# Strengthening Sustainability *in the Textile Industry*

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IFC—a member of the World Bank Group—is the largest global development institution focused on the private sector in emerging markets. We work in more than 100 countries, using our capital, expertise, and influence to create markets and opportunities in developing countries.

In fiscal year 2022, IFC committed a record $32.8 billion to private companies and financial institutions in developing countries, leveraging the power of the private sector to end extreme poverty and boost shared prosperity as economies grapple with the impacts of global compounding crises. For more information, visit www.ifc.org.

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***Growing global concerns over climate change are putting an increasing focus on sustainability. This report is part of an occasional series on sustainability in industry which examines the opportunities and challenges facing various industrial sectors and the role that the International Finance Corporation can play to support their efforts and contribute to a greener planet.***

# *Clothing is one of the fundamental necessities for physical well-being.*



Everybody needs clothes and every year some 100 billion garments are manufactured.[1] Thus it is no surprise that fashion is one of the world's biggest industries,[2] generating revenues in excess of $1.7 trillion,[3] employing tens of millions of people, and spewing billions of tons of greenhouse gases into the atmosphere.[4]

The environmental costs from the manufacturing of textiles and apparel—everything from the consumption of water to irrigate cotton to the burning of fossil fuels to power factories—are immense. In its lifecycle, a single pair of denim jeans will use 1,000 gallons of water to grow the cotton, manufacture the material, ship the garment, and launder after wear.[5]

Today, the combined textile and apparel sectors contribute as much as 8–10% of global greenhouse gas emissions.[6] If the industry's emissions continue on the same trajectory, it will be impossible for the world to meet the goals of the Intergovernmental Panel on Climate Change.[7]
Quick and substantive action is needed. Water conservation, energy decarbonization, and implementation of responsible waste management practices will require collaboration with policy makers, financial institutions such as the International

Finance Corporation (IFC), and the consumers who purchase and ultimately dispose of the clothes they wear.

## Sector Background

Textile and apparel manufacturing has driven economic development and technological advancement for 250 years, helping to launch the first Industrial Revolution in the 18th century. Ever since, the industry has been putting developing economies on a fast track to becoming middle- and high-income countries by creating jobs, accelerating their technological know-how, and expanding their access to global trade. The four Asian Tigers—South Korea, Singapore, Taiwan, and Hong Kong, with modern economies barely 50 years old—now rank among the world's most industrialized countries after getting their start in textile and apparel manufacturing.

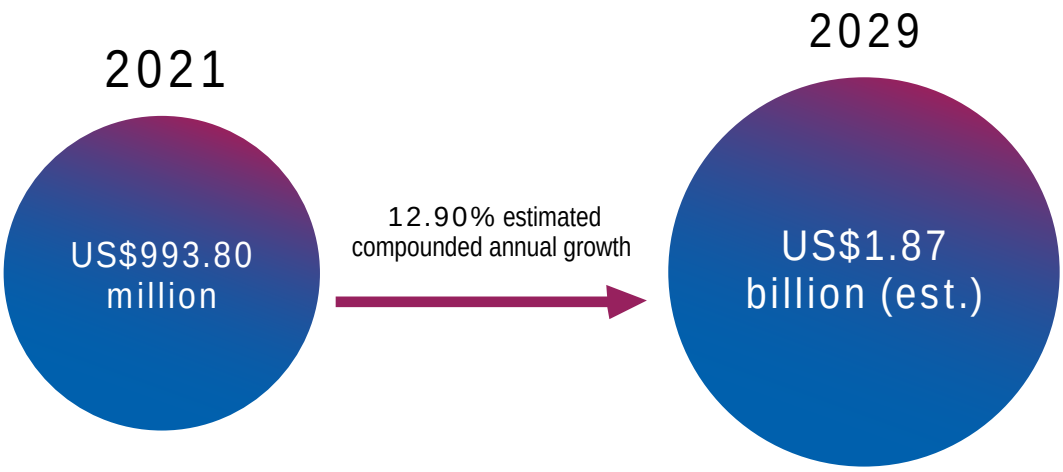
The industry has also helped to elevate other countries, most notably China, which emerged as the world's leading apparel manufacturer in the last two decades, driven by its export-oriented policies, economic reforms, cheap labor, and rapid expansion of its manufacturing base. Today, "Chinese-made" accounts for more than half of global apparel production, though

