FSG REIMAGINING SOCIAL CHANGE

H&M FOUNDATION

Laudes Foundation

Just Climate Transitions in Bangladesh

Accelerating Multistakeholder Action in Textile and Apparel and Construction Industries

SUJATA RATHI

AKSHAY KOHLI

SUBHASH CHENNURI

JANUARY 2025

This report has been authored and published by FSG, with support from the H&M Foundation and Laudes Foundation. We would like to thank the 100+ Bangladeshi and international stakeholders who provided their valuable time and inputs to strengthen this study.

About this report

Since early 2024, the H&M Foundation and Laudes Foundation have been collaborating to explore scenarios that could guide Bangladesh's industry development in the face of demographic and climate-related impacts. This report, resulting from the collaboration, identifies likely scenarios for Bangladesh's industrial sectors, and opportunities to accelerate just industry transitions both through direct grant-making and multistakeholder collaboration. We believe this report can become a guide for policymakers, industry leaders, financial actors, and civil society in Bangladesh, and among financial, business, and development partners globally, to inform their own plans and contributions in Bangladesh. As philanthropic foundations, we firmly believe that just transitions cannot advance in silos and that only by working holistically—across stakeholder groups, and bridging the spectrum of decarbonisation and climate adaptation—can the economy and critical industries within it become sustainable and competitive. This is a pivotal moment in Bangladesh's journey, and we encourage all who are interested in contributing to it to join us in this endeavour.

FSG REIMAGINING SOCIAL CHANGE

FSG is a mission-driven consulting firm supporting leaders in creating large-scale, lasting social change. Through customized consulting services, innovative thought leadership, and learning communities, we are working to create a world where everyone can live up to their full potential. Through strategy, evaluation, and research, we help many types of actors—individually and collectively—make progress against the world's toughest problems. We develop initiatives to put our insights into practice. These efforts include Talent Rewire (engaging employers for equitable economic mobility), GLOW (growing livelihood opportunities for women), and the Collective Impact Forum.

To learn more, please visit:
fsg.org

H&M FOUNDATION

The H&M Foundation, funded by the Persson family, founders and majority owners of the H&M Group, supports the textile industry in halving its greenhouse gas emissions every decade by 2050, while promoting a just and fair transition for both people and the planet. Its projects target high-emission areas along the textile value chain where the H&M Foundation's philanthropic strengths can have the greatest impact.

To learn more, please visit:
hmfoundation.com

Laudes Foundation

Laudes Foundation is an independent foundation addressing the defining challenges of our time: climate change, nature loss and social inequality. We are driven by the belief that businesses, when guided by values, rules and incentives, can be powerful agents for positive change. Our approach combines the catalytic power of philanthropy to work with and through business and industry to advance systems change.

To learn more, please visit:
laudesfoundation.org

Contents

Executive Summary

At the 2015 UN Climate Change Conference (COP21) in Paris, 196 countries, including Bangladesh, recognised the urgent and potentially irreversible threat of climate change, and made a legally binding commitment to pursue efforts to limit global temperature increase to 1.5°C above pre-industrial levels. The **Paris Agreement also recognised the imperative of a just transition**[1,2]. A just transition seeks to ensure fairness and inclusivity during the transition to a low-carbon economy and prioritises the creation of equitable opportunities for all members of society[3]. It involves **maximising the social and economic opportunities of climate action**, while minimising and carefully managing any challenges—including through effective social dialogue among all groups impacted, and respect for fundamental labour principles and rights[4].

Just Transitions to Support Bangladesh's Development Trajectory

Bangladesh is a vivid example of the opportunities and risks of transitions due to climate change. The **seventh most climate-vulnerable country** globally[5], Bangladesh is experiencing increasing incidence of extreme weather events such as heat waves, cyclonic activity, and flooding. On a business-as-usual trajectory, rising sea levels are expected to submerge about 17 percent of Bangladesh's land and displace about 20 million people by 2050[6]. Additionally, **without adequate adaptation, the country is projected to lose 4.8 percent of working hours due to heat stress by 2030**[7].

Bangladesh's economy grew 24-fold between 1980 and 2023[8,9], reducing poverty rates by two-thirds[10]. In the same period, Bangladesh's GHG emissions increased by 176 percent[11]. As physical risks due to climate change continue to materialise globally, the international focus on decarbonisation is expected to increase. Only with proactive investment to mitigate physical and transition risk can Bangladesh **protect its development trajectory**. Additionally, **just transitions bring opportunities for proactive businesses and countries**. Pursuing just transitions has the potential to **reduce costs** for Bangladeshi businesses through resource efficiency and low-cost energy, and enhance competitiveness of Bangladesh and of leading businesses. Just transitions also have the **potential to create new high-quality jobs** through the development of new products and services and access to new markets[12].

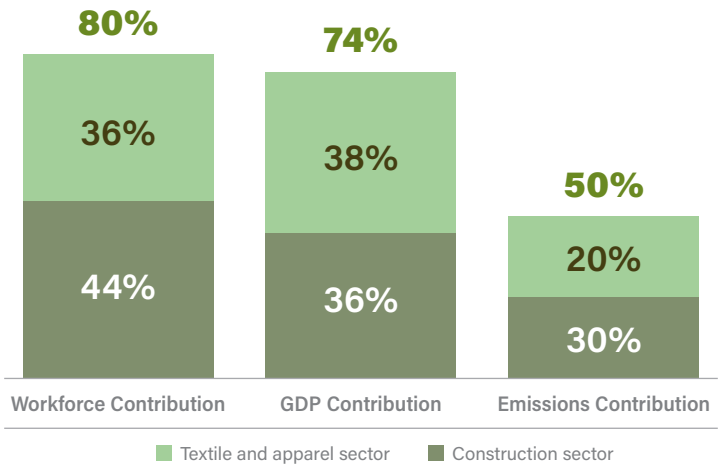
> Proactive investments in just transitions can bring opportunities for businesses and countries and mitigate physical and transition risks.

Priority Sectors: Textile and Apparel, and Construction Sectors

Industry* has been at the heart of Bangladesh's economic growth—today, the industrial sector employs 12 million people and accounts for 34 percent of Bangladesh's GDP[13,14]. However, it also contributes 15 percent of the country's total emissions, and this contribution is expected to rise by about five percent by 2030[15,16]. **The textile and apparel, and construction (including brick, cement, and steel manufacturing) sectors are critical to an industry transition**. These sectors together **constitute 74 percent of the industrial sector's GDP, 80 percent of the industrial workforce, and are responsible for about half of the industrial emissions in Bangladesh**.

Industrial workers are at particular risk and have limited resilience to climate transitions due to insecure livelihoods and financial stress. About 90 percent of workers in the industrial sector are employed informally, earning an average of BDT 13,568 (EUR 140) per month[20], which is about 40 percent below living wage estimates[21]. Only about 22 percent of Bangladesh's population has access to any form of social protection measures[22], and most programmes do not cover industrial workers[23].

Contribution of priority sectors to Bangladesh industry workforce, GDP, emissions in 2023 (%)[17,18,19]



For a just transition, those affected by transitions must experience inclusion, agency, and accountability[24]:

- **Inclusion**, which ensures that workers and other vulnerable or marginalised communities are involved in decision-making processes on issues that impact them,
- **Agency**, which as a further step, ensures that workers and affected communities have the power and ability to influence decision-making, and
- **Accountability**, of companies and governments who hold decision making power, to those affected by industry transitions, particularly workers and communities.

A holistic strategy, integrating the inclusion and agency of workers and accountability to them, is essential to advance just transitions toward a low-carbon, climate-resilient economy. This report, therefore, focuses on pathways to accelerate just transitions in the textile and apparel, and construction sectors.

While climate change and the need to rapidly decarbonise is certain, multiple uncertainties could impact the pace of decarbonisation of these sectors, the ability of these sectors to adapt to climate change, and the resulting outcomes for workers. To help stakeholders identify how they can contribute to advancing just industry transitions, we offer industry-focused **scenarios that outline potential futures for transitions in the textile and apparel, and construction sectors**. These scenarios, co-created with a diversity of over 100 Bangladeshi and international stakeholders, serve

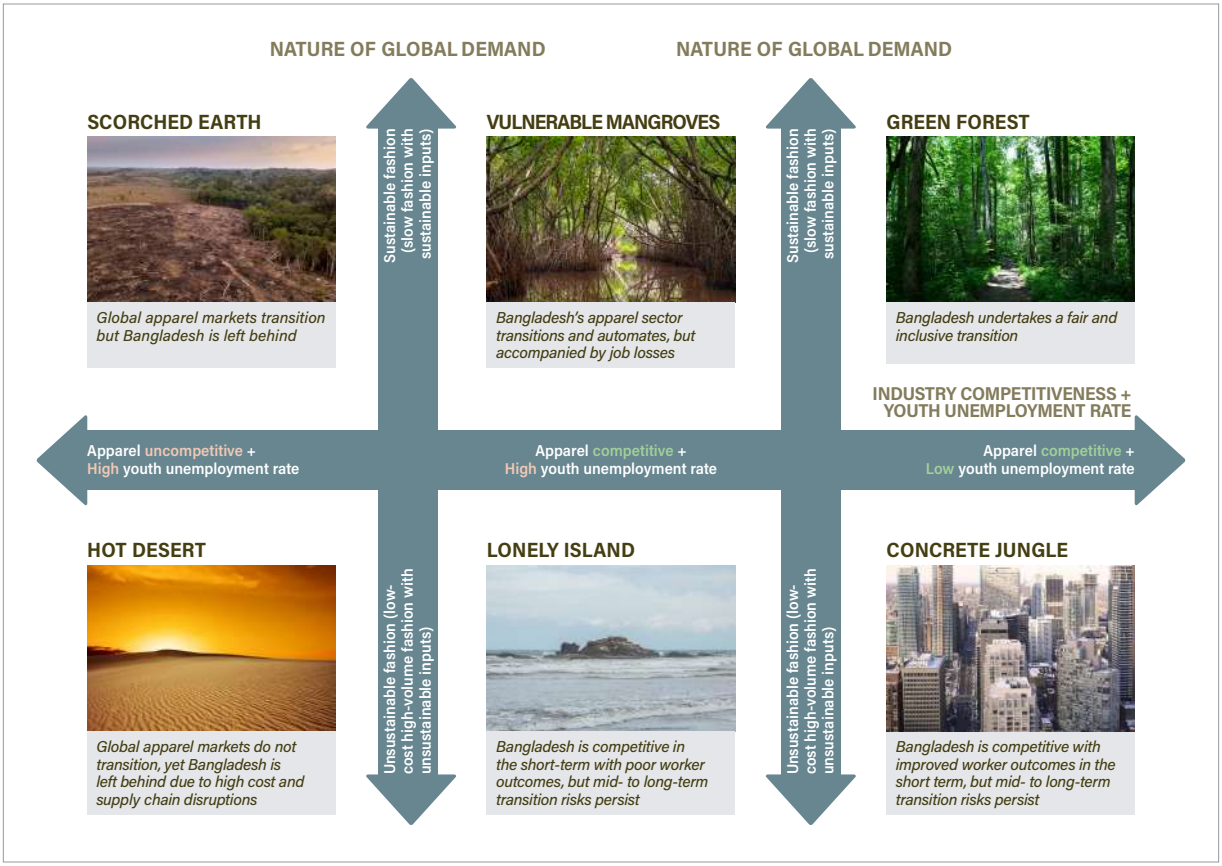
* According to Bangladesh Bureau of Statistics, industry includes five key types of activities: manufacturing; construction; mining and quarrying; electricity, gas, steam, and air conditioning supply; water supply, sewerage, waste management, and remediation activities

as a reference point for navigating the urgency, complexity, and uncertainty around the impacts of Bangladesh industry's climate transitions on its workers. The scenarios are not predictions. Instead, they present multiple possible futures so that decision makers can explore the full spectrum of possibilities, positive and negative, expected and surprising.

Scenarios for Textile and Apparel Sector in 2030

Three key uncertainties determine how this sector might evolve going forward—the nature of global demand, the competitiveness of Bangladesh's textile and apparel sector, and the level of national youth unemployment.

Combining these three uncertainties, six scenarios that represent divergent but possible future evolutions of Bangladesh's textile and apparel sector emerge:



The best-case scenario, named "*Green Forest*", envisions a world where:

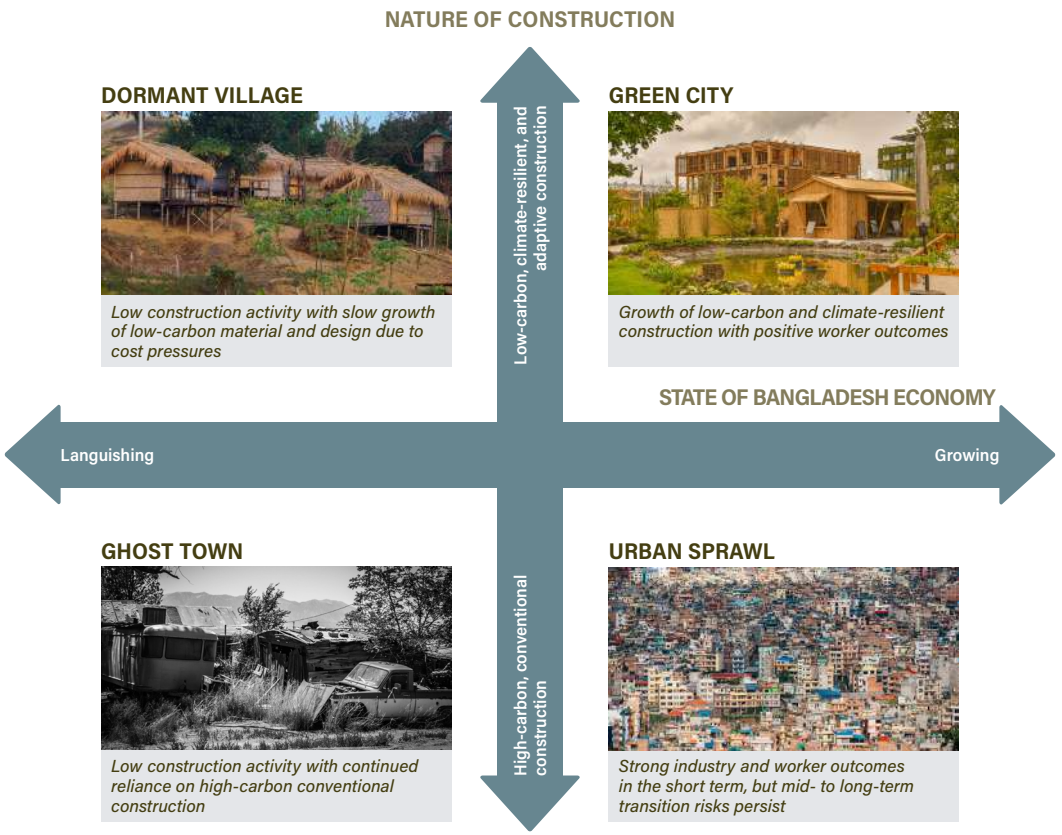
- **Sustainable fashion is the global norm**,
- **Bangladesh's textile and apparel sector has adopted low-carbon processes, sustainable fabrics, and climate resilient practices**,
- The textile and apparel sector has prioritised **agency and inclusion of, and accountability to workers**, and
- The development of multiple other sectors has led to a low youth unemployment rate, high wages, and good working conditions.

However, five other scenarios are plausible, all of which **fail to secure the long-term competitiveness of the sector and positive outcomes for workers**. While the "*Concrete Jungle*" scenario—high competitiveness and low sustainability—might appear desirable as it delivers jobs and GDP, this scenario only delivers short-term gains. As broader global shifts necessitate an inevitable transition to a lower carbon economy, the Concrete Jungle scenario sets up the sector for a late and disorderly transition, severely compromising its mid-to-long term competitiveness.

Scenarios for Construction Sector in 2030

In contrast to the textile and apparel sector, the construction sector is largely driven by domestic demand. Two key uncertainties determine how Bangladesh's construction sector might evolve by 2030—the state of Bangladesh's economy and the nature of construction that is gaining share, i.e., conventional vs. low-carbon and climate-resilient construction.

Combining the above two uncertainties, four scenarios representing the future evolution of Bangladesh's construction sector emerge:



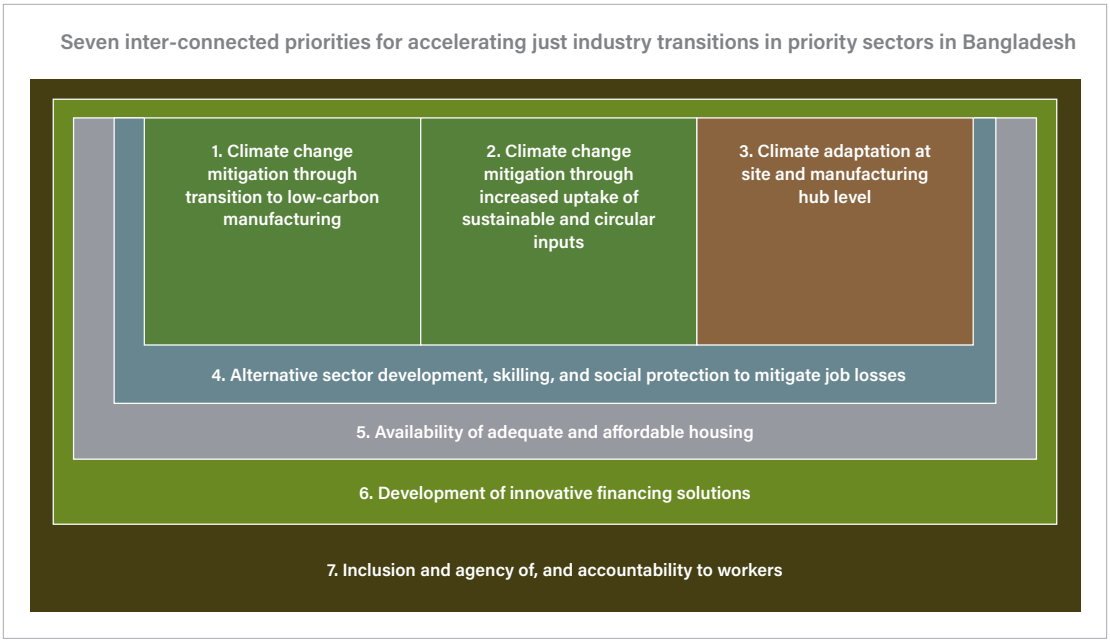
The best-case scenario, "*Green City*", envisions a world where, in 2030:

- The national economy is growing,
- **Low-carbon, climate-resilient, and adaptive construction** is gaining prominence, and
- The sector **prioritises agency and inclusion of and accountability to workers**.

Three other, less-desirable scenarios are plausible for 2030—these scenarios are unable to ensure long-term competitiveness of the sector and positive outcomes for workers and their communities. While the "*Urban Sprawl*" scenario—growing economy, high-carbon construction—achieves short-term growth of the construction sector, it creates mid-to-long term risks for the sector, climate, and workers, with actions that are too little and too late.

Priorities for Accelerating Just Transitions

The Green Forest and Green City scenarios help secure the long-term competitiveness of Bangladesh's textile and apparel, and construction sectors, create quality jobs, and ensure fair outcomes for workers and their communities. Stakeholder feedback clearly indicates that significant new interventions are required to fully realise the promise of these best-case scenarios. Seven interlinked priorities need to be pursued simultaneously to accelerate Bangladesh's transition towards a more just, low-carbon, and climate-resilient future.



01 **Climate change mitigation through transition to low-carbon manufacturing, including design, processes, and energy:** Utilisation of **innovative processes** that reduce on-site burning of fossil fuels and improvements in **energy efficiency** and **material efficiency** of existing processes can help reduce onsite burning of fossil fuels[25,26], which account for 83 percent of textile and apparel sector emissions[27] and 80 percent of construction sector emissions[28]. Addressing the remaining emissions from these sectors, which are from consumption of electricity from the grid, requires a combination of **decarbonisation of the grid** and switching to **onsite renewables**.

02 **Climate change mitigation through increased uptake of sustainable and circular inputs:** Using sustainable inputs can reduce emissions from upstream and downstream parts of the value chain[29], **mitigating transition risk as global and domestic demand moves towards lower-carbon production**. In the textile and apparel sector, several manufacturers are exploring sustainable and circular inputs. Similarly, in the construction sector, **compressed**

stabilised earth blocks (CSEBs) and jute-based bricks, which do not require baking in a kiln have lower embodied carbon than conventional clay bricks[30,31]. **Constructing buildings in layers, and disassembly instead of demolition can allow for reuse and recycling** of construction material, including wood, steel, glass, and concrete[32].

Using sustainable inputs can reduce emissions from upstream and downstream parts of the value chain.

03 **Climate adaptation at site and manufacturing hub level:** Climate change-induced heat stress and high vulnerability to flooding are already impacting worker productivity and causing supply chain disruptions in the textile and apparel sector in Bangladesh. **Resilient public infrastructure** in clusters where textile, apparel, and construction material factories, and workers' homes are located can help reduce manufacturing and supply chain disruptions. **Improved factory infrastructure** such as flood barriers, raised foundations, and drainage systems can reduce disruptions due to coastal or riverine flooding and safeguard workers' productivity. Similarly, **operational changes at factory and/or construction sites**, such as frequent breaks for rest and water, can alleviate heat stress among workers[33]. **National policy protections**, including enhancement of labour laws to include specific provisions for high heat conditions and health insurance could help workers better manage the impacts of heat stress. Finally, **climate-responsive insurance** could help compensate manufacturers as well as workers for loss of earnings due to heat stress and flooding.

04 **Alternative sector development, skilling, and social protection to mitigate job losses:** As textile and apparel, and construction sectors transition, old roles will be phased out and new roles created. **To avoid loss of livelihoods and maximise the creation of decent work opportunities, it will be critical to ensure the development of new roles in the geographies and periods with the highest need**. Investment in existing sectors with growth potential, such as jute, healthcare, hospitality, and retail could create about 1.5 million new jobs in Bangladesh by 2030[34,35,36], which could be taken up by workers formerly employed in the textile and apparel and construction sectors, provided they receive skilling and placement support. Social protection, particularly unemployment insurance could provide a vital safety net as workers transition between roles.

05 **Availability of adequate and affordable housing, to improve worker resilience to transitions:** A significant proportion of workers in textile and apparel and construction sectors live in informal housing. They have insecure tenure, face safety risks, and lack basic

facilities. This often results in them experiencing vector-borne diseases, greater incidences of flooding, poor ventilation, and lack of electricity, which can exacerbate impacts of heat stress[37]. **Affordable housing, with basic facilities can help improve the resilience of workers to the impacts of climate change, protecting the competitiveness of the industries they are employed in**. Policy support, development of land banks serviced with basic infrastructure by government agencies (e.g., municipalities or district administrations), simpler and expedited approvals for affordable housing projects, and access to low-cost financing can all help scale adequate and affordable housing for workers in these sectors.

06 **Development of innovative financing solutions:** While intergovernmental organisations and several international government partners are taking action to improve financing in Bangladesh, further financing is needed, including from **the private sector and philanthropy, which have distinct roles in closing the significant finance gap that exists today**. Derisking instruments, such as blended finance, guarantee mechanisms, Islamic finance, and thematic bonds could play a critical role in unlocking capital for just transitions. Financing instruments should be designed to take a holistic approach aggregating a package of opportunities which incorporate social equity considerations, diversify risk, and reduce transaction costs[38].

07 **Across all of the above, a prioritisation of the inclusion and agency of and accountability to workers involved:** Integrating lived experience of workers in the planning and execution of decisions that could impact them is essential for successful implementation. For example, workers are best placed to advise on the implementation of adaptation measures to improve their own resilience and productivity. To ensure local support for transitions, where old roles become redundant, workers should be involved in planning and negotiating their own transitions. Additionally, it is important to provide capacity building to enable workers to access roles with better pay either within their own sector or other sectors, and where relevant, to start their own enterprises. Collectivisation of workers (including those employed through third-party contractors or intermediaries) to be able to negotiate for workers in the design and implementation of those plans, and a supportive legal framework can significantly strengthen agency and inclusion of, and accountability to workers.

> Integrating lived experience of workers in the planning and execution of decisions is essential for successful implementation.

This report shares examples from within Bangladesh and internationally, which illustrate action already being taken to implement these priorities.

Call for Multistakeholder Action to Accelerate Just Industry Transitions

Bangladesh's textile and apparel and construction sectors, and workers in these sectors, face significant physical and transition risks, and if they proactively adapt and invest, significant opportunities. A coalition of actors that can define and build momentum behind a vision of climate resilient development can help Bangladesh meet its sustainable development goals and

unlock capital to drive this growth through international climate financing.

Together, businesses, workers and their representatives, policymakers, development organisations, skilling providers, finance, and philanthropy can develop new approaches and accelerate and scale good practices already being undertaken within Bangladesh. **To ensure swift transitions to a low-carbon resilient industry, it is critical that workers are included and have an ongoing say in the planning and implementation of initiatives**.

- Building on respect for fundamental rights to freedom of association and collective bargaining, **employers/suppliers** can be proactive in seeking worker input on transition plans from the early stages of decision-making through to implementation.
- **International buyers** can support and hold suppliers accountable for respecting workers' rights through transitions and support workers' inclusion in sectoral and national-level dialogue. They can also provide confidence for private and public investment through long-term commitments to source sustainably from Bangladesh.
- **Financial institutions and philanthropic funders** can take a holistic approach as they design transition funding, committing to packages of measures that incorporate just transition principles especially in the governance of funding mechanisms.
- The **Government of Bangladesh** can play a critical coordinating role amongst all these stakeholders, providing the stability and confidence for both industry and finance to invest for the long-term, and structuring policies to improve inclusion of and accountability to workers.

We offer this report to develop a common understanding amongst stakeholders within Bangladesh and its international partners, as a call for increased complementary and concerted action across all stakeholder groups. **Only together can we secure a green and equitable future for Bangladesh industry, and for the workers who have made its historic economic growth possible**. To learn more, you can reach out to us at info@fsg.org.

