guest satisfaction, professionalism, hygiene, and operational discipline are critical competitiveness factors.
2. **Digital Transformation of Hospitality Operations:** Hotel management systems, online reservations, billing software, customer data systems, and digital marketing platforms are becoming standard. Even entry-level staff are now expected to interact with software-driven systems.
3. **Growing Sustainability and Eco-Tourism Orientation:** Eco-tourism and responsible tourism practices are gaining visibility. Resource efficiency, waste reduction, hygiene discipline, local sourcing, and environmentally responsible operations are increasingly embedded within service expectations.

Despite structured training institutions and certification systems, employers consistently report a job-readiness gap. The sector's constraint is not the absence of training programmes but uneven practical preparedness, service mindset, and digital adaptability among graduates.



Primary Research Findings: Green Skills and Competency Requirements in Tourism

Overall Skills Needs in the Tourism Sector

Primary research indicates that the tourism sector faces competency gaps primarily at the trade and early supervisory levels.

Across hotels, resorts, and tourism service providers, demand centers on:

- Customer handling and service etiquette
- Professional communication and workplace discipline
- Operational coordination across departments
- Digital literacy for front desk and reservations
- Hygiene and food safety compliance
- Resource-efficient operational practices

Graduates often demonstrate basic theoretical knowledge but lack:

- Real-world exposure
- Service mindset and confidence
- Problem-solving ability
- Workplace communication skills

This gap leads employers to rely heavily on extended on-the-job training before employees become fully productive. Internships and structured industry placements are identified as the most effective bridge between training and employment. However, scaling high-quality practical exposure remains challenging due to limited industry-practitioner trainers and uneven trainee readiness.

What "Green Skills" Mean in the Context of Tourism

In tourism and hospitality, green skills are not typically standalone technical roles. Rather, they are embedded operational behaviors and service disciplines that reduce environmental impact while maintaining service quality. As shown in Figure 10, green skills in this sector include:

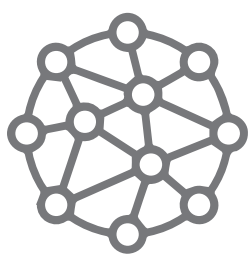
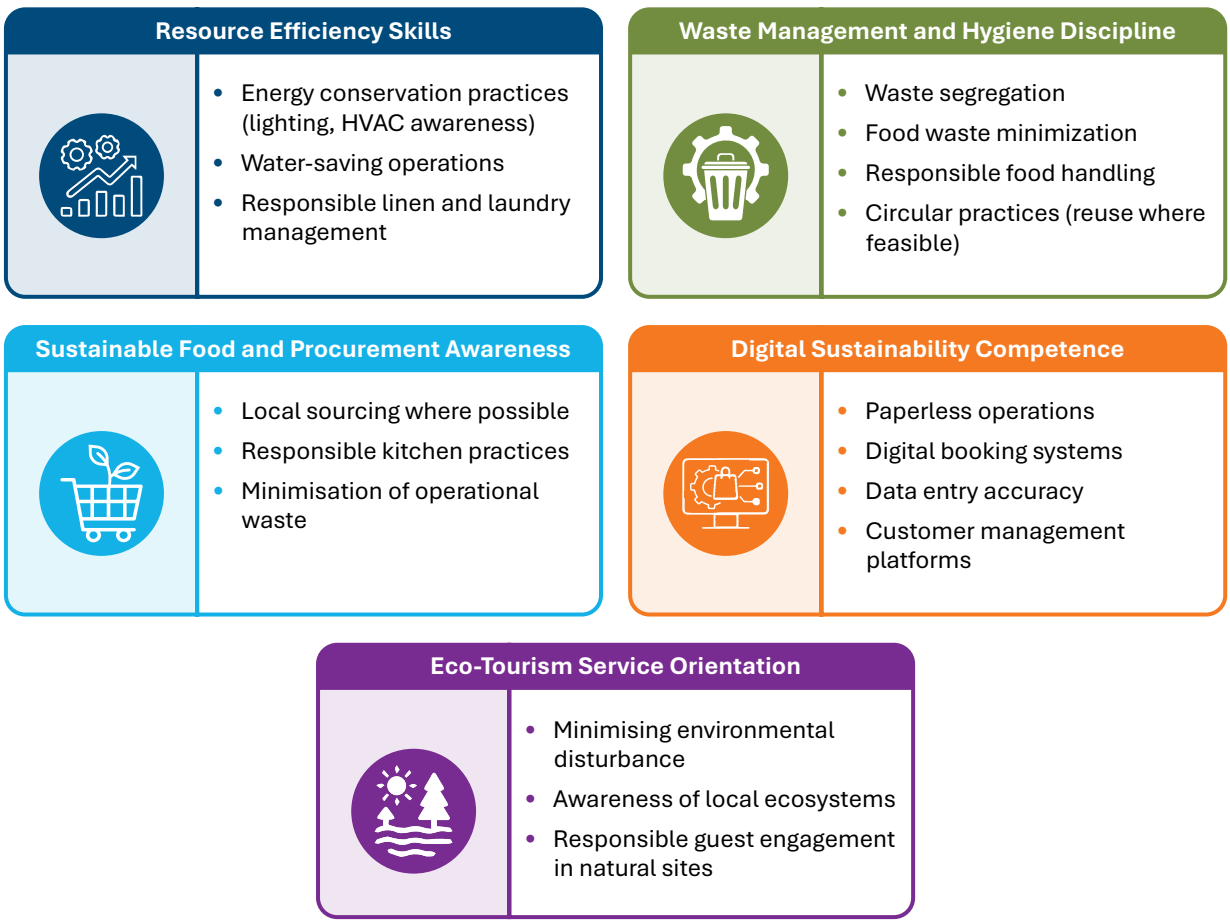


FIGURE 10: Green Skills in the Tourism Sector



Green skills in tourism therefore combine operational discipline, environmental awareness, and digital competence rather than new technical occupations.

Current Status of Skills Development in Tourism

The tourism training ecosystem includes government-run institutions, private providers, and semi-private programmes aligned with national standards. Certification frameworks exist, and structured curricula are approved at national level.

However, several structural issues persist:

1. **Job-Readiness Gap:** Training institutions provide theoretical grounding and simulation-style learning, but many graduates lack sufficient workplace maturity and service mindset.
2. **Motivation and Professional Attitude Constraints:** Some trainees enter tourism trades with limited long-term commitment or weak professional orientation, affecting training outcomes and service quality.
3. **Limited Practitioner-Trainers:** Hands-on hospitality training requires active industry professionals. However, experienced hotel managers and practitioners are often reluctant to engage in teaching roles, limiting real-world exposure quality.
4. **Financial Model Constraints:** Public institutions are not fully state-funded and rely partly on course fees. Simultaneously, government-supported free training programmes influence the market, requiring private providers to differentiate through placement support and specialisation.
5. **Curriculum Responsiveness Depends on Industry Signaling:** Curriculum updates are largely demand-driven. Unless employers clearly articulate new skill needs (e.g., sustainability modules, digital systems), training evolution remains incremental.
6. **Embedded but Limited Green Integration:** Sustainability concepts are generally integrated within broader hospitality modules rather than delivered as dedicated tracks.

Current Challenges

1. **Fragmented Training Ecosystem:** Multiple public and private providers operate in parallel. Consistency in quality and industry alignment varies.
2. **Digitalisation Gap:** Rapid digitalisation of hotel systems outpaces curriculum updates. Skills in reservations software, billing systems, CRM tools, and basic AI awareness are not yet fully mainstreamed.
3. **Trainer Supply Constraints:** Limited availability of industry practitioners as trainers restricts scaling of up-to-date practical instruction.
4. **Soft Skills and Service Mindset Deficit:** Professional behavior, motivation, and communication are binding constraints affecting service outcomes.
5. **Limited Structured Green Specialisation:** While sustainability is embedded conceptually, structured eco-tourism specialisation tracks remain underdeveloped.

Future Skills Needs (3–5 Year Horizon)

Over the next three to five years, tourism workforce requirements are expected to evolve in the following directions:

- Digital front desk and reservations system operators
- Hospitality technology-oriented roles
- Sustainable tourism and eco-tourism coordinators
- Community tourism facilitators
- Hospitality data and analytics assistants
- Sustainable operations supervisors

Critical cross-cutting competencies will include:

- Digital literacy and software fluency
- Basic AI awareness
- Sustainability-integrated service standards
- Strong customer engagement skills
- Professional discipline and workplace communication

Training providers will require support in:

- Curriculum modernisation
- Digital lab infrastructure
- Trainer upskilling in hospitality technologies
- Structured internship pipelines
- Stronger industry–training collaboration

Eco-tourism is likely to emerge as a growth segment, requiring integrated environmental awareness, destination management skills, and community engagement capacity.

Key Findings

Bangladesh's tourism sector is expanding but constrained by uneven job-ready competencies at trade and early supervisory levels. Green skills in tourism are primarily embedded in operational behaviors; resource efficiency, waste reduction, hygiene discipline, and responsible service practices; rather than separate technical tracks. Digital transformation represents the most significant structural shift, requiring curriculum modernisation and trainer capacity upgrades. The sector's binding constraint is not certification systems but practical readiness, service mindset, and digital adaptability. Without structured internship expansion, stronger practitioner engagement, and integration of digital and sustainability competencies into mainstream modules, workforce readiness may lag sector growth and eco-tourism ambitions. Tourism's green transition will depend on embedding sustainability into everyday service culture rather than creating isolated green roles.

4. SECTOR-WISE ROADMAP

4.1 SECTORAL GREEN SKILLS TRAJECTORIES AND STRATEGIC ROADMAP

This roadmap sets out how green skills are expected to evolve across the priority sectors between 2025 and 2035, based on the combined evidence from policy review and the study's primary research (FGDs, KIIs, case studies, and stakeholder consultations). Across sectors, the trajectory is clear: green skills demand is shifting from basic awareness and compliance to job-ready technical competencies, and then to advanced capabilities such as quality assurance, digital reporting, safety, and system optimisation. The roadmap therefore focuses on three practical outcomes: (i) credible standards and certification, (ii) training that produces field-ready workers, and (iii) stronger employer absorption through structured partnerships and incentives.

Renewable Energy

Strategic Objective: Establish a nationally certified, job-ready workforce capable of delivering high-quality renewable energy systems, from design and installation to operation and maintenance.

Dependency: Coordination between SREDA, NSDA, and training authorities is essential to standardise assessment, certification, and curriculum.

Risk: If certification systems remain fragmented or optional, employers may continue to rely on informal or manufacturer-driven training, limiting absorption of trained workers.

FIGURE 11: Renewable Energy Workforce Development Roadmap

Short-term (2026–2028):

- Shift training delivery from theory-heavy to practical formats by equipping labs and expanding field-based delivery (solar installation, inverter operation, basic O&M, safety).
- Address immediate supply constraints by supporting training providers facing funding and equipment gaps, while building modular short courses that can scale quickly.
- Launch competency-based certification for core roles (installer, O&M technician, site supervisor), responding to the documented gap in credible standardisation.

