



Discussion Paper on

# IMPACT OF ENERGY TRANSITION ON WOMEN EMPLOYMENT IN BANGLADESH'S READY-MADE GARMENTS SECTOR

This paper examines the implications of transitioning from fossil fuels to renewable energy in Bangladesh’s Ready-Made Garment (RMG) sector, with a particular focus on women’s employment. As Bangladesh moves toward sustainable energy solutions, this shift presents both opportunities and challenges for the RMG sector, which is a cornerstone of the country’s economy and a major employer of women. While the adoption of renewable energy promises significant environmental benefits, it also risks disrupting traditional job roles, particularly for women, who constitute the majority of the workforce in this sector. The paper highlights key challenges, including potential skills mismatches, the rise of automation, and the need for gender-inclusive upskilling initiatives. At the same time, it identifies opportunities in green technology adoption and sustainable factory operations that could position Bangladesh as a global leader in green manufacturing. However, achieving this vision requires proactive and inclusive strategies that balance sustainability goals with equitable job creation.

The purpose of this paper is to initiate deeper conversations on the topic and draw the attention of financial institutes, regulators, and policymakers to the need for further research and serious measures. By addressing the gendered dimensions of the energy transition and fostering inclusive policies, Bangladesh can ensure that the shift to renewable energy not only benefits the environment but also empowers its workforce, particularly women, who are central to the RMG sector’s success.

## THE CONTEXT

Bangladesh’s ready-made garments (RMG) sector is a key driver of its economy, contributing significantly, around 11% to GDP (Bangladesh Bank, 2024)<sup>1</sup> and employment. The country is a global leader in garment manufacturing, with millions of workers—primarily women—employed in the sector. However, as the industry shifts toward renewable energy to align with sustainability goals, it is essential to assess how this transition will impact employment, particularly for women. While women comprise majority of the RMG sector’s workforce, they remain

significantly underrepresented in the global renewable energy workforce. The push for renewable energy adoption, driven by policy mandates and global market demands, presents both opportunities and challenges for women’s employment in the sector. Ensuring an inclusive energy transition is critical to maintaining the sector’s economic and social contributions. Additionally, understanding the broader implications of this transition on gender dynamics in the workforce is necessary for crafting effective policies that ensure equitable outcomes.

# THE ENERGY TRANSITION IN BANGLADESH'S RMG SECTOR

## DRIVERS OF ENERGY TRANSITION

Bangladesh's ready-made garments industry is a leading contributor of the country's economy, accounting for over 80% of its total exports. The sector's overwhelming success has been largely attributed to the labor-intensive, export-oriented manufacturing model, which has transformed Bangladesh's economic landscape. This industry is heavily dependent on fossil fuels, particularly natural gas and coal, for its energy needs. Total GHG emissions from RMG and textile factories were approximately 129,015 tons in 2019 and rose to about 137,880 tons by 2021, indicating continued growth.<sup>2</sup> At 8% annual growth in CO<sub>2</sub> emissions over the past two decades, RMG sector is the largest industrial contributor in CO<sub>2</sub> emissions at 15.4%, followed by the textile sector at 12.4%.<sup>3</sup> This reliance has contributed to the sector's significant greenhouse gas emissions and environmental footprint. Such heavy reliance on fossil fuels, particularly in the form of grid-supplied electricity and backup diesel generators, has come under scrutiny in recent years.