Glossary

Building Stock	The total number of buildings in a country or region[39]
Climate Change Adaptation	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities[40]
Climate Change Mitigation	Any action taken by governments, businesses, or people to reduce or prevent greenhouse gases, or to enhance carbon sinks that remove greenhouse gases from the atmosphere[41]
Climate resilience	The capacity to prepare for, respond to, and recover from the impacts of hazardous climatic events while incurring minimal damage to societal well-being, the economy, and the environment[42]
Climate-resilient Design	Focuses on creating buildings and infrastructure that can withstand the effects of climate change, such as rising temperatures, severe weather events, and sea-level rise[43,44]
Compressed Stabilised Earth Block (CSEB)	A building material made from local soil mixed with a small amount of cement or lime. It offers a more environmentally sustainable alternative to fire-burned bricks[45,46]
Corporate Sustainability Due Diligence Directive (CSDDD)	A directive passed by the European Union (EU), that requires companies to identify and address potential and actual adverse human rights and environmental impacts in the company's own operations, subsidiaries, and value chain(s). In addition, the Directive sets out an obligation for large companies to adopt and put into effect, through best efforts, a transition plan for climate change mitigation aligned with the 2050 climate neutrality objective of the Paris Agreement as well as intermediate targets under the European Climate Law[47]
Corporate Sustainability Reporting Directive (CSRD)	An EU directive that requires companies to report on their environmental, social, and governance (ESG) impacts. Starting 2025, the directive requires companies in the EU to disclose information on environmental, social, and governance topics, including its sustainability impacts, risks, opportunities, strategy, targets, and progress, among others. The disclosures span the entire value chain of the company[48,49]
Decarbonisation	Reducing the amount of greenhouse gas emissions that a society produces, as well as increasing the amount that is being absorbed[50]
Eco-design for Sustainable Products Regulation (ESPR)	An EU regulation which aims to significantly improve the sustainability of products placed on the EU market by improving their circularity, energy performance, recyclability and durability[51]. It mandates ecological design and circularity requirements for products, supported by digital product passports[52]
Export Processing Zones (EPZ)	Industrial zones with special incentives set up to attract foreign investors, in which imported materials undergo some degree of processing before being exported again[53]
Fair Trade Agreement (FTA)	An agreement between two or more countries where the countries agree on certain obligations that affect trade in goods and services, and protections for investors and intellectual property rights, among other topics[54]
GHG	Greenhouse Gas
Generalised Scheme of Preferences Plus (GSP+)	An EU incentive for developing countries where they benefit from zero duties on roughly 66 percent of tariff lines contingent on implementation of core human rights, labour, governance, and other sustainable development conventions[55]

Industry	According to Bangladesh's Bureau of Statistics, industry includes five key types of activities: manufacturing; construction; mining and quarrying; electricity, gas, steam, and air conditioning supply; water supply, sewerage, waste management, and remediation activities[56]
Jhut	The fabric waste generated in readymade garment factories
Just transition	A just transition seeks to ensure fairness and inclusivity during the transition to a low-carbon economy. It prioritises the creation of equitable opportunities for all members of society, the protection of workers and communities, and the promotion of decent job opportunities, all while minimising negative impacts[57] There is a broad spectrum of approaches to just transitions. Given this report's focus on industry transitions and workers, it is guided by the ILO description of "greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind"[58]
Least Developed Country (LDC)	Countries recognised by the UN as having low levels of income and facing severe structural impediments to sustainable development[59]
Levelised Cost of Electricity (LCOE)	A metric that measures the average cost of generating electricity over the lifetime of the energy system
Low-carbon construction materials	Materials that have a lower embodied carbon footprint than conventional materials—they require less energy and resources to produce and therefore generate fewer greenhouse gas emissions during manufacturing[60]
Nationally Determined Contribution (NDC)	National climate action plans published by each country under the Paris Agreement that outline how the country plans to reduce greenhouse gas emissions to help meet the global goal of limiting temperature rise to 1.5°C and adapt to the impacts of climate change[61]
Physical Risk	Risks related to the physical impacts of climate change such as damage to infrastructure, supply chains, and the built environment. Physical risk can be acute (driven by an event such as a flood or storm) or chronic (arising from longer-term shifts in climate patterns)[62]
Renovation	The process of improving or modernising an old, damaged, or defective building[63]
Repurposing	Also called adaptive reuse, this is the process of reusing an existing structure for a purpose other than which it was designed for[64]
Retrofitting	The process of installing new materials, equipment, or methods after the building has already been completed, to improve safety and efficiency[65]
RMG	Readymade Garments
Sustainable Fibres	Fibres that are produced either from sustainably grown natural inputs (e.g., linen, sustainably grown cotton, lyocell) or recycled inputs (e.g., recycled cotton, recycled polyester made from textile waste)
Transition Risk	Risks related to the transition to a lower-carbon economy. Transitioning requires policy and legal, technology, and market changes to address mitigation and adaptation requirements related to climate change[66]
Unsustainable Fibres	Fibres that are produced either from unsustainably grown natural inputs (e.g., unsustainably grown virgin cotton) or are virgin synthetic fibres (e.g., virgin polyester)
Vertical Roller Mill (VRM)	A large grinding machine used in the cement sector that grinds materials into fine powders
Working conditions	Based on the ILO definition for decent work[67,68], this includes: ▪ Wages and benefits ▪ Safe and healthy working environment ▪ Freedom of association and right to collective bargaining ▪ Elimination of all forms of forced or compulsory labour ▪ Effective abolition of child labour ▪ Elimination of discrimination in respect of employment and occupation

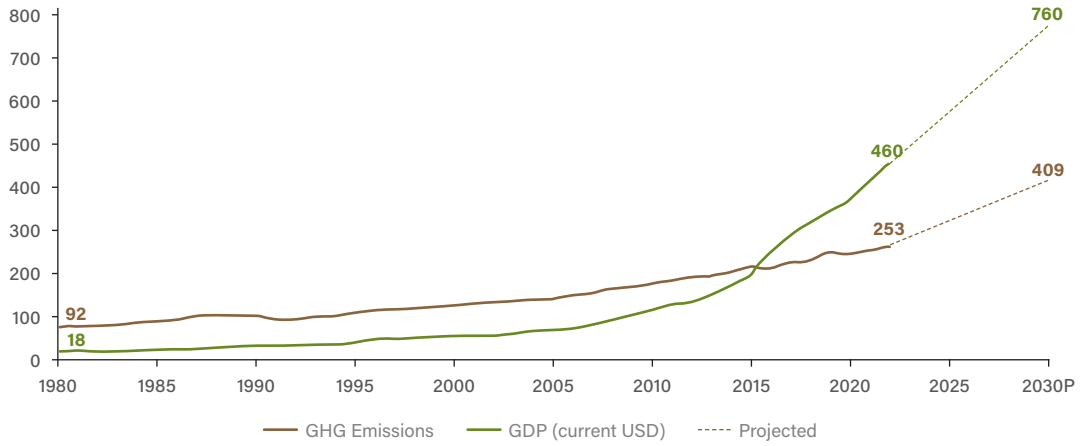
Introduction

Why Advance Just Industry Transitions in Bangladesh?

At the 2015 UN Climate Change Conference (COP21) in Paris, 196 countries, including Bangladesh recognised the urgent and potentially irreversible threat of climate change to human societies and the planet, and made a legally binding commitment to pursue efforts to limit global temperature increase to 1.5°C above pre-industrial levels and reduce emissions by 43 percent by 2030. Significantly, the Paris Agreement also recognised the imperative of a **just transition of the workforce** and the creation of **decent work and quality jobs**[68,70].

The 50 poorest countries, including Bangladesh, contributed about 2 percent of global emissions in 2020. Their share is expected to rise to 6 to 8 percent by 2030[71]. At the same time, many of these same countries are extremely vulnerable to the impacts of climate change—they experience high levels of heat stress and frequent natural disasters such as floods and droughts[72]. Without swift action, the development trajectories of these poorest countries are at risk, with **more than 130 million people in the most vulnerable countries likely to be pushed into extreme poverty by 2030**[73]. Bangladesh is a vivid example of this.

Figure 1: Bangladesh GDP and GHG emissions (USD billion, billion tonnes CO_2 equivalent, 1980-2030)[74,75,76]



Between 1980 and 2023, Bangladesh's **economy expanded 24-fold**[77,78], **reducing poverty rates by two-thirds**[79,80]. Bangladesh has benefitted from its demographic dividend—about 70 percent of Bangladesh's population falls within the working age group and youth account for about 30 percent of the total population[81,82]. Industry has been at the heart of Bangladesh's growth, with its share of total Gross Domestic Product (GDP) increasing by 15 percentage points between 1980 and 2023[83].

Today, Bangladesh's **industry employs 12 million people and accounts for 34 percent of its GDP**[84,85]. However, this economic growth has come at an environmental cost. Bangladesh's **GHG emissions increased by 176 percent between 1980 and 2023**[86] (See *Figure 1*). **Industry currently contributes 15 percent of the country's total emissions**, and this contribution is expected to rise by about 5 percentage points by 2030[87].

Bangladesh is ranked the seventh most climate-vulnerable country globally[88]. It experiences an increased incidence of extreme weather events such as heat waves, cyclonic activity and flooding. On a business-as-usual trajectory, rising sea levels are expected to submerge about 17 percent of Bangladesh's land and displace about 20 million people by 2050. Heat-related productivity losses in Dhaka are already estimated at USD 6 billion (EUR 5.5 billion) per year[89]. By 2030, without adequate adaptation, Bangladesh is projected to lose 4.8 percent of working hours due to heat stress[90].

Bangladesh now stands at a crossroads. Its growth, and the lives of its more than 170 million citizens, are imperilled by the impacts of climate change that knows no borders. As the impacts of climate change intensify, the global focus on mitigation is likely to increase, with high transition risk for **countries and businesses that do not proactively build climate resilience and reduce carbon-dependence**. Additionally, **just transitions bring opportunities for proactive businesses and countries**. Pursuing just transitions has the potential to reduce costs for Bangladeshi businesses through resource efficiency, low-cost energy, and greater competitiveness with respect to other competitor businesses and economies. It also has the potential to create jobs through the development of new products and services and access to new markets[91]. Finally, **it can help businesses and countries unlock new sources of financing**, for instance climate financing, to drive the growth of their businesses and nations.

Climate transitions affect people—as employees and workers, as entrepreneurs, as consumers, as citizens[92]—and ultimately as rights holders. For a just transition those affected by transitions must be consulted during the development of plans that affect their rights. Three elements are critical for a just transition[93]:

- **Inclusion**, which ensures that workers and other vulnerable or marginalised communities are involved in decision-making processes on issues that have an impact on them,

> For a just transition those affected by the transition must be consulted during the development of plans.

- **Agency**, which as a further step, ensures that workers and affected communities have the power and ability to influence decision-making, and
- **Accountability** of companies and governments, who hold decision making power, to those affected by industry transitions, particularly workers and communities.

A fair and inclusive process is necessary to address issues such as the disproportionate impacts of climate change on underrepresented and vulnerable communities; intergenerational injustices; loss and damage from climate change impacts, and unequal access to clean and affordable energy[94]. Since this report focuses on industry transitions, it particularly considers the inclusion and agency of workers, and accountability of companies and governments to workers in making decisions affecting their jobs.

To secure its long-term development trajectory, Bangladesh must urgently pursue a just industry transition that increases the competitiveness and resilience of its existing industries and creates high quality green jobs with fair wages and working conditions in new industries to proactively create alternate employment where transitions are likely to lead to job losses. Bangladesh's business leaders are particularly well-positioned to contribute to this diversification, as many owners have interests in multiple industries. Taking a proactive, inclusive, and accountable approach is essential to ensure broad societal support for climate transitions, so that decisions are fair and seen to be fair, thereby speeding the transition to a more resilient and competitive net zero economy[95,96].

Why Focus on Bangladesh Industry?

The energy sector accounts for about 40 percent of Bangladesh's emissions. Multiple efforts currently focus on Bangladesh's energy transition—these include significant budgetary allocations in Bangladesh's Annual Development Plan amounting up to BDT 250 million (EUR 2 million)[97] as well as funding from international financial institutions, bilateral donors, and private sector organisations[98]. **Industry has been the backbone of Bangladesh's economic growth** contributing 35 percent of GDP[99]. In addition to consuming about 8 percent of energy from the national grid[100], the industrial sector accounts for **15 percent of Bangladesh's emissions** and currently employs **17 percent of its workforce**[101,102].

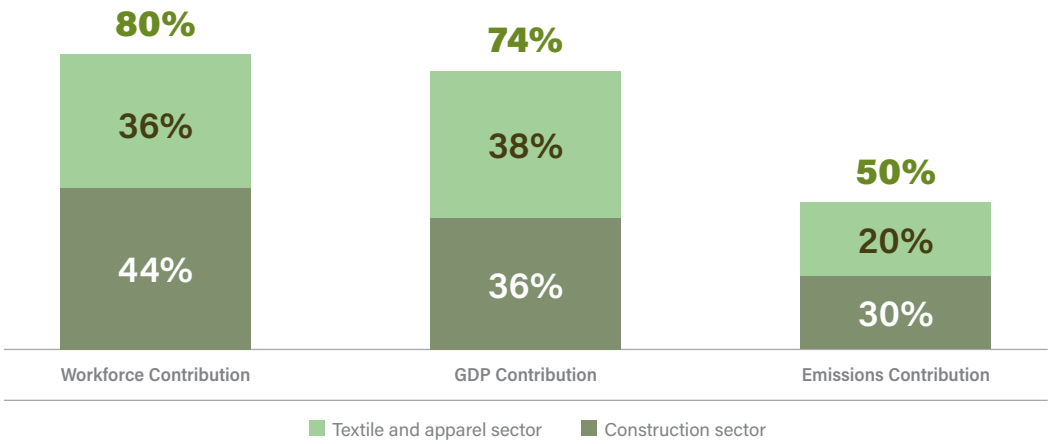
Workers in the industrial sector have limited resilience to climate transitions. About 90 percent of industrial workers are **employed informally**[103], earning on average of BDT 13,568 (EUR 140) per month[104], which is about **40 percent below living wage** estimates[105,106]. Only about 22 percent of Bangladesh's population has access to any form of social protection measures[107] and most programmes do not cover the working age population[108,109]. While workers in the energy sector also face risks due to energy transitions, this sector only employs 0.03 percent of Bangladesh's workforce. With a focus on impact and additionality, this report focuses on outlining pathways to support just industry transitions.

Most industrial workers are informally employed and have limited resilience to climate transitions.

Priority Industrial Sectors: Textile and Apparel, and Construction

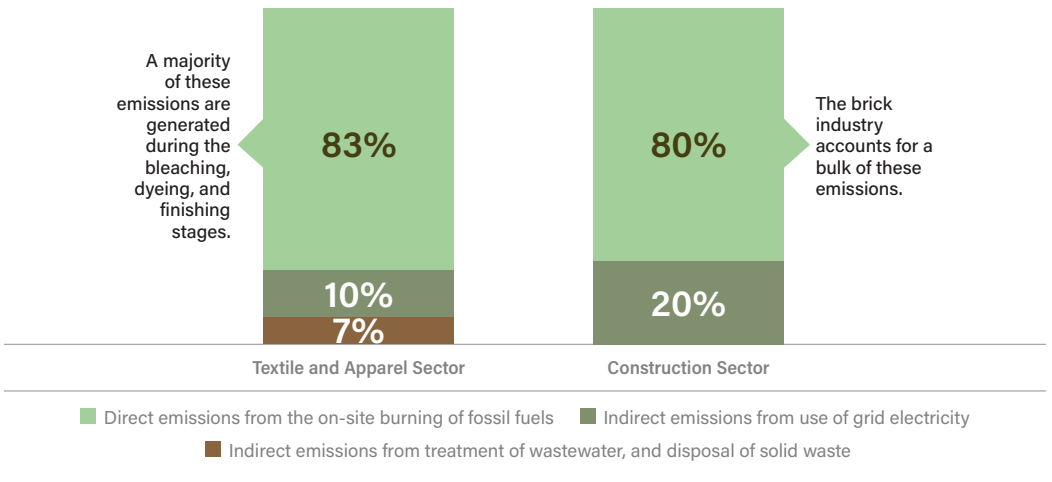
Two key sectors contribute the majority of industrial GDP, employment, and emissions: namely **textile and apparel** (i.e., textile and readymade garments (RMG)), and **construction** (which includes construction activities, with inputs from brick, cement, and steel sectors). Together, these two sectors employ approximately 10 million people, which accounts for about **80 percent of the industrial workforce**, contribute 74 percent of the industrial sector's GDP, and are responsible for **about half of industrial emissions** (See *Figure 2*). About 75 percent of the workforce in the textile and apparel sector[110,111], and more than 95 percent of the workforce in the construction sector[112] are **employed informally** and are highly vulnerable to shocks, particularly those caused by climate transitions.

Figure 2: Contribution of priority sectors to industry workforce, GDP, emissions in 2023 (%)[113,114,115]



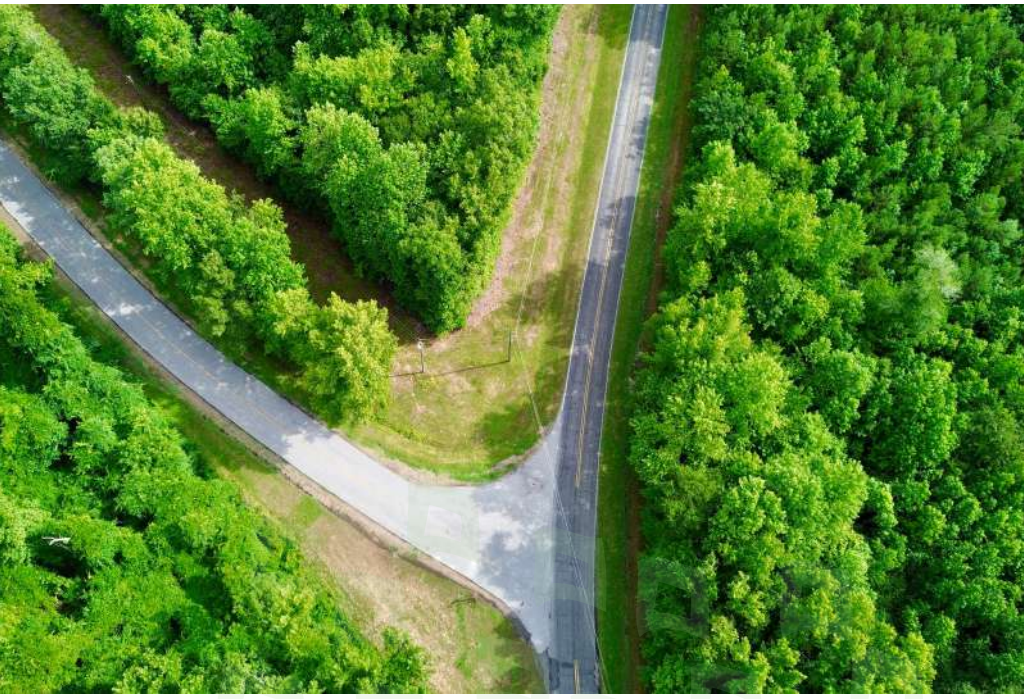
Significantly, over 83 percent of emissions in textile and apparel sector and 80 percent of emissions in construction sector come from the on-site burning of fossil fuels. In the textile and apparel sector, the majority of these on-site emissions are from burning natural gas in dyeing and finishing processes, and in construction and building materials, the majority is from coal-fired brick kilns (See *Figure 3*).

Figure 3: Key sources of GHG emissions in Bangladesh's textile and apparel and construction sectors[116,117,118,119]



Given the high contribution of on-site burning of fossil fuels to GHG emissions, engaging the industry for decarbonisation will be critical for Bangladesh to achieve its target of net zero by 2050.

Additionally, the two sectors are interlinked, and influence each other. Apparel factories create significant volume of demand for construction activity. In addition, a large number of apparel factories are demanding green building, driving green construction practices in Bangladesh. Similarly, the construction sector has a key role to play in making the textile and apparel sector climate-resilient by developing climate-resilient infrastructure and buildings.



Why Scenario Planning?

While climate change and the need to rapidly decarbonise is certain, multiple uncertainties could impact the pace of decarbonisation of these sectors, the ability of these sectors to adapt to climate change, and outcomes for workers in the transition to a low-carbon economy. To help stakeholders, such as policymakers, industry leaders, financial actors, and civil society in Bangladesh and international financial, business, development, and philanthropic partners, explore how they can effectively engage the industry to advance just transitions, we offer industry-focused scenarios. These scenarios, co-created with a diversity of Bangladeshi and international stakeholders as a tool for navigating the urgency, complexity, and uncertainty around the impacts of Bangladesh's industry climate transitions on its workers. The scenarios are not predictions. Instead, they present multiple possible futures so that decision makers can explore the full spectrum of possibilities, positive and negative, expected and surprising. (See *Appendix A* for scenario planning methodology). These scenarios focus on three questions:

> These scenarios present multiple possible futures so that decision makers can explore the full spectrum of possibilities.

- **How can the climate impact of Bangladesh's industry be mitigated more rapidly and ambitiously?**

- **How can the resilience of Bangladesh's textile and apparel, and construction sectors be built to enable them to better adapt to climate change?**
- **How can the inclusion and agency of, and accountability of decision makers to affected stakeholders, particularly workers be promoted, so that the transition is just, not only minimising negative impacts for workers and communities but also creating decent work and enhanced economic opportunities?**

These scenarios help stakeholders stress test their own plans and form a common basis for decision making.

As we publish this report in January 2025, Bangladesh is in a period of evolution. The interim government and the people of Bangladesh are coming together with a shared determination to contribute to the nation's development, bringing together diverse stakeholders, including students, youth, and civil society. **This moment presents a unique opportunity to accelerate just industry transitions that green the economy in a way that is inclusive and creates decent work opportunities, benefiting most, if not all, of the population**.

The scenarios outlined in this report present a stark call to action—**business as usual is not a viable option**—for delivering the Paris Agreement's commitment and ensuring the just industry transitions needed for the stability and economic security of Bangladesh and its people. These scenarios aim to help policymakers, industry leaders, financial actors, and civil society in Bangladesh and financial, business, development, and philanthropic partners globally, to stress test their own plans and form a common basis for decision making. Only together will we build sustainable and competitive industries to secure a just transition for the next generation in Bangladesh.

Scenarios for Textile and Apparel Sector

Critical Uncertainties for the Textile and Apparel Sector

Scenarios are developed based on 'uncertainties'—trends or driving forces that are highly relevant to the focal question but have uncertain future outcomes that cannot be controlled due to the multitude of factors and/or stakeholders involved. These uncertainties display how key stakeholders are being pulled in often opposing directions. By outlining the differences below, we aim to demonstrate how likely it is for different scenarios to emerge and that while several positive forces are at play, futures with negative outcomes for workers and climate are also plausible. Based on consultations with about 40 diverse stakeholders, comprising manufacturers, brands, skilling organisations, policy experts, worker rights organisations, just transitions experts, and value chain players, and further desk research and analysis, we identified three critical uncertainties for textile and apparel sector transitions:

- **Nature of global demand:** Whether fashion in 2030 is sustainable (or not), which is driven by legislation, consumer demand, and brand preferences.
- **Competitiveness of Bangladesh's textile and apparel sectors:** The relative competitiveness of Bangladesh's textile and apparel sectors compared to other textile and apparel producing countries such as Vietnam and India.
- **Youth unemployment rate:** Reflects the availability of alternative employment opportunities for young workers, who constitute about 35 percent of the total workforce. A low national youth unemployment rate would allow Bangladesh to reap its demographic dividend.