**World's Largest Apparel Companies, by Market Capitalization**

| | |
|---|---|
| LVMH | France |
| | United States |
| DIOR | France |
| INDITEX | Spain |
| TJX | United States |

*Source*: CompaniesMarketcap.com.

### Global Textile Market Projected Growth




*Source*: Data Bridge Market Research 2022.

countries with lower-cost workers are increasing their share.[8] The European Union ranks second after China, followed by Bangladesh, where the industry provides four million jobs and accounts for four-fifths of the country's total exports.[9]

In terms of consumer markets, China, the United States, the United Kingdom, Germany, and Japan are the five biggest for apparel, while European and U.S. firms top the list of the world's biggest apparel companies by market capitalization.[10]

Global apparel sales experienced a sharp decline in 2020 due to the impacts of the COVID-19 pandemic, but the industry has since bounced back. According to the Lenzing Group, an Austrian-based fiber producer, global demographics—particularly an expected 60% increase in the number of middle-class households over the next two decades—"support a further growth in per capita fiber consumption."[11]

The industry's dramatic expansion has come at a cost to the environment. Textiles account for 9% of microplastic discharge into oceans,[12] and the manufacturing process releases about 1.7 billion tonnes of greenhouse gas emissions annually.[13]

In addition, the fashion industry is notoriously thirsty, using 93 billion cubic meters of water each year, enough to meet the consumption needs of five million people.[14] Water goes toward growing cotton, dyeing and treating textiles, and washing

clothes; many of these activities also contribute to water pollution.

Plastic-based synthetics currently make up about 63% of the more than 50 million metric tons of fiber produced annually to make clothes.[15] Most of these fibers are made from polymers derived from coal, oil, or natural gas.[16] Cellulose-based fibers—both natural, such as cotton, linen, and jute, and semisynthetic manmade cellulose fibers, including rayon and viscose—are used to make about 33% of clothes.[17] The share of manmade cellulose fibers is expected to grow, but not that of cotton.

The textile and apparel value chain is driven by the global brands and retail chains which contract production out to multiple levels of suppliers in developing countries. These suppliers exhibit wide variation in efficiency, capacity, and approach in terms of managing sustainability and social issues. The global brands and retail chains can play a key role in making the supply chain sustainable by requesting manufacturers to comply with existing laws and by supporting suppliers to achieve more efficient, environmentally friendly production.





## Sustainability

In 2021, many leading fashion stakeholders including the IFC launched the Fashion Industry Charter for Climate Action under the auspices of the United Nations Climate Change, with a goal of getting the textile and apparel industry to reach net zero emissions by 2050.[18] The European Union is requiring the industry to attain circularity by 2030, and consumers, investors, and corporate boards are also increasing pressure on garment companies.

Recognizing the importance of this issue, many leading brands have pledged to become more transparent about their products' environmental and social impact and have adopted ambitious emissions-reduction and other targets. Levi Strauss & Co.,which produces the eponymous blue jeans, has pledged to achieve a 40% absolute reduction in supply chain (Scope 3) emissions by 2025, in part by working with key suppliers to create roadmaps and identify solutions for reducing

their climate and water impacts.[19] The company is sourcing from less thirsty cotton and adopting dyeing and production processes that use less water and fewer harmful chemicals.[20] Luxury group Kering has launched pilots focused on regenerative agriculture[21] and supported two dozen mill suppliers to improve their water and energy efficiency.[22]

Larger suppliers to the global brands are taking the initiative to make changes too. In Bangladesh, DBL Group's Hamza Textiles Ltd—a key supplier to PUMA, Inditex, C&A, and others—has installed solar systems, ramped up wastewater treatment, and incorporated energy-efficient machinery. IFC recently invested $22 million in the company. The financing will help pay for more resource-efficient technologies, allowing Hamza Textiles to sustainably expand its dyeing and finishing capacity and create more than 900 new jobs.