Mid-term (2028–2030):

- Expand national certification capacity (more certification bodies, clear assessment standards, aligned with industry requirements).
- Run structured capacity building for utility staff on net metering procedures, billing mechanisms, and technical standards to reduce operational bottlenecks that block uptake.
- Scale vocational training beyond major cities (regional rollout, reequipping centres, local delivery for non-urban deployment needs).

Long-term (2030–2035):

- Introduce advanced tracks (system design, performance optimisation, advanced safety, and quality assurance), reflecting the sector's shift beyond basic installation.
- Establish national frameworks for emerging needs such as storage safety and integration-so training and pace with sector evolution.
- Strengthen inclusion pathways by formalising roles where women can participate (design, metering/customer service, selected site supervision and O&M), paired with safe workplace arrangements.

Electric Vehicles (EV) and Battery Ecosystem

Strategic Objective: Develop a technically skilled workforce that can safely manage electric vehicles, charging systems, diagnostics, and battery recycling across a regulated value chain.

Dependency: National regulatory clarity from BRTA, NBR, SREDA, and DoE on EV licensing, battery recycling, and technician certification must be established.

Risk: Without enforceable standards and financing mechanisms, informal workshops and unsafe battery practices may persist, undermining both safety and market trust.

FIGURE 12: Electric Vehicle and Battery Ecosystem Workforce Development Roadmap

Short-term (2026–2028):

- Introduce national charging regulations (approved charging locations, tariffs, safety rules) and battery handling standards to address unsafe, inconsistent charging practices.
- Begin formal short courses for technicians focusing on: basic applied electricity, measurement, safety discipline, charging fault diagnosis, battery module handling, and software-based scanning/diagnostics.
- Establish licensing and regulation foundations for battery recycling and safe disposal to avoid informal, harmful practices.

Mid-term (2028–2030):

- Launch national EV certification systems for workshops and technicians (high-voltage safety, diagnostics, charging operations), so repairs and wiring are “up to code” and recognised by employers.
- Expand EV training in poly technics/TVET and upgrade training centres with real EV units and diagnostic tools (the current shortage limits repeated troubleshooting practice).
- Develop EV financing windows and bank capacity so entrepreneurs can invest in workshops, charging stations, and recycling.

Long-term (2030–2035):

- Build a regulated circular battery economy (licensed recyclers, enforcement of environmental standards, and R&D on reuse/second-life applications).
- Fully integrate workforce pathways across the EV ecosystem (vehicle service + charging + battery lifecycle + recycling), coordinated across responsible ministries and agencies.

RMG and Textiles

Strategic Objective: Equip the entire RMG workforce- not just sustainability teams- with skills for compliance, traceability, and efficiency to meet evolving global buyer and regulatory requirements.

Dependency: Embedding sustainability and ESG competencies into standard TVET and university programmes requires alignment between NSDA, BGMEA, and education regulators.

Risk: SMEs may remain excluded if training remains complex or costly, weakening overall industry compliance and competitiveness.

FIGURE 13: RMG and Textiles Workforce Development Roadmap

Short-term (2026–2028):

- Establish practical training for carbon footprint basics, sustainability reporting, and traceability documentation for compliance and market access.
- Deliver role-based upskilling for supervisors and midlevel managers (production efficiency, IE fundamentals, compliance implementation), as bottlenecks are increasingly at supervisory level rather than infrastructure alone.
- Support SMEs with simplified, modular learning packages (documentation, basic ESG readiness, waste/ chemical safety), recognising their lower baseline readiness.

Mid-term (2028–2030):

- Embed green compliance and reporting competencies into TVET/university programmes with workplace-based assessment and factory attachment, reducing the school-to-factory transition gap.
- Scale standardised internal training systems across departments (IE, procurement, merchandising, QA, HR) so sustainability is not isolated within one function.

Long-term (2030–2035):

- Develop advanced skill tracks for circular practices and productlevel traceability systems (data management, auditing, supplier engagement), aligned with evolving export market expectations.
- Build specialist career pathways (e.g., sustainability lead, traceability/ data manager, chemical safety specialist, resource-efficiency engineer) and certify them through recognised frameworks to professionalise the workforce.

Agribusiness

Strategic Objective: Transition Bangladesh's agricultural workforce toward climatesmart, quality-driven, and market-aligned production through practical and inclusive skill development.

Dependency: Stronger coordination between NSDA, DAE, agri-tech firms, and financial institutions is required to co-design certification, support infrastructure, and financing mechanisms.

Risk: If trainer capacity and demonstration infrastructure remain underdeveloped, new skills may not translate into adoption or productivity gains.

FIGURE 14: Agribusiness Workforce Development Roadmap

Short-term (2026–2028):

- Roll out targeted training on organic soil management, composting, sustainable pest management, and climate-smart practices.
- Expand demonstrationbased formats (visual learning, field demonstrations) and include value-chain actors (banks, logisticians, local administration) so training improves real market outcomes.
- Start practical skill programmes for postharvest handling, pesticide safety, irrigation practices, and basic business skills for SMEs.

Mid-term (2028–2030):

- Establish innovation hubs and demonstration farms to accelerate adoption of vertical farming, net houses, drip irrigation, and climate-resilient technologies.
- Create public–private skill councils to co-design curricula, training content, and certification pathways (reducing fragmentation and making skills credible for employers and investors).
- Upgrade TVET institutes and train trainers through partnerships so advanced agri-tech skills can scale.

Long-term (2030–2035):

- Link skills to market compliance requirements (harvesting- to-packaging quality systems) to unlock higher-value market access and reduce losses.
- Expand inclusive pathways for youth and women through entrepreneurship oriented training and financing mechanisms (including financial products that support green technology adoption).

Construction

Strategic Objective: Professionalise the construction workforce with technical and supervisory skills for energy efficiency, waste reduction, and low-carbon building execution.

Dependency: National construction standards and procurement rules must explicitly require green compliance, giving firms a reason to invest in skills.

Risk: Without enforcement and market incentives, green construction may remain a niche activity driven by individual clients, not industry-wide practices.

FIGURE 15: Construction Workforce Development Roadmap

Short-term (2026–2028):

- Prioritise jobsite "execution skills" for installers and supervisors (correct sequencing, optimised installation, waste-minimising practices), since outcomes fail most often at implementation stage.
- Scale practical training focused on the three highest-demand areas: energy efficiency, waste management, and environmental compliance.
- Start installer/ technician accreditation pathways (micro-credentials tied to practical assessment), responding to the current lack of structured execution-oriented training.

Mid-term (2028–2030):

- Build certification-oriented professional capacity (MEP professionals with green building capability; certification/LEED-focused expertise; accreditation level teams), reducing reliance on foreign consultants.
- Strengthen crossfunctional coordination skills across architecture– engineering–site delivery, reflecting the integrated nature of green building delivery and persistent coordination gaps.
- Expand contractor CPD (Continuing Professional Development) and structured employer-led practical workshops to institutionalise quality delivery at scale.

Long-term (2030–2035):

- Localise standards and governance so green delivery is not driven only by international certification systems; translate requirements into nationally grounded skill standards and enforcement mechanisms.
- Shift skills development toward system performance and lifecycle thinking (documentation, measurement, compliance-linked delivery) as green construction becomes more design-to-operation oriented.
- Strengthen incentives and procurement signals so contractors have commercial reasons to invest in green skills (otherwise firms continue doing only what the client demands).

Tourism

Strategic Objective: Equip tourism workers with green operations, digital tools, and eco-tourism skills to improve service quality and meet emerging sustainability standards.

Dependency: Co-development of training content with tourism boards and employers is needed to align skills with actual job demand.

Risk: Without industry engagement and curriculum updates, graduates will lack practical readiness especially for eco-tourism roles.

Green skills in tourism are evolving along two tracks: improving sustainability in mainstream hotel services, and meeting growing demand for eco-tourism professionals with digital and service competencies. However, current training remains overly theoretical and poorly aligned with operational needs.

FIGURE 16: Tourism Workforce Development Roadmap

Short-term (2026–2028):

- Integrate practical "green operations" into trade-level modules: energy/water conservation, waste reduction, responsible kitchen practices, hygiene discipline, and basic carbon footprint awareness at workplace level.
- Strengthen practical exposure and structured workplace attachment, since the biggest readiness gap is practical performance (customer handling, operational discipline, communication).
- Start short upskilling for existing workers (not only new entrants) on sustainable service practices and operational discipline.

Mid-term (2028–2030):

- Update curricula to match changing hotel operations (digital front desk systems, preventive maintenance practices, resourceefficient operations), as current programmes are only partially aligned with digitalisation and rising standards.
- Build stronger industry–academy collaboration and structured internship pipelines so training remains demand-led and job-linked.
- Address hands-on delivery constraints by expanding access to industry practitioners as trainers and strengthening employer involvement in training.

Long-term (2030–2035):

- Formalise eco-tourismaligned roles and modules (sustainable tourism management, eco-tourism project roles, community tourism facilitation, destination services), reflecting expected sector growth and emerging occupations.
- Strengthen destinationlevel capabilities (digital destination platforms, tourism analytics roles) as future competitiveness increasingly combines service quality with digital and environmental competence.
- Maintain a continuous feedback loop where curriculum redesign is triggered by structured employer demand and measurable business benefits (quality, compliance, customer satisfaction).

4.2 STAKEHOLDER ROLES AND RESPONSIBILITIES

Scaling green skills will require more than curriculum reform, it demands clear accountability across actors responsible for policy, finance, standards, training delivery, and job market integration. Insights from FGDs and stakeholder workshops highlight four consistent gaps: weak implementation leadership, fragmented financing mechanisms, lack of credible certification systems, and limited industry–training coordination. This section outlines sector-specific roles for key stakeholders across two phases—2025–2030 (core setup and early delivery) and 2030–2035 (scaling and institutionalisation) to ensure green skills investments translate into real employment and sector transformation.