UNCERTAINTY #1: NATURE OF GLOBAL DEMAND

Unsustainable fashion (low-cost high-volume fashion with unsustainable inputs)	Nature of global demand	Sustainable fashion (slow fashion with sustainable inputs)
Regulations for decarbonisation and circularity have been passed in the EU and some states in the US but are **not implemented effectively**. **Neither have** high-growth emerging markets adopted laws for decarbonisation or circularity	*Legislation in key purchase markets*	Regulations to encourage decarbonisation and circularity have been passed in the EU and the US, and are **implemented effectively**
Low-cost high-volume fashion dominates and: ▪ Consumers frequently refresh their wardrobes driven by the latest style, and discard apparel after a few uses ▪ Consumers demand low-cost apparel ▪ Demand for sustainable products is limited to young, high-income consumers in high-income markets ▪ Apparel sales in markets other than the EU and US have grown, and for these consumers environmental sustainability is not a key concern	*Consumer demand*	**Consumers focus on sustainable fashion**, and: ▪ Purchase fewer garments and purchase apparel less frequently ▪ Prefer durable apparel in classic styles, which can be worn over long periods without going out of fashion ▪ Prioritise apparel made from sustainable fibres (e.g., recycled cotton and polyester, lyocell, linen, sustainably grown cotton) ▪ Demand transparency from brands and prefer apparel made with a low carbon footprint and in a socially responsible manner
Brands prioritise low-cost high-volume fashion, and: ▪ Design low-cost apparel in simple cuts ▪ Launch more collections annually ▪ Prefer suppliers with low turnaround times and in low-cost production hubs ▪ Take a 'tick-box' approach to decarbonisation, with limited assessments of value chain emissions (in the EU and the US) and/or continue to utilise unsustainable inputs such as unsustainably grown cotton and virgin polyester (in other markets)	*Brand preference*	**Driven by effectively enforced regulations and consumer demand**, brands ▪ Launch fewer collections every year and place lower order volumes ▪ Prefer suppliers with a low carbon footprint and capabilities to use sustainable fibres ▪ Prioritise suppliers with the capability to produce complex apparel with superior quality control ▪ Form long-term commitments with suppliers and support them through risk sharing, investments, and technical support

UNCERTAINTY #2: COMPETITIVENESS OF BANGLADESH'S TEXTILE AND APPAREL SECTOR

Low — Competitiveness of Bangladesh's textile and apparel sector — High

The product mix of Bangladesh's textile and apparel sector is not aligned with global demand ▪ While global demand is **moving away from cotton** apparel, Bangladesh's textile and apparel sector lags and continues to focus on cotton ▪ While brands demand **complex apparel**, the apparel industry has continued to focus on simple apparel	*Product mix*	The product mix of Bangladesh's textile and apparel sector is closely aligned with global demand ▪ The fibres and apparel cuts produced by Bangladesh's textile and apparel sector are **in line with the demands of consumers and brands**
Bangladesh has **lost cost-competitiveness** due to: ▪ High procurement costs due to the devaluation of the Taka ▪ Inability to sign free trade agreements (FTAs) or qualify for EU's Generalised Scheme of Preference Plus (GSP+) before graduation from the Least Developed Country (LDC) status ▪ Lack of reliable low-cost energy	*Cost competitiveness*	Bangladesh continues to have **high cost-competitiveness** driven by: ▪ Ability to source raw material at low cost due to a stable Taka ▪ Signing of FTAs and/or qualification for GSP+ before LDC graduation ▪ Availability of reliable low-cost energy
The sector is misaligned with brands' ESG goals driven by: ▪ Limited ability to **decarbonise** manufacturing ▪ Misalignment of **worker welfare practices** (e.g., health and safety, benefits) with brands' requirements ▪ Lack of policy and value chains for **circular inputs**	*Alignment with brands' ESG goals*	Strong alignment with brands' ESG goals exists due to: ▪ Decarbonisation led by **on-site renewable energy (RE), energy efficiency initiatives**, and **RE in grid electricity** ▪ Alignment of worker welfare practices with brands' goals ▪ Growth of **circular** business models
Frequent supply disruptions affect the reliability of Bangladesh in the global apparel supply chain, driven by: ▪ Frequent worker protests ▪ Lack of an adequately skilled workforce ▪ Limited climate change adaptation, which causes disruptions due to extreme weather events and results in lower worker productivity due to heat stress	*Reliability*	Bangladesh's textile and apparel sector has high reliability due to: ▪ Adequate availability of **skilled workforce** ▪ Adoption of climate adaptation measures by the government and by factories, which minimises disruptions arising from extreme climate events and maintains productivity despite an increase in temperatures

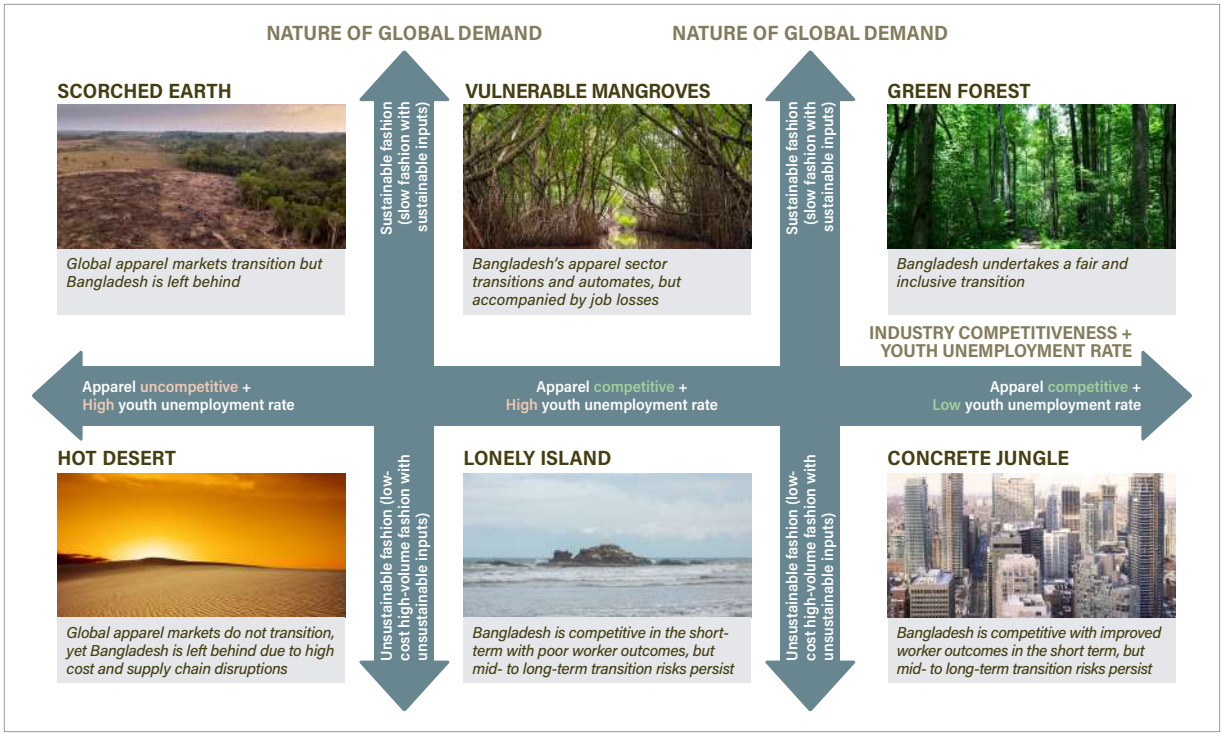
UNCERTAINTY #3: YOUTH UNEMPLOYMENT RATE

High ← **Youth unemployment rate** → **Low**

▪ Political instability and social unrest have led to a **withdrawal of investments**	*Political stability*	▪ Increased **political and social stability** has led to **continued investments**
▪ Due to dwindling foreign reserves and continued devaluation of the Taka, **government investments in infrastructure** have reduced ▪ The government has continued to focus on apparel, and not **adequately prioritised growth of other sectors**, leading to limited employment opportunities in other sectors	*Economic policy*	▪ The government has invested in **infrastructure** and introduced policies that have **improved the ease of doing business** ▪ Policy and **investments prioritise the growth of other nascent sectors** and increase international competitiveness of the textile and apparel sector, creating more employment opportunities
▪ **Employment in agriculture** has **reduced** due to more frequent flooding in rural areas	*Migration from rural areas*	▪ **Climate change adaptation** measures have helped **protect rural livelihoods, reducing rural-urban migration**
▪ **There have been inadequate investments in education and skill development** with a misalignment between the workforce skills and employers' needs	*Education and skilling*	▪ Significant investments in **education and skill development** have enhanced the employability of the workforce

Scenarios for Textile and Apparel Sector in 2030

Combining these three uncertainties, six scenarios representing divergent but possible future evolutions of Bangladesh's textile and apparel sector emerge:



Next, we briefly illustrate what these scenarios could look like using potential future newspaper headlines, followed by more detailed descriptions of the needs, challenges, and opportunities characterising each scenario.

SIX FUTURE SCENARIOS FOR THE TEXTILE AND APPAREL SECTOR

Illustrative Future Newspaper Headlines

NATURE OF GLOBAL DEMAND

Sustainable fashion (slow fashion with sustainable inputs)

Unsustainable fashion (low-cost high-volume fashion with unsustainable inputs)

RMG uncompetitive + High youth unemployment rate

RMG competitive + High youth unemployment rate

RMG competitive + Low youth unemployment rate

INDUSTRY COMPETITIVENESS + YOUTH UNEMPLOYMENT RATE

SCORCHED EARTH

Today

- *"MEPs agree to get tough on fast fashion over environmental impact"*
- *"Garment factories are ramping up automation. What will it do to jobs"*
- *"Bangladesh garment industry faces crisis amid political unrest, floods"*

2025-2027

- *"Sustainability Directive: Global brands report emissions and decarbonisation plans"*
- *"Sustainable fashion on the rise"*
- *"Bangladesh to lose preferential trade benefits: Small bump or dead-end?"*
- *"Worrying signs: Bangladesh apparel exports fall by 30%"*

2028-2030

- *"US passes sustainability reporting law for businesses"*
- *"Survey: 3 of 5 consumers check environmental impact on digital product passports"*
- *"Mass layoffs continue in Bangladesh RMG sector"*
- *"Bangladesh exits Top-10 garment exporters' list"*

VULNERABLE MANGROVES

Today

- *"Bangladesh now has 217 LEED-certified green RMG factories"*
- *"Bangladesh: First political dialogue with EU takes place"*
- *"Bangladeshi women in garment industry held back"*

2025-2027

- *"Energy transition: Large RMG manufacturers champion shift to renewables"*
- *"Bangladesh signs FTAs with key trade partners; duty free exports until 2040"*
- *"The growing crisis of female workers in the garment industry"*

2028-2030

- *"From two collections a month to six collections in a year – the new face of fashion!"*
- *"The changed face of the garment manufacturing sector: Women pushed out"*
- *"Bangladesh textile industry crashes as garment industry moves on"*

GREEN FOREST

Today

- *"International community praises Bangladesh's business environment, regulatory progress"*
- *"Diversifying for stability: Bangladesh's new focus on jute, healthcare, hospitality amid economic crises"*
- *"Skill development at the forefront"*

2025-2027

- *"Bangladesh RMG sector goes green to meet global demand"*
- *"Skilling organisation launch programs to train women in hand-producing high-quality apparel"*
- *"Bangladesh qualifies for GSP+ scheme"*

2028-2030

- *"Bangladesh achieves 30% renewable energy milestone under Renewable Energy Policy"*
- *"RMG workers cite high satisfaction levels: survey"*
- *"Growing employment in green sectors"*

HOT DESERT

Today

- *"Thousands of Bangladesh's garment factory workers protest, demand better wages"*
- *"RMG industry must address decarbonisation, LDC transition, automation to sustain: Stakeholders"*
- *"Bangladesh's exports could drop 14% post LDC transition, ADB warns"*

2025-2027

- *"Need of the hour: Bangladesh must automate its RMG sector"*
- *"Boiling point: If natural gas prices don't stabilise the garment industry is at risk"*
- *"Bangladesh to lose preferential trade benefits with LDC graduation: Small bump or dead-end?"*

2028-2030

- *"Fast fashion proves too quick for RMG industry to catch up with"*
- *"Bangladesh raises minimum wages, placing cost pressure on RMG and textile factories"*
- *"Mass layoffs continue in the wake of Bangladesh RMG sector's decline"*

LONELY ISLAND

Today

- *"Focusing more on non-traditional RMG markets"*
- *"India, Bangladesh discuss preparations to start talks for free trade agreement"*
- *"Bangladesh, South Korea move towards FTA with MoU"*

2025-2027

- *"Bangladesh lowers turnaround times to meet fast fashion demand"*
- *"Bangladesh RMG exports: Over 25% now are to Japan, Australia, South Korea, India"*
- *"Bangladesh in talks with new partners on FTAs for duty free exports"*

2028-2030

- *"Bangladesh emerges as bastion of fast fashion production"*
- *"Bangladesh RMG exports: Over 60% now are to Japan, Australia, South Korea, India"*
- *"Bangladesh renewable energy continues to hover at only 5%"*

CONCRETE JUNGLE

Today

- *"Why Robots Still Can't Do One of Fashion's Most Important Jobs: Efforts to automate sewing have fallen short of expectations"*
- *"Focusing more on non-traditional RMG markets"*
- *"Can Bangladesh become a regional industrial hub with Japan's help?"*

2025-2027

- *"Ultra fast fashion boom: Bangladesh automates to ship apparel within a week"*
- *"Bangladesh RMG exports to Japan, Australia, South Korea, India increase 25%"*
- *"Energy Efficiency and Conservation Master Plan on unsteady course"*
- *"Jute the next RMG?"*

2028-2030

- *"Bangladesh secures FTAs with new partners; duty free exports up to 2040"*
- *"SewBot no match for Bangladesh RMG workers"*
- *"Jute, healthcare, and hospitality industries create employment for 1 million"*

Of the six scenarios, only Green Forest—fair and inclusive transition—proactively secures the long-term viability of Bangladesh's textile and apparel sector, and its workers. On the face of it, the Concrete Jungle scenario—high competitiveness and low sustainability—is appealing as it delivers jobs and GDP. But this scenario will only deliver short-term gains—broader global shifts will necessitate an inevitable transition to a lower carbon economy. The Concrete Jungle scenario, however, will set up the sector for a potentially significant drop in competitiveness due to a late and disorderly transition. Given this, we describe the Green Forest scenario in the greatest depth, with condensed overviews of the unique needs, opportunities, and challenges in other scenarios to help stakeholders explore mechanisms to manage them.

GREEN FOREST

Bangladesh undertakes a fair and inclusive transition

In 2030, Bangladesh's textile and apparel sector is a **global beacon of innovation, environmental sustainability, and equity**. This has been driven by global shifts in policy, consumer behaviour, and investment trends—each reshaping the contours of the sector. In this scenario, the government and companies are proactively managing physical and transition risks, creating a balance between economic growth, environmental stewardship, and worker welfare. With better management of physical risks, Bangladesh has greater resilience to the impacts of climate change, such as high temperatures, cyclones, and floods. Addressing policy and legal, technology, market and reputational transition risks has allowed the country and the sector to make its transition in an orderly manner, ensuring it is able to benefit from the transition and has low exposure to financial risks including stranding of assets.

A global movement towards climate responsibility provides an impetus for change
High-income apparel-importing countries have passed regulations that require brands to decarbonise operations and reduce value chain emissions in line with science-based targets. The EU, which is the key export market for Bangladesh's apparel sector, has passed regulations requiring companies to identify and mitigate environmental and social harms in supply chains, and report on them transparently, alongside regulations on Eco-design for

In Green Forest, textile and apparel manufacturers have adopted structural and operational measures for climate change adaptation.

Sustainable Products Regulation (ESPR). These regulations have been designed with inputs from supplier countries to ensure that they are practical and do not exclude workers in these countries. They are also being enforced effectively, holding businesses accountable for preventing, mitigating, and providing remedy for environmental and human rights harm across their value chains, and reporting transparently on product, company, and value chain impacts. **Regulations have also built in provisions to minimise impacts of these transitions on workers involved in the value chains.**

Consumers are also more aware of the environmental costs of fast fashion and have reduced the frequency of apparel purchases and wear clothes for longer periods. The second-hand apparel market has grown, and the demand for products made with recycled inputs and lower carbon footprints has increased. **Consumers also want brands to be socially responsible and to ensure good working conditions for the workers** who make their clothes. The regulatory framework and consumer preferences have contributed to more investors integrating environmental and social factors into their decision-making. This has strengthened incentives for companies to adopt climate-conscious and responsible sourcing and increased the availability of climate finance.

> In this scenario, Bangladesh has embarked on a fair industry transition, proactively minimising transition and physical risk.

Driven by regulations, consumer demand, and investor expectations, and their own analyses of physical and transition risks, **brands have reimagined their business models**. They aim to minimise their environmental impact, while ensuring positive outcomes for workers in their value chains. They release fewer collections every year, and in these collections, durable garments in classic styles dominate. As a result, global apparel production volumes have declined, leading to lower global employment in the textile and apparel value chain. However, with an increase in durable and high-quality apparel, per unit prices of apparel have increased. Workers in the textile and apparel sector are skilled in producing high-quality garments and are paid well. Brands also prefer to work with suppliers who have low carbon footprints, have the capabilities and value chains to work with sustainable inputs and circular inputs, and can produce complex garments of high quality. Brands prioritise countries and suppliers that uphold rights to collective bargaining and freedom of association, ensure robust health and safety, and invest in adaptation measures to minimise risks due to heat stress and flooding. To ensure that suppliers, particularly SMEs, can build these capabilities, brands provide suppliers capacity-building as well as financial support in the form of upfront investments, increased rates, and long-term contracts.

Bangladesh responds with an inclusive and green textile and apparel sector

In response to both global trends and its climate commitments, **Bangladesh has embarked on a fair and green industry transition**, proactively minimising its exposure to transition and physical risk. To reduce transition risk, Bangladesh has made significant investments, with international support, in renewable energy and increased the share of solar and wind power in its grid electricity from about 3 percent in 2024 to 30 percent in 2030, in line with the 2022 Renewable Energy Policy

target. To reduce physical risk, Bangladesh has made significant investments in climate adaptation, coupled with policy measures to minimise the impacts of cyclones, flooding and heat stress. These efforts have positioned Bangladesh's textile and apparel sector as a resilient and reliable partner in the global supply chain.

Textile and apparel manufacturers have switched to renewable energy sources including solar and agricultural waste in Green Forest.

Bangladesh has diversified its apparel exports beyond the EU and the US to also serve other markets. It has signed free trade agreements (FTAs) with key export markets to maintain its cost-competitiveness. Bangladesh has **modified its labour laws to incorporate 27 international conventions laid out in the EU's GSP+ scheme** and now enjoys preferential trade benefits with the EU, its key trading partner. Therefore, despite a decline in total apparel production volumes, Bangladesh has been able to gain share from other countries and increase production volumes. Additionally, apparel manufacturers have invested in capabilities to produce complex apparel through automation of processes such as cutting and quality control, and skilling of its workforce in manual sewing of complex apparel. Since Bangladesh's apparel sector has grown through a combination of automation and manual production, there have been limited job losses, even as order volumes have declined globally. Employment in the textile sector has also increased due to increased demand from the apparel sector.

The textile sector has adopted **low-carbon technology** such as waterless dyeing, digital printing, and ozone finishing, reducing onsite burning of fossil fuels. Textile and apparel manufacturers have switched to renewable energy sources including solar and agricultural waste and made operational changes to improve energy efficiency. As a result, total emissions from the textile and apparel sector have declined by 40 percent compared to 2024, in line with the targets set by many brands for 2030. The textile and apparel sector has built capabilities to work with **sustainable fibres**, such as sustainably grown cotton and recycled cotton and polyester.

Ensuring a fair transition championing worker welfare

At the core of the green transition in Bangladesh is a **strong commitment to worker welfare**. Most apparel workers are skilled, have formal contracts, and experience good pay, job security, and favourable working conditions. Increased worker collectivisation has enabled unions to negotiate better pay and working conditions. Workers have access to social protection mechanisms such as unemployment benefits (which are particularly relevant for workers transitioning between jobs), retirement benefits, employment injury insurance, and health insurance. The sector has developed a mutually beneficial social dialogue culture with unions to ensure employee retention.

Although women constitute about 55 percent of the workforce, similar to 2024 levels, their roles have expanded. Managers perceive women workers to be as effective as men, including in supervisory and machine operator roles. **Women are not only employed in manual production**

but also thrive in roles where they operate equipment, which were earlier dominated by male employees.

Bangladesh has also developed a policy framework to encourage textile waste management and recycling and implemented policy changes and provided investment support to employment-intensive sectors such as jute, retail, hospitality, and healthcare. **As a result, renewable energy, waste management, and recycling sectors have grown**, creating new jobs, and diversifying the economy. These sectors have offset the limited job losses that have taken place in the apparel sector due to reduced volumes.

Adapting to climate change for long-term resilience

To minimise physical risk and ensure business continuity, textile and apparel manufacturers have invested in **structural climate adaptation measures** such as raised foundations and water barriers to minimise supply disruptions. They have also subscribed to climate insurance to minimise risks due to extreme weather events such as flooding and cyclones. Due to changes in regulations and brand expectations, competition for labour from other sectors, and the need to ensure productivity, Bangladesh's apparel manufacturers have **adopted measures to reduce the impact of heat stress on workers**. Measures such as regular measurement of heat stress against established protocols, frequent water breaks, good ventilation, and passive cooling systems have all contributed to high worker productivity. This is complemented by the Bangladeshi government's consideration of flood and heat risk when selecting locations for new export processing zones (EPZs), and measures to reduce the incidence of flooding in locations where factories exist and in settlements where textile and apparel workers live. Workers have additional protection due to access to **climate-responsive insurance**, such as micro-insurance, that helps them cover any losses experienced due to extreme weather events.

> In Green Forest, textile and apparel manufacturers have adopted structural and operational measures for climate change adaptation.

As a result of its cost competitiveness, sustainability credentials, expanded product basket, and supply reliability, Bangladesh has become a preferred sourcing hub for simple as well as complex apparel, safeguarding export earnings and employment prospects for its workers.

VULNERABLE MANGROVES

Bangladesh's apparel sector transitions and automates, but accompanied by job losses

In this scenario, the nature of global demand is very similar to the Green Forest scenario. However, while Bangladesh apparel sector is competitive in the global apparel sector, the textile sector is uncompetitive, and youth unemployment rate is high. The key differences between the Green Forest scenario and this scenario are highlighted below.

In this scenario, Bangladesh has faced economic headwinds and has therefore prioritised essential products and services in the short term over investing in renewable energy and climate adaptation. While the government has identified priority sectors other than apparel, policy support or investments for these sectors is limited. With **inadequate climate mitigation or adaptation measures**, Bangladesh faces **high physical as well as transition risks**.

Apparel manufacturers, including medium-sized enterprises have **significantly automated** their production processes, enabling them to produce complex apparel at **high quality in less time**. However, the textile sector has neither decarbonised nor made investments in producing sustainable yarn or fabrics. With the government reducing import duties on sustainable fabrics (such as lyocell, recycled cotton, and recycled polyester) and greater consolidation enabling apparel manufacturers to place larger orders with lower lead times, the apparel sector increasingly imports sustainable fabrics, and local textile procurement has declined.

> The apparel sector increasingly imports sustainable fabrics, and local textile procurement has declined in Vulnerable Mangroves.

The apparel sector has made significant investments in automation. Even though apparel order volumes have increased, they have not been able to offset the jobs lost due to automation. As a result, there has been a **significant reduction in the apparel workforce**. With declining demand, even the domestic textile sector has laid off workers. The workforce across the textile and apparel sector has declined from about 4.3 million in 2024 to about 2 million in 2030. With limited employment opportunities in other sectors, youth unemployment has increased. Managers believe that male workers are better at operating automated equipment—as a result, **female workers have borne a disproportionate impact of layoffs** in the textile and apparel sector.

The retained workers are skilled at operating the equipment introduced in the factories over the last few years and enjoy **good pay and working conditions**. In contrast, unskilled workers experience low pay and poor job security, with few prospects for those laid off. Although minimum wages for unskilled workers have increased nominally, real wages have remained stagnant due to high inflation over the last five years. The **lack of social protection measures** and low worker collectivisation has exacerbated their vulnerability. As a result, social unrest has increased, and workers have been forced to explore employment opportunities in other countries.

Inadequate climate adaptation measures have led to frequent flooding, which increases incidences of water-borne diseases and adds to workers' expenses on healthcare and commute. Absenteeism due to ill health has also resulted in worker layoffs or pay deductions. In addition to reducing sector productivity, these challenges also impact workers' earnings.

SCORCHED EARTH

Global apparel markets transition but Bangladesh is left behind

While there are some similarities between this scenario and Vulnerable Mangroves, we highlight below the key differences.

Bangladesh's apparel sector has lost its competitiveness in the global apparel market. The apparel sector has been unable to undertake on-site decarbonisation initiatives and to invest in automated technologies that are becoming standard in other manufacturing hubs. The sector has **lost its cost-competitiveness** owing to Bangladesh's inability to sign FTAs after graduating from the LDC status and failure to qualify for the GSP+ status. Frequent power cuts, increased frequency of flooding and cyclones, and frequent strikes by workers have lowered productivity and led to **recurrent supply disruptions**. Frequent flooding has also resulted in higher costs due to disruption of transportation networks, affecting movement of goods from factories to ports.

Due to a steep decline in orders, Bangladesh's textile and apparel sector has **laid off a large number of workers** over the last few years. Employment in the sector has shrunk from about 4.3 million in 2024 to about a million in 2030.

In Scorched Earth, Bangladesh's apparel sector has lost its competitiveness in the global apparel market.

Most displaced workers are either unemployed or informally employed as daily wage workers, in part, due to limited prospects in other sectors. **Women have been disproportionately affected by these layoffs**, with their share in the apparel workforce shrinking to about 25 percent from about 55 percent in 2024. Consequently, social instability as well as involuntary outbound migration have increased.

Most jobs in the apparel sector are low-skilled jobs which pay low wages and have limited job security. Workers lack access to social protection and worker collectivisation is low. Workers also **experience significant heat stress** at work. The drop in productivity caused by heat stress during summer months and absences during months of flooding often leads to workers' pay being docked. As a result, both factories' productivity and worker earnings are impacted.

Despite lack of adoption of decarbonisation initiatives, due to a steep decline in volumes, overall GHG emissions of the sector have declined. With inadequate adoption of climate mitigation or adaptation measures, Bangladesh faces **high physical as well as transition risks**.

CONCRETE JUNGLE

Bangladesh is competitive with improved worker outcomes in the short term, but mid- to long-term transition risks persist

In this scenario, the nature of global demand is unsustainable, and Bangladesh is moving towards a disorderly transition with too little action too late. The risks of a disorderly transition are masked as Bangladesh's textile and apparel sector has continued to be competitive in the short term and youth unemployment has declined.

With rising income levels and lowering trade barriers, emerging markets now command a significant share of the global apparel sector. While some of these new markets, such as South Korea and Japan have passed regulations related to environmental sustainability, **most emerging markets currently either do not have regulations or have far less stringent regulations for environmental sustainability compared to high-income countries**. While the EU has passed

While Bangladesh has seen significant economic development, Concrete Jungle scenario poses a high transition risk for Bangladesh.

regulations with respect to sustainability for the textile and apparel sector, they are not being enforced effectively.

Consumers frequently change their wardrobes in line with the latest social media trends. With limited disposable incomes, they demand new products frequently and at low prices. To meet consumer demand, brands demand products made from virgin synthetics, and continue to **prioritise costs over sustainability**. Brands in the EU have adopted **a tick-box approach to decarbonisation** to meet regulatory requirements.

Besides strengthening its position in the EU and US markets, Bangladesh has diversified to other markets like Japan, Australia, South Korea, and India. It has **retained its cost competitiveness** by signing FTAs with key export markets. Bangladesh has also developed a policy framework and made investments to diversify its economy beyond the apparel sector. Jute, retail, healthcare, and hospitality sectors have seen significant growth in the last 5 years and created more than a million jobs.

In this scenario, brands have adopted a tick-box approach to decarbonisation to meet regulatory requirements.

Meanwhile, Bangladesh's textile and apparel sector has built capabilities to produce synthetic yarn, fabric, and apparel, which are currently in high demand. However, as physical risks increase globally in the medium-to-long term, growing global demand for sustainable fashion could emerge and lead to **stranded assets with a late and disorderly transition**. The sector continues to be highly fragmented, with small and medium-sized players using **manual production processes**, resulting in greater employment. Women account for about 50 percent of the workforce.

With an increase in jobs in the textile and apparel sector and development of new sectors, there has been a **significant decline in youth unemployment** rates over the last five years. Since workers have opportunities in multiple sectors, they have greater bargaining power and are able to negotiate **better wages and working conditions**. With the adoption of measures to reduce the impacts of heat stress on workers, worker productivity continues to be high. The government has also instituted social protection measures.

Due to **government investments in climate adaptation measures**, impacts of climate disasters, such as flooding, have reduced significantly. Bangladesh continues to rely on natural gas for its grid electricity and the textile and apparel sector has not decarbonised on-site manufacturing processes. As a result, emissions from the textile and apparel sector have increased significantly between 2024 and 2030. While Bangladesh has seen significant economic development, this scenario poses a **high transition risk for Bangladesh**. In the mid-to-long term, as physical risks due to climate change materialise globally, the global focus on decarbonisation will likely increase and global environmental sustainability regulations will be implemented more effectively. In such a situation, Bangladesh would likely lose competitiveness, be stranded with investments in high-carbon assets, and face significant risks due to a disorderly transition.

LONELY ISLAND

Bangladesh is competitive in the short term with poor worker outcomes, but mid- to long-term transition risks

This scenario is very similar to the Concrete Jungle scenario, except in terms of the competitiveness of the textile sector and youth unemployment rate. We highlight these key differences below.

Due to economic headwinds and inability to get adequate international funding, Bangladesh has been unable to invest sufficiently in the climate mitigation measures. Additionally, Bangladesh has yet to establish a comprehensive policy framework to diversify its economy beyond the apparel sector.

Bangladesh's apparel sector has made **significant investments in automating** its production process to reduce lead time. While the domestic textile sector has not built synthetics capability, the apparel sector has started importing synthetic fabrics from China and India to meet the increasing global demand for synthetics-based, low-cost apparel.