Even as the pandemic dampened demand and disrupted supply chains, it has encouraged brands to near-shore to reduce dependence on Chinese suppliers and address supply chain vulnerabilities.[23] This trend of bringing production closer to consumer markets has helped to lower transport-related emissions while providing opportunities for factories in countries such as Morocco, Tunisia, Egypt, and Jordan (supplying European brands) and Central America (supplying North America) to invest in more energy- and water-efficient production lines.

Travel restrictions implemented during the pandemic, meanwhile, popularized the use of 3D digital design. Broad adoption of this technology is reducing emissions generated by travel and the volume of waste fabrics from multiple rounds of sample sewing.

In Asia, suppliers in Vietnam and Sri Lanka have benefited from low-cost labor forces and an emphasis on sustainable production practices to draw some global brands away from China, where costs are higher and facilities tend to be older and less efficient.

Other countries are seeking to integrate and shorten their

textile and apparel supply chains. Garment-producing countries such as Bangladesh, which previously imported its fabrics from China and elsewhere, are branching out into fabric and yarn manufacturing, while cotton-producing countries are starting to make yarns, fabric, and garments. Shortening the supply chain can reduce transport-related emissions and also help strengthen accountability and transparency, two factors that contribute to responsible production.

## BOX I: *Morocco Case Study*

**Situated on Europe's doorstep, Morocco's textile and apparel exporters are poised to benefit from their country's embrace of a green agenda that emphasizes circular economy production principles. IFC is working with Moroccan textile manufacturer Reciclados Tanger to finance and develop an integrated mill that uses postindustrial and postconsumer textile waste as a raw material.**

**The program compliments the sustainability efforts being undertaken in Europe, one of the world's largest consumer markets and Morocco's chief export destination. The EU's Green Deal aims to make "almost all physical goods on the EU market more friendly to the environment, circular, and energy efficient"[a] and stipulates that by 2030, "all textile products placed on the EU market are durable, repairable and recyclable, to a great extent made of recycled fibers."[b]**

**IFC believes Morocco is in a unique position to sustainably grow its textile and apparel sector by backwardly integrating its manufacturing facilities to use more recycled materials while introducing more complex production processes that open the door to global value chains.**

a. European Commission 2022.
b. European Commission n.d.