TABLE 2: Roles and Responsibilities of Stakeholders

Criterion	Sub-criterion	Core roles (2025–2030)	Scaling roles (2030–2035)
Renewable Energy	SREDA / Power Division	Lead policy–industry platform, establish certification, coordinate storage/net metering.	Institutionalise certification and integrate storage into national strategy.
	Utilities (DESCO/DPDC/BREB/BPDB)	Operationalise net metering through simplified approval, bidirectional meter installation, grid connection, accurate billing train staff.	Maintain quality standards; embed continuous training.
	Bangladesh Bank / ERD / Finance	Simplify RE finance, develop soft-loan windows, support OPEX models.	Shift to programmatic finance with performance-based lending.
	NBR	Reform duties; clarify sector definitions.	Ensure fiscal stability to support ecosystem growth.
	Industry Associations / Developers	Develop standards, run apprenticeships, update curricula.	Scale SME training and supervisor development platforms.
Electric Vehicles	BRTA / MoRT	Set EV registration and licensing; reduce regulatory friction.	Enforce compliance; tie licensing to certified skills.
	Power/Industries/SREDA	Set standards for charging infrastructure and battery systems.	Scale national charging networks with monitoring.
	DoE / Recycling Regulators	Launch battery recycling policy.	Develop circular battery systems and compliance.
	NBR / MoF	Cut lithium-ion duties, support EV ecosystem.	Stabilise fiscal signals for local EV value chains.
	Banks / Bangladesh Bank	Create EV finance windows; build sector awareness.	Scale certified EV finance products.
	TVET / NSDA / Universities	Launch EV curricula and certification.	Add advanced tracks (diagnostics, recycling).
Agribusiness	MoA / DAM / DAE	Strengthen training via extension; enforce policy.	Institutionalise data-driven planning and delivery.
	Commerce/NBR/ EPB	Fix tax and trade bottlenecks for climate-smart tech.	Align compliance systems for export.
	Banks / MFIs	Expand green agri-credit, insurance.	Scale bundled finance for cold chains, protected cultivation.
	BSTI / QA Bodies	Expand regional testing and compliance.	Develop one-stop hubs tied to skills and cold chains.
	BARC / Universities / NGOs	Run demos, train trainers, build data systems.	Institutionalise public–private skills councils.

Criterion	Sub-criterion	Core roles (2025–2030)	Scaling roles (2030–2035)
RMG	Associations / Regulators	Work closely with government to create green skills roadmap and improve compliance of members.	Institutionalise ESG-linked skills upgrading.
	Buyers / Donors / Banks	Set standards for charging infrastructure and battery systems.	Scale national charging networks with monitoring.
Green Construction	Housing Ministry / RAJUK	Integrate green initiatives in the Bangladesh National Building Code and incentivise adoption.	Institutionalise certification in compliance systems.
	Public Procurers	Embed green policies in design briefs and procurement.	Normalise green standards via procurement.
	Standards Body (e.g., GBC)	Localise LEED/EDGE standards; provide oversight.	Maintain updated standards; build national registry
	Architects / MEP Engineers	Build diagnostic and documentation skills.	Expand expert pools; reduce reliance on foreign consultants.
	Training Partners / Firms	Deliver site-focused certification and CPD.	Scale training aligned to evolving market needs.
	Banks / MoF / NBR	Make green building certification mandatory and reduce adoption barriers via finance and tax.	Link finance to performance, stabilise fiscal support.
Tourism	TVET / NSDA / Hospitality Institutes	Integrate green operations and digital hotel systems into trade modules; expand workplace attachment and upskilling.	Formalise eco-tourism, destination management, and tourism analytics tracks within national certification systems.
	Bangladesh Tourism Board (BTB) / Regulators	Set sustainability benchmarks; link hotel grading to operational compliance.	Formalise eco-tourism, destination management, and tourism analytics tracks within national certification systems.

4.3 CAPACITY BUILDING AND TRAINING PROGRAMMES

Renewable Energy: Prioritise competency-based pathways across design, installation, O&M, and electrical safety, with practical labs and field apprenticeships. Expand certification-linked short courses for mid-level technicians and supervisors (site coordination, QA (Quality Assurance), compliance documentation) and embed manufacturer/industry attachments to reduce reliance on ad hoc in-house training.

Electric Vehicles (EV): Establish tiered training from electrical/electronics foundations to EV diagnostics (BMS (Battery Management System), motor/inverter, charging), highvoltage safety, and software-enabled troubleshooting. Scale trainer certification, equip model workshops/labs, and introduce recognition-of-prior-learning routes for conventional auto technicians transitioning into EV servicing.

RMG & Textile: Build capacity in carbon accounting, ESG reporting, traceability/DPP readiness, and resource-efficiency implementation - not only compliance administration. Strengthen mid-level management and industrial engineering skills (production planning, maintenance for automation, execution discipline), with modular programmes for SMEs and line supervisors.

Agribusiness: Focus training where sustainability outcomes are most sensitive: farm-level pest and water management, climate-smart practices, and post-harvest handling (storage, cold chain operations, packaging, quality). Pair extensionstyle demonstration training with enterprise programmes on standards/compliance, testing, and data literacy for supply-chain management.

Green Construction: Expand dual-track capacity building: (i) certification-oriented design/ documentation capacity (MEP integration, measurement, reporting), and (ii) execution-quality training for installers and site supervisors (waste minimization, compliant installation, safety). Promote installer accreditation and contractor CPD (Continuing Professional Development) to close the "design intent vs site delivery" gap.

Tourism: Build practical skills for resource-efficient operations (energy, water, waste segregation, circular procurement) plus service quality and green compliance. Establish modular "green hospitality" training for managers and frontline staff, linked to recognised eco-certification and local destination management needs.

4.4 POLICY SUPPORT AND FUNDING MECHANISMS

Renewable Energy: Streamline permitting and net-metering procedures, clarify standards (including storage), and align fiscal policy (duties/taxes) to reduce system costs. Expand accessible green finance windows for rooftop/OPEX-type models, with risksharing instruments to improve investor confidence.

Electric Vehicles (EV): Update registration and classification frameworks to remove cost distortions, and set national charging/battery standards (safety, quality, recycling). Introduce blended finance for charging networks and servicing ecosystems (capex support, concessional loans), and link incentives to certified safety-compliant workshops.

RMG & Textile: Support a harmonised compliance/data framework to reduce duplicated audits and reporting burdens, especially for SMEs. Expand transition finance (energy efficiency, cleaner production, traceability systems) through concessional credit lines, technical assistance grants, and performance-linked incentives tied to verified emissions/resource outcomes.

Agribusiness : Rebalance incentives so climate-smart and organic transitions are not penalised relative to chemically intensive models (input policy, subsidies, market support). Scale affordable finance for cold chain, testing services, climate-resilient infrastructure, and insurance/risk instruments; support SMEs through targeted duty/tax reforms that encourage domestic value addition.

Green Construction: Use approvals, procurement, and fiscal measures to make greencertified delivery commercially rational (fast-track approvals, tax/duty adjustments for sustainable materials/ systems, green mortgages/loans). Strengthen localised guidance and accountability so compliance is not purely voluntary or client-driven.

Tourism: Provide concessional finance for green retrofits (efficient HVAC (Heating, Ventilation, and Air Conditioning), solar hot water, wastewater treatment) and support eco-certification uptake. Use destination-level policies (waste systems, water management, zoning) and incentives so individual firms are not carrying the full cost of "public" infrastructure gaps.

4.5 MONITORING AND EVALUATION FRAMEWORK

Renewable Energy: Track not only MW installed but system performance and quality (uptime, fault rates, safety compliance), plus workforce indicators (certified technicians, placement, supervisor coverage). Require standardised documentation for interconnection, commissioning, and O&M to support accountability.

Electric Vehicles (EV): Monitor uptake by segment (2W/3W/4W), charging reliability/utilisation, safety incidents, and battery lifecycle management (reuse/recycling volumes). Track skills pipeline outputs (certified EV technicians, certified workshops, trainer capacity) and link licensing/finance to compliance metrics.

RMG & Textile: Measure factory-level resource intensity (energy/water per unit), emissions reporting completeness, traceability readiness, and adoption of process improvements (not only "green buildings"). Include skills KPIs: number of staff trained in carbon/ESG/data systems, supervisor/IE upskilling completion, SME access to transition support.

Agribusiness: Track adoption of climate-smart practices (irrigation efficiency, IPM (Integrated Pest Management)/pesticide reduction), post-harvest loss reduction, testing coverage (soil/residue), and compliance outcomes for target markets. Include extension and training effectiveness measures (demonstration reach, behavior change, yield/quality improvements).

Green Construction: Monitor certification outcomes (LEED/EDGE achieved vs intended), documentation quality, and post-occupancy performance proxies (energy/water savings where available). Track workforce certification and execution-quality indicators (waste reduction practices, safety compliance, installer accreditation uptake).

Tourism: Track property-level efficiency metrics (energy/water per guest-night), waste diversion rates, and eco-certification adoption, alongside service quality. Measure training coverage across managerial and frontline roles and whether practices are sustained through audits/recertification cycles.

5: FORECASTING GREEN JOBS IN BANGLADESH

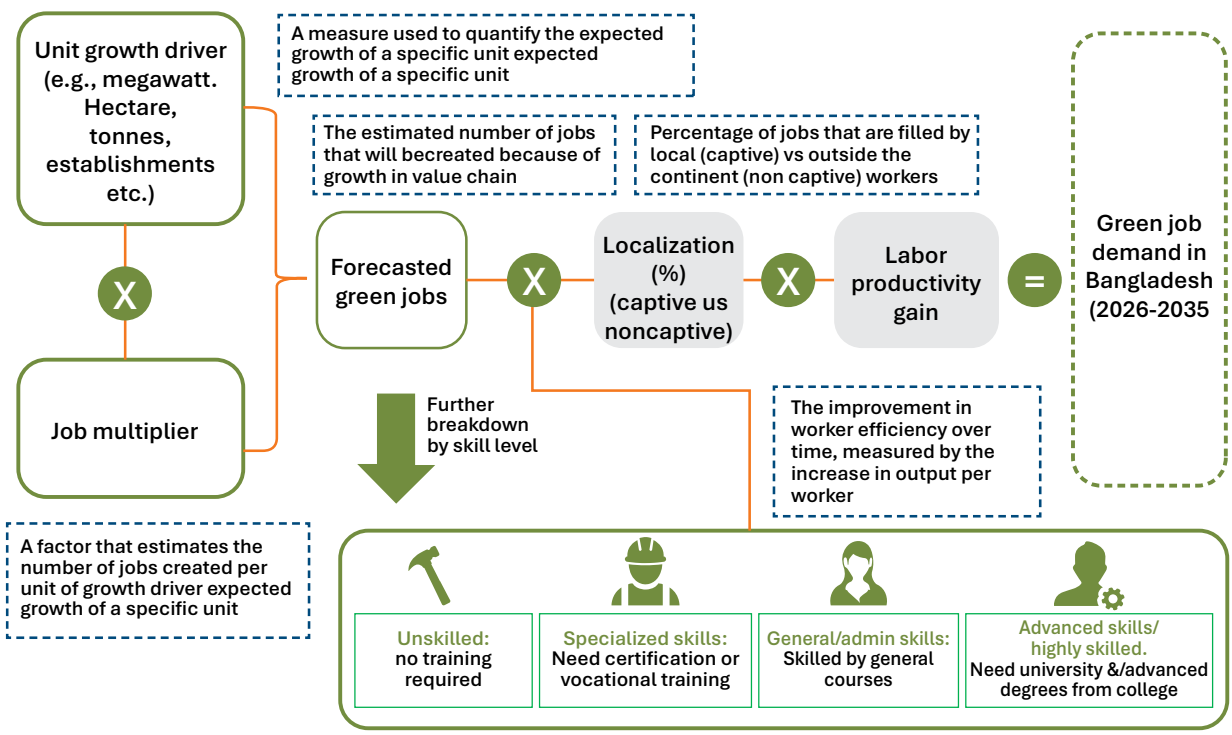
5.1 CONTEXT AND OBJECTIVES

Bangladesh stands at a pivotal moment in its development trajectory, balancing rapid economic growth with rising climate vulnerabilities. The country's Third Nationally Determined Contribution (NDC 3.0) outlines an ambitious pathway toward deep decarbonization, resilience-building, and a just socio-economic transition. This chapter provides a comprehensive forecast of green jobs for Bangladesh using the value chain prioritisation and green sector mapping approach, with a focus on the period 2025–2035.

