

Keeping Workers in the Loop

Preparing for a Just, Fair, and Inclusive
Transition to Circular Fashion

DECEMBER 2021



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01 About this Report

This report was researched and written by Margot Brent, Kate Coles, Clíodhnaigh Conlon, Juliette Lemaire, Laura Macias, and Jacob Park. The team worked in partnership with Shaonli Chakraborty, Ritika Gupta, and Vatsima Tripathi from Catalyst Management Services (CMS) and Arman Mazhikeyev and Marian Rizov, economists from the University of Lincoln, in delivery of this research and report. CMS conducted the India-based research, and our economics partners led the economic modeling and analysis. The report was produced with editing and design support from Sunhee Choi, Peter Kupfer and Stephanie Welter-Krause.

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KWIL was led by BSR with expert project partners CMS and University of Lincoln

During the project, the authors involved over 45 diverse and representative stakeholder and expert organizations from across the global fashion system in project research and co-creating recommendations. We are incredibly grateful to our project collaborators for their ideas, insights, and guidance. For a full list of project participants and typology of industry stakeholders please see [Appendix, Section 14](#). We note that participation as KWIL project collaborator does not mean that these organizations endorse the outputs of the project in full nor every recommendation made in this report. Beyond the organizations listed in the project collaborators group, we interviewed many other stakeholders and experts and greatly appreciate their insights.

In addition to project collaborators and interviewees, the authors also want to thank expert scenario reviewers Dr. Kartikeya Singh, Director of Programmes, Stichting SED Fund and Rohitesh Dhawan, President and CEO, International Council on Mining and Metals.

Alongside KWIL-hosted workshops, we were grateful to collaborate with Circle Economy and Lis Suarez-Visbal, an Ashoka fellow and doctoral researcher at Utrecht University, in convening stakeholders in a job quality workshop. The intersection of jobs and circular fashion is a research focus of our three organizations (Circle Economy, Utrecht University and BSR), and the insights from this jointly hosted workshop are integrated into this report.

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02

Executive Summary



In this section

Research methodology

Key findings

Top-line recommendations

Conclusion

The circular economy offers a compelling vision for decoupling growth from resource use, designing waste out of the system, and extending the value of products. However, while the environmental and commercial benefits are clear, the implications for people and society are not as well understood.

In the garment and textile industry, circularity is rapidly gaining momentum given its environmental benefits, commercial promise, and rising consumer interest. Clothing resale, for example, is expected to grow 11 times faster than traditional retail by 2025.

The industry, which employs an estimated 60-70 million people in its value chain, must now grapple with the following questions: how will circular fashion impact job opportunities and job quality? And how can we ensure that the transition to a circular fashion system is just, fair, and inclusive?

Keeping Workers in the Loop (KWIL)¹ convened industry leaders and stakeholders to explore these questions with the aim of advancing a circular fashion industry that works for all, and particularly workers. Participants explored the potential social impacts of a shift to circularity and then co-created recommendations designed to advance circular business models that offer dignified, inclusive, and resilient employment opportunities.

Research methodology

The KWIL team investigated the job impacts of a shift to circularity, using foresight methodologies to account for macro forces reshaping the industry, such as automation and climate disruption. The research focused on the US, Europe, and India and included the following workstreams:



Primary and secondary research

To understand how the shift to circular fashion might impact job opportunities, quality, and skill requirements. This considered the different dynamics across “consumption” and “production” countries, and by gender. Our research included interviews with stakeholders regarding the social implications of circularity. We also gathered the perspectives of almost 200 workers in India, the US, Spain, and Romania to understand their perceptions of job quality and alternative economic opportunities.



Economic modeling

To estimate the potential scale of the potential impacts on employment linked to the anticipated growth of circular fashion. Our project partners at the University of Lincoln developed a Computable General Equilibrium² model to project job impacts, with wages and gender analyzed as core variables of the model. The model was also used to generate illustrative quantitative data for KWIL’s future scenarios.



Scenario planning

To identify and explore how macro forces will reshape the industry and to stress-test project recommendations against different plausible futures, KWIL developed three scenarios exploring how the global context for fashion might evolve over the next decade.

Chasing the Low Cost describes a future of ongoing supply chain disruptions, poor working conditions, and the diversification of production to new regions. **Faster and Greener** imagines a world of high-tech decarbonization with blind spots around key social impacts. **Rise of the Regions** explores a future where nationalist politics has exacerbated geopolitical tensions and trade wars.

¹ The project has been supported by Laudes Foundation and Sida (the Swedish International Development Cooperation Agency) and led by BSR, in partnership with Catalyst Management Services, India, and economists from the University of Lincoln, and includes H&M Group, Shahi Exports, The Renewal Workshop, Target, and VF Corporation as industry partners.

² CGE models are a tool commonly used to evaluate policy decisions, conduct cost-benefit analyses, and simulate the development of “what-if” scenarios.

Key findings

Our research informed three key findings:

1. Marginalized and disenfranchised groups including informal, women, and migrant workers are overrepresented in those value chain segments likely to expand in a more circular system (e.g., recycling and logistics). There is a strong risk of perpetuating existing job quality concerns in circular roles (e.g., low wages, excessive overtime, and harassment).
2. Circularity offers an important opportunity for entrepreneurship and upskilling. However, new circular roles will require soft skills³ and technical competencies that are currently lacking, and skilling efforts at present are insufficient.
3. The transition will take place amid a backdrop of growing precarity and economic inequality throughout the global fashion system.

Informal workers, women, and migrants are key to circularity, but are especially vulnerable to negative social impacts

Informality in the garment and textile industry poses a major challenge to a just, fair, and inclusive transition to circularity. Many parts of the value chain expected to expand under a circular system, such as waste-picking, are the most likely to rely on informal workers. Furthermore, marginalized populations including informal workers, women, and migrants are often “invisible” in the system and are more likely to be excluded from legal protections, corporate frameworks, and other formal channels for worker rights and social protections.

Circularity will amplify parts of the global fashion value chain with job quality concerns

Our interviews in India and online surveys in Europe and the US with workers performing circular jobs,⁴ found that the parts of the industry that are already circular today, such as waste-picking for recycling or sorting for resale, have some of the worst labor conditions, high levels of informality, and negative social impacts on communities. For example, the secondhand clothing market in Africa often entails dangerous working conditions and degradation of the natural environment. Harassment, long working hours, and low levels of association of and representation for workers are also key concerns among today’s circular workers.

³ Character traits and interpersonal skills that characterize a person’s relationships with other people (e.g., flexibility, learning ability, tolerance for ambiguity).

⁴ In India, we interviewed factory workers, home-based workers, recyclers, waste pickers and cotton farmers; In Europe, we surveyed garment collectors, sorters, sew-techs/finishers, workers in packaging, logistics, retail, and quality control.

Circularity offers an important opportunity to catalyze entrepreneurship

Circularity provides a unique opportunity to spur entrepreneurship in the industry, especially in combination with digitalization. Small enterprises can play a key role providing services such as repair, resale, and waste aggregation. This also offers a particularly valuable prospect for women’s entrepreneurship.

New circular roles⁵ will require greater soft skills and technical competencies

Although roles throughout the value chain will vary widely, circularity will generally reduce standardization and require greater creativity. For instance, repair workers must be able to inspect a garment, identify the fault, and carry out non-standardized sewing operations. Workers across the value chain will need increased agility, flexibility, tolerance for ambiguity, problem-solving, and learning ability. Greater digital literacy will also be essential for circular roles. From production to retail, fluency in digital skills and machine management were consistently listed as critical by our key informants.

Current skilling efforts are insufficient

KWIL’s research has highlighted gaps across a broad spectrum of skills. Survey respondents believe that current training is insufficient in most skills categories to prepare for the future of work and that these training gaps exist right through the value chain, across organizational functions and at all levels. Forty percent of respondents in Europe and the US and 62 percent in India have never received training at their work facilities.

The global fashion industry is at high risk of job disruption over the next decade

KWIL’s economic modeling suggests that circularity, automation, and other macro factors could significantly disrupt job growth across the fashion industry by 2030. Each of the economic scenarios results in significantly fewer jobs by 2030 than a business-as-usual scenario. The variation between the number of jobs today and what we see in the scenarios is a range of 6.72 million jobs, which is over 11 percent of the fashion value chain jobs included in the model. Regional variance in job losses and/or gains across our economic scenarios is significant, with China, India, and the “rest of the world”⁶ seeing the biggest shifts.

5 For example, in repair, quality assurance and merchandising for resale, managing take back programs. An initial mapping of emerging circular roles is provided in [Section 11](#) of KWIL’s report.

6 Countries outside China, India, US, and EU.

Industry wages are likely to be volatile and increasingly unequal

KWIL's economic modeling also finds that wages in the garment and textile industry are likely to be highly volatile relative to the rest of the economy. Projected wage change patterns in the fashion sector parallel the changes in the wider economy but with a magnitude up to twice as large. However, most scenarios⁷ see a decline in wages for low-skill⁸ jobs across geographies.

Top-line recommendations for business and policymakers

Although the challenges to creating a just, fair, and inclusive circular fashion system are significant, the transition now underway offers a critical opportunity to deliberately design a better future. The following recommendations outline actions we believe businesses and policymakers must take today, paying special attention to the needs and aspirations of marginalized groups, to create a circular fashion system that works for all. A more detailed version of these recommendations is available in [Section 12](#) of the KWIL report.



1

Develop and disseminate information about the impacts on workers of changing industry dynamics, including a shift to circularity



2

Prepare and equip workers and organizations for the transition



3

Adapt industry processes and relationships to fit a changing context

⁷ Our economic results ([Section 8](#), and [Appendix, Section 3](#)) shows wage impacts per combination of region, scenario and fashion sub-sector. In some exceptional cases (e.g., one region and in one sub-sector) there were increases in wages for low-skill roles, however the general trend is declining low-skill wages.

⁸ While we discuss skill levels in this report, we recognize having a low income job does not mean that a worker has a low-skill level. In order to explore the impacts of the circular transition on workers and wages etc., our economic modelling used the occupational comparison from the International Standard Classification of Occupations 2008. This groups various skill levels into high and low-skill categories to facilitate international comparisons of occupational statistics and to serve as a model to countries developing their national occupational classifications. It is supported by the international community as an accepted standard of international labor statistics. Details on the ISCO08 classification and the corresponding skill linkages and definitions are provided in the [Appendix, Section 3](#).

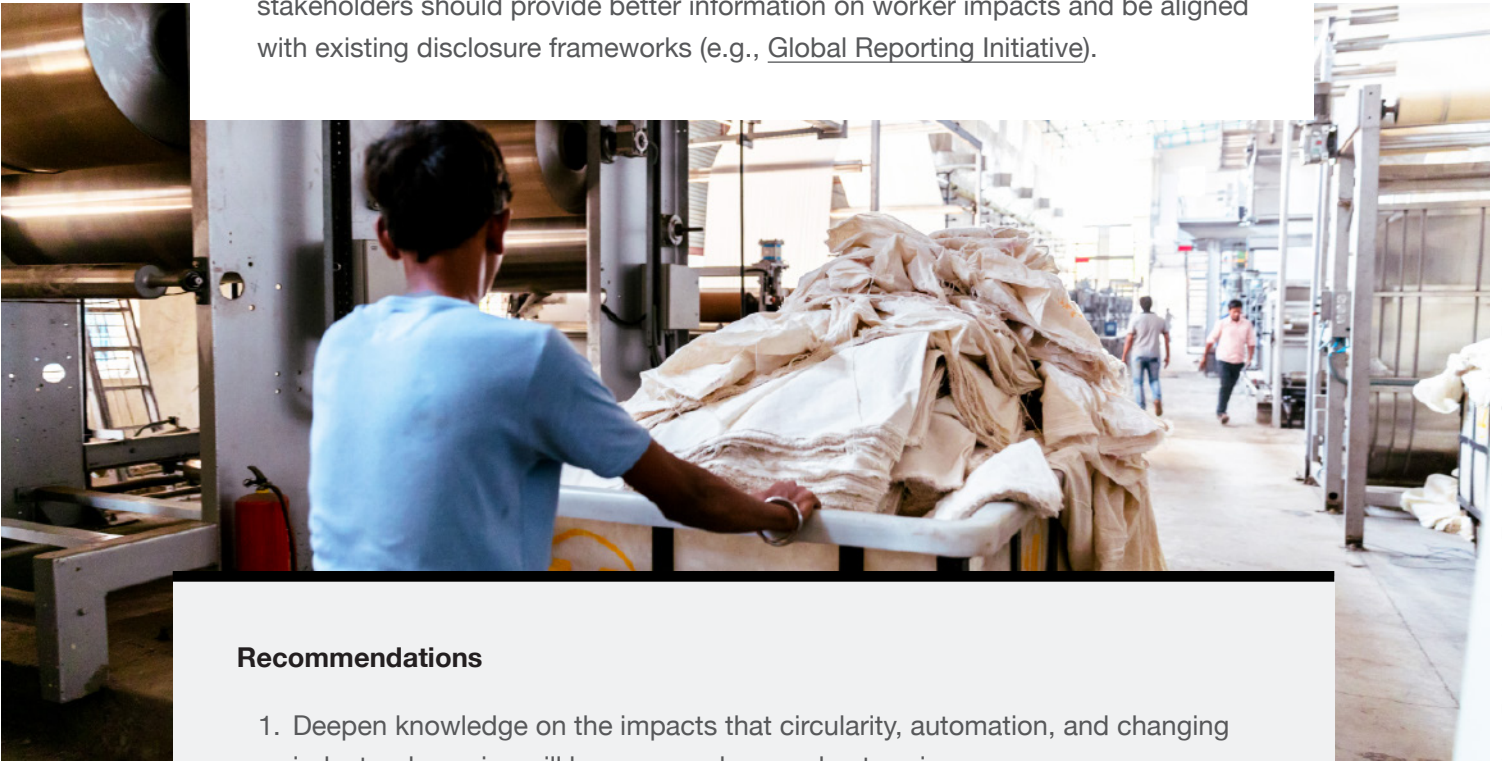
1

Develop and disseminate information about the impacts on workers of changing industry dynamics, including a shift to circularity

A truly circular fashion system will be drastically different from today, entailing significant investments and an overhaul of current business models. The global fashion value chain will need to expand upstream and downstream—for example, to include new sources of raw materials as well as to expand recovery of post-consumer textiles.

Furthermore, this shift will take place within a dynamic operating context in which other drivers, such as rapidly growing automation, will also disrupt the global fashion value chain. Against this changing backdrop there are different models for what circular fashion might look like. For example, a brand or retailer has several options to offer repair to consumers. These different circular models will have varied impacts on workers.

The sustainability risks and benefits of diverse models need to be mapped and analyzed alongside commercial dimensions in policy and strategy development to prioritize pathways that enable prosperity and well-being for workers. This analysis must consider an expanded global value chain that will include new segments and activities and that will also be transformed by macro disruptors like automation. Supply chain disclosures mandated by governments and other stakeholders should provide better information on worker impacts and be aligned with existing disclosure frameworks (e.g., [Global Reporting Initiative](#)).



Recommendations

1. Deepen knowledge on the impacts that circularity, automation, and changing industry dynamics will have on workers and enterprises.
2. Assess the consequences of alternative circular models and prioritize pathways that enable prosperity and well-being for workers.
3. Increase targeted disclosure of information pertinent to improving worker outcomes in the circular fashion transition.

2

Prepare and equip workers and organizations for the transition

The circular transition will require new and upgraded skills, across diverse functions, at all levels and throughout the value chain. Circular roles are likely to be more multifunctional and technology-intensive, but current training is insufficient in most skills categories to prepare workers for future roles. To do so successfully will require mapping out future roles and requirements, using these insights to guide upskilling, equipping workers with transferable skills to address potential job market disruption, and taking special care to include currently marginalized groups like women, informal workers, and migrants.

At the same time, KWIL's economic scenario analysis suggests that other macro drivers of change such as automation and geopolitical shifts could significantly disrupt the number of jobs available in the garment and textile industry by 2030. Policymakers and industry may not be sufficiently accounting for these sorts of disruptive forces in their labor outlook. This highlights the need for proactive planning around potential jobs shifts in the fashion value chain that includes social dialogue and takes a systemic approach to worker protection.

Beyond planning, different ways of thinking will be required to navigate the complex and uncertain changes ahead. Organizations will need to develop better strategic foresight capabilities to detect emerging issues, navigate the macro forces reshaping the industry's operative context, and use scenarios to develop resilient strategies in the face of future uncertainties. They should also adopt more intersectional perspectives and use systems thinking to develop solutions that do not pit social against environmental imperatives in a zero-sum game.

Recommendations

4. Invest in understanding and building the skills needed for a future sustainable fashion system, with supports geared around diverse needs (e.g., for formal vs. informal workers, migrant vs. local, and male vs. female workers).
5. Engage in proactive collaborative planning around potential job reductions linked to automation and production changes. Social dialogue should be central to this process.
6. Build organizational capacity to manage greater complexity, disruption, and uncertainty and to develop strategies and solutions that serve multiple purposes.



3

Adapt industry processes and relationships to fit a changing context

A shift to circularity will, by definition, entail radically different sourcing and product end-of-life strategies—along with new value chain segments, players, and activities. New policies and practices will be needed to ensure these are both socially inclusive and environmentally beneficial.

Responsible sourcing policies will need to be updated to account for new value chain segments and activities such as take-back and the use of recycled inputs. It will be necessary to understand the actors, processes, flows, and employment models, and their associated environmental and social issues. Policy development should be informed by worker representatives, NGOs, and community organizations, marginalized and with informal workers as a key focus.

Various arrangements are possible to deliver circular products and product service models (e.g., vertical integration, working with external service providers, integrating decentralized and informal systems). There is an opportunity for business and policymakers to support diverse supplier networks and better integrate SMEs into circular systems—maintaining their sustainability benefits (e.g., flexibility for workers) while working with them to address challenges (e.g., social protection and compliance) in their specific context.

Changes to material flows and ownership also present a vital opportunity to transform legacy industry norms that have traditionally disadvantaged workers. Circular models, such as re-commerce and rental, with multiple transactions and increased value per piece, can enable payment systems that share value more widely with suppliers, workers, and input producers, and reward them for the higher quality necessary for more durable products.

More broadly, the shift to circularity will require that social and environmental issues be managed in an integrated manner. Strategies to address environmental and social issues must recognize where these are interdependent and where progress on one could impact progress on another.



Recommendations

7. Develop principles for responsible reuse, repair, and recycling models, and the use of recycled inputs.
8. Create sustainable sourcing models that enable responsible procurement and resilience building across diverse supply networks.
9. Reimagine established industry norms to put people at the center.
10. Integrate environmental and social approaches to ensure plans serve holistic sustainability objectives.

Finally, it is important to acknowledge that persistent industry challenges will pose substantial obstacles to creating a just, fair, and inclusive circular fashion system. Our findings underscore the need to achieve living wages in the value chain, for wages to be revised amid changing economic conditions, and for workers to have freedom of association and collective bargaining to improve their negotiating power. We therefore urge business leaders and policymakers to address these well-known issues with a heightened sense of urgency. In particular, worker involvement and representation must be deepened and made central to governance, policy, and strategy development at all levels. We must also strengthen regulatory frameworks and rebalance value chain relationships across the fashion system.

Conclusion

The global fashion industry is at an inflection point. Circularity’s momentum and transformative potential present a unique opportunity to redesign the global fashion system so it works for all. However, a just, fair, and inclusive future will only be possible if we make the creation of good jobs a core tenet of the emerging circular fashion economy. Failure to design in positive social outcomes now risks perpetuating—and even worsening—job quality concerns that have plagued the industry.

Failure to design in positive social outcomes now risks perpetuating—and even worsening—job quality concerns that have plagued the industry.

This report aims to inspire and inform a conversation about how we might reimagine and intentionally design a truly just and sustainable fashion system.

03

Introduction



In this section

The growth in the circular fashion system

A rapidly changing global context

The job opportunities of the circular economy

The global fashion industry¹ through its value chain employs up to one in eight workers globally,² with an estimated 60 to 70 million people in total. As one of the largest employers of women workers, the industry provides economic opportunity to women and marginalized groups such as migrant workers, their families, and communities.

It is an industry on which many highly populated emerging economies rely for economic and employment growth. However, long-standing concerns about the quality of jobs in the industry and the protection of these millions of workers are well documented. The COVID-19 pandemic has highlighted the vulnerability of workers in the fashion industry to market shocks

1 For the purpose of this research, the global fashion industry includes textiles production for garments, garment production, fashion brands, and retailers.

2 <https://www.commonobjective.co/article/faces-and-figures-who-makes-our-clothes>.

and their limited protections and channels for recourse. Alongside social challenges, the industry has major environmental impacts along the entire value chain from pollution, biodiversity loss, resource extraction, and GHG emissions. The fashion industry generates 92 million tons of waste per year,³ and contributes 8-10 percent of all global carbon emissions.⁴ Serious and drastic action is needed across industries to avoid the worst impacts of the climate crisis, further environmental damage, and biodiversity loss. The latest Intergovernmental Panel on Climate Change (IPCC) Report⁵ has only served to highlight the level of urgency we face in transitioning our industries.

In the face of the mounting ecological crises and spurred by consumer interest in new models of ownership, momentum is building to reshape the fashion industry around the principles of a circular economy that focuses on designing out waste and pollution, regenerating natural systems, and keeping products and materials in use.⁶ Circularity's momentum and transformative potential presents a unique opportunity to reimagine and rebuild the global fashion system so that it works for all. Decisive and swift action is necessary to address the ecological crises, and this action must strive for prosperity and equity for the people who make up the global fashion system.

The growth in the circular fashion system

Leading retailers, brands, and suppliers are pursuing circular fashion to tackle the industry's major environmental impacts—improving performance in their own products and supply chains and inspiring broader industry action. Fashion companies from Inditex⁷ to H&M have launched circular fashion initiatives in the form of take-back programs and the use of recycled materials. New businesses that support the circular fashion ecosystem such as recycling services and rental or resale platforms are fast emerging and experiencing rapid growth. For instance, the online resale platform ThredUp grew by 20 percent in 2020,⁸ and in India, Flyrobe's rental platform is available in 30 cities with a franchise model being developed to further expansion.

In policy developments, China has released the Development Plan for Circular Economy in the 14th Five-Year Plan (2021-2025),⁹ which sets out the circular economy as a national priority and looks to promote industrial recycling, green design, and clean production. The plan will have a significant impact on apparel and textile production in China, which currently accounts for around 30 percent¹⁰ of global garment production. In the European Union (EU), the Circular Economy Action Plan identifies textiles as a key value chain and the EU's forthcoming Sustainable Textiles Strategy has applying circular economy principles as a core aim.

3 <https://www.nature.com/articles/s43017-020-0039-9?proof=t>.

4 <https://www.chathamhouse.org/2021/04/transitioning-circular-global-textiles-industry>.

5 <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>.

6 <https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview#:~:text=A%20circular%20economy%20is%20based,use%2C%20and%20regenerating%20natural%20systems.&text=The%20Industrial%20Revolution%20laid%20the,the%20economy%20of%20today%20operates.>

7 Inditex – Focus on a Circular Economy.

8 <https://www.thredup.com/resale/#resale-growth>.

9 <https://www.china-briefing.com/news/chinas-circular-economy-understanding-the-new-five-year-plan/>.

10 <https://www.statista.com/statistics/1094515/share-of-the-leading-global-textile-clothing-by-country/>.

While India does not have a national plan to develop a circular economy, the government’s call to build a self-reliant nation¹¹ is premised on sustainable growth and the transition from a linear to a circular economy across industries as it relies on a high growth development model that is resource efficient. At the same time, there is a push to create new business models and encourage entrepreneurship as part of this call. However, it remains to be seen how this political intention materializes into policy design, execution, and action, and how it fosters an inclusive and just transition.

Signs of industry disruption from experimentation with more circular approaches are already evident. The Ellen MacArthur Foundation projects the potential of circular business models as a portion of the global fashion market to grow from 3.5 percent today to 23 percent by 2030, totaling a US\$700 billion opportunity.¹² Resale is expected to grow 11 times faster than traditional retail by 2025.¹³ Clothing rental is expected to increase to US\$2.08 billion by 2025 from US\$1.26 billion in 2019,¹⁴ with notable growth in developing economies such as India, Brazil, China, and Indonesia.¹⁵ ThredUp’s Resale Report suggests that the global secondhand clothing market could be double that of fast fashion by the end of the decade.¹⁶

Limited integration of social considerations in circular strategies

As circular innovation becomes mainstream, and this begins to influence traditional production and consumption, there are numerous social impacts that may emerge—for employees, value chain workers, local communities, and consumers, with significant social justice considerations. BSR’s 2019 research with C&A Foundation found that fashion companies and their circularity partners recognized the importance of social considerations but were not yet actively including them in their circularity programs and felt ill-equipped to do so. Furthermore, numerous questions about the impact the transition to circularity may have on jobs and job quality makes integrating these considerations more challenging:

- How many jobs will be gained or lost and where?
- What sorts of new jobs will be created?
- What will be the quality of jobs in a circular economy?
- What are the skill sets needed across the value chain for a circular economy?
- What is the impact of the transition on marginalized and disenfranchised groups, in particular women for whom the industry is key provider of economic opportunity?

Without better information on the impacts and guidance for fashion companies and policymakers on social considerations, the needs and aspirations of workers will continue to be ignored in the design and deployment of circular fashion innovation.

11 <https://pib.gov.in/PressReleasePage.aspx?PRID=1705772>.

12 Ellen MacArthur Foundation, *Circular business models: Redefining growth for a thriving fashion industry* (2021)

13 <https://www.thredup.com/resale/#size-and-impact>.

14 <https://www.businesswire.com/news/home/20200505005656/en/Global-Online-Clothing-Rental-Market-Forecast-to-2025---ResearchAndMarkets.com>.

15 <https://www.deloittedigital.com/content/dam/deloittedigital/us/documents/blog/blog-20200610-apparel-trends.pdf>.

16 <https://www.thredup.com/resale/#transforming-closets>.

Job quality concerns in the sector today

Job quality concerns in the garment and textile industry are well documented, including sexual harassment and discrimination, poor working conditions and health and safety risks, physical and verbal abuse, human rights violations, low wages and long hours, and barriers to freedom of association, collective bargaining, and access to remedy. Industry actors have undertaken several initiatives to address job quality concerns and improve the social impacts of the industry, including the recent International Accord for Health and Safety in the Textile and Garment Industry,¹⁷ which expands the model pioneered by the Bangladesh Accord. Limited or poorly enforced legal frameworks for labor protection in production countries often further vulnerabilities and risks. Furthermore, much of the action to address challenges in the industry has relied on industry compliance, placing risk and responsibility, along with a burden of reporting and certifications, on suppliers. The Social & Labor Convergence Program¹⁸ aims to lessen this burden through converged assessments and collaboration.

The rapid and intense disruption from the COVID-19 pandemic brought to light many of the challenges and vulnerabilities workers still face, including the unequal power dynamics that underpin the industry, and the lack of enforcement of worker protections in the current system. For example, while some brands remained committed to responsible purchasing practices, many major US and European brands¹⁹ canceled or refused to pay for orders worth a total of US\$16 billion²⁰ at the onset of the pandemic. The impact was ultimately felt by workers. Mass layoffs—often without severance pay—and reduced wages meant that as many as 88 percent of workers surveyed by Workers Rights Consortium in 2020 had been going hungry.²¹ In the supply chains of brands that committed to their orders, workers were able to receive their wages in part or in full, highlighting the disparity in approaches and the lack of industry-wide standards. Although the high-profile impact of the pandemic on the industry has spurred more coordinated action, such as the Garment Industry Call to Action,²² overall, the pandemic has exposed the major need for our societies and industries to better protect disenfranchised and marginalized populations and to prepare robustly for the challenges we know lie ahead. It is clear that we must build resiliency and understand and plan for the impacts on people of the rapid changes expected in the fashion industry in the coming decade.

A rapidly changing global context

The shift to circularity is not taking place in isolation. The global apparel sector is in the midst of transformation, as a complex array of drivers, including technological innovation, geopolitical shifts, and the climate crisis, disrupt

17 <http://www.industrialunion.org/international-safety-accord-begins-with-77-garment-brands-and-retailers>.

18 <https://slconvergence.org/>.

19 <https://www.workersrights.org/issues/covid-19/tracker/>.

20 <https://www.business-humanrights.org/en/latest-news/major-us-european-fashion-brands-refused-to-pay-for-16bn-of-goods-during-covid-19-leaving-overseas-suppliers-unable-to-pay-garment-workers/>.

21 <https://www.workersrights.org/wp-content/uploads/2020/11/Hunger-in-the-Apparel-Supply-Chain.pdf>.

22 https://www.ilo.org/global/topics/coronavirus/sectoral/WCMS_744294/lang-en/index.htm.

established ways of doing business. These profound changes will also impact what the shift to circularity looks like. For example, the scale and pace of technological developments underpinning automation, recycling, logistics, and sorting and collection will play a key role in determining the availability and quality of jobs in a future fashion system. Similarly, the geographies of production, which are impacted by everything from geopolitics and trade wars to the cost of automation, will also determine where jobs are created and lost, and the quality of those jobs. A robust understanding of the shift to circularity requires an understanding of these additional macro developments. To further complicate matters, many of these macro changes are characterized by a high degree of uncertainty. It is impossible to accurately predict whether the fashion system of 2030 will benefit from a resurgence of global cooperation or be hobbled by geopolitical fragmentation.

To account for these complex possibilities, our research has adopted a scenarios approach—considering multiple plausible versions of the future context for the apparel industry in order to stress test assumptions and how the industry will develop. Doing so will enable the development of more resilient strategies today, and to effectively prepare for a highly dynamic range of future possibilities.

The job opportunities of the circular economy

Thus far, work on the circular economy has largely focused on the environmental and economic opportunities of moving from a linear to a circular economy. As the environmental and economic opportunities gain momentum, the global garment and textile industry must now grapple with serious but often overlooked questions: how will circular fashion, at scale, impact job opportunities and quality? Informed by those impacts, how can we ensure a just, fair, and inclusive transition to a circular fashion system?

The global fashion industry is at an inflection point. Circularity's momentum and transformative potential present a unique opportunity to reimagine and rebuild the global fashion system so that it works for all. However, a just, fair, and inclusive transition will only be possible if we seize the momentum of the transition and prioritize addressing fashion's long-standing job quality concerns and creating good jobs as core tenets of the emerging circular fashion economy. This report is an attempt to envision what different plausible futures could look like and aims to encourage and inform a conversation on how we might realize a future fashion system that shares power and prosperity fairly with people and protects nature.



The Circular Economy for Fashion

During our work together, KWIL participants used these definitions from the Ellen McArthur Foundation to guide our work:

A circular economy is a systemic approach to economic development designed to benefit businesses, society, and the environment.

A circular economy is regenerative by design and aims to gradually decouple growth from the consumption of finite resources.

Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles:



Eliminate waste
and pollution



Circulate
products and
materials



Regenerate
nature

In a circular economy for fashion, products (apparel, footwear, accessories) are:

- Used more through business models that keep products at their higher value.
- Made to be made again through product design and manufacturing that allows them to be reused, remade, recycled, and—where relevant, after maximum use and cycling—safely composted.
- Made from safe and recycled or renewable inputs, protecting the health of people and ecosystems by designing out hazardous substances, microfibers, and waste, and enhancing the use of recycled materials, renewable materials, and regenerative production practices.

Source: [Vision for a Circular Economy for Fashion](#), Ellen MacArthur Foundation

04

KWIL Project Overview

In this section

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Limitations

Keeping Workers in the Loop was launched to map and explore the impacts on job opportunities and quality of a shift to a circular fashion system in collaboration with fashion companies, expert partners, and broader industry stakeholders and to leverage strategic foresight in developing and testing practical recommendations. The US, Europe, and India were the focus research regions. The project team has:

- Conducted research to understand how the shift to circular fashion might impact job opportunities and quality, as well as the different dynamics across consumption and production communities, while acknowledging that countries such as India have both large levels of production and consumption.

- Developed future scenarios to explore how the impacts of circular fashion will be shaped by highly uncertain macro shifts such as automation and climate disruption.
- Co-created recommendations for fashion industry leaders, policymakers, and other key stakeholders to support and advance circular business models that offer good quality jobs and inclusive employment opportunities and are resilient in the face of external disruption.

Project work streams and approach

Primary and Secondary Research



Understand how the shift to circular fashion might impact job opportunities, quality, and skills, as well as the different dynamics across consumption and production countries and by gender. The approach included:

- Holding interviews with stakeholders to document their experiences, thoughts, and prospects about the social implications of circularity.
- Gathering perspectives of almost 200 workers in India, the US, Spain, and Romania to understand their perspectives on job quality and on alternative economic opportunities in the event of production declines.
- Exploring the viability of a collaborative initiative on the social impacts of a circular economy, through stakeholder engagement and needs assessment.

Futures and Systems-thinking



Develop resilient business and policy recommendations via consideration of plausible future scenarios based on the critical trends and uncertainties for the future of fashion. The approach included:

- **Conducting desktop research and interviews** to identify future trends shaping the industry.
- Conducting three **futures workshops** to design plausible futures scenarios and stress-testing of project recommendations and individual company approaches.
- For more details on the futures approach, including the full scenarios, please see [sections 8 and 9](#).

Economic Modeling



Estimate the potential scale of job opportunity impacts linked to the anticipated growth of circular fashion. The approach included:

- Developing a Computable General Equilibrium Model: a tool commonly used to evaluate policy decisions, conduct cost-benefit analyses, and simulate the development of “what-if” scenarios.
- Analyzing gender and wages as core variables of the model.
- For more details on the economic modeling, including details on model inputs and limitations, please see the [Appendix, Section 3](#).

Applied Research – Core Companies



Provide bespoke insights to core companies about their value chains and recommendations on how to better integrate job impact considerations in designing and implementing circular models. The approach included:

- Collecting evidence through **in-depth research**.
- Conducting **surveys and interviews** along the companies’ value chains.
- **Informing recommendations with broader industry context** and research findings garnered from project activities.

Leveraging industry expertise

To truly understand circular fashion’s potential job impacts and to identify how this transition can be fair, just, and inclusive, KWIL has taken a collaborative approach, working with a set of diverse and representative organizations across the global fashion system, including:

Project Partners

Project partners have been instrumental in supporting our research. They have enabled us to understand how social aspects are playing out in their own operations, supply chain, and sales channels as these companies shift their models towards circularity. They have also participated in workshops and undertaken internal reviews of research outcomes and recommendations.

Our project partners include:

H&M Group



SHAHI



The drafting of this report has been led by BSR and the views within are not necessarily those of project partners.

Project Collaborators

KWIL also worked closely with our project collaborators, a community of over 45 diverse and representative stakeholder and expert organizations including policymakers, international institutions, NGOs, and ecosystem companies. Through their knowledge, perspective, and/or influence, our project collaborators have made a unique contribution to our research through workshop participation, individual interviews, and internal reviews of research outcomes and recommendations. We are incredibly grateful for their ideas, insights, and guidance. For a full list of project participants and typology of industry stakeholders please see [Appendix, Sections 1 and 2](#). We note that participation as KWIL project collaborator does not mean that these organizations endorse the outputs of the project in full nor every recommendation made in this report.

Limitations

The results of the research conducted through the project should be viewed taking into account several key limitations:

Sample size and composition for worker interviews and surveys

The interviews conducted with workers in India and globally were intended to provide a snapshot of their situation, reflecting the perceptions and aspirations of workers currently employed in the fashion industry as it transforms. Due to the not randomized sample size (198 workers interviewed and surveyed in total), and the difficulty in accessing workers beyond the first tier of the supply chain, these findings can only provide a partial understanding of the challenges and perspectives for workers in the industry as a whole. Further, in many cases the workers that participated in surveys and interviews were connected with the KWIL project via international fashion brands and suppliers in their networks. We recognize that workers in such value chains may likely experience better conditions and so may also not be entirely representative of the experience of workers, even in the first tier of the supply chain.

Involvement of worker representatives

Given that KWIL's recommendations will highlight the importance of worker involvement in developing strategies and policies about significant changes and the future of work from the outset, the project team sought to involve global union organizations in the project activities. Unfortunately, however, none were in a position to participate as project collaborators. While we were able to include several regional union organizations that represent formal and informal workers in the project countries via interviews and the project collaborator group, we acknowledge that KWIL's research and recommendations would have benefitted from even greater involvement of worker representatives.

Economic modeling

The economic modeling used global employment data and firm level data in estimating the impacts on workers (please see [Appendix, Section 3](#)). As the number of workers included in the three fashion subsectors in the model is 59.2 million, we assume this does not include the many informal workers in the sector who would not have been accurately recorded in the data sources. A large number of these workers are either engaged in the informal markets from production using old/rejected cloth, repairs, resale, and processing of post-consumer cloth waste along with being involved in processing of post-production excess and discards. Further, KWIL's economic model counts more men than women working across the fashion sector, which conflicts with other estimates of the percentage gender split of workers in the fashion value chain. We anticipate that the number of women working in the fashion value chain who are not recorded in KWIL's data sources, and the number of informal workers,

means that the actual number of workers and female workers in the value chain is significantly higher.

Retail workers are not included in the model.

The model assumes that workers who hold jobs classified as the same skill level (e.g., high vs. low skilled¹) are paid the same regardless of gender, which is often untrue in reality.

Further assumptions made in the economic model are detailed in the [Appendix, Section 3](#).

COVID impacts

The pandemic significantly slowed the research with workers in India, which hampered data planning and gathering in India and delayed integrating this data into the project findings. The pandemic has also forced us to adapt and use short virtual workshops rather than longer in-person sessions, which created constraints on the depth of discussion and on project participant interaction. Finally, new content and challenges arose from the pandemic which needed to be quickly incorporated in the project, such as trends research, stakeholder interviews, etc.

¹ While we discuss skill levels in this report, we recognize having a low income job does not mean that a worker has a low skill level. In order to explore the impacts of the circular transition on workers and wages etc., our economic modelling used the occupational comparison from the International Standard Classification of Occupations 2008. This groups various skill levels into high and low skill categories to facilitate international comparisons of occupational statistics and to serve as a model to countries developing their national occupational classifications. It is supported by the international community as an accepted standard of international labor statistics. Details on the ISCO08 classification and the corresponding skill linkages and definitions are provided in the [Appendix, Section 3](#).

05

Industry Job Quality Today



In this section

Dimensions of job quality

Earnings quality in the garment and textile industry

Labor market security:
What is the social and economic situation of workers in each region?

Quality of the working environment in circular fashion

Who was interviewed/surveyed?

Workers' views about job quality

Assessing job quality was key to this research to understand the experiences of workers in circular jobs. Likewise, it was relevant to explore both the working context and conditions for these roles currently and how they might evolve, to identify potential positive and negative impacts on workers' rights and well-being.

Likewise, addressing job quality aspects of the current roles in the fashion industry helped identify some of the gaps and risks that might be replicated in a circular model if social impacts are not explicitly considered and designed into new models.

Lastly, collecting the perspectives of workers about their understanding of the circular transition, how this might impact their job prospects, and their awareness of new economic and reskilling opportunities helped inform our assessment of how well workers are equipped to face the transition.

The transition to circular fashion presents a unique opportunity to address long-standing job quality concerns in the industry. Some of those concerns are presented below with the aim that industry leaders and actors take advantage of circularity’s momentum to drive meaningful improvement of the working conditions of millions of workers worldwide.

In this section, primary and secondary data sources are used to portray the situation of workers currently in the garment and textile industry in the US, Europe, and India.

Dimensions of job quality



KWIL leveraged the OECD job quality framework to explore job quality considerations linked to the circular fashion transition. The OECD framework measures and assesses the quality of jobs considering three objective and measurable dimensions. Together, they provide a comprehensive assessment of job quality. The dimensions considered in the framework are relevant both for workers’ well-being and for policy.

Dimensions of job quality¹

Earnings quality captures the extent to which earnings contribute to workers’ well-being in terms of average earnings and their distribution across the workforce.

Labor market security captures those aspects of economic security related to the risks of job loss and its economic cost for workers. It is defined by the risks of unemployment and benefits received in case of unemployment.

Quality of the working environment captures noneconomic aspects of jobs, including the nature and content of the work performed, working-time arrangements, and workplace relationships. Key aspects include:

- **Demand of the job role:** physical, emotional, financial
- **Job satisfaction:** subjective work security, work-life balance, social support
- **Opportunities for workers:** training, career development, intrinsic rewards, self-realization
- **Workers’ participation and voice**

¹ <https://www.oecd.org/statistics/job-quality.htm>.