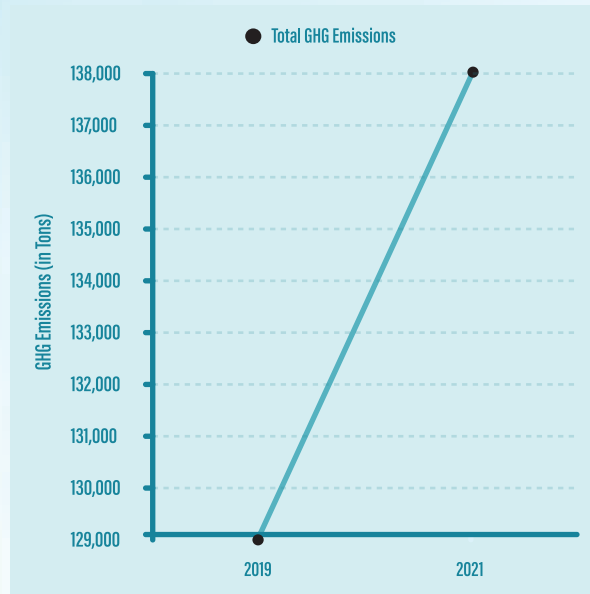
## POLICY MANDATES

Bangladesh is poised to make significant strides in its green energy transition, as outlined in two pivotal documents: the Bangladesh Climate Prosperity Plan 2022 - 2041 (BCPP) and the Integrated Power and Energy Master Plan 2023 (IPEMP).<sup>4</sup> These plans reflect the country's commitment to shift from fossil fuels to renewable energy sources over the next few decades.

The BCPP, launched in 2021, aims for Bangladesh to derive 30% of its energy from renewable sources by 2030 and 40% by 2041. This ambitious plan is not only a response to climate change but also a strategic framework for economic growth and job creation through sustainable practices.<sup>5</sup> The BCPP emphasizes enhancing resilience against climate impacts while promoting economic opportunities, effectively integrating climate action with national development goals.

Complementing the BCPP, the IPEMP outlines specific targets for renewable energy integration into the national grid. The plan sets a goal of achieving 15% of electricity from renewables by 2030, ramping up to 100% by 2050. Currently, renewable sources account for only about 3.5% of the total electricity generation in Bangladesh,

**Total GHG Emissions  
from RMG and Textile Factories from 2019 to 2021**



indicating a substantial gap that needs to be bridged through significant investments and policy support.

## GLOBAL MARKET PRESSURES AND COST BENEFITS

Alongside these policy efforts, international buyers and brands are increasingly demanding that their Bangladeshi suppliers adopt greener production methods, including the use of renewable energy. This market-driven pressure, combined with the potential cost savings from renewable energy adoption, has further motivated RMG factories to transition towards more sustainable energy sources. As the price of solar and other renewable technologies has declined significantly in recent years, the business case for renewable energy has become stronger for RMG factories in Bangladesh. However, the pace of this transition has been slow, and more concerted efforts are needed to drive widespread adoption across the industry.

## CHALLENGES IN ADOPTING RENEWABLE ENERGY TECHNOLOGIES

Despite the government's policy push and global market demands, the adoption of renewable energy technologies in Bangladesh's ready-made garment (RMG) sector has been slow and uneven. The primary responsibility for

this slow transition lies with factory owners. Their profit-driven approach to energy solutions, reluctance to invest in green technologies, and limited commitment to environmental sustainability have been the main barriers to progress. However, the burden of this transformation cannot be placed solely on factory owners. International brands, buyers, and the government must collectively share responsibility through financial support, technology transfer, and enabling policy frameworks.

### Ownership Behaviour and Short-Term Investment Priorities

Factory owners often prioritize short-term cost savings over long-term investments in renewable energy. Many rely on conventional energy sources, such as grid electricity and diesel generators, which are perceived as cheaper and easier to manage in the short run. This preference for low-cost, readily available energy solutions reflects a broader reluctance to invest in renewable energy systems, which require significant upfront capital and longer payback periods. Moreover, the lack of a strong regulatory framework enforcing environmental standards has allowed factory owners to delay or avoid adopting green technologies, despite the growing global demand for sustainable manufacturing practices.

### Limited Commitment to Environmental Sustainability

Another critical issue is the limited commitment of factory owners to environmental sustainability. While some larger factories have taken steps toward green initiatives, such as Leadership in Energy and Environmental Design (LEED) certification, the majority of small and medium-sized factories have shown little interest in reducing their carbon footprint. This lack of commitment is often driven by a focus on maximizing profits and minimizing operational disruptions, rather than aligning with global sustainability goals. Without stronger incentives or regulatory pressure, factory owners are unlikely to prioritize renewable energy adoption.