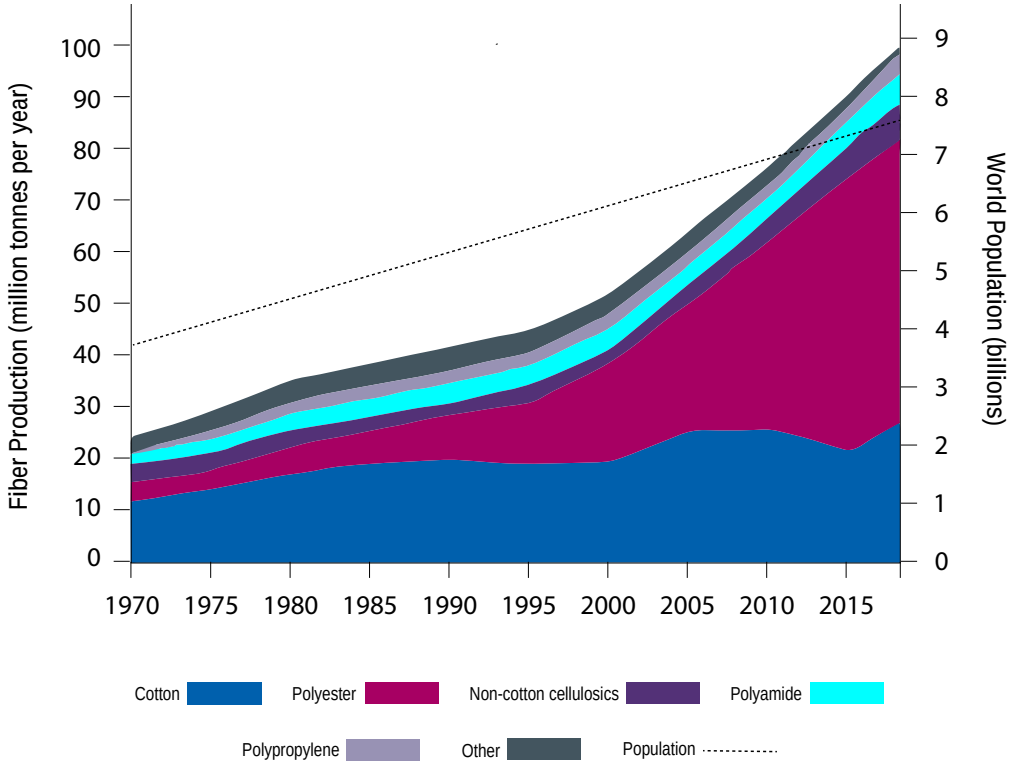
# Challenges & Opportunities

The textile and apparel industry arguably faces a complicated path to achieving net zero goals. Long and complex supply chains make it difficult for global brands to enforce, or even monitor, manufacturing processes for sustainability, especially among smaller suppliers.

Another challenge centers around the critical role that retailers and consumers play in the waste and recycling part of the cycle. Fast fashion is a major contributor to the estimated 92 billion tonnes of garments that end up in landfills each year, and Americans alone discard an average of 81.5 pounds of clothes each per year.[24]

Shifting such behavior will be essential to achieving a circular economy in the industry, but companies must also change the manufacturing process, which accounts for the largest share of water use and pollution and of greenhouse gas emissions. Regulatory support can help the industry strengthen sustainability, but primarily it will be up to the brands that drive the supply chain.

**Growth in Global Population and Textile Production by Fiber Type (1970-2015)**




*Source*: researchgate.net.

## Water and Environment

Water use and pollution rank among the industry's biggest challenges, with about one-fifth of the wastewater worldwide originating from fabric dyeing and treatment.[25] Industry organization ZDHC[26] has helped to establish minimum standards aimed at reducing chemical pollution, and more than two-thirds of fashion companies are members.[27]
A small but growing number of companies are looking to set targets to align their water management strategies with local conditions.

Technologies exist that can help reduce water use and pollution; for example, water in the dyeing process can be fully recycled. But these innovations require big investments, limiting adoption to major players with large capacity. Industrial parks with centralized wastewater treatment offer a potential solution for smaller players. To reduce the amount of water used to wash clothes, some brands are striving to change consumer behavior.



## Emissions

The fashion industry's current share of global emissions is on par with those of leading hard-to-abate heavy industries. At its current rate of expansion, the industry's total greenhouse gas emissions are projected to surge by more than 50% by 2030.[28] Production processes are estimated to account for 70% of these emissions.[29] Fabric production requires the most energy and, with coal serving as the primary source for generating steam needed to dye and print fabrics, emits a large part of these greenhouse gases.

Alternative energy sources are available, and more advanced companies have switched to lower carbon fuels such as natural gas, increased use of photovoltaics, and even biomass. The adoption of solar panels is becoming a mainstream solution for larger suppliers and manufacturers, such as Turkey-based Sanko Textile, which is partnering with IFC to increase its solar panel capacity.