Earnings quality in the garment and textile industry

The garment and textile industry has received consistent criticism due to the very low wages paid to many workers in production facilities, usually in developing or emerging economies. A garment worker in India earns on average US\$133 to US\$160 per month,² and a female garment worker US\$0.13 per hour in the North and US\$0.18 in the South of India. Wages in the industry are largely unequal when examined by gender, socioeconomic status, ethnicity, race, and caste.

Likewise, workers across the supply chain do not always get a living wage or even a minimum wage. The minimum wage in India is about US\$150³ and a living wage for a single adult is calculated between US\$99.83 and US\$157.35 per month.⁴ Clean Clothes Campaign calculates that 27 percent of global apparel supply chains workers are paid below the minimum wage,⁵ and only 2 percent of workers in the fashion industry receive a living wage.⁶

Human rights organizations and workers associations have made public calls to brands for workers to be paid living wages. Despite the attention, to date, no brand has committed to when workers in their apparel supply chains will receive one.⁷ As a response to the problem, some companies in the industry have joined efforts. For example, ACT is a coalition of brands and trade unions that seeks to achieve living wages through collective bargaining and freedom of association at the industry level (see illustration on *Industry efforts to improve the quality of jobs in the garment and textile sectors*).

Workers in production facilities in developed economies, usually migrants, female, and often young, also face obstacles earning a decent wage. For example, In Italy, where many luxury brands have their production operations, some salaries fall a few hundred euros short of the Wage Indicator Foundation benchmark (which seeks to contribute to a more transparent labor market by disclosing public information about wages across the world).⁸ In Los Angeles, approximately 85 percent of garment workers do not earn the minimum wage and are instead paid a piece rate of between two and six cents per piece.⁹ As a response to this issue, in September 2021, California became the first state in the United States to require hourly wages for garment workers and prohibited piece work through the Garment Worker Protection Act.¹⁰

The piece-rate¹¹ system is criticized as perpetuating poverty and inequality. Homeworkers and those working in the bottom tiers of the supply chain are especially vulnerable to working under such agreements.

2 "Garment Workers in India's Lockdown," Society for Labour & Development, June 2020.

3 Govindan Raveendran and Joann Vanek, "Informal Workers in India: A Statistical Profile," WIEGO Statistical Brief N24 India, May 2020.

4 <https://wageindicator.org/salary/living-wage/archive-no-index/india-living-wage-series-september-2019>.

5 <https://cleanclothes.org/news/2020/out-of-the-shadows>.

6 <https://www.fashionrevolution.org/usa-blog/how-much-garment-workers-really-make/>.

7 <https://cleanclothes.org/news/2020/out-of-the-shadows>.

8 <https://actonlivingwages.com/2021/06/21/act-members-adopt-framework-on-workers-safety-and-terminations-in-myanmar/>.

9 California to require garment industry to pay hourly wages to workers.

10 <https://www.vogue.com/article/california-sb-62-garment-worker-protection-act>.

11 Piece rate pay and working conditions in the export garment sector.

Other workers in the fashion value chain also received low salaries compared to the average national wages in each of the research locations. Average income for farmers often falls well below the national average in their countries. For example, US farmers earn between \$15,000 and \$17,000 (versus a \$69,000¹² national average wage), farmers in Europe earn US\$20,000 (versus a national average of US\$28,000¹³), and farmers in India earn between US\$798 and US\$1,875 (versus a national average of US\$5,244¹⁴).

Retail workers earn US\$29,000 annually in the US and Europe, and US\$1,439¹⁵ in India. Recyclers in the US and Europe receive on average \$29,000 annually, while in India they earn US\$2,064. Waste pickers in India earn about US\$1,450.¹⁶

A primary concern for the circular fashion transition, is the risk of replicating these low salaries in the circular model without intentional action to address the livelihoods of millions of workers across the industry supply chain.

Furthermore, KWIL's 2030 economic scenario modeling suggests that wages in the garment and textile industry will be highly volatile relative to the rest of the economy, meaning that the income of workers in the industry will be more vulnerable to shocks and fluctuations. A common theme in almost all the scenarios and almost all the three fashion subsectors¹⁷ in the model is the decline in wages for low-skill jobs across geographies.¹⁸ These findings suggest that without appropriate policies in place, a mainstream transition to a circular model might exacerbate earnings inequalities across the value chain, especially impacting workers at the bottom of the supply chain, including women, migrants, and informal workers. This underscores the serious need to achieve living wages in the value chain and for wages to be revised amid changing economic conditions, and for workers to have freedom of association and collective bargaining to improve their negotiating power.

12 OECD Data Average Wages.

13 Ismael Nafria, "The Ranking of the Average Salary in Europe and Spain," *The New Barcelona Post*, May 27, 2018.

14 "India placed 72nd on global list with average monthly wage of Rs 32,800: Report," *The Economic Times*, Aug. 28, 2020.

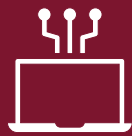
15 <https://www.simpliance.in/minimum-wages/daman-and-diu>.

16 Ashna Butani, "For waste pickers in Noida, constant fear of contracting Covid-19 on the job," *The Indian Express*, July 31, 2020.

17 Fashion Manufacturing; Sorting, Recycling and Resale; Rental (defined here).

18 Our economic results (Section 8, and Appendix, Section 3) shows wage impacts per combination of region, scenario and fashion sub-sector. In some exceptional cases (e.g., one region and in one sub-sector) there were increases in wages for low-skill roles, however the general trend is declining low-skill wages.

Industry efforts to improve the quality of jobs in the garment and textile sectors



THEME **Assurance and data sharing** | EXAMPLE **The Social and Labor Convergence Program**

SLCP is a nonprofit multi-stakeholder initiative that aims to redirect savings from auditing to improving employees' working conditions while reducing audit fatigue in global supply chains.

SLCP uses the Converged Assessment Framework to build up a high-quality comparable data set on working conditions that can be accessed and used by all industry stakeholders. The tool encourages manufacturers to take ownership of their own social and labor data to use it in decision-making and to improve workers' well-being.

Several manufactures in Indonesia, Bangladesh, and Vietnam—where the initiative was first launched—have reported a significant reduction in time and resources in audits processes since they started using the tool.

slconvergence.org/what-we-do



THEME **Compensation and Wages** | EXAMPLE **ACT**

ACT is a binding agreement between IndustriALL Global Union and 20 global brands and retailers that uses collective bargaining, freedom of association, and responsible purchasing practices to achieve living wages in the supply chains of the garment, textile, and footwear industry.

ACT currently operates in four key garment producing markets: Bangladesh, Cambodia, Myanmar, and Turkey.

Beginning on June, 18, 2021, ACT brands adopted a framework on workers' safety and security and communicated to factories in their supply chain that “workers who have been absent from work for more than three consecutive days for safety reasons can only be terminated upon payment of adequate compensation or, if possible, be granted unpaid leave for a period agreed between the worker and the employer.”

[ACT members adopt framework on workers' safety and terminations in Myanmar—ACT on Living Wages](#)



THEME **Safety** | EXAMPLE **Bangladesh Accord / The International Accord for Health and Safety in the Textile and Garment Industry**

The Accord was an independent, legally binding agreement between brands and trade unions to work toward a safe and healthy garment and textile industry in Bangladesh. It sought to enable a working environment in which workers feel safe and are not exposed to risky situations like building collapses, fires, or any other type of serious event.

Within the agreement, more than 2,280 factories have been inspected or scheduled for inspection since 2018 and more than 1.8 million workers have been informed about their workplace safety during training sessions.

On the other hand, 1,507 safety and health complaints have been filed by workers and their representatives.

Brands and unions agreed to extend the Bangladesh Accord—now called the International Accord for Health and Safety in the Textile and Garment Industry—for two years and to extend it geographically to protect workers beyond Bangladesh.

bangladesh.wpengine.com/wp-content/uploads/2021/06/accord_Quarterly_Aggregate_Report_May2021.pdf


THEME Protect Human Rights | EXAMPLE Global Frameworks Agreements

The IndustriALL Global Framework Agreements (GFAs) serve to protect the interests of workers across a company's global operation. The agreements are negotiated at the global level between trade unions and multinational companies. They operationalize the best global practices of trade unions associated with workers' rights, quality of work, health and safety, and environmental practices across a company's value chain.

Since 2017, IndustriALL Global Union has signed global framework agreements with more than 45 multinational fashion brands.

www.industrialunion.org/global-framework-agreements


THEME Funding | EXAMPLE COVID-19: Action in the Global Garment Industry

Launched in April 2020 by the ILO, the Call to Action aimed to catalyze action among key actors in the global garment industry to support manufacturers during the economic disruption caused by the COVID-19 pandemic to protect garment workers' income, health, and employment.

It also called on industry players to build sustainable social protection systems for workers, to create a more just and resilient garment industry.

Over €124 million was made available through multi-donor initiatives to protect the income of millions of workers across the RMG sector in Bangladesh, Cambodia, Ethiopia, and Indonesia.

www.ilo.org/global/docs/WCMS_758610/lang--en/index.htm

Labor market security: What is the social and economic situation of workers in each region?

Labor market security considers the importance of economic security for workers and how the broader labor market and public policy ecosystem impacts workers opportunities, protection, and livelihoods. A worker's status as formally or informally employed also dictates the access workers might have to social protection schemes such as unemployment benefits. Currently, two billion people, or around 61 percent of the world's employed population, work in the informal economy.¹⁹ Emerging economies have especially high levels of informality. In India, for example, 90 percent of workers are in the informal economy.²⁰ In the US, 18.6 percent of the total workforce is informally employed. In Europe, Luxembourg has the lowest informality rate (1.2 percent) and Albania the highest (61 percent).²¹

Formal workers at risk of losing their jobs are more likely to have access to social protection schemes that might safeguard their well-being and livelihoods while transitioning jobs. Levels of social protection also vary greatly depending on which country you work in. For example, workers in the US and, some European

19 Informal economy: More than 68 percent of the employed population in Asia-Pacific are in the informal economy, ILO, May 2, 2018.

20 Govindan Raveendran and Joann Vanek, "Informal Workers in India: A Statistical Profile," WIEGO Statistical Brief N24 India, August 2020.

21 "Women and Men in the Informal Economy, 3rd Edition," ILO, 2018.

countries are more likely to be employed in the formal labor market than workers in India, where most of the active population works informally. The situation for disadvantaged groups²² is of concern across the three geographies because the employment gap²³ is very high in general—in 2018 it rose 25 percent in the US and 50 percent in India. Likewise, formal representation of workers is low across the board, except for some countries in Europe.



Informal Workers

Informal employment: all remunerative work (i.e., both self-employment and wage employment) that is not registered, regulated, or protected by existing legal or regulatory frameworks, as well as non-remunerative work undertaken in an income-producing enterprise.*

Informal workers do not have secure employment contracts, workers' benefits, social protection, or workers' representation.

Examples include contract workers in restaurants and hotels, subcontracted janitors and security guards, casual workers in construction, piece-rate workers in sweatshops, agricultural workers, temporary office helpers or off-site data processors.**

Formal Workers




Workers who have salaried work and are protected by national labor legislation, are affiliated to a social security scheme, and are entitled to certain employment benefits (e.g., paid sick leave, paid annual vacation).***

* https://www.ilo.org/global/topics/wages/minimum-wages/beneficiaries/WCMS_436492/lang--en/index.htm#:~:text=By%20doing%20so%2C%20they%20defined,in%20an%20income%2Dproducing%20enterprise.
 ** "Occupational Groups in the Informal Economy," WIEGO.
 *** "Indicator description: Informality," ILOSTAT.

The table below details the current labor market situation for workers in the US, India, and Europe and the social schemes that most formal workers can benefit from. As a caveat, in the US many benefits and policies are dependent on the state level (we illustrate this where relevant), while in Europe national legislation varies largely across countries—as such, we captured the lowest and highest values for each indicator to draw an overall picture of the situation in the continent (when we did not find European averages).

22 [Disabled people; lone parents; ethnic minorities; people aged 50 and over; the lowest qualified; those living in the most deprived local authority wards, amongst other social identities.](#)

23 [Employment gaps for disadvantaged groups with respect to prime-age men.](#)

	 India	 US	 Europe
Employment rate	59.5%	72.1%	79.2% The Netherlands (highest) 52.7% Greece (lowest) ²⁴
Labor market insecurity^{25,26}	3.7%	4.4%	14.62% Latvia (highest) 1.41% Luxembourg (lowest)
Employment gap for disadvantaged groups	50.1%	25.4%	38.2% Greece (highest) 9.2% Iceland (lowest) ²⁷
Incidence of job strain²⁸	30.7%	25%	65% Greece (highest) 17% Norway (lowest)
Legal working hours/week (average)	50 hours	40 hours	40 hours Europe average
Annual leave	12 days for 240 days worked	Depends on the state	Mandatory but depends on the country 20 days Romania (one of the lowest) 30 days France (one of the highest)
Parental leave	12 weeks maternity leave	up to 12 weeks unpaid maternity leave up to 12 weeks paid family leave State of New York ²⁹ 8-12 weeks paid maternity leave State of California ³⁰	14 weeks Maternity leave Europe average
Overtime	~12 hours a week average overtime in garment sector ³¹ Supplementary hours should be compensated at double the regular rate	over 40 hours per week covered nonexempt employees must receive overtime pay	48 hours maximum average working week including overtime, over 7 days
Public help to find a new job	National Career Service Centre for job seekers (provides training, skills, job fairs)	Depends on the state	European Employment Services (Eures) ³² supports job seekers by providing them with job offers in all countries of the European Economic Area (EEA)

24 <https://www.statista.com/statistics/1195140/employment-rate-in-europe-by-country/>.

25 Labor Market Insecurity: Risk of becoming unemployed and its expected cost as a share of previous earnings, OECD.

26 <https://stats.oecd.org/Index.aspx?DataSetCode=JOBQ>.

27 <https://www.oecd.org/employment/jobs-strategy/country/>.

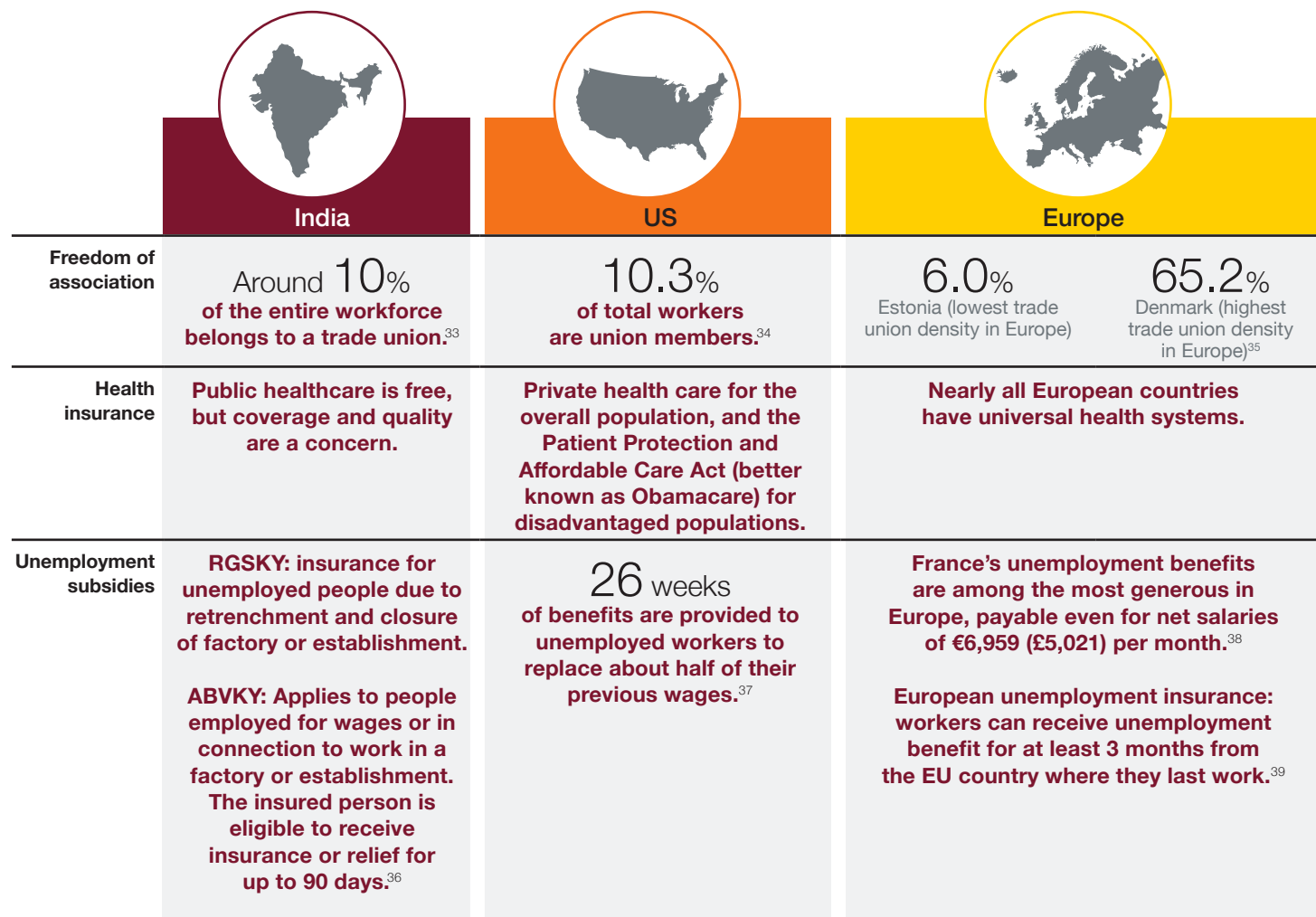
28 <https://stats.oecd.org/Index.aspx?DataSetCode=JOBQ>.

29 This parental leave is for both mothers and fathers (including same-sex parents). The amount of the paid leave is 67 percent of the parent's wage. ("Bonding Leave for the Birth of a Child," New York State – Paid Family Leave.)

30 https://www.edd.ca.gov/pdf_pub_ctr/de8520.pdf.

31 <https://www.myadvo.in/blog/overtime-policy-and-working-hour-laws-in-india/>.

32 <https://ec.europa.eu/social/main.jsp?catId=1400&langId=en>.



As circularity becomes mainstream, the global fashion value chain will expand to encompass more informal workers (e.g., in waste management, repair, and manual recycling), which makes it difficult for companies to track working conditions, beyond tier-1 suppliers. At the same time, it places workers in vulnerable situations, where, in the case of losing their jobs, they might be unable to access any of the above social schemes. In India, for example, an estimated 1.5 million people work as waste pickers,⁴⁰ most of them in the informal economy.

Workers in the informal sector are highly vulnerable to livelihood and income shocks due to the precarious nature of demand from manufacturers and the absence of transparency in the value chain. There is uncertainty on the availability of work and no minimum wage standards, social protection benefits, etc. for these workers. The absence of data on informal sector workers is perhaps the biggest gap, leading to a lack of information to clarify their employment situation and gain an understanding of how it can be improved.

In manufacturing nations like India, most informal workers and home-based workers are subcontracted by manufacturers and paid by the piece rate system.

33 "Working Conditions of Migrant Garment Workers in India," ILO, 2017.

34 OECD Statistics—Trade Unions.

35 OECD Statistics—Trade Unions.

36 <https://thewire.in/labour/unemployment-insurance-india-us-uk-covid-19-pandemic>.

37 <https://thewire.in/labour/unemployment-insurance-india-us-uk-covid-19-pandemic>.

38 <https://www.theguardian.com/politics/2015/apr/15/which-best-countries-live-unemployed-disabled-benefits>.

39 https://europa.eu/youreurope/citizens/work/unemployment-and-benefits/transferring-unemployment-benefits/index_en.htm#:~:text=You%20can%20carry%20on%20receiving,the%20institution%20paying%20your%20benefit.&text=entitled%20to%20receive%20unemployment%20benefits%20in%20the%20country%20where%20you%20became%20unemployed.

40 Foundations Try to Legitimize India's 'Invisible Environmentalists' - NYTimes.com.

Home-based workers comprise 5 million⁴¹ of the total workforce in the industry and are often left behind with no job security and social protection coverage from either the employer, because of subcontracting provisions, or from private service providers, because they are not traced through relevant data sources.

In addition, gaps in national legislation and international frameworks may leave informal workers unprotected. Likewise, many companies' social policies and due diligence processes are not inclusive of workers in the informal economy. Marlese von Broembsen, an expert in the informal economy, suggests it will take an update of the existing legal frameworks and corporate policies to protect the most vulnerable workers across the supply chain. Von Broembsen calls upon brands to step in to protect the most disenfranchised workers who are not working in factories or facilities but are part of the industry supply chain.⁴²

The informal economy dynamic adds significant complexity to the transition, as in many cases formalization is not a straightforward solution to workers' most urgent needs and well-being. In India, many workers in the recycling industry and farming value their autonomy and independence. Wages are a further concern, as in some cases, workers in the informal economy earn more per hour than formalized workers.

Circularity raises many questions about the best way to make visible, include, and meet the needs of informal workers in the whole system.

Quality of the working environment in circular fashion

In addition to the four subdimensions highlighted in the OECD framework (demand of the job role, job satisfaction, opportunities for workers, and workers' participation and voice in circular jobs), the KWIL project team created a fifth category to assess workers' awareness about **alternative economic opportunities and skills** needed in a circular fashion system.

To get a snapshot of how these five dimensions play out in the industry, KWIL conducted 100 interviews with workers in India, including farmers, recyclers, and garment workers. Additionally, an online survey was conducted with 98 workers performing circular jobs⁴³—garment collection and sorting, recycling, and repair and resale—in the US, Spain, and Romania.⁴⁴

Through these interviews and surveys, this research aimed to surface challenges and opportunities linked to job quality that the industry should be aware of and aim to address in the shift toward circular fashion. More broadly on the topic of job availability, the research sought to understand the employment context for workers whose roles could be at risk over the next decade due to increases in circular production.

41 Marlese von Broembsen, The world's most vulnerable garment workers aren't in factories – and global brands need to step up to protect them, WEIGO 2020.

42 <https://www.wiego.org/blog/worlds-most-vulnerable-garment-workers-arent-factories-and-global-brands-need-step-protect>.

43 In Europe, we surveyed garment collectors, sorters, sew-techs/finishers, workers in packaging, logistics, retail, and quality control.

44 Results for Romania, the US, and Spain will be presented together, while results for India will be shown separately because different research methods were used to collect data for each workers' group.

Who was interviewed/surveyed?



Romania

Most “circular” workers are female operators, between 35 and 44 years old, with an average annual salary of between US\$20,000 and US\$40,000.



Spain

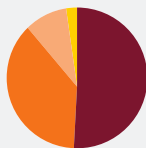
Most participants work in packaging/logistics/distribution and in presort and sorting of garments. Other functions included: quality control, retail, sew tech/finisher, and merchandising/photography.



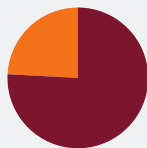
US

The level of education did not impact any of the results (e.g., we found that education was not linked to salary levels). Our assumption is that education levels don’t make a real difference for workers at the operational level; rather, access to training and development of critical skills might help them climb the ladder in a production facility.

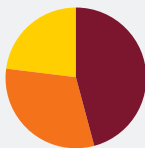
A significant number of workers work more than 40 hours a week, have more than one job, and do not hold a permanent contract.



WEEKLY WORKING HOURS
 ■ 51% 30-40
 ■ 38% 40+
 ■ 9% <20
 ■ 2% 20-30



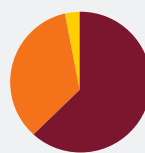
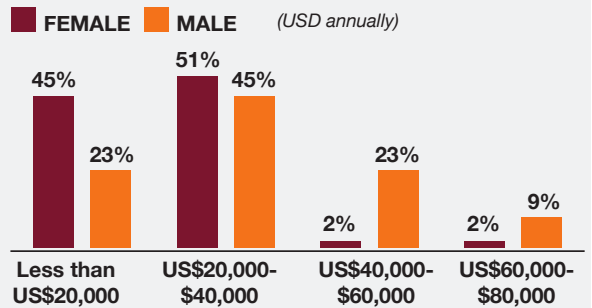
NUMBER OF JOBS HELD
 ■ 76% just 1
 ■ 24% 1 or more



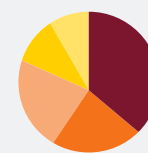
STABILITY / TYPE OF CONTRACT
 ■ 46% Employed under a permanent contract
 ■ 31% Under a contractual agreement
 ■ 23% Paid daily for daily wages

BY SALARY

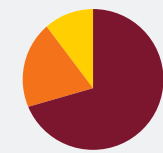
Overall men hold the highest paying jobs compared to their female colleagues.



BY GENDER
 ■ 63% female
 ■ 34% male
 ■ 3% other



BY AGE
 ■ 37% 35-44
 ■ 23% 45-54
 ■ 22% 25-34
 ■ 10% 55+
 ■ 8% 18-24



BY FUNCTION
 ■ 71% operators
 ■ 19% administrative
 ■ 10% managers

“My dream job is this job, but with more money.”

– Female operator, Spain

Other studies show more striking results about fashion workers conditions in “consumption” countries. For example, the Garment Workers Center found that garment workers in Los Angeles work between 60 to 70 hours a week and take home on average US\$300*



India



BY DESIGNATION
 ■ 50% Garment worker (both factory and home-based workers)
 ■ 25% Farmer (conventional and organic cotton)
 ■ 25% Recycler (recyclers and waste pickers from North and South India)



GENDER
 ■ 51% female
 ■ 49% male



86% of workers have completed a secondary education

Contractual employees who are new to the factory and work in lower strata jobs are paid in cash. These workers reported a lower access to and use of facilities at the workplace. On average, workers work about 48 hours a week. The work hours are fixed from 6-8 hours a day, with compensation for overtime.

* Get Informed – The Garment Worker Center

Workers' views about job quality

Job demands: physical, emotional, and financial


Romania


Overall perceptions of health and safety at work are positive, but access to basic health services is still a barrier. Most workers receive annual leave; however, the majority do not have access to other types of leave.


Spain


Most workers feel they have good health and safety conditions at the workplace.


US

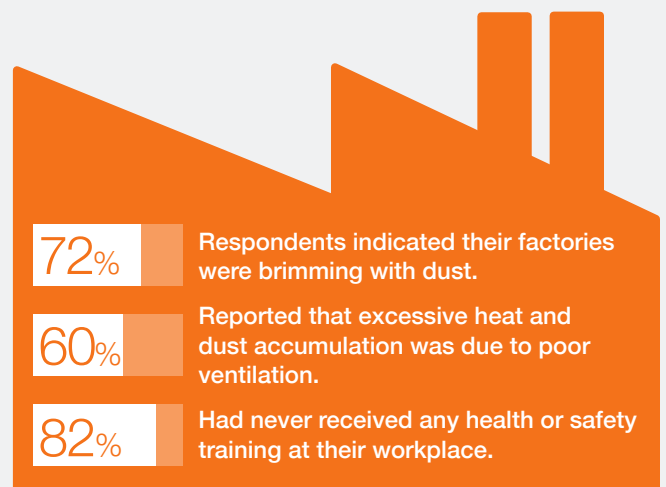
 23% of workers have suffered an accident and of those, 38 percent experienced an accident in the last year.

 92% of workers said there is not a clinic at their workplace.

 22% of workers do not have health insurance and 92 percent said there is not a clinic at their workplace.

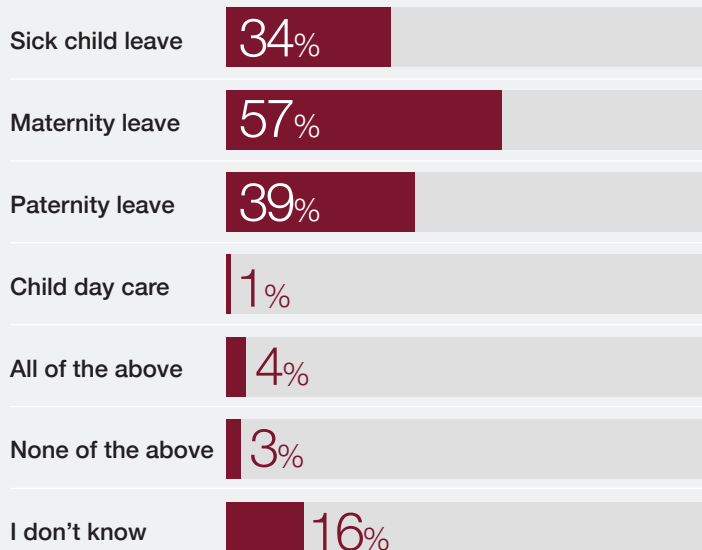
 15-20% of workers still feel their health and safety are at risk, while most feel they have good workplace conditions.

 52% of workers in operations said they are not required to wear PPE, despite the fact that most of the roles surveyed include garment collection, sewing, logistics, packaging, and quality control.





Source: Garment Worker Center, Los Angeles, 2015, 307 workers surveyed.


AVAILABLE BENEFITS



Views and experiences about workload differ among groups of workers

 63% of workers are **satisfied** with their workload. Workers in merchandising/photography, logistics/packaging, quality control, and retail are **less satisfied** than other functions.

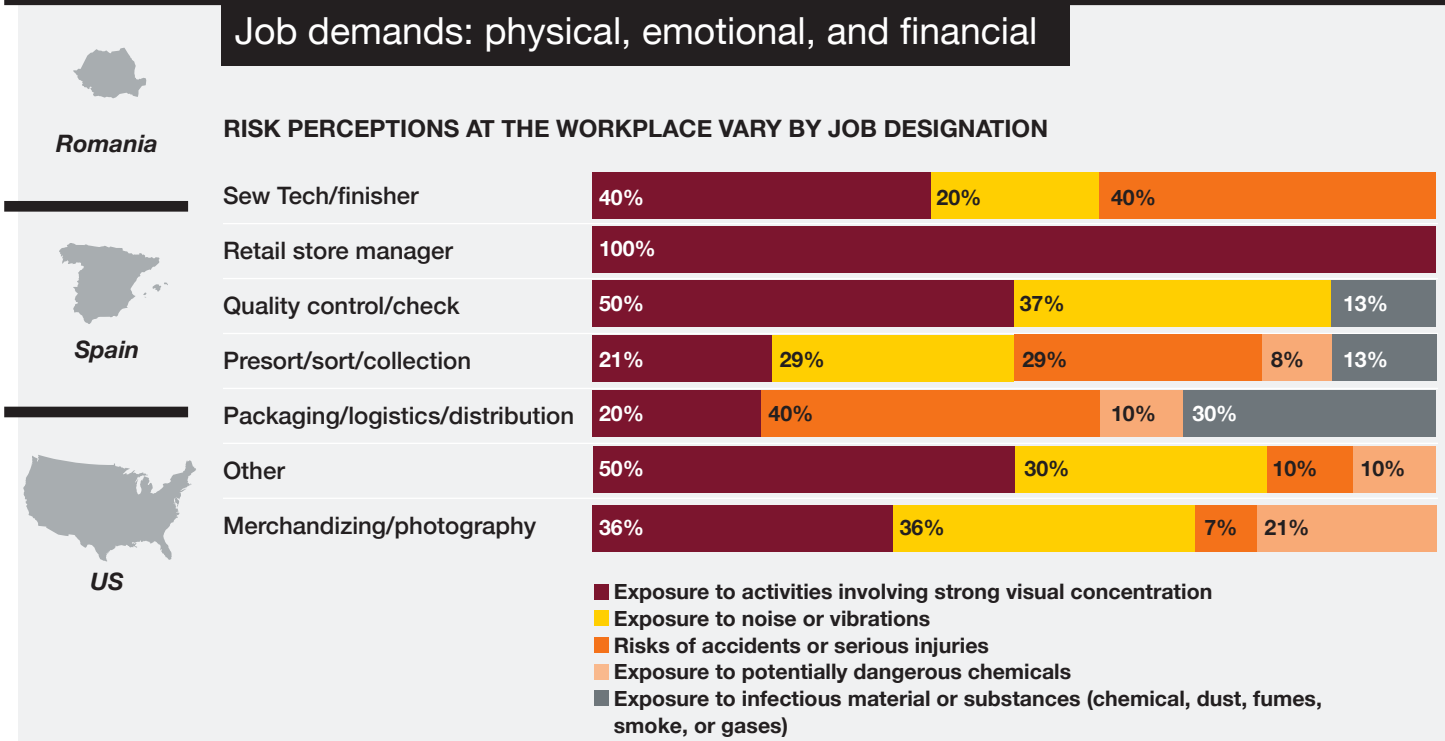
 62% of workers said they did **not get good sleep** in the last 30 days because of the workload.

 70% of workers feel they have the **flexibility** to vary their start and finish times. However, **45 percent of workers in logistics** feel differently because they have **no control over their working hours**.

Workers' views about job quality (continued)

Job demands: physical, emotional, and financial

RISK PERCEPTIONS AT THE WORKPLACE VARY BY JOB DESIGNATION



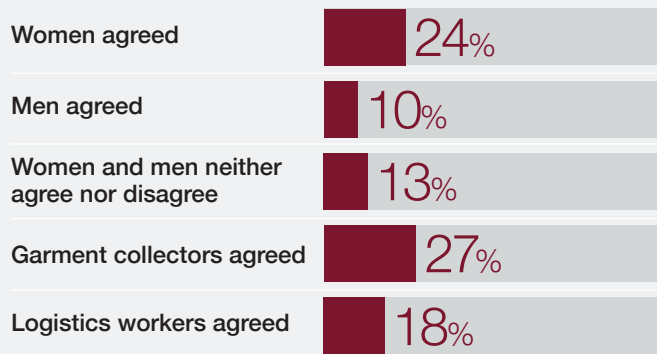
Most workers are exposed to activities that involve strong visual concentration.

Workers in sort, logistics, and merchandising are at greater risk of exposure to dangerous materials/substances.

Workplace Harassment

A significant percentage of workers, especially women, have felt harassed at work, and while access to a grievance mechanism (e.g., a committee) is high, knowledge of how to use the committee is low.

WORKERS WHO HAVE FELT HARRASSED AT WORK



76%
of workers said there **is a committee** to raise concerns, but **only 50 percent** of workers **fully understand** what the committee does. **Workers in garment collection** have the **least understanding** about the mechanism.

27%+
US workers (36 million people) have experienced "abusive conduct" at work during their lifetime.

Source: https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_751832.pdf

Workers' views about job quality (continued)

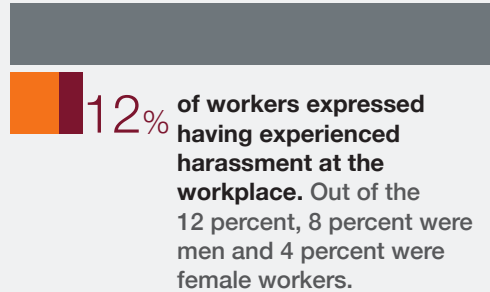


India

Job demands: physical, emotional, and financial

Workplace Safety

Workers feel a high threat to their safety and heightened concerns about emotional and physical demands at work.



80% of workers perceive a threat to their safety due to the nature of their jobs. Female workers perceived a higher threat as compared to men.

Higher instances of harassment were recorded among recyclers when compared with garment workers



Most workers (>85 percent) had knowledge about the Internal Complaints Committee (ICC) but lacked clarity regarding the processes and procedures to be followed to report incidents as harassment experiences.

- Even the ones who claimed to be aware of the processes seem to access it only through their supervisors.
- Factory units have installed confidential channels for workers to submit their complaints, but the workplace environment is not sufficiently enabling for them to use these with confidence.

Risk Perception

Workers' perception about exposure to risks at workplace is mixed. While most workers understand the need to wear safety gear, only half of them use it.



43% of recycling sector workers recorded high risk of accidents in their jobs (28 percent male workers and 15 percent female).

28% of workers recorded exposure to noise and vibration as the second-highest risk.

28% of male workers recorded the highest response around the risk of accidents.

15% of female respondents reported equal risk of accidents and exposure to potentially dangerous chemicals, at 15 percent each.



91% of farmers said they experienced threat to safety during work.

52% of the farmers who responded were female.

In terms of physical demands, **carrying loads and heavy loads** recorded the highest response from 47 percent of farmers. As the most pressing physical demands:

43% of male farmers reported carrying heavy loads

26% of female farmers reported repetitive hand or arm movements



81% of workers said their work required them to wear personal protective equipment.

46% said they "always" use it.

7% said they "sometimes" use it.

10% said they never wear it.

Workers' views about job quality (continued)



India

Job demands: physical, emotional, and financial

Sleep

26%
of respondents reported not sleeping or resting enough for more than 7 days.

13.5%
of respondents did not get enough sleep for 3-5 days and 6.25 percent lost sleep for 1-2 days in the past month.

40.5%
of garment workers reported incidents of loss of sleep for more than 7 days.

8.7%
of recycling workers reported not getting enough sleep for 7 days and 13 percent reported having lost sleep for 3-5 days in the past month.

Workers do not seem to have a choice when asked to work overtime, despite family commitments and physical strain.



Manufacturers do provide some flexibility in terms of taking leave on short notice. However, workers reported that management was rigid about work schedules, in terms of starting and ending times, and workers had little or no power to negotiate their schedules.

Workers' views about job quality (continued)



Romania

Job satisfaction: subjective work security, work-life balance, social support

Overall workers feel secure about their job, however, should they lose it, 40 percent think it is unlikely they will find a similar role.



Spain

Most workers feel satisfied with their organizations. Workers in logistics reported the lowest levels of satisfaction.



US

80% of workers feel they will keep their job in the next six months. 60 percent of workers feel confident that they will find another similar job if they lose the current one, in contrast to 40 percent who feel this will not be the case.

26% Operators are the group that report the highest probability of losing their job in the next six months, with 26 percent feeling this risk. When looking by role, workers in logistics and quality control feel the highest risk of potential job loss.

75% of workers overall are satisfied with their organizations. However, 30 percent of workers in logistics are not satisfied.

While most workers feel there is room to learn and grow, they report that engagement and support from managers is low.

Workers in quality control and logistics reported the lowest level of satisfaction with social support networks.

“I have considered moving to a role that gives me the opportunity to have a better career mentor.”

— Female operator/sorter, US

75% of workers feel they have opportunities to learn and grow. However, workers in logistics feel differently, with 37 percent of them saying there are not enough opportunities to grow.

43% of workers get positive feedback from their managers on a regular basis.

28% of workers have felt unimportant while talking to their manager at some point, in contrast to 73 percent who haven't. Workers in quality control feel differently than other functions; 14 percent of them reported this happens often and 43 percent say it happens sometimes.

27% of workers said that no one supports their growth in the workplace. The youngest and oldest workers are those who most often feel they do not receive support. Workers in quality control reported the lowest levels of support.

30% of workers have not spoken to their managers or Human Resources about work-related problems in the last 12 months. Around 60-70 percent of workers in sew tech and logistics reported not speaking to Human Resources or their managers.

“My dream job is the one I have, because I like it and I can always improve within my company.”

— Female operator/sorter, Spain

Workers' views about job quality (continued)



India

Job satisfaction: subjective work security, work-life balance, social support

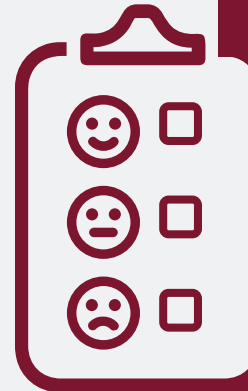
Workplace satisfaction

Recyclers and farmers reported higher levels of satisfaction with their work compared to garment workers.

Responses related to job satisfaction were polarizing across the groups of workers. This could be due to the relatively more entrepreneurial nature of their work, as compared to garment workers.

Recyclers reported higher satisfaction levels since their temporary nature of jobs and flexible contracts results in lower compliance requirements and gives them more say in their working hours and times. In comparison, the group of garment workers employed in factories and those based at home are bound by permanent and stringent work contracts.

Workers in recycling speak about uncertain job arrangements and poor and irregular wages, but their interpretation of job satisfaction appears to be based on how good they feel about doing the job, which is relatively more entrepreneurial compared to those employed under a permanent contract.



26%
of farm workers reported they were “extremely satisfied”

30%
of recyclers reported they were “satisfied”; 11 percent reported they were “extremely satisfied”



Job security

Workers on the whole feel secure about their jobs, but 44 percent said it was unlikely they would find a similar job if they quit the current one.

Among those who reported it was unlikely they would find a similar job, **Permanent Operators and Contract Operators recorded the highest response.**

76%
of workers said it was unlikely they would lose their jobs in the next six months

Workers' views about job quality (continued)

Opportunities for workers: training, career development, intrinsic rewards, self-realization

Romania

Career

Perceptions about career advancement are low across the board, despite the majority of workers having received a promotion.