5.2 APPROACH AND METHODOLOGY

This study adapts the internationally acceptable forecasting framework for the forecasting analysis. Figure 1 below provides a schematic diagram of the framework model used for job forecasting.

FIGURE 17: Modelling Future green jobs demand



Notes:

1. Skill levels; Source: ILO Skill level 1-4 definition.
2. Only direct jobs filled by locals are considered i.e. Localization factor is 100%
3. No meaningful gains expected within the duration of analysis therefore not included in this modelling exercise i.e. labour productivity is considered as 1.

The methodology includes four steps: first, defining sectoral value chains relevant to Bangladesh's NDC 3.0 commitments; second, identifying growth drivers for the selected value chain/sectors.; third, applying job multipliers derived from international green job research and regionally adjusted for Bangladesh's labour intensity; and fourth, allocating job outputs across skill levels using ILO definitions. The resulting model provides a transparent and replicable structure for updating forecasts as new data becomes available.

Data sources include NDC 3.0 Mitigation Tables, Renewable Energy Policy 2025, EV Policy 2023, BBS (Bangladesh Bureau of Statistics) Waste Surveys, and relevant sectoral masterplans.

Value-chain selection was informed by the NDC's mitigation pathways, including renewable energy deployment, industrial energy efficiency, transport electrification, agricultural modernization, green construction and sustainable building material production, eco tourism etc. Growth drivers were quantified based on publicly available government strategies, masterplans, and NDC modelling inputs. Job multipliers were adapted from global benchmarks, with adjustments reflecting Bangladesh's highly labour-intensive markets and the predominance of micro- and small enterprises in implementation.

Scenario modelling was conducted to generate lower bound and upper bound estimates. These scenarios reflect uncertainties in technology costs, policy implementation rates, infrastructure readiness, and investment flows. The methodology emphasizes direct employment only, excluding indirect and induced jobs to maintain a conservative baseline. Each value chain narrative includes descriptions of upstream, midstream, and downstream roles, as well as operational, technical, managerial, and regulatory functions.

5.3 FORECASTING GREEN JOBS IN THE SELECTED VALUE CHAINS

5.3.1 RENEWABLE ENERGY

The table below presents an indicative estimate of employment generation from scaling up key renewable energy and clean technology interventions. Using projected deployment levels and standard job multipliers, total employment potential is estimated to range from approximately 713,900 to 895,500 jobs.

The estimates are based on scenario assumptions adapted from international green jobs forecasting approaches. The lower bound reflects growth trajectories derived from current installed capacity and projected compound annual growth rates toward 2035, while the upper bound assumes tiered realization of national energy and power master plan and NDC 3.0 targets by 2035. Job multipliers are derived from recent global renewable deployment experience and capacity installation trends.

TABLE 3: Green Jobs Forecasting in RE Sector in Bangladesh (2026-2035)

	Unit growth driver	Job Multiplier (jobs/MW)[1]		Total jobs	
	MW	Lower bound	Upper bound	Lower bound	Upper bound
Rooftop solar	5000[2]	25	35	125,000	175,000
Solar IPP/MPP*	15000[3]	6	9	90,000	135,000
Solar irrigation	600[4]	14	20	8,400	12,000
Wind	1000[5]	8	10	8,000	10,000
Biogas	100[6]	25	35	2,500	3,500
Solar + BESS**	8000[7]	60	70	480,000	560,000
			Total	**713,900**	**895,500**

*IPP means Independent Power Producers MPP means Merchant Power Producers

** BESS means Battery energy Storage Systems.

[1] International Benchmark from contemporary studies in Africa and Asia.
[2] IEEFA, 2022
[3] Draft Energy Master Plan 2026. Estimated solar power generation capacity is 20 GW in 2035 i.e.15 GW Solar IPP/MPP is estimated excluding 5GW rooftop solar.
[4] Draft NDC 3.0 implementation Plan.
[5] Energy and Power Sector Master Plan 2025
[6] Draft NDC 3.0 implementation Plan.
[7] Energy and Power Sector Master Plan 2025

Below is a Bangladesh-context job intensity estimate (jobs per MW) for each renewable energy technology you listed.

TABLE 4: Renewable Energy Job Intensity in Bangladesh

Technology	Jobs per MW (construction & installation)	O&M jobs per MW	Total jobs per MW*	Bangladesh context
Rooftop solar	21 – 30	4– 5	25 – 35	Labour-intensive installation; strong SME participation
Utility solar park	5 – 7	1 – 2	6 – 9	Large-scale projects; limited local manufacturing
Solar irrigation	12 – 18	2 – 3	14 – 20	Includes pump installation & servicing
Wind	6 – 7	2 – 3	8 – 10	low job localization; imported components
Biogas (utility-scale equivalent)	18 – 25	7– 10	25– 35	Includes digester operations & feedstock management
BESS	40-45	20-25	60-70	

*Total jobs include installation, operation & maintenance, and system servicing.

5.3.1.1 SOLAR POWER

Solar energy deployment generates a diverse workforce structure spanning multiple skill levels. Approximately 40% of new jobs involve unskilled or casual labour, primarily supporting site preparation and solar farm installation. Specialized technical roles account for about 30%, including technicians responsible for system installation, operation, and maintenance. General and administrative positions represent roughly 20% of employment, covering management, logistics, and quality control functions that ensure system performance and grid integration. The remaining 10% require advanced expertise, such as electrical engineers and system developers working on design optimisation, grid compatibility, and emerging solar technologies.

FIGURE 18: Green jobs in Solar Power Sector Value Chain in Bangladesh

Job taxonomy	Unskilled	Specialized skill	General/admin skill	Advanced skill
Illustrative jobs	Casual labourers	• Installers • Electricians • Technicians	• Production managers • QC inspectors • Logistics & procurement	• Engineers • Project developers
Employment impacts (direct jobs)	40%	30%	20%	10%

Relevant value chain stages

Key Insight:

- Rooftop solar is highly labour-intensive due to the need for site assessments, structural mounting, electrical integration, wiring, safety compliance, and coordination through small contractor networks. This makes rooftop solar one of the largest green job generators per MW.
- Utility-scale solar (≈51% of deployment) delivers significantly higher generation capacity, supporting jobs in construction, grid integration, operations, and maintenance.
- Solar employment is heavily concentrated on installation and deployment, which can result in lower job permanence compared to long-term operations roles.

5.3.1.2 WIND POWER

Employment generated by wind power development spans multiple skill levels, with approximately 55% of jobs requiring specialized or general administrative competencies. Around 30% of new positions involve unskilled or casual labour supporting site preparation, transport, and construction activities. Specialized technical roles account for about 20%, including technicians responsible for installing, operating, and maintaining wind turbines. General and administrative functions represent roughly 35% of employment, providing regulatory oversight, compliance management, and operational coordination. The remaining 15% require advanced expertise, such as electrical engineers and developers engaged in research and development, turbine design, and system optimisation.

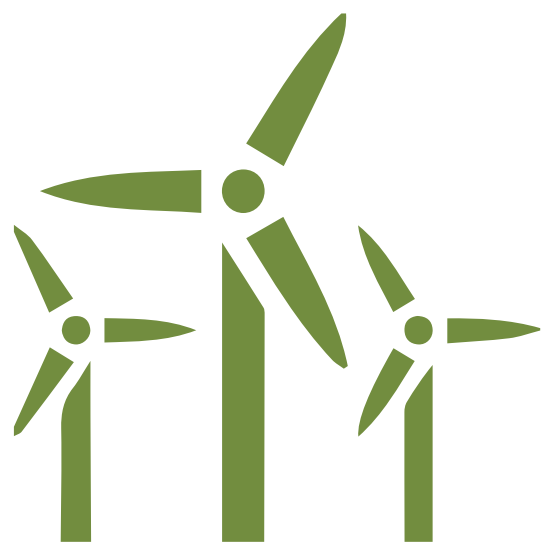
FIGURE 19: Green Jobs in Wind Power Sector Value Chain in Bangladesh

Job taxonomy	Unskilled	Specialized skill	General/admin Skill	Advanced skill
Illustrativejobs	Casual labourers	• Welders • Machine assemblers • Electricians	• Production managers • QC inspectors • Logistics & procurement	• Scientists • Engineers • Technicians
Employment impacts (direct jobs)	30%	20%	35%	15%

Relevant value chain stages

Key Insight:

- Bangladesh's current installed and planned wind energy capacity utilizes only a low fraction of total technical potential, indicating significant room for expansion.
- Due to long feasibility, permitting, and development timelines, wind energy deployment is projected to generate up to 10,000 jobs (≈3% of total renewable energy jobs).
- Local job creation in manufacturing remains limited, as most wind turbine components and equipment are imported rather than produced domestically.



5.3.1.3 BATTERY ENERGY STORAGE SYSTEM

Bangladesh Energy and Power System Master Plan 2025-26, gas given significant importance on Solar and Battery Energy Storage System (BESS) with around 8000 MW by 2035. BESS has been considered replacement of fuel oil-based power plants, majority of which is about to reach their end of life during 2028.

Employment in battery energy storage systems spans a range of skill levels, reflecting both manufacturing and technical service needs. Approximately 30% of new jobs involve unskilled labour, supporting manufacturing facilities and basic assembly-line operations. Specialized technical roles account for about 40% of employment, driven by the need for expertise in system assembly, installation, operation, and maintenance. General and administrative functions represent around 15% of jobs, focusing on storage management, logistics coordination, and operational oversight. The remaining 15% require advanced skills, primarily in research, system design, and innovation, representing the highest-skilled segment of the battery storage workforce.

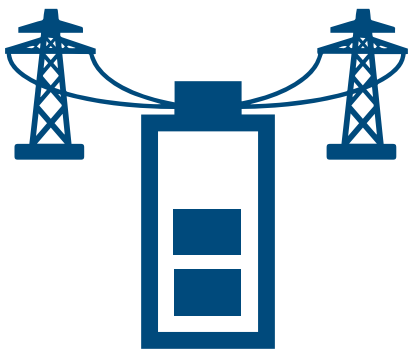
FIGURE 20: Green Jobs in Bess Sector Value Chain in Bangladesh

Job taxonomy	Unskilled	Specialized skill	General/admin Skill	Advanced skill
Illustrative jobs	Casual labourers	• Welders • Machine assemblers • Electricians	• Production managers • QC inspectors • Logistics & procurement	• Scientists • Engineers • Technicians
Employment impacts (Direct jobs)	30%	40%	15%	15%

Relevant value chain stages

Key Insight:

- BESS sector has shown the highest job intensity in contemporary green job forecasting reports based in Africa.
- BESS (≈25% of deployment by 2035) is expected to deliver a significant portion of the generation capacity which may create 0.56 million jobs (≈62.5% of total renewable energy jobs).
- Battery Energy Storage Systems are critical for maximizing renewable energy benefits by stabilizing grids and addressing the intermittent nature of solar and wind power.
- Global experience shows rapid uptake, advancing BESS deployment, demonstrating how storage can scale alongside renewable expansion.
- BESS skills are transferable across multiple energy and industrial applications, extending beyond solar and wind to broader power system modernization and electrification.
- Investment in specialized BESS skills development can strengthen Bangladesh's wider energy workforce and support future grid modernization.
- A significant share of battery manufacturing jobs may remain overseas, particularly in established manufacturing hubs such as China unless domestic assembly and manufacturing capacity is developed.



