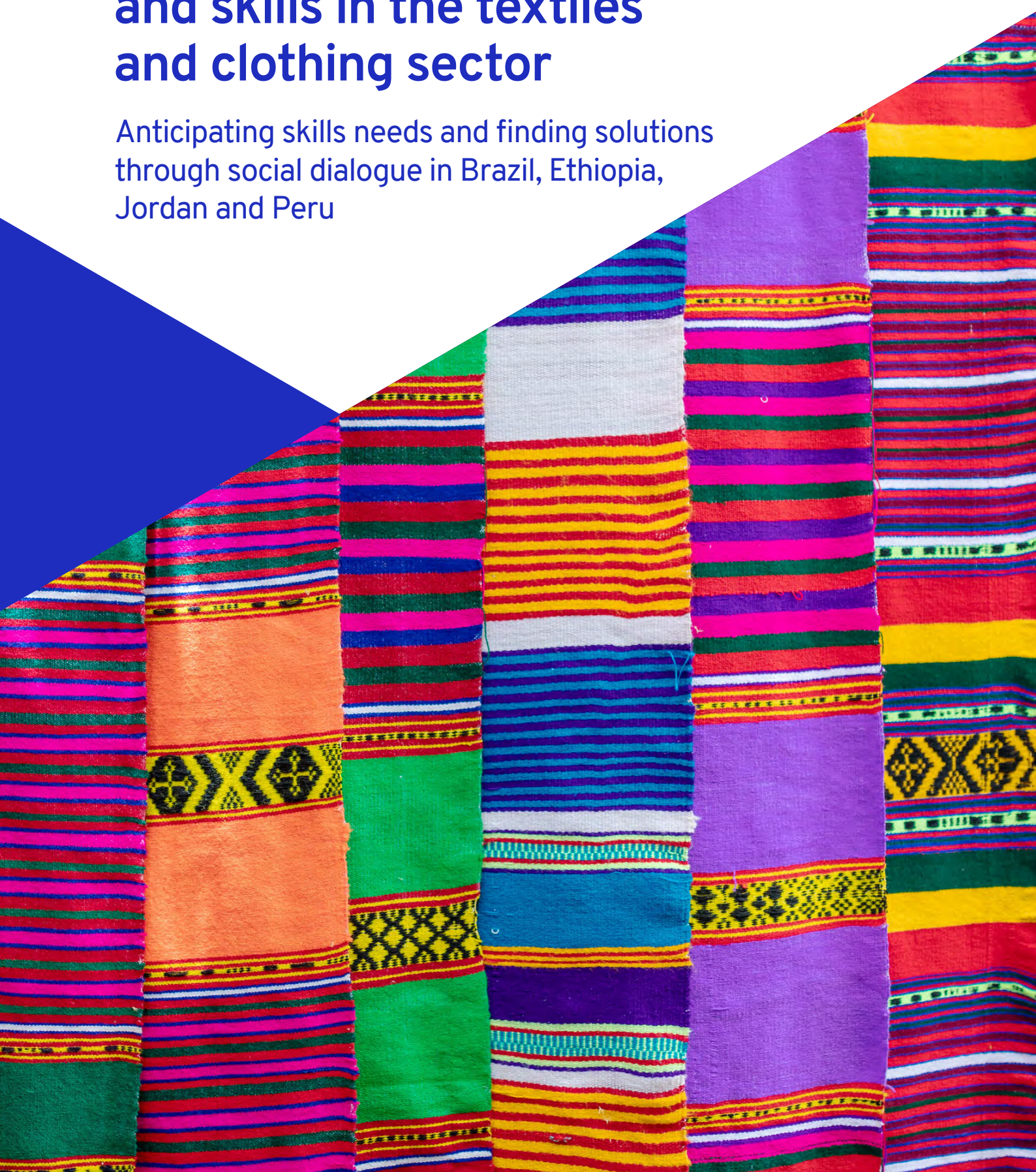




International
Labour
Organization

► The future of work and skills in the textiles and clothing sector

Anticipating skills needs and finding solutions
through social dialogue in Brazil, Ethiopia,
Jordan and Peru



▶ **The future of work
and skills in the textiles
and clothing sector**

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First published 2022

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The future of work and skills in the textiles and clothing sector – Anticipating skills needs and finding solutions through social dialogue in Brazil, Ethiopia, Jordan and Peru

ISBN 978-92-2-037408-5 (print)
ISBN 978-92-2-037409-2 (web PDF)

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► Preface

The ILO Centenary Declaration for the Future of Work, 2019 calls on ILO Member States to develop a human-centred approach to address the profound and rapid changes in the world of work. The Declaration asks the ILO to, inter alia, promote “the acquisition of skills, competencies and qualifications for all workers throughout their working lives as a joint responsibility of governments, employers and workers”. In doing so, these tripartite constituents of the ILO should address existing and anticipated skills gaps and pay particular attention to ensuring that education and training systems are responsive to labour market needs while enhancing workers’ capacity to make use of the opportunities available for decent work.

This report, *The future of work and skills in the textiles and clothing sector: Anticipating skills needs and finding solutions through social dialogue*, has been prepared for ILO constituents and other key actors in the textiles and clothing industries in Brazil, Ethiopia, Jordan and Peru to address future skills needs in the textiles and clothing sector. The textiles and clothing industries face an enormous challenge to quickly adapt to future changes in production and consumption. Technological innovations, demographics shifts, globalization, environmental and climate change, and lately the impact of COVID-19, are transforming the sector and increasing the demand for a skilled workforce.

In this context, the ILO’s Sectoral Policies Department (SECTOR) developed and implemented a research project on the future of skills needs in the industries. Funded by the Government of the Netherlands, the project partnered with the Better Work Programme, the Skills and Employability Branch and the ILO/ Brazil South-South Cotton with Decent Work Project to develop or review studies to anticipate existing and future demand for skills in the textiles and clothing industries in Brazil, Ethiopia, Jordan and Peru. Findings were subsequently validated by the tripartite constituents in the four countries, who adopted recommendations on how to develop the skills needed by the industry to succeed.

This report is the result of the combined efforts of colleagues from SECTOR, which promotes decent work by supporting the tripartite constituents of the ILO in creating opportunities and addressing challenges in 22 different economic and social sectors at the global, regional and national levels. The research was prepared by William Kemp, under my general guidance and the supervision of Casper N. Edmonds and Beatriz Cunha. Country studies and analyses were conducted with the support of Alemayehu Zewdie, Eman Alaraj, Fernanda Barreto, Laura Schmid, Maria del Rocio Valencia, Natanael Lopes, Olga Strietska-Ilina and Tareq Abu Qaoud. Comments were provided by Adam Greene, Bolormaa Tumurchudur-Klok, Cornelius Gregg, Paolo Salvai and Raphael Peels.

We are furthermore grateful to the Government of the Netherlands for its valuable and strategic financial support in the production of this research paper.

Alette van Leur

Director, Sectoral Policies Department

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▶ 1

Introduction



▶ 1. Introduction

The future of work in the textiles and clothing industries is changing profoundly and rapidly because of technological advances, climate change, demographic shifts, globalization, geopolitics and other drivers and megatrends.¹ The devastating impact of the COVID-19 pandemic has further compounded the challenges and complexity that governments, employers and workers in the industries face as they navigate an increasingly uncertain and unpredictable future.

As demand and consumer preferences change, low-cost production alone will most likely no longer be enough to compete in the industries. Workers with the skills needed now and in the future are increasingly critical to maintaining competitiveness in a constantly evolving global market and to advancing decent work for both women and men in the sector and in domestic and global supply chains.²

Recent reports show that the skills needed to drive the industry forward in the midst of a digital revolution are lacking, and that the COVID-19 crisis is likely to increase the demand for workers with the skills needed to drive digital and greener production.³ This is likely to widen the skills gaps at a time when the textiles and clothing industries are competing with other industries to attract skilled workers, particularly workers with science, technology, engineering, and mathematics (STEM) backgrounds and information and communication technology (ICT) skills.

Governments, employers and workers in an increasing number of countries with large textiles and clothing industries are responding to these challenges and opportunities. ILO constituents are using various methods to anticipate future skills needs, and they have engaged in various forms of social dialogue to formulate and implement measures to help equip employers and workers with the skills and training that they need to ensure their industries are competitive, resilient and sustainable in the future.

Brazil, Ethiopia, Jordan and Peru are among the countries that have taken significant steps to anticipate future skills needs and find solutions through social dialogue. Located in three different regions, the four countries have diverging histories, political systems and growth trajectories, markedly different income and education levels, and remarkably dissimilar industries that produce textiles and clothing for a diverse set of markets, buyers and consumers. Nevertheless, governments, workers and employers in the four countries share a common goal: to use skills anticipation and inclusive skills development to help grow their sectors sustainably and ensure better decent work opportunities for millions of women and men who work in the industries.

In the four countries, the majority of textiles and clothing workers are women. As demonstrated in several studies,⁴ women in the sector have historically faced poor working conditions and higher than average rates of violence, harassment and discrimination. Skills anticipation and inclusive skills development offer an opportunity to ensure that digital, circular and greener production processes benefit both women and men so that they may “pursue both their material well-being and their spiritual development in conditions of freedom and dignity, of economic security and equal opportunity”.⁵

1 ILO, *The future of work in textiles, clothing, leather and footwear*, 2019.

2 ILO, *COVID-19 and the textiles, clothing, leather and footwear industries*, 2020.

3 See: MOTIF, *2020 report: The state of skills in the apparel industry*, 2020.

4 See Better Work studies here: betterwork.org

5 ILO: *Declaration of Philadelphia: Declaration concerning the aims and purposes of the International Labour Organization* (1994).

1.1 Purpose

This report summarizes the findings of efforts to anticipate future skills needs in the textiles and clothing industries in Brazil, Ethiopia, Jordan and Peru.

The four countries were included in this study because of the significant efforts that the governments, employers and workers in each country have been undertaking to anticipate future skills needs in the textiles and clothing industries. It was furthermore important to include countries in different regions with different income and education levels, stages of technological development, and characteristics of their textiles and clothing industries.

The purpose of the report is to share the solutions and recommendations for skills development that governments, employers and workers in the industries have adopted through various forms of sectoral social dialogue. The aim is to inspire further social dialogue and action among ILO constituents in these and other countries, in line with the international labour standards that guide national human resources and skills development (box 1).

The findings and recommendations in this report will contribute to the delivery of several development cooperation programmes that the ILO is implementing in the textiles and clothing industries in these four countries to help constituents advance decent work. The Better Work programme and separate ILO skills development projects are implemented in both Ethiopia and Jordan, while the ILO/Brazil South-South Cooperation Programme on Decent Work in Cotton Production is supporting constituents in Brazil and Peru.

► Box 1. Skills anticipation and development policies

For constituents of the ILO, skills anticipation and inclusive skills development are not end goals, but a means of action to achieve full and productive employment, decent work and economic growth, and other Sustainable Development Goals (SDGs) and targets, especially target 8.5: “achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value”; as well as target 4.4: to “substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.”

This is reflected in the fact that skills anticipation and development forms part of a growing number of industrial policies that governments, employers and workers have formulated for their textiles and clothing sector to increase employment and improve the productivity, competitiveness, working conditions and environmental sustainability of the sector and its supply chains.

1.2 The ILO’s approach to skills and lifelong learning

The ILO’s work on skills and lifelong learning aims to support ILO constituents in its 187 Member States to reform and strengthen their national skills policies, improve their technical and vocational education and training (TVET) systems, and expand access to employment-related training to foster sustainable development, advance decent work, and promote inclusivity.

Education and lifelong skills development are essential to break the vicious cycle of poor education, low productivity and poverty, and to promote inclusive growth and decent jobs for all. Skills development and education are also critical to the achievement of the SDGs and to address the opportunities and challenges of the future of work.

The ILO *Centenary Declaration for the Future of Work, 2019*, adopted at the 108th Session of the International Labour Conference in June 2019, gave prominence to skills and lifelong learning and the need to increase investment in people's capacities. Acknowledging the challenges that countries worldwide face in relation to the skills, policies and institutions of work that are required for workers and employers to capture the opportunities of the future of work, "Skills and lifelong learning to facilitate access to and transitions in the labour market" was subsequently introduced as one of the eight policy outcomes of the ILO in its Programme and Budget for 2020-21.⁶

The ILO has since then conducted research and provided policy advice and technical assistance to help constituents integrate skills development into national and sector-specific development strategies. The work is currently focused on the following interlinked areas:

- increasing the capacity of ILO constituents to identify current skills mismatches and anticipate future skill needs;
- increasing the capacity of ILO Member States to strengthen skills and lifelong learning policies, governance models and financing systems;
- increasing the capacity of ILO constituents to design and deliver innovative, flexible and inclusive learning options, encompassing work-based learning and quality apprenticeships.

The ILO has launched the [SKILLS Innovation Labs](#), which provide space and resources to translate early-stage skills innovations into ready-to-test prototypes through the provision of technical advice, coaching and access to a network of innovators and experts on skills. This complements existing programmes and tools on skills and employability, including the [Skills for Trade and Economic Diversification \(STED\) programme](#) to identify the skills development strategies required for future success in international trade, among others.

► Box 2. International labour standards concerning skills

The efforts of the ILO and its constituents to achieve decent work are guided by international labour standards. The International Labour Conference has adopted the Human Resources Development Convention, 1975 (No. 142), and the Human Resources Development Recommendation, 2004 (No. 195), which focus on technical and vocational education and training, skills development and lifelong learning.

Convention No. 142, which has been ratified by 68 countries, calls on each Member of the ILO to "adopt and develop comprehensive and coordinated policies and programmes of vocational guidance and vocational training" (Article 1), in consultation with employers' and workers' organizations (Article 5).

While the Convention states that these policies, programmes and systems should "meet the needs for vocational training throughout life of both young persons and adults in all sectors of the economy" (Article 4), Recommendation No. 195 calls on governments, employers and workers to renew their commitment to lifelong learning: "governments by investing and creating the conditions to enhance education and training at all levels; enterprises by training

⁶ ILO, *Programme and budget for the biennium 2020-21*, 2019.

their employees; and individuals by making use of the education, training and lifelong learning opportunities” (Preamble).

The ILO’s work is also guided by the Conclusions on skills for improved productivity, employment growth and development, which the International Labour Conference adopted in 2008, and by *The youth employment crisis: A call for action*, a resolution adopted by the Conference in 2012.

In addition, many other ILO instruments, conclusions and policy guidelines contain references to skills development, education and vocational training.

1.3 Skills foresight methodologies

Skills foresight methodologies are still in development and often tailored to specific contexts, industries and countries.

The challenge of identifying future skills needs is particularly acute in the textiles and clothing industries. The industries are changing rapidly and global competition is increasing as new players enter the market, global supply chains evolve and new technologies and greener business models are adopted (see chapter 2).

To promote the sustainability of the textiles and clothing industries, governments, workers and employers in many countries are stepping up investments in long-term strategies, including through the formulation and implementation of national industrial policies for the sector. Skills needs anticipation and development tools can play a key role in preparing the industries for the future of work and advancing decent work and promoting inclusion for millions of women and men.

► Box 3. The ILO Skills for Trade and Economic Diversification (STED) methodology

STED is a methodology developed by the ILO that provides strategic guidance for the integration of skills development in sectoral policies. It is designed to support growth and decent employment creation in sectors that have the potential to increase exports and to contribute to economic diversification. STED takes a forward-looking perspective, anticipating a sector’s development and growth opportunities based on its global competitive position and market development. Together with an analysis of current skills supply and demand, this provides an outlook of existing and future skills shortages.

The STED methodology involves a Diagnostic Phase that analyses the skills required for the target sector to be successful in the future and develops a strategy for skills development to address the needs. When feasible, it also includes an Implementation Phase to assist in implementing the strategy for skills development. All the work is undertaken in close partnership with, and under the guidance of, sector stakeholders, including but not limited to, the government, employers’ and workers’ organizations and their representatives, and providers of education and training.

There are different versions of the methodology available. Full STED includes substantial primary and secondary research components. Rapid STED is lighter on research, and relies on the existing knowledge of sector partners to complement secondary research.

Major research activities under Full STED include:

- Background study
- Survey of employers

- Skills supply study
- Consultations with partners and other stakeholder experts.

Findings from these activities are synthesized into an analysis by the technical team for the work, and subsequently brought to stakeholders who deepen the analysis and propose recommendations. Ideally this is achieved through a technical and policy workshop, direct stakeholder involvement in the analysis and further in-person consultations. In the time of COVID-19, it has been necessary to adapt these approaches so as to limit in-person contact. The skills strategies developed are reviewed and validated to the point where they can be endorsed and adopted by national and sector stakeholders.

Sources: ILO, *STED: A Practical Guide*, 2012; ILO, *Rapid STED: A practical guide*, 2020.

In Ethiopia and Jordan, stakeholders used the ILO Skills for Trade and Economic Diversification (STED) methodology (box 2), while stakeholders in Brazil and Peru used the Prospective model developed by the Serviço Nacional de Aprendizagem Industrial - SENAI (see section 3.2). While there are some differences between the STED and SENAI methodologies, both approaches enable stakeholders in specific industries to adapt to the rapidly changing future of work and to gear skills training programmes towards lifelong learning that builds capacity to meet the future need of the market and address the skills mismatch that industries will otherwise face.⁷

1.4 The impact of the COVID-19 pandemic

The novel coronavirus (COVID-19) pandemic has had an immense and unprecedented impact on the textiles and clothing industries. The highly globalized sector has suffered from both demand- and supply-side disruption, causing factories to close and millions of women and men to lose their jobs.