Reducing emissions will be more challenging for the countless smaller suppliers that are not directly in contact with export markets. Currently, an estimated 40% of the

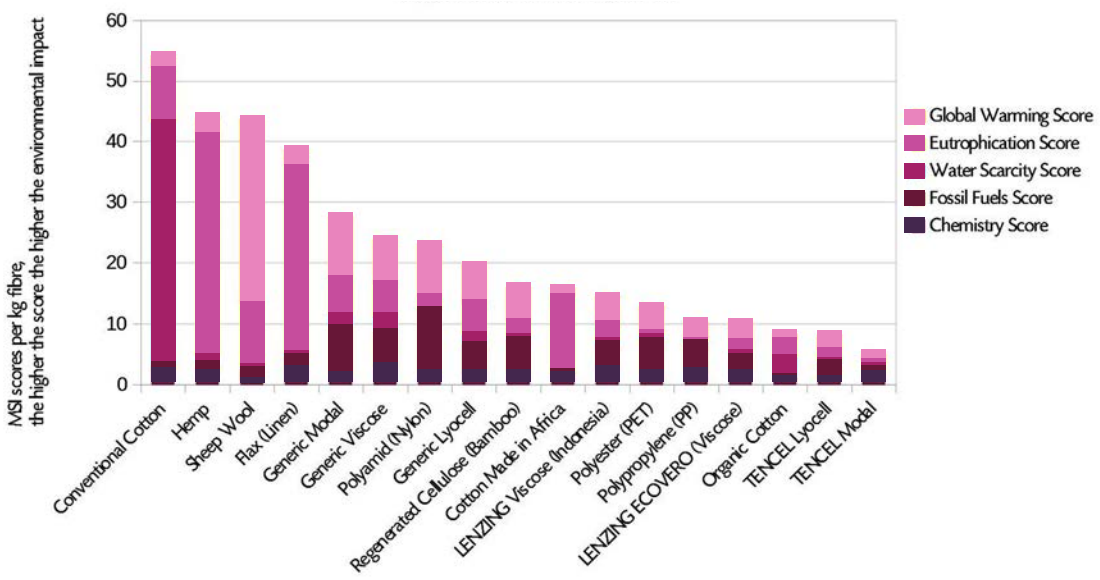
industry's $CO_2$ is generated by Tier 2 suppliers that manufacture textiles.[30]

Downstream activities also generate emissions, whether at the retail and consumer levels or at the end-of-life stage.[31] Cutting back on washing and drying by consumers could deliver 186 million tonnes of carbon emission reductions—as well as water savings—but this will require brands and retailers to provide better care instructions and more sustainable fabrics. Some executives are leading by example: Levi's CEO shared that he hadn't washed his jeans in over a year.[32]