5.3.2 ELECTRIC VEHICLES

As Bangladesh accelerates the transition toward cleaner urban transport to reduce air pollution, cut fuel imports, and modernize its mobility systems, electric vehicles and charging infrastructure are emerging as important sources of green employment. The table below presents indicative employment potential associated with the transition to electric mobility and supporting charging infrastructure in Bangladesh. Based on projected adoption of electric 4-wheelers and 3-wheelers, along with the expansion of charging stations and battery swapping networks, total job creation is estimated to range from approximately 75,882 to 161,514 jobs. These opportunities span vehicle assembly and servicing, charging infrastructure installation and maintenance, battery management, and network operations. The estimates highlight that accelerating e-mobility adoption can support urban air quality improvement, energy diversification, and the creation of new green employment opportunities across transport and energy service value chains.

TABLE 5: Green Jobs Forecasting in EV Sector in Bangladesh (2026-2035)

	Unit growth driver	Job multiplier (jobs/vehicle)[8]		Total jobs	
	Number	Lower bound	Upper bound	Lower bound	Upper bound
4-Wheeler	210,645 [9]	3	6	632	1,264
3-Wheeler	6,000,000[10]	4	9	24,000	54,000
Charging stations	7500[11]	1.5	3.5	11,250	26,250
Battery swapping	20000[12]	2	4	40,000	80,000
			Total	**75,882**	**161,514**

5.3.2.1 Electric Three-Wheelers and Four Wheelers Wheelers

Employment generated through the expansion of EV three-wheelers (EV3Ws) and EV Four wheelers (EV4Ws) spans multiple skill levels across manufacturing, sales, and technical functions. Approximately 40% of new jobs involve unskilled labour, with casual workers supporting factory operations and basic assembly tasks. Specialized roles account for about 30%, including electricians responsible for assembling and wiring EV3Ws. General and administrative positions represent roughly 20% of employment, with sales representatives and retail staff supporting distribution and customer engagement. The remaining 10% require advanced skills, including electrical and mechanical engineers involved in system design, quality assurance, and production optimisation.

[8] International Benchmark from contemporary studies in Africa and Asia.
[9] No of 4W passenger vehicles in 2035 is expected to be 702,149. 30% will be converted to EV (NDC 3.0)
[10] Draft EV roadmap 2026 and expert opinion provided by Shaymal Barman (Climate Change Expert)
[11] Estimated number of charging station to support 30% EV passenger car by 2035
[12] To support 40% to 50% of EV 3W with battery swapping

FIGURE 21: Value Chain Jobs in Ev 3W & 4W Sector in Bangladesh

Job taxonomy	Unskilled	Specialized skill	General/admin Skill	Advanced skill
Illustrative jobs	• Material handlers • Casual labourers • Sales agents	• Welder • Electrician • Customer service rep	• Sales representative • Production manager	• Electrical engineers • Mechanical engineers
Employment Impacts (direct jobs)	40%	30%	20%	10%

Relevant value chain stages

5.3.2.2 CHARGING INFRASTRUCTURE

Employment generated by battery swapping and EV charging networks spans a range of operational and technical roles. Approximately 30% of new jobs involve unskilled labour, including security personnel responsible for safeguarding swap stations and charging points. Specialized roles account for about 40%, with attendants operating swap stations and assisting users. General and administrative positions represent roughly 20% of employment, including logistics managers coordinating technician deployment and network operations. The remaining 10% require advanced skills, such as software developers designing and maintaining the digital platforms and mobile applications used to access and manage charging services.

FIGURE 22: Value Chain Jobs in Charging Infrastructure and Battery Swapping in Bangladesh

Job taxonomy	Unskilled	Specialized skill	General/Admin Skill	Advanced skill
Illustrative jobs	• Security guards • Construction workers	• EV Mechanics • Battery maintenance technician • Operator	• Logistics manager • EV fleet service manaer	• Electrical engineers • Software developer
Employment impacts (direct jobs)	30%	40%	20%	10%

Relevant value chain stages

5.3.3 RMG SECTOR

Bangladesh's ready-made garment (RMG) sector — the world's second-largest apparel exporter — is increasingly under pressure from global buyers to decarbonize production and adopt sustainable manufacturing practices. As brands strengthen climate and ESG requirements, green industrial transformation is emerging as both a compliance necessity and a competitive advantage. The transition toward energy-efficient and environmentally responsible production is estimated to generate approximately 26,833–50,856 specialized and advanced skilled jobs. Employment is generated across three key phases: audit and planning, which supports energy assessments and retrofit design; retrofit implementation, which creates the largest number of technical installation and upgrade jobs; and ongoing energy management, which establishes permanent roles in monitoring, maintenance, and efficiency optimisation.

TABLE 6: Specialized and Advanced Skilled Green Jobs Forecasting in RMG Sector in Bangladesh (2026-2035)

	Unit growth driver	Job multiplier (jobs/factory)[13]		Total Jobs	
	Number	Lower bound	Upper bound	Lower bound	Upper bound
Audit & planning	4600[14]	0.3	0.6	1,533	2,556
Retrofit implementation	4600	4.0	7.5	18,400	34,500
Ongoing energy management	4600	1.5	3.0	6,900	13,800
			Total	**26,833**	**50,856**

NDDC 3.0 target includes achievement of 10% industrial energy efficiency by 2035. The figure below provides key growth drivers, intervention areas and value chain jobs in the RMG sector.

FIGURE 23: Growth Drivers and Green jobs in RMG sector

RMG sector	Key growth drivers	Key interventions
Drivers and intervention **Illustrative value chain Jobs**	• Large number of ageing factories ❑ Labour-intensive retrofit work ❑ Continuous maintenance needs ❑ Compliance with buyer sustainability requirements ❑ Expansion of green certification programmes	❑ Energy efficiency retrofits ❑ Waste heat recovery systems ❑ Rooftop solar installations ❑ Green factory certification (e.g., LEED) ❑ Water recycling and resource efficiency systems ❑ High-efficiency motors & drives ❑ Boiler & steam optimisation ❑ Waste heat recovery ❑ Compressed air system optimisation ❑ LED & smart lighting ❑ Process heat & thermal insulation ❑ Digital energy monitoring systems
Energy audits & retrofit planning	**Retrofit & implementation**	**Monitoring, energy management & maintenance**
• Energy auditors • Industrial engineers • Measurement and verification specialist	• Electrical technicians • Boiler & steam engineers • HVAC & insulation technicians • Automation & control technicians	• Energy managers • Sustainability officers • M&V technicians • Data monitoring specialists • Preventive maintenance technicians

[13] International Benchmark from contemporary studies in Africa and Asia.
[14] Bangladesh's RMG Sector: A Catalyst for Inclusive Growth and Economic Resilience, IIX 2025

5.3.4 AGRIBUSINESS

Climate-smart agriculture (CSA) is emerging as a transformative pathway for Bangladesh to strengthen food security, enhance climate resilience, and reduce agricultural emissions while supporting rural livelihoods. The table below presents indicative employment potential from scaling CSA practices across Bangladesh's rice production systems. Based on projected adoption across millions of hectares, total job creation is estimated to range from approximately 210,173 to 285,337 jobs. Significant employment opportunities arise from the expansion of cold storage infrastructure, climate-resilient seed systems, mechanized irrigation, and advisory services, alongside improved cultivation practices such as Alternate Wetting and Drying (AWD), short-duration rice varieties, and precision fertilization. These interventions not only improve productivity and water efficiency but also generate substantial rural employment through extension services, equipment operation, input supply chains, and post-harvest management.

TABLE 7: Green Jobs Forecasting in Agribusiness Sector in Bangladesh (2026-2035)

	Unit growth driver	Job multiplier (job/hectare)[15]		Total jobs	
	Number	Lower bound	Upper bound	Lower bound	Upper bound
AWD in rice cultivation	1,444,368[16]	0.008	0.014	12,036	20,634
Short-duration rice varieties	3,160,407[17]	0.004	0.007	12,642	21,069
New cold storage	1,350,000[18]	0.070	0.070	94,500	94,500
Mechanized irrigation	4,000,000[19]	0.008	0.014	33,333	57,143
Precision fertilization	1,319,377	0.008	0.014	10,995	18,848
Agri advisory services	4,000,000	0.003	0.004	13,333	16,000
Climate-resilient seed systems	4,000,000	0.008	0.014	33,333	57,143
			Total	**210,173**	**285,337**

Figure below provides illustrative green jobs in CSA value chain.

FIGURE 24: Illustrative Green Jobs in Agribusiness Value Chain

AWD	Short duartion rice varieties	CSA	Digital and climate service
• Irrigation technicians • Water management advisors • Field monitoring staff • Pump & water scheduling specialists	• Seed distribution & logistics agents • Climate-smart extension officers • Crop advisory specialists • Climate risk field advisors • Farmer training facilitators	• CSA extension officers • Soil health advisors • Mechanization service operators • Pest management specialists • Agri input service providers • Post-harvest storage & cold chain operators • Agroforestry technicians	• Weather advisory service agents • Farm data collectors • Digital platform facilitators • Digital advisory agents • Agri-fintech services • Climate insurance facilitation • Climate risk field facilitators

[15] International Benchmark from contemporary studies in Africa and Asia.
[16] 30% of total Boro rice cultivation area which is 4,814,560 hectares (BBS)
[17] 30% of total Boro and Aman rice cultivation area which is 10,534,690 hectares (BBS)
[18] 30% of demand shortfall of post-harvest cold storage capacity (4.5 million tonnes) assumed to be new green facility by 2035. Source: Inspira Adviosry
[19] Barman, S. (2026). Towards A Job-Ready Green Skills Ecosystem in Bangladesh.

5.3.5 CONSTRUCTION

With Bangladesh experiencing rapid urban growth and infrastructure expansion, the shift toward low-carbon construction and building materials is becoming essential to reduce pollution, improve construction efficiency, and modernize the sector. The table below presents indicative employment potential associated with green construction activities and the adoption of sustainable non-fired brick technologies, including manual and automated Concrete Compressed Block (CCB) production and Autoclaved Aerated Concrete (AAC). Total employment is estimated to range from approximately 389,250 to 685,200 jobs, with substantial gains driven by semi-automated block manufacturing and broader green construction activities. Emerging roles in green construction includes green building technicians, energy-efficient construction workers, insulation installers, sustainable materials suppliers, and environmental site supervisors. This transition can reduce air pollution from traditional brick kilns, improve worker safety, and support the development of a modern, sustainable construction supply chain aligned with Bangladesh's climate adaptation and resilient urban development goals.