While the future for the industries remains uncertain, the recovery process is likely to be slow. But it is also likely to bring about significant transformations in business models and supply chains, and to accelerate the digital transformation already under way.⁸ Furthermore, there are growing calls for the industries to embrace environmental sustainability and circular economy approaches and to invest in sustainable enterprises and green jobs as the industries build back better.⁹

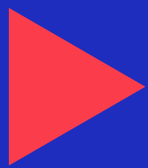
In Brazil, Ethiopia, Jordan and Peru, efforts to forecast, anticipate and develop the skills needed in the industries began before the pandemic struck and significantly altered the dynamics of the industry. The findings that have been summarized in this report were finalized following the initial outbreak and will have to be updated in the future as the impact of the pandemic unfolds. In this regard, the new [ILO Guidelines on Rapid Assessment of reskilling and upskilling needs in response to the COVID-19 crisis](#) has been prepared to help speed recovery from recession, to get people back to work safely, and to limit the career scarring effects of prolonged unemployment and skills mismatches.

Many of the findings and recommendations that arose from the pre-COVID-19 skills anticipation in Brazil, Ethiopia, Jordan and Peru remain relevant today. This includes the recommendation that skills anticipation and skills development with the full involvement of employers and workers and their representatives can and should play a significant role in the ongoing processes of formulating and implementing industrial policies to build back better. It is hoped that this and other key findings and recommendations in this report can help bring about the skills needed to create a more resilient, inclusive and sustainable textile and clothing sector.

⁷ ILO and Skolkovo, [Skills technology foresight guide](#), 2016; and ILO and OECD, [Approaches to anticipating skills for the future of work](#), 2018.

⁸ See, for example: ILO, [The future of work in textiles, clothing, leather and footwear](#), 2019.

⁹ See, for example: ILO, [Guidelines on Rapid Assessment of reskilling and upskilling needs in response to the COVID-19 crisis](#), 2020.



2

The future of work in the textiles and clothing sector and the demand for new skills



► 2. The future of work in the textiles and clothing sector and the demand for new skills

Demographics, climate change and globalization are shaping the future of textiles and clothing and changing what is required to be competitive in the industries. At the same time, a technological and digital revolution is altering the tools used and the skills needed for the industries to succeed and grow.

As the industries begin to recover and build back better, there is growing recognition of the urgent need to invest in the skills necessary to drive the industry forward. According to a new survey on the state of skills in the apparel industry, 57 per cent of respondents from all over the world felt that their companies had difficulty filling positions due to the lack of a skilled workforce, covering all areas from design, patternmaking, sustainability and environmental management, human resources, research and development and the soft skills of workers at all occupational levels. Retiring skills, a lack of quality professional training and a shortage of new industry entrants with the necessary skills were among the main reasons for the industry-wide skills gap, which constitutes a threat to future employment, growth and sustainability of the sector if it is not addressed.¹⁰

This chapter briefly outlines the textiles and clothing industries today and the impact that the above-mentioned megatrends and drivers are having on the sector, highlighting the benefits of skills anticipation and development to address these changes, with the active involvement of employers and workers.¹¹

2.1 Megatrends and drivers of change

2.1.1 Demographics

Shifting demographics such as the growth in the global population, the increase in the number of middle-class consumers, the transformation in the age structure across regions and countries, changes in consumer preferences and demand, and growing concerns regarding global health following the COVID-19 pandemic will continue to drive change in the industries.

As millions of new consumers join the global middle class each year, overall demand for textiles is likely to continue to increase. According to the 2021 Credit Suisse *Global Wealth Report*, the global middle class, defined as adults whose assets amount to between \$10,000 to \$100,000, more than tripled to 1.7 billion in mid-2020 from just 507 million in 2000.¹² The OECD has projected that this figure could reach 4.9 billion by 2030.¹³

In the short to medium term, demand for clothing is expected to grow fastest in Asia and the Group of Seven (G7) countries, whereas Africa is expected to contribute the most to population growth and significantly to economic growth by 2050. This is likely to increase regional demand in textiles and clothing and to further drive the emergence of African countries as new manufacturing destinations for the industries to service domestic and international markets. Countries that invest in the future skills needs of their textiles and clothing industries are more likely to capture the benefits of this growing market.

Significant changes have also been observed in terms of consumer preferences, fashion and brand loyalty, particularly among younger consumers. In many markets, there has been a growth in demand

10 MOTIF, *2020 report: The state of skills in the apparel industry*, 2020. The survey is based on 923 respondents from all over the world: 42 per cent from North America, 16 per cent from South America, 19 per cent from Europe and 21 per cent from Asia.

11 This chapter summarises and revises the research conducted in the 2019 ILO working paper *The future of work in textiles, clothing, leather and footwear*.

12 Chris Versace, Lenore Elle Hawkins and Mark Abssy, "World Reimagined: The Rise of the Global Middle Class," Nasdaq, 9 July 2021.

13 UNEP, *Preventing the next pandemic: Zoonotic diseases and how to break the chain of transmission*, 2020.

for natural and organic materials, second-hand products, and vintage fashion, as well as new clothing rental and sharing platforms and new models of recycling, creating new markets and new occupations within or related to the industries. If this trend continues, there will be a greater need for skills to support the emergence of circular economy approaches and business models.

Following the outbreak of the pandemic, constituents and stakeholders have focused their attention on how the industry can help become better prepared for future global health crises, which are in part caused by climate change and population growth. Skills development is increasingly part of debates and discussions on how to foster business resilience in the sector and how to bring about more resilient, sustainable and inclusive textiles and clothing supply chains.¹⁴

The world economy is generally faced with an escalating youth employment crisis, ageing workforces and the challenge of low female workforce participation and gender discrimination, as well as the need to create close to 520 million new jobs by 2030 to ensure full and productive employment for all. As highlighted above, the growing textiles and clothing industries can help provide decent work for millions of women and men. The skilling, re-skilling and upskilling of workers, as well as the recognition of skills across countries, will be essential to addressing the skills gap and realizing the potential for productive employment and decent work in the industries.

2.1.2 Climate change and environmental sustainability

Climate change is expected to have wide-ranging effects on textiles and clothing manufacturing and supply chains. ILO constituents in the textiles and clothing sector are increasingly recognizing that their efforts to advance decent work are jeopardized by extreme heat, air pollution or flooding, reduced availability of water, and the generation of chemical and other waste, which exacerbate occupational safety and health risks and undermine productivity. Skills development is an important component of equipping employers and workers with the knowledge and tools to adapt to a changing climate and to mitigate the industries' contribution to it.

Recent research has shed light on how the dominant model of textiles and clothing production today is resource-intensive and wasteful (figure 1). According to UN Environment, the global apparel industry consumes some 215 trillion litres of water per year and accounted for an estimated 8 per cent of the world's greenhouse gas emissions in 2016.¹⁵ According to the Ellen MacArthur Foundation, clothing production has approximately doubled in the last 15 years, while the number of times a garment is worn before being discarded has decreased 36 per cent compared to 15 years ago.¹⁶ Three-fifths of all clothes are thrown away within a single year of purchase and unsold clothing totals billions of dollars each year – with major brands accused of burning tonnes of stock over the last decade.¹⁷

A combination of green growth policies in many ILO Member States, consumer demand for sustainability and civil society campaigns have spurred action among brands, manufacturers, and producers of raw materials to adopt new, cleaner and more resource-efficient technologies, business models and production processes to reduce the industries' impact on the environment. Such processes include organic cotton production; drip-irrigation cotton growing; use of environmentally friendly replacement materials; dyeing processes that use no or little water; resource efficient washing; reduction and regulation of chemical use; resource-efficient machinery; use of renewable energy; and improved stock control and waste management. More recently, the industries have begun to adopt circular economy approaches to reduce the dependence on raw materials and increase the reuse, repair and recycling of materials used to produce new clothing, which in 2017 was reported to be less than 1 per cent.¹⁸

14 ILO, *Business Resilience: How can garment factories bounce back from COVID-19?*, 2020.

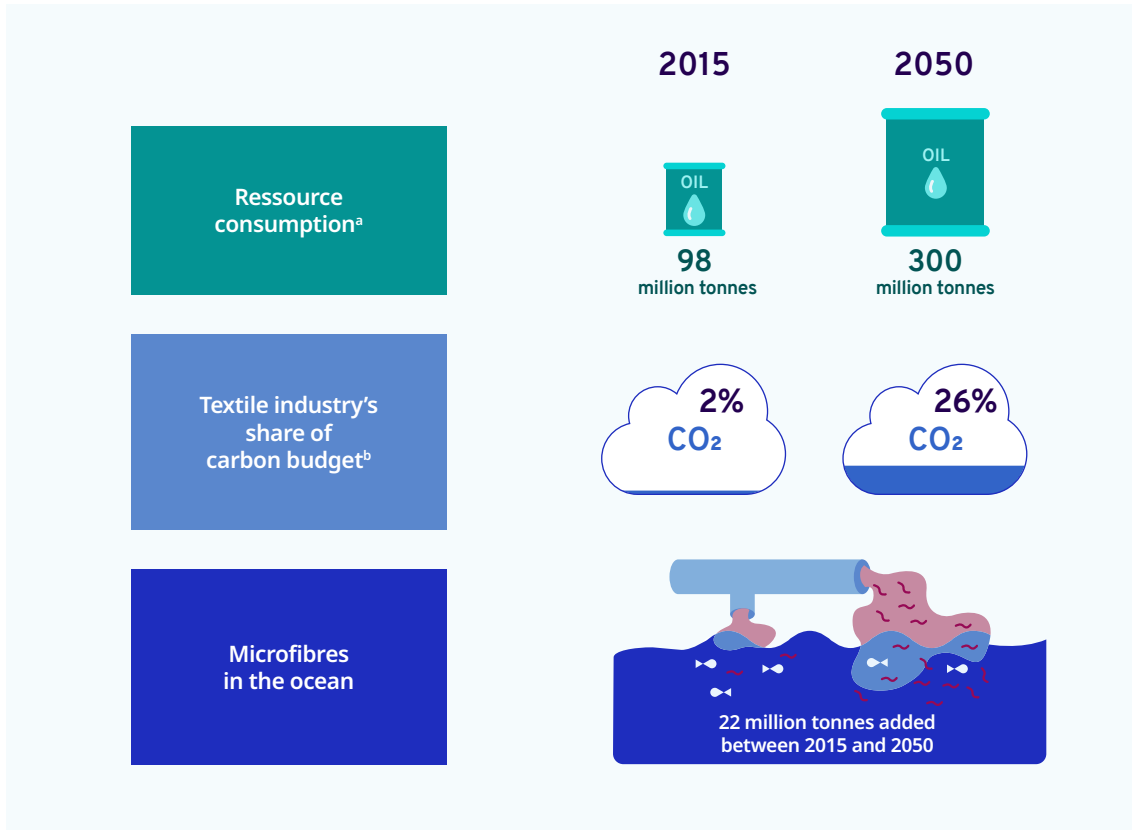
15 UNEP, *Sustainability and Circularity in the Textile Value Chain - Global Stocktaking*, 2020.

16 Ellen MacArthur Foundation, *A New Textiles Economy: Redesigning Fashion's Future*, 2017.

17 Margherita Licata and William Kemp, "The future of work in fashion", UN Today, 5 July 2020.

18 Ellen MacArthur Foundation, *A New Textiles Economy: Redesigning Fashion's Future*, 2017.

► Figure 1. The environmental impact of the textiles and clothing industries in 2015 and 2050



a) Consumption of non-renewable resources of the textiles industry, including oil to produce synthetic fibres, fertilisers to grow cotton, and chemicals to produce, dye, and finish fibres and textiles.

b) Carbon budget based on 2 degrees temperature increase scenario.

Source: Ellen MacArthur Foundation, A new textiles economy: Redesigning fashion's future, 2017.

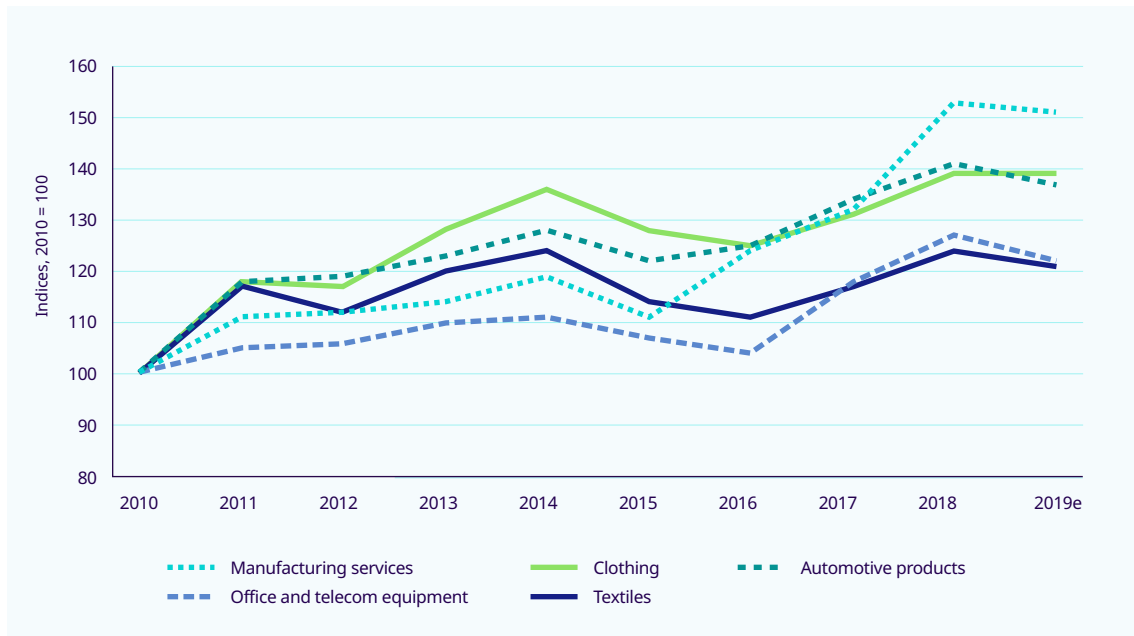
The rise of new circular business models and cleaner and more resource-efficient production processes will require skilled textiles and clothing workers, and these skills are increasingly in demand as environmental regulations of both exporting and importing countries become increasingly strict. In this regard, the ILO *Guidelines for a just transition towards environmentally sustainable economies and societies for all* (2015) highlight how governments and social partners should promote cooperation “at the industry level, where social partners can have a key role through all forms of social dialogue, including collective bargaining, in ensuring decent work and in anticipating skills needs and employment challenges, and in designing adequate and continuous training, among others.”¹⁹

2.1.3 Trade and globalization

While the long-term trend in world trade in textile and apparel has been upwards, exports have dropped sharply since the outbreak of the COVID-19 pandemic in 2019, as part of a general slowdown of trade in manufactured goods (figure 2).

¹⁹ ILO, *Guidelines for a just transition towards environmentally sustainable economies and societies for all*, 2015.

► **Figure 2. World exports of selected manufactured goods and services, 2010-19**
(indices, 2010 = 100)



Source: WTO, *World Trade Statistical Review 2021*, 2021.

However, textiles exports seem to have recovered with a significant increase in China's market share in world textiles exports from 39.2 per cent in 2019 to a 43.5 per cent.²⁰ Other Asian countries are likely to retain their lead in terms of world textile exports in the near future, in particular India, Viet Nam, Republic of Korea, Pakistan and Taiwan, Province of China (see table below).²¹

► **Table 1. Top ten world textile exporters, 2020**

Rank	Country/region	Value of exports (US\$ billion)	Market share	Growth rate (vs 2018)
1	China	\$154	43.5%	29%
2	EU (28)	\$64	18.1%	-3%
3	India	\$15	4.2%	-12%
4	Turkey	\$12	3.3%	-1%
5	US	\$11	3.2%	-15%
6	Viet Nam	\$10	2.8%	11%
7	Republic of Korea	\$8	2.2%	-15%
8	Pakistan	\$7	2.0%	-8%
9	Taiwan, Province of China	\$7	2.0%	-17%
10	Japan	\$6	1.6%	-14%

Source: WTO, *World Trade Statistical Review 2021*, 2021.

²⁰ WTO, *World Trade Statistical Review 2021*, 2021.

²¹ World Trade Statistical Review 2021.

Asian countries also dominate the exports of clothing, which suffered from a general decrease in 2020 in relation to 2019, mainly due to the impact of COVID-19 on the global market. The biggest losers were Hong Kong (-33 per cent), India (-24 per cent), and Bangladesh (-15 per cent), while the winner amongst the top 10 world clothing exporters was Malaysia (+73 per cent).²²

Trade in textiles and clothing is increasingly characterized by regional supply chains in Asia, Europe, and the Americas. Within these regional supply chains, middle-income and advanced economies generally supply textiles, materials and designs to factories in low-income countries, which in turn export clothing and footwear to mass major markets around the world.

In recent years, Africa has emerged as a new destination for the industries. The growth of the African textile industries in countries such as Ethiopia and Kenya has been spurred by factors such as local cotton production and markets, or the potential for improved quality and supply of cotton in the future, low labour and production costs, growing domestic demand, and trade agreements such as the African Growth and Opportunity Act – AGOA (a trade agreement between the United States and sub-Saharan Africa). Many Asian manufacturing companies have invested in operations in Africa, and also in Central America.²³

Irrespective of whether the world enters a new period of de-globalization or a new era or increased regionalization, the end result of the current changes in geopolitics and trade is likely to be increased disruption in the textiles and clothing industries, benefiting employers and workers in some countries, but to the potential detriment of others.

Ensuring that the skills of workers and employers match the current and future needs of the sector will be a crucial element in maintaining comparative advantage in the industries. Combined with political and macro-economic stability, infrastructure investments, the promotion of the rule of law and other active labour market policies, investments in skills development are key to sustainable sectoral growth, attracting foreign direct investment and advancing decent work, particularly in view of the increased use of advanced technologies and their likely impact on future skills needs.