Spain

70% of workers have been promoted at least one time.

50% of workers do not feel their job offers good prospects for career advancement.



US

60% of workers sew tech/finisher reported they have never received a promotion.

70% of workers in quality control do not feel their job offers prospects for career advancement.

Workplace training

Despite workers recognizing the benefits of training, most of them do not receive enough opportunities to be trained.

BY THE NUMBERS

40% of workers never received workplace training

60% of workers in merchandising or quality control never received training

30% received training every 6 months or more

75% sew tech workers never received workplace training

Workers in merchandising and sew tech had perceived higher risks of losing their job and low prospects of career advancement, which may correlate with this lack of training.

WORKPLACE TRAINING: AMONG THOSE RECEIVING TRAINING

66% of workers reported it improved the way they work

58% reported their jobs felt more secure

59% of workers reported their future job prospects were improved

62 percent of workers said that a new technology was introduced to their workplace. Out of that:

68% of workers reported training on new workplace technology

67% of workers in sew tech reported no training at all

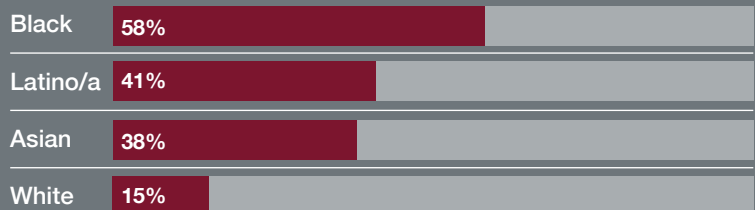

Most workers across the industry feel men and women have the same career opportunities. However, workers in retail have a different perception: 40% feel men and women don't have equal opportunities

People of color's perceptions about career advancement in the US labor market

People of color and from different ethnicities experience more job quality challenges and barriers in the labor market. This is also true for other groups depending on their social identities, including but not limited to gender, sexual orientation, socioeconomic status, religion, among others.

68% of Black Human Resources professionals think their organization does not provide enough opportunities for Black employees.

EXPERIENCED WORKPLACE RACIAL PREJUDICE



Source: Barriers for Black Professionals

Workers' views about job quality (continued)



India

Opportunities for workers: training, career development, intrinsic rewards, self-realization

Career Advancement

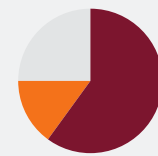
Workers reported positive views regarding career opportunities, but a significant number of recyclers do not feel at all satisfied.

While workers do get opportunities to grow within their line of work, barriers like education and age deter further promotions, thus limiting their opportunities after a while. Most garment workers join at entry level as a helper or on a contractual basis and have opportunities to move up the ladder based on their experience, skill, and competencies (from on-the-job training) to higher levels, including supervisory roles. A few respondents also reported that they got new opportunities when circumstances in the workplace changed (e.g., non-availability of a particular worker, increased workload in a particular department, etc.), and it may or may not have to do with planned workforce career development or skills per se. They suggested that workers' roles can also be changed by speaking with their supervisors.

Workplace training

A majority of the workers said the training was conducted at an interval of six months to one year, which due to lack of hand-holding support and follow-up sessions does not manifest into workers effectively adopting the skills in their routine work.

WORKPLACE PROMOTIONS



60% received one promotion
15% received two promotions

18% of recyclers do not feel men and women have the same career advancement opportunities (more than other groups).

The proportion of those receiving promotions is similar for men and women



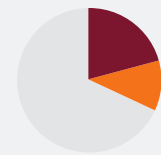
Reported never having received promotion in their careers



Those who reported receiving no promotion belong to the younger age category, with less than five years of experience at the workplace.



TRAINING RECEIVED
38% reported receiving training; of them 93% felt training was useful



ADDITIONAL TRAINING
21% women feel its needed to cope with current duties
11% men feel its needed to cope with current duties

DUTIES FIT SKILLS



65% of women reported training would help secure better opportunities

“Initially I joined as helper, then learnt how garment checking is done, followed by stitching and weaving work that I now do.”

— Male garment worker, India



Trainings regarding health and safety of workers were organized at the workplace. Apart from this, the trainings also included topics like rights, anti-discrimination at workplace, and soft skills.



Women workers were more receptive toward capacity building and training and feel more positive and aspirational about their work in the sector.

Workers' views about job quality (continued)

Workers' participation and voice

Romania

Workers reported low levels of association, though at the same time they reported high levels of participation.

94% of workers are not part of a workers' association.

Spain

Despite the high levels of participation, men feel more satisfied than women that their voices are being heard.

SEW TECH/FINISHERS REPORTED THE LOWEST LEVELS OF SATISFACTION



86% are not consulted before targets are set

67% believe they can influence work-related decisions (quality control workers are lowest, at 50%)

56% are not satisfied with how their opinion is taken into consideration

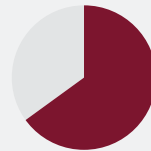
US



ENGAGEMENT
■ 59% of workers say they are consulted before targets are set



INFLUENCE
■ 67% of workers believe they can influence work-related decisions



SATISFACTION
■ 65% of workers are satisfied about how their opinion is taken into consideration



WOMEN MEN

67% agree
59% agree

79% agree
63% agree

72% agree
61% agree

Levels of participation influence other spheres of job quality and the employee's subjective experience.

67% of workers who feel they can influence the decisions that impact their job **do not feel their health and safety is at risk.**

73% of workers who feel they can influence decisions that impact their job **are satisfied with their workload.**

87% of people who feel they can influence decisions that impact their job **feel their dignity is respected at work.** 100 percent of people who feel they cannot influence decisions feel their dignity is not respected.

100% of people who feel they can influence decisions that impact their job **have never felt harassed at work,** while 100 percent of those who feel they cannot influence decisions have felt harassed.

93% of people who feel they can influence decisions that impact their job **feel they have opportunities to learn and grow in the organization.**

93% of people who feel they can influence decisions that impact their job **are satisfied with the organization.** (This is not correlated with salary; people with higher salaries are not necessarily more satisfied.)



Photo credit The Renewal Workshop

The Teal method: The Renewal Workshop's people-centered governance structure

The Renewal Workshop (TRW) is a technology-enabled service provider that powers circular business for brands. TRW offers resale and renewal services to large apparel brands looking to increase their revenue while reducing their negative environmental impact.

TRW philosophy centers on doing what is right for the planet and for people. As such, its circular mission is built on a strong people-centered ambition. To integrate this ambition into its business, TRW uses the Teal method, which explores three core principles: self-management, wholeness, and evolutionary purpose.

Teal organizations seek to end unequal distribution of power, give everyone a voice, and enable an environment where all employees can bring their whole selves.

In practice, employees at TRW do not have direct bosses or guide themselves by organizational charts or jobs titles. Instead, they self-organize in autonomous teams and commit to roles and accountabilities where they feel comfortable, challenged and on which they feel they can deliver. Job mobility is supported and employees are encouraged to work in different areas and functions. For example, TRW's Human Resources lead had started working in production, then worked in customer service and administration before taking up her current role. Teal structure enables professional development.

As a result, most of the production roles at TRW do not require strong technical skills to start, but rather soft skills such as emotional intelligence, communication, creativity, conflict resolution, and tolerance to ambiguity. Deep internal self-management are key to joining the team. TRW leadership believes that skills such as sewing, repairing, and tech-orientation can be easily learned when employees have strong soft skills, which are especially relevant in producing circular products, where standardized processes are less common than in linear fashion production.

Through the Teal structure, TRW seeks to increase workers' participation in decision-making to allow them to influence their job quality and experience; it is an innovative approach for a company that seeks to engage mostly migrant workers in its two facilities in the US and the Netherlands.

For more information about the TRW: renewalworkshop.com
The Teal method: [Home—Reinventing Organizations Wiki](#)

Workers' views about job quality (continued)



India

Workers' participation and voice

Few workers discuss work-related issues often with their supervisors.

Female workers fare better than their male colleagues in terms of participation and peer relationships at the workplace.



46% of the workers know about the presence of a union in the workplace, while others either do not have it, or do not know about it.

46% of workers know about the existence of a union in their workplace.

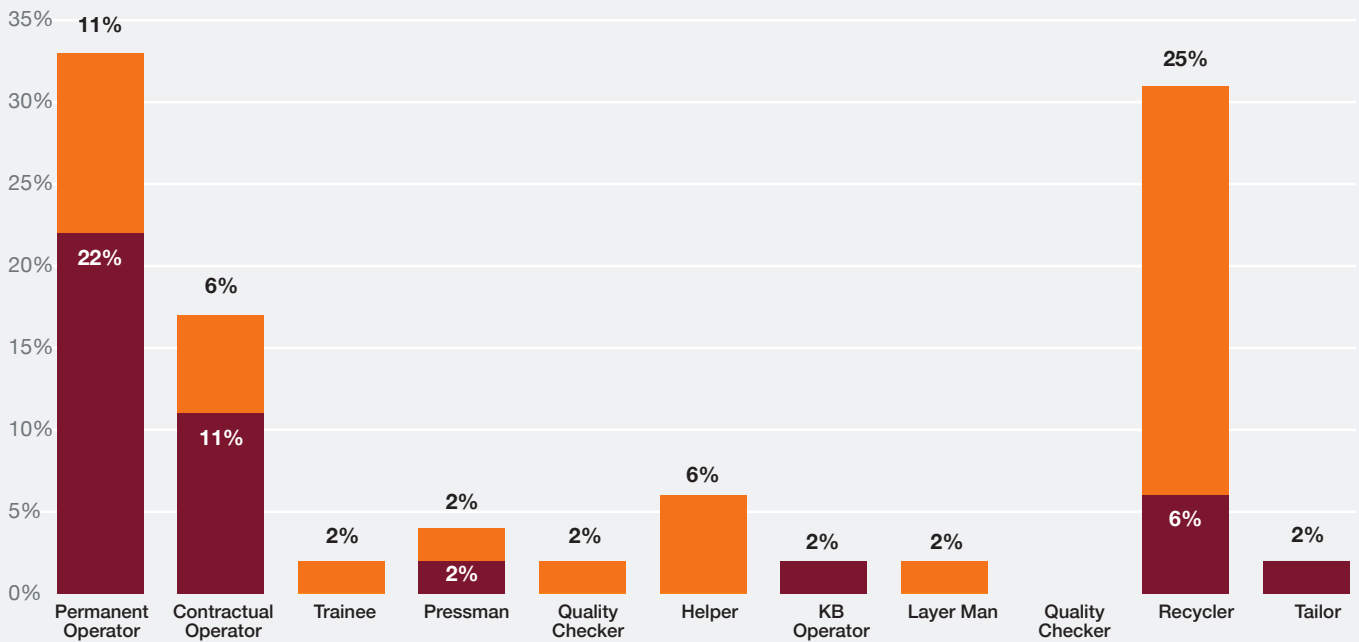


When asked about membership in unions, workers working as operators appeared to have the most exposure and chance of unionization.

Workers lower in the strata reported both high levels of lack of awareness and lack of association opportunities.

UNION MEMBERSHIP BY DESIGNATION

■ Yes ■ No



Workers in the recycling segment as well as those holding higher designations in the factory units reported positive responses when asked about their ability to influence decisions that are important for their work. However, there was higher dissatisfaction reported in the way their opinions are considered. Workers have always had the fear of losing their jobs or reduction or loss of wages for speaking out. Weak and deterring policies around unionization has further aggravated the situation for workers.

Workers' views about job quality (continued)

Alternative economic opportunities and skills

Romania

A significant number of workers have thought about working in a different industry, and many of them reported having the skills to work in a different role from their current one.



93% of workers said their job was affected by the COVID-19 pandemic.

Spain

49% of workers have thought about working in a different industry than fashion



32% of sew tech/finishers reported they have the skills to work on repairing and cleaning and laundry



US

16% of workers in quality control say they have the skills to work in recycling



38% in merchandising/photography reported they could work in sales



30% of workers in retail reported they have the skills to work in collection and sorting of garments



70% of workers suggested alternative roles for their skill sets would be available in their area/location



Job quality needs an intersectional approach: the impact of disruption on marginalized groups

Informal workers are more at risk of losing their jobs during disruption, and if they do so they are less likely to access government social schemes and/or companies' remedy mechanisms. Likewise, these workers are more at risk of harassment and poor working conditions.

Migrant workers often come from impoverished backgrounds and have limited working opportunities, and thus are more willing to accept low wages and poor working conditions. They face inherent vulnerability to disruption in the labor market, such as language barriers and social isolation, and ability to access reskilling programs, job insecurity, overexposure to poor working conditions and unsafe working conditions. All these aspects increase their vulnerability to job displacement and moves into even more precarious work, in or outside the industry, if there is disruption. Usually these workers are subject to double or triple discrimination not only because of their migration status, but also because of their race/ethnicity or caste.

Women are disproportionately affected by disruption because they are often in the base of the supply chain, especially in the informal market. They have access to fewer opportunities, but they also suffer higher discrimination and harassment at work than men.

Workers' views about job quality (continued)

Alternative economic opportunities and skills



Romania

A significant number of workers would like to work in non-fashion-related jobs and/or start their own business. Female workers, workers in garment collection, sew tech and logistics reported the highest desire to start their own business. Lack of time, business skills, and investment are what prevent workers from scaling up or starting their own business.



Spain

My dream job would be compatible with the creation of positive social impact.
 – Male manager, Spain



US

48% of workers said that their dream job is not fashion related. Soft skills are reported as the most important skillset needed to get their dream job.



42% of workers dream of starting their own business



22% of workers have a side business, and 40% of those would like to dedicate themselves to making a living at their business

WORKERS PERCEPTIONS ABOUT THEIR FUTURE IN FASHION IN THE NEXT 10 YEARS



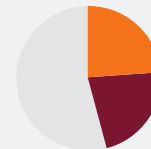
Workers that want to continue in production jobs
 28% men said yes
 17% women said yes



Workers who want to become managers
 38% men said yes
 32% women said yes



Workers who want to become supervisors
 29% men said yes
 22% women said yes



Workers who want to become directors
 24% men said yes
 22% women said yes

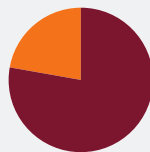


India

Lack of alternatives coupled with weak social protection systems in the manufacturing nations leave workers exposed in the case of production industry disruption.

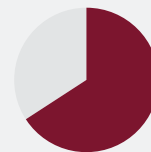
77% of workers said they have not considered working outside of their present roles/sector. Workers further explained that they get involved in different roles within the sector by virtue of their belonging to particular families or communities that have worked in the sector for generations.

WORKERS PERCEPTIONS ABOUT THEIR FUTURE IN FASHION IN THE NEXT 10 YEARS



78% don't see professional advancement
 22% want to be in their employer's position

Those who look forward to advancement can only think of their immediate line supervisors



66% of workers want to "start their own business" but were held back by lack of investment and business skills

A majority of women workers were also interested in entrepreneurship opportunities.

06

Changing Models and Jobs



In this section

The projected growth in circular business models

Emerging circular fashion models and their barriers

The role of technology in circular business models

Considering the impact on jobs and job quality

Industry examples

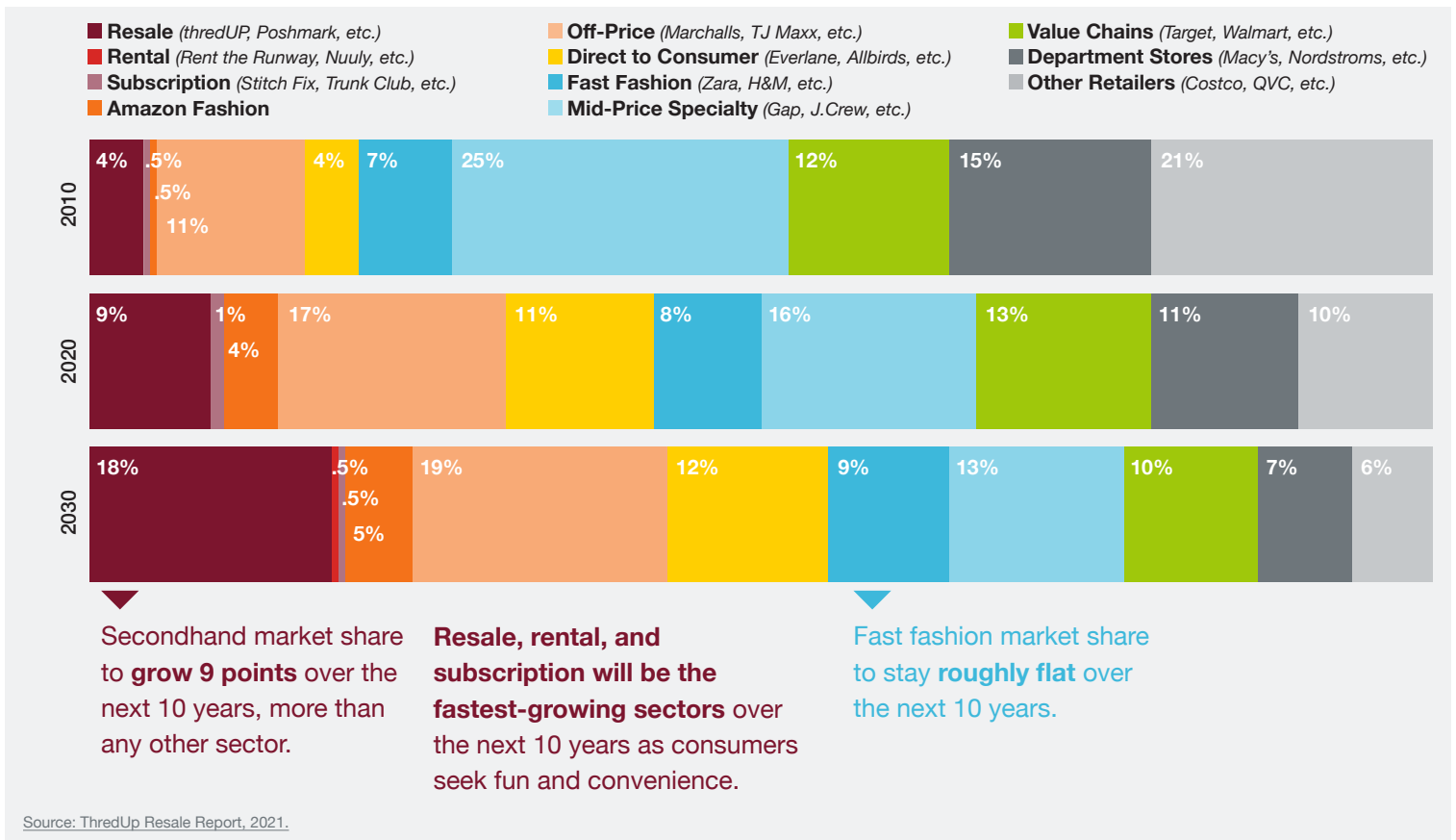
As industries around the world react to rising stakeholder expectations on sustainability and the urgent need to transition to a net zero carbon economy, its commercial promise has established circularity as a leading solution for the fashion industry to lower its greenhouse gas emissions and resource use.

Major brands and manufacturers in the industry, as well as a host of potential disruptors, are all testing and investing in circular business models and solutions. This includes increasing recycled material content, offering services like repair and remake of products, and reimagining how fashion is “consumed” with new business models that focus on resale, rental, and subscription.

The projected growth in circular business models

The current level of investments in the circular fashion economy makes up only 5 percent of spending in the industry and falls short of what is needed to truly unlock a circular fashion system.¹ However, circular business models look set for drastic growth. By 2030, the resale market is projected to be worth US\$84 billion, more than double the predicted worth of fast fashion (US\$40 billion). Investment in recommerce startups from luxury brands and venture capitalists has boomed. From April 2020 to August 2021, for example, the luxury resale platforms Rebag, Fashionphile, Vestiaire Collective, and The Luxury Closet attracted over US\$134 million in total investment, reflecting investor confidence in the expected growth of the resale market.² It is estimated that the size of the opportunity for a digitalized circular fashion industry is US\$5.3 trillion, an increase of the US\$2.3 trillion from today’s linear fashion industry.³

PROJECTIONS ON THE MAKEUP OF THE AVERAGE CLOSET IN 2030 AND THE GROWTH IN CIRCULAR BUSINESS MODELS (RECYCLING NOT INCLUDED).



The growth in these business models is underpinned by consumer preferences, which have shifted even more dramatically since the pandemic. Consumer awareness on sustainability in the industry has increased and there is heightened demand from consumers for brands to deliver on social and environmental

1 <https://www.chathamhouse.org/2021/04/transitioning-circular-global-textiles-industry>.
 2 <https://www.glossy.co/fashion/investors-have-poured-more-than-134-million-into-luxury-resale-since-april/>.
 3 <https://www.cfs.fashion/circular-fashion-report-2020>.

sustainability. A survey of 2,000 UK and German consumers revealed that 67 percent consider the use of sustainable materials to be important, 65 percent plan to purchase more durable clothing, and 71 percent plan to keep the items they already have for longer.⁴

However, this shift may not be universal. The declining preference for newness seen among European and American consumers is not necessarily reflected in India and other South Asian countries where increasing incomes and the growth of the middle class are driving more “aspiration-based buying” over need-based buying.⁵

Circular business models in India

Despite the projected growth in circular business modes, the idea of circularity in the apparel sector is nascent for South Asian production countries like India. International nonprofits, foundations, and civil society organizations have triggered the conversation in the traditional consumption countries with some replicable and scalable pilots. While these countries gradually adopt more circular models in their operations, India and other manufacturing countries of South Asia currently lack the business outlook and policy incentives to do so. The policy landscape in India has had a limited focus on the need to respond to the shift to circularity in the garment and textile sector. The misalignment between policies at the state and national level, irregular changes in regulations, lack of incentives for manufacturers, and implementation challenges have impeded the transition to circularity at multiple levels. Policies in these nations instead are focused on addressing immediate manufacturing challenges such as infrastructure and automation, etc. A recent study⁶ highlighted the lack of understanding of the circular economy by Indian manufacturers and suppliers. Circularity is used interchangeably with general sustainability and environmental measures, and is mostly associated with recycling and not yet redesigning or reusing. The study further highlights that government policies have not yet focused on providing infrastructural support for incentivizing waste management.

Furthermore, the lack of large-scale demand for circular fashion is considered another barrier to circular business models in India. Expert interviewees highlighted how the fashion system has failed to capture the affordability angle in sustainable clothing. For consumers in India, a more expensive garment that is thought to be of lesser quality than a virgin product is still confusing. Unless markets respond to consumers’ focus on sustainable clothing along with affordability, reaching economies of scale will be challenging even beyond the next decade.

Expert interviewees currently working in circular models in India do not anticipate a major shift toward circularity in the next ten to fifteen years. Instead, based on current growth, initiatives within the sector will take place in small pockets and interviewees did not expect major impact on jobs and earnings. A representative of a major rental platform suggested that if circular models become widely adopted,

4 <https://www.mckinsey.com/industries/retail/our-insights/survey-consumer-sentiment-on-sustainability-in-fashion>.

5 <https://www.investindia.gov.in/siru/textile-apparel-industry-change-agent-india>.

6 <https://c4rb.org/insights/report/Application-of-Circular-Economy.pdf>.

“It will have a somewhat similar impact as ride hailing services had on mobility. They increased mobility and new opportunities. Similarly, circular fashion will create more opportunities for skilled workers.” He further spoke of the change in supply chains and interaction between the consumption and production countries, describing “new and more opportunities rather than shrinking of opportunities.” Interestingly, as illustrated later (Section 9), KWIL’s economic modeling suggested that—depending on how circular fashion develops globally over the next decade, and taking into account broader macro factors such as automation and trade relations—there could be a very large variation in terms of the job impacts in India, with significant job losses in one scenario.

Emerging circular fashion models and their barriers

Exactly how the circular fashion opportunity will be seized, and what the future of a circular industry looks like is yet to be determined, with several models gaining traction yet also facing unique technological and market barriers.

We explore the job impacts per model in [Section 11](#).



Circular Models Included in the Research^{*,**}

Recycling: The process of reducing a product back to its basic material level, reprocessing those materials, and using them in new products, components, or materials.

Made from Safe and Recycled or Renewable Inputs: In a circular economy, substances that are hazardous to health or the environment are designed out to allow safe material circulation and ensure that no pollutants are released into the environment. KWIL research focused on regenerative production practices and organic agriculture in particular.

Reuse: Operation by which a product or component is used repeatedly and for long periods of time, for its original purpose, without being significantly modified, remade, or recycled. Products might need to be “prepared for reuse,” which often involves cleaning, repairs, or small modifications so that they can continue to be used over time and by multiple users. Reuse includes rental and resale operations.

Repair: Operation by which a faulty or broken product or component is returned back to a usable state.

* Several circularity models exist beyond those listed here, however our research focused on these because they emerged most prominently through expert interviews and desktop research. For a full list of models of circularity, please refer to “Vision of a circular economy for fashion,” Ellen MacArthur Foundation, 2020. <https://pacecircular.org/sites/default/files/2021-03/Vision-of-a-circular-economy-for-fashion.pdf>.

** Definitions based on “Vision of a circular economy for fashion,” Ellen MacArthur Foundation, 2020. However, for the purpose of this research, the use of recycled content and its supply chains (e.g., plastic waste collection) is discussed under recycling.

Recycling models

Based on expert interviews, most brands are beginning their circularity journey with a few select experiments across the different circularity models. Recycled content or other material innovations, such as plant-based clothing, is a common entry point for brands. Textile recycling diverts fiber, yarn, and textile waste from landfill and returns it into valuable products. A wide range of stakeholders, including fashion companies and other textile companies, collectors, and recyclers, have an interest in increasing fiber-to-fiber recycling of textiles but face challenges in doing so. There is an increasing number of fashion companies committing to the use of recycled textiles. However, due to the low prices of fossil-based polyester, growth in the use of recycled polyester has been slow, with an increase from 13.7 percent in 2019 to 14.7 percent in 2020.⁷

Textile recovery will rely on scaling of recycling technologies for the next 10 years. Currently, recycling technology is not sufficiently advanced to support large-scale recycling and take-back programs envisioned for the industry. Many textile recycling technologies are fully dependent on a well-sorted output to obtain recycled fibers with the same or similar-quality features as virgin materials. After sorting, research and innovation is needed to scale recycling techniques for textile blends and to allow disassembling, especially for footwear. Recycling currently relies heavily on mechanical processes. Other recycling options, such as thermomechanical and chemical recycling technologies, to upcycle complex textiles like blends, continue to develop at scale. Several expert interviewees consider that with advances in chemical processes, recycling will soon be both technically and financially viable at scale and will lead to the cost of recycled inputs being competitive or cheaper than virgin inputs. While some expert interviewees suggested a four-to-five year time frame, others suggested that the industry will rely on mechanical recycling for at least the next five to ten years. As such there is still a high level of uncertainty and debate on when this tipping point will arrive. It is expected that recycling processes may initially require manual labor as they expand and automate but ultimately will be largely automated. This may contribute to establishing these facilities close to consumers in the future. There are emerging initiatives, such as ReHubs,⁸ to create coordinated textile collection, sorting, and recycling through hubs across Europe, along with national level commitments⁹ in consumption countries.

Recycling based models will also lead to an expansion of fashion and textile value chains to encompass new activities and value chain segments that were traditionally beyond their borders, including the associated sustainability impacts. For example, sorting, collection, and recycling of textiles and use of recycled content from both inside and outside the industry. For instance, as recycling of textile polyester is still limited, PET bottles are the primary feedstock for recycled polyester.

When dependent on recycled content, circularity is expected to impact the material phase of the industry (e.g., cotton farmers) while cut-and-sew roles will

⁷ [Finland as a pioneer in the textile recycling in Europe.](#)

⁸ <https://euratex.eu/news/rehubs/>.

⁹ [Finland as a pioneer in the textile recycling in Europe.](#)

remain largely the same. For manufacturing, recycling-based circular systems are seen as an opportunity to not only recover waste in the system but also to create additional jobs based on these waste streams. For example, recycling pre-consumer waste is seen as a means to create new roles in garment manufacturing, in addition to existing production roles.

Reuse models

Some organizations are experimenting with business model innovations (e.g., rental and resale), alongside product innovations (e.g., recycled content), however these experiments are more niche and often undertaken by a potential disruptor in the industry, or as pilot project within larger organizations. Some brands are beginning to engage consumers in new models of consumption including rental, subscription models, resale, and encouraging consumers to “buy what you need.” For some brands, separate business models focused on circularity are being explored as an additional revenue stream alongside existing linear economy revenue streams which will be maintained. Circular business models are seen as a means to target new consumers. In this way, these new rental and resale models are expected to increase demand rather than detract from demand for new clothing, and as such are not expected to impact existing production roles.

Additional models

Some organizations included in our research are working on models of circularity focused on fully returning textiles to nature by developing clothing that is clean enough to return to the soil system. This also protects worker health and safety by eliminating toxicity in the system. However, synthetic materials in textiles limit the ability to create compostable clothes, and research and development on the creation of natural textile components such as thread, collars, and cuffs is still limited. Polyester, which is not biodegradable, was the most used fiber in 2020, accounting for 52 percent of the global fiber market. The market share of bio-based polyester fiber is only 0.03 percent of the polyester fiber market.¹⁰



Where will circular business models emerge?

The geography of the current shift towards circularity will also be important in determining its impact. Several expert interviewees noted that the majority of the innovation and investments in the circular fashion system is currently located in traditional consumption countries, and there is a significant gap in investments in production countries, where the majority of workers are. This will impact the types of roles created, their location, and job quality elements, as well as the proportional uptake of circular products, as consumption increases in countries like India and China in line with growth in the middle classes.

¹⁰ https://textileexchange.org/wp-content/uploads/2021/08/Textile-Exchange_PREFERRED-Fiber-and-Materials-Market-Report_2021.pdf.

The role of technology in circular business models

The shift to circular business models is also taking place at the same time as the rapid increased use of technology such as automation, e-commerce models, and the internet of things in the industry. Digitalization of the consumer experience has the potential to enable circularity in the industry as digital platforms can enable consumers to access, rather than own, fashion through rental platforms, peer-sharing, and subscription models, as seen in the music and automotive industries. For example, recommerce models are emerging more on the local level given the costs involved in international shipping, and there is growth in customer support services for C2C platforms that enable recommence and rental models directly between consumers. Similarly, digitalization in production processes such as 3D sampling, whole-garment knitting, AI-enabled predictive analytics, and on-demand production have the potential to reduce pre-consumer waste through reduced sample waste, cut-and-sew waste, and overproduction.

Considering the impact on jobs and job quality

Despite many unknowns, it is clear that current circular systems, when not implemented with consideration for the social impacts, can have unforeseen negative impacts. Our expert interviewees have also made it clear that the parts of the fashion industry that are already circular today, such as waste-picking for recycling or sorting for resale, have some of the worst labor conditions, high levels of informality, and major social impacts on communities. For example, the secondhand clothing market in developing economies in Africa has many unforeseen impacts on the health of communities through dangerous working conditions and degradation of the natural environment. A recent lawsuit against Salvation Army in the US for labor violations in its thrift store operations highlights the need to re-examine the labor conditions even in more established circular jobs and in traditional consumption countries.¹¹

When thinking about the transition to circularity, most organizations have focused on the environmental impacts where progress is usually easier to quantify and measure. A majority of organizations interviewed noted that the social impact of circularity receives insufficient attention currently and that many organizations still have siloed social and environment policies and, often, functions. Many brands and manufacturers noted that it is too early to tell the full impact of circularity on their workforce and supply chain. While some have acknowledged they face skills and labor gaps for the incoming circular economy within their own teams, few have begun to think about the value chain impacts of the transition—both pre- and post-consumer. Some brands noted that the primary solution to both environmental and social challenges is aligned: to decouple growth from consumption.

¹¹ <https://wwd.com/sustainability/social-impact/salvation-army-goodwill-thrift-stores-minimum-wage-exploitation-1234821979/>.

The shift to circularity, and the multiple forms it can take, raise several questions on the impact on job availability and quality. It's impossible to predict the end state of the transition to circularity with high levels of uncertainty on questions such as:

- What will be the makeup of circular business models in the future?
- Where will production take place?
- What will be the role of technology?

Each of these are likely to have a high impact on jobs and job quality and will be impacted by the drivers of change shaping the future of the industry (Section 7). We explore three plausible scenarios for the industry (Section 8), ahead of exploring the impacts of the transition on jobs and job quality (Section 9).

Industry examples

VF CORP | Regenerative Agriculture

With over 75 percent of land on Earth being severely degraded, Timberland has set the goal for its products, as a whole, to have a net positive impact on nature by 2030, giving back more than it takes. It aims to achieve this by designing 100 percent of products for circularity and sourcing 100 percent of natural materials—including leather, rubber, cotton, and more—from suppliers who are following regenerative agricultural practices. Timberland recognizes its unique position to drive change in agricultural supply chains through its sourcing strategy. Sourcing from partners who engage in regenerative agricultural practices is one the company's largest levers to start to look beyond “do less harm” and toward restoration and creating positive change for sourcing communities. Timberland believes that a regenerative model will not only be better for the Earth, but better for business as well, creating a healthier and more resilient supply base.

Pilot projects are already underway focusing on regenerative agricultural practices for high-volume material categories, including [cattle ranching projects](#) in the US, [cotton projects](#) in India and Haiti, a [rubber project](#) in Thailand, and a sugarcane project in Brazil.



Photo credit: Thousand Hills Lifetime Grazed

The focus is on projects that deliver positive outcomes for both the environment and the workers and communities involved. By supporting key pilot projects, Timberland aims to deliver more resources directly back to the farmers growing its materials, in the form of capital investment, premiums, or access to farmer training. Since many regenerative principles are rooted in ancient and indigenous knowledge specific to the places where they are practiced, the projects support peer-to-peer training, enabling the expansion of local indigenous knowledge.

The challenge for the future is achieving scale. As with many of Timberland’s eco-centric innovations in the past, it starts with small-scale pilots to test and learn, then incorporates learnings with a cross-functional team to strategically build long-term road maps and expand the programs over time.

SHAHI | Toward a circular economy by recycling pre-consumer waste into knitwear

Cotton production is a major user of resources and the industry’s social and environmental challenges hinder its ability to meet growing demand. At the same time, pre-consumer waste within the textile industry is immense; it is estimated that approximately 10-20 percent of textiles are wasted during the garment manufacturing process.¹² Additionally, pre-consumer cotton waste is frequently downcycled, undermining its potential value.

At Shahi, most of this waste has historically been sold to either traders or recyclers who use it to manufacture low-quality yarn for cushion covers, mops, rugs, and stuffing. Cutting waste in factories is mostly not segregated by fabric type, which places a burden on recyclers, increasing their costs. The supply chain of this waste is highly unorganized and lacks transparency. This waste, if not utilized properly, can often end up in a landfill, leading to an increase in carbon emissions and loss of value.



Photo credit: Nayantara Parikh



Photo credit: Nayantara Parikh

¹² https://www.researchgate.net/publication/284929635_Reusing_pre-consumer_textile_waste.

In Shahi's pilot, pre-cotton cut waste is segregated out and sent to its recycling partner—Usha Yarns—where it is mechanically recycled into a usable recycled cotton fiber of a particular color. This is then combined with recycled polyester blended yarns and delivered back to Shahi for knitting, finishing, and garment production. The project is economically viable for both manufacturers and recyclers because it enables higher quality recycled products. To date, Shahi has recycled 38,447 Kgs, or 84,761 pounds, of cotton cutting waste through Usha Yarns.

Historically, the textile recycling industry has been informal, characterized by unsafe working conditions that remain unmonitored and outside the purview of international supply chain management. The project helps create additional employment opportunities in the supply chain of cut waste recycling management for skilled, semi-skilled, and unskilled workers. If emulated, this model could create formal jobs that guarantee health and safety and provide all formal and legal benefits to employees. Further, workers will be part of the global fashion supply chain and the scope of international codes of conduct.

However, the model still faces challenges, including the absence of an integrated supply chain for cut waste in the industry. Currently, only pure cotton waste can be recycled in this model, which means that blended and synthetic waste is still sold in bulk to other traders and recyclers with no transparency about the end product. To overcome this, technology to recycle blended waste needs to be further developed. Furthermore, limitations in the strength and durability of the recycled product require it to be blended, preventing future recyclability. To increase the strength of the fiber, a blend 60 percent recycled cotton and 40 percent recycled polyester enables upscaling and further usage.

H&M | Shifting to a circular future through resell, repair, and rental

H&M Group believes expressing who you are through fashion shouldn't always mean buying something new.

Which is why it's focused on offering new ways of shopping through new business models like rental, resell, and repair that give customers the option to reduce their carbon footprint in convenient and attractive ways, and enable H&M Group to meet its responsibility in the industry.

Circular business models are being trialed across the Group's brands, and the job impacts of these programs are already being explored.

COS shoppers can buy and sell pre-owned items online through the Resell platform. ARKET has launched a subscription program for kids' clothing rental. Weekday offers a resell consignment program in Sweden and H&M customers can rent pieces from the Conscious Exclusive collection. Within H&M Group's workforce, recommerce could lead to the growth in roles working with curation and merchandising, and with future peer-to-peer solutions customers could potentially become service partners and support in building its supply chain.

H&M's Take Care program offers customers tips and hacks for looking after their clothes, while several locations offer in-store alterations and repairs. In the current repair programs, ateliers provide work for sewing operators who alter or upcycle existing products, creating employment in countries close to the customer to enable quick repairs.

The Group is already using recycling technology in its collections. In 2020 Monki released a range of clothing using the Green Machine, a chemical-based recycling method that fully separates and recycles cotton and polyester blends. As this kind of technology becomes available at scale, the Group anticipates the creation of new types of jobs connected to the circular economy. Another game-changing recycling innovation is the Loop machine, which transforms old garments into new ones. The system recaptures valuable raw materials in recycled clothing and regenerates them back into fibers that are spun into new yarn and knitted into new clothes.

H&M Group's ultimate ambition is to manufacture all products in a circular way. This will increase demand for recycled materials and create new jobs along the way. Workers will be reskilled to collect and sort materials both manually and automatically.

A circular fashion future will still need a workforce, although the types of jobs may look quite different from the ones we are familiar with in today's linear mode, and we need to make sure that workers in the industry's supply chain continue to be employed. New skills, like using technology, will be even more important for efficiency and competitiveness in the future. H&M Group acknowledges that no matter what the future holds, the priority is that everybody working in its supply chain is treated with respect and works in a safe and healthy environment.

07

Drivers of Change



In this section

Drivers of change in the fashion industry

Envisaging the future of the fashion industry, it is clear the shift to circularity is not taking place in isolation. Indeed, the global apparel sector is in the midst of transformation, as a complex array of drivers, including technological innovation, geopolitical shifts, and environmental pressures, disrupt established ways of doing business.

Together, with input from diverse and representative stakeholders, our research identified 20 key “drivers of change” that will critically influence the circular fashion transition. For some of these drivers, such as demographic shifts, it is possible to project how they’ll play out over the next decade with a reasonable degree of certainty. With many others, such as geopolitics, there is a high degree of uncertainty and a much wider range of plausible outcomes by 2030. The KWIL 2030 future scenarios are structured around different permutations of these “critical uncertainties” and depict how the drivers of change could play out in very different future worlds ([Section 8](#)).

Drivers of change in the fashion industry

Social drivers



Demographic shifts

The rate of population growth is slowing, and aged populations are increasing in the global North and East Asia, while a youth bulge emerges in Africa, placing increased pressure on social services.



Changing migration patterns

An increase in migration is placing additional pressure on social systems and fueling nationalistic sentiments; this will be exacerbated as the climate crisis displaces people internationally and internally.



Labor and human rights in apparel production

Apparel workers face high levels of informality, inadequate labor protections, and poor working conditions. At the same time, legislation to combat forced labor is becoming increasingly enforceable globally.



Evolving consumer attitudes about sustainable fashion

A rising awareness among consumers of both the environmental and social impacts of the fashion industry and a shift toward new ownership models.

Technological drivers



Technological disruption to apparel consumption

Consumers are shifting the way they purchase clothing and interact with brands, supported by a growth in innovative technologies that enhance e-commerce and immersive digital consumer experiences.



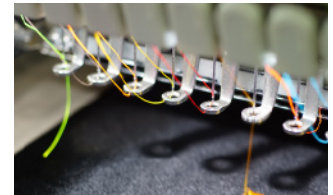
Transparency and traceability

Consumers are demanding more transparency about their products, and new technologies such as RFID thread, and industry collaborations could enable brands to meet these demands.