Significant automation has led to **layoffs of apparel workers**. Due to lower demand from the apparel sector, even the textile sector has laid off workers. The workforce across the textile and apparel sector has declined from about 4.3 million in 2024 to about 2 million in 2030. Those laid off from the textile and apparel sector are unable to find alternative employment and generally work in the informal sector on a daily wage basis and in poor working conditions. Most workers retained in the textile and apparel sector are skilled and enjoy good pay and working conditions. However, the minority of unskilled workers receive low wages, experience limited job security, and lack access to social protection measures. Women's representation in the textile and apparel workforce has dropped due to managers' unchanged perception that male workers are better at operating equipment. The women who work in these sectors are typically employed in unskilled positions and face poor working conditions and significant harassment and **gender-based discrimination** at the workplace.

> In the Lonely Island scenario, Bangladesh's apparel sector has made significant investments in automation, leading to worker layoffs.

With Bangladesh experiencing more frequent climate disasters, unskilled workers, who often live in informal housing, experience more severe impacts of flooding and water-borne diseases. These

workers sometimes miss work due to water-borne diseases and inability to travel to factories, which can result in deduction of pay or termination. Workers' expenses on healthcare and commute increase during the monsoon season, placing an additional financial burden on them. They also experience **significant heat stress** at home affecting productivity at work.

With increased volumes and lack of decarbonisation initiatives, GHG emissions from the apparel sector have increased significantly. With a lack of climate change mitigation or adaptation measures, Bangladesh experiences **high physical and transition risk**.

HOT DESERT

Global apparel markets do not transition, yet Bangladesh is left behind due to high cost and supply chain disruptions

This scenario is very similar to Lonely Island in terms of the nature of global demand as well as youth unemployment. However, in this scenario, the competitiveness of Bangladesh's apparel sector is low. Below, we outline the key differences between these two scenarios:

Due to political instability Bangladesh has not been able to sign FTAs with key buyer countries. As a result, the apparel sector has **lost its cost-competitiveness** after LDC graduation. While global demand has shifted even further towards synthetics, neither textile nor apparel factories have been able to build capabilities for working with synthetic inputs. **Frequent worker protests** and **adverse climate events**, such as cyclones and floods, increase lead times and make fulfilment times unpredictable. As a result, brands have moved away from Bangladesh to Vietnam, Cambodia, and India, where production is cost-efficient and more reliable.

This movement of brands to other countries has resulted in **mass layoffs** from Bangladesh's textile and apparel sector. Employment in this sector has decreased from approximately 4.3 million in 2024 to about a million in 2030. Moreover, Bangladesh has not been able to provide a structured policy framework or financing to promote the growth of sectors other than apparel. Workers who have been laid off have had to seek work in the informal economy on a daily wage basis, while many still struggle to find employment. Youth unemployment rates are high, leading to frequent social unrest.

Despite the lack of decarbonisation initiatives, total emissions from the textile and apparel sector have declined significantly compared to 2024, primarily driven by reduced production volumes. This scenario poses **high physical risk as well as transition risk** for Bangladesh.

Scenarios for Construction and Building Materials

Critical Uncertainties for the Construction Sector

Based on desk research, consultations with about 70 diverse stakeholders, spanning workers, companies in the construction, brick, cement, and steel sectors, developers, architects, global experts in transitions in the construction sector, researchers, and worker rights organizations, and subsequent analysis, we identified two critical uncertainties for the construction sector:

- **State of Bangladesh economy:** Whether Bangladesh's economy is showing strong growth or languishing, which in turn could have implications for demand for construction as well as youth unemployment.
- **Nature of construction that is gaining share:** Whether there is a growing demand for low-carbon, climate-resilient, and adaptive construction, or if high-carbon conventional construction continues to maintain its share.

UNCERTAINTY #1: STATE OF BANGLADESH ECONOMY

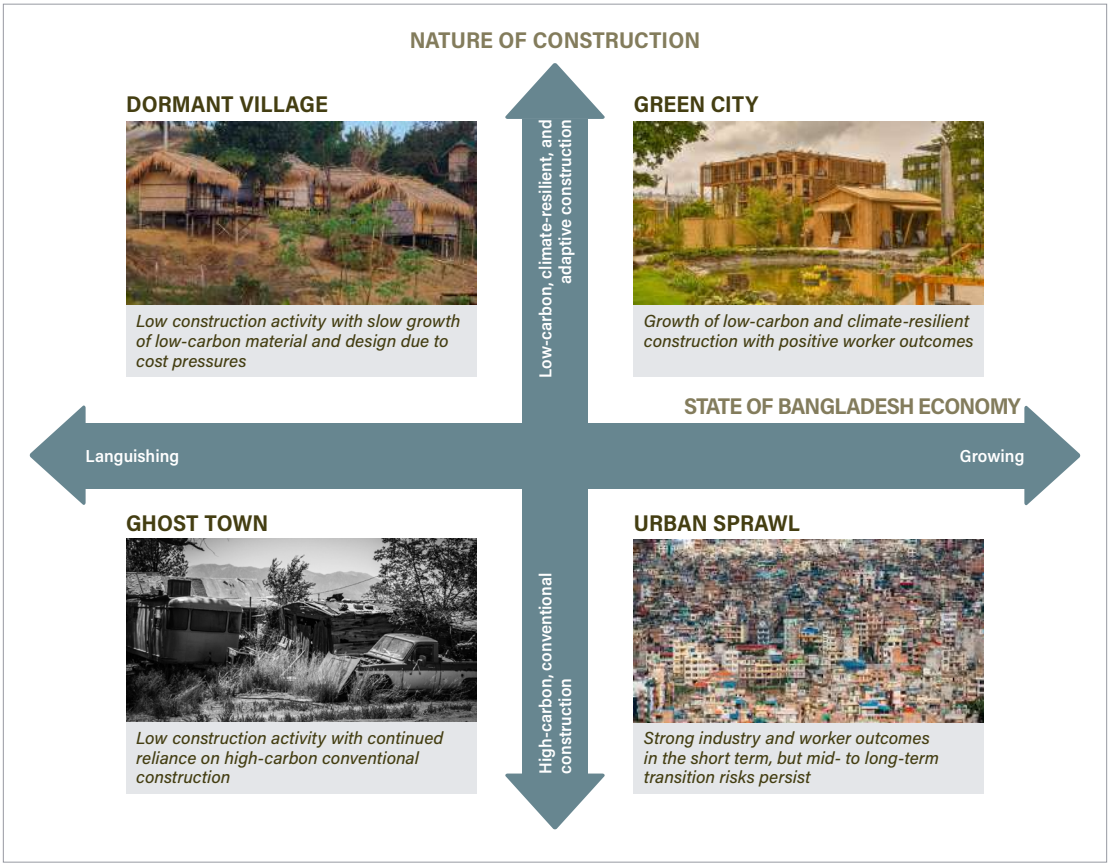
Languishing	State of Bangladesh economy	Growing
The global economy is unsteady, and **prices of key products imported by Bangladesh** (e.g., food items, cotton, fossil fuels, fertiliser, conventional construction material) are **high** due to growing global demand and supply disruptions due to geopolitical tensions	*Global economy*	The global economy is stable, with steady and **moderate prices** of key products imported by Bangladesh, due to a high degree of alignment between global demand and supply
The domestic economy is weak, with: ▪ Declining apparel exports due to low competitiveness ▪ **Deteriorating balance of payments, limiting infrastructure investments** and climate mitigation and adaptation action by the government ▪ **Low investments** by industry and services sectors in new factories ▪ **High inflation,** leading to lower household savings and slow growth in housing demand	*Domestic economy*	**Bangladesh's economy is strong,** with: ▪ Continued strong growth of apparel exports ▪ Favourable balance of payments and a **strong currency** ▪ Significant **infrastructure investments** by the government ▪ Political **stability** leading to **continued investments** by the private sector in new factories
▪ **High interest rates** ▪ **Frequent disruptions** due to increased incidence of extreme weather events ▪ **Reduced worker productivity** and increased absenteeism due to heat stress and water-borne diseases ▪ Lack of a comprehensive national social protection system	*Domestic economy*	▪ **Low inflation,** which has led to increased household savings and strong growth in demand for housing ▪ **Low interest rates** ▪ **High productivity and stable production** due to the timely adoption of strong climate policies globally, and of climate adaptation measures within Bangladesh ▪ Availability of a **comprehensive national social protection system**
Youth unemployment is high due to: ▪ Continued reliance on the apparel sector, where employment is declining ▪ **Weak agricultural markets** resulting in depressed income and/or livelihood losses in rural areas ▪ Low investments in **skilling**, and misalignment of skilling programs with industry needs	*Youth unemployment*	**Youth unemployment is low** due to: ▪ **Development of sectors other than apparel**, including green sectors such as renewable energy and waste management, with well-paying job opportunities ▪ Strong agricultural output, leading to improved livelihoods in rural areas ▪ Enhanced employability of the workforce due to **investments in education and skill development**

UNCERTAINTY #2: THE NATURE OF CONSTRUCTION THAT IS GAINING SHARE

High-carbon, conventional construction	Nature of construction	Low-carbon, climate-resilient, and adaptive construction
There is **low regulatory push** for low-carbon, climate-resilient and adaptive construction: ▪ **Government regulations**, including building codes, do not enforce low-carbon, climate-resilient, and adaptive design, raw materials, and processes ▪ **Limited policy support** (e.g., incentives, financing support) exists for manufacturing and using low-carbon design, raw materials, and processes ▪ Government projects utilise conventional design and raw material	*Policy*	The sector faces a **high regulatory push** for low-carbon, climate-resilient, and adaptive construction: ▪ The government provides **policy support, including building codes, incentives, and financing** for retrofitting and renovation of existing building stock, climate-resilient design (e.g., raised building foundations), low-carbon raw materials (e.g., bio-based materials, compressed stabilised earth blocks), and **optimal energy utilisation** ▪ The government mandates the use of low-carbon design and raw material in the **construction of public buildings and infrastructure**
▪ **Demand for low-carbon, climate-resilient, and adaptive construction is low.** Individual home builders, developers, and industry and service sectors do not demand low-carbon or climate-resilient construction	*Consumer demand*	▪ Demand for **low-carbon and climate-resilient** construction has expanded beyond the pioneering segments of apparel factories, commercial buildings, and premium residential buildings, influenced by international stakeholders (e.g., apparel brands, investors) and lower operational costs
The construction sector **continues to rely on conventional methods and raw material**: ▪ Companies **lack awareness** of and are sceptical of the **business case** for low-carbon, climate-resilient, and adaptive design and materials ▪ **Low prices of conventional construction material** have led to their continued use ▪ The **value chain for equipment and raw material** for low-carbon alternatives is nascent	*Practices of companies in the sector*	The **uptake of low-carbon practices** in the sector is **high**, and: ▪ The **business case** (e.g., cost, quality) for the adoption of low-carbon and climate-resilient design and raw material (e.g., material-efficient design, compressed stabilised earth blocks) is well established ▪ **Domestic value chains** for low-carbon raw materials have developed, leading to easy availability of equipment and raw material

Scenarios for Construction Sector in 2030

Combining the two abovementioned uncertainties, four scenarios representing the future evolution of Bangladesh's construction sector emerge:



Next, we provide a snapshot of potential future newspaper headlines in each scenario, followed by more detailed descriptions of the needs, challenges, and opportunities characterising each scenario.

FOUR FUTURE SCENARIOS FOR THE CONSTRUCTION CLUSTER

Illustrative Future Newspaper Headlines

NATURE OF CONSTRUCTION

STATE OF BANGLADESH ECONOMY

Languishing

Growing

Low-carbon, climate-resilient, and adaptive construction

High-carbon, conventional construction

DORMANT VILLAGE

Today

- *"Economy still in contraction mode"*
- *"Cement demand plummets as public projects lie dormant"*
- *"Construction cost on the rise: BBS"*

2025-2027

- *"Bangladesh economy remains sluggish"*
- *"Prices of construction inputs skyrocket"*
- *"Government mulls policy for building repurposing"*

2028-2030

- *"Government infrastructure investments at an all-time low"*
- *"5 Hazaribag leather factories converted into housing"*
- *"Bangladesh construction pioneers green design using local material"*

GREEN CITY

Today

- *"Are we thinking of energy retrofitting to make buildings in Bangladesh more efficient?"*
- *"Addressing climate change through innovative construction in Bangladesh"*
- *"Rising to resilience: Bangladesh's journey towards sustainable climate adaptation"*

2025-2027

- *"Material-efficient construction gaining steam"*
- *"Government mulls policy for building repurposing"*
- *"Comprehensive policy passed for priority sectors"*

2028-2030

- *"Bangladesh meets 30% renewable energy targets"*
- *"Women breaking barriers in the construction industry"*
- *"Building repurposing: Affordable and climate friendly"*
- *"Bangladesh leads the way in climate-resilient development"*

GHOST TOWN

Today

- *"Economy still in contraction mode"*
- *"Construction material industry crumbles as sales plunge"*
- *"Why construction workers continue to fall to their deaths"*

2025-2027

- *"Companies downsizing construction projects"*
- *"Air pollution by brick kilns causes over 8,000 premature adult deaths in Bangladesh yearly"*
- *"Construction responsible for maximum occupational deaths"*

2028-2030

- *"Investment in infrastructure stalls as economic pressures increase"*
- *"Choked by brick kilns"*
- *"Millions impacted by catastrophic floods in Bangladesh"*

URBAN SPRAWL

Today

- *"Illegal brick kilns choking Bangladesh"*
- *"Construction cost eases for third straight month"*
- *"Why construction workers continue to fall to their deaths"*

2025-2027

- *"Booming construction businesses in Bangladesh"*
- *"Construction companies are benefitting from low input costs"*
- *"Protective equipment now the norm at construction sites"*

2028-2030

- *"Rise in affordable housing in Bangladesh"*
- *"Repurposing buildings becomes the new construction"*
- *"Construction accident and injuries decline"*

Of these four scenarios, Green City—growing economy, low-carbon, and climate-resilient construction—best advances Bangladesh's construction sector towards a just, low-carbon, and climate-resilient future. With the increasing global pressure for decarbonisation and growing transition risks in the mid- to long-term, an immediate shift to a low-carbon and climate-resilient construction sector is necessary. While the Urban Sprawl scenario—growing economy, high-carbon construction—achieves strong short-term growth of the construction sector, it creates risks for the sector, climate, and workers by taking action that is too little and too late. We describe the Green City scenario in depth below, and to help stakeholders manage the negative outcomes that could emerge in other scenarios, we provide an overview of the unique circumstances of each of these scenarios.

GREEN CITY

Growth of low-carbon and climate-resilient construction with positive worker outcomes

In this scenario, the government and companies proactively manage physical and transition risks.

A nation embracing green growth to meet NDC target

The Bangladesh government has turned its climate goals into a blueprint for progress. **Prioritising green growth** to meet its Paris Agreement commitments, it has met the NDC target of ensuring 30 percent renewable energy in grid electricity. Through decarbonisation and by improving labour rights practices to qualify for Generalised Scheme of Preference (GSP+) status, the apparel sector has remained competitive, contributing significantly to Bangladesh's exports and employment. Through favourable policies and investments, Bangladesh has also **developed sectors such as jute, retail, hospitality, and healthcare**. Employment in these sectors has doubled since 2024, with these sectors employing over 2 million people. Meanwhile, favourable policies to grow off-grid renewable energy, waste management, and recycling have unlocked **green employment opportunities** for workers. Investments in skill development have continued and encompass these growing sectors, including green sectors such as solar panel installation and maintenance, electricians for retrofitting, and workers skilled in prefabricated construction. Job opportunities and skill development in diverse sectors have empowered youth to step into high-demand roles, leading to **low national youth unemployment**.

Sector responding with low-carbon and climate-resilient construction

As a part of its green growth agenda, Bangladesh has **passed regulations that require manufacturing, construction, and services sectors to decarbonise**. These regulations encourage businesses to innovate for a greener future. In addition to incentives for the production of low-carbon raw materials, these regulations also encompass building codes that provide guidance on building materials and design that reduce both operational and embodied carbon. Taking the lead, the government has mandated the use of low-carbon materials and material-efficient and circular

design in its own construction projects. These clear policy signals and the availability of a skilled workforce have encouraged private investment in low carbon construction and building materials. To strengthen communities against the impacts of climate change, the government has also invested in **improving climate adaptation in rural and urban areas**—this includes the development of cyclone shelters, improved drainage systems, rainwater harvesting, climate-resilient water and sanitation systems, and healthcare facilities. It has also designed incentives and developed a skilled workforce for renovating existing buildings, which has led to increased focus of the construction sector on renovation and retrofitting. With investments in climate mitigation as well as adaptation, Bangladesh faces low physical risk and transition risk in this scenario.

A strong economy with investments in infrastructure development has sparked **increased investments by the industry and services sector, driving demand for construction**. Improved employment opportunities, coupled with low inflation, have resulted in increased household savings and improved their ability to pay. **Affordable housing has become a cornerstone of Bangladesh's inclusive growth story**. Local governments periodically develop land banks, or parcels of land, and service these with basic infrastructure to improve land availability, thereby influencing market prices to prevent rapid escalation and enabling private sector developers to offer affordable housing. Governments have also invested in social housing with ownership and/or long-term/secure tenancy models for minimum wage workers and vulnerable households. Further, simplified approvals and the availability of low-cost financing have increased private sector construction of affordable housing. An adequate supply of affordable housing exists in the vicinity of centres of employment and transport facilities, as a result of which livelihoods of minimum wage workers continue to be protected. Moreover, these affordable housing units have adequate drinking water and proper sanitation facilities.

To strengthen communities against the impacts of climate change, the government has also invested in improving climate adaptation.

Due to regulations, incentives such as tax breaks, lower costs, and the development of domestic value chains, **low-carbon raw materials** like bio-based material and compressed stabilised earth blocks (CSEBs) have **gained popularity**. Construction now prioritises designs that entail low carbon emissions, such as material-efficient and circular design. Similarly, material and design that reduce heating and cooling of houses are preferred, such as solar reflective roofs, passive cooling systems, and orientation of buildings to avoid sun during peak hours. Renovation of buildings and climate-resilient designs like elevated foundations and flood barriers have also become popular. Companies in the construction sector have started using energy-efficient equipment and renewable energy to reduce emissions from manufacturing and construction processes.

Worker welfare at the heart of the green transition

Bangladesh's green transition is as much about people as it is about the planet. Progress in **worker collectivisation** in the construction sector, coupled with job availability in other sectors, has enhanced workers' bargaining power. Workers are now able to negotiate better pay, benefits, and working conditions. All workers earn at least minimum wages—which have increased in real

terms since 2024—supported by labour laws, annual minimum wage revision process, workers' awareness of these laws, and low inflation.

Besides better pay, workers have also been able to negotiate measures to improve worker health and safety, including the provision of safety equipment and masks. The government has updated its health and safety guidelines to also incorporate heat stress. Improved accountability due to regulatory pressure and pressure from worker collectives and goals of improving worker productivity have led companies to adopt measures to minimise the impacts of heat stress. These include frequent water breaks, shift timings that factor high temperature hours, shaded break areas, and provision of water with electrolytes. Workers who are skilled in low-carbon construction receive formal contracts and paid leaves, and the share of workers with formal contracts has increased. The government has passed a comprehensive social protection scheme that includes benefits, such as injury insurance, health insurance, and unemployment benefits. With improvements in pay and working conditions, and increased employment opportunities in Bangladesh, the migration of skilled construction workers to other countries has reduced.

Women workers now receive equal pay as their male counterparts and those in formal contracts can access maternity benefits. **Incidents of harassment of and violence against women workers are almost non-existent**, and factories and construction sites have adequate and clean sanitation facilities. Due to improved pay and working conditions, the participation of women in the sector has increased from less than 5 percent to about 20 percent. These advances have paved the way for a workforce that reflects the full potential of the nation.

Alongside these improvements in outcomes for workers, Bangladesh's construction sector has also made progress on emissions reduction. Through policy support, investor and customer pressure, investments in the development of low-carbon material and their value chains, capacity building of stakeholders, and decarbonisation of the grid, both embodied and operational carbon from the sector have declined in absolute terms.

DORMANT VILLAGE

Low construction activity with slow growth of low-carbon material and design due to cost pressures

In this scenario, the economy is languishing. Low-carbon, climate-resilient, and climate-adaptive construction are nascent, but due to a cost advantage, are gaining share at a slow pace. Some key differences between Green City and this scenario are highlighted below.

Political and social instability have limited the inflow of investments, which has led to a **slowdown in**

demand for construction by industry and service sectors. With limited resources, Bangladesh has prioritised essentials such as food and energy over infrastructure investments. Further, increases in import prices (e.g., of food items, fertilisers) have led to high inflation. This, in turn, has reduced household savings and resulted in low growth in demand for residential construction. Even though there is an increasing need for housing, low purchasing power has led to an **increase in informal housing** for minimum wage workers.

This scenario has seen slow growth of low-carbon design due to nascent value chains for low-carbon construction materials.

Despite limited investments in the greening of the grid, the government has introduced some policies to encourage climate-friendly and climate-resilient construction. **Building codes now include provisions for low-carbon raw material and processes**. While skilling investments have reduced, they focus on training workers in green building material and techniques. With limited investments in decarbonisation and adaptation, Bangladesh is at **high physical and transition risk**.

While conventional construction still accounts for a majority of the construction activity, due to cost pressures, **developers and individual home builders are exploring low-cost designs and raw materials**. There is an increasing preference for renovation of existing buildings instead of constructing new buildings. Even for new construction, companies are increasingly exploring **material-efficient building designs**, and **reuse and recycling of material** to reduce costs. Due to high cost of coal, clay-burned bricks are losing share to compressed stabilised earth blocks, which do not require coal in their manufacturing process. Businesses and residents are increasingly demanding features that reduce operational energy costs. However, **the growth of low-carbon design has been extremely slow due to nascent value chains for low-carbon construction materials**.

The decrease in construction projects has led to **significant layoffs** across the construction, brick, cement, and steel sectors. With a decline in employment in the sector and a lack of opportunities in other sectors, a large number of youth are either unemployed or employed informally.

Worker collectivisation continues to be low, which coupled with high youth unemployment, has resulted in **low bargaining power for workers**. Many workers continue to be employed informally and experience low and unstable incomes. They also lack access to social protection mechanisms such as health insurance, employment injury insurance, and unemployment benefits. Workers also experience poor health and safety conditions, high heat stress, and lack of access to facilities such as drinking water or washrooms. **Women's representation in the construction workforce continues to be low** due to gender-based harassment and lack of sanitation facilities. Workers who have received skilling in the use of low-carbon material and construction have experienced an improvement in pay and working conditions. However, they constitute a small proportion of the workforce. Due to limited employment opportunities within Bangladesh, many workers are forced to migrate to other countries where pay and working conditions are better.

Workers also experience poor living conditions. Due to lack of affordable housing, most workers reside in **informal housing** with erratic water and electricity supply. They experience **significant**

heat stress and water-borne diseases during flooding, which can reduce their productivity, increase their health expenses, and impact their earnings.

There has been a significant reduction in GHG emissions due to reduced demand for new construction and a shift towards low-carbon materials.

URBAN SPRAWL

Strong sector and worker outcomes in the short term, but mid- to long-term transition risks persist

This is a scenario where the economy is experiencing strong growth, but conventional construction continues to dominate. Some key differences between Green City and this scenario are highlighted below.

The government has neither made any investment in the greening of the industry or the grid, nor has it introduced any regulations for industries to reduce emissions. While the Paris Agreement prompted the formulation of climate mitigation and adaptation policies within Bangladesh, these remain largely unenforced. The government has **prioritised short-term economic growth at the cost of the environment**.

There is continued **reliance on conventional construction** materials and designs due to stable prices of conventional raw materials, lack of awareness about low-carbon alternatives, lack of incentives, and limited regulatory push. Value chains for low-carbon raw materials continue to be nascent.

Workers have been able to negotiate provision of protective equipment and masks. Incidences of health impacts such as lung diseases and skin ailments still exist, but have reduced compared to 2024.

Given the increase in construction activity and lack of adoption of low-carbon production methods, GHG emissions of the construction sector have significantly increased. Bangladesh faces **high physical and transition risk**. While the sector is seeing growth, in the long term, the availability of conventional construction materials is expected to decline, leading to price increase. Due to a delayed transition, the sector will likely be locked in to these conventional

Due to stable prices of conventional raw materials, Urban Sprawl sees continued reliance on conventional construction materials and designs.

materials, putting the long-term future of the sector at risk. If the sector declines, worker pay, and working conditions are also at a risk of backsliding in the long term.

GHOST TOWN

Low construction activity with continued reliance on high-carbon conventional construction

This is a scenario where the economy is experiencing slow growth, and conventional construction continues to dominate. Some key differences between Urban Sprawl and this scenario are highlighted below.

Disrupted supply due to geopolitical conflicts and growing global demand have led to an increase in global prices of key products imported by Bangladesh, including conventional construction material. Bangladesh's economy is experiencing a slowdown due to a decline in apparel exports and inadequate investments and policy support to develop other sectors.

To manage its limited resources, the government has focused on essential services and deprioritised spending on infrastructure. Due to low economic growth and frequent social unrest, new private sector investments have stalled, resulting in **low demand for new construction** from the industry and services sectors. High import costs have increased inflation rates, leading to a decline in household savings and in demand for new housing. With aging of buildings and lack of resources to renovate, the quality of the existing building stock has declined. The most marginalised, who have the least resources have borne a significant impact of this decline in quality, including leakages, cracks, and building collapses.

The decline in new construction has led to **significant layoffs** across construction, brick, cement, and steel sectors. With a lack of opportunities in other sectors, a large number of youth are either unemployed or employed informally. Worker collectivisation continues to be low, which coupled with high youth unemployment, has resulted in low bargaining power for workers. Most workers continue to be employed informally, experience low and unstable incomes, lack access to social protection mechanisms, and experience poor working conditions. With a lack of measures to manage heat stress in the workplace and at their homes, workers experience declining productivity and sick days, which further reduces their earnings. Due to poor pay and working conditions, many workers have little choice but to migrate to other nations for employment opportunities, which is not without its risks.