TABLE 8: Green Jobs Forecasting in Construction Sector in Bangladesh (2026-2035)

	Unit growth driver	Job multiplier (job/hectare)[20]		Total jobs	
	Number	Lower bound	Upper bound	Lower bound	Upper bound
Green construction Sustainable material -non fired bricks[21]				250,000	500,000
Manual CCB	550	15	20	8,250	11,000
CCB-semi-Auto	1790	60	80	107,400	143,200
CCB- full Auto	70	80	100	5,600	7,000
AAC	120	150	200	18,000	24,000
			Total	**389,250**	**685,200**

Bangladesh's construction sector is experiencing steady expansion, driven by rapid urbanization, infrastructure development, and growing demand for housing and commercial space. Market estimates indicate that the sector was valued at approximately USD 34.41 billion in 2025, rising to USD 36.49 billion in 2026, and projected to reach nearly USD 48.96 billion by 2031, reflecting a Compound Annual Growth Rate (CAGR) of about 6.05% between 2026 and 2031. With relatively low market concentration and participation from both domestic and international firms, the sector is poised for continued growth. This expansion presents significant opportunities to integrate green construction materials, energy-efficient building practices, and low-carbon technologies, positioning the industry as a key contributor to sustainable urban development and green job creation in Bangladesh. Approximately 3.5-3.6 million people are employed in the construction sector[22] which is expected to be increased by 5 million by 2035[23]. Although a Bangladesh Institute of Development Studies (BIDS) study has suggested that 9 million construction workers will be needed by 2030. Aligning with global percentage of green jobs across the globe, it is assumed that 10% of the job will be green and total green jobs in construction sector in Bangladesh could be 500,000 by 2035.

[20] International Benchmark from contemporary studies in Africa and Asia.
[21] expert opinion provided by Shaymal Barman (Climate Change Expert): Draft NDC Implementation plan assumptions. Non-firing brick's market share is estimated at 40% of total demand for bricks.
[22] Ahmad, I., Pervin, A. & Hossain, M.I. Occupational health risks, safety essentials, and safety beliefs among construction workers in Bangladesh. Sci Rep 15, 33064 (2025).
[23] Barman, S. (2026). Towards A Job-Ready Green Skills Ecosystem in Bangladesh.

5.3.6 TOURISM

Bangladesh's rich natural landscapes and biodiversity offer strong potential to develop tourism as a Bangladesh's rich natural landscapes and biodiversity offer strong potential to develop eco-tourism as a pathway for conservation, climate resilience, and rural income generation. Key destinations include the Sundarbans mangrove forest, Cox's Bazar and St. Martin's Island, the Chittagong Hill Tracts, and the country's extensive haor wetlands and protected ecosystems. Eco-tourism integrates environmental protection with community livelihoods, making it particularly suitable for climate-vulnerable and ecologically sensitive regions.

Sustainable tourism growth is expected to be driven by the expansion of community-based tourism enterprises, eco-lodges and low-impact accommodations, conservation tourism services, and sustainable tour operations. Based on a conservative scaling scenario, the sector could generate approximately 26,250 to 51,400 green jobs by 2035.

Regional benchmarking provides useful context for estimating Bangladesh's tourism growth potential. Countries with comparable biodiversity assets and nature-based tourism opportunities have successfully scaled community-driven tourism models. In Nepal, more than 3,000 community tourism enterprises and extensive homestay programmes support mountain and conservation tourism. Sri Lanka hosts over 1,500 tourism and homestay units, integrating wildlife reserves and coastal tourism into local livelihoods. In Vietnam, community tourism is embedded within protected areas, linking conservation zones with local income generation. Bangladesh possesses similarly rich ecological assets, yet eco-tourism remains comparatively underdeveloped, indicating significant potential for expansion through community-based and conservation-linked tourism models.

Community tourism enterprises represent the largest livelihood opportunity. With around 1,200 enterprises, employment could reach 6,000–14,400 jobs, including homestay operators, local guides, cultural tourism providers, and small food and craft businesses. The development of approximately 250 eco-lodges could generate 6,250–10,000 jobs in sustainable hospitality, facility operations, renewable energy systems management, and environmental maintenance.

Conservation tourism services are expected to create 8,000–15,000 jobs, supporting mangrove and forest protection, biodiversity monitoring, habitat restoration, and eco-site management. Sustainable tour operations and low-impact transport services could add 6,000–12,000 jobs, including eco-tour guides, visitor management personnel, and logistics providers.

Employment opportunities span multiple skill levels. Community and service roles will dominate, complemented by eco-guiding, conservation support, and hospitality services. Tourism development therefore offers a strategic opportunity to strengthen rural economies, support conservation efforts, and promote climate-resilient livelihoods while advancing sustainable tourism in Bangladesh.

TABLE 9: Green Jobs Forecasting in Tourism Sector in Bangladesh (2026-2035)

	Unit growth driver	Job multiplier (job/enterprise)[24]		Total Jobs	
	Number	Lower bound	Upper bound	Lower bound	Upper bound
Community tourism enterprises	1200	5	12	6,000	14,400
Eco-lodges	250	25	40	6,250	10,000
Conservation tourism services				8000	15000
Tour operations & transport				6000	12000
			Total	**26,250**	**51,400**

[24] International Benchmark from contemporary studies in Africa and Asia

FIGURE 25: Illustrative Green Jobs in Tourism Value Chain in Bangladesh

Community livelihood toursim services	Tourism services	Conservation tourism services	Sustainable tour operations and transport
• Homestay operators • Handicraft & cultural tourism providers • Local food & agritourism entrepreneurs • Local guides	• Trained eco-tour guides • Eco-lodge managers • Green building maintenance staff • Renewable energy & waste system operators • Hospitality staff • Environmental management staff	• Habitat restoration workers • Biodiversity monitors • Wildlife & ecosystem monitors • Mangrove & forest conservation support • Biodiversity monitoring • Eco-site management	• Eco-tour guides • Low-emission transport services • Visitor management & logistics

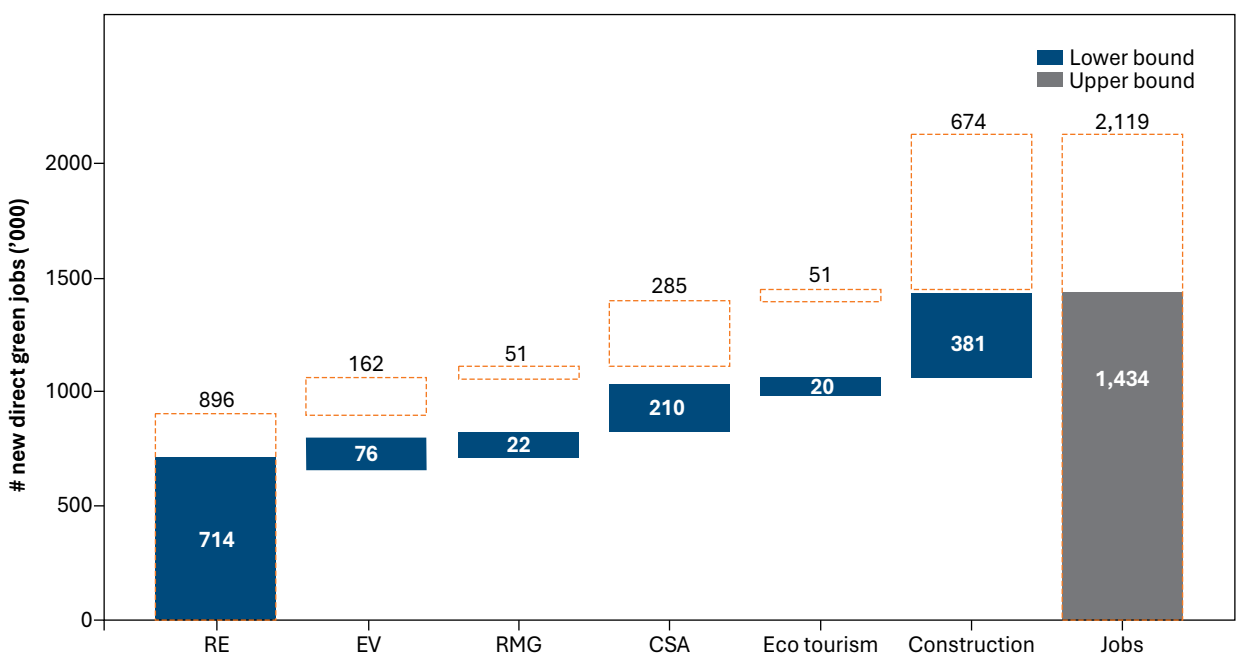
5.3.7 KEY FINDINGS

The figure presents a waterfall-style projection of new direct green jobs (in thousands) across key sectors in Bangladesh, showing both lower-bound estimates (filled bars) and upper-bound potential (dashed outlines). Together, these sectors could generate approximately 1.43 million to 2.12 million jobs.

Renewable energy dominates job creation potential, contributing to about 714,000 jobs in the lower scenario and up to 896,000 jobs under accelerated deployment. The construction sector represents the second-largest opportunity, adding 381,000 to 674,000 jobs, reflecting the scale of green building materials, infrastructure expansion, and climate-resilient construction.

CSA contributes a substantial 210,000 to 285,000 jobs, driven by irrigation services, advisory support, resilient seed systems, and mechanization services. Electric mobility expansion could generate 76,000 to 162,000 jobs, while the ready-made garment sector's energy efficiency and decarbonization transition may create 27,000 to 51,000 jobs. Eco-tourism development contributes 26,000 to 51,000 jobs, supporting conservation livelihoods and sustainable rural enterprises.

FIGURE 26: Total Green Jobs in Bangladesh, (2035) ('000 Jobs)



6. CONCLUSIONS AND RECOMMENDATIONS

6.1 KEY ANALYSIS

This study finds that Bangladesh's green transition is entering a systems-constrained phase. Labour supply is not the primary bottleneck. The binding constraint is the shortage of job-ready, sectorspecific and standards-aligned competencies required to implement, operate and scale green investments across priority sectors - renewable energy, electric mobility (EV), RMG and textiles, construction, agribusiness and sustainable tourism.

Across consultations, policy review and sector analysis, four cross-cutting findings stand out.

- **The Green Transition is Policy-Led but Implementation - Constrained**

  Bangladesh has a strong policy foundation for green transformation through its climate commitments, renewable energy roadmaps, adaptation strategies, export diversification agenda, labour reform plans and social protection reforms. Architecture reflects ambition in mitigation, resilience, economic upgrading and inclusion. However, operationalisation gaps persist. Most policies refer to "capacity building" without clearly defining occupation-level standards, certification pathways, institutional responsibilities, financing models for delivery or mechanisms linking training to labour absorption. This creates fragmentation between climate ambition, industrial upgrading and skills systems.