2.1.4 Advanced technologies

While demographics, climate change and globalization all have implications for skills in the industries, the technological and digital revolution that the industries are undergoing is likely to have the most profound impact on the skills that employers and workers in the industries need. Advanced technologies such as laser cutting, advanced robotics (known as “sewbots”), 3D printing, new materials and digitalization have the potential to improve productivity as well as environmental sustainability but will require investments in a wide range of new skills for workers.

Compared with electronics or automotive, the textiles and clothing industries have traditionally been slow to adopt new technologies. Sewbots, for instance, have been available since 1980s, but largely disregarded as they were not flexible enough for the diversity of materials and processes involved in manufacturing, and were too expensive relative to low-cost labour.

There are diverging views on whether robotics and automation will advance rapidly:

On the one hand, a 2016 ILO study concluded that “Significant shares of TCF [textile, clothing and footwear] workers in ASEAN are at high risk of automation, from 64 per cent in Indonesia, to 86 per cent in Viet Nam and 88 per cent in Cambodia.”²⁴ These findings were based on a methodology developed by Frey and Osborne, who estimated that 47 per cent of all employment across economic sectors could be at risk of computerization.²⁵

22 WTO, *World Trade Statistical Review 2021*, 2021.

23 Sheng Lu, “5 key trends in world textile and apparel trade”, Just Style, 14 December 2017.

24 ILO, *ASEAN in Transformation: Textiles, Clothing and Footwear: Refashioning the Future*, 2016.

25 Carl Benedikt Frey and Michael A. Osborne, “The future of employment: how susceptible are jobs to computerisation?”, *Technological Forecasting and Social Change* 114 (2017): 254-280.

On the other hand, two recent ILO reports have found that the cost savings and efficiency gains of automation may not be enough to outweigh the competitive advantage that developing countries experience from lower labour and production costs and their ability to access raw materials locally.²⁶

The debate continues today, as automation and robotics have the potential to facilitate a growth in “re-” or “nearshoring” of production closer to consumer markets. These trends may accelerate in the aftermath of the COVID-19 pandemic, as both brands and buyers and manufacturers look to reconfigure their global and domestic supply chains to protect themselves from further disruption in the future.²⁷

In this regard, digitalization is likely to have an even more profound impact on the industries and the skills needed in the future than automation and robotics. Technologies such as radio-frequency ID (RFID) tags, sensors and the Internet of Things, coupled with new software, augmented virtual reality (AVR), blockchains and artificial intelligence (AI), are expected to be increasingly used to manage complex global supply chains and to stay as close as possible to customers and end users. Digitalization is increasingly shaping how products are designed, how supply chains are managed, how and where production takes place, how logistics systems are automated and run, and how products are marketed, sold and delivered to the consumer.²⁸

Furthermore, new materials are being developed to replace or complement resource-intensive raw materials (e.g. hemp fibres), improve performance (e.g. help regulate body temperature), enhance aesthetics (e.g. fabrics that can change colour), connect users with web applications (e.g. built-in sensors), and protect the wearer against radiation, dry skin or ageing (e.g., drug releasing materials or fabrics with moisturizers, perfume and anti-ageing properties, known as cosmetic textiles or cosmetotextiles).

While advanced technologies, new materials and digitalization have the potential to both create and destroy jobs, they importantly change the tasks that textiles and clothing workers perform on the job and the nature of their work. This will in turn alter the skills that workers will need and increase demand for workers that can combine digital skills with traditional industry skills and soft skills. Since automation, digitalization and new materials will continue to shape the industries, national TVET institutions will come under growing pressure to update curricula and training approaches for the textiles and clothing industry. It will be important to invest in lifelong learning and to support women and men in the textiles and clothing sector through the transitions they will undergo throughout their working lives.²⁹

2.2 The future of work in different country contexts

The challenges and opportunities arising from the megatrends identified above are markedly different in three categories of countries: least developed, middle-income, and high-income countries. For each of the three country contexts, skills development is key to advancing decent work and sustainable growth in the textiles and clothing industries.

26 Better Work, *Automation, employment and reshoring in the apparel industry: Long-term disruption or a storm in a teacup?*, 2020; and ILO, *Automation, employment, and reshoring: Case studies of the apparel and electronics industries*, 2020.

27 ILO, *COVID-19 and the textiles, clothing, leather and footwear industries*, 2020.

28 Michelle Russell, “Li & Fung’s ‘shot at the moon’ approach to digitalisation”, *Just Style*, 25 May 2018.

29 ILO, *Work for a brighter future*, 2019.

2.2.1 Least developed countries

The textiles and clothing industries are critical to the economies of many least developed countries (LDCs). In Cambodia, for example, textiles and clothing accounted for 65 per cent of all exports in 2016, and the European Chamber of Commerce in Cambodia estimated that the garment industry accounted for 16 per cent of GDP that year.³⁰ In 2018, the textiles and clothing sector directly provided income supporting one in five households in the country.³¹

LDCs' competitive advantage typically stems from low-cost production, in part because they are unable to invest in advanced technologies or attract foreign direct investment to do so. As technology costs fall and the efficiency of automation increases in other countries, the competitive advantage of LDCs is increasingly eroded, which could lead to further downward pressure on wages and working conditions. Furthermore, as labour costs rise over time, competition for labour from higher added value sectors increases, and low-cost countries that were not previously manufacturing and exporting textiles and clothing become more viable locations for production (such as Ethiopia or Myanmar in recent years).

The search for shorter delivery cycles and more resilient supply chains has already prompted some brands and buyers to source more from factories in high and middle-income countries closer to key consumer markets, a process that could be accelerated by the impact of the COVID-19 crisis on the sector. The pandemic has also highlighted the dependence of LDCs upon international trade, and the volatility of the global trading system to shocks.

In view of these complex challenges, there is an urgent need to invest in technological transfer and trade assistance, increased productivity and an enabling environment for sustainable enterprises in LDCs to support their economic development and to ensure the sustainability of their textile and clothing industries. This in turn necessitates investment in developing the skills of textiles and clothing workers in LDCs to operate new machinery, participate effectively in modern and digitized production systems, programme software and design new products.

2.2.2 Middle-income countries

The middle-income countries (MICs) that produce textiles and clothing are diverse in terms of geographical size, location, population and income level. The challenges faced by the sector in countries such as Brazil, China, India, Jordan and Turkey differ significantly. However, they all face the challenge of maintaining or upgrading their positions in increasingly complex global supply chains.

Many of the MICs are furthermore faced with structural transformations of their economies of historic proportions. Some large MICs such as Brazil, China and India are well-positioned to promote growth in domestic markets. Most others will continue to depend upon exporting products, primarily to the European Union, the United States and other high-income countries. For all such MICs it is crucial to invest in skills, research, infrastructure, new technologies and improved operations and production management in order to increase productivity and sustain growth and employment in their textiles and clothing sector. In doing so, policies and strategies for the industries must be coupled with broader policies for social protection and active labour market policies to advance inclusive growth and decent work in the textiles and clothing sector, while facilitating the creation of new jobs in other manufacturing industries and across the entire economy.

30 ILO, *Cambodian Garment and Footwear Sector Bulletin*, Issue 6, May 2017.

31 ILO, *Cambodian Garment and Footwear Sector Bulletin*, Issue 8, December 2018.

2.2.3 High-income countries

Enterprises in high-income countries (HICs) are increasingly investing in creative competencies and skills to develop, design and market their products and services globally. Governments in many HICs are furthermore supporting the green transition of their industries by investing in the skills and tools needed for the development of environmentally friendly products and production processes. Manufacturing companies are pioneering the use of design and user-driven innovation as part of the development process, including significant investments in robotics and automation. This is likely to drive the reshoring of manufacturing, particularly of niche and high-end products, to HICs.

While more and more factories in HICs are investing in automation and robotics, the industries have been relatively slow to undergo digitalization. However, potential productivity gains, savings, and shorter lead times are beginning to drive a digital transformation, which will increase the demand for workers with STEM backgrounds and ICT expertise in the industries.

With more and more processes becoming digitized, many jobs in HICs are at increased risk, including those of accountants, designers and sales representatives. But digitalization will also create new opportunities for workers, particularly for those trained in STEM disciplines and for high-skilled ICT specialists.³² Increased investment in education, training and lifelong learning is needed to realize this potential and to reduce the skills mismatch and skills shortages between the needs of employers and the availability of skilled workers in the future.

2.3 Conclusion: The future of work and the demand for new skills

Globalization, demographic shifts, climate change and technological advances will bring about both new challenges and opportunities for the textiles and clothing industries. As highlighted in this chapter, they will have wide-ranging impacts on the world of work and the skills workers need now and in the future.

How these challenges and opportunities transpire will vary greatly depending on the country context. However, in each of the three scenarios mentioned above, it is clear that new skills, including upskilling and re-skilling, will be critical to advancing decent work and sustainable growth, and that a reliance on low-cost, low-skilled labour alone is unlikely to be sufficient to compete in the future.

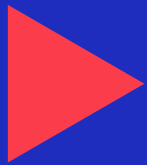
Lifelong learning and continuous training will be increasingly critical to ensuring that employers and workers are able to adapt to the rapidly changing industries, including the advent of new technologies, new materials and the growing pressure and need to manufacture products in an environmentally sustainable way to help mitigate and adapt to climate change. Furthermore, as the industries plan to build back better from the COVID-19 crisis, skills development and pro-employment policies can maximize the effectiveness of building back a job-rich and sustainable future of work.³³

Skills anticipation and development, such as the work already carried out in Brazil, Ethiopia, Jordan and Peru plays a key role in planning for the medium and long term future of the textiles and clothing industries and in addressing the challenges and opportunities to advance decent work. The following sections summarize the work that the governments of Brazil, Ethiopia, Jordan and Peru have carried out to anticipate skills needs and to find solutions to invest in and develop these skills in consultation and close collaboration with employers and workers.

³² ILO, *Synthesis report: Skills shortages and labour migration in the field of information and communication technology in Canada, China, Germany, India, Indonesia, Singapore and Thailand*, 2020.

³³ According to a review of the ILO's response to the 2008 financial crisis, skills development and pro-employment policies represent key elements of a successful recovery. Source: ILO, *ILO Monitor 1st Edition: COVID-19 and the world of work: Impact and policy responses*, 2020.





3

Brazil



▶ 3. Brazil

3.1 The textiles and clothing industries in Brazil

The textiles and clothing industries are among the most important sectors of the Brazilian economy. According to the Brazilian Association of Textile and Apparel Industries (ABIT), Brazil was the fourth largest producer of both textiles and apparel in the world in 2019, producing 5.5 billion garments. In total, the textiles and apparel industries generated US\$49.3 billion in revenue in 2019.³⁴

The textile and clothing industries are the second largest employer in the manufacturing sector in Brazil. They employ some 1.5 million workers, 75 per cent of whom are women, who account for 16.7 per cent of all manufacturing workers. These workers are employed by a total of 25,000 registered companies, many of which are small and medium-sized enterprises.³⁵

Table 2 shows the value of production in 2018 in the textiles and clothing industry and the number of workers employed in major segments of the supply chain.

▶ **Table 2. Value of the Brazilian textiles and clothing supply chain**

Area of production chain	Value of production – 2018 (R\$ billion)	Number of employees (1,000 employees)
Fibres and threads	2.9	6
Basic textiles	50.2	262
Made to order	172.0	1,236
Total for sector ^a	176.8	1,503
Total manufacturing	2,483.1	8,134.6
Proportion ^b	7.1%	18.5%

a) Value of garments plus basic textiles for retail trade or other.
b) Net revenue and employment in the manufacturing industries, not including mining and civil construction.

Source: IEMI / IBGE.

Despite exporting approximately US\$1 billion of textiles and clothing goods annually, Brazil is a net importer of these goods, as the industries primarily produce for the domestic market. This differs from most other leading manufacturing countries such as Bangladesh, China and Viet Nam, which are export-oriented and primarily producing for foreign markets.³⁶

In addition to the large domestic market, one of the key advantages for the industries in Brazil is the country's self-sufficient cotton production, which exceeded 11.6 million 480-lb bales in 2019.³⁷ Since Brazil has a complete textiles supply chain from fibre production to retail, the textiles and clothing industries have significant untapped potential, in the sense that they have not fully exploited potentially lucrative export markets³⁸

34 The Brazilian Textile and Apparel Industry Association (ABIT), "[Brazilian textile and apparel sector for 2019](#)".

35 "[Brazilian textile and apparel sector for 2019](#)".

36 Ilaria Pasquinelli, "[Brazil's textile industry: a world of untapped potential](#)", *The Guardian*, 27 July 2012.

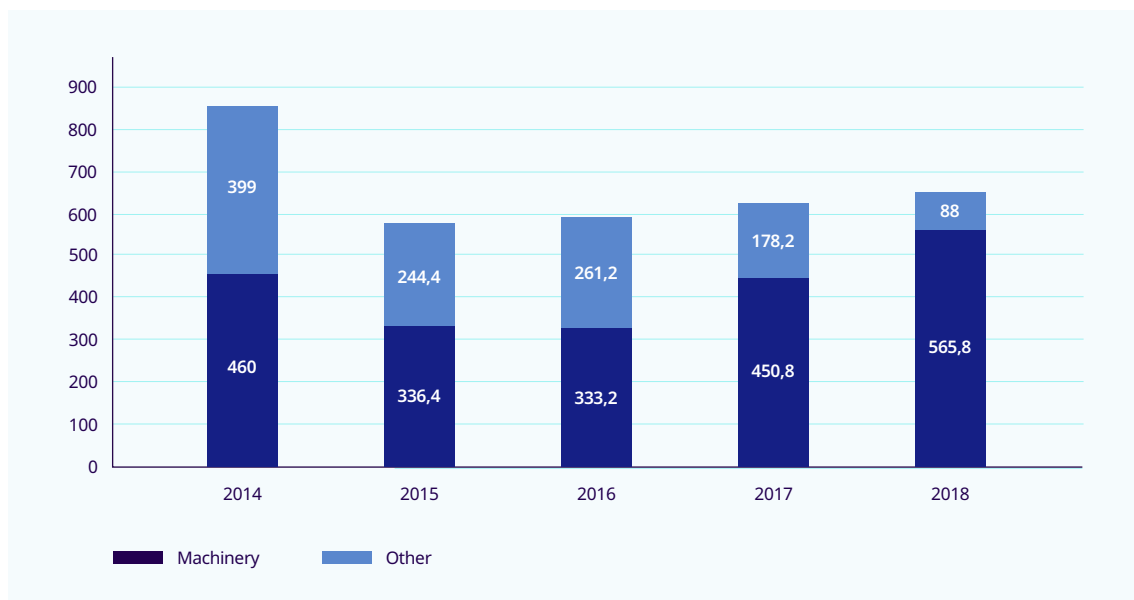
37 Cotton Incorporated, "Monthly Economic Letter: Cotton Market Fundamentals & Price Outlook", October 2019.

38 "Monthly Economic Letter: Cotton Market Fundamentals & Price Outlook".

Textiles and clothing are produced across Brazil. However, the majority of companies – some 47.8 per cent – are concentrated in the south-east region. This region accounts for about 60 per cent of the production of fabrics and 48 per cent of garments.

The textiles and clothing industries hold the potential to adopt, absorb and benefit from advanced manufacturing technologies. Investment in the acquisition of machinery and equipment has grown in recent years and reached R\$2.8 billion (approximately US\$505 million) in 2018, an increase of 25.5 per cent over 2017 (figure 3). Among all subsectors, investment in clothing manufacturing increased the most, by up 40.2 per cent from 2017.

► **Figure 3. Total investment in the sector by year³⁹ (US\$ million)**



Source: IEMI (2019).

3.2 Methodology

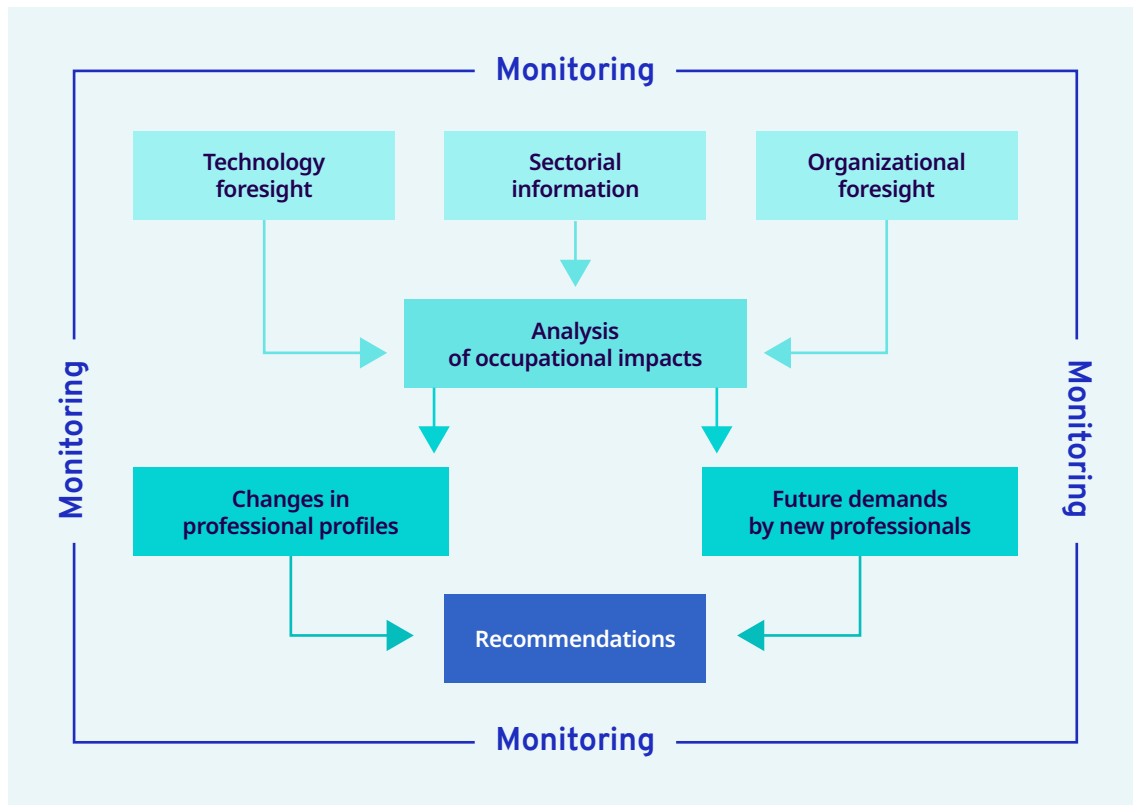
The study of future skills need in Brazil was conducted by the Serviço Nacional de Aprendizagem Industrial (SENAI), a not-for-profit institution for industrial training, linked to the National Confederation of Industry (CNI).⁴⁰

The national scoping study was conducted using SENAI's Prospective and Projection Model, which has been developed by SENAI to identify future changes in terms of technological advances and the organizational structure of the industries, in order to analyse their potential impact on occupations and jobs. It is structured through an interrelated set of methodological activities of a prospective nature, which are based on established foresight tools (figure 4).