## *Materials*

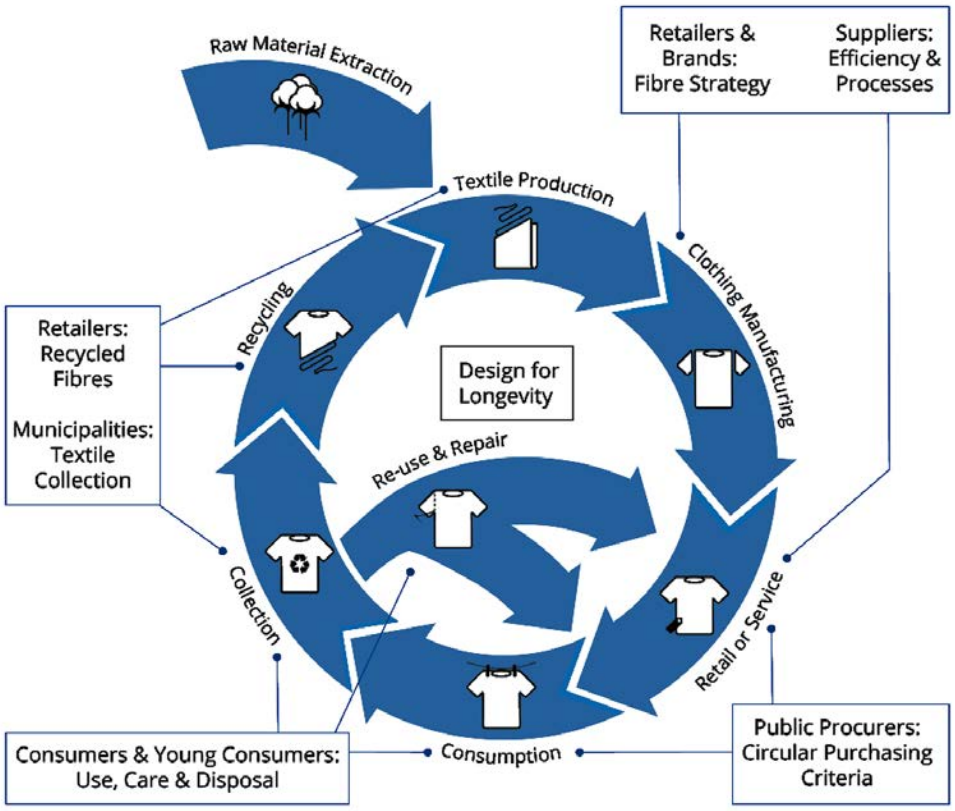
Current fibers (cotton, synthetics, and cellulosic fibers) all have varying negative impacts on the environment. The industry can alleviate these by adopting new techniques and technologies, from applying microirrigation and growing organic for cotton production to replacing fossil fuel-based synthetics with recycled polyethylene terephthalate (PET) or biobased or biodegradable synthetics, such as those made from starch.[33] Cost remains an issue, but wider adoption and economies of scale should make innovative materials more affordable.

**Higg Materials Sustainability Index**




*Source*: Lenzing Group.

Circular Cycle of Textiles




*Source*: Ellen MacArthur Foundation 2017.

Lenzing predicts that manmade fibers will constitute nearly the entirety of future fiber demand, and that wood-based cellulosic fibers especially will benefit from the sustainability trend. Based on the Higg Materials Sustainability Index, wood-based fabrics such as TENCEL™ exact a significantly lesser toll on climate, water, and soil than natural fabrics such as cotton and wool.[34]

## *Waste and Circularity*

Overproduction and fast fashion have contributed to a major waste problem for the industry. Currently, less than 1% of textile waste is recycled into new fibers for clothing, translating into more than $100 billion in lost material annually.[35] Use of 3D in design, online marketing, and virtual try on can help alleviate waste. New retail models, such as fashion rental

platforms and clothes made to last, increasingly offer more sustainable options to environmental-minded consumers.

The most impactful solution will be converting the industry to a circular economy. Fully scaled, existing recycling technologies could deliver 75% "textile-to-textile recycling" back into the system and 5% recycled feedstock from other industries.[36] Under the Circular Fashion Partnership led by Global Fashion Agenda, a pilot program brought together brands, manufacturers, and recyclers in Bangladesh to capture and recycle postindustrial textile waste.

McKinsey estimates scaling this model in six major textile-manufacturing countries (Vietnam, Turkey, India, Malaysia, Indonesia, and Bangladesh) could comprise a $4.5 billion market. To overhaul the sector globally would require at least $5 billion to $7 billion in capital investments in recycling technologies by 2026, along with investments in collection and sorting infrastructure.[37]



## IFC Role

IFC has a long record of investing in the textile and apparel industry to increase countries' competitiveness, promote sustainable performance standards, and encourage social and workplace advances. Its approach to the sector includes: (i) laying the foundation for industrial production of textiles and apparel; (ii) expanding and diversifying the textile and apparel manufacturing base; and (iii) supporting more complex textile and apparel manufacturing.

As a partner with deep roots in the industry, IFC has helped improve the efficiency of plants and worked with companies to transition to renewable energy, improve effluent waste management, and conserve resources such as water.

IFC also has a number of specific programs that can help global companies promote sustainable manufacturing among their suppliers and reduce their Scope 3 emissions.