Clothing collection and reverse logistics

E-commerce is driving an increase in reverse logistics globally; emerging technologies such as autonomous vehicles could revolutionize the service.



Automation of apparel production

A growing trend toward automation and the displacement of workers in garment production.



Fiber and textile recycling technologies and policies

Interest from brands and consumers in the use of recycled textiles is increasing, and new technologies are emerging to meet this demand despite technical and financing challenges in recycling.

Political and economic drivers



Commodity availability and prices

Driven by shocks such as climate impacts and changes in the oil price, there is increased volatility in the markets for commodities such as cotton and polyester.

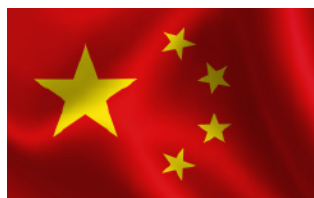
Economic participation gap between men and women

Progress on women's economic empowerment has been slow, and women still face a global gender pay gap and take on the majority of unpaid care work. This impacts industries with high numbers of women workers such as the fashion industry.



Geopolitics and trade relations

The era of globalization is under threat from increased nationalistic sentiments, protectionist trade policies, and overall trade tensions.



The rise of China

China's continued economic growth and expanding political influence is coupled with a rapidly expanding middle class, elevating the importance of Chinese consumer spending in the global market.

Social safety net policies

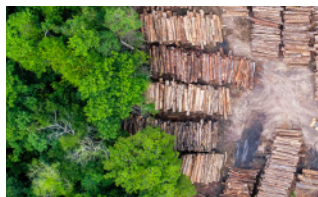
Many of world's most vulnerable still lack access to social safety nets that are proven to reduce poverty. At the same time, there is a growing interest in new forms of social protection such as Universal Basic Income.



Waste management policies

New regulations are being adopted that increase producers' responsibility for waste, along with a push back on the importing of waste in Asia and Africa.

Environmental drivers



Land degradation and deforestation

Increases in population and consumption per capita has caused unprecedented rates of land use, deforestation, and growing land scarcity, which is a growing concern for the production of leather and man-made cellulosic fibers.

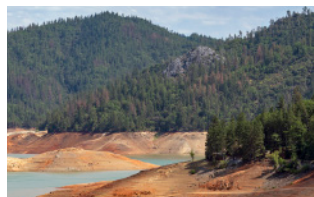
Water and pollution

Water scarcity is a growing reality for many regions of the world, placing increased pressure on the fashion industry and its high-water usage and impacts on water pollution.



Energy transition

The global energy mix is transitioning from fossil fuels to renewables due to market forces and climate commitments by governments and business. This transition is crucial to decarbonizing the fashion industry.



Climate impacts

The physical impacts of climate change on the fashion industry are becoming more apparent and prevalent, including limiting the availability of inputs, decreasing productivity, and the potential displacement of workers, particularly since traditional production countries face disproportionate impacts.



Climate policies and programs

International climate action has been uncertain in recent years, but new laws are emerging to accelerate action from government, together with a wave of ambitious new climate commitments in Asia, and industry-level initiatives such as the Fashion Pact.



08

KWIL 2030

Future Scenarios

In this section

Scenario One:
Chasing the Low Cost

Scenario Two:
Faster and Greener

Scenario Three:
Rise of the Regions

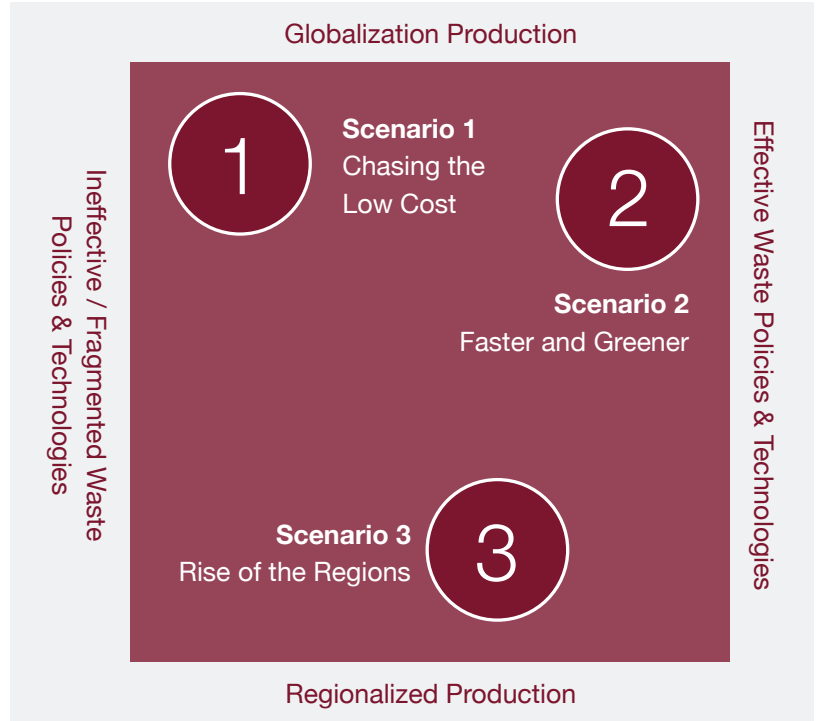
Scenario planning is a well-established methodology that is widely used in different sectors to enhance strategic planning, especially when the external operating environment contains unpredictable elements.

A strategy that is predicated on a single assumption of what the future will hold is highly vulnerable to unforeseen changes in the external context. The more complex and global the domain in question, the greater the vulnerability. Scenario planning is a way of considering a multiplicity of plausible future developments and modifying a strategy to make it more likely to succeed across the full range of plausible futures.

KWIL project participants prioritized and clustered the drivers of change outlined in [Section 7](#) according to the level of impact they would have on the future of a circular fashion industry and the degree of certainty about how they would play out. Two overarching critical uncertainties emerged: how globalized fashion production will

be in the future, and how effective waste policies and technology will be. We then developed three scenario narratives to explore different plausible permutations of the critical uncertainties, along with other social, technological, environmental, economic, and political drivers of change.

KWIL’s 2030 scenarios imagine three different futures shaped by different responses to the critical uncertainties described above. These are not predictions for what the future will hold; rather, they are hypothetical constructs that describe what the future could look like. None of these scenarios will transpire exactly as written. However, taken together as a set they provide an important tool to challenge our assumptions about the future, stress test our strategies and plans, and identify opportunities to futureproof our organizations and steer the world toward better outcomes.



Alongside the scenario narratives, we also present figures from the Computable General Equilibrium (CGE) Model, which KWIL’s economist partners developed to help understand what the scale of impacts in various scenarios might be. CGE models are a tool commonly used to evaluate policy decisions, conduct cost-benefit analyses, and simulate the development of “what-if” scenarios.

The model includes five regions (China, India, US, Europe, and the “rest of the world” (RoW)) and 16 different sectors involved in the apparel supply chains. Using data from sources such as the Global Trade Analysis Project, the ILO, and official statistical agencies, it reflects the fashion industry and the economy as it is today and covers information such as number of workers, the value of current production, imports and exports, etc. Please see [Section 9](#) and the [Appendix, Section 3](#) for more detail. The economic model attempts to quantify some of the impacts present in the three scenarios. Neither futures scenarios nor economic modeling will be able to perfectly predict what might occur; however, both are useful tools to challenge our assumptions. In cases where there are divergent results from what we would have expected based on the futures scenarios and what was found in the economic model, these differences are highlighted.

We note that where jobs grow, some of this growth will be driven by expected population growth. Further, workers may move across sectors due to wages and/or working conditions being better/worse in one sector than another. As such a reduction in workers in a sector in a certain scenario should not be solely interpreted as negative, some workers may have voluntarily left the industry to gain higher wages elsewhere, for example.

Scenario One: Chasing the Low Cost

The World in 2030

The global economy has emerged from the 2020s more unequal than at the start of the decade. It is still recovering from the economic and social fallout of the COVID-19 pandemic in many places, and climate impacts are increasingly visible and disruptive. Many traditional production countries were unable to significantly vaccinate their populations or have struggled to keep up with new variants. Periodic outbreaks disrupt those economies and their production capacity.

The US, European Union, and East Asia fared better—managing to effectively contain COVID-19 and, in the US and China, to enjoy robust economic growth. However, in the EU, ongoing economic malaise, a strained social protection budget, and nationalist flare-ups have slowed achievement of environmental and social ambitions. And inequality has risen steeply both within and between countries worldwide.

Due to ongoing supply chain disruptions from COVID-19, as well as a global glut of cheap labor, fashion supply chains have diversified and increasingly shifted to Latin America; East and North Africa; and the Middle East. Outside of the US, Europe, China, and India, jobs have significantly increased for both women and men. Competition is rife among countries competing for a slice of the sourcing pie, undercutting efforts to improve working conditions and environmental standards. Difficult economic conditions have also muted calls from consumers and policymakers on persistent human rights concerns in production and raw material sourcing locations.

Economic model – In the rest of the world, jobs for both genders have significantly increased compared to today, with men’s jobs growing by 4.63 million, and by 6.48 million for women. Globally, roles in fashion manufacturing have increased significantly with 1,459,000 additional low-skill roles and 343,000 additional high-skill jobs.

Circular fashion models are driven by cost-conscious consumers rather than sustainability objectives, and there has been some growth in rental, resale, and repair. The use of recycled materials has been slowed by a lack of investment, coordination, and supportive policies. Vast quantities of textile waste are still being exported, undermining local textile industries and pushing workers into precarious waste treatment jobs.

Despite these challenges, the adoption of the European Green Deal,

mandatory human rights and environmental due diligence, and investor pressure on Environmental, Social and Governance (ESG) issues have driven some progress on environmental, wage, and social performance among major brands.

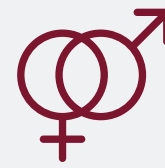
However, these apply largely to first-tier suppliers and do not reach informal workers.

Smaller, less visible brands have sprung up and rely on cheap and dirty production. To meet the continued demand for inexpensive fast fashion, super lean brands have emerged that produce in low-cost locations and then sell exclusively online. This includes domestic brands in large consumer markets such as China and India, leading to significant job losses in traditional retail.

Majority of gains are low-skilled jobs and female jobs in “rest of the world,” which displace female jobs in China. China also sees substantial decline in male jobs in the fashion sector.

1,915

Net jobs gained
Baseline 2030: 7,793

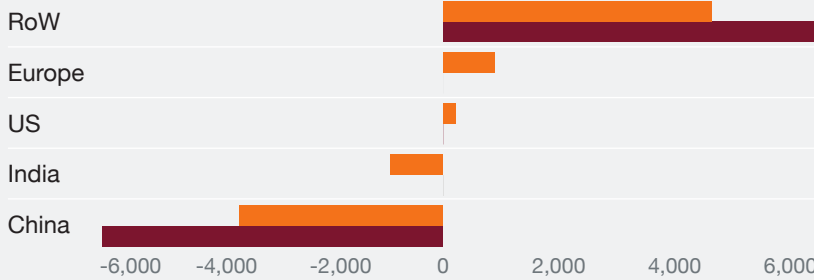


1,312
MEN 4%

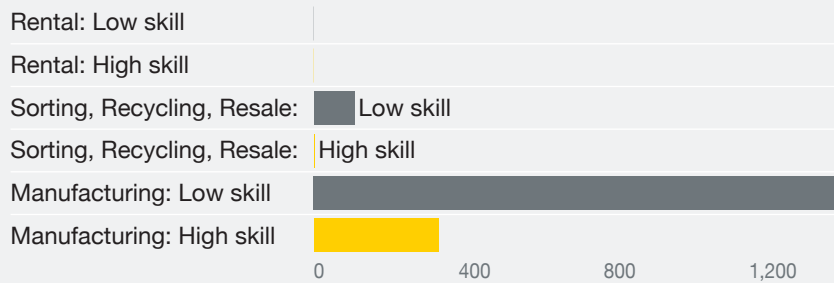
603
WOMEN 3%

Numbers in '000 of workers

JOB GAINS BY COUNTRY



BY SUB-SECTOR



Women's job gains

driven by an increase in Agricultural & Unskilled Workers and Technicians & Professionals in RoW.

Men's gains

driven by an overall increase in Agricultural & Unskilled Workers in RoW, though these decline sharply in China and India. Men's losses driven by a decline in Service & Shop workers in China.

High increase of low-skill roles in Manufacturing (1.5 million)

Significant increase in high-skills jobs (343,000) in Manufacturing

How we got here

The global deployment of COVID-19 vaccines in the early 2020s was highly uneven.

The US, Europe, and parts of East Asia were able to vaccinate the majority of their populations by 2022. However, Africa, Oceania, and parts of Asia and Latin America struggled to achieve sufficient vaccine coverage. The emergence of new variants and the need for vaccine boosters undermined progress and left poorer countries struggling to keep the virus under control and achieve sustainable economic growth.

Even in those countries that enjoyed a relatively fast recovery, such as the US, economic inequality intensified, and a growing share of consumers experienced economic strain. Traditional production countries struggled with the economic and social impacts of ongoing COVID-19 outbreaks, crushing debt repayments, and a lack of job recovery programs and social protection reforms.

Climate related disruptions drove up the price of raw materials, yet a lack of coordination on waste treatment policies, slow progress on recycling technologies, and corruption in the waste treatment sector slowed a switch to recycled materials. The price increase in fibers directly impacted the already-stretched financial margins of the fashion industry. This posed huge challenges for fast fashion retailers and brands, especially highly visible global brands that still faced growing scrutiny of their environmental and social performance.

Meanwhile, many lower income production countries weakened labor protections and offered tax inducements to attract foreign direct investment (FDI) and lure apparel production to their shores. This helped enable the emergence of less visible and less scrupulous producers to meet the ongoing demand for affordable fast fashion. Wages remained low, which also slowed momentum for automation.

Economic model – Compared to today, low-skilled workers in the fashion sector will experience almost a 3 percent reduction in wages on average globally. Average global wages for high-skill workers will increase by just 0.5 percent.

In China, a growing middle class and skilled workforce, rising labor costs, more stringent environmental standards in line with its international commitments, and the shift toward a service economy eroded its share of apparel production, even while it continued to be a major supplier of cotton. Circular models grew as China attempted to restore its environment.

Chemical recycling developed slowly but steadily in the EU, US, and Bangladesh but has not yet reached meaningful scale. This is being driven by policy developments yet slowed by insufficient coordination and investment.

Economic model – Compared to today, there is a reasonable increase of 113,000 low-skill jobs in the sorting, recycling, and resale subsector. This overall increase comes from growth in men's roles; low-skill jobs for women actually decline globally by 196,000 in this subsector.

In an effort to clean up their environment and improve the quality of life of their citizens, countries in Southeast Asia followed China and India's lead in banning the import of textile waste, leading to flows of waste shifting to sub-Saharan Africa.

Key Themes

WORKERS



The growth of inequality led to a boom in cheap labor globally.

Less regulated and more precarious working models have spread—in traditional retail and distribution as well as in repair, resale,

and rental. However, in some countries, unions and/or NGOs have successfully collectivized workers to push for improvements. Increasing scrutiny and traceability of human rights and environmental impacts due to legislative and technological developments have resulted in some incremental gains, mostly in first-tier production facilities. Growth in e-commerce has caused significant job losses in retail in traditional consumption countries that are partially counterbalanced by growth in new technology-related roles (e.g., from software development to logistics).

UNDERREPRESENTED GROUPS



Working conditions along the value chain remain particularly poor for women and under-represented groups, compounding the effects of a decade of disruption. Increased rural-to-urban

migration in new production countries has created a workforce more vulnerable to exploitation, but it has also generated new economic opportunities for women.

In the US and EU, nonstandard working models (e.g., gig work, daily employment, contract work, piecework) have proliferated and contribute to precarity for women and underrepresented communities.

Economic model – The majority of gains are low-skilled jobs and female jobs in the rest of the world. 6.4 million jobs are created and concern mostly agricultural and unskilled workers and technicians and professionals. This scenario sharply displaces female jobs in China, which sees a decline of 5.9 million jobs compared to today. China also sees substantial reduction in male jobs in the fashion sector (–3.5 million).

INDIA



India vaccinated most of its population by late 2023, however the pandemic pushed millions into poverty and led to high levels of unemployment. The

ongoing economic hardship faced by

Indian consumers has hampered the domestic fashion market and made India reliant on exports. In the name of competitiveness, the government strengthened pro-business labor policies that undermined collective

bargaining and unionization of workers, minimum wage, and access to redress. The labor surplus has supported a shift away from economic growth based in the main metropolitan centers toward a more decentralized economic model.

TRADE RELATIONS AND GEOPOLITICS



Governments in Africa, Latin America, and parts of Asia have sought to attract global business and foreign investment by rolling back environmental and labor regulations and offering tax inducements.

Growing competition between potential production markets has slowed progress on working conditions and heightened trade tensions. China, the EU, and the US are exerting influence on countries that are struggling to recover through the provision of access to vaccines and economic relief. Globally, transparency has decreased as countries are unwilling to jeopardize their economic prospects by sharing accurate data.

TECHNOLOGY DEVELOPMENT



The high capital costs of automation, coupled with a global glut of cheap labor, have slowed the automation of fashion production. However, some

automation is taking place in near-shored/

reshored manufacturing facilities and circular hubs, often due to financial incentives at a city or regional level. Clothing recycling has grown primarily in Europe, driven by EU policy and several countries banning the export of textile waste. This has led to growth in waste picking and sorting roles, with generally poor working conditions and protections for workers, as well as corruption. Labor policy has struggled to keep up as the sector develops. Investments in Bangladesh have also led to some recycling of post-industrial waste and a shift of workers out of production roles.

CLIMATE ACTION



The strong climate commitments made by the EU earlier in the decade have not been effectively implemented due to the prolonged economic recovery from COVID-19 and a lack of cohesion from EU

member states. China has exceeded its stated climate goals, although much of its emitting activities have been outsourced to other countries. It has positioned itself as the global leader on climate and is now subsidizing the decarbonization of traditional production countries. This has deflected attention from ongoing human rights concerns and increased its political influence. India is lagging behind on reaching a net zero economy as it continues to deal with the economic and social repercussions of a lost decade.



Garment worker in the US

I arrived in California nearly 20 years ago now and have worked in garment factories ever since. At that time, jobs in this industry were some of the only ones available when you don't have a green card. At first I worked on the shop floor, sweeping and packing, but over the years I've worked my way up to working on a single-needle sewing machine—I mostly attach zippers and labels to dresses and other small finishing details. I get paid at a piece rate, just 20 cents a piece, which means I take home about \$100 a day*. I need to send money home to my family in Guatemala as well as support my children here and so I work long days, from 7 a.m. to 6 p.m. Monday through Saturday. Some months I can barely afford my rent and I feel sad that I'm struggling to provide a better life for my children.

The conditions in the factory are pretty poor, its dusty and poorly ventilated and hardly ever cleaned. My health has really deteriorated lately but I can't afford health insurance on my wages or to take time off to go to the doctor. I try not to complain and mostly suffer in silence.

My friends at work and I were hopeful when the Garment Worker Protection Act came in, but there were so many factories

going out of business as other countries started making even cheaper clothes that the factory owners here kept finding ways to get around the new regulations. Sometimes they just shut up shop and reopen somewhere else to avoid being investigated for not paying decent wages. Once I lost a month's wages when my employer just disappeared. I later learned that he'd started operations in another part of the state. I shouldn't be being paid at piece rate but I'm afraid to complain in case I lose my job completely. Sometimes I feel so trapped, it's awful. I've thought about going home but my sisters have got some work in a new factory near Guatemala City and their salaries are so low and hours so long it sounds even worse than here.

However, I recently heard about a group of former garment workers who have got together to help others to develop small businesses and I'm thinking about joining one of their sessions. They are held in Spanish and are organized at times when we're not working. My hope is that one day I may be able to leave the factory and have my own small business.

– **Garment Worker, US**

* equivalent to US\$75 today.

Scenario Two: Faster and Greener

The World in 2030

The COVID-19 pandemic was a turning point. It made clear just how interconnected the world is, and that no place could thrive and be fully free from risk without conditions improving everywhere. Belated cooperation on the global pandemic response ramped up over time and catalyzed cooperation on other global challenges. Now, in 2030, the pandemic is behind us, and the world's attention is squarely focused on the climate crisis. Governments, investors, and businesses are actively coordinating to accelerate a low-carbon transition driven by innovation and technology. Multilateralism is on the rise and trade conflicts are manageable.

Improvements in recycling technology, green freight, and renewable energy have partly decoupled economic growth from resource use. The fast fashion model has not fundamentally changed but relies heavily on technology and innovation to improve its environmental footprint. Circular fashion investments focus on waste recycling, new materials, traceability technology, and reducing environmental impacts in producing countries. Consumers increasingly view fast fashion as sustainable, and there is little drive to reduce consumption.¹

Economic model – Overall, 879,000 jobs are lost in the industry across all regions compared to today (the highest across all scenarios).

Automation has reduced the number of workers at risk in the fashion supply chain, while also displacing people from production, collection, and sorting roles. Technological unemployment is the foremost labor issue in production areas. Slow to start, there is growing collaboration across industry, governments, unions, and NGOs to address the issue of displaced workers and deliver an inclusive, coordinated, and tech-enabled approach to reskilling. Several EU states have implemented a universal basic income in response to automation.

Human rights due diligence laws in consumption countries aim to improve working conditions in supply chains but continue to be difficult to enforce. As a result, an industry for human rights surveillance technology has emerged, including digital reporting platforms, factory surveillance, and satellite monitoring. Worker productivity levels are also closely monitored by machines.

¹ KWIL's economic analysis suggests that counter-intuitively, this 'Faster and Greener' scenario could actually be the scenario with the highest emissions. The model suggests that without broad restructuring of the production processes, improvements in the environment may not be achieved if only isolated processes and technologies are modernised while keeping consumption levels high and increasing. Further detail is provided in the [Appendix, Section 3](#).

Policy changes, regulation, and investor pressure have driven investments in regenerative agriculture, ecosystem services, and reforestation. Alternative materials such as lab-grown fibers and vegetable leathers have gained prominence and align with more automated production methods such as 3D printing. While these new materials still face environmental challenges at scale and social challenges in their supply chains, continued innovations are making them more sustainable.

Waste collection, reverse logistics for circularity, and recycling have improved in consumption countries, providing jobs alongside automated systems. This forms part of a global circular system with key production markets positioning themselves as waste collectors or importers of recycling output. Waste collection and sorting in production countries like India is less coordinated and automated. However, the increased value of waste and investments in imported technology are changing this.

Economic model – A global increase of 13,000 high-skill jobs in sorting, recycling, and resale in the industry, and loss of 62,000 low-skill jobs in sorting, recycling, and resale in the industry compared to today.

Majority of losses are low-skilled jobs and in male jobs in India and in China. High-skill jobs have limited growth, with some increase in all regions in manufacturing and/or sorting, recycling, resale.

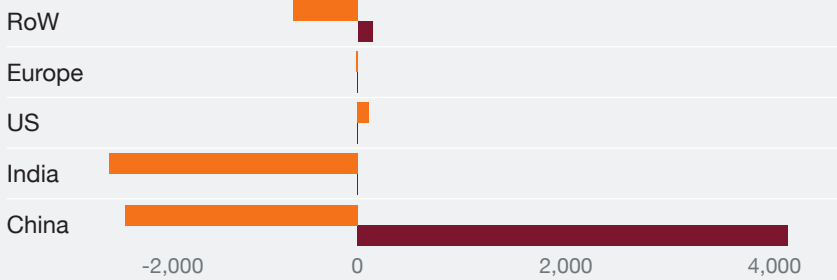
-879
 Net jobs lost
 Baseline 2030: 7,793



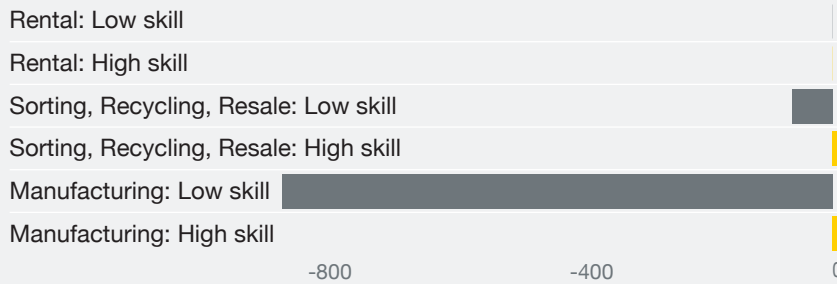
-5,147 MEN	-14%
4,269 WOMEN	19%

Numbers in '000 of workers

JOB GAINS BY COUNTRY



BY SUB-SECTOR



Women's job gains
 driven by increase in Service & Shop workers

Men's losses
 driven by decline in Agricultural & Unskilled Workers and Service & Shop workers

Low-skill roles are neutral or decline across the three subsectors

Small increase in Sorting, Recycling, Resale (13,000)

Small increase in high-skill roles in Manufacturing (20,000)

How We Got Here

Realizing that a new COVID-19 variant emerging in one country could undermine the recovery of the entire global economy, the major powers joined forces in an ambitious global vaccination campaign in 2022. Despite distribution challenges and vaccine hesitancy, COVID-19 was mostly contained over the following two years.

Green recovery policies drove fiscal spending in clean technology and created an enabling policy environment for the low-carbon shift. Combined with a push towards low-carbon investments from the private sector, this spurred developments in renewable energy and recycling technologies. However, high levels of consumption and rate of production still challenge emission targets.²

As part of the international recovery effort, multilateral lending to developing countries from the EU, China, and US focused on financing green technology and industry 4.0 projects. To attract international investments in new technology, many production countries sought to position themselves as nascent pioneers in decarbonization.

By the mid-2020s, with the pandemic mostly contained, the global economy surpassed pre-pandemic levels of production and consumption. However, widespread automation of clothing production in global supply chains reduced employment rates among larger suppliers.

Labor reforms, employment policies, and skills development programs to address technological unemployment saw uneven uptake. Some developed economies strengthened social protections and reskilling programs for displaced workers, particularly in Europe where unions remained a powerful force in the economy, and to a lesser degree in the US. The question as to who bore responsibility for skills training in production countries was a matter of contentious debate as automation rolled out to large suppliers. As a result, reskilling and social protections lagged in production countries, outside of China.

Economic model – Job loss in the industry in Europe is limited to 24,000 workers compared to today. Increased production and trade led to job gains in the industry in the US of 111,000 compared to today. China had a net job increase in the industry of 1.9 million jobs compared to today.

Investments and scaling up of recycling processes also relied on automation wherever possible. Some processes, particularly sorting of post-consumer waste, were slow to automate and continued to take place in both production and consumption countries.

Waste legislation evolved rapidly. The EU mandated the separation of textile waste in 2022, which set a global precedent and model. As a result, waste also became a key geopolitical and trade issue mid-decade. The increased valorization

² An additional finding from the economic modeling showed that the Faster & Greener scenario had the highest levels of emissions across all scenarios despite changes in the policy environment.

of waste dampened concerns about dumping and led to policies for facilitating the international transport and trading of textile waste, much like other goods.

Key Themes

WORKERS



Government and industry efforts to reskill workers in production countries have not kept pace with automation.

A large network of unautomated informal suppliers absorbs displaced workers, driving down wages to

compete with automated factories. Unions in consumption countries have begun to adopt a more global approach—pushing for automation taxes and mandatory investments in reskilling through trade agreements, supplier engagement, and purchasing practices. Labor protections and freedom of association are increasingly included in international trade agreements and procurement policies.

Economic model – The majority of job losses are low-skilled jobs and male jobs in India and China. High skill jobs have limited growth, with some increase in all regions in manufacturing and/or recycling.

UNDERREPRESENTED GROUPS



The rapid economic recovery from COVID-19 prevented a worst-case scenario for under-represented groups.

However, the new technology-intensive economy has negatively impacted women and migrant

workers. Investments in STEM education and reskilling have ramped up, but a portion of the workforce has been left behind. To counter this, new models of production are being explored, including tech-enabled distributed models that decrease the need for workers to migrate and enable more craft-focused homeworkers. Economies are increasingly closed off to low wage migrants as automation grows

INDIA



India was a key focus of the global vaccination drive and has seen strong economic growth spurred by the rise of the middle class. Traditional tailored clothing

has largely been replaced by ready-to-wear

fast fashion from international and local brands. Informal jobs in the global secondhand clothing market have declined as clothes are increasingly recycled. The community-driven waste economy, and many of the informal jobs included in it, is also slowly being replaced as India attracts more investment in automated recycling and sorting.

Economic model – Job displacement in manufacturing is felt hardest in India, losing over 2.3 million jobs in the fashion industry.

TRADE RELATIONS AND GEOPOLITICS



Carbon border taxes were introduced by the EU in 2023 and have become a key factor in trade agreements and geopolitics.

They have made it harder to offshore high-emitting activities and

are accelerating decarbonization. Competition for green technology is spurring innovation and investments, particularly from the US and China. Access to this technology has become a key part of diplomacy efforts as the US and China vie for influence in other regions.

TECHNOLOGY DEVELOPMENT



Automation has accelerated but requires significant up-front capital—making it more widespread among large suppliers and in developed economies. Most smaller

suppliers continue to rely on low wage

manual labor. Policy changes, innovations, and investments have driven growth in automated recycling technology globally. Post-consumer apparel waste is either exported directly to production countries with recycling capabilities or processed in consumption countries with emerging automated sorting systems and exported as polymers and fibers. As a result, recycled clothing is cost competitive with virgin materials.

Economic model – Globally, jobs in sorting, recycling and reuse see as considerable decrease in low-skill roles (62,000) and an increase in high-skill roles (13,000).

CLIMATE ACTION



Carbon border taxes unlocked new revenue streams for climate action within production countries and led to increased climate action by laggards as a matter of trade competitiveness. Climate

adaptation and mitigation combines nature-based solutions and technologies such as industry 4.0, smart agriculture, and renewable energy. However, the rapid deployment of technology for climate action has paid insufficient attention to the social and environmental challenges associated with their production, and failure to curb the rate of consumption still challenges carbon emissions.



Photo Credit: D. Talukdar

Waste Collector, India

I started out sorting clothes. We'd get these giant bundles from all over the world, but all the good stuff had already been picked out by their sorters for resale. What was left was for recycling or downcycling. We'd have to sort through it based on colors, content, and making sure any trimmings were removed. Slowly our work got easier as machines came into help us, but there was also just less work. First, they could separate the colors, then as the brands started using new labels and they brought in new chemical recycling systems and suddenly sorting for content was gone too.

Eventually, there were fewer and fewer sorters needed. I was pregnant when all the major cuts were made, and I was passed over for training to stay on as a system supervisor. It was a very dark time for me as I was a new mother and had no access to unemployment benefits, childcare, and all that. Eventually I found new work in collecting old garments. I knew a fair share about clothing content from my days as a sorter, so I was quite good at it. There were also a lot of old garment workers starting to collect clothing too who were also good, so the competition was tough. The shift in the industries was quite a shock as no one seems to care if organizations follow the law in my new world as a collector. There are some bright spots though. As a waste collector I have a lot more flexibility to work around my childcare availability. I'm also now part of the "Connected

Collectors," which is a mobile app that helps me pre-sort clothing as I collect it, and helps me get a fair prices for my finds. My income has increased a lot since joining the app and I've also helped train other collectors onto the app. The system does monitor your "find rate" though, which can make taking a break to rest or spend time with my child feel stressful.

I've heard from the community organizers from the app that the government is thinking about getting in a big company and machines to do our job at the landfill, and they plan to organize the waste better and even use some for electricity. I'm determined to not miss my chance at getting trained for another job again, so this time I am doing everything I can. Through the app we have access to a digital community of collectors and we've started organizing ourselves better. I've attended every meeting so far, and I've heard that there is a proposed "Mandatory Reskill for Recycled Content Program" coming from Europe, which means that brands that use our collected waste have to help us get new skills. Through our digital community, we've connected directly with the workers in Europe, and we're all working together to help push the program through. I've already signed up for some technology training. I think my experience as "Connected Collector" trainer will help me. Plus, I'm optimistic since now that we only have work four days a week, work is meant to be shared more evenly.

– *Waste Collector, India*

Scenario Three: Rise of the Regions

The World in 2030

Centrifugal forces—especially nationalist politics, geopolitical tensions, and supply chain disruptions from climate change and COVID-19—have caused economic and political fragmentation. China, the US, and Europe are increasingly at odds and evolving in divergent ways. Each has established regional constellations of influence—some of which, like Africa—are hotly contested. Geopolitical volatility has prompted brands to reshore and near-shore production.

A rupture between China and Western Governments means Chinese raw materials, labor, and markets are now largely unavailable to Western brands. This has driven the relocation of production to Africa (for European markets) and Latin America (for the US) as well as growth in reshored and automated production. However, ongoing global interdependencies mean that alliances are complex and unstable. Supply chain upheaval has driven consolidation and downsizing at small and mid-size factories across many regions, particularly in Asia.

Increased reshoring and near-shoring and growth in high-tech and purpose-led startups has renewed activity in historic textile-producing regions in traditional consumption countries. Circular business models have become more prevalent and user-friendly in consumer-facing industries, with several wildly successful startup companies leading the way.

Tech-enabled gig employment has boomed, often bringing precarity for workers. In Europe, unions have improved conditions for gig workers and sought to secure freedom of association for apparel workers in Africa.

Economic model – There is significant growth of 4.3 million men’s jobs in the rest of the world, compared to today, which is driven mainly by an increase in agricultural and unskilled workers. The biggest job growth for women is also in rest of the world where almost 6.5 million jobs are added in comparison to today.

The US has tried to avoid domestic production losses to lower cost regions by strengthening labor protections in Mexico via the North American trade deal, and unions have strengthened their position in several LATAM countries. Conversely, China’s growing influence in Asia has diminished freedom of association in the region.

Economic model – Women in China see their economic opportunities losing 2 million jobs, driven by a decline in agricultural and unskilled workers. Jobs have been displaced compared to today.

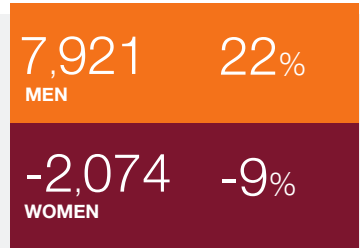
Competition for critical inputs has intensified, including those needed for renewable energy and artificial intelligence (AI). In the fashion industry, this has driven up prices and accelerated use of fiber recycling, with a notable rise in cellulose use. This has caused rental, resale, and repair models to blossom in the US, China, and Europe, and gain traction, especially for high-end items, in India. Quality, durability, individualization, and experiences are prized.

Rising e-commerce and increased local production capabilities have strongly benefitted smaller, local, and purpose-led brands in traditional consumption countries, whose combined popularity is nibbling at the market share of incumbents. These brands differentiate based on responsible design and production, as well as the care and post-use of clothing.

In China, home-grown “Guachao” brands are booming, and increasingly using high-end, smart green textiles. Like in China, Western brands are experiencing pushback in India and some African countries, where they are seen as eroding indigenous style and culture.

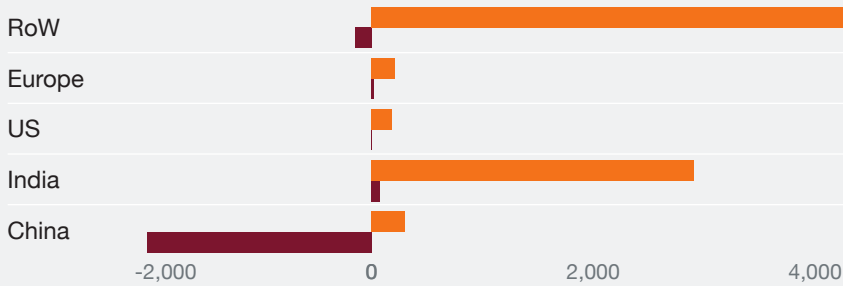
Majority of losses are low-skilled jobs and female jobs China. High-skill jobs have limited growth, with some increase in all regions in manufacturing and/or sorting, recycling, resale. Low-skilled jobs and male jobs have high growth in India and in the RoW.

5,847
Net jobs gained
Baseline 2030: 7,793



Numbers in '000 of workers

JOB GAINS BY COUNTRY



Women’s job loses
driven by a decline in Agricultural & Unskilled Workers

Men’s gains
driven by an increase in Agricultural & Unskilled Workers

BY SUB-SECTOR



Small increases in high-skilled roles in all sub-sectors (1,000–3,000)

Significant increase in low-skilled roles in Sorting, Recycling, Resale (532,000).

High increase in low-skilled roles in Manufacturing (5.3 M)

How We Got Here

The “Tumultuous Twenties” saw widespread disruption in global supply chains, with divergent commercial, cultural, and policy developments in many regions. The most significant driver of regional fragmentation has been the resurgence of nationalist politics, geopolitical tensions, and trade wars. In the early 2020s tensions grew among the US, China, and Europe along numerous fault lines. This included concerns about human and labor rights, the imposition of carbon border taxes in the EU, the resurgence of “America First” politics in the US, and differing approaches to data and AI.

Political tensions and trade friction led to the growth of regional constellations of influence, with major powers attempting to secure relations and supply routes based on investment, trade, and ideology. The US, EU, China and Russia also used “vaccine diplomacy” to bolster their regional influence, which reduced COVID-19 rates to manageable levels in most of the world by the mid-2020s. The US has sought to strengthen its influence in Latin America as a production geography and emerging market. China has done the same through much of Asia. The EU and China have each tried to gain dominance in Africa. China and the US have increasingly competed in a “space race” for AI supremacy.

Challenges to the global cotton supply drove diversification of cotton production regions, with investment in more vertically integrated supply in South Asia, Latin America, and Africa. Input volatility also accelerated investment in fiber recycling, which began to reach industrial scale around 2025. Clothing recycling has been rapidly growing in the West on a regional level.

Disruptions to global supply chains also accelerated investments in automation and the reshoring of some production in the West. However, regional competition diminished the push for policies that would ensure decent work and inclusive growth, particularly for informal and unorganized workers. Meanwhile, the reduction of global capital mobility has closed many tax loopholes for multinational corporations.

India saw nationalism intensify domestically but managed to avoid getting pulled into damaging trade wars and was able to position itself as a trading partner of each of the three major blocs. It focused on a self-sufficiency strategy first, then turned its attention to export.

The passing of the Garment Worker Protection Act, initially in California, improved the rights and livelihoods of garment workers in the US. Increasing due diligence legislation in the EU and elsewhere has seen transparency and some worker conditions improve. The piece pay rate system commonly used across the industry has come under even greater scrutiny with the advance of circular models.

Key Themes

WORKERS



Automation and reshoring have reduced jobs in traditional production countries, though new jobs have been created globally in technology, quality assurance, repair, collection, and

reverse logistics. Demand for skilled labor has grown, particularly for reuse models, and circularity has brought more diversity and creativity to workers' daily tasks (e.g., undertaking both sales and basic repairs). In new roles, job quality varies widely. Tech-enabled gig employment has grown globally, especially in logistics and fulfillment. Efforts are underway to address poor working conditions and high levels of informality in the recycling sector. Rental and subscription models have enabled some brands to test new models for product and worker payments.

UNDERREPRESENTED GROUPS



Job losses in production and retail are impacting women, migrant, and younger workers in all regions. Though circularity has created new roles, the higher quality ones are frequently inaccessible for women

and other marginalized communities with less access to STEM training. To promote workers' rights despite regional fragmentation, NGOs and unions are creating a garment supply chain workers collective to unite all types of workers in the industry to have voice and demand change across the entire supply chain.

Economic model – Global average fashion sector wages for low-skill workers have declined by 3.3 percent compared to today. High skill workers have seen their wages increase 6.1 percent.

INDIA



Volatility in the global cotton market has brought investment to India, which seeks to raise productivity, grow organic production, and address the human rights concerns of international buyers.

Growth in fast fashion has continued, and most Indian consumers are driven more by price than sustainability. However, the upper middle class is increasingly interested in more sustainable and circular models of fashion production. Guided by a self-sufficiency strategy, India initially concentrated on serving growing demand of its own market and then exporting its traditional regional fabrics and garments around the world. The waste management and segregation sector is starting to formalize and integrate more technology.

Economic model – Fashion sector jobs in India have increased almost 3 million from today. About 2.8 million of this is low-skill roles in fashion manufacturing and another 233,000 is low-skill roles in sorting, recycling, and resale.

TRADE RELATIONS AND GEOPOLITICS



Geopolitical instability and regional fragmentation have created a complex operating environment for international businesses, as well as opportunity for many traditional production countries.