³⁹ Includes clothing, socks and accessories, home wear and technical items.

⁴⁰ ILO, *Survey on the Future Demand for Vocational Training in the Textile Sector in Brazil*, 2022.

► **Figure 4. General outline of the prospective and projection model to identify future demand for professional training**



Source: National Observatory SESI/SENAI/IEL.

SENAI's model aims to generate information that can support the various stakeholders involved (e.g. professional training institutions, employers' associations, workers' organizations and government agencies) in developing training for specific sectors. It was used to obtain the following information on the future of work and skills needs in the Brazilian textile sector:

- the technological and organizational changes that may occur in the next 5, 10 and 15 years
- variations in the tasks and core competences (knowledge, skills and abilities) involved in occupations
- identification of future demand for new professions by companies in the sector.

A panel of 15 experts from the manufacturing sector and academia was assigned to analyse the technological, organizational and occupational impact.⁴¹

⁴¹ Expert panels conduct structured meetings and seek interaction between experts to reach a consensus. These meetings involve the application of previously designed questionnaires or questions, having established specific rules. The tool is an innovative way to obtain expert insights and has been increasingly used in national prospecting.

3.3 Findings

According to the findings of the SENAI Foresight Model, the future of work in the textiles and clothing industries in Brazil will be characterized by the diffusion of Industry 4.0 technologies and innovation in business models.

The technological prospective study indicated that over the next 10 years, there will most likely be an increase in the acquisition and use of advanced technologies, including nanotechnology and biotechnology (box 3).

▶ Box 4. Applications of advanced technologies that will shape the future of the industries in Brazil

- ▶ Industrial internet of things (IoT) for production control
- ▶ Big data systems for production planning and collaborative robots in production processes
- ▶ Internet of services (IoS) for customer services over the internet
- ▶ Biomimetic textile fibres, providing faster absorption, water resistance, better handling and greater ease of use and/or washing
- ▶ Finishing processes that utilise nanoparticles to produce fabrics with multifunctional properties (e.g. ultraviolet resistance, liquid repellence, anti-wrinkle and antibacterial properties)
- ▶ Demand for smart fabrics or smart textiles.

The panel of experts forecasted an increase in capital intensity (in particular the capital to labour ratio), which should generate gains in productivity and competitiveness for the industries. However, experts also highlighted factors that could limit the acquisition and use of technologies, such as:

- ▶ lack of perception of the advantages of new technologies over current production processes
- ▶ the high degree of complexity of new technologies
- ▶ lack of qualified labour
- ▶ lack of suppliers
- ▶ deficiency in technical assistance.

In addition, the digitalization of production will introduce new challenges for employers and workers, including the formulation of protocols for accessing information, guaranteeing privacy and safeguarding digital security.

According to the organizational foresight analysis, the sector is moving towards the implementation of management tools and organizational activities that strike a balance between manufacturing low-cost products and products with a higher added value. In the next five to ten years, parts of the Brazilian supply chain will further implement strategies to lower the costs of final products, including lean production and market positioning strategies based on cost leadership.

3.3.1 Future requirements of the textiles and clothing industries

According to the results of the foresight model, the main requirements for the future of the Brazilian textiles and clothing sector can be divided into three main categories: knowledge, skills and capabilities. The panel of experts furthermore identified new professions that employers are likely to demand in the next 15 years.

Knowledge

The key knowledge areas in demand by the industries in Brazil are:

- **chemistry** – general chemistry; environmental chemistry; analytical chemistry; waste management; waste and effluent treatment; organic chemistry and nanotechnology
- **mathematics** – applied mathematics; probability and statistics; calculation and analysis; mathematical logic and geometry
- **physics** – mechanics, electricity and magnetism and fluid physics, elasticity; rheology; optics; fields and particles loaded; heat transfer; acoustics; plasma physics and electrical discharges
- **Portuguese language** – reading and interpretation of texts, technical writing
- **computers and electronics** – programming languages, electronic and electrical circuits, hardware, electronic installation and software applications
- **computer science** – internet of things, programming
- **mechanics** - elements of machines, engines and equipment; control of mechanical systems, maintenance of machine elements and lubrication.

Skills

The skills most needed by the industries are:

- **programming** – writing and modifying computer programmes, machines and equipment for different purposes. recognition of programming paradigms
- **technology projects** – generating or adapting equipment and technologies to meet the needs of users
- **systems analysis** – analysing how a system should work and how changes in conditions, operations and the environment may impact the results
- **negotiation** – promoting the debate of ideas and/or positions in order to achieve a balance between different interests
- **complex problem solving** – structuring complex problems and analysing related information in order to develop and evaluate options to implement solutions
- **operations analysis** – analysing requirements and procedures for the design and improvement of production, parameters and objectives of operations, inspection standards, materials and forms of use, facilities, equipment, tools, conditions and working methods
- **environmental awareness** – being aware of the importance of and the relationship of environmental issues to production processes and new business models.

Capabilities

The competencies required by the industries are:

- **innovation** – being creative and thinking in alternative ways to develop new ideas and provide answers to problems related to work
- **manual coordination speed** – ability to operate communication and automation systems at speed
- **multicultural adaptability** – being able to perform individual and or collaborative work, in multi-cultural, physical or remote environments
- **social perception** – understanding actions and reactions in the interpersonal sphere and recognizing differences in order to work in a harmonious and inclusive way
- **cognitive flexibility** – continuously adapting the mind-set to new and unexpected situations
- **perception of problems** – ability to perceive when something is wrong or could go wrong. This involves recognizing that there is a problem, but not solving the problem.

3.3.2 New professions

The specialists that were consulted by SENAI identified a set of new professions that will develop and be demanded by Brazilian textiles companies in the future (table 3).

► **Table 3. New professions in the Brazilian textiles industry**

New profession	Brief description of activities
Sustainability specialist for textile processes	To seek sustainable solutions to handle waste products from the textile chain
Specialist in non-woven and technical textiles	To develop non-woven products and technical textiles, as well as their respective manufacturing processes
Textile technician specialized in mechatronics	To plan, execute and maintain the integration of electronic, mechanical, automated control and computing technologies into textile production processes
Textile technician specialized in textile surface design	To develop structures and designs for textile substrates (yarn, flat fabric, mesh fabric and prints) and 3D printing
Specialist in biotechnology processes applied to textile fibres	To develop biopolymers for the textile sector
Specialist in biotechnology processes applied to textile beneficiation processes	To develop textile beneficiation processes for biopolymer fibres
Specialist in certification of textile processes	To guide and monitor the certification processes for textile processes and products
Digital textile printer	To operate digital printing machines

3.4 Recommendations

Based on the findings of the SENAI prospective study, a tripartite working group was established with the support of the ILO to debate the results of the study and adopt policy recommendations to address future skills needs in the sector. The group met virtually several times and decided to launch a broader consultation process with key industry stakeholders.

Initially, the objective was to hold a tripartite workshop with representatives from the government, businesses, workers and academia to formulate recommendations for future action. However, due to the COVID-19 pandemic, it was decided instead to conduct a survey with 40 experts. The survey covered technological and organizational changes, future skills needs, demand for new professions, and other proposals for the sector.

The results of the survey were systematized by SENAI and presented to the tripartite working group, who further adopted a set of recommendations for constituents and stakeholders in the sector. These can serve as guidance for the development of future policies and activities in the fields of technological and organizational upgrading, education and training, and human resources, and are intended to promote improved performance by TVET institutions.

3.4.1 Federal government ministries and secretariats

The main recommendations for federal government ministries and secretariats include:

- deepening tripartite social dialogue and extending collaboration with academia to develop more effective employment policies
- providing the necessary financial resources and planning, in the short, medium and long term, to develop the skills needed by the industries including technical training and human resource development, and improve the business environment
- taking measures to ensure the suitability of curricula designs in public and private schools, strengthen knowledge of STEAM (Science, Technology, Engineering, Art, and Mathematics) disciplines, foster sustainable development, and promote the value of quality of basic training.

3.4.2 Vocational training institutions

The main recommendations for vocational training institutions focus on:

- understanding and addressing the changes that are shaping the world of work, ensuring the training of qualified labour and adaptation to the demands implied by probable changes, generating employability
- the suitability of courses on offer in view of the demands of the industry, with the aim of ensuring convergence between employers' and workers' needs, and the promotion of equity and equal opportunities for all people, with special attention given to women
- the expansion of capacity to reach the greatest number of workers that are vulnerable to technological change, with workers offered the opportunity both to adapt the new skills sought by the market and to reskill in the future.

3.4.3 Employers' associations

The main recommendations for sectoral associations of employers are:

- establishing a collaborative environment that favours tripartite social dialogue, enabling a broad technical debate with workers' organizations and other key stakeholders

- ▶ building the relationship with the public sector in order to reduce obstacles to the modernization of companies and to encourage new companies to seek and achieve greater competitiveness
- ▶ improving the relationship with the public sector, professional training institutions and companies in order to encourage the training of qualified workers according to the needs of the industry, and the adoption of modern and flexible standards and forms of work and of vocational training for workers.

3.4.4 Textile companies

The main recommendations for textile companies are:

- ▶ adopting best practices and production processes based on national and international experience, seeking to develop innovative aspects of the production process
- ▶ providing modern and accessible learning processes for the development and maintenance of the skills needed by workers
- ▶ developing measures to reduce informality throughout the production chain
- ▶ strengthening social dialogue, including collective bargaining and tripartite cooperation, and stimulating reflection on vocational training and requalification in order to facilitate functional and sectoral mobility.

3.4.5 Workers' organizations

The main recommendations for workers' organizations are:

- ▶ developing actions to bring sectoral demands closer to the needs of its representatives, with a view to helping build an ideal worker profile within a fast changing environment
- ▶ participating in negotiations concerning vocational training and reskilling of workers whose jobs may become obsolete, providing them with the possibility of functional or sectoral mobility
- ▶ articulating and promoting agreements with companies, industry associations and vocational training institutions to provide vocational training for union members in order to facilitate access for workers
- ▶ supporting the representation of workers' interests in the new world of work, taking account of all the variables that are influencing the future of the labour market, and reinforcing social dialogue, including collective bargaining and tripartite cooperation.

3.4.6 Research institutions

The main recommendations for research institutions are:

- ▶ researching new activities and the functioning of the labour market, including studies of technological trends, fashion, consumption, and production methods to help promote the functional and sectoral mobility of workers
- ▶ fostering an environment of easy access among sectoral associations and companies in order to formulate research, development and innovation programmes of common interest, and better utilize the resources made available through government finance
- ▶ forming partnerships with sectoral associations, companies and vocational training institutions to promote exchanges of information and to subsidize workers and companies in the search for innovative solutions to address technological and organizational changes.





▶ 4 Ethiopia



▶ 4. Ethiopia

4.1 The textile and clothing industries in Ethiopia

The textiles and clothing industries are not new to Ethiopia. Following centuries of tradition of handloom, spinning and weaving, the first textile factory was established in Ethiopia in 1939. However, the growth of the industries was slow until the 1990s, when Ethiopia first adopted a free market economy.⁴²

Today, the textiles and clothing industries are vital sectors for one of Africa's fastest growing economies.⁴³ Ethiopia has a population of over 109 million and a high population growth rate of 2.6 per cent per annum, which drives growing consumer demand for textiles and clothing.⁴⁴

The industries in Ethiopia primarily produce cotton and woollen fabrics, nylon fabrics, acrylic and cotton yarn, blankets, sewing threads, bed sheets and apparel. The sector comprises four major groups of enterprises –

- ▶ spinning enterprises to produce yarn for the domestic market and for export
- ▶ textile manufacturers engaged in spinning and weaving
- ▶ garment industries engaged in knitting, dyeing and finishing, and apparel manufacturing
- ▶ integrated textile and garment factories that are involved in a range of operations from spinning to apparel manufacturing.

4.1.1 Performance and structure of the sector

The textile and clothing industries became the largest Ethiopian manufacturing sector between the 1990s and the early 2000s. However, from 2000 to 2010 the growth of the sector stagnated, and other manufacturing sectors such as food and beverages emerged as leading industries. Since 2010 low labour costs, local access to raw materials, low energy costs and bilateral trade agreements have stimulated growth in the industries. The gross value of production increased from 755.7 million Ethiopian Birr (approximately US\$20.37 million) in 2001 to 6.67 billion Birr (US\$179.78 million) in 2014.⁴⁵

In recent years, the industry has attracted foreign direct investment from global brands and buyers, and while export revenues have experienced peaks and troughs, they have grown dramatically from US\$62 million in 2010/11 to US\$109 million in 2017/18 (figure 5). Germany and the US are the key export markets for Ethiopian producers, representing 76 per cent of total exports combined.⁴⁶

42 The Ethiopian Messenger, "[Ethiopia: The Next Hub for World Apparel Investment and Sourcing](#)".

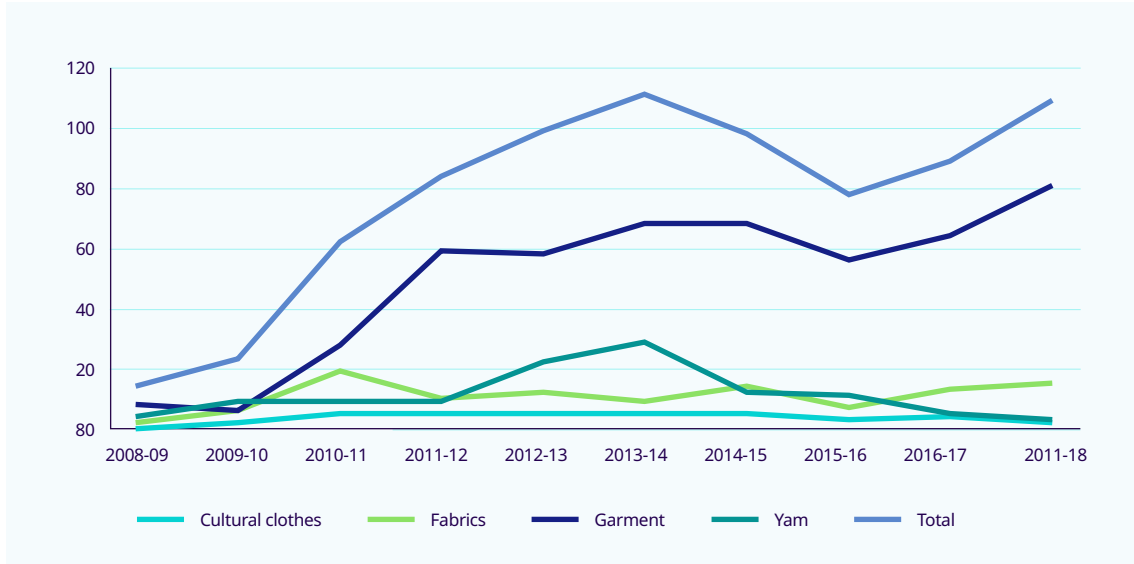
43 Overseas Development Institute, [Comparative Country Study of the Development of Textile and Garment Sectors: Lessons for Tanzania](#), 2019.

44 World Bank "[Population Growth \(annual %\)](#)", accessed 30 July 2020.

45 Based on 2011 constant prices.

46 ILO, *Skills for Trade and Economic Diversification in Ethiopia: A background paper for drafting of a Sector Skills Strategy for the Garment sector in Ethiopia*, forthcoming.

► **Figure 5. Export performance of the textile and garment industries in Ethiopia (US\$ millions)**



Source: ILO, *The Future of Work in the Textile and Garment Industries in Ethiopia: Technological Advances, Climate Change and the Implications for Skills*, forthcoming (based on data from the Ethiopian Textile Industries Development Institute).

Most new investments are housed in newly built, state-of-the-art public industrial parks such as Bole Lemi, Hawassa, Mekelle, Kombolcha, and some private industrial parks such as the Eastern Industrial Zone and Velocity. These have generated localization benefits that can reduce the cost of production for employers by attracting workers, creating linkages between suppliers and producers, agglomeration effects, and providing a one-stop-shop for public services. In Hawassa, a flagship industrial park, 18 companies are engaged in textile and garment production, employing nearly 35,000 workers as of early 2020 (see section 4.1.2 below).⁴⁷ At the end of 2018, more than 250 medium and large enterprises operated in the industries, of which more than 81 were operational in public and private industrial parks⁴⁸

Relevant studies and key informant interviews with stakeholders and enterprises indicate that the constraints faced by the industry include the inadequate supply of raw materials in terms of quantity and quality; poor infrastructure; logistics costs and time; a shortage of skilled workers and high staff turnover; constrained access to finance; inefficient bureaucracy in public service including customs; and security concerns.⁴⁹ Moreover, Ethiopia’s institutional framework and capacity for ensuring the continuous improvement of wages and working conditions through improved industrial relations remains weak and has not kept pace with the growth of the industries. The expansion of industrial parks and factories outside industrial parks has not yet been accompanied by measures to strengthen labour administration, social dialogue or occupational safety and health services, which can contribute to sustainable improvements in working conditions and productivity.