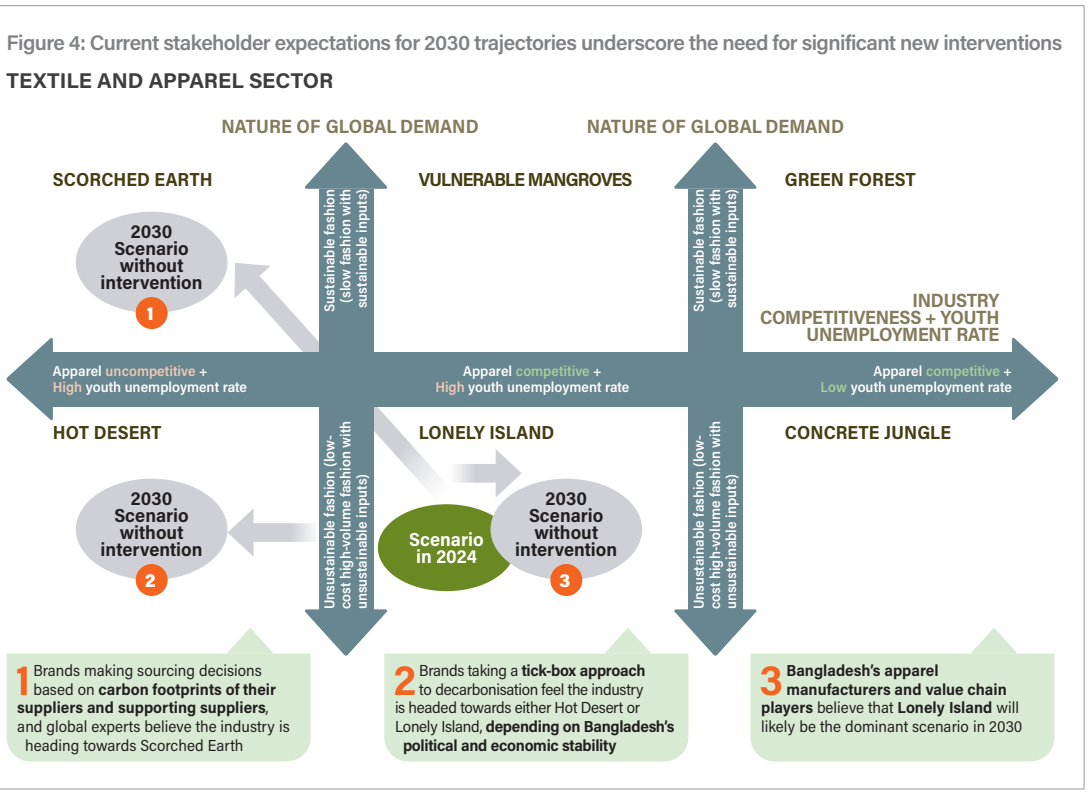
There has been a significant reduction in GHG emissions of the construction sector due to reduced construction activity. With limited mitigation and adaptation measures, the country faces **high physical and transition risk**.

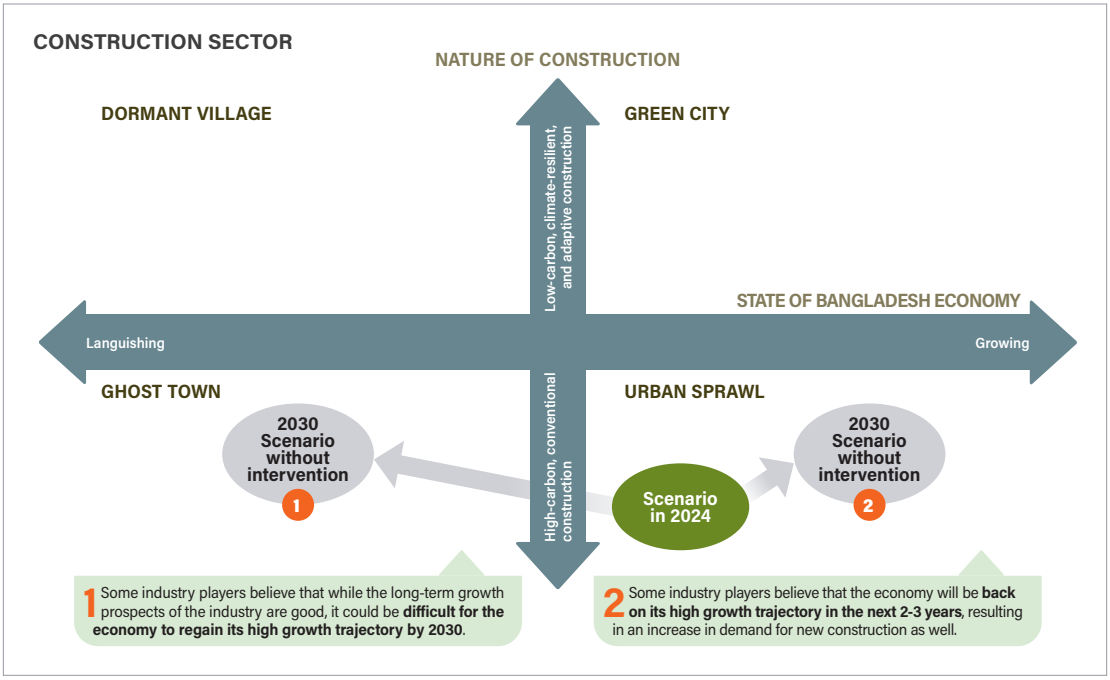
Priorities for a Just Low-Carbon Future

Just transitions can allow businesses to increase their competitiveness against other businesses from Bangladesh and other countries, achieve greater cost and resource efficiency, and enter new markets and new products and services[120]. Similarly, **workers can benefit from decent work opportunities** and greater agency and decision-making power, which can prepare them to better adapt to transitions. Just transitions can also enable Bangladesh to meet its development goals, by creating decent work opportunities and allowing it to **leverage new financing opportunities**, including climate financing, for development.

As seen in the scenarios, only Green Forest and Green City secure the long-term competitiveness of Bangladesh's textile and apparel, and construction sectors, create quality jobs, and ensure fair outcomes for workers and their communities. As we publish this report, there are varying views between stakeholder groups about which scenarios are likely to emerge by 2030. However, in neither sector is there a consensus expectation of fully realising the opportunity of just industry transitions without significant new interventions (See *Figure 4*).

Figure 4: Current stakeholder expectations for 2030 trajectories underscore the need for significant new interventions





Business as usual is not sufficient to transition to a low-carbon, resilient, and just industry in Bangladesh. Industry, worker rights organisations, policymakers, development organisations, skilling providers, finance, and philanthropy will need to work collaboratively to shift and accelerate the trajectory towards these best-case scenarios. This section identifies seven interlinked priorities that need to be pursued simultaneously to put Bangladesh's industries fully on course for a more just, resilient, and low-carbon future (See *Figure 5*).

1. Climate change mitigation through **transition to low-carbon manufacturing**, including design, processes, and energy,
2. Climate change mitigation through increased uptake of **sustainable and circular inputs**,
3. **Climate adaptation** at the site and manufacturing hub level,
4. **Alternative sector development, skilling, and social protection** to mitigate job losses,
5. Availability of **adequate and affordable housing**, to improve worker resilience to transitions,
6. Development of **innovative financing solutions**, and
7. Across all of the above, a prioritisation of the **inclusion and agency of and accountability to workers involved**.

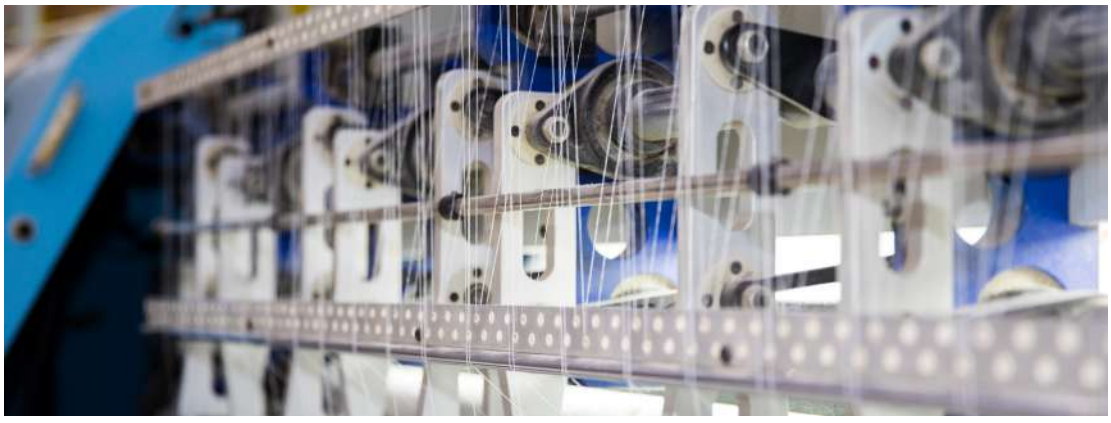
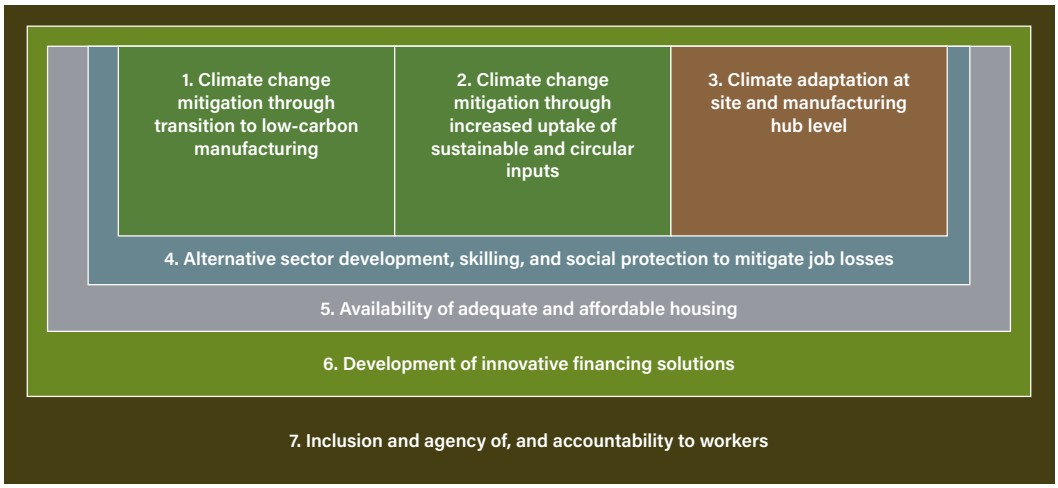


Figure 5: 7 Inter-connected priorities for accelerating just industry transitions in priority sectors in Bangladesh



Below, we describe these priorities and illustrate existing examples from within Bangladesh and internationally, proving that these are all possible.

Climate Change Mitigation through Transition to Low-carbon Manufacturing

Eighty-three percent of textile and apparel sector emissions and 80 percent of construction sector emissions are from onsite burning of fossil fuels. Therefore, **utilisation of innovative processes that reduce on-site burning of fossil fuels** (see *Example 1a*), **improvements in energy efficiency** (see *Example 1b*), and **material efficiency of existing processes** (see *Example 1c*) are among the most impactful activities to both accelerate decarbonisation, mitigate transition risks, and increase energy security and competitiveness of these sectors.

Example 1a: Adoption of innovative technologies to reduce on-site burning of fossil fuels[121]

In textile manufacturing, techniques such as waterless dyeing, digital printing, and ozone finishing can significantly reduce GHG emissions:

- DBL Group has incorporated **water-efficient dyeing technology** that reduces the amount of steam required for drying of fabrics. This can reduce energy consumption by 30 to 85 percent, depending on the type of technology, fibre, and colour, and has a typical payback period of 1 to 2 years. However, the high upfront investment of USD 1.5 to 3 million (EUR 1.4 to 2.8 million) per line has limited adoption[122,123].
- Multiple manufacturers in Bangladesh, such as Nice Denim, Bitopi Group, Ananta Group, and Envoy Textiles, have adopted ozone finishing for bleaching, particularly of denims. **Ozone finishing** can reduce energy use by about 80 percent, and GHG emissions by about 40 percent. This technology has a relatively higher payback period of 5 years, but a smaller upfront investment of USD 8,000 (EUR 7,870)[124,125].

In the **cement sector**, to reduce energy costs, some companies in Bangladesh have replaced traditional ball mills with roller press equipment and vertical roller mills (VRM), that can reduce energy consumption by up to 40 percent. Multiple cement companies including Crown Cement, Premier Cement, and Shah Cement have installed VRMs[126,127,128].

Example 1b: Improving energy efficiency in manufacturing[129]

In apparel, improved insulation to reduce heat loss, energy-efficient motors, tuning of boilers, and quality control mechanisms to reduce errors and waste can all improve energy efficiency. Since 2013, the Partnership for Cleaner Textile (PaCT), led by IFC, has supported 488 spinning, weaving, wet processing, and apparel factories to identify and adopt the most relevant opportunities. It also provides linkages to technology suppliers and trainings to participating factories. To date, factories have invested USD 170 million (EUR 156 million), resulting in energy savings of 3.8 million MWh every year and avoiding 0.7 million tons of GHG emissions per annum.

Example 1c: Improving material efficiency in construction[130,131]

In **construction**, design choices such as waffle slabs, renovation of existing buildings to extend their lives, and renovation and repurposing of abandoned buildings, all reduce material consumption and GHG emissions arising from material manufacturing and construction process. Smart urban planning that aligns with the local needs is required to disincentivize inefficient use of materials.

The remaining 17 percent of textile and apparel sector emissions and 20 percent of construction sector emissions are from the consumption of electricity from the grid. Reducing these emissions will require a combination of **decarbonisation of the grid** and **switching to onsite renewables**.

Decarbonisation of the grid: Of Bangladesh's installed power capacity of 27,740 MW, about 97 percent is met through fossil fuels, of which about 10 percent is met through imports from India[132]. Investment in renewables have the potential to increase energy security, reduce energy costs, and improve the competitiveness of Bangladesh's export-focused industries. The former government of Bangladesh had planned to invest in 4.5 GW of coal and 5.2 GW of new gas capacity over the coming three years[133], continuing its high dependence on fossil fuels for electricity[134]. This new fossil fuel capacity could lead to renewable energy investments being locked out[135,136].

Achieving the target of 30 percent of electricity generated from renewable sources set in the 2022 Renewable Energy Policy will require an estimated USD 20 billion (EUR 19 billion) investment[137]. Private sector investments have a key role to play in grid decarbonisation (See *Example 1d*). Efforts to mobilise funds will also need complementary regulatory reforms to encourage private sector investments[138].

Example 1d: Private sector investment in grid decarbonisation[139,140,141]

Bestseller, H&M Group, Global Fashion Agenda (GFA) and Copenhagen Infrastructure Partners (CIP) are collaborating to develop the first utility-scale offshore wind project in Bangladesh. If approved, this 500 MW project is expected to start operations in 2028. It will provide low-carbon energy to Bangladesh's grid, reducing GHG emissions by about 725,000 tons every year. To facilitate collective action by brands, Global Fashion Agenda and Copenhagen Infrastructure Partners are inviting additional fashion brands to support this USD 100 million (EUR 92 million) fund.

Scaling of onsite renewable energy: Switching to onsite renewables reduces manufacturers' dependence on the grid and fossil fuels, securing access of low-cost reliable energy. The levelised cost of electricity (LCOE) from solar rooftop is already estimated to be about 25 percent lower than

the average cost of electricity and is expected to reduce further[141,143]. With recent increases in gas prices, even captive power has become expensive[144].

Multiple companies in the apparel sector are exploring solar energy for manufacturing (See *Example 1e*). About 65 apparel manufacturers, most of whom are large enterprises, have already installed solar energy systems[145]. However, with payback periods of 6 years or more, manufacturers, especially those that are small and medium-sized, will require financial support for adoption of on-site solar energy[146,147]. Typically, industrial boilers can have a life of 20 to 30 years[148]. Therefore, to avoid carbon lock-in, it is critical for all new investments to switch to renewable energy options, with a planned transition of existing assets[149]. Lack of technical knowhow, limited linkages for equipment, lack of access to low-cost finance, and unsupportive policy (such as lack of inter-agency coordination, restrictions that only allow companies to install solar power capacity up to 70 percent of their sanctioned load) are the most critical barriers to factories investing in solar energy. Companies in the cement and steel sectors continue to rely on grid electricity and have limited incentive to switch to onsite renewables.

Example 1e: Accelerating deployment of solar energy in apparel factories

GIZ's Solar Photovoltaics (PV) program aims to accelerate and scale deployment of solar energy across the textile and apparel sector in Bangladesh, with a focus on large factories. The program supports on-site assessments of selected factories to prepare a project plan and a business case to support the investment decision[150]. The program also links factories with solution providers and, where relevant, with finance providers. The program, funded by Apparel Impact Institute (AII), is expected to reduce GHG emissions of participating factories by about 8 percent[151].

Inclusion, agency and accountability to workers: As Bangladesh's industry decarbonises, a new social contract that includes decent work conditions, minimum living wages, social protection, and equity and inclusion will be imperative[152]. It will be critical to ensure workers' voice in decisions that affect them, such as changes in roles due to phasing out of carbon-intensive manufacturing processes and introduction of new ones. Seeking worker inputs and building awareness among workers significantly increases the chances of success of decarbonisation initiatives and is an opportunity to create decent work opportunities. Where old roles are becoming redundant, workers should be involved in planning and negotiating their own transitions, including capacity building to access roles with better pay either within their own sector or, other sectors, and where relevant, capacity building to start their own enterprises. Unemployment benefits and severance pay provide workers interim cover as they manage the transition to a different sector.

Support for labour rights organisations that develop worker collectives, capacity building of workers to contribute their inputs, and advocacy efforts to amplify worker voice through representation in key forums can help improve worker voice and agency in key decisions. For the textile and apparel sector, brands could support accountability by requiring suppliers to incorporate worker voice into key decisions. The creation of a supportive legal framework and initiatives that create transparency on working conditions and worker voice and inclusion (see *Examples 1f* and *1g*), including independent media can further enhance accountability.

Example 1f: Improving inclusion and agency of workers[153]

Oxfam's Just Energy Transition (JET) programme aims to shift the narrative in Bangladesh's industrial and government sectors, emphasising the affordability and viability of renewable energy for sectors like textile and apparel. As a part of this programme, Oxfam organized a workshop involving workers, labour unions, nongovernment organisation, and industry representatives from the textile and apparel sector.

The programme sought to educate participants on how the switch to renewable energy sources may be inclusive and equitable. Aiming to bring the voice of workers to textile and apparel factory owners, the workshop ensured workers shared their experiences and concerns regarding energy transition. Stakeholders explored how the transition to renewable energy can protect workers' rights and livelihoods and how workers could directly be involved in planning and decision-making processes to ensure their voices are heard and their concerns addressed, making the transition inclusive and equitable. Further, stakeholders also discussed opportunities for new, sustainable jobs in the renewable energy sector and the need for reskilling workers to adapt to these roles.

Example 1g: Improving accountability to workers[154]

In December 2024, the Ministry of Labour and Employment, Bangladesh Employers' Federation (BEF), and the National Coordination Committee for Workers' Education (NCCWE) made a joint declaration to improve and promote the national industrial relations system and practices with respect to workers in Bangladesh. The partners committed to:

- Strengthening social dialogue mechanisms, including the National Tripartite Consultative Committee (NTCC), Ready-made Garments Tripartite Consultative Council (RMG TCC) and Minimum Wages Board at national, sectoral, and enterprise levels. This aimed to "promote an enabling environment for constructive policy and decision making on labour rights for all, economic growth, and decent work" and
- Ensuring a more stable and peaceful industrial environment where workers' rights are protected, and their voices heard. This was proposed to be achieved through the upgrading of the labour judiciary and improving non-judicial labour dispute resolution by establishing and participating in resourced and capacitated mechanisms for conciliation and arbitration.

Climate Change Mitigation through Increased Uptake of Sustainable and Circular Inputs

Using sustainable inputs can reduce emissions from upstream and downstream parts of the value chain, mitigating transition risk as global and domestic demand moves towards lower-carbon production. In the textile and apparel sector, organic cotton and sustainable man-made cellulosic fibres are 40-70 percent less carbon-intense than conventional inputs[155]. Apparel factories that switch to sustainable inputs typically do not need to make significant capital investments—changes in processes and equipment settings are usually sufficient[156]. Building mechanical recycling capabilities in-house requires an investment of USD 1.5 to 2 million (EUR 1.4 to 1.8 million) for a shredding facility and USD 3 to 4 million (EUR 2.8 to 3.7 million) for spinning capabilities depending on capacity[157]. Fluctuations in prices of circular inputs, limited supply, and lack of a business case (i.e., financial gains, short-term competitiveness) have limited the adoption of sustainable inputs[158,159,160]. Stable commitments from brands can encourage investment (See *Example 2a*).

Example 2a: Cross-sectoral initiative for circular fashion[162,163]

The Circular Fashion Partnership (CFP) is a cross-sectoral project, led by Global Fashion Agenda with Reverse Resources and the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), with support from Partnership for Growth (P4G). CFP brings together brands, manufacturers, and recyclers to reduce dependency on unsustainable materials. The Reverse Resources platform enables capturing and recycling of post-industrial textile waste streams. To attract investments, CFP presents the global demand for recycled materials and improves access to consistent, high-quality, and transparently traced feedstock. As of February 2022, CFP had onboarded 22 brands, 45 factories, and 18 recyclers to mobilize textile waste recycling and collected 1,569 tons of fashion waste, about 42 percent of which traced back to participating recyclers. With Bangladesh generating 500,000 -700,000 tons of textile waste every year, there is significant potential to scale such efforts.

Currently, textile waste is typically collected as part of the *jhut* business, which is highly informal. Increasing domestic availability of affordable circular inputs would entail developing a waste management and textile recycling infrastructure in Bangladesh. Developing this infrastructure requires policy support (such as professionalisation of the textile waste sector, withdrawal of VAT and other taxes on *jhut* trade) and incentives (from brands and the government) to encourage investments in textile waste sorting and recycling. Currently about 35 percent of workers in the *jhut* management sector are not trained in *jhut* waste management, sorting, or recycling[161]—skilling of textile waste workers would be important to ensure quality of circular inputs and is an opportunity to expand access to decent work.

In the **construction sector**, compressed stabilised earth blocks (CSEBs) and jute-based bricks, which do not require baking in a kiln have lower embodied carbon than conventional clay bricks[164,165]. Constructing buildings in layers and disassembly instead of demolition can allow for reuse and recycling of construction inputs, including wood, steel, glass, and concrete[166]. However, limited availability of low-carbon alternatives, low awareness of sustainable and circular inputs, limited policy push (e.g., penalties, incentives, low-cost financing), and lack of data on quality and business case of low-carbon and circular inputs within Bangladesh have limited uptake of sustainable and circular inputs in construction[167].

Inclusion, agency and accountability to workers: As the industry transitions to include more sustainable and circular inputs, ensuring worker inclusion and agency will be critical. The textile recycling sector is currently dominated by the informal *jhut* processing sector, estimated to employ about 500,000 workers[168]. Most of the *jhut* processing facilities have poor infrastructure, lack fire safety measures, and have poor ventilation. Workers are often not provided protective equipment and are exposed to hazardous chemicals and dust, resulting in respiratory ailments, chronic skin issues, and exposure to carcinogenic chemicals. Further, workers receive low wages, work long hours, and lack job security. As the industry transitions, it will be critical to include those currently working in the informal *jhut* value chain and provide an enabling environment, so they have an ongoing say in decisions affecting them. The transition provides an opportunity to collectivise those working in the informal *jhut* processing sector and professionalise the sector. It can help build employment opportunities that provide job security, improved pay, safe and healthy working conditions, and the right to collectivise, while positioning the textile and apparel sector for long-term competitiveness.

As the construction sector shifts to CSEBs and jute-based bricks, it is critical to upskill workers currently working in the traditional brick sector so that as new processes grow and traditional ones

phase out, they have secure and decent employment. Similarly, skilling courses for construction could focus on circular building construction and disassembly to ensure workers in traditional roles are able to secure decent employment.

Transparency about transition plans in the early stages, collectivisation of workers (including those employed through third-party contractors or intermediaries) to be able to negotiate for workers in the design and implementation of those plans, and a supportive legal framework can significantly strengthen agency and inclusion of, and accountability to workers (See *Example 2b*).

Example 2b: Collectivisation of informal workers[170]

An Italian multinational company that had a factory in Tamil Nadu produced tractors and diesel engines. The workforce of this factory consisted of permanent employees, fixed-term contract workers, and contract labourers. Contract labourers were employed through a third-party intermediary and were not issued an appointment letter, employment contract, or identity card. As a result, the names of these contract labourers did not reflect in employment records, and these labourers did not receive social security benefits.

This factory was unionized in 2018, and the union negotiated wage revisions for permanent employees, fixed-term contract workers, as well as contract labourers. Several rounds of negotiations were held with the management and the trade union participating in negotiations. On 9 December 2019, the negotiations culminated in the completion of two agreements one on the permanency of contract labourers and the other on wage increases for permanent workers.

Climate Adaptation at Site and Manufacturing Hub Level

Climate change-induced heat stress and high vulnerability to flooding are already impacting worker productivity and reliability of the textile and apparel sector in Bangladesh. Without climate change adaptation, about 22 percent of Bangladesh's apparel export earnings and about 5 percent of jobs are at risk by 2030 – these numbers are expected to increase to 69 percent and 20 percent respectively by 2050[171]. Investments in climate change adaptation are essential to future-proof Bangladesh's textile and apparel, and construction sectors against physical risk and position these sectors for ongoing growth and viability. There are five key opportunities to build resilience to climate change:

- **Resilient Public Infrastructure:** Resilient public infrastructure in clusters where textile, apparel, and construction material factories, and worker homes are located can help minimise manufacturing and supply chain disruptions due to extreme climate events such as flooding. Floods disrupt supply chains and affect worker productivity due to water-borne diseases and other health impacts. As part of the National Adaptation Plan (2023-2050), Bangladesh has estimated its annual adaptation costs as USD 8.5 billion (EUR 7.8 billion), across areas spanning water resource management, disaster management, food security, rainwater harvesting, and climate-resilient construction material and design. This is about 7 times its current spending of USD 1.2 billion (EUR 1.1 billion) annually[172]. Therefore, over 2024-30, Bangladesh requires an external funding about USD 44 billion (EUR 40 billion). Of this, only about USD 8 billion (EUR 7.4 billion) has been secured[173,174].
- **Improved Factory Infrastructure:** Measures to reduce disruptions due to coastal or riverine flooding include flood barriers, raised foundations, and drainage systems. Dhaka is estimated to experience 70 high heat stress days a year by 2030, rising to 105 days per year by 2050[175]. Factories can prepare

for this and safeguard workers' productivity through better ventilation, passive cooling systems, and provision of cold drinking water and electrolytes. To make these changes, manufacturers would require support in the form of greater awareness, vendor linkages, and financing.

- **Operational Changes at Factory and/or Construction Sites:** There are also relatively simple, yet highly effective operational measures that employers can take to alleviate heat stress. These include frequent breaks for rest and water, and the right to stop work based on temperatures[176]. Manufacturers, brands, unions, and the government can all contribute to adoption of such measures at scale.
- **National Policy Protections:** The government can play a key role in addressing the impacts of heat stress. Bangladesh's labour laws already include provisions for adequate ventilation, clean drinking water, regular rest breaks, and paid work stoppage for catastrophes such as fire or epidemics. Enhancing these to also include specific provisions for cold drinking water, reduced targets, and work stoppages in conditions of high heat could help address worker impacts of heat stress. Improved mechanisms for providing employment injury insurance and access to health insurance could help workers better manage the health impacts of heat stress and water-borne diseases during flooding, which include increased health expenditures and potential loss of wages[177].
- **Climate-responsive Insurance:** Finally, insurance could be used to compensate manufacturers as well as workers for loss of earnings due to heat stress and flooding. For example, Climate Resilience for All's micro-insurance programme with SEWA in India pays out lost earnings on high heat days (See *Example 3a*).