## *Global Trade Supplier Finance Program (GTSF)*

Launched in 2012, GTSF is a US$1 billion facility that provides financing to suppliers that sell products to corporations, and facilitates suppliers' access to competitive financing solutions. The program disbursed more than US$2.27 billion to 352 suppliers in fiscal year 2022, with more than two-thirds of the financing going to the world's poorest developing countries.

GTSF improves the sustainability of supply chains by offering sustainability-linked pricing, which connects receivable discount rates to suppliers' environmental and social performance; such arrangements accounted for 66% of all disbursements in fiscal 2022. The program also provides direct advisory services to suppliers aimed at improving labor standards, environmental and social performance, and gender inclusion, and supports the development of supply chain decarbonization programs. GTSF has been working with a number of global apparel brands, such as Nike, Ralph Lauren, and Under Armour.

### BOX II: *IFC Textile and Apparel Total Financing Commitments*

Total financing commitments by IFC in Textile and Apparel in the last 10 fiscal years amounted to approximately

**$10 billion,**

including long-term and short-term financing.

## *Partnership for Cleaner Textile (PaCT)*

This long-running IFC advisory program seeks to bring systemic, positive change to the textile value chain in Bangladesh by contributing to the sector's long-term competitiveness and improved sustainability. IFC has worked with more than 414 textile factories in Bangladesh to help them identify and implement cleaner production solutions such as improved energy efficiency, water-use reduction, and

increased use of renewables.

The program has generated annual cost savings exceeding $100 million for participants, reduced water usage by about 30 billion liters a year (enough to meet the annual water needs of almost a million people in Bangladesh), and cut more than 670,000 tons of carbon emissions equivalent per year (equal to removing more than 100,000 cars from the road). IFC has partnered with multiple brands in Bangladesh, including Gap Inc., Levi Strauss, VF Corporation, and Puma.

IFC has expanded the PaCT approach pioneered in Bangladesh to its work with other global brands and their suppliers, helping to identify, assess, and implement decarbonization solutions for suppliers in Asia, Africa, Europe, and Latin America.

## *IFC-ILO Better Work Program*

This partnership between IFC and the United Nations' International Labour Organization (ILO) brings diverse groups together—governments, global brands and retailers, factories, and unions and workers—to improve working conditions and competitiveness in apparel value chains.

The Better Work Program is engaged with more than 50 global brands and retailers as partners, and more than 2,000 apparel supplier factories, reaching 2.5 million workers across 12 countries. At the factory level, Better Work provides labor assessments, training, and advisory services.

## *Gender Equality and Returns (GEAR)*

GEAR is a training program that helps female workers progress and excel in managerial roles, increasing gender diversity at the management level. Partnering with leading apparel brands such as H&M and Marks & Spencer, the program has trained more than 750 female employees in over 100 apparel factories in Bangladesh and Vietnam.

### *Workforce Program*

IFC's Workforce advisory programs provide manufacturing clients with assessments and advisory services focused on recruitment of women employees, equitable career development, and gender-inclusive workplace policies.

Since 2018, IFC has partnered with manufacturing clients in the garment and cement industries to improve gender equity, including a partnership with Nike to support more than 100 of its strategic suppliers on gender.

## Conclusion

Global apparel brands and their network of suppliers face increasing pressure from consumers, governments, workers, and bankers to decarbonize their operations, conserve resources, reduce waste, and improve labor conditions. Over the past few decades, even as production has boomed to meet the needs of a growing global population, textile and apparel manufacturers have made significant progress. Today, they are more conscious of the impact of manufacturing and they are more conscientious about finding sustainable and often circular solutions to address these challenges.

However, it will take even greater collaboration across the value chain along with support from governments and international financial institutions for the industry to achieve its goals. IFC will complement the work of investors, regulators, and end-users to help the textile and apparel industry drive a pathway to a zero carbon future.

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# Endnotes

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2. Fashion United 2022.
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