47 ILO, *The Future of Work in the Textile and Garment Industries in Ethiopia: Technological Advances, Climate Change and the Implications for Skills*, forthcoming.

48 ETIDI, *Investment Opportunity in the Cotton, Textile and Garment Industry in Ethiopia*, 2018.

49 World Bank, *Fourth Ethiopia Economic Update: Overcoming Constraints in the Manufacturing Sector*, 2015.

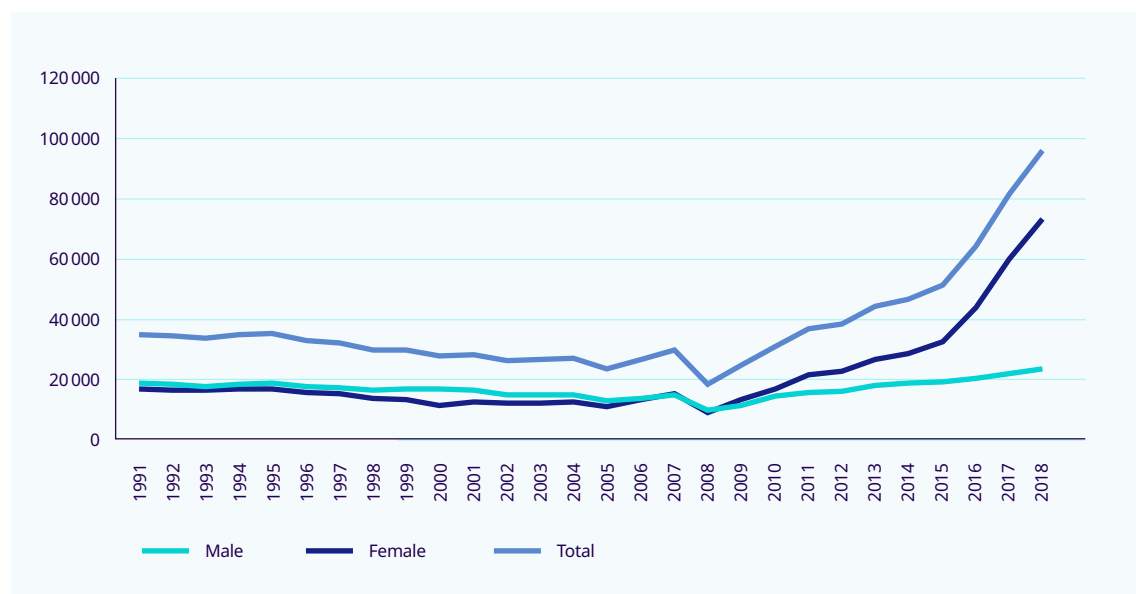
Partly as a result, the sectors have underperformed relative to government targets: the industries achieved only 50 per cent of the targets for job creation and less than 10 per cent of the targets for exports in the government's Growth and Transformation Plan (GTP I) for 2010-2015. The current GTP II sectoral targets (for 2015-2025) are also likely to be missed by wide margins. Furthermore, the low level of value added remains a key concern for the sector.⁵⁰

4.1.2 Employment

The Government of Ethiopia estimates that total employment in the sector, including small and medium-sized enterprises, which provide much of the employment in the sector, is around 798,000. Typically, the sector provides jobs for young, unskilled and lower educated workers, the majority of whom are women.⁵¹

The industries employ around 17.4 per cent of the workforce in the formal manufacturing sector in Ethiopia. The number of workers formally engaged in medium and large enterprises has increased significantly, from around 18,000 to more than 96,000 in the decade between 2008 and 2018, during which the share of women workers increased from 48 per cent to around 76 per cent (figure 6).⁵²

► **Figure 6. Employment in Ethiopian medium and large-scale textile and garment industries (1990–2018)**



Source: ILO, *The Future of Work in the Textile and Garment Industries in Ethiopia: Technological Advances, Climate Change and the Implications for Skills*, forthcoming (based on data from the Ethiopian Textile Industries Development Institute).

Employment in the industries is forecasted to grow by 86 per cent by 2025. If this target is achieved, this would result in 683,000 new direct jobs and 868,000 new indirect jobs in the sector.⁵³

⁵⁰ Fourth Ethiopia Economic Update.

⁵¹ Fourth Ethiopia Economic Update.

⁵² Fourth Ethiopia Economic Update.

⁵³ Ethiopia, Jobs Creation Commission, *Plan of Action for Job Creation 2020-2025*, 2020.

4.2 Methodology

The skills anticipation study in Ethiopia was carried out in collaboration with the ILO SKILL-UP Project. The objective was to provide additional foresight analysis of the impact of technology and climate change on the future skills needs of the country, which would complement the findings and recommendations of the 2019 STED strategic skills report on the Ethiopian garment sector.⁵⁴

The 2019 STED report was based on a combination of research and consultations, using the ILO's Rapid STED approach.⁵⁵ The process involved the preparation of a background study, based on a combination of secondary research, consultations with constituents and stakeholders in the sector and in two industrial parks (Hawassa and Mekelle), drawing on the experience of consultants conducting policy work on skills development in the sector. The study was guided by a two-day technical and policy workshop in August 2019, and its main recommendations were adopted through a [validation workshop in November 2019](#). A sectoral skills committee was later established, with members from the industry and the private sector as well as from the government and the federal TVET agency.⁵⁶

To build on the 2019 STED analysis, a complementary report on the future of work in the textiles and garment industry was produced in 2020 with financing from the Government of the Netherlands, with a specific focus on the impacts of technology and climate change on future skills needs. The report was produced on the basis of a desk review of related studies and key informant interviews with industry and government institutions, as well as with ILO constituents and key stakeholders.⁵⁷ This was supplemented by a survey of eight enterprises located in Hawassa and Mekelle industrial parks. The findings of this study were subsequently presented during a tripartite workshop that adopted a set of recommendations to provide a pathway for governments, employers and workers in the industries.

4.3 Findings of the national study

This section summarizes the findings of the national study of 2020 on the impact of technological advances and climate change on the textiles and clothing sectors in Ethiopia.⁵⁸

4.3.1 Advanced technologies

Adoption of technologies to date

The level of technological adoption among enterprises in the textiles and clothing industries in Ethiopia can broadly be categorized in terms of four groups of enterprises:

- enterprises in industrial parks, most of which benefit from foreign direct investment and use modern technologies
- enterprises outside industrial parks that use modern technologies
- large, established enterprises, most of whom use older technologies

54 ILO, [Developing a Skills Strategy for the Garment Sector in Ethiopia](#), 2019

55 ILO, [Rapid STED: A Practical Guide](#), 2020.

56 ILO, [Sector Skills Strategy for the Garment Industry in Ethiopia](#), forthcoming.

57 Representatives were interviewed from: the Textile and Garment Manufacturers Association (ETAGAMA); the Ethiopian Textile Industries Development Institute (ETIDI); the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ); the Environment, Forest and Climate Change Commission (EFCCC) of the Federal Democratic Republic of Ethiopia (FDRE); the Industrial Parks Development Corporation (IPDC); the Ethiopian Investment Commission; the Ministry of Labour and Social Affairs (MoLSA); the Ministry of Innovation and Technology (MINT); and the Federal TVET Agency. In addition, inputs were also received from the Ethiopian Jobs Creation Commission (JCC) and the Confederation of Ethiopian Trade Unions (CETU) on the draft document.

58 The national report, prepared by Tsegay Gebrekidan Tekleselassie, for ILO Addis Ababa and the ILO Sectoral Policies Department, is: ILO, [The future of work in the textile and garment industries in Ethiopia: Technological advances, climate change and the implications for skills](#), forthcoming.

- ▶ small and medium-sized enterprises, whose financial constraints limit their adoption of modern technologies.

Technological adoption is most advanced within the industrial parks. The flagship Hawassa Industrial Park, for instance, uses zero liquid-discharge (ZLD) technology and is powered by renewable hydropower energy. Several other industrial parks are building ZLD waste treatment facilities, and all other parks have effluent treatment plants of varying dimensions. Box 4 demonstrates how state-of-the-art industrial parks in Ethiopia are helping the country to meet international standards of efficiency and sustainability.

▶ Box 5. The flagship Hawassa Industrial Park

ZLD effluent treatment: The textile industry uses various dyes and chemicals to treat products and can hence pollute water resources. With ZLD technology 90 per cent of the water is recycled and reused, and the final waste is crystallized.

Use of renewable energy: The park uses renewable hydroelectric energy sources. It has a dedicated 75-MW power line and uses light-emitting diode (LED) technology that achieves energy savings of up to 90 per cent over traditional light bulbs.

Compliance with the Customs-Trade Partnership Against Terrorism (C-TPAT): The C-TPAT is a risk-assessment programme of specific supply chain security criteria, allowing for expedited processing with US Customs. HIP has installed surveillance to monitor premises and prevent unauthorized access to cargo handling and storage areas.

Tenant's association: A tenant's association has agreed common rules of operation for all tenants. It aims to foster efficient collective action in improving infrastructure, organizing workers' training, and ensuring a safe working environment.

Source: Mamo Mihretu and Gabriella Llobet, [Looking Beyond the Horizon: A Case Study of PVH's Commitment in Ethiopia's Hawassa Industrial Park](#) (World Bank, 2017).

Textiles and clothing enterprises outside the industrial parks have highlighted how they lack access to modern processing and finishing technologies as well as workers with the skills needed to maintain machinery.

Stand-alone spinning enterprises highlighted how the use of rudimentary farming methods combined with old and inefficient technology by Ethiopian ginners has a negative impact on the quality of cotton. This includes saw-gin technology, which aggressively thrashes cotton into fibres shorter than necessary and lowers the quality of the yarn on which Ethiopian weavers and manufacturers depend.

Impact of technology on skills needs

Interviews conducted with industry representatives and others⁵⁹ highlighted three key barriers to the adoption of new technologies:

- ▶ the high cost of purchasing and maintaining new technologies, particularly those that require technicians from abroad to service them
- ▶ the low cost of manual labour, which is likely to remain low for the foreseeable future

⁵⁹ Representatives of two enterprises housed in Hawassa and Mekelle Industrial Parks, and from the Industrial Parks Development Corporation; Ethiopian Investment Commission; Ministry of Trade and Industry; Ministry of Labour and Social Affairs; Ministry of Innovation and Technology; and federal TVET Agency.

- poor infrastructure and unreliable supply of power, which mean that it is more efficient and cost-efficient for textile firms to run a semi-automated production line for the time being.

For small and medium-sized enterprises that produce for the domestic market, the scope for automation and digitalization was even more limited.

While this means that full automation and robotics is unlikely to happen overnight, the gradual introduction of new technologies and processes is already changing the industry, led by enterprises in the industrial parks. Partially automated pattern making and dyeing, for instance, has been introduced to garment operations to enhance quality and reduce waste. Similarly, parts of the production process are being digitalized to enhance efficiency. While these technological developments are introduced to enhance productivity rather than replace workers, they will create a demand for new skills. Hence, there is a growing need for continued re-skilling and up-skilling of textiles and clothing workers in Ethiopia to operate new machineries and technologies.

Table 4 presents the share of workers in different occupations and indicates the degree of skill shortages in each. The majority of workers are employed in sewing and stitching, where workers are relatively low-skilled, and where turnover is high due to low wages and challenging working conditions.

► **Table 4. Skills needs by production process in industrial park garment manufacturing operations**

Production process	Average share of workers (per cent)	Average share of workers requiring additional training (per cent)	Is skill shortage a main problem? 1 = is not a problem at all, 5 = a severe problem (Average response)
Design	0.1	32.0	3.5
Receiving fabrics	0.4	54.0	2.0
Fabric relaxing	0.3	68.6	3.0
Spreading, form layout, and cutting	2.3	47.2	2.5
Laying and marking	0.1	54.6	2.6
Cutting	0.6	55.5	2.7
Embroidery and screen printing	0.2	20.0	2.3
Sewing / stitching	53.0	54.3	2.4
Knitting	4.2	54.7	2.0
Dyeing	0.6	32.5	2.0
Checking / quality control	7.4	67.9	2.4
Spot cleaning and laundry	1.3	32.5	1.5
Fusing and pressing	0.2	44.3	1.8
Packaging and shipping	9.2	77.3	2.7
Production management, planning and engineering	2.4	80.0	3.0
Machine maintenance and repair	2.9	76.1	3.1
Facility management and maintenance	1.9	74.0	2.7
Other	12.8	-	-
Overall average	-	54.4	2.5

Source: : ILO, *The Future of Work in the Textile and Garment Industries in Ethiopia: Technological Advances, Climate Change and the Implications for Skills*, forthcoming.

The most severe skills shortages are found among high-skilled and management positions, such as product design, production management, planning and engineering, machine maintenance, and facility management. Garment enterprises typically hire expatriates to work in design and management, but this coping strategy is expensive and unsustainable. There is an urgent need to invest in the development of these skills locally so that a new generation of Ethiopian employers and workers can generate greater value added for the industries in the future.

4.3.2 Climate change and environmental standards

The challenge of climate change and environmental standards

Climate change is a major threat to the future sustainability of the textiles and clothing industries. Water shortages and recurring droughts already limit the production of cotton. On the other hand, the use of modern water and energy efficient technologies can enhance the productivity and competitiveness of the Ethiopian textile and clothing industries, which in turn can generate growth and create more opportunities for decent work.

Measures are urgently needed to mitigate the industries' contribution to climate change. The volume of greenhouse gas (GHG) emissions from textile and leather industries is projected to rise from 0.6 Mt CO₂e⁶⁰ in 2010 to almost 5 Mt CO₂e in 2030.⁶¹ Interviews with constituents and stakeholders furthermore revealed that solid and liquid waste from the textile industry has become a source of concern, along with air pollution from the use of coal and oil furnaces to power production. Fabric waste from the industry is also a concern but is increasingly in demand from small and medium-sized enterprises that re-use or recycle the materials.

The Government of Ethiopia has recognized the threat to the country and has introduced policies to adapt and to mitigate climate change.⁶² Increased consumer demand for sustainability is driving manufacturers to adopt new technologies, implement resource-efficient business models, and use green production processes to protect the environment. Interviews with constituents and stakeholders suggest that Ethiopian textiles and clothing enterprises can be categorized into three groups according to their compliance with environmental standards:

- ▶ **proactively sustainable:** enterprises that conduct an environmental feasibility study prior to investment and apply sustainable practices
- ▶ **sustainable due to market forces:** enterprises that invest in sustainability efforts because export destinations require certification
- ▶ **not sustainable:** Enterprises that supply local markets do not have the means to invest in greener production or do not see the benefits of doing so as environmental standards are lower and rarely enforced.

Impact of climate change and environmental standards on skills needs

Ethiopia is faced with increased demand for highly skilled technicians and engineers to increase compliance with environmental requirements and to implement resource-efficient technologies. Furthermore, demand for wastewater treatment plant workers and chemists is also rising. These skills are key to realizing opportunities for decent and sustainable work in the sector.

⁶⁰ Carbon dioxide equivalent.

⁶¹ Ethiopia, *Ethiopia's Climate Resilient Green Economy: Green economy strategy*, 2011.

⁶² *Ethiopia's Climate Resilient Green Economy*.

4.4 Recommendations for future action

4.4.1 Recommendations on meeting priority skills needs and gaps

The following summary of recommendations sets out the key measures and means to meet priority skills needs and gaps in the textiles and clothing sector. They have been validated and adopted by constituents in Ethiopia and can be consulted in full in the ILO STED report:⁶³

Operator skills

- ▶ **Labour sourcing and grading centres** play an important role in sourcing new recruits and channelling them to the right job
- ▶ **Pre-employment soft skills training** plays an important role in preparing new recruits without a formal employment or industrial background for employment in the sector. Focus is needed on a standard soft skills curriculum; soft skills linked to the TVET National Qualifications Framework occupational standards and mainstream TVET courses; and soft skills training provided by employers
- ▶ **Entry-level training for machine operators** is currently provided primarily by factories but should be supplemented by machine operator training from TVET colleges, which should be consistent with internal provision by employers
- ▶ **Continuing training for machine operators** is limited. Emphasis should be placed on the mentoring of machine operators, continuing education from TVET colleges, linking skills development with productivity improvement strategies, linking productivity training to the National Qualifications Framework, and making courses at operator level more widely available.

Mid-level skills

- ▶ **Supervisory, team leader and line leader skills:** systems to develop skills are not working well and the skills of many local recruits are inadequate. A supervisory management training programme for the sector should be implemented, TVET occupational standards related to line leader and supervisory management should be reviewed, and TVET courses are needed to meet the standards for machine operation and basic maintenance that are required by employers. Upper-level TVET courses should contain a supervisory management component
- ▶ **Pre-employment soft skills training** plays an important role in preparing new recruits without a formal employment or industrial background for employment in the sector. Focus is needed on a standard soft skills curriculum; soft skills linked to the TVET National Qualifications Framework occupational standards and mainstream TVET courses; and soft skills training provided by employers
- ▶ **Continuing training for mid-level technical occupations:** the availability of continuing learning to upgrade skills in mid-level occupations is limited. Mentoring for mid-level technical occupations, upskilling through blended learning for mid-level technical workers, and the availability of TVET courses for such workers can help in provision
- ▶ **Mid-level skills in design, sales and marketing:** demand for designers is growing, but a major part of demand is for technical skills to bridge between creative design and manufacturing. A review of occupational standards for mid-level skills in design, sales and marketing is necessary. The occupational standard should include provisions for technical design skills and merchandising skills.

⁶³ ILO, *Sector Skills Strategy for the Garment Industry in Ethiopia*, forthcoming.