Local brands and regional trade in Asia have enjoyed a boom, and Pan-African trade routes have bolstered continental trade. The West and China seek to secure influence in lower income production countries with increased development aid and the inclusion of social and environmental protections in trade deals. Some large businesses work to the highest standards, others seek to arbitrage regional differences, while still others have withdrawn from global markets.

TECHNOLOGY DEVELOPMENT



Most pre-consumer waste is recycled, and post-consumer textile recycling is rapidly increasing in Europe and the US.

Manufacturers in different regions have vertically integrated with recyclers to serve international brands' demands for recycled inputs. Though automation in recycling has advanced, low income roles remain widespread in sorting. Product-level digital IDs are helping to extend value sharing deeper into the supply chain and to valorize durability of items used in rental models.

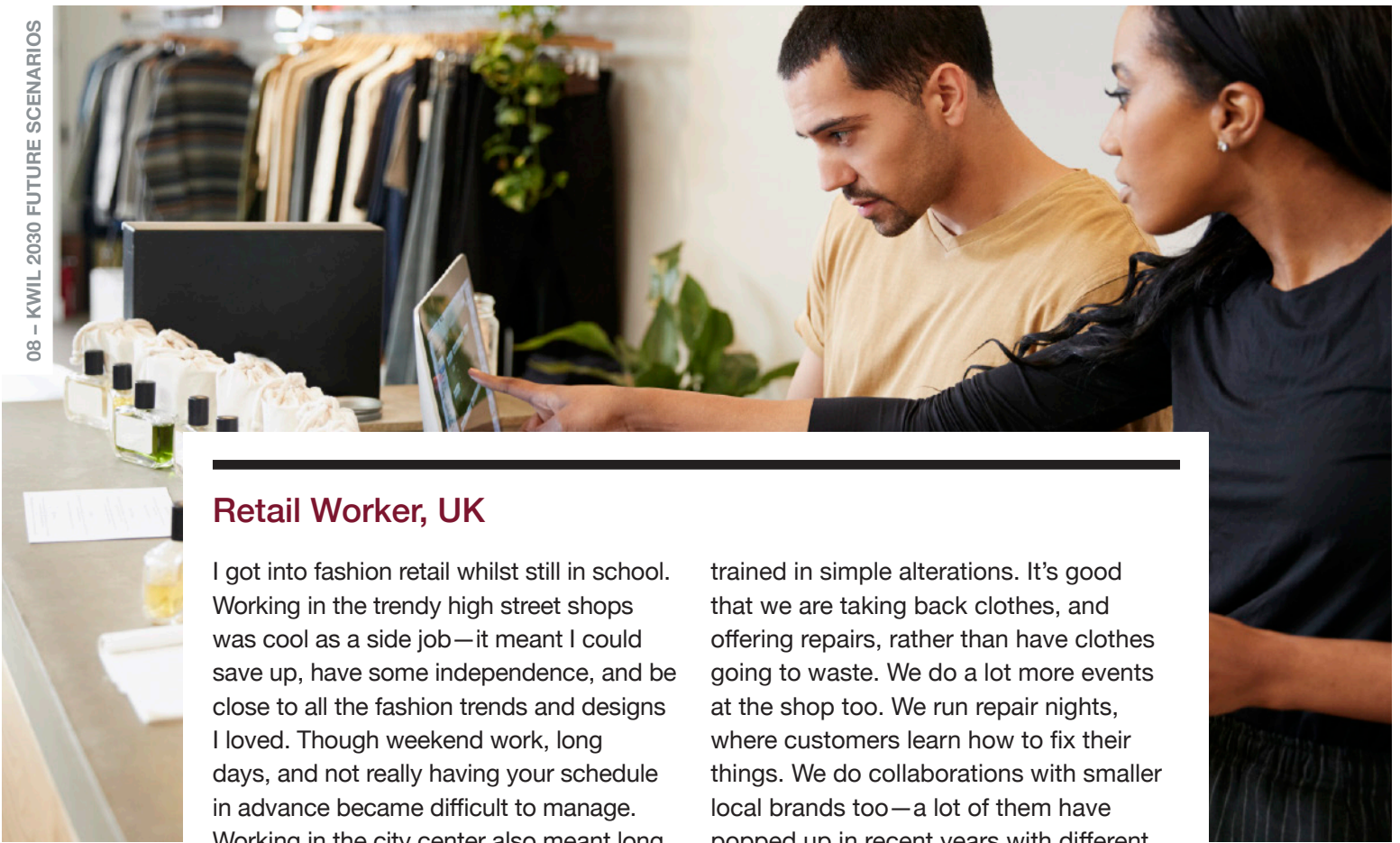
Economic model – 532,000 low-skill jobs in sorting, recycling, and resale are created compared to today.

CLIMATE ACTION



Growing climate impacts have bolstered national and regional climate policies and action, despite the lack of global cooperation. Investment in green

technology is significant and transfer of such technologies is used by the major powers to increase their influence. Consumer interest in sustainability has risen in most regions, driven by increasingly acute climate impacts and revelations of poor labor practices in global supply chains.



Retail Worker, UK

I got into fashion retail whilst still in school. Working in the trendy high street shops was cool as a side job—it meant I could save up, have some independence, and be close to all the fashion trends and designs I loved. Though weekend work, long days, and not really having your schedule in advance became difficult to manage. Working in the city center also meant long commutes, living centrally is pricey.

Nine or ten years ago, our roles were simpler than today. We'd keep the shop tidy, sort the clothes, help monitor stock, and serve at the fitting room and the registers. We'd get clothes from all over—China, Vietnam, Turkey—not that people paid that much attention. Then more and more stories came out about the damage fashion did to the planet, and the stories about the terrible conditions for the people making our clothes. As customers asked more and more questions about this, the brand I work for started sourcing from factories closer to here. It was a bumpy period when we started losing sales in Asia—many of us worried about losing our jobs.

I like it though, the new way we work. It's more interesting, helping customers choose basic designs and then customize them, and I finally get to express some of my creativity and ideas on design. We know more of the back story on the clothes too, where they came from and who made them is all linked to the tag. Some of my colleagues have also been

trained in simple alterations. It's good that we are taking back clothes, and offering repairs, rather than have clothes going to waste. We do a lot more events at the shop too. We run repair nights, where customers learn how to fix their things. We do collaborations with smaller local brands too—a lot of them have popped up in recent years with different sustainability stories. I like that my role is more varied, and the closer relationship with customers.

All the tech can be overwhelming though—the 3D scanning for fit, tracking info on local fashion trends and it seems like everything—repairs, taken-back clothes, quality assessments etc.—all have to be logged with machines. Customer data protection is a big thing. To be honest, working with all the tech has forced some of my older female colleagues out of retail. I don't want that to happen to me. I'd like to see if I can move up through some of my new tasks, and earn a better wage. There are parts of production and design in our roles now, so I wonder about opportunities there. It would be amazing to have a role more focused on design, but I hear there is a lot of competition. I'd always dreamt of starting my own fashion business, and it seems like there is lots of new ways to do this with the interest in repair and refashioned items. I am not sure where to start or how I could get investment though.

– Retail Worker, UK

09

Scale of Potential Job Impacts



In this section

Overall Results

India Results

US Results

Europe Results

KWIL's economist partners built a Computable General Equilibrium Model¹ to estimate the potential scale of job opportunity impacts linked to the anticipated growth of circular fashion. The economic modeling produced four scenarios:

- Three economic scenarios correspond with the KWIL 2030 future of fashion scenarios. They were produced by introducing different shocks to the model to simulate what is described in the scenario narratives in [Section 8](#). The main shocks include the rate of technological progress (i.e., in sorting, recycling, and automation), offshoring/reshoring trends, and wage policies affecting the cost of labor. The full list of shocks is included in the [Appendix, section 3](#).
- The **2030 “baseline scenario”** models a future with predicted GDP and population growth to 2030 and assumes a low

¹ A tool commonly used to evaluate policy decisions, conduct cost-benefit analyses, and simulate the development of “what-if” scenarios.

degree of increased automation. Predicted GDP and population growth are the same across all of the three KWIL scenarios and the baseline scenario serves as a comparative tool for them.

The model enables comparison of employment effects by scenario, across regions and by group of workers (male vs. female; high skill vs. low skill²; by occupation, by subsector). The three fashion subsectors in the model refer to the following and a table showing the full setup of the model, along with the assumptions made, is included in the Appendix, Section 3.

- **Fashion Manufacturing:** includes all workers (counted in the data sources) who are working the fashion manufacturing sector (traditional), with the 11 subsectors covered in the model.
- **Sorting, Recycling, Resale³:** includes all workers (counted in the data sources) who are working in the sorting, recycling, and resale of all textiles (and not clothing only). To confirm this does not include workers working in sorting, recycling, resale of inputs that could be transformed into fibers for clothing (e.g., plastic bottles that are transformed into recycled polyester).
- **Rental:** includes all workers (counted in the data sources) who are working in rental.

Overall Results

KWIL's economic scenarios analysis suggests large variations in the number of jobs that may be gained and lost across the fashion industry to 2030. Further, there is substantial variation between the potential outcome in each of the three KWIL scenarios and the 2030 baseline, in which **7.8 million** jobs were created in comparison to today. The variation between jobs today and what we see in the KWIL scenarios is a **range of 6.72 million jobs**, which is **over 11 percent** of the fashion value chain jobs included in the model. The **largest global net loss** of jobs across the scenarios is **almost 900,000 jobs—a decrease of 1.5 percent** compared to the number of jobs today—and the **largest net global gain is almost 6 million jobs—an increase of almost 10 percent** compared to jobs today.

Looking at specific regions, the variance in job losses/gains across the scenarios is significant, with China, India, and the rest of the world seeing the biggest impact. The **variation in India**, for instance, is **5.3 million jobs**. The model did not have sufficient data on informal workers, and so impacts on informal workers are excluded in these numbers, as are impacts on retail workers, which could be likewise significant. Both the substantial global and regional variations highlight the need for proactive planning around potential jobs shifts in the fashion value chain. Even where job opportunities are created, intentional action is needed to ensure that these jobs are decent jobs.

2 While we discuss skill levels in this report, we recognize having a low income job does not mean that a worker has a low skill level. In order to explore the impacts of the circular transition on workers and wages etc., our economic modelling used the occupational comparison from the International Standard Classification of Occupations 2008. This groups various skill levels into high and low skill categories to facilitate international comparisons of occupational statistics and to serve as a model to countries developing their national occupational classifications. It is supported by the international community as an accepted standard of international labor statistics. Details on the ISCO08 classification and the corresponding skill linkages and definitions are provided in the Appendix, Section 3.

3 The Rental sector, and the Sorting, Recycling and Resale sector, are sectors constructed for the model using various sources (reports, fashion websites, etc., that provided partial information on the size of production or consumption for the regions of interest; export and import sizes are taken from a valid source, World Integrated Trade Solution WITS).

Cross-scenario changes in fashion

JOB CHANGES ACROSS THE 3 SCENARIOS

Highest potential net loss
Faster & Greener

-878

Baseline 2030: 7,793

Highest potential net gain
Rise of the Regions

5,847



Biggest loss

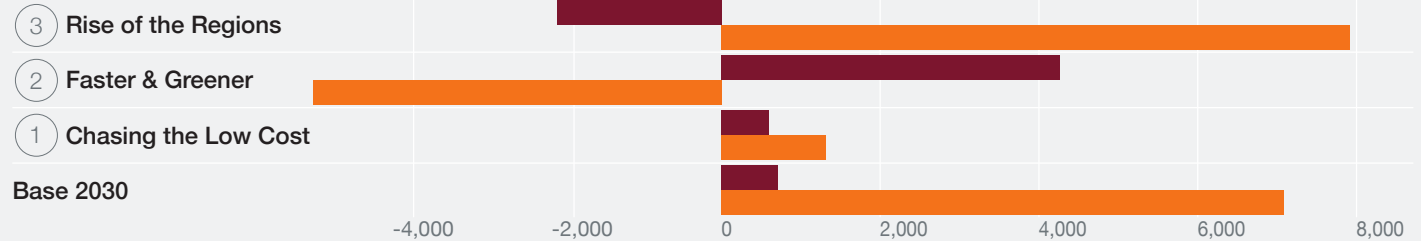
Biggest gain

MEN	2	3
-5,147		7,921
WOMEN	3	2
-2,074		4,269

Numbers in '000 of workers

Number fashion workers today: 59.2 M

JOB CHANGES ACROSS SCENARIOS BY GENDER



Cross-scenario changes

Biggest growth: RoW

Biggest loss: China

Regions with largest changes across scenarios:



China



India



US

Regions with least change:



RoW

Region with most job growth across scenarios:

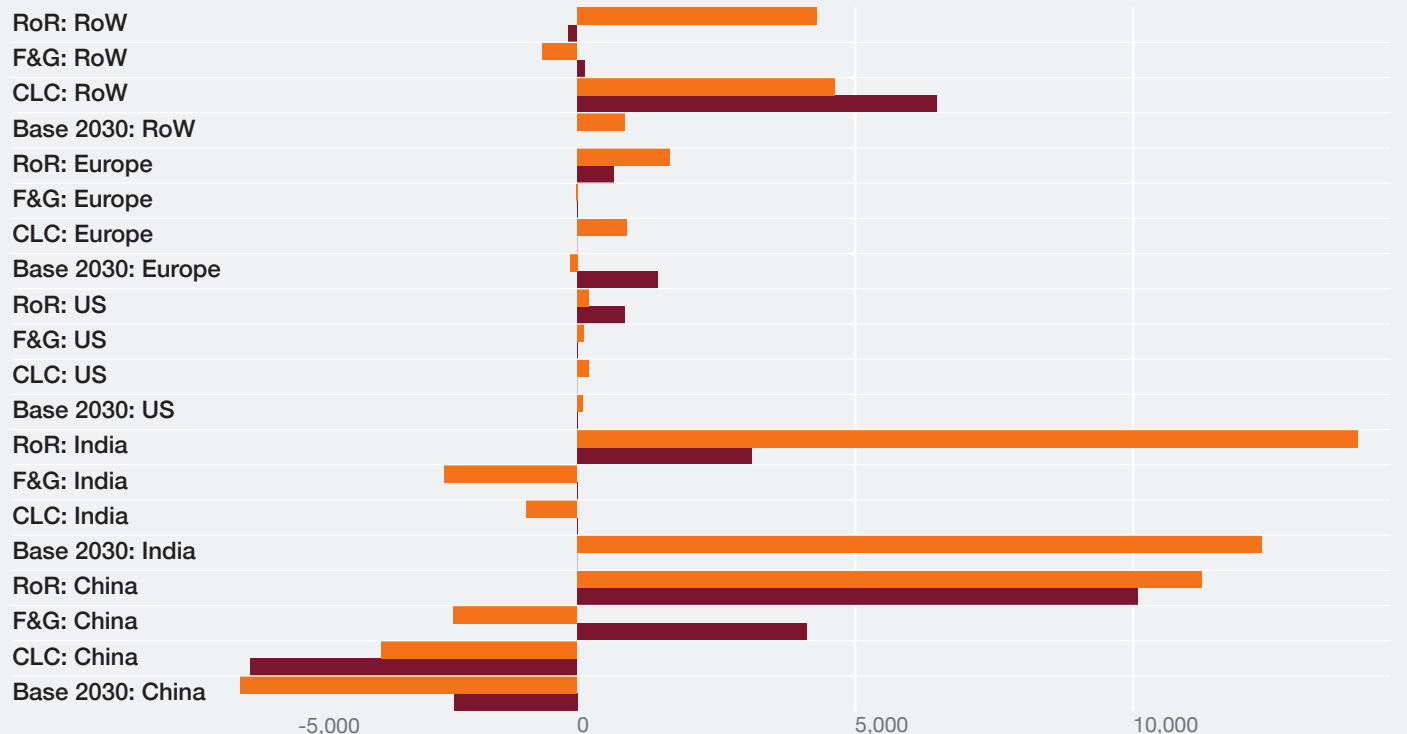


MEN	1	1
4,629		-3,514
WOMEN		
6,475		-5,876

Numbers in '000 of workers

Number fashion workers today: 59.2 M

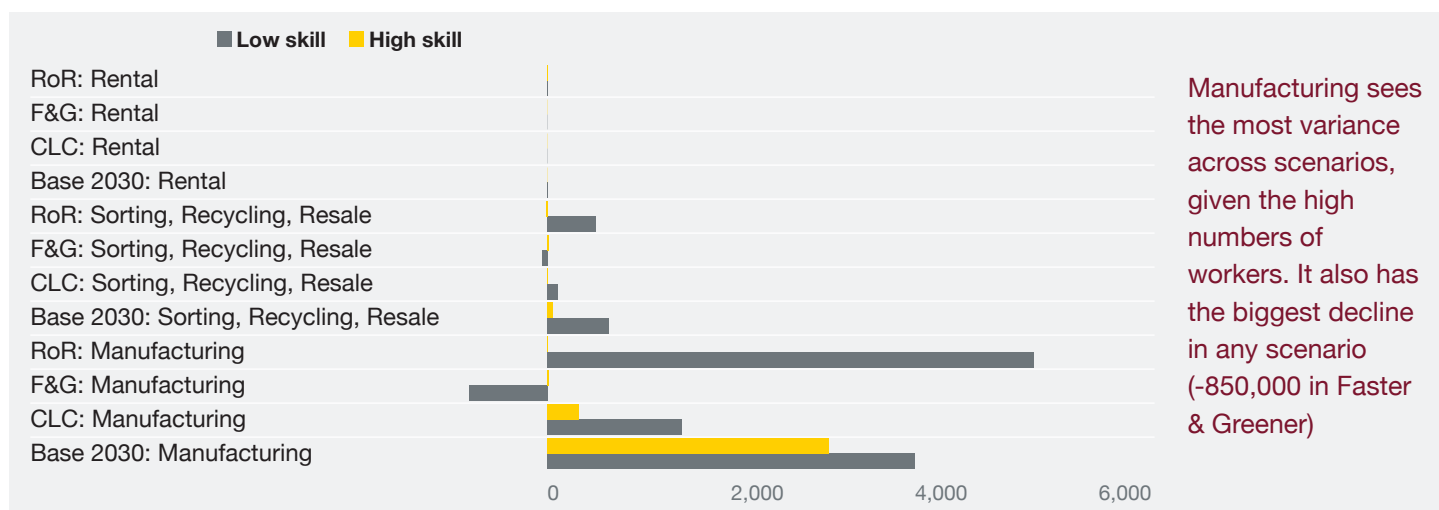
BY REGION



Job opportunities in the fashion sector

As might be expected, the largest change witnessed in number of jobs is in the fashion manufacturing sector—the largest fashion subsector in the model. It sees the highest variation across scenarios and the biggest decline in any scenario (–850,000 jobs in Faster and Greener). Sorting, Recycling, and Resale see the next biggest impacts. In both subsectors, low-skill job numbers are impacted the most. There are no notable changes in jobs in the small rental sector when the aggregate global fashion industry is considered, however, at the regional level we will see some more pronounced changes.

Cross-scenario changes in fashion by sub-sector & skill



The biggest gains for female jobs are seen in Faster and Greener (almost 4.3 million, or a 19 percent increase), with the biggest loss seen in Rise of the Regions (almost 2.1 million, or -9 percent). For men, the biggest gains are in Rise of the Regions (almost 8 million, or a 22 percent increase) and the largest losses are in Faster and Greener (over 5.1 million, or -14 percent).

Wage effects

Global average low-skill wages in the fashion sector **decrease** across the 3 KWIL scenarios from around **-1.4 percent** in Faster and Greener to **-3.3 percent** in Rise of the Regions. For global **average high-skill wages** the picture is mixed across scenarios, with gains in Rise of the Regions (6.1 percent) and Chasing the Low Cost (0.5 percent) and a reduction in Faster and Greener (-1.3 percent).

Generally, the increase in high-skill wages combined with no significant changes in employment suggests **relative excess demand for high-skill workers**. The opposite relationship observed in the case of low-skill wages suggests **a relative excess supply** (or rigidity of demand) **of low-skill workers**.

Comparing with the wage changes in the whole economy, the wage change patterns in the fashion sector reflect the changes in the whole economy but with a larger magnitude—the wage effects are up to twice as large in the case of both

high-skill and low-skill wages. This suggests higher volatility in the wages in the fashion sector relative to the rest of the economy which, considering the existing low wages in the industry, reinforces the need for supportive policies for low income workers in the sector and collective effort to achieve a living wage.

A detailed breakdown on wage impacts by region, scenario and fashion sub-sector can be found in the [Appendix, Section 3](#).

Changes across scenarios in India

JOB CHANGES ACROSS THE 3 SCENARIOS

Highest potential net loss
Faster & Greener ²

-2,384

Baseline 2030: 12,312

Highest potential net gain
Rise of the Regions ³

2,980



Biggest loss

Biggest gain

MEN

²

-2,387

³

2,906

Smallest gain

WOMEN

²

3

74

³

Numbers in '000 of workers

Number fashion workers today: 14.2 M

Job losses/gains in India are driven by changes in low-skill manufacturing for men. Women's roles are least responsive to changes, they stand to have the least losses, but also the least gains across the scenarios.

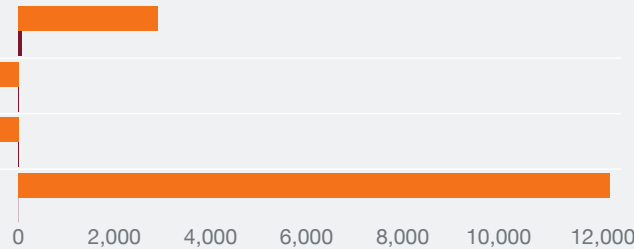
Considerable low-skill job losses in manufacturing in 2 scenarios (approx. 1 M and 2.5 M).

Limited growth in high-skill roles in Sorting, Recycling, Resale.

BY GENDER

- ³ Rise of the Regions
- ² Faster & Greener
- ¹ Chasing the Low Cost

Base 2030



BY SKILL LEVEL

■ Low skill ■ High skill

RoR: Rental

F&G: Rental

CLC: Rental

Base 2030: Rental

RoR: Sorting, Recycling, Resale

F&G: Sorting, Recycling, Resale

CLC: Sorting, Recycling, Resale

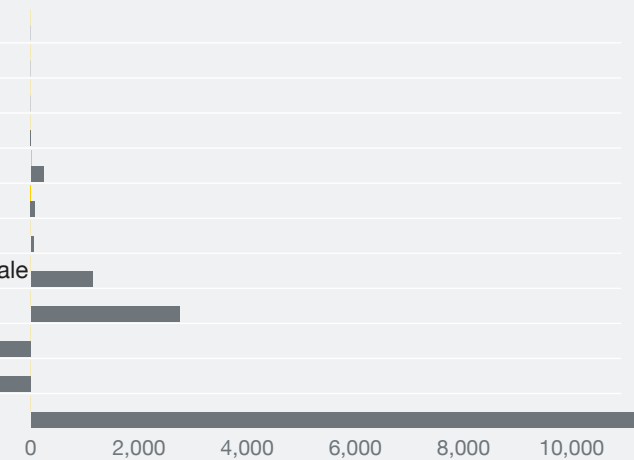
Base 2030: Sorting, Recycling, Resale

RoR: Manufacturing

F&G: Manufacturing

CLC: Manufacturing

Base 2030: Manufacturing



India Results

Job opportunities in the fashion sector

In India, 14.2 million jobs are counted in the fashion industry in the model today, though as noted this excludes informal workers, of which there is a very significant number in India.⁴ The baseline 2030 scenario, the scenario that does not have shocks associated with circularity or trade relations etc., sees a major

⁴ It's estimated that in India 90 percent of workers are in the informal economy.

increase of workers in the sector of 12.3 million, mainly men’s jobs. It’s important to note that lack of data on female workers influences the results, meaning it was not possible for the model to accurately explore the impacts on female workers. The continued job creation that we see in the baseline corresponds with the interviews conducted among fashion industry participants, experts, and stakeholders in India who all expect continued job growth to 2030. However, there is a dramatic difference between the baseline 2030 scenario and all three KWIL scenarios. The scenario with the biggest job growth compared to today (Rise of the Regions) adds almost 3 million jobs, but this is just a fraction of the jobs created in the baseline. The scenario with the biggest job losses (Faster & Greener) sees a shrinking of almost 2.3 million jobs compared with jobs today.

The fashion manufacturing sector has the most volatility across scenarios. There are considerable low-skill job losses in two of the three scenarios (approx. 1 million in Chasing the Low Cost and 2.5 million in Faster and Greener). The Sorting, Recycling, Resale subsector has some growth in low-skill roles (44,000–233,000 roles) and limited growth in high-skill roles.

Female jobs grow in all three KWIL scenarios, with the biggest gains seen in Rise of the Regions (almost 74,000), and the smallest gains in Faster and Greener (3,000). For men, the biggest gains are in Rise of the Regions (2.9 million) and the largest losses are in Faster and Greener (almost 2.4 million).

Job opportunities in other sectors:

Considering the available conditions and/or disruption to jobs in the fashion sectors—particularly disruption for men’s jobs and low-skill jobs in India—workers may be attracted to or forced to find work in other sectors. For instance, the jobs created in the Sorting, Recycling, and Resale sector in scenarios with significant loss of low-skills jobs in manufacturing is only a small fraction of the jobs that are reduced. The sectors with bigger changes in women’s employment with which the fashion sector may interact are:

♀	Agricultural production	All scenarios
	Business services (other)	① Chasing the Low Cost ② Faster & Greener

Growth in men’s employment has more diversity of sectors:

♂	Agricultural production	All scenarios
	General manufacturing	① Chasing the Low Cost ② Faster & Greener
	Wholesale and retail trade	② Faster & Greener ③ Rise of the Regions
	Processing food products	① Chasing the Low Cost ③ Rise of the Regions
	Business services (other)	② Faster & Greener ③ Rise of the Regions
	Transport services	① Chasing the Low Cost

For both genders, population growth contributes to the increases in numbers of overall workers—it may add around 10 million workers per year.

Wage effects

Indian **average low-skill wages** in the fashion sector **decrease** across the three KWIL scenarios from around **-0.6 percent** in Chasing the Low Cost to **-1.8 percent** in Rise of the Regions. For Indian average high-skill wages the picture is mixed across scenarios, with gains in Rise of the Regions (7.6 percent) and Chasing the Low Cost (4.6 percent) and a reduction in Faster and Greener (-1.3 percent).

Generally, the increase in high-skill wages combined with no significant changes in employment suggests **relative excess demand for high-skill workers in India**. The opposite relationship observed in the case of low-skill wages suggests **a relative excess supply (or rigidity of demand) of low-skill workers**.

Compared with the wage changes in the whole economy, the wage change patterns in the fashion sector resemble the changes in the whole economy but with a larger magnitude especially in the high-skill wages segment (about twice as large in the case of wages for high-skill roles). This suggests **higher volatility in high-skill wages in the Indian fashion sector**.

Changes across scenarios in the USA

JOB CHANGES ACROSS THE 3 SCENARIOS

Smallest potential net gain
Faster & Greener (2)

110

Baseline 2030: 96

Highest potential net job gain
Rise of the Regions (3)

212



Biggest gain Smallest gain

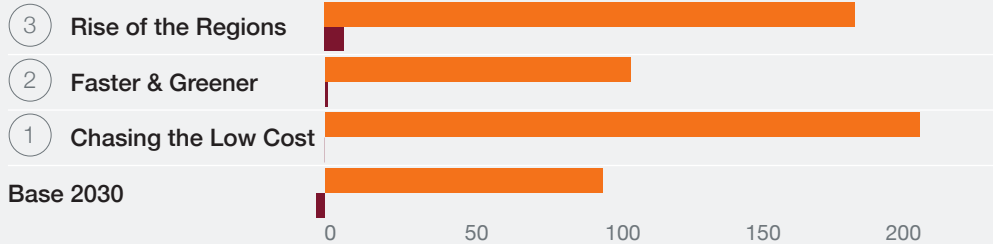
MEN	212 (1)	109 (2)
WOMEN	7 (3)	0 (1)
Neutral		

Numbers in '000 of workers

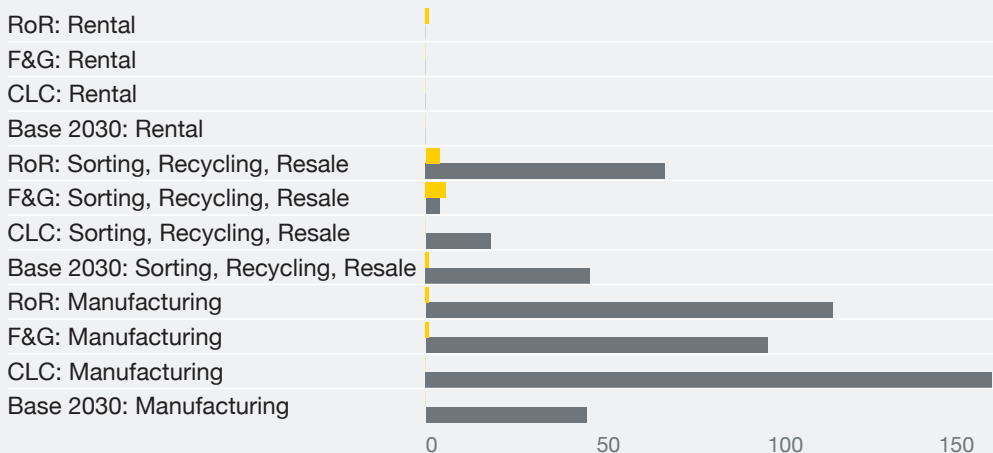
Number fashion workers today: 0.865 M

Growth in men's jobs across the scenarios, with little to no increase in jobs for women.

BY GENDER



BY SKILL LEVEL



Growth in low-skill manufacturing jobs across all scenarios.

Sorting, Recycling, Resale sees potential largest increases in high-skill roles.

US Results

Job opportunities in the fashion sector


The US has the smallest number of fashion industry jobs in the model today: **865,000**. Among the US, Europe, and India, the US is the only focus region that sees job gains in each of the three KWIL scenarios, with larger job gains for each than in the baseline 2030 scenario. The scenario with the biggest job growth compared to today (Chasing the Low Cost) adds around 212,000 jobs.

Low skill manufacturing jobs see growth across all scenarios (up to 192,000 in Faster and Greener). The Sorting, Recycling, Resale subsector sees the largest potential increases in high-skill roles (up to 6,000 jobs in Faster and Greener).


Female jobs are either neutral (in Chasing the Low Cost) or grow, with the biggest gains seen in Rise of the Regions (around 7,000). For men, fashion sector jobs grow in all three KWIL scenarios, with the biggest gains seen in Chasing the Low Cost (212,000) and the least gains in Faster and Greener (109,000).

Job opportunities in other sectors:

Considering the available conditions and/or disruption to jobs in the fashion sectors, workers may be attracted to or forced to find work in other sectors. The sectors with bigger changes in women’s employment with which the fashion sector may interact are:

	Agricultural production	② Faster & Greener ③ Rise of the Regions
	Business services (other)	① Chasing the Low Cost ② Faster & Greener
	Wholesale and retail trade	① Chasing the Low Cost ③ Rise of the Regions

Growth in men’s employment has more diversity of sectors:

	Agricultural production	② Faster & Greener ③ Rise of the Regions
	General manufacturing	② Faster & Greener
	Wholesale and retail trade	All scenarios
	Processed food products	③ Rise of the Regions
	Business services (other)	All scenarios

For both genders, population growth contributes to the increases in numbers of overall workers—it may add around 1 million workers per year.

Wage effects

US **average low-skill wages** in the fashion sector **decrease** across the three KWIL scenarios from around **-2.3 percent** in Faster and Greener to **-5.3 percent** in Rise of the Regions. US **average high-skill wages** see growth in all scenarios, ranging from **0.6 percent** in Faster and Greener to **12.6 percent** in Rise of the

Regions. are A notable exception to low/high-skill wage changes in Rise of the Regions is the rental sector, where low-skill wages increase substantially (almost 25 percent) and decline for high-skill workers (by about 21 percent).

Generally, the increase in high-skill wages (especially in manufacturing) combined with no significant changes in employment suggests **relative excess demand for high-skill manufacturing workers** in the US. The opposite relationship observed in the case of low-skill wages suggests a relative excess supply of low-skill workers in the US.

Compared with the wage changes in the whole economy, the wage change patterns in the fashion industry broadly resemble the changes in the whole economy but with a larger magnitude, both for high- and low-skill wage segments. Thus, overall, the fashion industry appears more prone to wage shocks relative to the rest of the economy.

Changes across scenarios in the Europe

JOB CHANGES ACROSS THE 3 SCENARIOS

Highest potential net loss
Faster & Greener (2)

-24

Baseline 2030: 1,311

Highest potential net job gain
Chasing the Low Cost (1)

894

Biggest loss

Biggest gain

MEN

-19 (2)

895 (1)

WOMEN

-5 (2)

24 (3)

Numbers in '000 of workers

Number fashion workers today: 2.1 M

BY GENDER

(3) Rise of the Regions

(2) Faster & Greener

(1) Chasing the Low Cost

Base 2030

0 500 1,000 1,500

BY SKILL LEVEL

■ Low skill ■ High skill

RoR: Rental

F&G: Rental

CLC: Rental

Base 2030: Rental

RoR: Sorting, Recycling, Resale

F&G: Sorting, Recycling, Resale

CLC: Sorting, Recycling, Resale

Base 2030: Sorting, Recycling, Resale

RoR: Manufacturing

F&G: Manufacturing

CLC: Manufacturing

Base 2030: Manufacturing

0 300 600 900 1,200

Women's job gains in the baseline scenario are driven largely by Technicians & Professionals. Only RoR shows a marginal gain for women in the scenarios in Agricultural & Unskilled workers.

Manufacturing sees potential low-skill job loss in the 2030 base and 1 scenario.

Manufacturing sees the most potential for high-skill job increases across scenarios.

Europe Results


Job opportunities in the fashion sector

In Europe, **2.1 million** jobs are counted in the fashion industry in the model today. The scenario with the **biggest job growth** compared to today (Chasing the Low Cost) adds around **894,000 jobs**. The scenario with the **biggest job losses** (Faster and Greener) sees a decrease of almost **24,000 jobs** compared with jobs today. The baseline 2030 scenario, the scenario that does not have shocks associated with circularity or trade etc., sees a major increase in high-skill worker roles and in women’s jobs, neither of which is realized in any of the three KWIL scenarios once shocked are introduced. As expected, the fashion manufacturing subsector, as the largest of the three subsectors, sees the biggest gains/losses in terms of numbers of jobs and also experiences the most volatility. It sees losses of low-skill jobs of 107,000 in Faster and Greener and a gain of about 213,000 such roles in Rise of the Regions. It is the subsector with growth in high-skill roles in two of the three scenarios.


Female jobs see the biggest growth in Rise of the Regions (around 24,000) and the largest losses in Faster and Greener (5,000). For men, the biggest gains occur in Chasing the Low Cost (895,000) and the biggest losses in Faster and Greener (19,000).

Job opportunities in other sectors

Considering the available conditions and/or disruption to jobs in the fashion sectors, workers may be attracted to or forced to find work in other sectors. The sectors with bigger changes in women’s employment with which the fashion sector may interact are:

	Business services (other)	① Chasing the Low Cost ② Faster & Greener
	Wholesale and retail trade	① Chasing the Low Cost ③ Rise of the Regions
	Transport services	① Chasing the Low Cost ② Faster & Greener
	Manufacturing (other)	② Faster & Greener

Growth in men’s employment has more diversity of sectors:

	Agricultural production	③ Rise of the Regions
	General manufacturing	All scenarios
	Wholesale and retail trade	All scenarios
	Transport services	③ Rise of the Regions
	Processed food products	③ Rise of the Regions
	Business services (other)	② Faster & Greener ③ Rise of the Regions
	Mining and extraction	① Chasing the Low Cost

For both genders, population growth contributes to the increases in numbers of overall workers—it may add around **3 million** workers per year.

Wage effects

In Europe the picture across the three KWIL scenarios for average high and low-skill wages in the fashion sector is mixed. **Average low-skill wages** see **decreases between 2.1 percent** in Rise of the Regions **and 4.5 percent** in Chasing the Low Cost and an **increase of 1.4 percent** in Faster and Greener. **Average high-skill wages** see a **decline** in only Faster and Greener (–3.9 percent), and see **increases of between 3.7 percent** in Rise of the Regions and **4.6 percent** in Chasing the Low Cost.

Generally, the increase in high-skill wages (the predominant trend) combined with no significant changes in employment suggests **relative excess demand** for high-skill workers in Europe, but this relationship is more mixed than in India and the US. The opposite relationship observed in the case of low-skill wages suggests a **relative excess supply of low-skill workers in Europe**, again with a higher heterogeneity than in the other two regions.

Compared with the wage changes in the whole economy, the wage change patterns in the fashion industry broadly resemble the changes in the whole economy but with a much larger magnitude (about twice as large), both for high and low-skill wage segments. Thus, overall, the fashion industry appears more vulnerable to wage shocks relative to the rest of the economy.

10

Challenges & Opportunities



In this section

Workers' rights and protection

Automation and digitalization

New models of worker organization

Alternative economic opportunities and skills

Through a series of workshops, economic modeling, expert interviews, and job quality surveys, our research has identified several key challenges and opportunities for job quality and availability as the industry transitions to a more circular model.

Challenges and opportunities can be broadly categorized as those emerging specifically from the transition (e.g., the emergence of new roles), and those historical challenges that, without being addressed in the transition, will continue in the new circular fashion industry. It is important to stress that the transition to a circular fashion industry does not automatically translate into an improvement in job quality. Instead, the transition offers a crucial opportunity to intentionally redesign the system and the roles within it so that the industry may tackle the twin problems of environmental challenges and existing job quality concerns.

Workers’ rights and protection

One of the key challenges underpinning the current quality of roles for workers across the value chain, particularly for garment workers, is the need to strengthen workers’ rights and protection. To do this, the industry must address the current unequal power dynamics between brands and suppliers and their workers that have historically undermined the health and safety, rights, and livelihoods of workers. Without addressing the current power structures and resulting practices, there is a risk that the most disenfranchised and marginalized workers will be left behind in the transition. If current established operating norms¹ in the industry prevail, the current challenges on job quality will be perpetuated in the circular fashion industry, and new roles such as waste picking, sorting, and repair will emerge and/or grow with the same challenges as existing roles in the industry. Additionally, there is a further need to strengthen workers’ rights and protection as there is a risk that the circular transition may mean workers in parts of the industry, or in certain regions, face fewer available jobs. This could place a downward pressure on job quality and wages in the absence of appropriate worker rights and protection.



Workers’ representation and unionization—Learnings from a just transition process in the energy sector

Diablo Canyon is a commercial nuclear power plant in the state of California. As a result of public pressure from environmental activists and organizations, Diablo Canyon’s core investor, Pacific Gas and Electric (PG&E), decided in 2016 not to renew its license and negotiated with the union representing the plants’ workers a transition period of eight to nine years. As part of the deal, the union negotiated a generous retention package for workers. The agreement also contains benefits for the community because the facility is one of the largest employers and taxpayers in the region.

Likewise, as PG&E was seeking to invest in energy efficiency, renewable energy, and energy storage, the deal also contemplated capacity building by investing in infrastructure and technology and reskilling workers in the plant to avoid its complete closure.

“Both unions and civil society describe the Diablo Canyon closure plan as a good example of a just transition process.”

Source: Just Transition, A Report for the OECD, Just Transition Center, 2017

¹ By operating norms within the industry/industry norms, we mean ways of doing business that are typical in the garment and textile industry. This would include the roles, responsibilities, and risks undertaken by brands and retailers, manufacturers, and other supply chain actors and how they interact with each other. Commercial terms and how prices are set are also included in these norms.

Historically, workers’ protections are undermined by their “lack of voice” and limited opportunities for collective bargaining, especially for informal workers, along with a limited scope and enforcement of labor protections in some production countries, including the lack of protection for informal workers within the current scope of labor protection. Of Indian workers surveyed, only 46 percent know about the presence of a union in the workplace. To ensure the transition to circularity is used as an opportunity to address existing job quality concerns in the industry and avoid further challenges, it is essential that workers are placed in the center of the transition. Social dialogue between employers and workers and their representative is critical to the process of designing the new system and roles, and ensuring a just, fair, and inclusive transition.