### Technical Capacity and Skills Gap

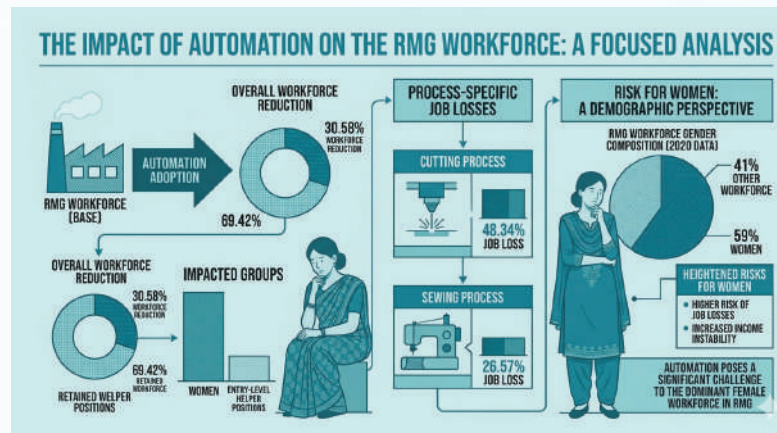
That said, addressing the skills gap among workers and improving technical capacity remain important. Many RMG factories lack the in-house expertise to effectively integrate renewable energy solutions into their production processes, and the shortage of qualified technicians and engineers further complicates the transition. However, these challenges are secondary to the need for factory owners to take the lead in driving the energy transition.

To accelerate progress, it is essential to address the structural barriers rooted in ownership decisions. This includes creating financial incentives, such as low-interest loans and grants, to reduce the upfront costs of renewable energy systems. Policymakers must also strengthen regulatory frameworks to encourage or mandate sustainable practices. At the same time, initiatives to upskill workers and build technical expertise should be pursued to ensure a smooth transition.

## IMPACT ON WOMEN'S EMPLOYMENT

### Risks of Automation and Reduced Demand for Labor-Intensive Processes

The energy transition in the RMG sector is also closely linked to broader technological changes, including the increasing adoption of automation and advanced manufacturing technologies. These technological advancements, driven by the need for greater efficiency and cost savings, could potentially lead to a reduction in the demand for labor-intensive tasks that have traditionally been performed by women in the RMG industry. With increasing automation, women's employment opportuni-



ties in the sector are expected to be threatened. Automated production processes, such as computer-controlled sewing machines and robotic material handling, may displace workers, particularly those engaged in repetitive, labor-intensive tasks that are typically carried out by women. Studies document that automation has already caused a workforce reduction of approximately 30.58%, especially impacting women and entry-level helper positions. Automation has particularly affected cutting and sewing processes, with job losses reaching up to 48.34% and 26.57%, respectively.<sup>6</sup> This could heighten the risk of job losses and income instability for women,

who constitute about 59% of the RMG workforce as of 2020.<sup>7</sup> This employment transformations for women in Bangladesh will be providing them with obstacles in economic independence and contributing to lessen their social empowerment.<sup>8</sup>

### Potential Shifts in Job Roles Due to Renewable Energy Adoption

The ongoing energy transition in Bangladesh's RMG sector is likely to lead to changes in the job roles and skills required for workers, including women. As RMG factories invest in renewable energy technologies, such as solar photovoltaic systems, a new set of technical skills will be needed to install, maintain, and operate these systems. Women comprise the majority of the RMG sector's workforce, with estimates suggesting that they account for over 80% of the industry's employees<sup>9</sup> and studies show that women currently make up less than 20% of the renewable energy workforce globally.<sup>10</sup> This reveals the substantial gender disparity in the technical positions needed for the energy transition.

### Specific Challenges for Women Workers, Including Skills Mismatch and Access to New Opportunities

The transition towards renewable energy in the RMG sector also presents specific challenges for women workers. Many women in the industry are employed in labor-intensive, repetitive tasks that are at a higher risk of automation as factories upgrade their production processes. Additionally, women in the RMG sector often have limited access to technical and vocational training, which can hinder their ability to acquire the skills needed for the new job roles emerging in the renewable energy-focused industry.