High-level skills

- ▶ **Systems for education and training in high-level skills:** areas of high-level skills important to the sector include production management and planning; industrial engineering; human resource management; design; sales and marketing management; and logistics. Universities and TVET providers should be active in developing high-level skills for the sector (both for first-time graduates and existing professionals), and providers should develop a benchmark of standards comparable to international standards. Partnerships should be formed between industry and training providers, while a graduate experience scheme could partly fund graduates' salaries to promote transition into the workplace
- ▶ **Skills of teachers in TVET and universities:** there should be a sector-level initiative to raise and certify skill levels among TVET and university teachers in parallel with the updating of curricula, including short courses for teachers and high-level training of trainers programmes
- ▶ **Work placements and supporting institutional arrangements:** it is important to establish systematic collaboration between employers and institutions. An industry institute partnership is envisioned to strengthen the links between such institutions. Group training organizations are an approach to addressing these needs by hiring apprentices and acting as their employer, reducing the burden on host employers, coordinating between the workplace and off-the-job provider of training, and providing active quality assurance.

4.4.2 Future skills development needs relating to technological advances and environmental compliance

Technological advances

To help transition the sector to a future of work with more efficient and sustainable production, and to continue to attract investment and promote growth, there is a need to develop the following skills:

- ▶ training workers in the operation of new machines and computer software, particularly as computer-assisted design systems are introduced to Ethiopia; there is a need to incorporate courses on relevant software in TVET colleges and university systems
- ▶ training highly skilled maintenance engineers who can operate, service and maintain new technologies and semi-automated machinery
- ▶ training logistics and marketing managers in ICT skills
- ▶ expanding formal training in material planning and supply chain management
- ▶ re-skilling and up-skilling of existing workers through life-long learning to adapt to rapid technology changes.

Training for finance professionals to manage digital payment systems will also be needed as the country continues to open its finance system to foreign direct investment.

Environmental compliance

There is a need to promote the development of the following skills to improve the sustainability of the sector and to promote compliance with environmental regulations:

- ▶ chemical engineers specializing in wastewater treatment facilities
- ▶ production managers trained in environmental standards and compliance
- ▶ quality control specialists trained in national and international environmental standards
- ▶ solid waste managers specialising in sludge management and recycling
- ▶ advanced engineers trained in operating modern water and fuel-efficient machinery and technologies.

Policy measures

Short-term interventions on skills include:

- ▶ strengthening the Ethiopian Textile Industries Development Institute to take the lead as a skills and technology hub for the sector
- ▶ introducing and implementing a skill anticipation system to respond to changing skills needs of the economy, including the textile and garment industries.

Medium-term interventions include:

- ▶ targeting the modernization of cotton production, including the use of new technology, and with a view to creating jobs for young women and men in rural areas
- ▶ preparing an institutional framework to implement technology transfer policies and establish a centre for the promotion and facilitation of technology transfer between foreign and domestic factories.





▶ 5 Jordan



► 5. Jordan

5.1 The textile and clothing industries in Jordan

At first glance, Jordan does not seem to fit the profile for attracting investment in textiles and clothing industries. Compared to many other producing countries it has relatively high labour costs, longer lead times on products, limited capacity to supply cotton or other production inputs, and little indigenous experience in textiles and clothing manufacturing.⁶⁴

Following the signing of the Qualifying Industrial Zone Agreement in 1996, and the Jordan-United States Free Trade Agreement (JUSTFA) in 2001, however, the industries in Jordan began to grow. The introduction of JUSTFA gave Jordan significant tariff advantages and helped to create a market for exporting Jordanian apparel to the US. However, workers in the sector were toiling under exploitative working conditions, and in 2006 an exposé on labour rights violations in Jordan nearly brought the industry to a halt. Subsequently, in 2009 the ILO-IFC Better Work programme was introduced at the request of the Government of Jordan, and has for over a decade worked with employers, workers and their organizations to improve working conditions in the country.

Today, the clothing industry plays an important role in Jordan's economy. It now comprises approximately 1,300 garment manufacturing enterprises, of which 85 are large factories, 150 are small and medium-sized enterprises, and the rest are microenterprises.⁶⁵ In 2018 garment-related exports accounted for more than US\$1.6 billion, around 28 per cent of all Jordan's exports. Garments constituted 84 per cent of Jordan's total exports to the US that year.

The textiles industry in Jordan is considerably smaller than the clothing industry. Textiles companies are predominantly micro, small and medium-sized enterprises.

Better Work Jordan has estimated that Jordanian garment factories in January 2019 employed over 68,300 workers, of which 16,700 were Jordanians and some 51,500 were migrant workers (table 6). The textiles industry currently employs around 2,500 mostly Jordanian workers.

⁶⁴ Kevin Korben, *The Jordanian Garment Industry and Better Work* (Better Work, 2019).

⁶⁵ ILO, *Skills for Trade and Economic Diversification (STED) in the Garment & Leather Manufacturing Sector in Jordan*, 2020; World Bank, "Jordan Textiles and Clothing Exports, Imports, Tariffs by country 2017", WITS database, accessed 2019.

► **Table 5. Estimated employment in the garment, textiles and leather sectors**

Employment by sector and category	Department of Statistics (2017) ^a	Better Work (2019) ^b	Jordan Chamber of Industry (2018) ^c	CBI ^d
Garment industry (Jordanians)	18,719	n/a	n/a	
Total exporting garment industry	n/a	68,300	n/a	
Total garment industry				77,000
Exporting garment industry (foreign workers only)	n/a	51,500	n/a	
Leather industry (Jordanians)	760	n/a	n/a	
Manufacture of textiles (Jordanians)	2,507	n/a	n/a	
Total	-	68,300	73,148	77,000

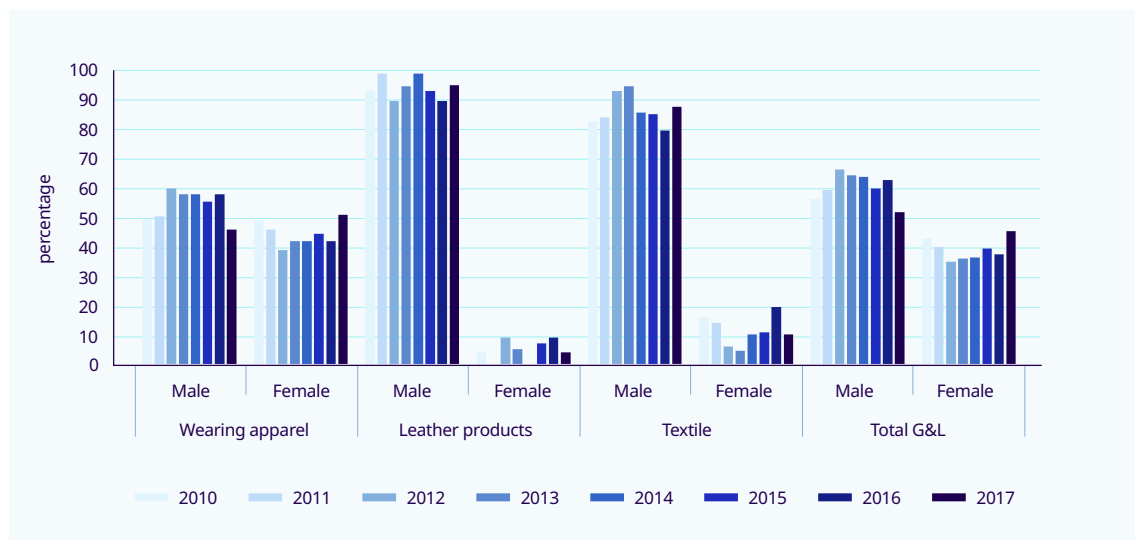
a) Jordan, Department of Statistics (2018): "Industrial Survey", ILO List (unpublished).

b) Better Work Jordan, *Annual Report 2019: An Industry and Compliance Review Jordan*, 2019, 10.

c) Jordan, Chamber of Industry, *Main Industrial Indicators*, Issue No. 18, May 2019.

d) CBI, *Value Chain Analysis (VCA) Garments, Jordan*, 2019.

In 2016 Better Work Jordan reported that women represented 69 per cent of all workers in the garment sector.⁶⁶ Meanwhile, statistics from Jordan's Department of Statistics suggest the manufacture of wearing apparel has an evenly split male to female employment ratio, while other subsectors such as textiles and leather were dominated by men (figure 7).⁶⁷

► **Figure 7. Jordanian employment in the garment and leather sector by gender (2010-17)**

Source: ILO, *Skills for Trade and Economic Diversification (STED) in the Garment & Leather Manufacturing Sector in Jordan*, 2020; with data from Jordan, Department of Statistics, "Employees and Enterprises by Economic Activity and Size Group of Employment for Both Private and Public Sector (2011-2017)".

66 Better Work Jordan, "Garment Industry 7th Compliance Synthesis Report", January 2016.

67 "Employees and Enterprises by Economic Activity and Size Group of Employment for Both Private and Public Sector (2011-2017)".

Since unemployment has been high in Jordan for many years, almost 19 per cent in 2018, the Government of Jordan initially hoped that the nascent textiles and clothing industries would generate employment for Jordanian workers. However, employers have generally hired migrant workers, who currently comprise around 75 per cent of the workforce.

The Government of Jordan has for many years sought to increase the number of Jordanian workers in the sector in order to reach a balance between domestic and migrant workers and to realize the potential of the sector to stimulate employment and economic growth. However, progress has been hampered by low desire among Jordanians to work in the industry and by a lack of the necessary foundational and technical skills.⁶⁸ That Jordan has the second lowest female labour participation rate in the world, around 14 per cent, is also an obstacle for an industry that traditionally recruits women workers.⁶⁹

According to a recent study prepared by the ILO with the International Trade Centre (ITC), the garment industry has the second highest potential export growth of any sector in Jordan: up to an additional US\$550 million. If this target was achieved, it could generate an additional 34,000 jobs in Jordan. Targeted employment and skills policies could help increase employment in the industry for both Jordanian and migrant workers, and help address persistent high unemployment in the country.⁷⁰

5.2 Methodology

Three distinct but related activities were carried out in Jordan with the support of the ILO SKILLS programme:

- ▶ A study was conducted on the garment and leather industries based on the ILO's Skills for Trade & Economic Diversification (STED) methodology (see section 1.3)
- ▶ This led to the development of a sector skills strategy in Jordan
- ▶ This was complemented by a study of the impact of COVID-19 on skills needs in the sector.

The first report involved a desk review of secondary data and a field survey encompassing both the demand side (enterprises working in the garment and leather sector) and the supply side (education and training providers) in the industries. The findings were discussed and validated by the Garment and Leather National Sector Skills Council (NSSC), a tripartite body responsible for improving linkages between employers in the garment and leather sector and public and private education and training providers to address skills needs in the sector. A scenario planning session was organized with the NSSC to discuss the growth prospects of the industry in terms of export values and job prospects up to 2025.

A sector skills strategy was subsequently drafted on the basis of further desk review, interviews and focus group discussions with the NSSC chairman and members. The draft sector skills strategy was shared with the NSSC for further feedback.

In reaction to the COVID-19 pandemic, a report was produced on the impact of the COVID-19 crisis on the industries in Jordan. This was based on a desk review and an expert survey to further develop recommendations to meet the skills needs of the industries in the future.

68 ILO, *Skills for Trade and Economic Diversification (STED) in the Garment & Leather Manufacturing Sector in Jordan*, 2020; World Bank, WITS, "[Jordan Textiles and Clothing Exports, Imports, Tariffs by country 2017](#)".

69 Korben, *The Jordanian Garment Industry*.

70 ILO, *More Trade for More Jobs: Identifying the Employment Potential of Jordan's Exports*, 2020.

5.3 Findings of the national study

The multi-skilled sewing occupation comprised the vast majority – some 75 per cent – of the total workforce in the garment and leather sectors – of which only 28 per cent were Jordanian.

5.3.1 Identification of priority occupations

To identify skills needs, the garment and leather STED report identified 39 priority occupations in the industries, divided into 6 subsectors (table 5).

► **Table 6. Priority occupations in the textiles, garment and leather industries by subsector**

Industry	Priority occupation	
Manufacture of garments (linens)	Multi-skilled sewer Production supervisor Production planning and control Quality assurance Quality controller	Ironing and pressing operator CAD technician Cutter Embroidery application developer Embroidery machine operator
Textile weaving	Ball wrappers Dyeing lab technician Dyeing machine operator	Dye colour heat setting RAM machine operator Denim washing and aging machine operator Fabric polishing machine operator
Textile knitting and tricot	Knitting machine operator Linking machine operator	Pressing machine operator Knitting machine programmer
Leather shoes and accessories	Shoe designer / modelist Shoemaker Upper shoe cutting operator	Upper shoe sewing machine operator Multi-sewing machine operator for shoes Leather bag sewers (school bags, women's bags and messenger bags)
Leather tanning and leather garments	Leather technologist (university graduate) Leather tanning machine operator Leather dyeing technician Leather fleshing machine operator	Leatherwear designer (apparel, gloves) Leather liming machine operator Pattern maker (leatherwear)
Carpet manufacture	Carpet loom machine operator Carpet weaving machine operator Carpet looping machine operator	Carpet linking and gluing technician Carpet shearing machine operator Carpet-mix chemical technician

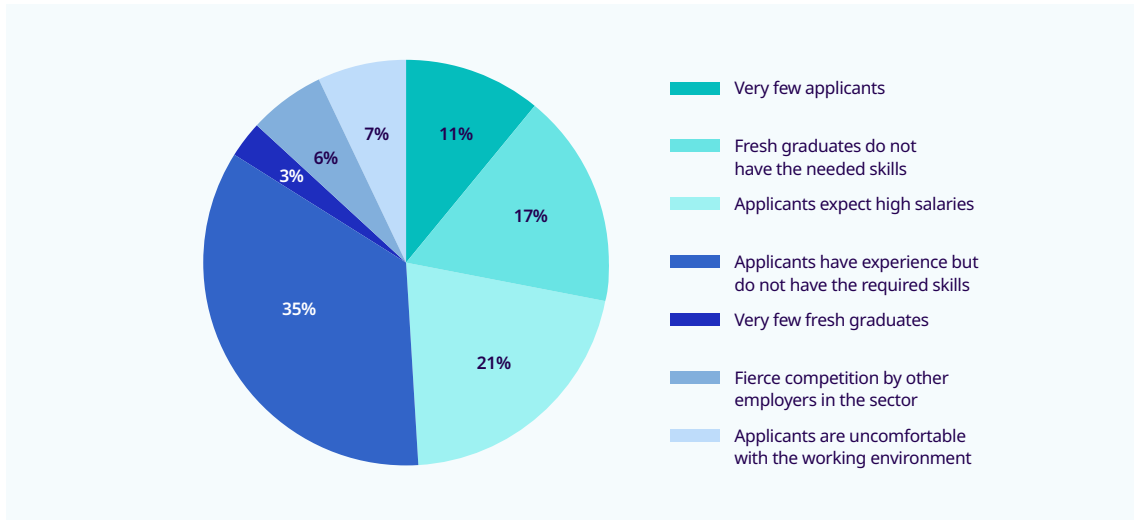
Source: ILO, *Skills for Trade and Economic Diversification (STED) in the Garment & Leather Manufacturing Sector in Jordan*, 2020.

5.3.2 Demand-side challenges identified by factories

Employers in the Jordanian textiles and clothing industry find it challenging to recruit workers with the skills they need. Fifty-two per cent of respondents to the ILO STED survey said neither fresh graduates (17 per cent) nor applicants with some experience from the sector (35 per cent) had the required skills (figure 8). Respondents further felt high salary expectations (according to 21 per cent of respondents) and an insufficient number of applicants (11 per cent) were among the most important recruitment challenges.

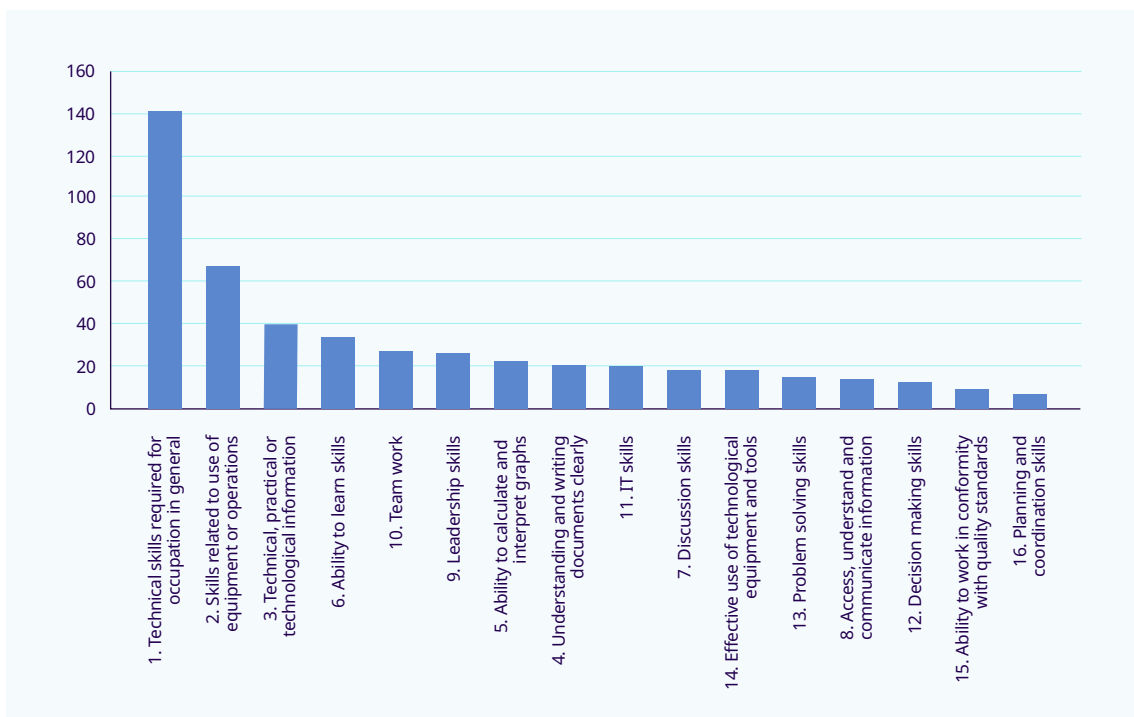
In addition to skills mismatches, respondents were also asked to identify skills gaps. The majority of the factories surveyed, some 60 per cent, identified skills gaps associated directly with the occupation, the use of equipment, technology, understanding and writing documents, and the ability to conform to quality standards. Most of the other skill gaps identified, some 33 per cent, concerned so-called soft skills such as teamwork and leadership skills, ability to calculate and interpret graphs, basic information technology (IT) skills and comprehension skills such as accessing, understanding and communicating information. The remaining 7 per cent concerned workers' aptitude to learn new skills for their occupation (figure 9).