Furthermore, lack of social protections is another key challenge across all roles, and in the transition to circularity leaves workers little option but to take on jobs with poor working conditions and precarious work. This is particularly true for waste collectors and sorters, where there are high levels of informality and limited social protections. The COVID-19 pandemic brought to light these gaps, with many waste pickers being excluded from government support schemes in the early stages of the pandemic. For example, in Dehli other groups working in the informal sector were supported by the government and received compensation of 5,000 rupees while waste pickers were not included.^{2,3}

Current levels of harassment and discrimination, including violence against women, also pose an ongoing challenge to a just, fair, and inclusive transition to the circular economy. According to a worker representative in India, the pandemic has increased levels of harassment due to the declining number of available roles. This serves as an example of how disruptions to the industry can exacerbate the issue. Harassment and discrimination could also be worsened by the need to acquire new skill sets to access new roles leading to increased vulnerability of workers in the face of declining job availability. Further, we could see workers, particularly those with existing vulnerabilities including women and migrant workers, moving into more precarious roles in the industry, or in new industries altogether. Additionally, some of the roles expected to expand under a circular economy have historically faced high levels of discrimination and harassment. In India, recycling workers surveyed reported higher levels of harassment than garment workers. Waste pickers are known to face discrimination from broader society and harassment from law enforcement, and women waste pickers have historically experienced sexual and physical abuse from private security forces, law enforcement, and other workers.⁴ In Europe and the US, worker surveys revealed that workers in logistics and garment collection reported the highest levels of harassment—roles expected to increase in the circular economy.

Traditionally, retail platforms and brands have invested significantly in understanding their consumer markets, and there is less focus on understanding production markets and the supply chains. This lack of depth in supply chain

² Silpa Kaza, “Waste workers are protecting our communities during COVID-19,” World Bank Blogs, April 9, 2020.

³ Preeti Mehra, “,” Hindu Business Line, April 8, 2020.

⁴ https://www.wiego.org/sites/default/files/publications/files/LC_WIEGO_Briefing%20Note%20Violence%20in%20the%20workplace%20EN%20for%20web.pdf.

transparency is both a challenge and an opportunity for the circular economy. In pursuing a circular economy, brands will have to go deeper on their supply chains and understand their raw material inputs.

Automation and digitalization

The rollout of more automated systems in the industry is likely to impact job availability, skills profiles, and quality and will grow in tandem with the shift to circularity. Technological advances such as automation and AI bring the opportunity to enable circularity and better connect the two parts of the supply chain, bringing new levels of transparency and traceability. While significant technological bottlenecks such as dexterity remain, it is difficult to forecast the speed of technology adoption. Research from BetterWork⁵ suggests that there will not be a sizeable job loss in the industry in the near future, and instead points to greater worker-machine collaboration.⁶ However, on a 2030 time frame, the extent of automation in the industry is unclear. KWIL's economic modeling revealed the scenario with the highest levels of technology and recycling as the scenario with the highest potential job loss in the industry, with the majority of job loss coming from low-skilled manufacturing and agriculture jobs. As it rolls out, automation in the industry will elevate the need to reskill and upskill workers in the industry. This will be felt to reskill workers due to job transformation and/or decline linked to circularity. Research suggests that there will be both a deskilling and upskilling of workers as automation and semi-automation make certain roles easier, such as the stitching of footwear uppers or hemming apparel.⁷ Automation may also require more technical skills for machine operation across multiple machines, programming, and maintenance.⁸ Automation is expected to impact not only the number of jobs available, and their skills need, but also the job quality through changes to the working conditions and earnings. A more automated industry would require less physical work, and provide opportunities to improve the operational health and safety of many roles. With appropriate skilling and people-centered planning, automation can lead to enhanced creativity and diversity of the tasks being conducted and a move away from repetitive tasks that may be dull, dirty, or dangerous. However, it is important to recognize that, without the necessary progress and updates to labor standards to account for the changing nature of the work, automation does not guarantee better quality work. Automation runs the risk of increasing pressure on workers to work at a certain speed, as seen in other industries such as logistics. Similarly, regulation needs to keep pace with technology and the threats it poses to worker surveillance. The efficiencies gained from automation may also reduce overall earnings by reducing working hours.⁹ Furthermore, there is potential for automation to lead to reshoring of some parts of production as the cost and capabilities of technology improve. Some research suggests there may be a hybrid model in the future with reshored or near-shored production of high-

5 <https://betterwork.org/>.

6 https://betterwork.org/wp-content/uploads/2020/05/BW-Discussion-Paper-36-Automation_FINAL.pdf.

7 <https://apparelresources.com/business-news/manufacturing/automation-sewing-room-integrated-hemming-t-shirt/>.

8 https://betterwork.org/wp-content/uploads/2020/05/BW-Discussion-Paper-36-Automation_FINAL.pdf.

9 https://betterwork.org/wp-content/uploads/2020/05/BW-Discussion-Paper-36-Automation_FINAL.pdf.

quality or customized goods alongside low quality mass-produced goods in traditional production goods.¹⁰

As technology will evolve rapidly, a dynamic and holistic strategy that connects the industry needs with technical/vocational/skills development programs and social protections is essential. The private sector and public sector will need to work together to ensure more comprehensive social protection systems and coordinated skills strategies and programs (see [Recommendations 4 and 5](#)). Without which, there is a risk that workers skills will not keep pace with technological changes. This is especially true for workers that face existing vulnerabilities and inequalities such as migrant workers, women, and informal workers, including those in the gig economy. Such groups face a disproportionate risk with the shift to automation. Migrant workers face language barriers, social isolation, and structural challenges such as limited access to freedom of association¹¹ that make accessing reskilling programs challenging, and they are overly represented in informal roles¹² in the fashion value chain which may not have reskilling programs and social protections. Women are also more vulnerable to job loss from automation as they are overly represented in the roles likely to automate earlier, such as sewing lines. Social norms may also impact decisions to retain men over women, and there are a limited number of women involved in the decisions to retain workers given their



Upskilling for digital transformation with Shimmy

Shimmy uses AI-powered app-based training designed to upskill and reskill garment manufacturing workers. Shimmy believes that while automation can sometimes substitute for human work, it also—more importantly—has the potential to create new, more valuable, and more fulfilling roles for humans. Through lesson content in a fun, gamified learning app, Shimmy create interactive, engaging content that’s memorable and “sticky,” so it remains fresh in workers’ minds months after the training has been conducted.

Training on new machines and equipment with automated features cannot be conducted in a vacuum, with hyper-focus and attention paid only to the automated aspect of that machine. This leaves the worker unaware of the context in which that machine is being utilized. Instead, Shimmy aims through the Upskill app to train workers with lesson content spanning several disciplines so that they learn what’s happening across the factory in other departments.

In a Shimmy Upskill pilot conducted in a large Bangladesh garment factory in 2018, all pilot participants achieved promotions with corresponding wage increases within six months after participating in the Upskill training.

Shimmy began training female workers in Bangladesh garment factories in September 2021 as part of the H&M Foundation Future of Work Pilot in the country, and it anticipates that workers will have increased opportunity to move into more technical and advanced roles over time, such as multiprocess or multimachine operator roles.

Importantly, Shimmy applies a female-focused mental model as part of the training methodology to create a supportive environment for female garment workers to learn, explore, ask questions, and grow. This is underpinned by hiring an all-female staff of technical trainers, several of whom have worked in garment factories themselves.

¹⁰ https://betterwork.org/wp-content/uploads/2020/05/BW-Discussion-Paper-36-Automation_FINAL.pdf.

¹¹ <https://www.somo.nl/wp-content/uploads/2016/02/FactsheetMigrantLabour.pdf>.

¹² https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---declaration/documents/publication/wcms_554809.pdf.

underrepresentation in leadership roles. Women also have less STEM-based education than men, and are often overlooked for more technical roles and training.¹³ See [Section 11](#) for details on digital and technical skills needed for the circular economy.

New models of worker organization

Informal workers

Many of the roles that already support a circular fashion system are informal, including waste pickers and recyclers. Informal systems present a challenge in the transition to a circular economy. Within informal systems, workers may be more vulnerable to human rights abuses, including trafficking, child labor and forced labor, labor violations, poor working conditions, sexual harassment and discrimination, and lack of social protections. However, since a lot of these workers depend on the flexibility of the work and the easy access to entry level jobs, a blanket approach to formalizing these sectors may erode some of the benefits informality provides to workers, and may displace some of the workers. Instead, approaches to formalize community-organized or informal workers must consider how to preserve the benefits and capitalize on the opportunities that these systems offer, including: distributed work and opportunities for people, especially women, to work from home, and the community fiber and support systems that informal working communities provide, especially for women. There is also a wealth of lived experience within the informal sector on quality, recovery and usage potential of materials that needs to be included in any formalization plans. This would ensure continuity of informal workers' livelihoods while also improving the quality of their contribution to the efficient recovery of textiles. Addressing informality in a way that works with communities and their needs is critical. The industry must seek solutions on how to reach informal workers with new models that preserve the benefits of informality and community, while providing informal workers with much needed social protection, decent and stable wages, and representation.

Homeworkers

Homeworkers are an important part of the industry's supply chain and employment opportunities. It is estimated that there are 5 million homeworkers in the industry in India, with up to 58 percent of factories outsourcing some parts of production to homeworkers.¹⁴ Homework provides an opportunity for older workers, and women in particular, to find employment, overcoming several barriers they may face in accessing factory work, including gender norms, mobility, and domestic duties. There are opportunities for workers engaged in homework or other more independent models to engage in homeworker networks and improve skills, such as bargaining and financial literacy, etc. These more informal systems also offer the opportunity to connect with new models of distributed production and logistics that support new modes of consumption based on customization.

¹³ <https://www.shimmy.io/tech-for-women>.

¹⁴ Of 34 surveyed factories in Delhi and Bengaluru. <https://www.wiego.org/blog/worlds-most-vulnerable-garment-workers-arent-factories-and-global-brands-need-step-protect>.

Gig workers

Many of our expert interviewees pointed to a potential increase in gig economy workers as the industry transitions to circularity through expansion of roles such as drivers in logistics and reverse logistics. This expansion offers both an opportunity and a challenge. The gig economy, much like the informal economy, offers workers increased flexibility. However, the gig economy is currently facing several challenges on the contractual relationship of workers in several geographies and how to provide gig economy workers with benefits and protection. There is a need to define the regulatory framework around gig economy work in a circular fashion system.



Industree: Opportunities for workers in decentralized production

Industree’s producer-owned enterprise model of decentralized production moves previously informal workers into an enterprise model that gives them the security and some of the benefits of the formal employment economy. Decentralized production enables workers to enjoy a better quality of life in rural/small town production centers. The decentralized production centers are aggregated into professionally overseen networks with transparent and open communication and monitoring, powered by digital tools and platforms.

The decentralized production model has proven resilient in the pandemic, enabling both the pivot to work from home and providing security to vulnerable community members. Given that the model was already distributed, it was able to quickly pivot to a “Make from Home” model to restore income levels and employment, and enable women to take on extra care duties during the pandemic. The Make from Home model now provides opportunity for women who cannot work full days far from home, to work at will from home or nearby units. This has provided them with flexible and accessible employment options, enabling their economic empowerment. During the worst of the pandemic, the community-focused model was also able to provide emotional support and information on the pandemic and personal protection through calling circles, peer learning sessions, and mask-making kits.

E-commerce offers new opportunities for decentralized production models for open communication with consumers and brings new levels of transparency on wages, working conditions, environmental impacts, and producer stories. For example, Industree’s Flourish online store is a producer-owned e-commerce marketplace that includes price and wage transparency for consumers. To enable this model of production workers need to develop key skills, including digital literacy and digital financial literacy (especially when connected to e-commerce), and the ability to be effective in smaller order volumes.

The decentralized model has also enabled leadership skills and improved agency among women workers as leadership responsibility is distributed throughout the small units. In this model, workers rely on soft skills that enable them as leaders including governance, negotiation, listening, conflict-resolution, and problem-solving skills.

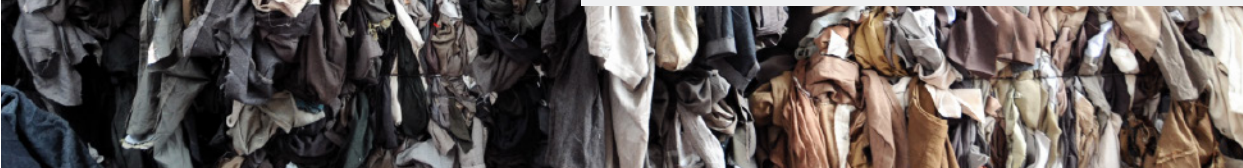
Alternative economic opportunities and skills

A key challenge identified through KWIL's research, is the limited upskilling opportunities currently available to most workers across the value chain. KWIL worker research found that upskilling and training correlates with a sense of job security (58 percent agree) and improved future prospects (59 percent agree) for workers. There is also a challenging ongoing discussion on the conflict between investing in upskilling or reskilling for the fashion industry with a potential decline in available roles, or investing in workers transferable skills to enable a transition to other industries. There is currently a disconnect between worker's expectations on their roles in the future and how jobs are likely to change. For example, in 10 years' time, 78 percent of the workers surveyed in India see themselves in the same position as today. However, our economic modeling has identified jobs in India as among the most volatile to changes across the scenarios, with a high risk of job loss in low-skill manufacturing and agricultural roles in certain scenarios.



Renewcell collaborates to re-employ timber, pulp, and paper workers

In 2020, as Swedish timber, pulp, and paper manufacturer SCA discontinued operations at its industrial site Ortviken in Sundsvall, Renewcell established textile recycling facilities at the site. Through collaboration between SCA and Renewcell, workers from SCA were able to be re-employed at Renewcell with some additional basic training. This has been extremely important and successful for both Renewcell and SCA, providing access to experienced workers for Renewcell and enabling SCA to responsibly redeploy its workforce. Through the collaboration, Renewcell was able to engage SCA employees to introduce Renewcell and its future plans. The two operations shared similarities in their processes which enabled Renewcell to provide new training that built on SCA workers' previous knowledge and experience within the traditional paper pulp industry. This previous experience in an adjacent industry is regarded as invaluable for Renewcell in training its new workforce. Renewcell believes that opportunities to use existing infrastructure with suppliers and workers as recycling operations scale will benefit both the recycling companies and society as a whole.



Some expert interviewers suggested a pragmatic approach that includes reskilling for alternative industries may be the best use of resources. Additionally, as many as 49 percent of workers surveyed in the EU and US have thought of working in a different industry. It is also important that the industry consider how workers are enabled to seek employment in alternative sectors, and what quality jobs

are available based on the transferable skills workers have. As such, there is an opportunity to enhance the transferable skills of workers in the industry including soft skills, creative skills, and management skills (see [Section 11](#) on futures skills needs). Additionally, some expert interviews discussed the potential for public job [guarantee schemes](#) to support workers transition to other industries, as alongside income, such schemes also enable skills development. Economic modeling revealed that the sectors with the largest growth in low-skill jobs were agriculture and agriculture products, business services, and manufactured products. Business services was the largest growth in high-skill jobs.

Additionally, as the industry transitions to a circular economy, there are several opportunities to enable grassroots entrepreneurs to fill current gaps in the circular economy, particularly in the post-consumer economy. Workers in the informal sector hold a lot of knowledge on how garment and textile waste is categorized, segregated, processed, and re-entered into the marketplace. Including informal workers in the circular economy ecosystem and enabling them as entrepreneurs could create quality jobs as part of a distributed network of small-scale entrepreneurs such as repair workers and waste handlers. To stimulate a circular system, as well as commercial opportunities and jobs, the industry needs to consider how it is enabling entrepreneurship through skills development and market access.

11

Preparing for the Transition



In this section

How are jobs changing in each circular model?

Challenges and opportunities for workers across the value chain

Which are the jobs needed for circularity?

How are skills needs changing?

Circular workers perceptions about their skill set

Divergent perceptions exist around what might happen to jobs as the industry migrates to a circular model. Some of our key informants believe that circularity is an opportunity to create more jobs in production and consumption countries as new roles will emerge, and existing linear jobs might not significantly decrease because many are still relevant in a circular production.

Others believe new jobs accompanying the circular transition will be mostly high-skill and tech-related roles, which may provide limited opportunities for workers in production countries to access them and could even widen the gender gap, as women have been historically underrepresented in the STEM¹ sector. On one side,

1 Science, technology, engineering, and mathematics.

manufacturer countries have neither the technological means needed for circularity nor the skills to fulfill these jobs, and therefore these new roles are likely to be generated in consumption countries. At the same time, technological and automation developments might replace many of the operational/manual jobs historically done by workers in developing economies.

However, some labor-intensive roles, such as garment collection and sorting, will increase in a circular model. Our expert interviewees do not expect that technological advancements will fully replace these jobs soon, and that the automation of roles will ultimately not only be country specific, but also specific to regions within countries. These tasks are often executed by the most marginalized workers in developing economies. For example, in India the majority of waste-picking activities remain a job mainly done by lower castes.² Key stakeholders in India also highlighted the short working life of manual workers due to physical job strain. They emphasized the need for fair payment and working conditions because many of these workers in their 50s tend to move out of the jobs due to inability to do physical work. They also highlighted how the jobs for low-skilled women workers will increase soon for segregation and sorting roles because employers find women to be more skillful in these manual roles than male workers.

This of course raises concerns about the quality of these future jobs and questions on the role of upskilling in the transition to circularity. A key informant working in recycling in West Africa suggested that the idea circularity is motivating the reskilling and upskilling of the most marginalized groups of workers is misleading because, in many cases, workers in the traditional garment industry are being trained to do lower skilled jobs than those they currently hold to be able to participate in the circular system.

Based on workers' surveys and interviews, we found that circular jobs can actually provide reskilling and promotion opportunities. However, skilling and advancement programs must be intentional and inclusive, and KWIL research found that most workers' have never received training. Likewise, in India, workers lack of envisaging working in any alternative jobs could be linked to the low access to training and career growth opportunities. For example, garment workers told us they do not have any perception about any alternative jobs they could be doing. Workers further explained that they get involved in different roles within the sector by virtue of belonging to communities or families in which older generations have built a rapport with the employer and feel obliged to work under them for generations. In terms of transition in the sector, traditional garment workers do not foresee any loss of jobs in the next six months.

It also emerged from the study that while India always relied on circular practices of repairing and upcycling garments, fast fashion's enormous growth in the past decade led to a loss of livelihoods for some workers who were involved in tailoring and semi-skilled stitching work. In order to mainstream such jobs back to the system, it will be important to map these workers and reskill them, to bring them to the higher-skilled circular jobs that may emerge from this large-scale transition.

2 [Waste Pickers—WIEGO](#).

Likewise, a key informant told us that the demand for artisanal workers using handwork and natural fiber requires high maintenance, thus making it expensive. This has been the reason for the small and niche market base for artisanal products. A shift of focus from luxury products is needed to curb this challenge of limited outreach, and circularity opens the doors to skilling workers for more utility products that can provide them with enough and regular earnings. ReFashion Hub, through the [Karkhana Chronicles](#) initiative, is one of the players in India trying to support and bring traditional artisans and craftsmen to the mainstream.

While circular models could open opportunities for traditionally underrepresented groups to take advantage of new roles and flexible working models, this also raises concerns over the erosion of labor protections and the quality and reliability of these type of jobs, even in the most developed economies. It should not be assumed that the jobs in Europe or the US are automatically high quality. Many stakeholders confirmed that many garment and waste collection roles in Europe and the US are still precarious and are often filled by migrant workers. Additionally, there is a reasonable amount of voluntary work in take-back programs and the secondhand clothing trade in consumption countries (e.g., companies working with NGOs to manage). These roles may be excluded from traditional supply chain policies and labor protections.

Lastly, we saw that circularity has the potential for more participatory systems where workers' voices are more central. However, this should not substitute traditional forms of association such as trade unions that are essential to workers' bargaining power, which leads to better working conditions and better wages.³ Overall, workers reported extremely low levels of association and unionization.

How are jobs changing in each circular model?



Rental

Rental at scale may reduce opportunities for workers in production countries due to reduced clothing demand. At the same time, roles in logistics and delivery may experience imminent growth, especially in consumption and emerging consumption markets. In addition, there is a high risk of “gig jobs” being created and, as a possible consequence, significant erosion of social protection for workers, especially migrants.

In many countries, delivery workers are mostly men, which puts them at higher risk, and at the same time discourages women from participating in these new roles. In India, some companies have tried to hire women delivery workers, but risks of sexual harassment, long-distance traveling, and long working hours have been barriers.

Other models of circularity, such as durability and design for disassembly, also enable similar opportunities for new entrepreneurship—for example, online resale businesses from home or product development/innovation from materials at end of life.

³ [Labour Standards Compliance in the Global Garment Supply Chain ILO.](#)

Software development roles will also contribute to increasing the gender gap if rental companies do not intentionally generate strategies, policies, and incentives to hire and retain women. Rental companies have a big role to play in creating models that protect both male and female workers, and that guarantee a fair and equitable participation of female and migrant workers.



Resale

Resale models provide new opportunities for workers who are closer to consumers, and there is a risk that jobs in production countries will decline as less new clothing is made. In markets where resale takes place there is likely to be an increase in roles to support these systems, including cleaning, repair, and reverse logistics. Traditional retail may decline but jobs may, in part, be replaced by resale retail (both physical and online). Resale is also increasingly taking place on e-commerce platforms, including C2C platforms, which would lead to a decline in traditional retail. However, platform models would require technical support and skills such as web design, UI/UX, AI, etc., and provide economic opportunity for online professional sellers.



Recycling

Jobs in recycling will tend to increase, at least in the first stages of growing circular models. Historically, these jobs have been informal, dangerous, and offer low protection, particularly in lower income countries. The transition to circularity will expand the global fashion supply chain to include recycling vendors and waste collectors and add specific human rights risks in addition to those the industry currently struggles with. Workers doing these jobs, who are often from the lower castes and socioeconomic status, are invisible to conventional supply chains, which raises significant concerns about workers' well-being and increasing human rights violations, including child labor.

For example, the recycling supply chain in India is fragmented and relies heavily on informal waste pickers, collectors, and segregators. The major recycling units are mostly family run businesses that have been operating for years. The core workers within the recycling units are women involved in sorting and segregating waste, while those involved in actual waste processing are more skilled workers with technical expertise. The categorization between the two strata is stringent with little or no scope for those in the lower ranks to learn and climb up the ladder. The study also revealed that even these workers employed within the recycler units work under contractual agreements, thus making them more vulnerable and susceptible to crisis in case of any shock or disaster.

The use of recycled inputs is also likely to expand the depth and scope of the textile supply chain to include altogether new material value chains ranging from recycled PET to agricultural waste. As a result, new roles will be brought into scope for the textile supply chain, including sorters, recycling plant workers, plastic waste collectors, and agricultural workers. Further knowledge is needed on the full scope of the recycling supply chain for new types of recycled material, as well as on the risks and challenges for job quality in these supply chains.



Repair

Repair models present the opportunity for job creation in consumption markets, but they also increase the risk that, if adopted at scale, they could result in job loss in production countries. It is unlikely that products will be shipped from one side of the world to the other to be repaired. This might translate to repair services growing locally or even brands doing them in-house in their facilities or stores.

Increased repair services could support inclusive growth in consumption countries. Migrants, workers with manual skill sets, and part-time workers may find more opportunities in the job market. Yet, these new jobs also raise concerns about gig type conditions and job quality as a whole.

Another potential scenario is repair happening in traditional production countries, with the caveat that global supply chains might become regional. For example, factories in Central America and South America would serve US consumers. Some near-shoring is already underway in the wake of the pandemic. Textile waste management legislation, therefore, will be key in the articulation of these new supply chains.

Workers will need reskilling/upskilling to secure jobs in repair.⁴ They will need to know about modular fashion and dismantling garments, and approach garments from start to finish as opposed to seeing just one part of the production (as might be typical for workers on a production line).



Sorting

Both reuse and recycling models are dependent on sorted clothing as inputs. As these models scale, sorting is expected to become increasingly important in the industry. Research and innovation are already underway to develop automated sorting capacity of textile waste by fiber type and color, which will impact the number and types of jobs created in sorting. There are particular challenges to scale sorting for reuse given the difficulties in automating a process that relies heavily on the “human eye” and the ability to judge quality and style. The current cost and limitations in reverse logistics is also a challenge to scaling circular business, and it is expected that while jobs in this sector will grow as reverse logistics advances, the high-quality roles in this sector will be primarily technology-focused roles.



Made from Safe and Recycled or Renewable Inputs (particularly regenerative or organic agriculture)

With more sustainable inputs, production should have reduced occupational risks, including reduced exposure to hazardous chemicals and toxins.

Our research has shown that farmers may struggle to respond to and benefit from the increased demand for organic inputs such as cotton. Increased quality standards, the current fragmented nature of agriculture, as well as lack of awareness and training among small farmers will all be barriers in tapping the demand potential for organic inputs.

⁴ Remaking offers similar job opportunities and skills needs as repair, but given how nascent the model is, it did not feature prominently in this research.

Challenges and opportunities for workers across the value chain

Challenges

Basic working conditions as working hours, wages, type of contract, social protection schemes, and ability to fulfill economic responsibilities **are still precarious for the most marginalized workers, including those executing circular jobs.**

Harassment continues to be a serious problem, especially for female workers.

Job stability continues to be a concern, especially for those in the lowest-paying jobs.

Governance structures and employee management systems are not changing at the same pace as jobs are changing.

Circularity requires flexible and autonomous structures; organizations need to adapt to the new reality of circular jobs, otherwise workers will carry the burden of adapting and facing a much more complex system.

Workers in quality control reported the lowest levels of job quality in KWIL's survey. This group might need special attention from brands and suppliers to make sure their transition is smooth and their well-being is respected.

From the surveys and interviews conducted in the three geographies, we identified several areas of opportunity and challenges that need urgent attention from the industry to achieve a people-centered transition.

Opportunities

Safety conditions in circular jobs may significantly improve as better materials and processes are used in production.

Circular jobs might offer more flexibility and autonomy to workers, even those in manual jobs.

Circular jobs could present an opportunity to strengthen employee satisfaction and subjective experience, as workers feel they are working for a broader purpose beyond economic gains.

Circular jobs might bring an opportunity to boost gender equality and build a more equal and just workplace with the right policies and upskilling programs in place.

Likewise, across the various models of circular fashion, the changing nature of roles brings both **challenges and opportunities for workers along the fashion value chain**. Below we list some of the most pressing issues per stage:



Agriculture

Technology

- Automation brings both the opportunity to enhance traceability and establish systems that reward better farming practices, but there is also the risk of job displacement.
- The digital divide between rural and urban areas may only exacerbate challenges facing farmers, including limited access to education for children and child labor, and marginalized workers.

- Small-scale farmers are particularly vulnerable to changes from technologies as they typically have lower digital literacy, face financial barriers to invest in new technology, and lack economies of scale.⁵

New methods and materials

- Regenerative or organic farming methods could increase farmers' income, but they face challenges around the certification and standards process.
- Potential price competition with recycled materials and lab-grown materials as these technologies scale and become more affordable.

Access to resources

- Access to financing could improve access to technology as well as enable farmers to produce better grades of cotton.
- Given their small size,⁶ small-scale cotton farmers need better market linkages to capture the full value of their product. Limited insights on demand levels, exploitative intermediation, limited quality assurance, limited access to efficient and low cost logistics, and minimal bargaining power all impact the price small-scale farmers receive for their product.⁷
- Awareness of their rights and access to recourse mechanisms. Without which, the marginalization of farmers may lead to a decline in job quality and potential human rights abuses, including child labor.
- There is a need for better organization among small-scale farmers, which can facilitate access to markets, financing, and new technologies and coordinate training in new techniques, crops, and technologies.



Garment Production

Labor protection gaps

- For homeworkers, the gap in current labor protections scope and enforcement could be exacerbated by the transition to a circular economy. Despite automation, it is feasible that handiwork is still largely outsourced to homeworkers and that they continue to face greater labor protection gaps than other garment workers. As a result, there is a need to improve the organizational capacity of and regulations for homeworkers.

New roles in the circular economy

- There may be opportunities to upskill garment workers to respond to increased demand for repair work and enable them as entrepreneurs. Our primary research found that in the US and Europe 32 percent of sew tech/finishers reported they have the skills to work on repairing and cleaning and laundry, while in India 77 percent of workers said they have not considered working outside of their present roles/sector.

⁵ https://gcgh.grandchallenges.org/sites/default/files/files/gc_farming_digital_technologies_english.pdf.

⁶ Over 60 percent of the world's cotton is produced by smallholder cotton farmers, who are among the poorest and most vulnerable in the world. <http://cottonupguide.org/why-source-sustainable-cotton/challenges-for-cotton/#1518784631393-54125774-71fd>. In India, cotton farming sustains the livelihoods of 5.8 million farmers, the majority of whom are small scale, operating on less than 2 hectares of land. <https://www.fashionrevolution.org/standing-up-for-the-farmers-who-grow-our-cotton/>.

⁷ <https://www.weforum.org/agenda/2021/06/agri-tech-innovation-can-improve-value-capture-and-transform-ecosystem-for-india-small-farmers/>.

- Quality assurance and software development will also increase. Based on the survey KWIL conducted with workers, quality control/assurance is one of the roles that reported the lowest level of satisfaction with job quality, which highlights on the need to guarantee good and fair working conditions for this group.



Retail

New in-store experiences and service

- There is an opportunity to enable retail workers to respond to the shift in the in-store experience from simply shopping to more experiential retail, including customization, on-demand production, garment-to-garment recycling, take-back programs, enhanced consumer expectation on the transparency of the garment, and omnichannel retail.
- Retail workers will need to manage in-store circular services (e.g., take-back, repair, etc.).



Collection

Increased labor risks

- Higher collection volumes provide an opportunity for more jobs in waste collection. However, as these roles are traditionally dominated by informal workers, there are several risks that could be exacerbated as demand increases. These include human rights risks such as child labor and health and safety risks as waste pickers are exposed to hazardous materials and contaminants.
- The increased demand for sorted clothing may also lead waste collectors to pursue more precarious collection activities, such as sorting on open landfills that include additional risks caused by trucks, fires, and surface slides.⁸

Enhanced governance and transparency needed

- As recycled content increasingly becomes part of brands' supply chains, there is a need to enhance the transparency and compliance in waste collection and to ensure that recycled content has the same level of social compliance as virgin materials. At the same time, this also poses the challenge that efforts to formalize or privatize waste threatens informal workers livelihoods.⁹
- There is an opportunity for incoming extended producer responsibility legislation to improve formality and job quality in waste handling in the EU.

New models of collection

- There is an opportunity to develop and nurture new business models for collection and to provide new incentives within collection communities, as well as training and digitally-enabled collection tools that provide waste pickers and sorters with access to information on the value of textiles and transparent data on waste.

⁸ <https://www.wiego.org/informal-economy/occupational-groups/waste-pickers>.

⁹ <https://www.wiego.org/informal-economy/occupational-groups/waste-pickers>.



Sorting

Impact of automation

- Higher collection volumes provide an opportunity for more jobs in sorting, but this would be offset by the level of automation in the sorting process.
- Automation in sorting facilities will also limit the tasks needed, and potentially impact job quality as wages are driven down.
- Despite automated sorting capabilities being developed, it is likely that some sorting will always require a high level of human skill, particularly sorting for reuse, and there is an opportunity to train more workers to perform this level of high-skill sorting. To do this, workers will need to understand the textile makeup of clothing and the different value that different garments offer.

Opportunity for marginalized groups

- Sorting jobs could be a route for marginalized groups to enter the workforce.



Recycling

New skills and safety requirements

- There is a need to fully understand both the environmental impacts and the social impacts of recycling processes, for both mechanical and chemical recycling. The chemical recycling process, which is not currently used at scale, will shift the nature of the work for those operating recycling facilities because it requires more technical skills to work with chemical recycling machinery.



Logistics

The role of the gig-economy

- Higher collection volumes and new business models reliant on e-commerce will increase roles in logistics including reverse logistics. Growth in e-commerce and logistics is often associated with precarious roles with little social protection due to high levels of outsourcing and the use of temporary labor. Furthermore, these roles are often underpinned by the gig economy, which faces several challenges across regions on the status of workers and the role of employers in providing basic labor protections.

Which are the jobs needed for circularity?

In 2020, KWIL ran a survey about the future of work with different actors and employees of the fashion and circular fashion value chain. Respondents envisaged circular fashion increasing jobs in several categories including managers, professionals, services and sales, and elementary occupations, with a mild decline in skilled agricultural and forestry workers. Job creation may not be as positive when automation and/or offshoring impacts are considered, respondents see jobs declining in several of above categories if these two become growing trends in the industry.

On the other hand, respondents agreed that many roles, especially in operations and management, will be created or transformed across functions and along the value chain to enable circular fashion. Below is a list of jobs per function, suggested by respondents, needed to guarantee a successful transition to circularity.

Function	Roles needed for circularity
Managers	<ul style="list-style-type: none"> – R&D and fashion design – Circular economy strategy – Circular marketing – Quality and product verification
Professionals	<ul style="list-style-type: none"> – Innovation specialists – Remanufacturing designers – Curators – Accountants for circularity
Technicians & Associate Professionals	<ul style="list-style-type: none"> – Recycling engineers – Tech developers – Sorting technicians – Materials technicians
Clerical Support Workers	<ul style="list-style-type: none"> – Drivers – Logistics
Services & Sales Workers	<ul style="list-style-type: none"> – E-commerce specialists – Secondhand experts – Repair experts
Skilled Agricultural & Forestry Workers	<ul style="list-style-type: none"> – Regenerative agriculture specialists – Lab materials technicians – Sustainable forestry specialists
Craft & Related Trades Workers	<ul style="list-style-type: none"> – Repair technicians – Tailors – Post-apparel customizers (embroidery, paint)
Plant & Machine Operators & Assemblers	<ul style="list-style-type: none"> – Sorters – Packing and labelling – Sorting machine maintenance & repair
Elementary Occupations	<ul style="list-style-type: none"> – Garment deconstruction (seamstress specialization) – Recyclers – Collectors

How are skills needs changing?

Increased need for soft skills and agility and flexibility across tasks

To fulfil these new jobs, workers' skill sets need to change or at least evolve, adopting a changed perspective. Many stakeholders agreed that as circularity brings more creative process and less standardized products, jobs will require strong soft skills such as agility, flexibility, tolerance to ambiguity, problem-solving, learning ability, and self and resource management, even for the most manual jobs. Our research among workers in Europe and the US revealed that

34 percent of women are uncomfortable with the idea of constant change compared to only 17 percent of men.

On the other hand, some circular organizations that we interviewed suggested they recruit workers with well-developed soft skills because they believe many of the technical skills for production roles can easily be learned. Interviewees expect that circular roles will be more multi-functional than their linear equivalents. For instance:

- Repair workers must be able to inspect a garment, identify the fault, and be capable of carrying out sewing operations that will vary greatly in complexity compared to a repetitive sewing task in a production line.
- Retail workers may have to help fulfil a range of in-store circular services, e.g., helping to manage take-back programs and carry out basic repairs.

Workers doing marketing or financial tasks will most likely not need to change their technical skill set, but they will need to change their focus and how they approach the new system. As such, employees with system thinking skills are critical to circularity. This new system needs people that work as enablers and are in a position to break many of the current silos existing in traditional fashion production and have the ability to perform in more decentralized organizations.

For workers across the value chain, including those in the informal economy, homeworkers, or gig economy workers, soft skills that enable them to better organize and represent themselves will be important through the transition. This includes engaging in dialogue with employers, self-confidence, organizing, advocating, leadership, and negotiation. Access to digestible data to raise

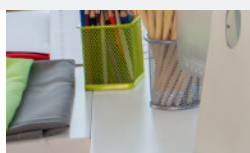
awareness about their rights and increase their knowledge about national labor legislation, and international frameworks are key to informing and strengthening workers' dialogue capacity. Similarly, business and entrepreneurial skills will be important across the value chain for workers seeking more independence or those wanting to capitalize on the opportunities that the transition will create. As many as 42 percent of workers surveyed in Europe and the US, and 66 percent in India, dream of starting their own business one day. Workers feel held back by a lack of investment and business skills.

Gender gap in technical skills among workers surveyed in Europe and the US

81% women / 71% men reported not having any knowledge in programming or coding

66% women / 39% men don't feel comfortable managing machines

22% women / 16% men cannot remember information such as words, numbers, pictures, and procedures easily.



Enhanced digital literacy across all roles

Stakeholders strongly agree that digital literacy is essential for circularity. From production to retail, workers fluency in digital skills and machine management were consistently listed as highly needed/desirable by our key informants. This will be accompanied by increasing needs for skills in data privacy and rights.

Likewise, the increased use of digital systems and data management by several actors in the supply chains raises concerns about workers' data privacy and digital rights.

Language skills continue to be critical

Many jobs in garment production are held by migrants¹⁰ and language barriers pose major obstacles for job performance, access to information and grievance mechanisms, and knowledge of local labor rights and policies.

With a potential rise of manual/operational jobs in traditional consumption countries as circularity mainstreams, language skills become even more critical for workers' well-being and human rights fulfilment. It also requires companies to share critical information in a language that workers can understand and interact with. One key informant working in production in a circular facility conveyed that it was not until a foreign migrant worker learned the local language that she discovered she was earning less than colleagues and was able to negotiate a salary raise.

Language skills will also be crucial to help workers find jobs in different industries where roles in the fashion industry in their region largely decline because of the transition.

Circular transition will provide opportunities for entrepreneurship and intrapreneurship

Workers reported very high levels of interest in starting their own business across the three research geographies. This is a unique opportunity for companies to develop employees' business skills, especially those in the lowest-paying jobs and women, who could create new offerings internally or small/medium enterprises offering circular services. This will contribute to the diversity and resilience of the circular value chain. Ruaab SEWA is a good example of the inclusion of female informal workers in the system, as it is a model of

Digital skills across circular roles



Retail workers

- Manage digital inventory
- Interaction with AI systems
- 3D skills to show products to customers and respond to on-demand customization
- Digital pattern-making and body scan
- IT and troubleshooting



Collection and sorting workers

- Use of digital devices to read product/material information
- Interaction with automated systems



Garment production workers

- Interaction with automated systems and machines
- Ability to work with various digital software and programs (e.g., track a garment's information online)

¹⁰ [wcms_554809.pdf \(ilo.org\)](#).

garment production and sourcing that is owned and managed by women producers directly. This model allows women to organize and increase their bargaining capacity, and as a result, participate in the mainstream garment market in fair conditions. Through SEWA, female garment workers, many of them homeworkers, can also access social protection schemes and training opportunities.

Key technical skills per role

Some technical skills will continue to be critical; these are the skills experts in the field suggested will be needed in each role across the value chain:



Retail workers

- Handle greater product take-back rates
- Product transparency
- Event support and management



Collectors and sorters

- Knowledge about value of waste and post-consumer waste
- Material pricing and quality
- Reverse logistics
- Chemical technologies



Garment workers

- Repair
- Advanced sewing skills
- Pattern-making
- Fiber processing



Farmers

- Organic and regenerative farming
- Agro-processing

Roles and groups where training is most needed

KWIL's research has highlighted gaps across a broad spectrum of skills (basic, complex problem-solving, resource management, social, systems, and technical skills—see next page). Survey respondents believed that current training is insufficient in most skills categories to prepare for the future of work and that these training gaps exist right through the value chain, across organizational functions and at all levels. Additionally, some key informants suggest that skills in traditional production facilities have declined to keep workers' wages low. This is confirmed by workers in the survey and interviews where 40 percent of respondents in Europe and the US and 62 percent in India have never received training at their work facilities.

A key challenge is the unbalanced distribution of financial resources and time allocated for training. Many brands have a strong focus and grasp on the new roles and skills needed within the company but are not yet focused on the roles and skills in their supply chain and partner organizations. Collaboration is needed to understand and fund the future needed skills along the value chain.



Female workers need specific support to develop leadership and critical technical skills essential in a circular model.

Women reported higher levels of interest in entrepreneurship and reported better soft skills development, but access to resources and training opportunities continue to be an obstacle for them to advance in the workplace.

The table below lists suggestions from survey respondents on the training and skills development most needed by workers in the circular global fashion system.