There is a risk that the energy transition could exacerbate existing gender disparities in the RMG workforce, as women may face greater barriers to accessing the new job opportunities created by renewable energy adoption. Targeted interventions, such as skills development programs, career guidance, and inclusive hiring practices, will be crucial to ensure that women can actively participate in and benefit from the energy transition in the RMG sector.<sup>11</sup> To ensure an inclusive transition, targeted efforts to upskill and reskill women workers, as well as measures to promote their participation in the technical and managerial roles in the

renewable energy domain, will be crucial.

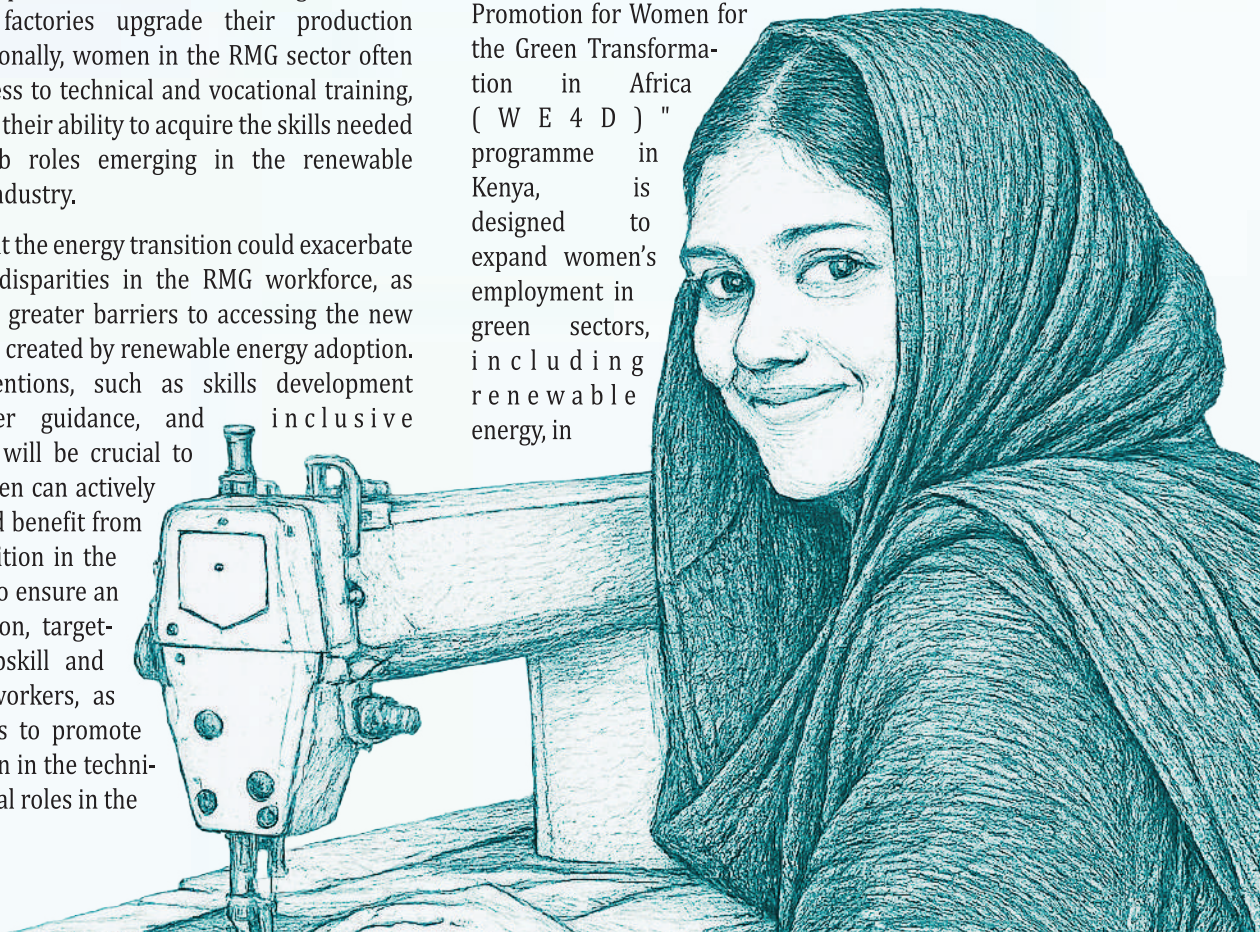
## OPPORTUNITIES FOR WOMEN IN A GREENER RMG SECTOR