Example 3a: Micro-insurance for workers[178]

Women's Climate Shock Insurance and Livelihoods Initiative (WCS) is an insurance product that aims to compensate informal women workers in India for wages lost due to extreme heat. The micro-insurance policies pay out automatically when heat passes a pre-set threshold and can help women recover their incomes losses. WCS was designed by Climate Resilience for All in partnership with Self Employed Women's Association (SEWA) and is underwritten by global reinsurer, Swiss Re. The product is active across 22 districts in India and has already benefitted 46,000 women. There is scope to introduce and expand such products in Bangladesh. The micro-insurance industry in Bangladesh primarily focuses on agriculture and there are limited schemes for workers in the industry.

Inclusion, agency, and accountability to workers: Construction, and textile and apparel workers are already experiencing the impact of heat stress and should be involved in identifying and implementing solutions for the same. In addition to factories, this includes holistic adaptation measures in and around workers' homes. The costs and responsibility for adaption must be shared rather than pushed down the supply chain to workers. Workers arranging finance for cooling or meeting overambitious targets on high heat days is unrealistic and unfair. While interventions covering health and safety of workers are underway in Bangladesh's apparel factories, workers themselves should be involved to play an active role in dialogue and decision making on such issues.

Alternative Sector Development, Skilling, and Social Protection to Mitigate Job Losses

Bangladesh is currently grappling with unemployment of 5.1 percent, up from 3.4 percent in 2010. As the textile and apparel and construction sectors transition, old roles will be phased out and new roles created. To avoid loss of livelihoods and maximise creation of decent work opportunities, it will be critical to ensure creation of new roles in the geographies and periods with the highest need. For

the 1 to 2 million workers in the textile and apparel sector and about 400 to 700 thousand workers in the construction sector that may not find new roles within existing sectors by 2030[180,181], investment in alternative employment-intensive sectors will be critical. Investment in existing sectors with growth potential, such as jute, healthcare, hospitality, and retail could also create about 1.5 million new jobs in Bangladesh by 2030[182,183,184], which could be taken up by workers formerly employed in the textile and apparel and construction sectors, provided they receive skilling and placement support. In the mid-to-long term, nurturing of new sectors that are critical for the transition, such as solar panel installation and maintenance, could provide additional employment opportunities.

Social protection, particularly unemployment insurance, can provide a vital safety net as workers transition between roles. Comprehensive unemployment protection measures that provide income security through temporary income support and employment promotion measures, including skill development training and placement services, can safeguard workers as they transition between jobs. Through periodic and predictable benefits, unemployment insurance programs can help address the risk of out-of-work poverty while creating incentives for individuals to look for a job and increase their employability[185,186]. Unemployment insurance schemes that encompass informal workers are critical to ensure that a large proportion of workers are not excluded from these safety nets.

Inclusion, agency and accountability of workers: To ensure just transitions, it will be critical to ensure that workers are provided appropriate skilling and outplacement opportunities into high-growth sectors (See *Examples 4a* and *4b*). Provision of adequate and decent work opportunities

Example 4a: Supporting livelihoods and mobility[187]

Germany's Coal Commission was established in 2018 as a multi-stakeholder coalition to develop a strategy for phasing out coal-fired power generation and defining policy measures to create economic opportunities in affected coal-mining regions. The Commission included representatives from businesses, trade unions, the government, and environment-focused organisations. It aimed to create concrete opportunities for new, future-proof jobs in the affected regions, development of skilled workers, entrepreneurial development, establishment of research facilities, long-term structural development. It also recommended social protections such as protection against early dismissal, enablement of early retirement, retraining, and reallocation measures.

Example 4b: Social protection for livelihoods[188]

The Employment Injury Scheme (EIS) Pilot launched in 2022 and governed by the Government of Bangladesh, employers' associations, and workers' associations is aimed at developing an improved income protection system for all 4 million apparel sector workers, while protecting employers from financial and reputational loss. In cases of work-related injuries, the EIS Pilot provides compensation payments, in the form of monthly pensions, for permanently disabled workers and the dependants of deceased workers, in accordance with international labour standards. These pensions are financed by voluntary contributions from international brands. More than 30 brands and retailers have already committed to support the EIS Pilot financially, with a yearly contribution of 0.019% of their respective apparel export volume from Bangladesh.

The EIS Pilot also includes a data-gathering and capacity-building component on occupational accidents, diseases and rehabilitation, based on a sample of ~150 representative factories. This aims to enable a comprehensive assessment of the pilot and ensure the affordability of employer contributions.

within Bangladesh could help reduce outward migration of workers, minimising risks of exploitation of workers associated with outbound migration. As stakeholders explore initiatives to develop other sectors, it is important to ensure equitable access to these jobs. For instance, skilling and outplacement efforts can intentionally build in representation of groups that are currently marginalised based on gender, education levels, or disability to ensure they are not left behind. Including workers in the design of these programs enhances their relevance and effectiveness.

Availability of Adequate and Affordable Housing

A large proportion of industrial workers live in informal housing and experience even more stark impacts of flooding and heat stress. In addition, most workers who live in informal housing have insecure tenures, making them particularly vulnerable to the impacts of climate transitions, including temporary job losses as they transition between jobs, or layoffs. Bangladesh has rapidly urbanised over the last 20 years—today about 70 million people live in urban Bangladesh, about twice the number in 2003[189]. Between 33 and 50 percent of Dhaka's population is estimated to live in informal housing[190]. IFC estimates that about 250,000 new houses will have to be built every year to overcome existing shortages and meet future demands for affordable housing. In comparison, the supply of affordable housing is only about 31,500 houses, of which about 17,000 were provided by the private sector[191,192,193].

Those living in informal housing have insecure tenure and face safety risks. Inadequate sewage disposal and sanitation facilities often result in vector-borne diseases. During periods of heavy rain, these settlements also experience flooding which further exacerbates health challenges for residents. Poor ventilation and lack of electricity can result in significant heat stress[194].

To expand access to affordable housing, multiple interventions are required. In terms of policy support, government agencies (e.g., municipalities or district administrations) could develop land banks serviced with basic infrastructure that are demarcated for or rely on market forces to build affordable housing (See *Example 5a*). Additionally, building codes could also mandate developers to

Example 5a: Developing urban settlements[195]

City and Industrial Development Corporation (CIDCO) is a leading urban planning agency in Maharashtra, India. Its mission is to plan and develop self-sufficient urban settlements with robust physical and social infrastructure to meet the residential, commercial, socio-cultural, and industrial needs of the population in the future. CIDCO played a crucial role in conceptualising and developing Navi Mumbai into a satellite city.

To develop Navi Mumbai, CIDCO developed public infrastructure such as transport and enabled necessities such as water and electricity. It also developed multiple affordable housing projects. The presence of basic infrastructure on a new land parcel attracted the private sector to make investments in new housing and commercial properties.

include a minimum percentage of affordable housing in new construction projects above a certain threshold. Governments can reduce the cost of affordable housing development by simplifying and expediting approvals (e.g., single-window clearance for affordable housing applications), encourage redevelopment of existing housing structures, and subsidise or facilitate access to low-cost financing.

Inclusion, agency, and accountability to residents: As affordable housing projects are developed, a participatory process that seeks inputs from the community on their challenges and key needs is essential to ensure that affordable housing meets the needs of residents (See *Example 5b*). For example, new developments need to be close to centres of employment or have efficient transport facilities so that residents are able to pursue their livelihoods. Examples of mechanisms to include residents' voices in planning and enable accountability throughout the development include surveys and consultations with them, site visits, and inclusion in key decision-making bodies. It is also important to protect the land rights of Bangladesh's indigenous communities[196].

Example 5b: Incorporating resident voice in planning urban spaces[197,198]

Fraser Avenue, a mid-20th century housing estate in Inverkeithing, Fife, was one of the most disadvantaged areas in Scotland. Buildings were in poor condition, public spaces were not well-defined, and residents felt a lack of belonging. After a detailed assessment, the Fife Council decided to demolish and redevelop this estate. To address the stigma associated with the estate and to give residents ownership, the project engaged residents throughout the process.

The project sought resident inputs through multiple formats. It carried out extensive consultations with the community to establish key design principles. At this stage, residents were taken to other developments to help them decide what features they would want to see incorporated into the Fraser Avenue. The project conducted workshops and consultation events to identify three choices for the design of the estate, from which the community selected one. Residents were also given choices in terms of the layout and fittings and fixtures of their individual houses. A range of social activities were introduced to build a sense of community.

Development of Innovative Financing Solutions

Delivering on global climate goals is estimated to require over USD 8 trillion (EUR 7.7 trillion) of climate finance each year until 2030. However, annual climate financial flows are currently only around USD 1.7 trillion (EUR 1.6 trillion), most of which is concentrated in high-income countries and China. The consequences of this financing gap are the most acute for low- and middle-income economies, which lack the fiscal resources required to invest in climate mitigation and adaptation, or to realise the transformative potential of a low-carbon industrial strategy[199]. At the recently concluded COP29 negotiations in Azerbaijan, countries agreed to establish a USD 300 billion (EUR 285 billion) "new collective quantified goal on climate finance", which establishes how much funding high-income countries will directly provide and mobilise every year by 2035 to support climate action across the developing world. They also agreed on a broader objective of USD 1.3 trillion (EUR 1.2 trillion) in annual flows to developing countries by 2035, and offered specific recommendations to multilateral development banks and other public financial institutions[200]. But while intergovernmental organisations and several international government partners have taken action to improve financing nationally in Bangladesh, the private sector and philanthropy will be key to closing the significant finance gap that exists today, including with pragmatic sector-specific financing aligned to sectoral needs (See *Example 6a*).

Example 6a: Financing climate action in Bangladesh[204]

The Economic Relations Division (ERD) of the Government of Bangladesh, in collaboration with United Nations Development Programme (UNDP) and Impact Investment Exchange (IIX), will facilitate the introduction of Orange Bonds in Bangladesh. This initiative seeks to mobilize up to USD 1 billion (EUR 950 million) across a series of bonds, channelling investments to strategic sectors essential for long-term stability and inclusive growth, such as apparel and agriculture, while promoting micro, small, and medium enterprise (MSME) development. The bond prioritises gender equity and climate action and aims to attract significant public and private investments while deepening Bangladesh's capital markets.

This sectoral approach can help define realistic decarbonisation pathways and break down challenges into more manageable pieces[201]. Derisking instruments, such as blended finance, guarantee mechanisms, Islamic finance, and thematic bonds could play a critical role in unlocking capital for just transitions[202,203]. Investment vehicles and financing schemes should be structured so both private/commercial and public/philanthropic funders can share in the upside.
For innovative finance to scale, the development of new instruments needs conducive policy support and capacity building. A coherent national framework for the climate transition, embedded in policy and communicated clearly via mechanisms like the new NDC, could help improve awareness of approaches and investments that could facilitate a just transition, enabling institutions to allocate capital towards high-potential projects. Platforms that bring together stakeholders from public, private, development finance, and philanthropy could help facilitate the creation of new blended finance platforms and instruments that account for the varied return and risk appetites of different stakeholders. Enhancing the capacity of regulators of capital markets, such as Bangladesh Bank and the Securities and Exchange Commission, could help spur investments in just transitions. Finally, developing the knowledge and capacity of stakeholders such as financial institutions and intermediaries who deliver climate finance will be critical (See *Example 6b*).

Example 6b: Innovative financing facility[205]

In 2023, Asian Development Bank (ADB) launched the Innovative Finance Facility for Climate in Asia and the Pacific (IF-CAP). IF-CAP is a multi-donor financing partnership facility. It is a donor-backed guarantee facility, where public, private, and philanthropic financing partners reduce risk for ADB by guaranteeing repayments for parts of ADB's portfolio. IF-CAP enables projects that address both climate change mitigation and adaptation. These investments could cover a wide range of sectors, such as transportation, energy, and agriculture and natural resources, as well as social sectors such as health and education, for projects with high climate impacts.

Financing instruments should be designed to **take a holistic approach aggregating a package of opportunities which incorporate social equity considerations, diversify risk, and reduce transaction costs**. The Green Finance Institute's recent report on mobilising capital for a just transition in the global south recommends: "*Only at scale can you align sector policy with development finance and demand side support to create investment pathways that private capital can access. Only at scale can you 'bake in' just transition requirements across the entire transition to avoid cherry picking, whilst bearing down on friction costs*[206]."

Inclusion, agency, and accountability: Financing solutions should reflect the principles of common but differentiated responsibilities as defined in the Paris Agreement, where developed countries take the lead in providing financial assistance to developing countries[207]. Likewise, responsibilities should be fair and equitable between enterprises, workers, and communities, include targeted financial support for small businesses in vulnerable sectors to ensure their resilience and adaptability during the transition. Financing arrangements should be designed to safeguard both climate outcomes and social inclusion, by promoting governance, transparency and accountability[208], for instance, building in clear targets with independent verification of impact outcomes (See *Example 6c*)[209]. Strong national buy-in is essential to maintain momentum[210]. To the extent they are utilised, blended finance mechanisms should be structured such that both commercial and concessional funders are able to share equitably in the upside of any investments. For example, the Brazilian Development Bank's (BNDES) equity investment in wind power generation assets has generated significant returns for the Brazilian Treasury and the Brazilian Workers Social Security Fund[211].

Financing solutions should reflect the principles of common but differentiated responsibilities as defined in the Paris Agreement.

Example 6c: Innovative financing for skilling[212]

India's National Skill Development Corporation (NSDC) launched a skill impact bond, an outcome-based financing tool that uses private sector capital and expertise, focusing on job placement and retention, rather than merely on training and certification. The program aims to benefit 50,000 young Indians over 4 years. As a part of this bond, risk investors provide initial funding for the service providers to deliver interventions. The employment outcomes are verified by an independent third party, after which outcome investors repay initial investors. The bond has had an explicit gender lens, with a target of at least 60 percent of its beneficiaries being women.

Inclusion and Agency of, and Accountability to Workers

Inclusion and agency of, and accountability to workers is not a bolt-on, but must be integrated into and cut across each of the priorities described above. This is highly dependent on the enabling environment where workers, including those employed through third-party contractors or intermediaries, are able to collectively negotiate for their own priorities in decisions affecting them, and exercise accountability throughout implementation.

Call to Action

The scenarios in this report present clear choices as Bangladesh's industries and its workers face both new and serious physical and transition risks and—if they proactively adapt and invest to get ahead of these risks—significant opportunities. The analysis also makes clear that the long-term interests of workers, employers and the Government of Bangladesh are aligned in seizing the opportunities and mitigating these risks, and that both public and private stakeholders are vital in enabling an inclusive transition that safeguards the future of Bangladesh's industries and workers.

Decarbonisation and improved climate adaptation are critical for enhancing the long-term competitiveness of Bangladesh's industry and creating decent work opportunities that allow Bangladesh to effectively leverage its demographic dividend. By working together, businesses, workers and their representatives, policymakers, development organisations, skilling providers, finance, and philanthropy can initiate and innovate, where new approaches are needed, and accelerate and scale the many examples of good practice within Bangladesh that are showcased in this report. While much is in place, there are still significant gaps to be filled to advance just industry transitions:

	Innovation	Development of business case	Technical know-how and linkages	Low-cost finance	Policy incentives
Transition to low-carbon manufacturing, including design, processes, and energy					
Utilising innovative processes that reduce on-site burning of fossil fuels					
Improved energy and material efficiency					
Decarbonisation of national grid					
Adoption of onsite renewable energy					
Increased uptake of sustainable and circular inputs					
Factory equipment					
Factory processes					
Waste management ecosystem					

Limited action, with additional support required Significant action underway

	Innovation	Development of business case	Technical know-how and linkages	Low-cost finance	Policy incentives
Climate adaptation at site and manufacturing hub level					
National infrastructure					
Factory infrastructure					
Factory-level operational changes					
National policy protection					
Insurance					
Alternative sector development, skilling, and social protection					
Growth of sector					
Worker skilling for new sectors					
Availability of adequate and affordable housing					
Invest in development of affordable housing					
Expansion of innovative financing					
Develop innovative instruments					
Scale use of innovative instruments					

Limited action, with additional support required Significant action underway

Within this landscape, **Bangladesh's business leaders hold a unique role as they make decisions over their operations and investments**. Only by facing climate risk head on and seizing the moment to invest early and position their industry competitively can they realise the upside of climate transitions. At the same time, this process must be inclusive to ensure that the transition benefits workers and has the support of the broader community.

In 1972, Bangladesh ratified ILO conventions 87 and 98, protecting workers' rights to freedom of association and collective bargaining. These rights are essential for fair and fast transitions[213]. However, Bangladeshi workers have experienced barriers with respect to collective bargaining, which are often compounded by marginalisation on the basis of gender, ethnicity, and/or disability[214]. **To ensure swift transitions to a low-carbon resilient industry, it is critical that workers are included and have an ongoing say in the planning and implementation of initiatives for the success of the transition**.

As well as respecting basic rights to freedom of association and collective bargaining, **employers** can be proactive in seeking worker input on transition plans from the early stages of decision making through to implementation.

Alongside Bangladesh's business leaders and workers three other stakeholder groups play a critical role:

- **International buyers** can support and hold suppliers accountable for respecting workers' rights throughout transitions, support their inclusion in sectoral and national-level dialogue, and provide confidence for private and public investment through long-term commitments to source sustainably from Bangladesh
- **Financial institutions**, and philanthropic funders should take a holistic approach as they design transition funding, committing to packages of measures that incorporate equity[215]. Funders can also support cross-cutting enabling factors, including influencing narratives and social norms, which can provide an impetus for just transitions.
- Finally, the **Government of Bangladesh** plays a critical coordinating role amongst all these stakeholders, providing the stability and confidence for both industry and finance to invest for the long-term, and structuring policies to improve inclusion and accountability to workers.

This report has described the urgent need for Bangladesh's pursuit of a just transition to a low-carbon and resilient economy which creates green jobs with fair wages and working conditions. And while we have showcased examples of pioneering action on multiple fronts that already exist in Bangladesh, proving what's possible, much wider uptake is needed. We offer this report to develop a common understanding amongst stakeholders within Bangladesh and its international partners, as a call for increased complementary and concerted action between all stakeholder groups. **Only together can we secure a green and equitable future for Bangladesh's industry, and for the workers who have made its historic economic growth possible**.

To learn more or explore opportunities to collaborate you can reach us at info@fsg.org.

Appendix

Methodology and Long-list of Trends

The scenarios were developed between May and October 2024 based on a combination of background research, more than 100 interviews and 2 scenario development workshops with key stakeholders. We interviewed 36 workers; 7 textile and apparel companies; 10 construction and building material companies and industry associations; 7 labour rights organisations; 3 brands or brand associations; 3 development financial institutions; 2 local institutions; 4 stakeholders associated with the government; 18 industry experts, policy experts, and research organisations; 3 worker skilling organizations; 10 climate experts. Among these, 88 stakeholders were based in Bangladesh, while 15 were global stakeholders.

The stakeholder consultations aimed to capture key uncertainties affecting the sectors and surface initial scenarios the sectors may face by 2030. Based on this we developed the following longlist of social, technological, economic, environmental, and political trends, impact the overall landscape within which Bangladesh's textile and apparel and construction sectors operate. The scenarios in this report were developed based on critical uncertainties – those with the highest degree of uncertainty and greatest impact on workers and climate which form the axes of the scenario frameworks to provide a framework for how these critical uncertainties may evolve together. When the 'critical uncertainties' are combined, distinct and plausible future employment and climate scenarios for the textile and apparel sector and the construction sector in Bangladesh are created.

This is the long list of trends, driving forces and events which fed into the scenarios:

COUNTRY-LEVEL TRENDS

Social Trends and Driving Forces

- Increase in urbanisation and congestion in Dhaka and Chattogram
- Increase in share of industry and services in total employment
- Rising female labour force participation rate
- Increasing proportion of the population that are of working age

Technological Trends and Driving Forces

- Increase in internet and smartphone penetration, although regional disparities exist
- Rapid growth of social media user base
- Rise in the use of mobile payment services

Economic Trends and Driving Forces

- Consistently high economic growth, with relatively slower job creation
- Rising contribution of the industry sector to GDP, caused by growth in manufacturing and construction
- Continued high contribution of readymade garments category to exports
- Focus on diversifying exports beyond the apparel sector

- Increase in income inequality, with regional disparity
- Increase in size of the middle class in Bangladesh
- Rising costs of imports, leading to increase in trade deficit and inflation, and reduced investments

Environmental Trends and Driving Forces

- Increasing greenhouse gas emissions, with a major contribution from the agriculture sector
- Increase in energy production, with continued low share of renewable energy and low energy efficiency
- Increasing severity of climate disasters, leading to displacement and loss of land and livelihoods
- Increasingly adverse health and economic impacts of climate change and heat stress
- Introduction of climate action plans, including financing plans, but with limited focus on worker impacts
- Reporting requirements for Enhanced Transparency Framework due starting Dec 2024

Political Trends and Driving Forces

- Significant push by the government to develop and upgrade infrastructure services
- Increasing subsidy bills for power and energy
- Sustainability measures being mandated by the EU and US governments

TEXTILE AND APPAREL SECTOR TRENDS

Worker Trends and Driving Forces

- Reduction in the proportion of women in the apparel workforce
- Women workers largely satisfied, despite lack of upward mobility
- Growth of trade unions over the last 10 years, providing support to apparel workers
- Increase in minimum wages, but significantly lower than union demands
- Improvements in social protection legislation, but gaps exist
- Risk of job losses due to automation in the textile and apparel value chain
- Increasing impact of climate change on health and livelihoods of apparel workers

Supplier Trends and Driving Forces

- High level of automation in fabric manufacturing, with potential for greater automation in assembly
- Increasing push towards environmental sustainability
- Large apparel manufacturers building yarn and fabric manufacturing capabilities
- Increase in apparel exports per factory

Competitor Trends and Driving Forces

- Increasing competitiveness of Vietnam's apparel exports in comparison to Bangladesh due to wider product portfolio and automation
- Increased potential for near-shoring by US and European apparel brands

Buyer Trends and Driving Forces

- Continued dependence on EU and US markets, with attempts to diversify
- Increased focus on worker welfare by apparel brands
- Mandatory sustainability measures being introduced by the EU and US governments leading to brands adopting sustainability initiatives across textile and apparel manufacturing
- Use of alternative sustainable fibres. However, there is also an increase in the use of man-made fibres such as polyester
- Increasing focus on traceability, digitisation, and analytics in apparel sourcing
- Apparel brands are forming deeper relationships with suppliers through longer commitments and consolidation

Customer Trends and Driving Forces

- Increase in demand for ultra-fast fashion
- Increased adoption of sustainable fashion among Millennial and GenZ customers with high income and education

Skilling Provider Trends and Driving Forces

- Continuing skill gaps in the apparel sector
- Multiple initiatives to upskill and reskill apparel workers

CONSTRUCTION SECTOR TRENDS

Demand

- Increase in demand for construction, resulting in increased demand for brick, cement, and steel sectors
- High demand driven by infrastructural development, growth in residential housing, and development of Economic Zones and commercial buildings
- However, slowdown in pace of demand growth, with the government prioritising essential sectors, rising inflation, and limited investments by industry due to economic uncertainties

Sector Overview

- Brick and construction continue to be highly fragmented, while steel and cement are highly consolidated
- Small players within steel sector gaining share by targeting retail customers at lower prices, and small players in cement losing share due to increasing costs and slowing demand growth
- Low capacity utilisation in cement and steel sectors due to slower demand growth and power shortages

Key Inputs

- Increase in prices of imported raw materials, due to devaluation of BDT, and a rise in global prices, along with electricity costs
- Reduced operating margins of manufacturers despite increase in prices of products

Environment Sustainability Practices

- Significant environmental impact of the brick sector:
  - About 3.6 percent of GHG emissions and about 11 percent of PM2.5 emissions from brick sector
  - Degradation of soil quality due to leading to lower crop yields and farmer incomes
- Low GHG emissions from cement manufacturing due to import of clinker, which results in the most GHG emissive process occurring outside Bangladesh[216,217,218]
- Low GHG emissions of steel sector due to focus on recycling of scrap steel through Electric Arc Furnace (EAF), which produces about 80 percent lower GHG emissions than traditional steel manufacturing[219,220,221]
- Early action underway to help resolve this environmental impact (e.g., increase in demand for green building certification, use of cleaner technologies by cement and brick manufacturers, schemes to improve access to green financing)

Worker Welfare and Skilling

- 32 percent of industry workforce in Bangladesh employed in construction
- 97 percent of workers temporary, with 100 percent of them having no formal employment contracts
- High health risks (e.g., heat stress, and lung and skin diseases) and safety risks (e.g., injuries and accidents, workplace deaths) for workers
- Low female participation due to harassment and gender bias
- High child labour, especially in construction and brick sectors
- 40 percent roles need skilling, for which 50-75 percent of employers highlight the existence of skill gap

Comparison of Scenarios

Table 1: Comparison of scenarios for Textile and Apparel sector

Key Elements Considered in Each Scenario	Green Forest	Vulnerable Mangroves	Scorched Earth	Concrete Jungle	Lonely Island	Hot Desert
Global Regulations and Investors						
Global sustainability regulations	• Passed and enforced effectively in developed markets and import supply chains • Designed to minimise disruptions to supplier countries			Passed in the EU but not enforced effectively		
Investor preferences	• ESG prioritised while making investment decisions • Investee companies expected to improve environmental and social impact			Single-minded focus on short-term returns, with deprioritisation of ESG considerations in investment decisions		
Consumers						
Key apparel markets	Developed and emerging markets		Developed markets	Growth of emerging markets		
Demand for second-hand apparel	High and growing	High and growing	High and growing	Low	Low	Low
Frequency and quantity of apparel purchases	Low	Low	Low	High	High	High
Type of apparel demanded	• Durable apparel in classic styles • Apparel made with sustainable inputs			Low-cost apparel in line with latest trends		
Brand preferences	Environment-friendly and socially responsible brands			Indifference to environmental and social factors		
Brands						
Apparel preferences	Fewer collections launched every year, with lower total order volumes and dominance of complex cuts			More collections launched every year, dominated by simple cuts		
Fabric preferences	Sustainable inputs, including circular inputs			Virgin inputs, particularly polyester, to maintain low costs		
Supplier preferences	• Preference for suppliers with low carbon footprint and capabilities to use sustainable fibres • Preference for suppliers with capability to produce complex apparel with superior quality control • Develop long-term partnerships with suppliers			Preference for suppliers with low turnaround times and in low-cost production hubs		
Brand approach to environmental sustainability in supplier factories	Demand decarbonisation and provide support to help suppliers decarbonise			Tick-box approach to decarbonisation, with limited assessments of value chain emissions		
Brand approach to labour practices in supplier factories	Demand and support worker voice, agency, and accountability from suppliers			Low focus on worker practices beyond health and safety		
Bangladesh Context						
Political stability	High	High	Low	High	High	Low
FTAs with key export markets	Signed	Signed	Not signed	Signed	Signed	Not signed