Basic skills*	Complex problem-solving skills**	Resource management skills***	Social skills†	Systems skills††	Technical skills†††
<ul style="list-style-type: none"> – Regenerative farming – Secondary raw material treatment – Garment & textile workers – Merchandising – Product development – Sales 	<ul style="list-style-type: none"> – Leaders – Managers – Managers in clothing manufacturing – Buyers – Production – Brand sustainability teams – Garment & textile workers – Product development 	<ul style="list-style-type: none"> – Design – Recycling – Top management (need for expertise) – Sorting – Merchandising 	<ul style="list-style-type: none"> – Buyers – Public relations – Quality – Sales – Production 	<ul style="list-style-type: none"> – Policymakers – Managers – Brands – Professionals 	<ul style="list-style-type: none"> – Designers – Brands – Textile engineers and technicians

* Developed capacities that facilitate learning or the more rapid acquisition of knowledge.
 ** Developed capacities used to solve novel, ill-defined problems in complex, real-world settings.
 *** Developed capacities used to allocate resources efficiently.
 † Developed capacities used to work with people to achieve goals.
 †† Developed capacities used to understand, monitor, and improve sociotechnical systems.
 ††† Developed capacities used to design, set up, operate, and correct malfunctions involving application of machines or technological systems

Circular worker's perceptions about their skill set

During the workers' surveys in Romania, Spain, and the US we asked workers to self-rate the level of development of different types of skills. **Most workers feel they perform well** in active learning, communications, creativity, following instructions, teaching others, learning capacity, organizational adaptability, reading comprehension, results-driving, self-management, and strategic thinking. Overall, female workers feel better about their soft skills than men do.

Concentration, conflict resolution, empathy, memorization, service orientation, time management, tolerance to ambiguity, and digital and technological skills **received the lowest ranking from workers**. In many of these, a gender gap was also identified.

Digital skills emerge as a particular concern. As found, most circular jobs will need a certain degree of digital/technological interaction, yet 23 percent of workers do not feel comfortable with technological tasks. Many workers do not have any coding or programming skills, and many of them don't feel comfortable managing machines. Workers' responses reveal a gender gap on digital/technological skills, placing women in an even more disadvantaged position to perform roles in a circular fashion system.

Another important finding is the high number of workers, especially women, who feel uncomfortable with constant change/ambiguity. This is concerning because the industry envisages the circular economy as a changing system where workers will need to constantly adapt and have the capacity to transition to different tasks and structures.



Conflict Resolution

16% of workers feel uncomfortable expressing their needs to others.

26% of workers feel uncomfortable handling difficult conversations (33% of men vs. 22% of women).



Concentration

19% of workers lack concentration ability.



Service Orientation

16% of men feel they don't find solutions and ways to help others. Most women feel they developed this skill.



Digital/Technological

23% workers don't like technological things.

81% of women and **71% of men** reported not to have any knowledge in programming or coding.

66% of women and **39% of men** don't feel comfortable managing machines.



Empathy

15% of workers believe understanding others is not one of the most important parts of their work.

17% of workers don't feel concerned about how their decisions affect others.



Memorization

22% of women and **16% of men** cannot remember information such as words, numbers, pictures, and procedures easily.



Time Management

41% of workers find it difficult to manage their time to accomplish targets.



Tolerance to Ambiguity

34% of women and **17% of men** don't feel comfortable with the idea of constant change.

12

KWIL Recommends



In this section

KWIL Specific Recommendations for an Inclusive System

1. Deepen knowledge on impacts
2. Assess consequences of models
3. Increase disclosure
4. Understand and build skills
5. Collaborate on transition planning
6. Build capacity on complexity
7. Develop responsible principles for new models
8. Adapt sustainable sourcing models
9. Reimagine industry norms
10. Integrate environmental and social approaches

KWIL Recommendations for the Fashion Industry

11. Deepen worker involvement and representation
12. Strengthen regulatory frameworks and rebalance relationships

KWIL set out to co-create recommendations for fashion industry players and policymakers to support and advance circular business models that offer dignified and inclusive employment opportunities.

It is impossible to envisage the improvement of conditions for workers and the creation of good jobs via the circular transition without addressing fundamental and persistent issues within the global garment and textile industry, which have a major impact on worker rights and livelihoods.

Failing to address the issues of worker representation, regulatory protection, and power imbalances risks replicating the same deplorable conditions for many workers of the linear fashion economy. As such, KWIL's recommendations are divided into two categories:

1. Recommendations targeted at improving opportunities, rights, and livelihoods for workers via the circular transition

2. Recommendations for historic industry challenges, which must be addressed in the circular fashion transition

We want to stress that worker consultation and representation is a fundamental principle in the design of the recommendations and should be considered as central to all of the actions proposed.

KWIL's recommendations were drawn from desk research and futures scenario development, combined with a series of interviews and futures workshops between April 2020 and October 2021. Many of the ideas have come directly from [KWIL's Project Collaborators](#) and have been refined in discussion with the group. The recommendations have been informed by futures scenarios and economic modeling, neither of which attempts to make a prediction or perfect projection. As the project takes a multi-regional and full value chain view, the recommendations are limited in terms of addressing specific regions and specific types of fashion businesses. Further, we recognize that in approaching job opportunities and quality with a circular fashion focus, the recommendations below do not address the full set of historic concerns for workers in the global fashion system.

The set of recommendations are structured as follows:

KWIL Specific Recommendations for an Inclusive Circular Fashion System

Develop and disseminate information about the impacts on workers of changing industry dynamics, including a shift to circularity	Deepen knowledge on the impacts that circularity, automation, and changing industry dynamics will have on workers and enterprises (1)
	Assess the consequences of alternative models and prioritize pathways that enable prosperity and well-being for workers (2)
	Increase targeted disclosure of information pertinent to improving worker outcomes in the circular fashion transition (3)
Prepare and equip workers and organizations for the transition	Invest in understanding and building the skills needed for a future sustainable fashion system, with supports geared around diverse needs (4)
	Engage in proactive collaborative planning around potential jobs reduction linked to automation and production changes (5)
	Build organizational capacity to manage greater complexity, disruption, and uncertainty and to develop strategies and solutions that serve multiple purposes (6)
Adapt industry processes and relationships to fit a changing context	Develop principles for responsible reuse, repair, and recycling models and the use of recycled inputs (7)
	Create sustainable sourcing models that enable responsible procurement and building resilience across diverse supply networks (8)
	Reimagine established industry norms to put people at the center (9)
	Integrate environmental and social approaches to ensure plans serve holistic sustainability objectives (10)

KWIL Recommendations for the Fashion Industry

Overarching recommendations	Deepen worker involvement and representation, and make it central to governance, policy, and strategy development at the global, regional, national, sectoral, and enterprise levels (11)
	Strengthen regulatory frameworks and rebalance value chain relationships across the fashion system (12)

Develop and disseminate information about the impacts on workers of changing industry dynamics, including a shift to circularity

1. Deepen knowledge on the impacts that circularity, automation, and changing industry dynamics will have on workers and enterprises

A truly circular fashion system would be drastically different from today's fashion system. The necessary investments and overhaul of current business models will be major, while simultaneously the impacts of automation will be felt throughout the value chain. Already opaque, complex, and fragmented, the global fashion value chain will expand to encompass new segments and activities. For instance, new supply chains and sources of raw materials, from recycled PET bottles to collected, sorted, and recycled textile inputs. The value chain will also expand downstream from brands and retailers to include recovery of post-consumer textiles and all actors and activities in the end-of-life and second-hand clothing value chain. Both policymakers and business must consider the full scope of this expanded value chain in informing public and private policy and plans.

Today, basic data is already lacking on workers in the global, regional, and national fashion value chains, particularly in deeper tiers of the supply chain and on informal workers. An expanded circular value chain will encompass new risks and opportunities, with two areas requiring particular attention:

Take-back, recycling, and using recycled inputs

- As highlighted throughout this report, value chains linked to take-back, collection, sorting, recycling, the secondhand clothing trade, and the use of recycled inputs have specific sustainability considerations and high levels of informality. Public, private, and collaborative effort is needed to map these value chains and better understand their nuanced context, challenges, and potential, as well as their impact on other value chain activities such as natural fiber production. This can inform individual company due diligence and responsible sourcing processes.

Logistics

- Extending the life of clothing through circular clothing will increase the importance of logistics in the fashion value chain. Growth in e-commerce models has seen increases in the number of precarious jobs and working arrangements across regions. In addition, high degrees of outsourcing and use of temporary labor reduce visibility and increase sustainability risks. With increased logistics activity, both policymakers and business must better understand how these value chains function and the impacts on workers. In many instances, traditional logistics supply chains and business partners have been beyond the scope of company social policies. Thus, as companies increase reliance on these business partners, policies must be adapted to reflect workers' contexts and be extended to these supply chains accordingly.

Further, better knowledge on the potential worker impacts in the circular fashion transition should be compiled and assessed alongside projected impacts from automation, rapid e-commerce growth, and digitization along the value chain, seeking to identify the scale of the impacts on workers as well as unintended consequences. Automation impacts also include the automation that is part of the circular transition, such as automating parts of sorting activities. This more comprehensive understanding can better inform public and business policy and practices.

In gathering information and running assessments, paying particular attention to marginalized groups is crucial. As highlighted throughout the report, women, migrants, informal workers, and other groups of workers face differentiated impacts that must be examined and integrated into decisions taken in public and private policy and strategy development.

Areas for collective action

- Establish or add to a central database where companies can contribute to and also access data to assess social impacts and ensure the information is disaggregated by gender. This database could be housed under a body such as ILO.

2. Assess the consequences of alternative models and prioritize pathways that enable prosperity and well-being for workers

As illustrated in [Section 11](#), diverse circular models will have different impacts for workers, as will the choices for location and methods of operating circular services. For example, a brand or retailer has several options to offer repair to consumers: with in-store contractors or direct employees, with less formal repair service providers, or via its existing suppliers. The sustainability risks and benefits will be different with each arrangement. They must be mapped and analysed to identify the arrangements that are best for workers and communities.

At the policy level, waste management legislation—through its classification of used textiles as waste and the application of tariffs—will influence where businesses locate such activities. In this context, it is essential for governments, as well as unions and business organizations, to work together to ensure a just, fair, and inclusive transition to environmental sustainability and the equal sharing of the benefits, as well as to address the employment and social impacts of such a transition. Impacts on workers, across various scenarios, must be analysed alongside environmental and commercial dimensions in policy and strategy development to prioritize pathways that enable prosperity and well-being for workers.

Specific actions for fashion and textile businesses:

- Integrate job quality assessment into all circularity pilots and trials to build the evidence base on job impacts.
- Assess the implications for all groups of workers across diverse circular models and methods of operating.

- Investigate the informal economy and voluntary processes that are currently part of the value chain for their circular activities—both in the supply chain and through post-consumer activities—to account for and address worker impacts via responsible sourcing policies and efforts.
- Integrate job impact assessment findings and analysis of differing circular arrangements into circularity policy, strategy, and investment decisions.

Specific actions for policymakers:

- Routinely assess and publish the job and social impacts of environmental policies, incentives, and investments (e.g., waste classification and infrastructure, eco-labelling) and integrate into policy updates.
- Analyze the job impacts that may occur beyond legislative borders, in recognition of the highly global and interconnected structure of the fashion value chain, and integrate findings into circularity policies and trade agreements.
- Investigate potential impacts on farmers linked to forecast increased use of recycled inputs and develop corresponding policies, providing support for the transition (e.g., to alternative farming systems).
- Assess the capacity of businesses, including SMEs, to move toward viable circular businesses, while ensuring decent working conditions, and formulate appropriate provisions, policies, and support.

Areas for collective action:

- Build visibility into the functioning, risks, opportunities, and impacts on workers in the expanded fashion and textiles value chain, including waste management, repair, and recycling and among the communities that receive used textiles.
- Deepen understanding on informal work across the circular value chain, the associated sustainability risks, and opportunities to enable improved rights and livelihoods for workers and a transition to a formal economy.
- Develop guidance for policymakers and business on assessing the implications for diverse groups of workers of alternative routes to circularity and prioritizing improved worker outcomes. This would be most effective if developed in collaboration with policymakers, businesses and employers' organizations in the fashion and recycling value chain, unions, and NGOs. Key aspects will be (i) ways to quantify or measure social impact across choices to make data-backed decisions—ideally an existing standard of social impact, (ii) recommending updates to existing industry social and labor frameworks to anticipate and account for changing market conditions, and (iii) ways to integrate assessment findings and social metrics into existing business/policy decision-making frameworks.

3. Increase targeted disclosure of information pertinent to improving worker outcomes in the circular fashion transition

Increasing government regulations provide an opportunity to improve poor practices in global supply chain through effective due diligence to identify, prevent, mitigate, and account for actual and potential human rights and environmental impacts in company operations, as well as in upstream and downstream value chains. Considering the circular transition, automation, and other macro shifts impacting value chain workers, there is a need to ensure that calls for more transparency and disclosure include targeted information to help understand worker impacts and to orient toward pathways with improved outcomes for workers. Disclosure should be aligned with and build on existing disclosure frameworks (e.g., [Global Reporting Initiative](#)).

Specific actions for fashion and textile businesses:

- Disclose company transition plan and supports regarding substantially reducing production and/or shifting production from a supplier or a region, including how the company has assessed and accounted for worker impacts.
- As discussed, track and disclose the job impacts of circularity, automation, and digitization pilots (e.g., via a multi-stakeholder partnership/forum).
- Improve transparency around how wages are set and provide clarity for workers.

Specific actions for policymakers:

- Establish or strengthen nonfinancial mandatory reporting for companies that include environmental and social impact indicators. Disclosure sought should include data that enables assessment of whether the objectives of a circular model are being accomplished
- Ensure that existing and proposed mandatory due diligence requirements for companies cover circular value chains (e.g., include providers of take-back, sorting, and logistics services as well as traditional manufacturing) and both environmental and social impacts.

Areas for collective action:

- Dialogue between government, industry, and worker representatives to identify the most impactful data and formats to be disclosed. Disclosure will have greatest effect where it is aligned with and builds on existing disclosure frameworks (e.g., GRI). This dialogue to align should highlight:
 - The specific and relevant indicators from existing frameworks that companies who are committed to a socially responsible circular transition should disclose.
 - Any additional disclosure beyond existing frameworks that is necessary.

Prepare workers and organizations for the transition

4. Invest in understanding and building the skills needed for a future sustainable fashion system, with supports geared around diverse needs

Understanding future skills needs: A key enabler of the circular transition will be the new and upgraded skills, across diverse functions, at all organizational levels and throughout the entire value chain. Some brands and retailers have developed a strong understanding of emerging roles and the skills needed internally, but there are knowledge gaps in the shifts that will occur across the value chain. As evidenced by KWIL’s job quality research, workers are not well placed to envisage future jobs needs. Collective action is required to map future roles and requirements and the tools and curriculum necessary to address the skills gaps. Such investigations should link with future industry needs and be in line with sustainability and digital ambitions (e.g., planning for a circular, low-carbon economy).

KWIL participants believe that current training is insufficient in most skills categories to prepare for the future of work and that these training gaps exist right through the value chain, across organizational functions and at all levels. At the sectoral level, social dialogue can play a key role in assessing skills needs and employment challenges, and in designing adequate and continuous training. Further, it’s important to build stronger connections with education and training facilities in the industry and ensure that education programs are equipping incoming talent to the industry for the circular transition, and to consider the social impacts.

Businesses interviewed currently observe gaps in technical fashion skills (e.g., an understanding of fabrics, of garment construction, and the ability to sew and alter garments). They also expect circular roles will be more multi-functional than their linear equivalents (e.g., retail workers carrying out basic repairs). All such roles will increasingly interface with technology to carry out their functions (e.g., logging information about faults and repairs and taking customer measurements).

KWIL’s economic modeling suggested there is a **general scarcity of high-skill workers** and the number of low-skill workers¹ significantly exceeds the number of jobs available to them across our focus regions. This situation is particularly pertinent to India and other developing regions (e.g., several countries in “rest of world” (RoW) in KWIL’s model). Investment in education should be a priority policy to address this, and policies for creation of alternative employment will be important, especially in the short run.

¹ While we discuss skill levels in this report, we recognize having a low income job does not mean that a worker has a low skill level. In order to explore the impacts of the circular transition on workers and wages etc., our economic modeling used the occupational comparison from the International Standard Classification of Occupations 2008. This groups various skill levels into high and low skill categories to facilitate international comparisons of occupational statistics and to serve as a model to countries developing their national occupational classifications. It is supported by the international community as an accepted standard of international labor statistics. Details on the ISCO08 classification and the corresponding skill linkages and definitions are provided in the [Appendix, Section 3](#).

The link between skills and inequality: Considering the important finding of declining low-skill worker wages in KWIL’s economic modeling, long-term policies for improving skill levels that are closely related to income and income inequality should be implemented. This should include investing at all levels of the education system to provide flexibility in skilling/reskilling and multiply the effects.

Equipping workers to move segment or industry: With automation, digitization, on-demand production advances, and more circular/sustainable approaches, we expect much disruption to jobs in this industry overall by 2030. Those who traditionally worked in large garment manufacturing factories may find that future opportunities might only exist in other segments (e.g., collection, sorting, recycling) or within alternative structures (e.g., decentralized systems) or industries. As such, it’s crucial to build transferable skills and enhance workers’ employability across industries and adaptability to the more multifunctional nature of circular roles. The need for training to advance workers careers and future prospects was highlighted by KWIL’s worker research.

Skilling programs must also be tailored to the diverse needs of different groups. For instance:

- Providing language training for **migrant workers** will help them better understand their rights and responsibilities, and better equip them to move across roles or industries where needed.
- **Informal workers** require different forms of support helping them build business skills (e.g., training informal waste workers how to better valorize their products, while taking progressive measures to enable them to transition to the formal economy).
- **Women** globally have been underrepresented in STEM education and training with greater investments needed to close the gap.
- **Artisans** in India have been increasingly displaced as demand for fast fashion has risen. The circular transition presents new opportunities to re-engage this supply chain in circular models by providing them with the skills needed to work with circular products and to help them adapt to more mainstream scale production.

Specific actions for fashion and textile businesses:

- Build in diversity and inclusion approaches with respect to recruitment, workplace training, upskilling, and advancement, involving workers and employers’ representatives in the design and implementation.
- Convene a cross-functional group of leaders (e.g., human resources, learning and development, supply chain, climate, and circular) to contribute expertise and knowledge in developing a view on how jobs internally and through the value chain will change, linked to core business strategy. Leverage this view to inform engagement with technical education institutions and in skills investments for future commercial success.
- Collaborate via existing brand and industry platforms to initiate research, fund pilots, build capacity of local organizations, develop curriculum, and forge public-private partnerships.

- Showcase the business case for skills development and investment, developing industry case studies to encourage investment in skills development.

Specific actions for policymakers:

- Invest in education to address the supply and demand imbalance for high and low-skill workers (regions studied experience a general scarcity of high-skill workers and excess supply of low-skill workers). This is particularly important in India and other developing regions. Long-term policies for improving skill levels should be closely related to income and income inequality in response to projections on low-skill wages decline.
- Investment in education should include building circular economy skills both nationally, regionally, and via international aid funding, using public finance to mobilize private investment. The Ellen McArthur Foundation's [Universal Policy Goals](#) provide examples of existing policy measures to stimulate circular economy opportunities and skill development.
- At the sectoral and industry level: Formulate accompanying policies combining social protection, including unemployment insurance and benefits, skills training and upgrading, workforce redeployment, and other appropriate measures to support enterprises and workers in sectors negatively impacted by the transition to circularity.
- Provide specific capacity building for social enterprises. Given the role they play in the circular economy, they need to be strengthened by capacity building, incentives, and access to resources.
- Provide capacity building for SMEs in circular activities and supportive policies enabling them to comply with circularity legislation.
- Enable access to post-production and post-consumer waste to informal workers in the sector to enhance and promote material recovery.
- Leverage the framework of the “polluters pay” principle² in policy development (e.g., for extended producer responsibility) to secure funding for appropriate and ethical handling of post-consumer products.
- Foster an inclusive and agile system to update curricula and keep it current, reflective of industry needs and changing technology and innovation.
- Develop policy and programs to increase the participation of women in STEM education.
- Provide forums and incentives for cross-industry collaboration on mapping and anticipating future jobs, skills requirements, and investment needs.
- Invest in understanding alternative opportunities for workers beyond industry borders and develop relevant public vocational training programs in consultation with worker representatives and employers' representatives.
- Provide tax breaks for indigenous artisans in the textile industry to help make their production competitive and maintain their skills.

² The 'polluter pays' principle is the commonly accepted practice that those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment.

Areas for collective action:

- Cross-industry and public, private, and civil society collaboration on anticipating future jobs, skills requirements, and investment needs—regionally, nationally, and internationally.
- Considering the transformative change anticipated in the industry over a short time line (e.g., with respect to climate and automation), skills mapping and integration into training and educational programs should be prioritized in the immediate term. This context would benefit from agile approaches that identify needs, test, and integrate in a cycle of continuous improvement.
- Improve coordination between skills development, vocational training, social protection, and environmental policies within countries.
- Explore mechanisms to fund skilling programs, including baseline digital literacy and language skills (e.g., price increase, business tax, subsidy).
- Include all levels of government (local, state, supranational), industry, and worker representation in collaboration and planning efforts to ensure that educational programs are inclusive, accessible, and adapted across the board—not just among leading education providers who have strong industry partnerships. Industry can partner with universities, technical schools, and skills development centers to innovate and incentivize investment in skills that meet future needs.
- Fashion and textile businesses, workers and employers’ representatives, and policymakers can work in collaboration to align on and adopt existing metrics to measure progress (e.g., leveraging the metrics from the [World Economic Forum](#), Sustainable Development Goals’ Repository, and others).
- Concerted public and private efforts to ensure investments allow for scale at a sufficiently rapid pace (versus fragmented approaches from individual companies).
- Develop training and recruitment programs focusing on women. Unions and women’s associations can be effective channels for re-skilling.
- Establish a coordinating mechanism with and invest in scaling support to those organizations that are already focusing on developing future skills (e.g., [Shimmy](#)). This could include building a database of companies that can provide trainings, to better connect the industry with such organizations and provide opportunities for funding and scaling support.

5. Engage in proactive collaborative planning around potential jobs reduction linked to automation and production changes

KWIL’s economic scenarios analysis suggests that circularity, automation, and other macro factors could significantly disrupt jobs in the garment and textile industry by 2030. Each of the scenarios results in significantly fewer jobs than government and industry leaders may be expecting in the absence of such disruptive forces. The variation between jobs today and what we see in the scenarios is a range of 6.72 million jobs, which is over 11 percent of the fashion value chain jobs captured in the model. The largest global net loss of jobs across

the scenarios is almost 900,000 jobs and the largest net global gain is almost 6 million jobs. Regionally, China, India, and the rest of the world exhibit large variations, with India's at 5.3 million jobs. The model did not have sufficient data on informal workers, and so impacts on informal workers are not included in these numbers and could be likewise significant.

Both the substantial global and regional variations highlight the need for proactive planning around potential jobs shifts in the fashion value chain. This should include government and the private sector in collaboration with civil society and take a systemic approach for worker protection including legislative, job quality elements, and social protection. There are important questions around who is responsible for capability building, reskilling for automation between brands, suppliers, and governments. Such questions must be explored and addressed through social dialogue and public/private collaboration.

KWIL's economic modeling suggests that social and economic inequality are likely to increase in the US and in Europe where automation and technological progress may lead to job losses in secondary occupations. Specifically, skill-biased and routine-biased technological changes are two mechanisms that may increase inequality because they favor particular groups of the workforce and reduce the employability of other groups. Further, the general trend across regions and scenarios was that wages of high-skill workers increase over time, while low-skill wages decline. Both the potential for growing inequality and the general scarcity of high-skill workers, combined with the lack of sufficient roles for low-skill workers across our focus regions, call for investment in education to tackle the skills gaps and increase prospects for low income workers in particular.

Considering future disruption, workers must be afforded protection and support when facing job loss or moving roles, industries, or from one form of employment to another (e.g., formal worker becoming self-employed), or taking up new jobs. There must be a strong focus on ensuring that the jobs created are good jobs. Plans should account for the fact that the numbers of jobs may decrease dramatically for certain occupations and ensure workers can still advocate as their numbers go down.

If the pessimistic outcomes from KWIL's economic modeling come to fruition—substantial job losses, mostly among low-skilled workers, and as a consequence, a substantial increase in inequality, this may lead to a major erosion of the income basis of the populations involved in the fashion value chain. In such a situation, a move to a system that provides a universal basic income or universal basis services for every citizen, regardless of whether they are employed, may become a necessary policy consideration.

Specific actions for fashion and textile businesses:

- Engage in collaborative planning with suppliers, including on access to remedy and supports for workers who may have lost their jobs, and work collaboratively with unions and worker representatives on strategy development.
- Track and disclose the job impacts of circularity, automation, and digitization pilots (e.g., via a multi-stakeholder partnership/forum).

Specific actions for policymakers:

- As discussed in [Recommendation 4](#), Invest in education to address the supply and demand imbalance for high and low-skill workers (regions studied experience a general scarcity of high-skill workers and excess supply of low-skill workers). This is particularly important in India and other developing regions. Long-term policies for improving skill levels should be closely related to income and income inequality in response to projections on low-skill wages decline. In addition, transition planning should include policies for creation of alternative employment, especially in the short run.
- Design social policies to support workers who lose their jobs, tailored to the needs of diverse groups, including skills development, training support, and adequate and sustainable social protection.
- Consider and implement mechanisms to provide workers in transition with income and opportunities to upskill and gain experience for new roles (e.g., via a [public job guarantee scheme](#)).
- Develop policies that encourage redundancy packages that incentivize reskilling rather than layoffs.

Areas for collective action:

- Collaborative industry skills mapping (see [Recommendation 4](#)) and joint investments in upskilling.
- Establish a multi-stakeholder partnership/forum to monitor and collectively plan for worker impacts in the circular and digital transitions, with a specific focus on regional impacts. This forum should also provide space for social dialogue and navigating difficult questions on responsibility and financing and should help the industry to accelerate learning on impacts during the transition. This dialogue could be facilitated via ILO sectoral meetings and via employer’s organizations in regions where they are equipped to do so.
- Develop processes and metrics that allow enterprises to rate their transition to a just, fair, and inclusive circular model. Design criteria that have the potential to be linked to investment and considered for access to capital.
- Invest in public-private funding mechanisms that support a socially responsible circular transition.

6. Build organizational capacity to manage greater complexity, disruption, and uncertainty and to develop strategies and solutions that serve multiple purposes

The KWIL 2030 scenarios help us to appreciate the complexity and uncertainty ahead as countries and societies navigate how to avoid the worst impacts of the ecological crises, and address growing social injustice in a context of disruptive technological and geopolitical developments. Trend analysis and traditional quantitative forecasting are highly imperfect tools to shape a future that is continuously changing in unexpected ways.

To complement those traditional approaches, organizations must develop much greater strategic foresight capabilities. First, this means scanning the horizon

to detect emerging issues that could upend current assumptions, such as new technologies or political developments. Second, it is critical to engage head on with the high degree of uncertainty that characterizes many of the most salient factors reshaping the global fashion system. Whether trade relations or climate action, there is simply no certainty on how these will play out into the next decade and beyond. Instead, a “futures thinking” approach is needed that uses future scenarios to game out different possibilities and work through their strategic implications. Finally, these should be complemented by collaboratively developed aspirational visions of the future that align stakeholders around a radically different and better version of the fashion system. The Three Horizons framework is a particularly useful tool for this.

The supremacy of measures such as profit and efficiency contributed to many of the sustainability challenges and structural vulnerabilities pervasive in the fashion industry today. Taking similar single-minded approaches to circularity will ignore the interdependencies across natural systems and societal health and risks worsening diverse sustainability outcomes. Likewise, our ability to meet global sustainability goals are interlinked. It will be impossible to make sufficient progress on the climate crisis without protecting biodiversity, and reducing inequality and providing opportunities for affected workers and communities is central to both.

Identifying a wise course of action amid so many competing and seemingly contradictory objectives will require organizations to become adept at systems thinking and to adopt intersectional perspectives. This requires mapping out the complex interlinkages among different actors in the global fashion system. Crucially, it also means exploring the sometimes unexpected and contradictory dynamics at play within the system and identifying feedback loops and key leverage points. Without a nuanced understanding of the complex dynamics of the system there is a high risk that interventions designed to address one problem will engender new ones. It is no longer acceptable, for example, to improve environmental performance on the back of diminished employee well-being or the livelihoods of local communities. In many cases addressing such wicked problems and apparent tradeoffs will require a radical reframing of the problem and emergent solutions that are highly context-specific.

Actions for fashion and textile businesses, policymakers, and broader organizations influencing the industry:

- Encourage cross-departmental teams to break silos via coordinating governance mechanisms, performance indicators, and incentives (e.g., sourcing, finance, HR, sustainability, government ministries).
- Integrate futures thinking into vision and strategy-setting and leverage systems thinking for cross-departmental and organizational collaboration to identify root causes of challenges and develop solutions that focus on structural change.
- Collaborate to build organizational capacity on managing complexity and multiple purposes beyond just larger organizations, brands, and government ministries. This includes for unions and worker representative organizations, as well as organizations creating an enabling environment (e.g., Fashion for Good, Circular Apparel Innovation Factory).

Adapt industry processes and relationships to fit a changing context

7. Develop principles for responsible reuse, repair, and recycling models and the use of recycled inputs

It is common for brands and retailers to have sustainable sourcing policies in place for virgin raw materials that cover social issues. As discussed, in a circular system, activities like recycling are poised for rapid growth and will be encompassed in the fashion and textiles value chain. As such, public and private policies must be created that recognize and respond to the specific context of these activities and their unique sustainability risks and opportunities.

Such principles can be informed by deeper knowledge on the newer value chain segments and activities (e.g., take-back, recycling, recycled inputs, logistics as discussed in [Recommendation 1](#)) and mapping to understand the actors, processes, flows, employment models, and the associated environmental and social issues present. Mapping and research should be informed by worker representatives, NGOs, and community organizations, with informal workers and activities as a key focus.

Areas for collective action:

- Collaborate across policymakers, businesses, employers' organizations in the fashion and recycling value chain, unions, and NGOs to define what responsible business looks like across reuse, repair, recycling, and recycled inputs and develop principles for engagement between actors along these value chains.
- Integrate the outputs of this definition into existing principles and international frameworks pertaining to responsible business and due diligence (e.g., ILO conventions, OECD Guidelines for Multinational Enterprise, OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector) to ensure they respond to the changing context for circular systems.
- Garment and textile businesses can collectively fund mapping of:
 - Informal activities in textile recycling and waste management (e.g., Kabadiwalla Connect has [surveyed and enumerated Chennai's informal scrap-shops](#)).
 - The supply chain from source of raw materials and routes to final disposal of both the garment and the packaging materials.

8. Create sustainable sourcing models that enable responsible procurement and building resilience across diverse supply networks

There is an important distinction between actual improved sustainability outcomes and the assurance of compliance with sustainability requirements. Demonstrating sustainability compliance is often costly and less accessible for different types of organizations (e.g., SMEs). It's crucial that the demand for standardization and sustainability compliance doesn't lock smaller value chain players and diverse workers out of the system.

A future circular system could see fashion value chain players engage in a host of arrangements to deliver circular products and product service models:

- Suppliers could vertically integrate to secure access to raw virgin (e.g., with farms) and/or recycled materials (e.g., with recycling facilities).
- Brands and retailers could work with chain or independent laundry, dry cleaning, repair, and tailoring providers or it could bring such businesses in-house.
- Decentralized and informal systems could be leveraged in both production and service provision (e.g., collection, sorting, recycling).
- Brands and retailers will increasingly procure the services of providers to manage take-back programs and reuse models.
- Fashion and textile businesses could integrate artisans in upcycling and repair roles.

While vertical integration and acquiring businesses to offer services in-house could be attractive in attempting to increase visibility, control, and compliance, it's important to remember that working with SMEs and the informal economy has its own sustainability benefits, such as fostering entrepreneurship, supporting businesses owned by women or other underrepresented groups, and potentially increasing wages and flexibility for informal workers. Rather than operating under a command-and-control approach from buyers, there is an opportunity for business and policymakers to support diverse supply networks and integrate them into circular systems—aiming to maintain their inherent sustainability benefits and work with the system to address challenges in their specific context. One example is in regenerative agriculture, where some pioneers of the movement don't favor the creation of a regenerative standard because it inhibits trade (particularly for smaller farms), and the ability to customize to the unique issues in each area/farm is lost.

Specific actions for policymakers:

- Explore and identify an appropriate combination of taxes, subsidies, incentives, guaranteed prices, and loans to encourage a transition towards circular fashion, with specific incentives to SMEs in repair, recycling, resale, and other circular services to promote and apply environmental and labor standards.
- Engage in dialogue with informal waste economy representatives to understand compliance ability and to explore how to extend social and labor

protection to these groups, in line with an integrated approach to ensure their transition to formality and ILO's Recommendation 204 (on transition from the informal to the formal economy).

- Ensure that public procurement practices incorporate both social and environmental dimensions, including circularity criteria.

Specific actions for fashion and textile businesses:

- Extend codes of conduct and responsible procurement activities to take-back partners, recycling operations, etc.
- Design in flexibility to responsible sourcing approaches that enables working with circular startups, SMEs, and the informal economy and that recognizes the differences between value chain tiers.

Areas for collective action:

- Convene business, policymakers, NGOs, and informal worker representatives on routes to integration for formal and informal waste management and on the supports, skills, and social protection required for informal waste workers.
- Explore how secure technology like blockchain can help with visibility and fairness, helping SMEs to participate on an equal footing.

9. Reimagine established industry norms to put people at the center

Established operating norms³ within the garment and textile industry pose a serious obstacle to upholding dignified working conditions along the value chain. For example, purchasing practices and the piece-rate system are consistently identified as contributing to excessive overtime and harassment and cited as a barrier to achieving living wages. The creation of circular models that transform material flows and ownership presents an opportunity to simultaneously transform the industry norms that contribute to poor outcomes for workers. If we merely change the ownership model, or extend the life of clothing, but maintain the same mechanisms for defining supplier and worker payment used in the linear model, we risk creating the same unacceptable conditions—e.g., with workers in repair experiencing the same issues that garment workers today are facing.

Two examples of circular models are radically different from the linear system and demonstrate the unique opportunity to change the buyer/supplier/worker dynamic in the fashion industry:

- **Recommerce:** In such models there are multiple transactions and greater value is being derived from a single item of clothing. Enabling successful recommerce will require quality, durability, and appropriate design. Acknowledging the multiple transactions and increased value per piece, payment systems that share this value with suppliers, workers, and inputs producers and reward them for the higher quality can be developed.

³ By operating norms within the industry/industry norms, we mean ways of doing business that are typical in the garment and textile industry. This would include the roles, responsibilities, and risks undertaken by brands and retailers, manufacturers, and other supply chain actors and how they interact with each other. Commercial terms and how prices are set are also included in these norms.

- **Rental/subscription:** With such models, brands can gain more forward-looking visibility and potentially even consistency with revenue streams. This can afford the space for a different approach to planning and pricing systems. Like recommerce, value chain players can be rewarded for the higher durability needed.

Further, the advance of technologies that connect products and their inputs throughout the supply chain and along its entire lifecycle could provide the foundation for alternative payment models. As one KWIL participant suggested, we could even envisage a royalty model for the fashion industry, where suppliers, workers, and fiber producers receive payment each time a transaction (e.g., sale, rental) occurs on a piece of clothing to which they contributed.

Through piloting alternative commercial practices and payment models for circular fashion, the industry could look to more broadly apply successful practices within the existing linear value chain to address long-standing issues for workers.

Specific actions for policymakers:

- Develop and/or enforce legislation against unfair trading practices.
- Incentivize alternative payment systems with improved outcomes for workers.
- Provide incentives for companies that reflect the social and environmental costs of production and transport in the price of final products.

Specific actions for fashion and textile businesses:

- Examine current purchasing practices for fairness and for behavior that could pose risks for workers (e.g., via Better Buying™).
- Test alternative payment models for circular fashion pilots and share good practices with peers.

Areas for collective action:

- In collaboration with brands, retailers, employers' organizations, suppliers, worker representatives, and NGOs, co-create and pilot alternative industry norms and payment systems for circular models that align with international labor standards and fundamental principles and rights at work.
- Facilitate regional discussions involving government, brand, employer and worker representatives on how industry norms that promote a just, fair, and inclusive circular fashion economy can be integrated into regional regulatory frameworks.

10. Integrate environmental and social approaches to ensure plans serve holistic sustainability objectives

Social and environmental issues are often managed separately, both within garment and textile companies and sustainability-focused collaborative initiatives. This is also true of sustainability-focused public policy, such as the [Sustainable products initiative](#) in the EU, where the leading focus is on the circularity and environmental efficiency of products, with requirements to

address social aspects, where appropriate and feasible. The concept of circular economy itself has a well-developed vision on material flows and environmental dimensions but lacks a clear vision on social dimensions.

A key tenet of sustainable fashion is that design has a major influence on a product’s environmental impact—for instance, in the choice of materials and on its durability. As such, providing training and guidance for designers on sustainability impact is a core component of many companies’ circularity plans.⁴ Design training and principles commonly focus purely on environmental criteria and are missing the social dimensions. **However, design choices also carry social consequences.** For example, choosing synthetic or recycled fibers will indirectly impact farmers. Choosing materials that undergo processing with hazardous substances will impact the health and safety of workers. The complexity of garment construction dictates the time it takes to produce, which could influence the pressure on workers in the production line. While social impacts of products are more difficult to quantify than environmental, it’s important that companies and their teams understand the links.

Standards and tools exist to measure working conditions in the fashion supply chain, but they don’t illustrate how production changes—such as those resulting from environmental strategies or automation—will impact workers. Ultimately, there are a host of critical sustainability issues—including living wages, working conditions, climate, water, and biodiversity, among others — where public and private actors want to see urgent progress. Our strategies and tools to address the environmental or social dimensions must recognize where these issues are interdependent and where progress in one area could accelerate or decelerate progress in another. Aligning circular strategies, goals, and commitments with social issues could be mutually beneficial, speeding up a sustainable transition to circular economies and supporting local communities and workers to respond and benefit from the transition.⁵

Specific actions for policymakers:

- Play a leading role in expanding the circular economy concept to integrate social dimensions and gaining consensus and understanding on circularity’s social vision.
- Follow the ILO Guidelines for a just transition towards environmentally sustainable economies and societies for all and ensure assessment of both social and environmental considerations is included in the development and updates of policy.
- Involve both labor and finance ministries and relevant public bodies from the outset in designing circular strategies.
- Create frameworks, tools, and campaigns that allow companies to understand the connection between circularity and social impacts to build awareness on the topic and how to address it.
- Develop fiscal and trade policies that incentivize companies to consider the social aspects of a shift to circularity (e.g., via tax incentives).

⁴ As part of [Global Fashion Agenda’s 2020 Commitment](#), over 50 fashion companies have either trained design teams on circular design principles and/or integrated circular design principles into their design briefs.

⁵ https://www.bsr.org/reports/Taking_a_People-Centered_Approach_to_a_Circular_Fashion_Economy.pdf.

Specific actions for fashion and textile businesses:

- Integrate social and labor goals (e.g., on living wages, diversity, equity and inclusion, social protection, and working time) into circularity strategies and measure and communicate progress.
- Review environmental and social goals and road maps to understand how they may impact each other. Develop plans to address barriers and unintended consequences and build on synergies where goals intersect.
- Support integration of environmental and social goals with appropriate coordination and governance structures.
- Embed social aspects in guidance, criteria, and training for designers.

Areas for collective action:

- Collaborate across the public, business, and NGO space to build better understanding of the social impacts of circularity and identify considerations and criteria to include in public and private strategy and implementation.
- Integrate relevant and comprehensive social criteria into eco-labels.

Recommendations for persistent industry challenges, which must be addressed in the circular fashion transition

In approaching job opportunities and quality with a circular fashion focus, it is beyond the scope of this report to provide comprehensive recommendations to address legacy issues in the global garment and textile industry. We reinforce the importance of addressing these issues in a changing industry context and offer some new considerations on how the circular transition may interact with these issues.

KWIL SPECIFIC RECOMMENDATIONS FOR THE FASHION INDUSTRY**11. Deepen worker involvement and representation, and make it central to governance, policy, and strategy development at the global, regional, national, sectoral, and enterprise levels**

The current organizational and value chain structures that have evolved in the fashion system leave millions of workers with inadequate representation or power. Despite functioning unions, worker councils and other organizing/representative bodies, overall union density in the sector remains low,⁶ representation is particularly lacking for marginalized groups, and the well-documented labor concerns in the industry (discussed in Section 5) reflect both the scale of the challenges and the lack of worker power. To ensure that the circular transition does not aggravate existing poor conditions, or negatively impact job quality or opportunities, workers' representatives as well as employers' organizations must be formally included in strategy and policy development. Freedom of association, social dialogue, and collective bargaining

6 While it is difficult to access definitive global data on the union density in the sector, regional data on unionization across sectors gives a sense of the low levels. For example, the [average percentage of employees across the OECD](#) that are part of a union is just 15.8% (2020) across all sectors included. According to [ITUC's 2019 Global Rights Index](#), 91% of countries in Asia-Pacific exclude workers from the right to establish or join a trade union.

remain crucial means of improving conditions for workers. Indeed, the increased digitization of processes, e-commerce, automation, and production changes and their major potential impacts on workers over the next decade reinforces the importance of these mechanisms.