### Creation of New Roles in Renewable Energy Maintenance and Management

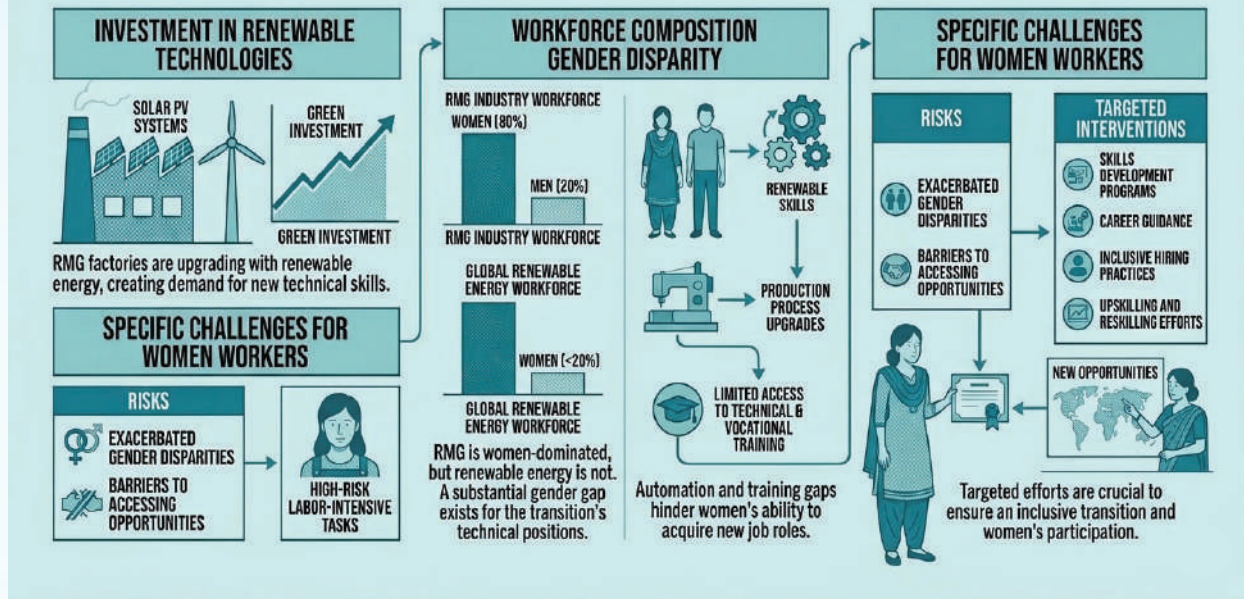
Despite these challenges, the energy transition presents new employment opportunities for women. Roles in renewable energy installation, maintenance, and sustainability compliance could provide alternative employment paths. As RMG factories invest in solar and other renewable energy solutions, there will be a need for technical and managerial personnel to oversee these new systems. Currently, women make up around 80% of RMG workers, yet they remain underrepresented in technical and managerial positions. However, these opportunities may remain inaccessible to many women due to a lack of relevant technical and vocational skills.<sup>12</sup>

### Opportunities for Upskilling and Vocational Training

To address this, targeted skills development programs and vocational training initiatives could provide women with the necessary competencies to take on these new roles. For instance, there are several gender-inclusive energy programs globally such as the "Employment Promotion for Women for the Green Transformation in Africa (WE4D)" programme in Kenya, is designed to expand women's employment in green sectors, including renewable energy, in



## POTENTIAL SHIFTS IN JOB ROLES DUE TO RENEWABLE ENERGY ADOPTION IN BANGLADESH'S RMG SECTOR



circular economy, waste management and sustainable agriculture. Similarly, projects like "Green People's Energy for Africa (GBE)" have worked to increase women's participation across the clean energy value chain through entrepreneurship support, technical upskilling and access to finance.