► **Figure 8. Garment and leather recruitment challenges in Jordan**



Source: ILO, *Skills for Trade and Economic Diversification (STED) in the Garment & Leather Manufacturing Sector in Jordan, 2020.*

► **Figure 9. Skills gaps in the garment and leather industries in Jordan**



Source: ILO, *Skills for Trade and Economic Diversification (STED) in the Garment & Leather Manufacturing Sector in Jordan, 2020.*

It was observed from the survey data that the garment and leather sector has the potential to hire people with disabilities, including those with hearing disabilities, impaired mobility, and those who are deaf and deaf-mute.

The majority of respondents (78 per cent) said they did not work with training providers. The remaining 22 per cent had worked with training providers by sending their employees to receive training or by receiving students of training centres for internship or apprenticeship programmes. The factories attributed the weak collaboration with training providers to a lack of capacity of such institutions to provide up-skilling support to trainees. Only 5 per cent of factories had worked with scientific research institutes, the majority of which had worked exclusively with Jordanian institutes.

5.3.3 Supply-side challenges identified by education and training providers

The five universities interviewed by the ILO offered three educational programmes that cover ten of the 39 priority occupations in the garment and leather sector. In 2018 these programmes had provided a total of 2,133 graduates with skills relevant to sewing, production planning and control, quality control, computer assisted design, cutting, and embroidery application. However, it was not clear from the survey whether the training provided matched the skills needs of the industry.

All the universities and one training centre provided students with soft skills development focusing on communication, teamwork, problem-solving, entrepreneurship, computer literacy, foreign languages, mathematics and technical writing. All universities stated that they collaborated with employers, though only two measured job placements of their students after graduation. Four of the five training centres collaborated with employers through job placement, apprenticeship and training within the private sector.

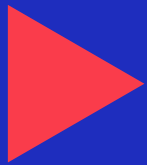
The surveys demonstrated a mismatch between the existing supply of and current and future demand for skills in the textiles and clothing industries in Jordan. There clearly is a need for improved collaboration between training and education providers and employers, with the full involvement of workers. There is also a need to better understand the future of work in the industries, and what skills are required for employers and workers to adapt to rapid and profound changes.

5.4 Recommendations for future action

Following the study, a comprehensive sector skills strategy was developed in support of the government's targets for the industry in terms of exports and employment over the next five years. The sector skills strategy focused on priority subsectors, value chains, and value-added services, highlighting that emphasis should be placed on the following:

- **Training of workers:** while migrant workers often have higher levels of skills, a lack of skills among local workers hinders the growth of the sector and its economic contribution to the country. Given that unemployment is expected to rise post-COVID-19, a special focus and funding should be directed towards training young people with the skills required by the industry. Such training programmes should prepare Jordanians to work in apparel factories near development zones or in rural areas. As Jordan builds back better, it is critical to upgrade the skills of all workers in the textiles and clothing industry, with a focus on providing opportunities for young Jordanian women and men
- **Digital transitions:** the COVID-19 pandemic has accelerated the already rapid digital advances, which an increasing number of enterprises and workers rely on. In Jordan the majority of factory workers are not trained to use digital technology. Orientation and training courses should be administered to factory workers to assist them in adapting to the digital economy
- **Life skills and safety measures:** in parallel to developing skills related to digitalization and advanced technologies, many workers within the sector lack on-the-job life skills or soft skills. These include communication skills, writing skills and problem solving abilities. An integrated programme to upgrade these skills is urgently needed, and with basic digital skills in place, it could be conducted online.
- **Develop programmes for supervisors, mid-level managers and higher-skilled, knowledge-intensive occupations:** while these make up a smaller share of the overall workforce, the skills are transversal and job opportunities are likely to be more appealing to a larger share of Jordanians in rural areas.





6

Peru



▶ 6. Peru

6.1 The textile and clothing industries in Peru

Peru has a rich history of traditional weaving of textiles and clothing that dates back over 5,000 years. Today, textiles and clothing are major drivers of manufacturing activity in Peru, accounting for 10 per cent of manufacturing and 1.9 per cent of GDP.⁷¹ The sectors have experienced growth in recent years, with Peru benefiting from the competitive advantage of local production of high quality fibres, such as pima cotton. The industries have multiple characteristics that have established them as important engines of growth for the national economy, including the use of raw materials of national origin, such as domestic cotton production; chain linkages to other industries from agriculture to marketing; intensive use of manual labour; and their contribution to exports and product diversification.⁷²

The industries in Peru consist of 4,843 formal companies (846 textiles companies and 3,997 clothing companies). However, the total number of companies is likely to be much higher, accounting for a large number of informal SMEs operating in the country.⁷³ Of the companies operating in Peru, 94 per cent are classified as microenterprises, while just 0.5 per cent are defined as medium or large-scale enterprises.⁷⁴

According to national statistics, the sector employs 414,083 workers in Peru (184,399 in textiles and 229,684 in clothing), accounting for 2.5 per cent of national employment. Formalization of the workforce, however, is low in comparison to other industries, with a labour formalization rate of 18.9 per cent in the textiles and 29.2 per cent in the garment industries. Self-employment is also high, particularly in the textiles sector, and the prevalence of informality means that workers often do not have access to adequate social protection, and work long hours, without the right to collective bargaining. In both industries, women represent the majority of the workforce, accounting for at least 65 per cent of textiles and 53 per cent of clothing workers.⁷⁵

The textiles and clothing industries also make a significant contribution to Peruvian exports, constituting one of the main non-extractive industries in the national economy. In 2018 the total value of textiles and clothing exports was US\$1.373 billion, accounting for a total of 10.4 per cent of non-traditional exports. The largest textile export is “carded or combed alpaca or llama hair”, for which the main markets are Italy and China. The majority of clothing produced in Peru is exported to the United States (76 per cent), but there is a growing demand for exports to the rest of Latin America. Over the period 2000-2018, export markets for both textiles and clothing increased overall, but experienced fluctuations, and are currently below their peak values of 2014 and 2007 respectively.⁷⁶

71 United States International Trade Administration, “[Peru - Country commercial guide: Textiles and apparel](#)”.

72 Peru, Ministry of Production, *Estudio de Investigación del Sector Textil y Confecciones*, December 2015.

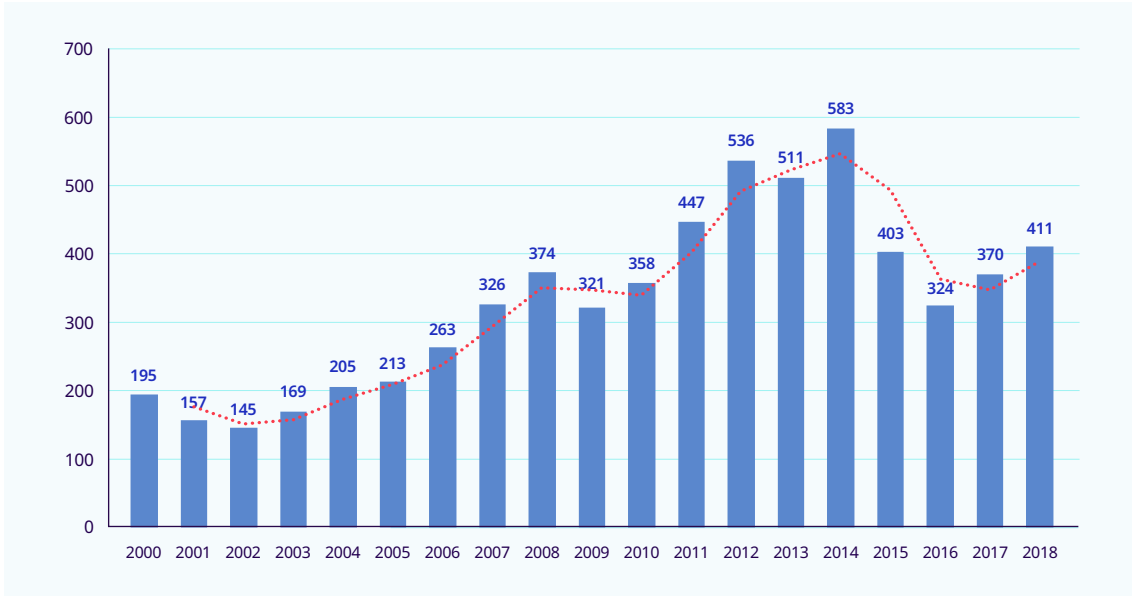
73 Peru, Ministry of Labour and Promotion of Employment, *Estudio prospectivo para la industria de confección de prendas de vestir*, 2020.

74 Oxford Business Group, “[Peru Government Initiatives to Diversify Local Industry](#)”.

75 ENAHO, 2018 statistics, cited in: *Estudio prospectivo para la Industria de confección de prendas de vestir*; and Peru, Ministry of Labour and Promotion of Employment, *Estudio prospectivo de la industria textil*, 2020.

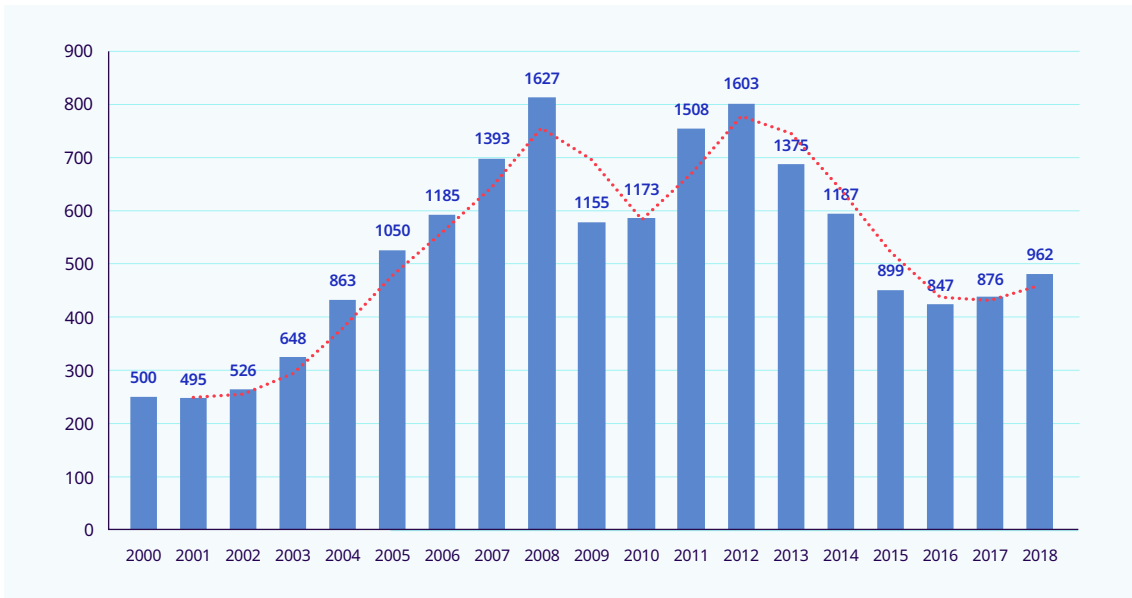
76 *Estudio prospectivo de la industria textil*.

► Figure 10. Value of exports in the Peruvian textile industry, 2000–2018 (US\$)



Source: Trade Map data; cited in Peru, Ministry of Labour and Promotion of Employment, *Estudio prospectivo de la industria textil*, 2020.

► Figure 11. Value of exports in the Peruvian clothing industry, 2000–2018 (US\$)



Source: ITC Trade Map data; cited in Peru, Ministry of Labour and Promotion of Employment, *Estudio prospectivo para la industria de confección de prendas de vestir*, 2020.

6.2 Methodology

The study to forecast future skills needs in Peru was conducted using the SENAI prospective model outlined in chapter 3.2, with the support of the ILO-Brazil South-South Cooperation Programme. The study was developed by the Ministry of Labour and Promotion of Employment of Peru (MTPE) in cooperation with SENAI, the Brazilian Cooperation Agency (ABC) and the Brazilian Cotton Institute (IBA). A prospective study team was created at the MTPE, to take charge of conducting the studies, organizing the expert panels and formulating the recommendations.

The methodology adopted followed the same steps implemented in Brazil. It employed technological, organizational and occupational foresight analyses of the sector in order to assess their impact on the structure of work organization and vocational training (i.e. on occupational profiles) in the sector over the next 5, 10 and 15 years. The model was applied individually to the textile and clothing sectors to produce two prospective studies. For each of the industries a panel of experts was selected, representing key industry stakeholders.

To determine emerging technologies in the garment manufacturing industry, a preliminary investigation was carried out based on information from desk research and from industry specialists, which were later revised and adjusted by the panel of experts. Organizational trends were based on sectoral information and were presented to the panel in order to assess the main management practices that could impact future occupations related to the industries in Peru. This information was used to determine new and emerging occupational profiles in the short, medium and long term.

Recommendations were then developed by the prospective study team established by the MTPE to provide guidance to different constituents and stakeholders involved in the professional training of the country.

6.3 Findings of the national study

This chapter combines the studies compiled for the textiles and clothing industries in: Peru, Ministry of Labour and Promotion of Employment, *Estudio prospectivo para la industria de confección de prendas de vestir*, 2020; and *Estudio prospectivo de la industria textil*, 2020.

6.3.1 Emerging technologies

The study indicated that over the next 5, 10 and 15 years there is likely to be an increase in the acquisition and use of advanced technologies by firms in the textiles and clothing industries in Peru. The emerging technologies identified as likely to shape the industries are listed in box 5 below. They include key technological advances shaping the entire production process, such as the use of big data, digitalization, including sensors and the IoT, and the use of bio- and nanofibers.

▶ **Box 6. Emerging technologies that will shape the future of the textiles and clothing industries in Peru**

- ▶ big data
- ▶ digitalization of production
- ▶ smart clothing/smart textiles
- ▶ biofibres
- ▶ nanofibers
- ▶ nanoparticles for the production of fabrics with multifunctional properties
- ▶ use of natural colorants in the processes of textile dyeing
- ▶ automated colour measurement systems
- ▶ digital textile printing (DTG)
- ▶ machines designed for sewing, cutting and profiling
- ▶ pattern design technologies
- ▶ 3D systems in the product development area
- ▶ intelligent systems for storage and shipping
- ▶ internet of things (IoT)
- ▶ augmented reality
- ▶ artificial vision (by computer)
- ▶ artificial intelligence (for monitoring and relationship with the market)
- ▶ technologies for recycling
- ▶ use of the just in time concept in customer/supplier relations
- ▶ systems for the identification and management of faults and defects
- ▶ collaborative robots
- ▶ blockchain technology
- ▶ sensors for product identification and operating conditions.

6.3.2 Organizational trends

Organizational foresight analysis was also used in order to identify trends in management practices and organizational structure in the textile industry, estimating the degree of their uptake by companies in the short, medium and long term. In the textiles industry, three key trends were prioritized, while in the clothing industry 17 trends were identified, ranging from innovative marketing strategies and marketing analysis, to talent development and retention. These trends were typically forecast to be progressively implemented by organizations over the next 5, 10 and 15 years. The results of the organizational survey are summarized in table 7 below.

► **Table 7. Projected organizational trends in the textiles and clothing industries in Peru**

Organizational trend		Degree of implementation (% of companies)		
		2020-2024	2025-2029	2030-2034
Textiles industry				
strategies	State-Company Academy for the promotion of textile products	Up to 10%	11-30%	31-51%
Production strategies	Strategies to encourage production (with improvements in the State-Company relationship)	Up to 10%	11-30%	31-51%
Marketing Strategies for attracting, identifying, developing and retaining talent	Develop strategies for collaborative work of state academy and companies	Up to 10%	11-30%	31-51%
Clothing industry				
Market positioning strategies	Leadership by differentiation	Up to 10%	11-30%	31-51%
	Market niches (differentiation)	Up to 10%	11-30%	31-51%
Marketing strategies	Offering innovative products	Up to 10%	11-30%	31-51%
	Offering innovative services	Up to 10%	11-30%	31-51%
Production strategies	Mass customization	Up to 10%	11-30%	31-51%
	Lean manufacturing	Up to 10%	11-30%	31-51%
Tools for decision-making processes	Market analysis tools	Up to 10%	11-30%	31-51%
	Tools for identifying technological trends	11-30%	31-51%	31-51%
	Tools for the development, management and evaluation of projects	Up to 10%	11-30%	31-51%
Strategies for attracting, identifying, developing and retaining talent	Career development, training and apprenticeship programmes	Up to 10%	11-30%	31-51%
	Quality of life programmes and coaching programmes	Up to 10%	11-30%	31-51%
	Clear and transparent with participation of the workers involved	Up to 10%	11-30%	31-51%
Establishment of financial and non-financial goals	A balanced approach between financial and non-financial performance	Up to 10%	11-30%	31-51%
Establishment of performance indicators	Ensure workers a remuneration that guarantees an adequate standard of living for themselves and their families	Up to 10%	11-30%	31-51%
	Achievable and aligned with the corporate strategy	Up to 10%	11-30%	31-51%
Establishment of corporate responsibility actions and programmes	Measured by IT tools	Up to 10%	11-30%	31-51%
	Rationalize and optimize the use of utilities and the recycling of your products after use	11-30%	11-30%	31-51%

6.3.3 New occupations

The panel of experts further identified a list of occupations in which needs for future skills were identified. The panel selected occupations for which training was not currently offered, as well as existing occupations for which training needed to be strengthened or revised. These included technical specialists required for implementing new innovative production processes and operating new technologies, and staff in management, design and marketing. The occupations identified are summarized in table 8 below.