- **Skills Gaps are Concentrated in Mid-level Technical and Supervisory Roles**

  Across the priority sectors, shortages are most acute at technician, supervisory and compliance levels. "Green skills" are increasingly defined as integrated competence - technical capability combined with compliance, documentation and digital proficiency - rather than standalone tasks.

- **Demand for Green Skills is Driven by Finance, Standards and Trade**

  Training alone will not generate employment. Sector growth is shaped by access to green finance, regulatory clarity, export requirements, public procurement standards and infrastructure readiness. Where incentives are misaligned or enforcement is weak, skills do not translate into jobs. Where compliance and finance signals are clear, demand for certified competence rises rapidly. Skills development must therefore be embedded within broader economic and regulatory reform processes.

- **Certification and Governance Credibility are Systemic Weak Points**

  Across sectors, employers report weak standardisation, limited independent certification, uneven trainer quality and heavy reliance on manufacturer-led informal training. This reduces labour mobility, increases employer risk and limits scale. Green skills development must therefore be treated as an ecosystem design challenge—linking standards, certification, finance, regulation, training delivery and labour absorption into a coherent system.

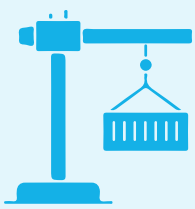
Overall, Bangladesh can achieve significant employment and climate outcomes if green skills development is integrated with industrial policy, export competitiveness and climate finance architecture, rather than treated as a standalone training agenda.

6.2 POLICY AND PROGRAMMATIC RECOMMENDATIONS

Bangladesh's green transition requires coordinated action across five structural constraints:
Governance Coordination, finance, certification, training infrastructure and inclusion.

Strategic Area	Key Focus Area
1 **Establish a National Green Skills Delivery Mechanism** A formal coordination platform should translate sector climate and industrial targets into annual skills plans aligned with export diversification, climate action and economic reform priorities. This mechanism should:	Define occupation-level standards. Align training provision with investment pipelines. Track skills-to-jobs conversion. Integrate gender and disability Inclusion benchmarks.
2 **Embed Certification into Market Systems** Occupational standards should be finalised for priority green roles, supported by nationally recognised certification, structured RPL pathways and assessor accreditation. Certification should be embedded into:	Green loan and blended finance schemes. Public procurement requirements. Compliance frameworks for exporters. Regulatory approvals.
3 **Upgrade Practical Training Infrastructure** Priority investments include: Mandatory practical hours and structured apprenticeships with employers should be institutionalised to ensure job readiness.	Solar O&M and safety labs. EV diagnostics and high-voltage safety facilities. Carbon accounting and traceability systems labs for RMG. Construction compliance and materials testing modules. Agribusiness testing and post-harvest handling facilities.
4 **Address Demand-Side Bottlenecks in Parallel** Training will only translate into employment if sector demand signals are clear and stable.	Standardise renewable energy interconnection and utility procedures. Clarify EV battery lifecycle and charging standards. Harmonise ESG and carbon reporting frameworks for SMEs. Rebalance incentives toward climate-smart agriculture and risk financing. Introduce green procurement and building compliance incentives.
5 **Institutionalise Inclusion** Inclusion should be monitored not only by enrolment but by certification, placement and retention outcomes. Green skills programming must integrate:	Flexible schedules. Safe transport and facilities. Progression pathways into supervisory roles. Disability-accessible infrastructure. Explicit gender participation targets.

6.3 FUTURE PROGRAMMING DIRECTIONS

Strategic Area	Key Focus Areas
 **Green Skills and Economic Reform Platform**	Links green sector investment pipelines with occupation-level skills planning. Supports regulatory reform in certification and standards. Strengthens labour market intelligence systems. Aligns skills with macroeconomic and export reform agendas.
 **Climate Finance–Linked Skills Accelerator**	Ties concessional climate finance to certified workforce requirements. Builds institutional capacity for climate finance governance. Develops O&M and resilience service markets. Supports locally led adaptation skills in climate-vulnerable districts.
 **Inclusive Green Enterprise and Employment Initiative**	Women in technical and supervisory green roles. Youth transition pathways into EV, RE, ESG compliance and climate-smart agriculture. Disability-inclusive vocational models. Integration with social protection and graduation pathways.
 **Green Export Competitiveness and Trade Readiness Facility**	RMG decarbonisation and traceability readiness. Agro-export compliance and testing. Sustainable tourism service upgrading. Supply-chain skills linked to logistics and regional connectivity improvements.

6.4 FUTURE RESEARCH DIRECTIONS

1. Future Research Should Prioritise:

- **Occupation-level labour market intelligence across priority green sectors.**
- **Training system readiness and unit cost modelling.**
- **Certification and RPL design for informal technicians.**
- **Inclusion barriers in technical and supervisory pathways.**
- **Skills-to-jobs conversion metrics linked to sector performance and climate outcomes.**

2. Monitoring Frameworks Should Track:

Certification numbers	Placement and retention rates	Compliance outcomes	Productivity gains	Climate adaptation or mitigation results

Not training numbers alone

3. Why this Matters

Bangladesh's green transition represents both a climate imperative and an economic restructuring opportunity. With coordinated reform linking policy, finance, certification, training delivery and inclusion, green skills development can drive quality employment, export competitiveness and resilient growth over the coming decade.

ANNEX 1

Traffic-Light Assessment of Priority Sectors Against Relevance, Opportunity and Feasibility Criteria

Sector Selection Criteria		Renewable Energy	Electric Vehicles	RMG and Textile	Green Construction	Agribusiness	Tourism	Leather	Waste
Relevance	Alignment with Climate Priorities	High	High	High	High	High	Medium	Medium	High
	Just Transition & Inclusive Employment Potential	High	Medium	High	High	High	High	Medium	High
	Youth Relevance	High	High	High	High	Medium	High	Medium	High
	Gender Inclusion Relevance	Low-Medium	Medium	High	Low-Medium	High	Medium	High	Medium
	Green Transformation Potential	High	High	High	High	High	Medium	High	High
Opportunity	Green Competitiveness & Value Addition	High	High	High	Medium	Medium	Medium	Medium	Medium
	Green Growth Momentum	High	High	High	High	High	Medium	Medium	Medium
	Quality Green Employment	Medium	Medium	High	High	High	High	Medium	Medium
	Green Entrepreneurship & Self Employment Potential	High	Medium	High	High	Medium	Medium	Medium	High
	Demand for Green Skills	High	High	High	High	Medium	High	Medium	High
	Attractiveness for Public and Private Investment	High	High	Medium	High	Medium	Medium	Medium	High
Feasibility	Presence of Market Actors	High	Medium	High	High	High	Medium	Medium	High
	Policy & Institutional Alignment	High	High	High	Medium	High	Medium	Medium	High
	Skills Ecosystem & Scaling Capacity	Medium	Medium	Medium	High	High	Medium	Medium	Medium

ANNEX 2

Policy Alignment Analysis

Government policies play a pivotal role in guiding the country toward a low-carbon economy and reducing GHG emissions. As a highly climate-vulnerable country, Bangladesh faces rising sea levels, frequent cyclones, flooding, and extreme heat. These risks make it essential for the government to set a clear national direction for climate action. By shaping regulations, incentives, and long-term development pathways, government policies ensure that climate action is systematic, inclusive, and aligned with global commitments such as the Paris Agreement. The following criteria outlines the key frameworks that drive this transformation and define Bangladesh's strategic approach to building a sustainable future.

1. **Setting Clear National Priorities:** Only the government can define national goals, such as renewable energy targets, emissions-reduction commitments (like the NDCs), and long-term plans for energy transition. These priorities create a shared vision that guides ministries, industries, and local authorities.

2. **Creating the Regulatory Framework:** A low-carbon transition requires strong rules and standards—such as limits on pollution, incentives for renewable energy, energy-efficiency standards for industries, and guidelines for sustainable land use. Government policies provide these regulations, so all actors follow a consistent path.

3. **Driving Investment and Technology Adoption:** Low-carbon development often requires high up-front costs and new technologies. Government policies—such as subsidies, tax incentives, public investments, or carbon-market mechanisms—help attract private investment, reduce financial risks, and speed up adoption of clean technologies.

4. **Ensuring Coordination Across Sectors:** GHG emissions come from energy, transport, industry, agriculture, and waste. Policies help coordinate actions across all these sectors, ensuring they move in the same direction. Without coordinated planning, progress in one area may be offset by emissions from another.

5. **Mobilising Climate Finance:** International climate funds, development partners, and carbon market mechanisms require strong national policies and reporting systems. The government plays a central role in mobilising this finance and directing it to priority areas such as renewable energy, adaptation, and green jobs.

6. **Protecting Vulnerable Communities:** Bangladesh's climate vulnerabilities mean that low-carbon policies must also support resilience, social protection, and just transition. Government policies ensure that the shift to a green economy benefits workers, communities, and marginalised groups rather than widening inequalities.

7. **Creating Demand for Green Skills:** Strong national policies generate long-term demand for green jobs and green skills. By setting sectoral targets—for example in renewable energy, green transport, waste management, and climate-smart agriculture—the government creates clear signals for educational institutions, training systems, and employers to invest in green workforce development.

Global Climate and Development Frameworks Shaping National Action

Bangladesh's Nationally Determined Contribution (NDC) does not exist in isolation. It emerges from an evolving international climate and development architecture that has progressively linked emissions reduction, development pathways, and implementation capacity. The Kyoto Protocol, the Paris Agreement, the Millennium Development Goals (MDGs), and the Sustainable Development Goals (SDGs) together provide the normative and institutional foundation within which Bangladesh's climate commitments and sectoral priorities are situated.

The Kyoto Protocol (1997) marked the first binding global effort to reduce greenhouse gas emissions, though its relevance for countries such as Bangladesh lay primarily in mechanisms related to capacity building, technology transfer, and market-based instruments rather than binding mitigation targets.

The Paris Agreement (2015) introduced a structural shift by universalizing participation through nationally determined contributions while recognizing differentiated national circumstances. For Bangladesh, this framework enabled the alignment of mitigation actions with national development priorities and institutional capacity constraints. The Paris Agreement explicitly emphasises implementation capacity, transparency, and cooperative mechanisms, all of which carry direct implications for skills demand, including monitoring, reporting, verification, and climate finance expertise.

This operational logic connects directly to the Sustainable Development Goals. The Sustainable Development Goals (2015–2030) extend the Paris Agreement's implementation focus by embedding climate action (SDG 13) within a broader development architecture that includes decent work (SDG 8), sustainable industry and innovation (SDG 9), responsible consumption and production (SDG 12), and inclusive urban development (SDG 11). The SDGs conceptualise climate action and employment creation as mutually reinforcing objectives, a framing that directly informs Bangladesh's NDC approach.