By investing in the upskilling and reskilling of women workers, the RMG sector can ensure their active participation and ability to benefit from the energy transition. Equipping women with the requisite skills through skills development and training programs will be crucial to enable their full participation in and ability to capitalize on the shift towards renewable energy.

### Potential for Improved Working Conditions in Sustainable Factories

The transition to renewable energy can also present opportunities to improve the overall working conditions in the RMG sector. Green factories offer improved working conditions, including better air quality, reduced workplace hazards, and enhanced worker well-being, which could improve overall job satisfaction and retention for female workers.

One notable example is the "Green Factory" initiative led by the Bangladesh Garment Manufacturers and Exporters Association (BGMEA). Many factories

Bangladesh have achieved LEED (Leadership in Energy and Environmental Design) certification, making the country a global leader in green garment factories (e.g. Plummy Fashions Ltd., located in Narayanganj, is one of the world's most environmentally friendly garment factories and has been certified LEED Platinum).<sup>13</sup>

The green transition in factories like Plummy Fashions has led to better working conditions for women, who make up the majority of the workforce. Women workers in green factories may also benefit from increased job stability and potential for higher wages, as environmentally certified factories often attract international buyers who prioritize sustainability. This can lead to more secure employment opportunities for women in the sector.

Transitioning to sustainable production models can also open doors for women in leadership roles within the sector, empowering them to take on more decision-making responsibilities. Strengthening mentorship programs and increasing awareness about career opportunities in the green economy will be essential in ensuring women's active participation in the transition.

## POLICY RECOMMENDATIONS:



### Support Gender-Inclusive Upskilling Initiatives

- Invest in skills development and vocational training programs that are specifically tailored to women, with a focus on equipping them with the technical skills required for jobs in the renewable energy and advanced manufacturing sectors.
- Expand training programs focused on renewable energy and technological adaptation.



### Ensure women having access to new job opportunities.

- Collaborate with vocational training institutions and industry leaders will be crucial in delivering accessible and effective training solutions.



### Develop Inclusive Policies and Incentives for RMG Factories

- With policy intervention, promote inclusive hiring practices within the RMG factories. Provide specific guideline for ensuring training opportunities that enable women to transition into new roles created by the energy transition and technological advancements.
- Implement regulations that require RMG factories to set gender-based hiring and retention targets, along with monitoring and reporting mechanisms to ensure compliance.
- Offer tax incentives and other financial support to RMG factories that demonstrate tangible progress in hiring and promoting women in technical and managerial roles.
- Incentivize RMG Factories to Adopt Renewable Energy While Safeguarding Employment.
- Introduce targeted subsidies, low-interest loans, and other financial incentives to encourage RMG factories to invest in renewable energy technologies, such as solar power and energy-efficient upgrades.
- Couple these incentives with requirements for factories to maintain or increase the number of female employees during the transition, ensuring that women do not disproportionately bear the brunt of job losses.
- Develop a comprehensive monitoring and evaluation framework to track the impact of the energy transition on women's employment in the RMG sector, enabling policymakers to make evidence-based interventions.



### For Regulators and Government Authorities

- Strengthen monitoring and regulatory frameworks that enforce ESG compliance, with mandatory reporting and gender-disaggregated data on workforce impacts.
- Develop and implement financial incentive schemes such as tax rebates, subsidies, and low-interest loans to lower upfront costs for renewable energy adoption in RMG units.
- Mandate factories to maintain or increase female employment throughout the energy transition.
- Promote inter-agency coordination between ministries of finance, environment, labor, and industry to align policies fostering inclusive industrial transitions.