Consideration of the changing industry and value chain context must be integrated into existing social dialogue forums, where new groups of workers in an extended circular value chain (e.g., see [Recommendation 1](#)) must be represented. Research and modeling on how changing industry dynamics are impacting and may impact workers should serve as dialogue inputs. Fashion and textile businesses and policymakers can fund such studies to improve the comprehensiveness of the information available. Extending representation to all groups of workers, including informal and migrant workers and those from other marginalized groups is crucial, and this need will be reinforced by increased activities in a circular value chain that have high proportions of informal workers. Both the low percentage of value chain workers that are unionized and the practical difficulties of reaching informal workers are major barriers to adequate worker representation. The industry and policymakers must increase existing efforts to tackle this through promotion, capacity building, and funding support for worker organizing, including integration into trade agreements and contractual expectations. Social dialogue must be facilitated from the early stages of circular fashion planning and, given the highly international nature of the value chain, this requires cross-border social dialogue. The establishment of formal governance processes to ensure such voices are represented is also essential. This can take the form of the creation of a policy and strategy review committee, whereby workers have a defined, appointed seat at the committee table via worker representative bodies.

KWIL participants noted the potential of technology to strengthen the grievance mechanisms for workers and to facilitate organizing and collective bargaining (e.g., information access and a means to connect communities). Indeed, where circular fashion models increase digital infrastructure (e.g., to track products through the value chain) it can bring further opportunities to meet these objectives. However, workers will need appropriate skills and tools to be able to access information sources and use them for their benefit, for instance for evidence-based bargaining. Further, as discussed, privacy and data protection must be afforded to workers.

Finally, there is an opportunity for collaboration between government, businesses, employers' organizations, unions, and NGOs to ensure there are different options accessible for worker organizing that extends to all workers—including informal and independent workers—and builds strong workers' networks and associations at a regional and sectoral scale.

12. Strengthen regulatory frameworks and rebalance value chain relationships across the fashion system

Sustainability efforts in the fashion and textiles industry are characterized by numerous voluntary programs that are frequently criticized for not delivering on their environmental and social objectives.^{7,8} Increasingly, regulators have been introducing mandatory due diligence requirements to identify, prevent, mitigate, and account for actual and potential social and environmental impacts in company operations, as well as in upstream and downstream value chains. However, as technology and models of production, ownership, and employment evolve there are persistent and emerging gaps to address in legislative protection for workers. Both policy and industry efforts are needed to ensure government ratification and compliance with international labor standards, which would be binding, as well as the progressive realization of fundamental principles and rights at work.

Workers in production countries: In several countries that have ongoing labor issues, a regulatory framework is needed to implement and enforce international labor standards. Dialogue between producer and consumption countries can be used to promote worker inclusion and rights by strengthening legislation and enforcement. For example, via mechanisms to report noncompliance, improved sustainability assessments, increasing participation of diverse stakeholders in the trade agreements negotiations, and investing in governments' technical enforcement ability. Governance and law reforms in producing countries should be coupled with incentives from consumption countries (e.g., market access) and capacity building to hold governments and businesses to account and engage in productive dialogue. This should include investing in capacity of trade unions and employers' associations.

Workers in insecure forms of work: Nonstandard working models (e.g., gig work, daily employment, contract work, piecework) have been growing alongside the booming e-commerce trade. They have elicited growing concern over the erosion of labor protections as well as the quality and reliability of contingent jobs. In a circular system, the fashion industry may rely more heavily on more casual forms of employment for activities such as take-back and logistics. Revisions of legal frameworks need to explicitly acknowledge and accommodate workers in nonstandard forms work and companies also need to update their policies and processes to include such workers and their needs.

Social protection for workers: The shift to circular jobs and environmental sustainability, in general, is poised to have a disruptive impact on the garment and textile value chain. To varying degrees, it will contribute to redundancies; closure of garment factories and other effects that may lead to reduction or elimination of jobs, as well as substitution and transformation of jobs profiles and activities. In this context, adequate and sustainable social protection systems

7 <https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/1952.pdf>.

8 https://www.msi-integrity.org/wp-content/uploads/2020/07/MSI_Not_Fit_For_Purpose_FORWEBSITE.FINAL_.pdf.

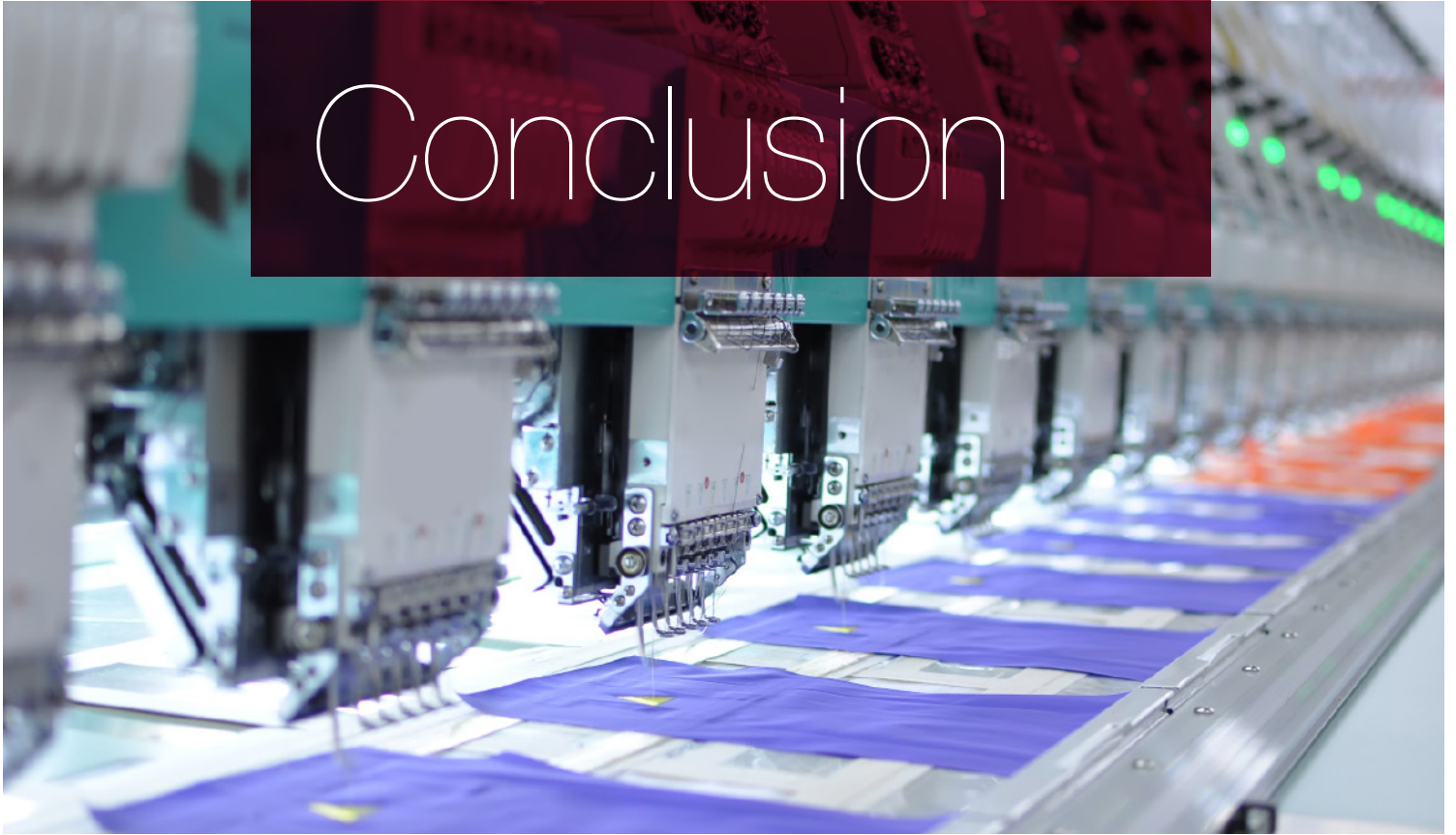
must be established to account for these transformations and provide affected workers access to health care as well as income security.

Worker data protection: With greater use of technology and worker data in the supply chain, data privacy and worker surveillance emerge as issues with important human rights considerations. In this context, protection of worker data and privacy must be integrated into legislation and corporate policies. Finally, as explored in KWIL’s Rise of the Regions scenario, the industry may encounter geopolitical sensitivities on human rights and environmental topics requiring public and private sector dialogue to uphold international human rights principles.

Another key contributing factor to the industry’s persistent and pervasive sustainability challenges is the power imbalance in relationships along the fashion value chain. KWIL participants acknowledged that improving worker outcomes won’t be possible unless the typical operating model for the buyer/supplier relationship changes. This would include better pricing models, forecasting, and planning (and reducing deviations); longer-term, partnership-oriented relationships; and shared risk around investing in new technology. Buyers also need better internal alignment between teams on priorities. Strengthening trade unions and the employers’ associations, both at the national and regional level, and investing in their skills to set strategy and deliver on their agenda is also important to balance the value chain relationships and dialogue.

13

Conclusion



In this section

Informal workers, women, and migrants are at high risk of being left behind

Inequality risks being exacerbated without significant policy interventions

Reskilling must be inclusive, transferable, and aimed at creating better jobs

Circular strategies should integrate foresight and systems thinking

Questions raised through our research

The current momentum toward circularity in the industry provides a unique transformative moment to reimagine and rebuild the global fashion system so that it works for all, particularly workers.

The circular fashion transition brings both an opportunity to address existing challenges from the outset in designing new models, and a responsibility to ensure that the jobs created are good jobs. Despite the opportunities for positive social impact that a circular system could provide, research into the impacts of the transition on workers, particularly with regard to job quality and availability, has been limited to date. Without intentionally addressing these impacts now, there is a risk that the historical inequities of the global fashion system could be perpetuated and even exacerbated by new circular models. From the outset,

the Keeping Workers in the Loop project set out to answer the following key questions about the shift to circularity:

- How might jobs be negatively/positively impacted in “production” countries? In “consumption” countries?
- How might “traditional” jobs change? What kinds of “new” jobs might arise, and what are the social implications?
- How might circular fashion business models impact working environments, working hours, pay, benefits, skills development, and other indicators of job quality?
- How might a shift to circular fashion impact women differently than men with regard to job opportunities and quality? What are the differentiated impacts in “production” and “consumption” communities?
- How will the shift to circularity, and its impacts on jobs, be shaped by changes in the external operating environment?

Key findings

Informal workers, women, and migrants are at high risk of being left behind

Our research made it clear that informality in the industry poses a major challenge to a just, fair, and inclusive transition to circularity. Informality is often highest in parts of the value chain expected to expand under a circular system, such as waste-picking. Furthermore, marginalized populations such as informal workers are often “invisible” in the system and are likely to be excluded from legal protections, corporate frameworks, and other formal channels for worker rights and social protections. For example, our economics model was unable to include informal workers as they are not captured in standard datasets. Similarly, our economic modeling was unable to capture the full extent of women working in the fashion industry because many women are believed to be in informal roles or are simply not captured in standard datasets. The same is true for migrant workers. This lack of data and insight on marginalized and disenfranchised groups places them further at risk in the transition. Targeted research and modeling are needed to ensure that the impact of the transition to circular fashion is understood for such groups at a global, national, and local level. Continued effort and learning are needed on how to practically ensure the inclusion of workers, particularly informal workers and those from marginalized and disenfranchised groups, in the forums advancing circular fashion strategies and policies.

Inequality risks being exacerbated without significant policy interventions

The ability of the industry to explore new creative solutions is often limited by its margins and retail price pressure. However, the transition to circularity provides a unique opportunity to reimagine some of the existing pricing models

and value chain relationships, and to pilot new ideas. Indeed, the conversation on creating “quality jobs” through the transition to circularity needs to be broadened to consider the underlying business models, pricing structures, and value of labor in the industry.

Furthermore, KWIL economic modeling has shown that without serious and structured interventions to address inequality it will continue to rise across all scenarios, suggesting a disconnect between the current system’s trajectory and goals to deliver prosperity across society. Across all scenarios, inequality between those who work and those who own capital continued to grow. Furthermore, low-skill wages declined in many regions and scenarios compared to high-skill wages, and low-skill manufacturing roles were the most volatile to change. This further highlights the vulnerability of lower wage groups to disruptions, and the risk of lower wage groups falling further behind higher-wage earners. It reinforces the urgent need to achieve living wages in the value chain, for these to be revised amid changing economic conditions, and for workers to be able to fully exercise their rights to freedom of association and collective bargaining to improve their negotiating power. Our research has shown that harassment, long working hours, and low levels of association and representation are all current concerns in the industry that are at risk of being perpetuated in circular models.

The industry requires universal protection of workers, bolstered by national protections. Without universal coverage there will be a continued “race to the bottom” on price, wages, and subsequently working conditions, even within a circular system. This forms part of a broader question for consideration for policymakers on how we value labor as a society and how our economic incentives are designed to accumulate wealth for capital holders, as opposed to ensuring that all people can participate in economic prosperity. While this challenge extends beyond the garment and textile industry, and is clearly beyond the scope of KWIL’s focus, a trajectory of rising inequality between capital owners and workers and between high- and low-income jobs raises important questions for our industries and societies. How can industries with inequality challenges address these in a system that is driving the inequality wedge? If the pessimistic outcomes from KWIL’s economic modeling come to fruition—substantial job losses, mostly among low-skilled workers, and as a consequence, a substantial increase in inequality—this may lead to a major erosion of the income basis of the populations involved in the fashion value chain. Such a situation may call for a radical rethink of our economic system and protections. For instance, assessing the potential of transformations such as offering a universal basic income or universal basic services for every citizen, or shifting tax systems from the taxation of labor to a taxation of capital and value added as the main contributor of economic wealth redistribution.

Reskilling must be inclusive, transferable, and aimed at creating better jobs

Each circular business model shapes the transformation and creation of new jobs differently. As our research spells out, roles in rental might not look the same

as those in recycling models. This new complex circular system also mandates new skills from workers. Our research shows that soft skills, especially agility and flexibility, as well as high levels of digital literacy will be critical for workers to participate in the circular economy.

However, it is important that the approach to reskilling and upskilling is intentional, inclusive, and aimed at promoting job quality. Our research has shown that some upskilling and/or reskilling, especially when related to automation, can often more resemble down-skilling as workers move into lower skill, lower quality roles alongside automated systems. Instead, the focus must be on creating higher skill, better quality roles in the industry. Inclusivity is also critical, especially since accessing digital skills and leadership skills development is often challenging for women, girls and disenfranchised groups. Equal access to upskilling and reskilling opportunities designed to enable high quality jobs is a key factor that must be explicitly built in to public and private planning for a just, fair, and inclusive transition.

In addition, the focus on reskilling needs to include enabling workers to safely and securely transition to other industries. Reskilling programs need to take a more expansive view on skills and their transferability (e.g., basic technology and language skills are important foundations for workers transferring across industry). However, a key question that remains is who is ultimately responsible for investing in workers' transferable skills? Policymakers need to consider how to incentivize reskilling workers for transferability, and the private sector must consider new partnerships with adjacent industries and ways in which to upskill and reskill workers to provide value to both the fashion industry and industries absorbing fashion workers.

Finally, circularity provides a unique moment of opportunity for entrepreneurship in the industry, especially in combination with digitalization. Upskilling workers as small business owners to seize opportunities in transition to circularity (e.g., repair services, resale entrepreneurs, waste aggregators) will help accelerate the transition and build a diverse and resilient system. The circular transition is a particularly valuable opportunity for women to engage entrepreneurship activities, which will require targeted support and investment.

Circular strategies should integrate foresight and systems thinking

While we cannot predict the future, we can safely assume it will be one of rising complexity as diverse social and environmental dynamics interact against a backdrop of accelerating technological transformation.

Our economic modeling revealed that the baseline scenario in 2030—one in which the economy operates similarly to today, and includes projected growth of GDP and population to 2030 and a small degree of automation—would see positive job growth in the garment and textile industry. However, the transition towards circularity isn't happening in a vacuum. Climate change, technological disruption, and new political movements are all transforming the world, adding additional complexity to the emergence of an inclusive circular system. Indeed,

none of the three KWIL scenarios, which explore how circularity might develop against a backdrop of various macro changes, achieve the same level of job creation as a baseline projection, and one scenario—with the highest degrees of both automation and recycling—actually leads to an overall decline in jobs.

The use of scenarios enabled our research to explore the impact of these and other major drivers of change as part of the transition. The intersecting impacts between these drivers and their effect on environmental and social goals is profound and, as such, robust strategy and planning by public and private sectors must systematically consider important drivers and interdependencies. KWIL's scenario analysis and economic modeling clearly demonstrate the risk of negative impacts on job opportunities and/or job quality when implementing circular models without consideration for jobs and the major drivers of change. Swift and decisive action on environmental sustainability and circularity are necessary, but it is only by understanding and integrating the job impacts that stakeholders can collaborate to deliver improved outcomes for workers via the transition. KWIL's research underscores the need, not only for job impacts to be included in the circular transition planning, but also to develop organizational and individual capabilities for strategic foresight, to create agile policies and strategies amid rapid change and profound future uncertainties.

Systems thinking will be another critical skill. Organizations and individuals will increasingly be confronted by apparent dilemmas between social and environmental priorities. There may be a strong temptation to choose one over the other. Instead, stakeholders should endeavor to use systems thinking to reframe zero-sum challenges (e.g., environmental gains versus job loss), see the interrelationships between these different parts of the system, and identify solutions that shift the entire system in a more positive direction for both people and the planet.

As a first step, we need to broaden our understanding of circularity beyond material flows and the elimination of waste to look at key aspects of how business models function. A more holistic framing of circularity is needed to ensure it includes social as well as environmental sustainability, and that circular models eliminate negative social impacts alongside eliminating waste. For example, current green growth strategies that include circularity need to be evaluated for both social and environmental impacts. Without an approach that marries social and environmental considerations, the transition runs the risk of pitting environmental impact against workers' rights and considerations, potentially perpetuating the same negative outcomes for workers.

We must also recognize that the highly globalized nature of the fashion industry value chain means negative impacts from government or corporate policy and practices can often be felt beyond national borders or deep into the supply chain. Compared to today across the three scenarios, jobs in India and China were most vulnerable to decline, while in the US, Europe, and the rest of the world jobs largely increase. This further highlights the need for comprehensive systems thinking and an industry-wide approach. There is also a risk that economic opportunities often arise close to clothing consumption, and our

research interviews suggest that this is where the bulk of current investment around circularity is located. As such, there is an unanswered question as to how to develop and encourage innovation, investment, and entrepreneurialism in circular systems in traditional production countries.

Questions raised through our research

Keeping Workers in the Loop forms part of a nascent body of research on the social impacts of circular fashion. It is our hope that this research can be used to further the industry's and policymakers' understanding of this challenge. Given the novelty of the issue and the paucity of available data, our research has raised several questions for further investigation, including:

Worker representation and organization

- How do we secure better worker representation in strategy, policy, and investment decisions? Particularly, how do we practically ensure the inclusion and participation of informal, women, and migrant workers?
- How can worker representation be reimagined for a circular system to include new players to create a cohesive, enabling environment for collective bargaining and empowerment?
- Considering its different dynamics and the changing operating context, what models or combination of models of worker organization will work best, and when/where in a circular system?

Industry collaboration and coordination

- How do we enable strong partnerships and collaboration in the industry ahead of circular and digital disruption? Which mechanisms have worked well in the face of previous disruptions and may provide lessons or models?
- How do we enable more creative solutions and innovation on the challenge of job quality in the industry?
- What industry-wide social and labor impact metrics are appropriate to measure progress and impact? How can these be integrated into decision-making frameworks: policy, strategy, investment, etc. and how can we ensure the data captures gender-specific data and information pertaining to informal workers?
- Considering that circular fashion's economic opportunities may often be located close to clothing consumption, how can we develop and encourage innovation, investment, and entrepreneurialism in circular systems in traditional production countries?

The KWIL team is deeply grateful to the organizations and individuals who shared their time, skills, knowledge, and ideas to begin to weave a common understanding of how the circular fashion transition might impact workers and what a just, fair, and inclusive transition might entail. It is clear that while there is much left to learn, it is crucial that industry and policymakers act today to design social and job impacts into the circular system of the future. We look forward to further collaboration with organizations across the garment and textile ecosystem to help bring to fruition a future circular fashion system that works for all.

In this section

1: Typology of industry participants and stakeholders included via the Project Collaborators group and/or via research interviews

2: List of KWIL Project Collaborators

3: Economic Analysis

Section 1: Typology of industry participants and stakeholders included via the Project Collaborators group and/or via research interviews

Stakeholder	Description
Worker representatives	Women and men workers' representatives from retail/supply chain/emerging subsectors/farms
Trade unions	National and international trade unions of workers in the fashion value chain
Ecosystem companies	Companies offering products and/or services to support circular fashion business models and innovation
Suppliers/fashion manufacturers	Organizations involved in producing textiles, garments, footwear, and/or inputs for global fashion brands
Fashion and sustainable fashion trade associations and think tanks	National and international coalitions, certification bodies, and associations
Fashion brands	Mainstream fashion and luxury fashion companies
Fashion retailers	On-site and online clothing and footwear retailers
NGOs and local NGOs	International and local nongovernmental organizations focused on issues relevant to sustainable fashion, including gender, worker rights, and environmental impacts
Policymakers, governments, and international Institutions	Main actors in the national and international sphere focused on labor, social, gender, environmental, and apparel industry public policies and regulations
Subject matter experts, academia, and futurists	Scholars and experts specialized on the transition to circularity, labor and social policies, and/or trends that will dictate the future operating content of the fashion industry

Section 2: List of KWIL Project Collaborators

During the project, the authors involved over 45 diverse and representative stakeholder and expert organizations from across the global fashion system in project research and co-creating recommendations. We are incredibly grateful to our project collaborators for their ideas, insights, and guidance. We note that participation as KWIL project collaborator does not mean that these organizations endorse the outputs of the project in full nor every recommendation made in this report. Beyond the organizations listed in the project collaborators group, we interviewed many other stakeholders and experts and greatly appreciate their insights.

- **Accelerating Circularity**
- **Circle Economy**
- **Closed Loop Partners**
- **C4RB—Centre for Responsible Business**
- **Ellen MacArthur Foundation**
- **Eon**
- **Fair Wear**
- **Fung Group**
- **Garment Worker Center**
- **Global Fashion Agenda**
- **H&M Group**
- **Hasiru Dala**
- **HERproject**
- **International Labour Organization (ILO)**
- **Inditex**
- **Intellectap**
- **International Organization for Migration (IOM)**
- **Laudes Foundation**
- **Lis Suarez-Visbal—Ashoka fellow and doctoral researcher at Utrecht University**
- **Renewcell**
- **Sahaas Zero Waste**
- **SEWA Bharat, SEWA Ruaab**
- **Shahi Exports**
- **Shimmy Technologies**
- **Swedish International Development Cooperation Agency**
- **Target**
- **The OR Foundation**
- **The Renewal Workshop**
- **University College of Dublin, Fashion’s Responsible Supply Chain Hub**
- **University of Lincoln**
- **VF Corporation**
- **Worn Again Technologies**
- **Zalando**

Section 3: Economic Analysis

Alongside the scenario narratives, our economist partners from University of Lincoln have developed a **Computable General Equilibrium (CGE) Model** to help understand what the scale of impacts in various scenarios might be. CGE models are a tool commonly used to evaluate policy decisions, conduct cost-benefit analyses, and simulate the development of “what-if” scenarios.

The model includes five regions (China, India, the US, Europe, and “rest of the world”) and 16 different sectors involved in the apparel supply chains. Using data from sources such as the Global Trade Analysis Project, the ILO, and official

statistical agencies, it **reflects the fashion industry and the economy as it is today** and covers information such as number of workers, the value of current production, imports and exports, etc.

For technical detail on the model, beyond that covered in this appendix, please see the [following documents](#).

Using the Model with Scenarios

A CGE model, allows us to **“shock” the economy and see the effects**. For instance, if we have a more protectionist world with increased tariffs: What will happen to exports? What will happen in terms of numbers of workers?

With the CGE model, we have included a set of shocks for each of our three KWIL scenarios that help to simulate each scenario and understand what the scale of the impacts might be. Graphs of select impacts are shown with each scenario.

For the economic analysis, we have a fourth “baseline scenario” that models a future with predicted GDP and population growth to 2030 and assumes a low degree of increased automation. This scenario serves as a comparative tool.

Data Sources and Uses

Data dimensions: five regions, 27 sectors (including 11 fashion plus recycle and rental sectors), eight factors of production (including five labor types) and four agents (firms, households, governments, and investors). The model set up is illustrated in the table below.

- The **Global Trade Analysis Project 10 (GTAP 10)** data covers **production, consumption, investment, international trade, and capital flows**.
- **Multi Regions Input Output (MRIO) table** database contains richer supply-use and input-output tables used to disaggregate aggregated sectors in GTAP.
- **World Integrated Trade Solution (WITS)** database contains records of **bilateral flow of textile waste** at HS 4-digit level which is used to build missing **recycle, reuse, and rental export and import flows among the regions**.
- **Additional data:** the sizes of activity and rates of textile **waste, sorting, reuse, recycle** and **rental** obtained from various online sources, mostly from international fashion reports and websites.
- **International Labor Organization (ILO)** employment data used to estimate **number/wages of female and male workers** in identified sectors and regions.
- **World Bank Databank: Population, emissions, and GDP** time series from 1960 to 2019 which are then extrapolated to 2030.
- Delphi **surveys** conducted by BSR team provided estimates of **near future changes in occupations** in the fashion sector.

Key Assumptions

- **Firms** are producing goods/services and **maximize profit** while **consumers** are utilizing products by **maximizing welfare**.
- **Continuous technological progress** with a rate which varies by type of scenario analyzed.
- **Government** collects various **taxes and tariffs, forms regional budget,** and provides public goods and services.
- **Investment goods** (capital goods) are **utilized by the sectors with higher rate of return** and are **mobile internationally**.
- A share of population in each region is engaged in employment; **workers** (distinguished by gender or skill) **are free to move to the sectors which offers higher wages** (mobility is kept within regions).
- Behind all, **law of supply and demand governs and equalizes all the markets,** including intermediate inputs, final goods, exports, imports, capital goods, and factors of production, including the labor market.
- **Circular fashion economy** link: production—destination markets—consumption—waste—sorting—reuse (goes back to consumption) or recycle (goes back to production as an input). Balance of recycling vs. reuse vs. landfill differs by scenario.

Computable General Equilibrium (CGE) Model | Set Up

Categories	Sectors, Geographies, etc., Covered
Scenarios Each scenario represents a different state of the world vis a vis the present. Baseline scenario extrapolates the (current) trends from the past 10 years.	0. Baseline scenario 1. Chasing the low cost 2. Faster and greener 3. Rise of the regions
Regions included	– USA – EUR (EU 27 + UK) – India – China – Rest of World (all other countries)
Reuse sector	Rental Repair Resale
Recycling sector	Recycling of clothing and textiles Use of recycled inputs

Categories	Sectors, Geographies, etc., Covered
Fashion manufacturing sector (traditional) This sector comprises the 11 subsectors listed to the right. The upstream (input producing sectors) and downstream (such as retail sector) are not included in the summaries presented in the graphs.	Spinning, weaving, and finishing of textiles
	Manufacture of other textiles
	Manufacture of knitted and crocheted fabrics
	Manufacture of carpets, rugs, & similar
	Manufacture of wearing apparel, except fur apparel
	Apparel accessories and apparel manufacturing
	Dressing and dyeing of fur
	Tanning and dressing of leather
	Manufacture of footwear
	Manufacture of luggage & handbags
	Leather and allied product manufacturing
Factors of production	<ul style="list-style-type: none"> – Labor (workers) by five occupations and two skill categories – Capital – Land – Natural resources
Worker occupation categories	<p>High skill: Officials and managers (mng), technical and professional workers (thc)</p> <p>Low skill: Agriculture and unskilled workers (agw), shop (and service) workers (shw), and clerks (clk)</p>

Description of the shocks used in the economic modeling

To simulate the impacts on employment and the economy in the three KWIL scenarios, the following shocks were used to develop economic scenarios that corresponded with the narrative futures scenarios.

1. CHASING THE LOW COST (2030)

- a. Low-skilled labor receives relatively lower wages in Africa Central and South America and India
- b. Automation continues to replace low-skilled labor (mostly in USA/EUR/China)
- c. Tax incentives to attract production back in the US and Europe
- d. Structural changes in employment sector (labor migration within regions)
- e. Employment of women varies; gender is included to the presentation of results
- f. Domestic work done by female move a fraction of female workers away from labor market

2. FASTER AND GREENER (2030)

- a. High sorting-recycling-reuse rates, with larger improvements in China, India, and Rest of World
- g. Consumer preferences change toward recycled materials
- h. Technology shift from “dirty” to “clean” energy sources

3. RISE OF THE REGIONS

- a. Sorting-recycling-reuse rates increase with larger improvements in China, India, and Rest of World
- b. Formation of regional supply chains
- c. Consumer preferences shift toward regionally made goods (as imports more costly)
- d. International transport costs are relatively higher as in-land costs
- e. Regions use artificial barriers against each other to redirect trade flows

The specific values of shocks (sorting-recycling-reuse rates) are reported in the [technical documents](#), they were informed by desk research and perspectives of the KWIL project collaborators.

The baseline 2030 scenario can be interpreted as a business-as-usual scenario and assumes average-annual-rate projections for relevant variables. Productivity and trade conditions in the baseline are assumed to be similar to that experienced over recent years. The baseline projects GDP growth at an average 3.1 percent per annum (within two standard deviations) over the period of analysis with full-time equivalent employment growth of the order of 1.5 percent per annum.

GHG emissions impacts suggested by the economic modeling

To capture the effect of economic activity on the environment we monitored a total (CO₂) emissions indicator across the three scenarios. Relative to the baseline, the most positive impact on the environment is observed in the **“Rise of the Regions”** scenario, with **reduction in emissions by 160 percent in China and no increases in other regions**. A similar but smaller impact is observed from **“Chasing the Low Cost”** scenario where the **reduction of emissions in China is about 100 percent**. Interestingly, **“Faster and Greener”** produces **increases in emissions in the USA and the rest of the world** of about **160 percent each** and a **50 percent increase in Europe**. The use of ‘clean’ energy sources in this scenario has a positive effect on emissions. However, these unexpected overall emissions effects are due to the accelerating impact generated by increasing automation that leads to increases in productivity, production and demand for inputs, which combined result in a significant expansion of economic activity. The effect of the sorting (and recycling and reuse) rate increase generates a similar mechanism as in the case of automation. From an emissions perspective, the main implication is that increasing automation and/or increasing sorting, and recycling activity would

lead to more pollution without managing a comprehensive structural change in the supply (and demand) side of the economy. Structural changes could include new production processes altogether and new approaches to production and consumption. We note that in our modeling framework (a standard Computable General Equilibrium (CGE)) is not a climate model and it does not account for structural changes. It modifies the parameters of existing technology (e.g., the proportions/combination of inputs can change) but it does not change the type of technology (e.g., the process of using and combining inputs remains the same). Furthermore, the modelling approach's medium time frame likely makes the implementation of widespread and drastic structural changes an unrealistic proposition by 2030.

Detailed wage impacts by region, scenario and fashion subsector

INDIA

	Baseline 2030	Chasing the Low Cost	Faster & Greener	Rise of the Regions
<i>HIGH SKILL WAGES</i>				
Sorting, Recycling, Resale	22	1	1	4
Rental	8	1	3	1
Fashion Manufacturing	17	3	-9	9
Average Broader Economy	10	5	-1	8
<i>LOW SKILL WAGES</i>				
Sorting, Recycling, Resale	- 4	0	-1	-1
Rental	- 7	-2	-3	-1
Fashion Manufacturing	- 2	-1	1	-1
Average Broader Economy	- 4	-1	-1	-2

EUROPE

	Baseline 2030	Chasing the Low Cost	Faster & Greener	Rise of the Regions
<i>HIGH SKILL WAGES</i>				
Sorting, Recycling, Resale	- 31	8	11	5
Rental	14	10	-16	-14
Fashion Manufacturing	11	4	-7	5
Average Broader Economy	7	5	-4	4
<i>LOW SKILL WAGES</i>				
Sorting, Recycling, Resale	20	-5	-8	-4
Rental	- 11	-10	9	12
Fashion Manufacturing	8	-3	2	-5
Average Broader Economy	3	-4	1	-2

The US

	Baseline 2030	Chasing the Low Cost	Faster & Greener	Rise of the Regions
<i>HIGH SKILL WAGES</i>				
Sorting, Recycling, Resale	11	2	-7	14
Rental	- 10	3	-1	-21
Fashion Manufacturing	13	17	4	20
Average Broader Economy	0	5	1	13
<i>LOW SKILL WAGES</i>				
Sorting, Recycling, Resale	10	-7	-5	-13
Rental	8	-9	-10	24
Fashion Manufacturing	5	-8	-6	-6
Average Broader Economy	1	-4	-2	-5

Skill levels and employment data

Our labor statistics data are obtained from the International Labour Organisation (ILO) statistical office and follow the International Standard Classification of Occupations from 2008 (ISCO08).

The data available are at the top (major group) ISCO08 level. There are 10 major groups (0-9) as major group 0 representing arm forces occupations is excluded from our data. The remaining nine major groups are split into two skill categories—high and low skill—based on the ISCO08 four skill levels. High skill category comprises skill levels 3 and 4; low-skill category comprises skill levels 1 and 2.

Details on the ISCO08 classification and the corresponding skill linkages and definitions are provided below. The main reference for this information is:

ISCO08 Volume I: Structure, group definitions, and correspondence tables. ILO: Geneva, 2012.

Definitions and explanations

ISCO08 has been developed to facilitate international comparisons of occupational statistics and to serve as a model to countries developing their national occupational classifications. It is fully supported by the international community as an accepted standard of international labor statistics.

ISCO08 is a four level hierarchically structured classification that allows all jobs in the world to be to be classified into 436 unit groups. These unit groups represent the most detailed level of the classification and are aggregated into 130 minor groups, 43 sub-major groups, and 10 major groups based on their similarity in terms of skill level and skill specialization required for each job.

The framework used for the design and construction of ISCO08 is based on two main concepts: the concept of job and the concept of skill.

The concept of job is defined as a set of tasks and duties performed by one person for an employer or in self-employment.

Occupation refers to the kind of work performed in a job. The concept of occupation is defined as a set of jobs whose main tasks and duties are characterized by a high degree of similarity.

Skill is defined as the ability to carry out the tasks and duties of a given job.

Two dimensions of skill are used to arrange occupations into groups. These are skill level and skill specializations.

Skill level is defined as a function of the complexity and range of tasks and duties to be performed in an occupation. The concept of skill level is applied mainly at the top (major group) level giving more emphasis on operational aspects and the nature of the work performed than to the formal (and informal) education and training requirements.

Skill specialization is considered in terms of four concepts: the field of knowledge required; the tools and machinery used; the materials worked on or with; the kinds of goods and services produced. The aspects of skill specialization play an important role in arranging occupations at levels below the level of major group.

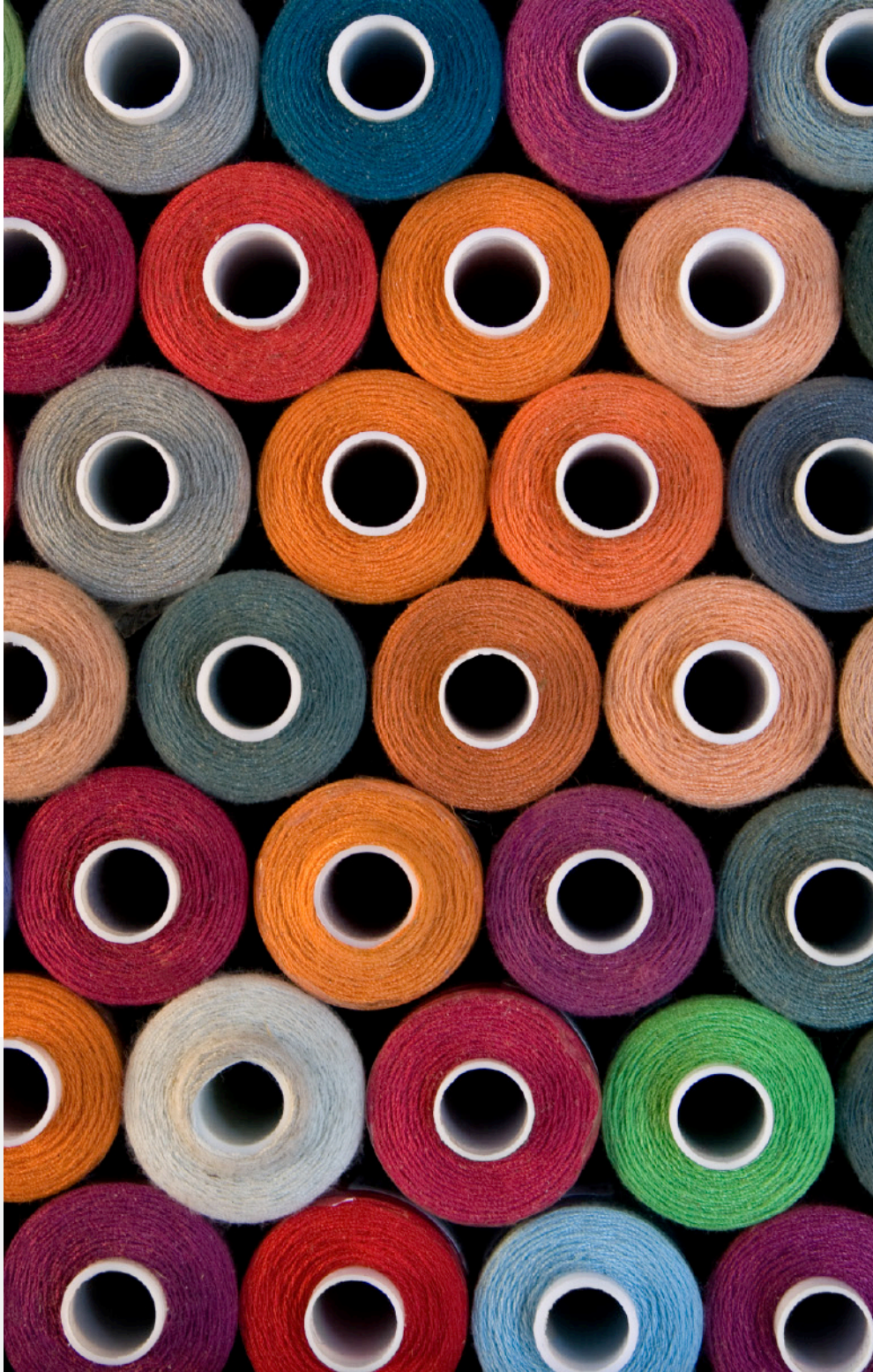
Considering the international character of the classification and to ensure comparability only four broad skill levels are defined; for details on matching the major groups with skill levels see Table 1.

There are extensive definitions of the ISCO08 four skill levels. A brief summary of these definitions is provided below:

- **Skill level 1**—occupations involve the performance of simple and routine physical and manual tasks.
- **Skill level 2**—occupations typically involve the performance of tasks such as operating of mechanical or electronic equipment, driving vehicles, maintaining and repairing equipment, manipulating and storing information.
- **Skill level 3**—occupations involve the performance of complex technical and practical tasks that require an extensive body of factual, technical, and procedural knowledge in a specialized field.
- **Skill level 4**—occupations involve tasks that require complex problem-solving, decision-making and creativity based on an extensive body of theoretical and factual knowledge in a specialized field.

Mapping of ISCO-08 major groups to skill levels

ISCO-08 major groups	Skill level
1 Manager	3 + 4
2 Professionals	4
3 Technicians and Associate Professionals	3
4 Clerical Support Workers	2
5 Service and Sales Workers	
6 Skilled Agricultural, Forestry, and Fishery Workers	
7 Craft and Related Trades Workers	
8 Plant and Machine Operators, and Assemblers	
9 Elementary Occupations	1
0 Armed Forces Occupations	1 + 2 + 4



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