Key Elements Considered in Each Scenario	Green Forest	Vulnerable Mangroves	Scorched Earth	Concrete Jungle	Lonely Island	Hot Desert
Qualification for GSP+	Qualified	Not qualified	Not qualified	Not qualified	Not qualified	Not qualified
Growth of sectors other than apparel	Yes	No	No	Yes	No	No
Growth of green sectors	Yes	No	No	No	No	No
Ability to access funds for climate mitigation and adaptation	High	Low	Low	High	Low	Low
Grid decarbonisation	High	Low	Low	Low	Low	Low
Climate adaptation	High	Low	Low	High	Low	Low
Minimum wages	Increase in real terms	No increase in real terms	No increase in real terms	Increase in real terms	No increase in real terms	No increase in real terms
Labour laws amendment for heat stress	Passed	Not passed	Not passed	Not passed	Not passed	Not passed
National social protection scheme	Available	Not available	Not available	Available	Not available	Not available
Apparel Sector						
Types of fabrics	Sustainable	Sustainable	Virgin cotton	Virgin cotton and polyester	Virgin cotton and polyester	Virgin cotton
Types of garment produced	Complex	Complex	Simple	Complex	Complex	Simple
Level of automation	Medium	High	Low	Medium	High	Low
Level of fragmentation	High	Low	Low	High	Low	Low
Ability to access funds for decarbonisation (among large and medium players)	High	High	Low	NA	NA	NA
On-site decarbonisation initiatives (among large and medium players)	Implemented	Implemented	Not implemented	Not implemented	Not implemented	Not implemented
Adoption of circular practices (among large and medium players)	High	High	Low	Low	Low	Low
Adoption of adaptation measures to prevent factory flooding and for heat stress	High	High	Low	High	High	Low
Agency and voice of, and accountability to workers	High	Low	Low	High	Low	Low
Manager perceptions about women workers	"Women can operate equipment and do supervisory roles"	"Women cannot operate equipment and do supervisory roles"	"Women cannot operate equipment and do supervisory roles"	"Women cannot operate equipment and do supervisory roles"	"Women cannot operate equipment and do supervisory roles"	"Women cannot operate equipment and do supervisory roles"

Key Elements Considered in Each Scenario	Green Forest	Vulnerable Mangroves	Scorched Earth	Concrete Jungle	Lonely Island	Hot Desert
Bangladeshi Textile Sector						
Types of fabrics	Sustainable	Unsustainably grown cotton	Unsustainably grown cotton	Unsustainably grown cotton and polyester	Unsustainably grown cotton and polyester	Unsustainably grown cotton
Adoption of n-site decarbonisation and circular practices (among large and medium players)	Implemented	Not implemented	Not implemented	Not implemented	Not implemented	Not implemented
Adoption of circular practices (among large and medium players)	High	Low	Low	Low	Low	Low
Workers						
Level of youth unemployment	Low	High	High	Low	High	High
Wages	Increase in real terms	No increase in real terms	No increase in real terms	Increase in real terms	No increase in real terms	No increase in real terms
Proportion of skilled workforce	High	High	Low	High	High	Low
Working conditions	Good	Poor	Poor	Good	Poor	Poor
Women's representation	High	Low	Low	High	Low	Low
Level of Risk						
Physical risk	Low	High	High	Low	High	High
Transition risk	Low	High	High	High	High	High

Table 2: Comparison of scenarios for construction sector

Key Elements Considered in Each Scenario	Green City	Dormant Village	Urban Sprawl	Ghost Town
Bangladesh Context				
Political stability	High	Low	High	Low
Balance of payments	High	Deteriorating	High	Deteriorating
Government investments in infrastructure	High	Low	High	Low
Inflation	Low	High	Low	High
Growth of sectors other than apparel	Yes	No	Yes	No
Growth of green sectors	Yes	No	No	No
Ability to access funds for climate mitigation and adaptation	High	Low	High	Low
Grid decarbonisation	High	Low	Low	Low
Climate adaptation	High	Low	High	Low

Key Elements Considered in Each Scenario	Green City	Dormant Village	Urban Sprawl	Ghost Town
Amendments to labour laws to include heat stress	Passed	Not passed	Not passed	Not passed
National social protection scheme	Available	Not available	Available	Not available
Low-carbon material and practices in building codes	Included	Included	Not included	Not included
Construction Sector				
Investments by industry and service sectors	High	Low	High	Low
Housing demand	High	Low	High	Low
Demand for low-carbon construction	High	Medium and growing	Low	Low
Demand for climate-resilient construction	High	High	High	High
Value chains for low-carbon inputs	Well-developed	Nascent but developing	Very limited	Very limited
Know-how about low-carbon design	High	Medium and growing	Low	Low
Adoption of low-carbon inputs	High	Medium and growing	Low	Low
Ability to access funds for decarbonisation (among large and medium manufacturers and construction companies)	High	Low	NA	NA
Adoption of circular construction practices	High	Medium	Low	Low
Adoption of adaptation measures to prevent factory flooding	High	Low	High	Low
Adoption of adaptation measures for heat stress	High	Low	High	Low
Agency and voice of, and accountability to workers	High	Low	Low	Low
Skilling for low-carbon construction	High	Medium	Low	Low
Workers				
Level of youth unemployment	Low	High	Low	High
Wages	Increase in real terms	No increase in real terms	Increase in real terms	No increase in real terms
Women's representation	High	Low	High	Low
Proportion of skilled workforce	High	Low	High	Low
Working conditions	Good	Poor	Good	Poor
Level of Risk				
Physical risk	Low	High	High	High
Transition risk	Low	High	High	High

References

1. Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015
2. UNFCC (n.d.). *The Paris Agreement*. Retrieved December 18, 2024, from https://unfccc.int/process-and-meetings/the-paris-agreement
3. Climate Horizons. (2024). *Mapping and trends analysis on just transition initiatives*. https://www.laudesfoundation.org/media/hurj2qnz/mapping-and-trends-analysis-on-just-transition-initiatives_full-report.pdf
4. ILO. (2024, July 9). *Climate change and financing a just transition*. https://www.ilo.org/resource/other/climate-change-and-financing-just-transition
5. Eckstein, D., Künzel, V., & Schäfer, L. (2021). *Global Climate Risk Index 2021. Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2019 and 2000 to 2019*. Germanwatch. https://www.germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf
6. Climate Resilience Centre. (2022). *Hot Cities Chilled Economies – Dhaka Bangladesh*. https://onebillionresilient.org/hot-cities-chilled-economies-dhaka/
7. Anderson Hoffner, L., Simpson, J., Martinez, C., Patumtaewapibal, A. (2021). *Turning up the heat: Exploring potential links between climate change and gender-based violence and harassment in the garment sector*. ILO Working Paper 31 (Geneva, ILO). https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40asia/%40ro-bangkok/documents/publication/wcms_792246.pdf
8. International Monetary Fund. World Economic Outlook – Real GDP growth. April 2024. https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD
9. World Bank Data. *GDP (current US$) – Bangladesh*. Retrieved on December 18, 2024, from https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=BD
10. Ministry of Finance, Government of the People's Republic of Bangladesh. (2015). *Poverty and Inequality in Bangladesh: Journey Towards Progress (2014-15)*. https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/ce0882c6_4bd1_4454_b7a8_9b720425479b/poverty14-15EN.pdf
11. Jones et al. (2024) – with major processing by Our World in Data. "*Annual greenhouse gas emissions including land use*" [dataset]. Jones et al., "*National contributions to climate change 2024.2*" [original data]. Retrieved December 18, 2024, from https://ourworldindata.org/grapher/total-ghg-emissions
12. United States Environmental Protection Agency (2024, March 8). *Climate Risks and Opportunities Defined*. https://www.epa.gov/climateleadership/climate-risks-and-opportunities-defined
13. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
14. Ministry of Finance, Government of the People's Republic of Bangladesh. (2023). *Bangladesh Economic Review 2023*
15. Jones et al. (2024) – with major processing by Our World in Data. "*Annual greenhouse gas emissions including land use*" [dataset]. Jones et al., "*National contributions to climate change 2024.2*" [original data]. Retrieved December 18, 2024, from https://ourworldindata.org/grapher/total-ghg-emissions
16. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. (2021). Nationally Determined Contributions (NDCs) 2021: Bangladesh (Updated)
17. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
18. Ministry of Finance, Government of the People's Republic of Bangladesh. (2023). *Bangladesh Economic Review 2023*
19. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. (2023). *Bangladesh First Biennial Update Report to the United Nations Framework Convention on Climate Change*

20. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
21. The Fair Labor Association. (2024, January 11). *Fair Labor Association's Bangladesh Wage Trends Report and Recommendations*. https://www.fairlabor.org/resource/fair-labor-associations-bangladesh-wage-trends-report-and-recommendations/
22. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
23. Research and Policy Integration for Development (RAPID). (n.d.). *Universal Social Protection and National Social Insurance Scheme in Bangladesh*. Retrieved December 18, 2024, from https://www.rapidbd.org/usp-ilo/
24. Climate Horizons. (2024). *Mapping and trends analysis on just transition initiatives*. https://www.laudesfoundation.org/media/hurj2qnz/mapping-and-trends-analysis-on-just-transition-initiatives_full-report.pdf
25. Partnership for Cleaner Textile (PaCT). (n.d.). Retrieved December 18, 2024. https://www.textilepact.net/
26. Chakma, J. (2023, August 30). *Top cement makers shifting to eco-friendly production*. The Daily Star. https://www.thedailystar.net/business/economy/news/top-cement-makers-shifting-eco-friendly-production-3406406
27. Biswas, M. K., Azad, A. K., Datta, A., Dutta, S., Roy, S., & Chopra, S. S. (2024). *Navigating Sustainability through Greenhouse Gas Emission Inventory: ESG Practices and Energy Shift in Bangladesh's Textile and Readymade Garment Industries*. Environmental pollution (Barking, Essex: 1987), 345, 123392. https://doi.org/10.1016/j.envpol.2024.123392
28. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. (2023). *Bangladesh First Biennial Update Report to the United Nations Framework Convention on Climate Change*
29. McKinsey, Global Fashion Agenda. (2020). *Fashion on Climate: How the Fashion Industry can Urgently Act to Reduce Its Greenhouse Gas Emissions*. https://www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/fashion%20on%20climate/fashion-on-climate-full-report.pdf
30. Mongabay. (2024, March 4). *To save topsoil & reduce pollution, Bangladesh moves toward alternative bricks*. https://news.mongabay.com/2024/03/to-save-topsoil-reduce-pollution-bangladesh-moves-toward-alternative-bricks/
31. European Commission. (n.d.) *Building greener - sustainable building in Bangladesh*. Retrieved December 18, 2024, from https://international-partnerships.ec.europa.eu/news-and-events/stories/building-greener-sustainable-building-bangladesh_en
32. European Environment Agency. (2020, July 9). *Cutting greenhouse gas emissions through circular economy actions in the buildings sector*. https://www.eea.europa.eu/publications/cutting-greenhouse-gas-emissions-through/file
33. Expert interviews
34. Skills for Employment Investment Program (SEIP). (2022). *Labor Market Study under Skills for Employment Investment Program (SEIP): Skill Gap in the Jute Sector of Bangladesh*. https://seip-fd.gov.bd/wp-content/uploads/2023/03/Skill-Gap-in-the-Jute-Sector-of-Bangladesh.pdf
35. Skills for Employment Investment Program (SEIP). (n.d.). *Labor Market Study and Skill Gaps Analyses. Healthcare: Nursing and Care*. https://seip-fd.gov.bd/wp-content/uploads/2023/06/7.-Labor-Market-and-Skills-Gap-Analyses-on-Healthcare-Nursing-and-Caregiving.pdf
36. Howlader, Md. Ziaul Haque. (2019, September 26). *Employment generation through tourism*. The Daily Sun. https://www.daily-sun.com/printversion/details/426836/Employment-generation-through-tourism
37. Habitat For Humanity. (n.d.). "Informal Settlements". Retrieved December 18, 2024, from https://www.habitatforhumanity.org.uk/blog/2023/07/tackling-challenges-in-dhakas-informal-settlements/
38. Green Finance Institute. (2024). *What next for mobilising capital in service of a just transition in the Global South?* https://www.greenfinanceinstitute.com/wp-content/uploads/2024/09/What-next-for-mobilising-capital-in-service-of-a-just-transition-in-the-Global-South.pdf
39. Designing Buildings. (2020, November 12). *Housing stock/building stock*. https://www.designingbuildings.co.uk/wiki/Housing_stock_/_building_stock
40. Intergovernmental Panel on Climate Change (IPCC). (n.d.). *IPCC User Guide*. https://www.ipcc.ch/site/assets/uploads/2019/01/SYRAR5-Glossary_en.pdf
41. UNDP. (2024, February 29). *What is climate change mitigation and why is it urgent?* https://climatepromise.undp.org/news-and-stories/what-climate-change-mitigation-and-why-it-urgent
42. The London School of Economics and Political Science. (2022, September 12). *What is the difference between climate change adaptation and resilience?* https://www.lse.ac.uk/granthaminstitute/explainers/what-is-the-difference-between-climate-change-adaptation-and-resilience

43. United Nations Environment Programme. (2021). *A Practical Guide to Climate-resilient Buildings & Communities. Nairobi*. https://globalabc.org/sites/default/files/2021-07/A%20Practical%20Guide%20to%20Climate-resilient%20Buildings%20%26%20Communities.pdf
44. Design Resilience. *Design Resilience*. Retrieved on December 18, 2024, from https://www.designresilience.ltd/
45. Ministry of Housing and Urban Affairs, Government of India, Global Housing Technology Challenge India (2021). *Compressed Stabilized Earth Blocks (CSEB)*. https://ghtc-india.gov.in/IHTM/Content/img/company-logos/pdf/3.pdf
46. Hanafi, W.H.H. *Compressed stabilized earth block: environmentally sustainable alternative for villages housing. J. Eng. Appl*. Sci. 68, 20 (2021). https://doi.org/10.1186/s44147-021-00017-9
47. European Commission. *Corporate Sustainability Due Diligence*. Retrieved on December 18, 2024 from https://commission.europa.eu/business-economy-euro/doing-business-eu/sustainability-due-diligence-responsible-business/corporate-sustainability-due-diligence_en
48. PwC. *The Corporate Sustainability Reporting Directive (CSRD)*. Retrieved on December 18, 2024, from https://www.pwc.com/lv/en/about/services/sustainability-services/the-corporate-sustainability-reporting-directive-CSRD.html
49. Carbonfact. (2024, June 1). *[Fashion] CSRD - Corporate Sustainability Reporting Directive Reporting Requirements for footwear and apparel brands*. https://www.carbonfact.com/blog/csrd-textile
50. UNDP. (2023, February 2). *The Climate Dictionary: An everyday guide to climate change*. https://climatepromise.undp.org/news-and-stories/climate-dictionary-everyday-guide-climate-change
51. European Commission. *Ecodesign for Sustainable Products Regulation*. Retrieved on December 18, 2024, from https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/ecodesign-sustainable-products-regulation_en
52. Carbonfact. (2024, May 30). *[Textiles] ESPR: How the Ecodesign for Sustainable Products Regulation will impact apparel and footwear brands*. https://www.carbonfact.com/blog/policy/espr-textile
53. ILO. (2009, August 5). *Export Processing Zones (EPZs)*. https://www.ilo.org/resource/export-processing-zones-epzs
54. International Trade Administration. *Free Trade Agreement Overview*. Retrieved on December 18, 2024, from https://www.trade.gov/free-trade-agreement-overview
55. The EU GSP Hub. *About the EU GSP*. Retrieved on December 18, 2024, from https://gsphub.eu/about-gsp
56. Bangladesh Bureau of Statistics. (2021, June 8). *Bangladesh Standard Industrial Classification 2020*. https://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/745673c8_c7ed_49bc_a4e2_e7b05fe7a9d4/2021-06-08-08-39-6be22d0db12b4087042cca9e0ff9222e.pdf
57. Climate Horizons. (2024). *Mapping and trends analysis on just transition initiatives*. https://www.laudesfoundation.org/media/hurj2qnz/mapping-and-trends-analysis-on-just-transition-initiatives_full-report.pdf
58. ILO. (2024, July 9). *Climate change and financing a just transition*. https://www.ilo.org/resource/other/climate-change-and-financing-just-transition
59. United Nations. *Least Developed Countries Category*. Retrieved on December 18, 2024, from https://www.un.org/ohrlls/content/ldc-category
60. U.S. Green Building Council. (2023, February 17). *Low Carbon Materials*. https://www.usgbc.org/education/sessions/low-carbon-materials-12854401
61. United Nations. *All About the NDCs*. Retrieved on December 18, 2024, from https://www.un.org/en/climatechange/all-about-ndcs
62. United States Environmental Protection Agency. (2024, March 8). *Climate Risks and Opportunities Defined*. https://www.epa.gov/climateleadership/climate-risks-and-opportunities-defined
63. Designing Buildings. (2022, August 3). *Renovation*. https://www.epa.gov/climateleadership/climate-risks-and-opportunities-defined
64. Empire Services. (2023, March 2). *Renovation vs Repurposing: What is the difference?* https://www.esreading.com/my-post
65. SRD Limited. *Retrofitting Construction*. Retrieved on December 18, 2024, from https://www.srdlbd.com/retrofitting-construction/
66. United States Environmental Protection Agency. (2024, March 8). *Climate Risks and Opportunities Defined*. https://www.epa.gov/climateleadership/climate-risks-and-opportunities-defined
67. European Commission. *Employment and decent work*. Retrieved on December 18, 2024, from https://international-partnerships.ec.europa.eu/policies/sustainable-growth-and-jobs/employment-and-decent-work_en

68. International Labour Organization. *Decent work*. Retrieved on December 18, 2024, from https://www.ilo.org/topics/decent-work
69. Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015
70. UNFCC (n.d.). *The Paris Agreement*. Retrieved December 18, 2024, from https://unfccc.int/process-and-meetings/the-paris-agreement
71. Baker, A. & Mitchell, I. (2020). *Projecting Global Emissions for Lower-income Countries*. Center for Global Development. https://www.cgdev.org/sites/default/files/Projecting-Global-Emissions-LMICS-Mitchell.pdf
72. Bhargawa, R. & Bhargava, M. (2023). *The climate crisis disproportionately hits the poor. How can we protect them?* World Economic Forum. https://www.weforum.org/stories/2023/01/climate-crisis-poor-davos2023/
73. World Bank. (2023). *For the Poorest Countries, Climate Action is Development in Action*. https://www.worldbank.org/en/news/feature/2023/12/02/for-the-poorest-countries-climate-action-is-development-in-action
74. Jones et al. (2024) – with major processing by Our World in Data. "*Annual greenhouse gas emissions including land use*" [dataset]. Jones et al., "National contributions to climate change 2024.2" [original data]. Retrieved December 18, 2024, from https://ourworldindata.org/grapher/total-ghg-emissions
75. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. (2021). "Nationally Determined Contributions (NDCs) 2021: Bangladesh (Updated)"
76. World Bank. (2022). *Urgent Climate Action Crucial for Bangladesh to Sustain Strong Growth*. https://www.worldbank.org/en/news/press-release/2022/10/31/urgent-climate-action-crucial-for-bangladesh-to-sustain-strong-growth
77. International Monetary Fund. World Economic Outlook – Real GDP growth. April 2024. https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD
78. World Bank Data. *GDP (current US$) – Bangladesh*. Retrieved on December 18, 2024, from https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=BD
79. Bangladesh Bureau of Statistics (2023). *Household Income and Expenditure Survey 2022*
80. Ministry of Finance, Government of the People's Republic of Bangladesh. (2015). *Poverty and Inequality in Bangladesh: Journey Towards Progress (2014-15)*. https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/ce0882c6_4bd1_4454_b7a8_9b720425479b/poverty14-15EN.pdf
81. World Bank Data. *Industry (including construction), value added (% of GDP) - Bangladesh*. Retrieved on December 18, 2024, from https://data.worldbank.org/indicator/NV.IND.TOTL.ZS?locations=BD&view=chart
82. Zaman, Md Asaduz. (2024, December 20). *Demographic dividend: How long can Bangladesh enjoy it?* The Daily Star. https://www.thedailystar.net/business/economy/news/demographic-dividend-how-long-can-bangladesh-enjoy-it-3578701
83. World Bank Data. *Industry (including construction), value added (% of GDP) - Bangladesh*. Retrieved on December 18, 2024, from https://data.worldbank.org/indicator/NV.IND.TOTL.ZS?locations=BD&view=chart
84. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
85. Ministry of Finance, Government of the People's Republic of Bangladesh. (2023). *Bangladesh Economic Review 2023*
86. Jones et al. (2024) – with major processing by Our World in Data. "*Annual greenhouse gas emissions including land use*" [dataset]. Jones et al., "*National contributions to climate change 2024.2*" [original data]. Retrieved December 18, 2024, from https://ourworldindata.org/grapher/total-ghg-emissions
87. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. (2021). Nationally Determined Contributions (NDCs) 2021: Bangladesh (Updated)
88. Eckstein, D., Künzel, V., & Schäfer, L. (2021). *Global Climate Risk Index 2021. Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2019 and 2000 to 2019*. Germanwatch. https://www.germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf
89. Climate Resilience Centre. (2022). *Hot Cities Chilled Economies – Dhaka Bangladesh*. https://onebillionresilient.org/hot-cities-chilled-economies-dhaka/
90. Anderson Hoffner, L., Simpson, J., Martinez, C., Patumtaewapibal, A. (2021). *Turning up the heat: Exploring potential links between climate change and gender-based violence and harassment in the garment sector*. ILO Working Paper 31 (Geneva, ILO). https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40asia/%40ro-bangkok/documents/publication/wcms_792246.pdf
91. United States Environmental Protection Agency. *Climate Risks and Opportunities Defined*. Retrieved on December 18, 2024, from https://www.epa.gov/climateleadership/climate-risks-and-opportunities-defined

92. Grantham Institute on Climate Change and the Environment. (2024). *What is the just transition and what does it mean for climate action?* https://www.lse.ac.uk/granthaminstitute/explainers/what-is-the-just-transition-and-what-does-it-mean-for-climate-action/
93. Climate Horizons. (2024). *Mapping and trends analysis on just transition initiatives*. https://www.laudesfoundation.org/media/hurj2qnz/mapping-and-trends-analysis-on-just-transition-initiatives_full-report.pdf
94. Grantham Institute on Climate Change and the Environment. (2024). *What is the just transition and what does it mean for climate action?* https://www.lse.ac.uk/granthaminstitute/explainers/what-is-the-just-transition-and-what-does-it-mean-for-climate-action/
95. United Nations Environment Programme Finance Initiative. *Just Transitions*. Retrieved on December 18, 2024, from https://www.unepfi.org/social-issues/just-transition/
96. Grantham Institute on Climate Change and the Environment. (2024). *What is the just transition and what does it mean for climate action?* https://www.lse.ac.uk/granthaminstitute/explainers/what-is-the-just-transition-and-what-does-it-mean-for-climate-action/
97. Institute for Energy Economics and Financial Analysis (IEEFA). (2024). *Budgetary push for clean energy and energy security in Bangladesh*. https://ieefa.org/resources/budgetary-push-clean-energy-and-energy-security-bangladesh
98. International Monetary Fund. (2023, December 3). *Bangladesh and its Partners are Launching the Bangladesh Climate and Development Platform to Leverage Adaptation and Mitigation Investments*. https://www.imf.org/en/News/Articles/2023/12/03/bangladesh-launch-climate-development-platform-to-leverage-adaptation-and-mitigation-investments
99. World Bank Data. *Industry (including construction), value added (% of GDP) - Bangladesh*. Retrieved on December 18, 2024, from https://data.worldbank.org/indicator/NV.IND.TOTL.ZS?locations=BD&view=chart
100. Centre for Policy Dialogue. (2024). *Prospect of Renewable Energy Transition in Bangladesh's RMG Industry*. https://cpd.org.bd/resources/2024/05/Prospect-of-Renewable-Energy-Transition-in-Bangladeshs-RMG-Industry.pdf
101. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh (2023). *Bangladesh First Biennial Update Report to the United Nations Framework Convention on Climate Change*
102. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
103. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
104. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
105. The Fair Labor Association. (2024). *Fair Labor Association's Bangladesh Wage Trends Report and Recommendations*. https://www.fairlabor.org/resource/fair-labor-associations-bangladesh-wage-trends-report-and-recommendations/
106. Bangladesh Institute of Labour Studies. (2022). *Mind The Gap: A Study on Garment Workers in Bangladesh*. https://bilsbd.org/wp-content/uploads/2024/01/Mind-the-gaps-_-a-study-on-garment-workers-in-Bangladesh.pdf
107. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
108. Research and Policy Integration for Development (RAPID) (n.d.). *Universal Social Protection and National Social Insurance Scheme in Bangladesh*. Retrieved December 18, 2024, from https://www.rapidbd.org/usp-ilo/
109. Ministry of Finance, Government of the People's Republic of Bangladesh. (2023). *Social Security Programs: Fiscal Year 2023-24*
110. Dhaka Tribune. (2024, March 20). *Report: 92% RMG workers without formal contracts*. https://www.dhakatribune.com/business/342269/92%25-rmg-workers-without-formal-contracts
111. Centre for Policy Dialogue. (2018). *Majority of Bangladeshi RMG workers do not have appointment contract*. https://rmg-study.cpd.org.bd/majority-of-bangladeshi-rmg-workers-do-not-have-appointment-contract/
112. Skills for Employment Investment Program. (n.d.). *Labour Market and Skill Gap Analysis for the Construction Sector in Bangladesh*. https://seip-fd.gov.bd/wp-content/uploads/2023/06/5.-Labour-Market-and-Skill-Gap-Analysis-for-the-Construction-Sector-in-Bangladesh.pdf
113. Bangladesh Bureau of Statistics. (2023). *Bangladesh Labour Force Survey 2022*
114. Ministry of Finance, Government of the People's Republic of Bangladesh. (2023). *Bangladesh Economic Review 2023*

115. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. (2023). *Bangladesh First Biennial Update Report to the United Nations Framework Convention on Climate Change*

116. Biswas, M. K., Azad, A. K., Datta, A., Dutta, S., Roy, S., & Chopra, S. S. (2024). *Navigating Sustainability through Greenhouse Gas Emission Inventory: ESG Practices and Energy Shift in Bangladesh's Textile and Readymade Garment Industries*. Environmental pollution (Barking, Essex: 1987), 345, 123392. https://doi.org/10.1016/j.envpol.2024.123392

117. Quantis. (2018). *Measuring fashion: Environmental impact of the global apparel and footwear industries study*. https://quantis.com/wp-content/uploads/2018/03/measuringfashion_globalimpactstudy_full-report_quantis_cwf_2018a.pdf

118. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. (2023). *Bangladesh First Biennial Update Report to the United Nations Framework Convention on Climate Change*

119. Rahman, A. M. (2022). *CO_2 emission from brickfields in Bangladesh: Can ethical responsibility by doing reduce level of emission. Athens Journal of Social Sciences*, 9(3), 255-272

120. United States Environmental Protection Agency. (2024, March 8). *Climate Risks and Opportunities Defined*. https://www.epa.gov/climateleadership/climate-risks-and-opportunities-defined

121. Company websites

122. Alchemie Technology. *A World with Zero Pollution from Textile Dyeing and Finishing*. Retrieved December 18, 2024, from https://naturatekstil.com/docs/alchemie/AlchemieSalesPresentation.pdf

123. Fashion For Good. (2023). *Textile Processing Guide: Pre-treatment, Colouration, & Finishing*. https://reports.fashionforgood.com/wp-content/uploads/2022/01/Textile-Processing-Guide-3.pdf

124. Ellen Macarthur Foundation. (2021). *A fabric finishing that's as pure as air: Jeanologia*. https://www.ellenmacarthurfoundation.org/circular-examples/a-fabric-finishing-thats-as-pure-as-air-jeanologia

125. IFC PaCT. (2018). *Cleaner Production Case Study. Process Optimization: Cutting Edge Industries Ltd*. https://documents1.worldbank.org/curated/en/896491627053404277/pdf/Cleaner-Production-Case-Study-Process-Optimization-Cutting-Edge-Industries-Ltd.pdf

126. Chakma, J. (2023, August 30). *Top cement makers shifting to eco-friendly production*. The Daily Star. https://www.thedailystar.net/business/economy/news/top-cement-makers-shifting-eco-friendly-production-3406406

127. Ali, M., López, A., Pasha, M., & Ghadiri, M. (2024). Optimisation of the performance of a new vertical roller mill by computational fluid dynamics simulations. *Powder Technology*, 433, 119282.