### For RMG Factory Owners and Industry Associations

- Embrace inclusive hiring policies set with clear gender targets to ensure women's access to new technical and managerial roles arising from the energy transition.
- Invest in training and upskilling to prepare the existing workforce, particularly women for emerging green economy job requirements.

- Pursue green certifications and sustainable factory standards to enhance market competitiveness and meet buyer demands.
- Collaborate with financiers, civil society and government bodies to optimize access to funding, technical expertise and regulatory incentives.

### For Financial Institutions (FIs)

- Adopt and improve sustainable finance policies that integrate Environmental, Social, and Governance (ESG) criteria and incorporate gender and community impact considerations.
- Increase transparency and public disclosure of financing decisions aligned with sustainable finance and human rights standards.
- Collaborate with vocational training and technical institutes to support capacity building, especially for women workers transitioning into technical roles within greener factories.
- Facilitate concessional lending and green financing products tailored to incentivize renewable energy investments in RMG factories.



### For Civil Society and Development Organizations

- Build civil society capacity to conduct research, monitor finance flows and advocate for transparency, accountability, and gender inclusion in sustainable finance.
- Raise awareness on the intersection of finance, energy transition, and women's employment to empower communities and workers.
- Facilitate inclusive multi-stakeholder dialogues that amplify marginalized voices, ensuring fair representation in policymaking.
- Partner with national coalitions and regional partners to promote knowledge-sharing and joint advocacy on sustainable finance reform.



### FFB's Role to Advance the Agenda

Fair Finance Bangladesh is strategically placed to catalyze sustainable finance reforms and inclusive practices in the RMG sector by:

- **Initiating Multistakeholder Dialogue:** Convening financial institutions, regulators, factory owners, civil society, and worker representatives to build consensus, share knowledge, and co-create actionable plans for sustainable financing and gender-equitable employment
- **Capacity Building:** Providing technical assistance and training to stakeholders to improve understanding and implementation of ESG and gender-lens investing criteria.
- **Research and Knowledge Generation:** Leading studies, policy assessments, and knowledge products that shed light on sustainable finance impacts, with a focus on gender and community outcomes.
- **Advocacy and Policy Engagement:** Engaging policymakers and industry leaders with evidence-based recommendations to strengthen regulations and incentives fostering a just energy transition.
- **Finance Facilitation:** Supporting the development and scaling of innovative green finance products with social impact metrics accessible to RMG factories.
- **Monitoring and Accountability:** Establishing transparent mechanisms to track sustainable finance flows and employment trends, enabling responsive and evidence-driven interventions.
- **Community Empowerment:** Strengthening the voice and participation of women workers and marginalized communities in shaping sustainable industrial policies.



## CONCLUSION

The energy transition in Bangladesh's ready-made garments sector presents both challenges and opportunities for women's employment. To ensure an inclusive and equitable transition, policymakers and industry stakeholders must prioritize targeted interventions that address the specific barriers faced by women, such as access to education, training, and upskilling programs. By adopting a comprehensive and gender-responsive approach, Bangladesh can leverage the energy transition to empower women, enhance their economic participation, and drive sustainable development in the vital RMG sector.

A well-managed energy transition can position Bangladesh as a leader in green and ethical manufacturing while ensuring that women—who form the backbone of the industry—are not left behind. By investing in skills development, supporting fair energy policies, and fostering

collaboration, Bangladesh can create a more sustainable and equitable RMG sector for the future. Ensuring that sustainability efforts align with gender-inclusive strategies will allow Bangladesh's RMG sector to remain globally competitive and socially responsible.

The potential risks of the politics-economy nexus in Bangladesh, such as corruption, lack of transparency, and policy instability, could hinder the green transition in the RMG sector by delaying investments in sustainable infrastructure and creating an unpredictable business environment. Additionally, restricted women's rights in the industry, including limited access to leadership roles, unequal wages, and inadequate workplace protections, can undermine the sector's potential by stifling innovation and reducing productivity. Addressing these challenges is crucial to ensuring a sustainable and inclusive future for Bangladesh's RMG sector.

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