Bangladesh's updated NDC operationalises these global commitments by translating Paris-aligned mitigation objectives and SDG-linked development goals into sector-specific actions across energy, transport, industry, construction, agriculture, and waste. The NDC thus functions as a national translation mechanism, identifying priority sectors, mitigation pathways, and areas requiring international cooperation and domestic capacity enhancement.

The sectoral focus of this study reflects this convergence of global and national frameworks. In this context, green skills emerge as a critical enabling condition linking international commitments to national implementation. Global policy guidance increasingly recognises that climate transitions require targeted workforce development strategies to ensure productivity, competitiveness, and social inclusion. For Bangladesh, addressing green skills gaps is therefore essential not only for meeting NDC targets but also for sustaining export competitiveness and supporting inclusive economic growth.

Overview of National Policies and Strategies

The review covered 17 national policy documents grouped into four thematic clusters that collectively shape Bangladesh's green transformation and the demand for green skills:

- Mitigation and Energy Transition
- Adaptation and Resilience
- Employment and Skills Development
- Environmental Governance and Regulation

Across clusters, skills development is frequently referenced, but detailed delivery mechanisms and labour-market integration pathways remain limited.

Mitigation and Energy Transition

Bangladesh's core mitigation framework centers on renewable energy expansion and energy efficiency. The Renewable Energy Policy 2025 (gazette June 2025) provides the updated national direction for renewable integration. The National Solar Energy Roadmap (2021–2041) outlines longterm solar deployment pathways, while the Energy Efficiency and Conservation Master Plan (up to 2030) structures economy-wide efficiency measures.

These policies are operationalised through compliance-oriented instruments such as the Energy Audit Regulation (2018), formalizing mandatory audits for energy-intensive entities, and the Brick Manufacturing and Kiln Establishment (Control) Act, 2013 (amended 2019), targeting emissionsintensive brick production.

Together, this cluster emphasises renewable deployment planning, efficiency governance, and regulatory enforcement—implying demand for skills in renewable installation, energy auditing, cleaner production, compliance management, and industrial upgrading.

Adaptation and Resilience

Bangladesh's long-term adaptation architecture is anchored in three major instruments:

- National Adaptation Plan (2023–2050)
- Bangladesh Delta Plan 2100 (approved 2018)
- Bangladesh Climate Change Strategy and Action Plan (2009)

These frameworks prioritise agriculture and food systems resilience, water and delta management, ecosystem protection, and disaster risk reduction. They translate into practical sectoral actions such as climate-smart agriculture, water-efficient irrigation, resilient infrastructure, sustainable input systems,

and climate-informed supply chains. The adaptation cluster signals strong demand for green skills in farm-level practices, agro-processing, water management, environmental monitoring, and risk management.

Employment and Skills Development

The employment and skills architecture is structured through a layered framework:

- National Skills Development Policy (NSDP) 2011 – foundational framework establishing the NTVQF, competency-based training, industry participation, and Recognition of Prior Learning (RPL).
- National Employment Policy 2022 – focuses on expanding decent work and strengthening labour-market governance.
- National Action Plan for Skills Development (2022–2027) – operational reform roadmap promoting demand-driven training, quality assurance, apprenticeships, and institutional strengthening.

Rather than replacing earlier policies, newer instruments build on the NSDP 2011 through implementation updates. Together, they provide the institutional backbone for workforce development across both traditional and emerging green sectors.

Environmental Governance and Regulation

Environmental oversight is governed by:

- Environment Conservation Rules 2023 (updated regulatory framework)
- Environment Court Act 2010 (specialised environmental judiciary)
- Environmental Management Framework 2018 (programme-level risk management tool)

This cluster establishes standards, environmental clearance procedures, compliance monitoring, and enforcement mechanisms. It implies growing demand for professional roles in environmental assessment, inspection, monitoring and reporting, waste management, and regulatory compliance.

Third Nationally Determined Contribution (NDC 3.0)

Bangladesh's overarching climate commitment is articulated in its Third Nationally Determined Contribution (NDC 3.0), submitted to the UNFCCC in September 2025. NDC 3.0 sets an economy- wide target to reduce greenhouse gas emissions by 20.31% below BAU by 2035 (84.97 $MtCO_2e$)— comprising 6.39% unconditional and 13.92% conditional reductions.

The NDC spans Energy, IPPU, AFOLU, and Waste sectors, with energy delivering the largest mitigation share. It explicitly links climate action with job creation, just transition principles, and workforce transformation. Priority skill areas include renewable energy, grid integration, energy efficiency, electric mobility, climate-smart agriculture, waste-to-energy, monitoring, reporting and verification (MRV), climate finance, and carbon market readiness under Article 6.

Bangladesh's NDC trajectory—2016 (first), 2021 (updated), and 2025 (NDC 3.0)—reflects progressively rising ambition.

Collectively, these policy clusters depict a comprehensive but fragmented green transition architecture. While climate, energy, adaptation, employment, and environmental policies are well articulated, systematic integration of green skills development into sector strategies remains emerging. The policy environment signals clear and growing demand for technical, transversal, and regulatory green competencies to support Bangladesh's low-carbon, climate-resilient transformation.

ANNEX 3

List of Interviewees and Stakeholders

Renewable Energy (RE)

Name	Position	Organisation	Engaged in
Assistant Vice President, Project Management	Mehedi Islam Aneek	Orion Group	FGD
Mostafa Al Mahmud	President	BSREA	FGD
Aziza Sultana Mukti	Managing Director	SolShare	FGD
Asma Jahan Huque	Managing Director	Prokaushali Sangsad Ltd.	FGD
Probir Kumar Paul	Project Coordinator	WAVE Foundation	FGD
Zahidul Alam	Sr Vice President	BSREA	FGD
Redwanoor Rahman	Managing Director	Rahman Renewable Energy Co. Ltd.	FGD
Md. Forhadul Pervez	Assistant General Manager, Sales	Filament Engineering Ltd	FGD
Arafath Mostafa	Deputy Manager Grameen	Shakti	FGD
East Coast Group (Omera Solar)	Masudur Rahim	Chief Executive Officer	FGD + KII
Kazi Umme Jahan	Assistant Manager, Business Development	East Coast Group	FGD + KII
Sincos Green Tech LTD	Borhan Uddin Bhuiyan	Director	KII
UCEP Bangladesh	B. M. Mofizur Rahman	Sr. Specialist, Skills Promotion	KII
Aiko Energy	Nur Alam	Country Manager	KII

Electric Vehicle (EV)

Name	Position	Organisation	Engaged in
Mahbub Alam	Head of Sales	Nitol Motors Ltd.	FGD
Abu Neaim Howlader	Managing Director	Dynamic Cars PLC	FGD
Hasin Noman Mahee	Operations Manager	Dynamic Cars PLC	FGD
Rawad Ashraf Jamee	Managing Director	Mulytic BD Ltd	FGD
Redwanul Zia	CEO	Mercedes-Benz	FGD
Zubayer Al Billal Khan	Chief Innovation Officer	Progress tech ltd	FGD
Mia Joy Pasculado Khairuddin	Deputy Manager	Mercedes-Benz	FGD
Aziza Sultana Mukti	Managing Director	SolShare	FGD
Tangime Zihad	CEO	AutoLogic Bangladesh	FGD + KII
Tauseef Anwar	Co-founder & Chief Business Officer	Cassetex	FGD + KII
Md Mokaddesul Hoque	Consultant, Transport Sector	World Bank	KII
Imran Zaman Khan	Divisional Director	Rancon Motors Limited	KII

Ready-Made Garment (RMG)

Name	Position	Organisation	Engaged in
Mohammad Sohel	Director	BGMEA	FGD
Samia Tunazzin	Assistant Manager	DBL Group	FGD
SM Romman Shah	Sustainability Manager	Inditex	FGD
Nazmul Mondol	GM, HR & Compliance	Mondol Group	FGD
Amit Hasan	Production Specialist	Decathlon	FGD
Dr. Mohidus Samad Khan	Professor, Dept of Chemical Engineering	BUET	FGD + KII
Azim Mohammad	CEO	Institute of Apparel Management	FGD + KII
Monowar Hossain	Head of Sustainability	Team Group	FGD + KII
Mazedul Haque	Senior Executive	Epyllion Group	KII

Tourism

Name	Position	Organisation	Engaged in
Md. Kamrul Hasan Afsary	Sr. Assistant Director (BD & Automation)	Daffodil International Professional Training Institute (DIPTI)	FGD + KII
Mohammed Sarwar Uddin	Manager- Training	National Hotel & Tourism Training Institute	KII
Shaikh Sayeed Hossain	THM Faculty, Head of Department	United College of Aviation, Science & Management	KII

Agribusiness

Name	Position	Organisation	Engaged in
Arifa Parvin Sohani	Assistant Manager – Project Management	ACI Agribusiness	FGD
Md. Atikur Rahman	Knowledge Transfer Manager	East West Seeds	FGD
Zakaria Prince	Development Sector Specialist	Adorsho PraniSheba Limited	FGD
MD Haider Jahan Khan	Director	Meera Seeds	FGD
Lubna Noman	Lead of Organisational Development & Culture, Human Resources	Square	FGD
Mohiuddin Ahmed	Founder & CEO	Conpass Corporation	FGD
Moshiur Rahman	Head of Communication	Growup agrotech limited	FGD
Md Belal Hossain	MD	Irrigation technology bd	FGD
Fahud Khan	Project Coordinator	SEBA Limited	FGD
Afsaruddin Ahmed	Director Operations	SEBA Limited	FGD
Abu Hasnat Md Jamil Islam	Deputy General Manager	Dana Power Company Ltd	FGD
Saiful Islam	Head of Business Development	SGS	FGD
Bony Iamin	Head of Business Development	SGS	FGD
Hasibul Mannan	Program Head	ACI Agribusiness	FGD + KII
MD Zarik Hossain Mondol	General Manager - Plant Operations	IFAD	FGD + KII

Agribusiness

Name	Position	Organisation	Engaged in
Razzab Ali	Professor, Department of Entomology	Agricultural University	FGD + KII
Shamiran Biswas	Head of Agriculture	Genius Farms	FGD + KII
Sumaiya T Ahmed	Head of Sustainability	PRAN	KII
Dr Md Abu Zafar Al Munsur	Deputy Director (Monitoring), Field Services Wing	DAE	KII
K. B. M. Tareq	Regional Manager (Marketing & Sales)	Bureau Veritas (Bangladesh) Private Limited	KII
Muntasir Tahmeed Chowdhury	Managing Director	Inspira Advisory & Consulting Limited	KII

Construction

Name	Position	Organisation	Engaged in
Shaid Al Hoque	Head of B+C Bangladesh	SMEC Bangladesh	FGD + KII
Shabnam Mustafa	Sr. Executive Architect	SMEC Bangladesh	FGD + KII
Saida Akter Mumu	Principal Architect	Matreek	FGD + KII
Mahmudur Rashid	Chairman	Dinajpur Institute of Science & Technology	KII
Md Mamunur Ferdous	Principal	Dinajpur Institute of Science & Technology	KII
Naleen Kaura	General Manager	Hilti Bangladesh	KII

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