128. Mohammad Mufazzal. (2024, January 10). *Not bound by rules, they eye revenue boost. Environ benefits are byproducts*. The Financial Express. https://thefinancialexpress.com.bd/stock/bangladesh/not-bound-by-rules-they-eye-revenue-boost-environ-benefits-are-byproducts

129. Partnership for Cleaner Textile (PaCT). (n.d.). Retrieved December 18, 2024 from https://www.textilepact.net/

130. Circular Buildings Coalition. (2024). "*Four Circular Building Pathways Towards 2050*". https://drive.google.com/file/d/1RFB0in88kz9OlmboCkWdbjlX0Gd4GNDH/view

131. UNEP. (2024). *Climate Action Roadmaps for Buildings and Construction Bangladesh*. https://globalabc.org/sites/default/files/2024-10/Climate%20Action%20Roadmaps%20for%20Buildings%20and%20Construction%20Bangladesh.pdf

132. Bangladesh Power Development Board. (2024, September 30). *Present Installed Generation Capacity (MW) as on 31st August 2024*. https://bpdb.gov.bd/site/page/e7f4aaea-7605-4588-a705-e615c574cb88/-

133. Bloomberg NEF. (2023). *Bangladesh Power Sector at the Crossroads*. https://assets.bbhub.io/professional/sites/24/2023-09-22_TCF-BNEF_Bangladesh-Report-and-factsheetFINAL.pdf

134. Ministry of Power, Energy and Mineral Resources, Government of the People's Republic of Bangladesh. (2023). *Integrated Energy and Power Master Plan (IEPMP) 2023*

135. Caldecott, B., McCarten, M., & Triantafyllidis, C. (2018). *Carbon lock-in curves and Southeast Asia: Implications for the Paris agreement. Briefing Paper*. University of Oxford. https://www.smithschool.ox.ac.uk/sites/default/files/2022-04/Carbon-Lock-in-Curves-and-Southeast-Asia.pdf

136. Shafiqul A. (2024, August 29). *How to make Bangladesh's power sector sustainable*. Institute for Energy Economics and Financial Analysis. https://ieefa.org/resources/how-make-bangladeshs-power-sector-sustainable

137. Shafiqul A. (2023, April 5). *Charting an Electricity Sector Transition Pathway for Bangladesh*. Institute for Energy Economics and Financial Analysis. https://ieefa.org/resources/charting-electricity-sector-transition-pathway-bangladesh

138. Centre for Policy Dialogue. (2024). *Prospect of Renewable Energy Transition in Bangladesh's RMG Industry*. https://cpd.org.bd/resources/2024/05/Prospect-of-Renewable-Energy-Transition-in-Bangladeshs-RMG-Industry.pdf
139. Global Fashion Agenda. *Renewable Energy Initiative*. Retrieved December 18, 2024, from https://globalfashionagenda.org/
140. Renewables Now. (2023, December 5). *Bestseller, H&M pledge to invest in Bangladesh offshore wind project*. https://renewablesnow.com/news/bestseller-hm-pledge-to-invest-in-bangladesh-offshore-wind-project-842288/
141. Fashion United (2023, December 6). H&*M Group and Bestseller to build Bangladesh's first offshore wind project*. https://fashionunited.com/news/business/h-m-group-and-bestseller-to-build-bangladesh-s-first-offshore-wind-project/2023120557221
142. Shafiqul A. (2023, April 5). *Charting an Electricity Sector Transition Pathway for Bangladesh*. Institute for Energy Economics and Financial Analysis. https://ieefa.org/resources/charting-electricity-sector-transition-pathway-bangladesh
143. Bloomberg NEF. (2023). *Bangladesh Power Sector at the Crossroads*. https://assets.bbhub.io/professional/sites/24/2023-09-22_TCF-BNEF_Bangladesh-Report-and-factsheetFINAL.pdf
144. Byron, R. (2024, February 28). *Hefty power bill to weigh on consumers*. The Daily Star. https://www.thedailystar.net/business/economy/news/hefty-power-bill-weigh-consumers-3554091
145. Centre for Policy Dialogue. (2024). *Prospect of Renewable Energy Transition in Bangladesh's RMG Industry*. https://cpd.org.bd/resources/2024/05/Prospect-of-Renewable-Energy-Transition-in-Bangladeshs-RMG-Industry.pdf
146. Ibid
147. Shafiqul A. (2022, December 6). *Time to make rooftop solar shine in Bangladesh*. Institute for Energy Economics and Financial Analysis. https://ieefa.org/resources/time-make-rooftop-solar-shine-bangladesh
148. EPCB Boiler. (2024, November 11). *How Long Does an Industrial Steam Boiler Last?* https://www.epcbboiler.com/how-long-does-an-industrial-steam-boiler-last.html
149. Caldecott, B., McCarten, M., & Triantafyllidis, C. (2018). *Carbon lock-in curves and Southeast Asia: Implications for the Paris agreement. Briefing Paper*. University of Oxford. https://www.smithschool.ox.ac.uk/sites/default/files/2022-04/Carbon-Lock-in-Curves-and-Southeast-Asia.pdf
150. Apparel Impact Institute. *Solar PV Installation Bangladesh*. Retrieved November 3, 2024, from https://csp.apparelimpact.org/solutions/solar-pv-installation-bangladesh
151. GIZ. (n.d.). *Business Case: Solar PV Rooftop System for RMG Factory – CAPEX Model*. https://rmg-finance.com.bd/wp-content/uploads/2020/08/Solar-Rooftop-CAPEX.pdf
152. L20 Brasil. (2024). *Building a just world and a sustainable planet through a New Social Contract*. https://www.ituc-csi.org/IMG/pdf/l20_statement_2024_en_v2.pdf?30867/4fefec0872fff62d5033d615b070209f99214fd9cb7b1806a427172fb4681acd
153. Oxfam Bangladesh. (2024). *Understanding Just Energy Transition: Perspectives from the Ground*
154. ILO. (2024). *Joint Declaration for "Improved and Harmonious National Industrial Relations System in Bangladesh"*. https://www.ilo.org/sites/default/files/2024-12/Joint%20Declaration%20on%20National%20IR%20System_1%20December%202024.pdf
155. McKinsey, Global Fashion Agenda. (2020). *Fashion on Climate: How the Fashion Industry can Urgently Act to Reduce Its Greenhouse Gas Emissions*. https://www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/fashion%20on%20climate/fashion-on-climate-full-report.pdf
156. Interviews with industry stakeholders
157. Circular Fashion Partnership. (2021). *Pre-feasibility Analysis of Post Industrial Textile Fiber-2-Fiber Recycling in Bangladesh*. https://globalfashionagenda.org/resource/pre-feasibility-report/
158. McKinsey, Global Fashion Agenda. (2020). *Fashion on Climate: How the Fashion Industry can Urgently Act to Reduce Its Greenhouse Gas Emissions*. https://www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/fashion%20on%20climate/fashion-on-climate-full-report.pdf
159. Sadowski, M., L. Perkins, and E. McGarvey. 2021. "*Roadmap to Net-Zero: Delivering Science-Based Targets in the Apparel Sector*." Working Paper. Washington, DC: World Resources Institute. https://doi.org/10.46830/wriwp.20.00004
160. Interviews with industry stakeholders
161. GIZ. (2024). *Study for a Regulatory Framework to Enable Recycling of Post-Industrial Waste (JHUT) for the RMG Industry in Bangladesh*. https://asiagarmenthub.net/resources/2024/internal-stile-jhut-sector-project-preliminary-doc-06-june-24-1final-3-pdf.pdf

162. Global Fashion Agenda. *Circular Fashion Partnership*. Retrieved on November 3, 2024, from https://globalfashionagenda.org/circular-fashion-partnership/
163. P4G. *Circular Fashion Partnership*. Retrieved on November 3, 2024, from https://p4gpartnerships.org/pioneering-green-partnerships/all-p4g-partnerships/circular-fashion-partnership
164. Mongabay. (2024, March 4). *To save topsoil & reduce pollution, Bangladesh moves toward alternative bricks*. https://news.mongabay.com/2024/03/to-save-topsoil-reduce-pollution-bangladesh-moves-toward-alternative-bricks/
165. European Commission. *Building greener - sustainable building in Bangladesh*. Retrieved December 18, 2024, from https://international-partnerships.ec.europa.eu/news-and-events/stories/building-greener-sustainable-building-bangladesh_en
166. European Environment Agency. (2020, July 9). *Cutting greenhouse gas emissions through circular economy actions in the buildings sector*. https://www.eea.europa.eu/publications/cutting-greenhouse-gas-emissions-through/file
167. Interviews with industry stakeholders
168. Textile Today. (2023). *Bangladesh can earn US $6.0bn by textile garment waste*. https://www.textiletoday.com.bd/bangladesh-can-earn-us-6-0bn-by-textile-garment-waste
169. GIZ. (2024). *Study for a Regulatory Framework to Enable Recycling of Post-Industrial Waste (JHUT) for the RMG Industry in Bangladesh*. https://asiagarmenthub.net/resources/2024/internal-stile-jhut-sector-project-preliminary-doc-06-june-24-1final-3-pdf.pdf
170. Schmidt, V., Webster, E., Mhlana, S. & Forrest, K. (2023). *Negotiations by workers in the informal economy*. ILO. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40ed_protect/%40protrav/%40travail/documents/publication/wcms_864924.pdf
171. Cornell ILR Global Labor Institute and Schroders. (2023). *HIGHER GROUND? Report 1: Fashion's Climate Breakdown and its Effect for Workers*. https://www.ilr.cornell.edu/sites/default/files-d8/2024-09/GLI%20Report%201_Rev_9-19-24.pdf
172. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh. (2022). *National Adaptation Plan of Bangladesh (2023-2050)*
173. International Monetary Fund. (2023, December 3). *Bangladesh and its Partners are Launching the Bangladesh Climate and Development Platform to Leverage Adaptation and Mitigation Investments*. https://www.imf.org/en/News/Articles/2023/12/03/bangladesh-launch-climate-development-platform-to-leverage-adaptation-and-mitigation-investments
174. Byron, R. (2023, December 4). *Lenders join hands over $8b climate fund for Bangladesh*. The Daily Star. https://www.thedailystar.net/environment/news/lenders-join-hands-over-8b-climate-fund-bangladesh-3485161
175. Cornell ILR Global Labor Institute and Schroders. (2023). *HIGHER GROUND? Report 1: Fashion's Climate Breakdown and its Effect for Workers*. https://www.ilr.cornell.edu/sites/default/files-d8/2024-09/GLI%20Report%201_Rev_9-19-24.pdf
176. Expert interviews
177. Cornell ILR Global Labor Institute and Schroders. (2023). *HIGHER GROUND? Report 2: Climate Resilience and Fashion's Costs of Adaptation*. https://www.ilr.cornell.edu/sites/default/files-d8/2023-09/Higher%20Ground%20Report%202%20FINAL.pdf
178. Climate Resilience for All (2024, June 12). *World-First Financial Product Combining Insurance and Cash Payments for Extreme Heat is a Lifeline for 50,000 Informal Women Workers in India*. https://www.climateresilience.org/wcs-50000women
179. World Bank Data. Retrieved on December 18, 2024, from https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=BD
180. A2i. (2022). *Future Skills: Finding Emerging Skills to Tackle the Challenges of Automation in Bangladesh*. https://a2i.gov.bd/wp-content/uploads/2022/08/4IR.pdf
181. Climate and Clean Air Coalition. (2014). *Factsheets about Brick Kilns in South and South-east Asia*. https://www.ccacoalition.org/sites/default/files/resources//Bricks-SEA.pdf
182. Skills for Employment Investment Program (SEIP). (2022). *Labor Market Study under Skills for Employment Investment Program (SEIP): Skill Gap in the Jute Sector of Bangladesh*. https://seip-fd.gov.bd/wp-content/uploads/2023/03/Skill-Gap-in-the-Jute-Sector-of-Bangladesh.pdf
183. https://seip-fd.gov.bd/wp-content/uploads/2023/06/7.-Labor-Market-and-Skills-Gap-Analyses-on-Healthcare-Nursing-and-Caregiving.pdf

184. Howlader, Md. Ziaul Haque. (2019, September 26). *Employment generation through tourism*. The Daily Sun. https://www.daily-sun.com/printversion/details/426836/Employment-generation-through-tourism

185. ILO. (2019). *Unemployment insurance schemes around the world: Evidence and policy options*. https://www.ilo.org/publications/unemployment-insurance-schemes-around-world-evidence-and-policy-options

186. ILO. (2017). *Unemployment protection: A good practices guide and training package*. https://www.ilo.org/publications/unemployment-protection-good-practices-guide-and-training-package

187. Agora Energiewende und Aurora Energy Research. (2019). *A Roadmap for a Just Transition from Coal to Renewables*. The German Coal Commission. https://www.agora-energiewende.de/fileadmin/Projekte/2019/Kohlekommission_Ergebnisse/168_Kohlekommission_EN.pdf

188. EIS Pilot Bangladesh. Retrieved on December 18, 2024, from https://eis-pilot-bd.org/

189. World Bank Data. Retrieved December 18, 2024, from https://data.worldbank.org/indicator/SP.URB.TOTL?locations=BD

190. The London School of Economics and Political Science. (2023, August 7). *Informal Governance and Urban Slums in Bangladesh*. https://blogs.lse.ac.uk/southasia/2023/08/07/informal-governance-and-urban-slums-in-bangladesh/

191. Policy Insights. (2023). *Rapid Urbanisation and Growing Demand for Affordable Housing in Bangladesh*. https://policyinsightsonline.com/2023/01/rapid-urbanisation-and-growing-demand-for-affordable-housing-in-bangladesh/

192. The Daily Star. (2022, December 14). *Long-term finance key to affordable housing*. https://www.thedailystar.net/business/economy/news/long-term-finance-key-affordable-housing-3195351

193. UNEP. (2024). *Climate Action Roadmaps for Buildings and Construction Bangladesh*. https://globalabc.org/sites/default/files/2024-10/Climate%20Action%20Roadmaps%20for%20Buildings%20and%20Construction%20Bangladesh.pdf

194. Habitat For Humanity. (n.d.). "*Informal Settlements*". Retrieved December 18, 2024, from https://www.habitatforhumanity.org.uk/blog/2023/07/tackling-challenges-in-dhakas-informal-settlements/

195. Society Achievers. (2024). *City Planning Mastery: CIDCO's Role in the Evolution of Navi Mumbai*. https://societyachievers.com/city-planning-mastery-cidcos-role-in-the-evolution-of-navi-mumbai/

196. Amnesty International. (2013, August 8). *Bangladesh must restore land rights of Indigenous People*. https://www.amnesty.org/en/latest/campaigns/2013/08/bangladesh-must-restore-land-rights-of-indigenous-people/

197. Architecture & Design Scotland. (n.d.). *Case study: Fraser Avenue*. https://www.ads.org.uk/sites/default/files/2022-06/case-study-fraser-avenue-2019.pdf

198. 7N Architects. *Fraser Avenue*. Retrieved December 18, 2024, from https://www.7narchitects.com/projects/fraser-avenue

199. Mazzucato, M. & Songwe, V. et al. (2024). *A Green and Just Planet. The 1.5° C Agenda for Governing Global Industrial and Financial Policies in the G20. Independent Report of the G20 TF CLIMA Group of Experts*. https://cebrap.org.br/wp-content/uploads/2024/10/AF3_tf-clima_report-g20_en_digital.pdf

200. UNFCC (2024, November 24). *COP29 UN Climate Conference Agrees to Triple Finance to Developing Countries, Protecting Lives and Livelihoods*. https://unfccc.int/news/cop29-un-climate-conference-agrees-to-triple-finance-to-developing-countries-protecting-lives-and

201. LaMonaca, S. et al (2020). *Charting the Course to Climate-Aligned Finance: Five barriers to alignment and how a sectoral approach can help*. Centre for Aligned Climate Finance, Rocky Mountain Institute. https://rmi.org/wp-content/uploads/2020/03/climate-aligned-finance-insight.pdf

202. The Global Governance Project. *Financing a Just Transition: Transforming Funding, Tackling Climate Change*. https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=e51ab057-a4b9-44a1-aafc-7209130daf8d

203. UNDP (2024, November 7). *Government, UNDP, IIX to Launch Orange Bonds for Inclusive Growth and Climate Action*. https://www.undp.org/bangladesh/press-releases/government-undp-iix-launch-orange-bonds-inclusive-growth-and-climate-action

204. UNDP (2024, November 7). *Government, UNDP, IIX to Launch Orange Bonds for Inclusive Growth and Climate Action*. https://www.undp.org/bangladesh/press-releases/government-undp-iix-launch-orange-bonds-inclusive-growth-and-climate-action

205. Asian Development Bank. *IF-CAP: Innovative Finance Facility for Climate in Asia and the Pacific*. Retrieved December 18, 2024, from https://www.adb.org/what-we-do/funds/ifcap

206. Green Finance Institute. (2024). *What next for mobilising capital in service of a just transition in the Global South?* https://www.greenfinanceinstitute.com/wp-content/uploads/2024/09/What-next-for-mobilising-capital-in-service-of-a-just-transition-in-the-Global-South.pdf
207. United Nations Climate Change. (2021, February 16). *The Explainer: The Paris Agreement*. https://unfccc.int/news/the-explainer-the-paris-agreement
208. Suki, L. & Firger, D. (2023). *Catalytic Capital: A key to aligning infrastructure investments with climate mitigation in emerging markets*. The GIIN, New York. https://thegiin.org/publication/research/catalytic-capital-a-key-to-aligning-infrastructure-investments-with-climate-mitigation-in-emerging-markets/
209. The Global Governance Project. *Financing a Just Transition: Transforming Funding, Tackling Climate Change*. https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=e51ab057-a4b9-44a1-aafc-7209130daf8d
210. Curtin, J. (2024). *Scaling the JET-P Model: Prospects and Pathways for Action*. The Rockefeller Foundation. https://www.rockefellerfoundation.org/wp-content/uploads/2024/02/Scaling-the-JETP-Model-Prospects-and-Pathways-for-Action.pdf
211. Mazzucato, M. & Songwe, V. et al. (2024). *A Green and Just Planet. The 1.5° C Agenda for Governing Global Industrial and Financial Policies in the G20. Independent Report of the G20 TF CLIMA Group of Experts*. https://cebrap.org.br/wp-content/uploads/2024/10/AF3_tf-clima_report-g20_en_digital.pdf
212. NSDC. *India's First Skill Impact Bond*. Retrieved December 18, 2024, from https://nsdcindia.org/sib
213. Climate Horizons. (2024). *Mapping and trends analysis on just transition initiatives*. https://www.laudesfoundation.org/media/hurj2qnz/mapping-and-trends-analysis-on-just-transition-initiatives_full-report.pdf
214. Interviews with industry stakeholders
215. Green Finance Institute. (2024). *What next for mobilising capital in service of a just transition in the Global South?* https://www.greenfinanceinstitute.com/wp-content/uploads/2024/09/What-next-for-mobilising-capital-in-service-of-a-just-transition-in-the-Global-South.pdf
216. Czigler, T., Reiter, S., Schulze, P., & Somers, K. (2020). *Laying the foundation for zero-carbon cement*. McKinsey & Company. https://www.mckinsey.com/~/media/mckinsey/industries/chemicals/our%20insights/laying%20the%20foundation%20for%20zero%20carbon%20cement/laying-the-foundation-for-zero-carbon-cement-v3.pdf
217. EBL Securities. (2023). *Bangladesh Cement Industry Overview*. https://research.eblsecurities.com/Content/EBSLAdmin/images/ResearchFeature/03bb628a-bad9-42f2-9daa-39bd3006392924042023094557.pdf
218. International Cement Review. (2022). *The Rise of Bangladesh's Clinker Imports*. https://www.cemnet.com/News/story/174029/the-rise-of-bangladesh-s-clinker-imports.html
219. Rahman, S. M., Handler, R. M., & Mayer, A. L. (2016). *Life cycle assessment of steel in the ship recycling industry in Bangladesh*. Journal of Cleaner Production, 135, 963-971. https://doi.org/10.1016/j.jclepro.2016.07.014
220. International Energy Agency. (2020). *Iron and Steel Technology Roadmap*. https://iea.blob.core.windows.net/assets/eb0c8ec1-3665-4959-97d0-187ceca189a8/Iron_and_Steel_Technology_Roadmap.pdf
221. Charter Steel. (2024, January 31). *EAF vs. BOF Furnaces in Sustainable Steelmaking*. https://www.chartersteel.com/about/news/eaf-vs-bof-furnaces-in-steelmaking

THE AUTHORS WISH TO EXPRESS THEIR GRATITUDE TO:

100+ Bangladeshi and international stakeholders for their time and inputs which helped shape this report.

Charlotte Brunnström, **Linda Hilmgård**, and **Fernanda Drumond** from the *H&M Foundation* and **Sarah Ong**, **Faiza Farah Tuba**, **Lakshmi Poti**, **Nazakat Azimli**, and **Naureen Chowdhury** from *Laudes Foundation* for their invaluable guidance and thought leadership.

Ainee Islam, **Ahnaf Tahmid**, **Md. Mostafa Sorower**, and **Kashfia Kayes** from *The Asia Foundation*, for their significant support and contributions throughout the scenario planning process.

Annabel Short from *It's Material*, **Anthony Dane** from *Southern Transitions*, **Ameer Azim** from *BSR*, **Masrur Reaz**, **Md. Ziaur Rahman**, and **Hasnat Alam** from *Policy Exchange*, and **Dan Firger** from *Great Circle Capital Advisors* for providing valuable peer review inputs that helped strengthen the report.

Latika Murarka, **Vedika Gupta**, **Kriti Chaturvedi**, **Gaurav Bajaj**, and **Sarthak Shah** from *FSG* and **Umang Kapadia** (ex-*FSG*), for their research and analysis support, which was essential to the writing of this report, and **Youri Tabet** for his inputs guidance throughout the analysis and report development process.

Sagnik Chowdhury from *FSG* for his role in the copy-editing of this report.

Usha Sondhi Kundu from *Cognitive Designs* for her support in designing this report.

PHOTO CREDITS

Cover:	Nongnuch Pitakkorn/istockphoto.com; Md. Abdun Nahid/ istockphoto.com; onuchcha/Freepik.com; Vannet/Freepik.com; zakir1346/shutterstock.com; CognitiveDesigns
Page 03:	Freepik.com
Page 06:	Paralaxis/istockphoto.com; Alex Potemkin/istockphoto.com; Myles Bloomfield/unsplash.com; sharply_done/istockphoto.com; Elen Marlen/istockphoto.com; carlosbezz/istockphoto.com
Page 07:	Shakil Ahmed/istockphoto.com; Bert de Boer/alamy.com; MWCPhoto/istockphoto.com; Solovyova/istockphoto.com
Page 09:	vikakokhanevich/Freepik.com
Page 11:	EyeEm/Freepik.com
Page 15:	wal_172619/pixabay.com
Page 18:	Cody Moore/unsplash.com
Page 20:	Getty Images for Unsplash+
Page 23:	Paralaxis/istockphoto.com; Alex Potemkin/istockphoto.com; Myles Bloomfield/unsplash.com; sharply_done/istockphoto.com; Elen Marlen/istockphoto.com; carlosbezz/istockphoto.com
Page 24-25:	soniasds/Freepik.com
Page 26:	Myles Bloomfield/unsplash.com
Page 30:	Alex Potemkin/istockphoto.com
Page 31:	Paralaxis/istockphoto.com
Page 32:	carlosbezz/istockphoto.com
Page 34:	Elen Marlen/istockphoto.com
Page 35:	sharply_done/istockphoto.com
Page 36:	pixabay.com
Page 39:	Shakil Ahmed/istockphoto.com; Bert de Boer/alamy.com; MWCPhoto/istockphoto.com; Solovyova/istockphoto.com; Azim Khan Ronnie/Wikimedia Commons
Page 40-41:	soniasds/Freepik.com
Page 42:	Shakil Ahmed/istockphoto.com
Page 44:	Bert de Boer/alamy.com
Page 46:	MWCPhoto/istockphoto.com
Page 47:	Solovyova/istockphoto.com
Page 49:	tbaodatui/Freepik.com
Page 58:	Moheen Reeyad/Wikimedia Commons
Page 64:	pixabay.com
Page 82:	Hermes Rivera/unsplash.com
Back Cover:	Alik Ghosh/unsplash.com

CONTACT DETAILS

Sujata Rathi
Director, FSG Asia
sujata.rathi@fsg.org

Subhash Chennuri
Director, FSG Asia
subhash.chennuri@fsg.org

FSG REIMAGINING SOCIAL CHANGE

H&M FOUNDATION

Laudes Foundation