► **Table 8. New and existing occupations identified in the textiles and clothing industries in Peru**

	Priority		
	First	Second	Third
Textiles industry			
New occupations	Sustainable textile technology management analyst	Systems analyst specialized in textile production control	Textile supply chain management developer
Existing occupations	Textile fibre development analyst	Quality control technician	Innovation and development project manager
	Textile mechatronic technician	Textile mechatronic technician	Textile engineer
Clothing industry			
New occupations	Specialist in communication and development of fashion brands	Technologist for the management of systematized production processes	Fashion and garment product developer
Existing occupations	Automated production processes analyst	Sustainability management technologist	Marketing Expert
	Garment fashion designer	Product design and development technician	Garment operator

The new occupations were then prioritized based on the opinions and observations of the panel of experts. In the textile industry the panel selected: sustainable textile technology management analyst; textile mechatronics technician; and innovation and development project manager. In the garment industry the panel selected: specialist in communication and development of fashion brands, technologist for the management of systematized production processes, and automated production processes analyst.

6.3.4 Skills requirements for the industry

According to the results of the foresight model, the skills required in the future within the Peruvian textiles and clothing sectors can be broken down into three categories: knowledge, skills and capabilities. The results of the two studies are summarized and combined below.

Knowledge

The key knowledge areas in demand by the industries in Peru include:

- **administration and management** – production administration, business administration, financial administration, cost management, quality and process management, project management
- **engineering and technology** – general biology, biochemistry, genetics, microbiology, ecology;
- **chemistry** – general chemistry, physical chemistry, environmental chemistry
- **mathematics**: numerical analysis, algebra, geometry, logistical mathematics, applied mathematics, probability and statistics, calculus and analysis

- ▶ **physics** – mathematical methods of physics, mechanics, electricity and magnetism, technical processes and thermodynamics, electronic circuits
- ▶ **languages** – reading and interpretation of texts, technical writing, foreign languages particularly English language skills
- ▶ **computers and electronics** – computer systems architecture, databases, programming logic and semantics, analytical models
- ▶ **computer science** – internet of things, programming, sensor technology
- ▶ **mechanics** – control of mechanical systems; machines, engines and equipment; maintenance; hydraulic and pneumatic mechanics
- ▶ **design** – colour analysis, product design, visual communication, incorporation of environment and sustainability
- ▶ **communications** – telecommunications, media, network communications, public relations, information dissemination processes.

Skills

The skills most needed by the industries include:

- ▶ **programming** – write and modify programmes for computers, machines and equipment for various purposes
- ▶ **critical thinking** – use logic and reasoning for the development of activities and to identify the strengths and weaknesses of alternative solutions, conclusions or ways of approaching problems
- ▶ **complex problem solving** – structuring complex problems and analysing related information in order to develop and evaluate options to implement solutions
- ▶ **technology projects** – generating or adapting equipment and technologies to meet the needs of users
- ▶ **systems analysis** – analysing how a system should work and how changes in conditions, operations and the environment may impact the results
- ▶ **judgment and decision making** – assess the costs and benefits of potential actions in order to choose the most appropriate one
- ▶ **negotiation** – promoting the debate of ideas and/or positions in order to achieve a balance between different interests
- ▶ **operations analysis** – analysing requirements and procedures for the design or improvement of production, parameters and objectives of operations, inspection standards, materials and forms of use, facilities, equipment, tools, conditions, and working methods
- ▶ **orientation for services** – communicate with other people to transmit and receive information effectively
- ▶ **systems analysis** – analysing how a system should work and how changes in conditions, operations and the environment may impact the results
- ▶ **social perception** – understanding actions and reactions in the interpersonal sphere, recognizing differences, and working in a harmonious and inclusive way that takes account of the differences
- ▶ **active learning.**

Capabilities

The competencies required by the industries include:

- ▶ **creativity** – ability to generate innovative ideas on a certain subject or situation, or develop creative ways to solve a problem
- ▶ **deductive, abstract and inductive reasoning**
- ▶ **cognitive flexibility** – continuously adapting the mindset to new and unexpected situations
- ▶ **manual coordination speed** – ability to perform quick, simple and repeated movements with fingers, hands and wrists for handling communications and automation systems
- ▶ **adaptability/flexibility** – adapting to positive and negative changes and to diversity in the work environment
- ▶ **perception of problems** – ability to perceive when something is wrong or could go wrong; this involves recognizing that there is a problem, but not solving the problem
- ▶ **innovation** – being creative and thinking in alternative ways to develop new ideas and provide answers to problems related to work
- ▶ **auditory attention** – ability to focus on a single sound source when there are other sounds that can be distracting
- ▶ **peripheral vision** – ability to see objects or the movement of objects with the eyes directed forward
- ▶ **colour discrimination** – ability to compare or detect differences between colours, tones and brightness.

6.4 Recommendations for future action

The SENAI model generated a set of recommendations for the constituents and stakeholders involved in the development of the industries and in professional education and training in Peru, to guide the development of education and training and improvements in the performance of TVET institutions to meet future skills needs.

6.4.1 Federal government ministries and secretariats

The Ministry of Labour and Employment Promotion and Regional Directorates of Labour and Employment Promotion should:

- ▶ prepare and update occupational profiles and training modules to match the most impacted occupations identified in section 6.3.4
- ▶ promote the certification of competencies by actions through the new Labour Competency Certification Centres to raise the awareness of enterprises (micro, small, medium and large) and of workers' organizations on the benefits of certification
- ▶ promote coordination with companies, business associations, trade unions, international organizations and other state institutions to anticipate new demands for skills in the industries
- ▶ provide information on the most demanded occupations via web portals in order to facilitate student decision making for higher education, and promote the dissemination of information on national and regional labour market trends
- ▶ design and implement a strategy for the dissemination of the results of the studies of the industries at the national level with all relevant public and private institutions
- ▶ promote tripartite social dialogue for the development of human capital in the industries, in order to improve the employability and productivity of workers and businesses

- ▶ create and/or strengthen programmes to promote the development of skills for workers, especially for micro, small and medium-sized enterprises.

Regarding the Ministry of Education (MINEDU) and Regional Directorates of Education (DRE):

- ▶ MINEDU is recommended to update the education supply of the industries taking account of the trends, occupations and skills requirements identified in section 6.3.4.
- ▶ MINEDU and DRE are recommended to strengthen cooperation with social partners, IGOs and other state institutions to identify and elaborate study programmes to meet the needs of the industries
- ▶ MINEDU recommends strengthening technical secondary education so that young people acquire the skills that the productive sector demands, ensuring coordination and collaboration between education providers and the private sector.

The Ministry of Foreign Trade and Tourism Commission for the Promotion of Peru for Export and Tourism (PROM PERÚ) and Regional Governments (GORE) should:

- ▶ strengthen market surveillance of the industries and identify the needs of enterprises of all sizes to adapt to new demand
- ▶ create or strengthen mechanisms to adapt to new trends, such as financing programmes, research centres, strengthening industry clusters and entrepreneurial programmes
- ▶ implement policies to boost the productivity and competitiveness of both SMEs and large enterprises.

The Ministry of Production (PRODUCE), National Institute of Quality (INACAL), Technological Institute of Production (ITP), Innovate Peru Programme and Regional Governments (GORE) should:

- ▶ strengthen technological and organizational monitoring and identify challenges facing SMEs and large enterprises; work with the Centre for Productive Innovation and Technology Transfer to strengthen measures related to achieving productive efficiency and innovation in the industry
- ▶ create and/or strengthen mechanisms related to the dissemination of technological and organizational trends, including incentive programmes for SMEs, the development of programmes to promote skills for employment, financing research and innovation, and the review and updating of technical standards, among other measures
- ▶ implement public policies to boost the productivity and competitiveness of the industries, supporting the production of quality products that can compete in international markets.

The Ministry of Agrarian Development and Irrigation should strengthen and/or develop programmes to improve productivity, profitability and competitiveness in the domestic production of cotton, through mechanisms such as providing training and technical assistance to farming, research and innovation, and linkage of producers to formal credit markets.

6.4.2 Universities and institutes of higher education

Universities and institutes of higher education should:

- ▶ develop and update the curricula related to the most affected occupations to satisfy the demands of the industry
- ▶ offer training courses incorporating skills, aptitudes, capacities and knowledge related to those occupations
- ▶ develop and/or strengthen research and innovation on technological and organizational trends.

6.4.3 Employers' organizations

Employers' organizations should:

- ▶ create and/or strengthen mechanisms to support micro, small, medium and large enterprises in the knowledge, adoption and use of the technological and organizational trends identified in the study
- ▶ strengthen coordination and collaborative work to design and implement joint strategies aimed at improving the productivity and competitiveness of the industry
- ▶ participate in the development of occupational profiles and study programmes in the most affected occupations and develop permanent communication channels with higher education centres
- ▶ train workers in regard to new technological and organizational trends to ensure that they have the skills the industry needs
- ▶ incorporate the skills, aptitudes, capacities and knowledge required by the textile industry into training programmes
- ▶ strengthen training and promote the continuous training of workers through mechanisms including training courses, internships and the certification of competencies
- ▶ contribute to tripartite social dialogue, alongside the government and workers' organizations, as an effective mechanism to promote the development of human capital in the industries.

6.4.4 Workers' organizations

Workers' organizations should:

- ▶ promote training and the certification of labour competencies among workers in the textile industry
- ▶ disseminate the organizational and technological trends and the profiles of the most impacted occupations identified in the study
- ▶ participate in the development of occupational profiles and study programmes in the most affected occupations and develop permanent communication channels with higher education centres
- ▶ contribute to tripartite social dialogue, alongside the government and employers' organizations, as an effective mechanism to promote the development of human capital in the industries.

6.4.5 ILO

The ILO should:

- ▶ disseminate the results of the studies on the industry among its constituents and partners via the media, programmes and projects corresponding to the needs for vocational training in the industries
- ▶ promote social dialogue between the government, employers' organizations and workers' organizations to address the needs for vocational training in the industries.





▶ 7 Conclusions



► 7. Conclusions

Even before the COVID-19 crisis brought unprecedented disruption to the textiles and clothing industries and focused everyone's attention on short-term survival and recovery measures, few Member States had carried out work to better understand the future of work in the sector or to develop strategies to ensure decent and sustainable work in the medium and long term. Notable exceptions are China and Viet Nam, where constituents have developed industrial policies for textiles and clothing which include a focus on human resources and skills development.

This report has summarized how ILO constituents in Brazil, Ethiopia, Jordan and Peru have used foresight models and skills anticipation methodologies as a tool to plan for the future development of their industries. As a result, ILO constituents in these countries are now better prepared to address the challenges and opportunities related to skills development and to advance decent work in the sector.

The four countries and their textiles and clothing industries differ in many respects, including in terms of the size of the industries, their history, access to local raw materials, the numbers of workers and the share of women employed, and the ways in which governments, training institutions, workers, employers, and other stakeholders have organized and operate today. It is therefore not surprising that the constituents in each country have used different methodologies, notably the SENAI model in Brazil and Peru and the ILO STED methodology in Ethiopia and Jordan.

Social dialogue was a common feature of the work in the four countries. In Jordan, a tripartite sector skills council had been established prior to the analysis of future skills needs, and this council placed a key role in guiding the analytical work and in validating the recommendations. In Ethiopia the constituents established a sector skills council in follow-up to one of the recommendations in the skills forecasting report. In Brazil a panel of industry experts and ILO constituents was assembled to validate SENAI's skills anticipation and make recommendations for skills development. The adoption of the findings and recommendations by the constituents in all four countries is testament to the level of social dialogue in the countries and to the constituents' commitment to jointly find solutions for a more resilient, inclusive and sustainable textiles and clothing sector.

It is important to note that the constituents adopted a unique set of concrete and practicable recommendations for each country. This not only reflects that there is no one-size-fits-all approach to skills foresight or development in the textiles and clothing industries. It also underlines the importance of social dialogue between governments, employers and workers at the national and sectoral level to foster workable and targeted local, sectoral and national solutions for the future. Table 9 below provides a comparative overview of the profiles of the four countries and their textiles and clothing industries, the methodologies applied, and the recommendations that were formulated and adopted.

While there are key differences in the scope and content of the recommendations adopted by the constituents in Brazil, Ethiopia, Jordan and Peru, there are common themes. These include but are not limited to: (i) enhancing education and TVET systems; (ii) strengthening linkages with the private sector in order to close industry skills gaps and provide the skills that employers and workers need to face the future of work; and (iii) developing digital skills to meet current demand and keep up with the projected technological development of the sector in each country. The role of employers in upskilling and reskilling workers to tackle the skills gap issue is also considered critical in all four countries.

► **Table 9. Comparative summary of skills anticipation and recommendations**

Priority	Brazil	Ethiopia	Jordan	Peru
ILO regions	Americas	Africa	Arab States	Americas
Population^a	211 million	112 million	10.1 million	32.5 million
GDP per capita, current prices^b	US\$ 7,001	US\$ 952	US\$ 4,360	US\$ 6,680
Textiles and clothing industries				
Revenue	US\$ 48.3 billion	US\$ 89.3 million	US\$ 1.8 billion	US\$ 1.37 billion
Employment	1.5 million	798,000	77,000	414,000
Domestic or migrant workers	Domestic	Domestic	Migrant	Domestic
Share of women workers	75 per cent	76 per cent	69 per cent	65 per cent (textiles) 53 per cent (clothing)
Methodology				
Skills anticipation model	SENAI model	ILO STED	ILO STED	SENAI model
Sector skills council	No	Yes (following STED analysis)	Yes (involved in STED analysis)	No
Focus of skills anticipation	Industry 4.0 technologies	New technologies and climate change	Employment for national workers	Industry 4.0 technologies
Validated through	Industry and tripartite national workshops (online)	Tripartite national workshops, email consultations with constituents and stakeholders	Tripartite national workshops, consultations with sector skills council	Industry and tripartite national workshops
Recommendations				
Scope and content	Specific recommendations for constituents and stakeholders involved in education and training and technological development. Aim to promote improved performance of professional training institutions	Actions for constituents and stakeholders to better prepare themselves for the future of work in the industries in terms of technological development, climate change and the impact of these changes on skills needs and training	Sector skills strategy to outline plan of action, recommendations for training including occupational training, digital skills and key life skills	Recommendations for government ministries, employers' organizations, workers and various stakeholders to promote improved performance of professional training institutions and implementation of recommendations

a) World Bank, "Population", [World Bank Open Data](#), accessed 6 November 2020.

b) IMF, "[IMF Country Information](#)", accessed 12 April 2021.

Source: IMF; World Bank; various sources referenced in individual chapters of this report.

Despite the differences in the approaches taken to skills anticipation and forecasting and to delineating the proposed paths forward, constituents in the four countries share a common understanding of the importance of planning for the future of the industries. This is based on the recognition that low-cost, low-skilled production will not be sufficient to ensure the competitiveness of the industries in the future, and that the skilling, reskilling and upskilling of workers will be key to ensuring their continued growth and sustainability, whether socially, environmentally or financially. Similar to the industrial development paths taken by China, Germany, Turkey and Viet Nam, the constituents in Brazil, Ethiopia, Jordan and Peru are working to promote skills development as part of a broader set of measures to ensure the sustainability of the industries, from investments in infrastructure to the creation of an enabling environment for enterprises to grow and workers to enjoy their rights. Crucially, in each of the four countries, the industries are

a key employer of women workers. ILO constituents in the four countries have recognized and support the key role skills development can play in promoting gender equality, diversity and inclusion for all workers.

In each of the four countries, the industries are competing with other industries to attract talent, particularly for workers with STEM backgrounds and ICT skills. This calls for skills foresight and development strategies in the textiles and clothing industries to be combined with broader foresight and skills development strategies across manufacturing and other key sectors of the countries' economies. For skills development in the textiles and clothing sector to be implemented most successfully, it should be combined with other active labour market policies, such as social protection and labour market information systems.

While each country's textile and clothing industry is unique, the constituents agreed to share their experiences and good practices through a south-south and triangular workshop held in January 2021. During the event, participants reiterated the importance of designing skills strategies through social dialogue and of embedding them in broader sustainable industrial policies. Such skills strategies and sustainable industrial policies can assist governments, employers and workers in bringing about a just transition to more productive and sustainable industries, guided by international labour standards and the outcomes of the general discussion on skills and lifelong learning at the 109th Session of the International Labour Conference (November 2021).⁷⁷

In Brazil, Ethiopia, Jordan and Peru, the process of defining skills development strategies and lifelong learning approaches is already under way in their textiles and clothing industries. However, this is just a first step. To ensure a brighter and sustainable future for the sector, where governments, employers, workers and key stakeholders build forward better from the COVID-19 crisis and provide decent work for the millions of women and men it employs, large-scale investment is needed to develop skills in the sector. This will have to be complemented by investments in infrastructure, strong labour market institutions, the rule of law, stable macro-economic and trade policies, policies and measures to aid the transition to formality, improvements in occupational safety and health and working conditions, and respect for fundamental principles and rights at work, in order to facilitate a just transition to a digital and sustainable future of work.

77 <https://www.ilo.org/ilc/ILCSessions/109/committees/skills-and-lifelong-learning/lang--en/index.htm>.

ilo.org

International Labour Organization

Route des Morillons 4
CH-1211 Geneva 22
Switzerland

T: +41 22 799 6111
E: sector@ilo.org

ISBN: 978-92-2-037408-5



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