DELIVERING THE ROADMAP

While the science and data on the impact of textiles on the environment has reached a consensus, the level of ambition has not. It is clear that we need to act in a more ambitious and urgent manner to reach not only the Paris Agreement but also the 2030 Agenda.

This document forms an annex to the United Nations Environment Programme report, *Sustainability and Circularity in the Textile Value Chain: A Global Roadmap*, which outlines the key priorities and actions needed to deliver a sustainable and circular textile value chain.

From the Roadmap report, three overarching and interconnected priorities to deliver system change emerge: 1) shifting consumption patterns, 2) improved practices and 3) infrastructure investment.

To deliver on the three priorities, UNEP proposes nine building blocks to achieve a sustainable and circular textile value chain. All building blocks consider the key drivers of environmental and/or socioeconomic impacts within the value chain, support the delivery of the existing industry goals, and require multiple stakeholders to act together.

While the Roadmap report specifically explores the cross-stakeholder opportunities for change, and how collaboration can be facilitated, in delivery against the nine building blocks, it is also important to recognize that each stakeholder group has unique challenges, and a unique role and contribution to make. For this reason, the annexes of the Roadmap report detail the barriers and opportunities, as well as specific actions for each stakeholder group.

This annex outlines the role and actions that raw materials producers and manufacturers can take in transforming the textile sector towards sustainability and circularity.
DEFINITION OF RAW MATERIALS PRODUCERS AND MANUFACTURERS

Producers and manufacturers are those in tier 1-4 of the diagram below. They are the stakeholders that produce the raw materials, process the products and create finished goods.

The tiers in the textile value chain

Raw materials production

Raw materials production can strongly vary depending on the material being extracted or grown. Cotton producers and other agriculturally based materials such as hemp and linen as well as bio-based PLA and animal materials can have challenges around sustainable agricultural practices including water use and pollution, chemicals and waste management and energy for irrigation and machinery as well as land-use impacts and feed issues for animals. They can also have challenges around social and labour issues including child labour, migrant labour, livelihoods and health and safety. Forest-based fibres can have impacts around deforestation, biodiversity, GHG emissions and chemicals, as well as labour issues in harvesting including safety and wages.

Extractive industries can have major impacts on pollution, water use, biodiversity and land-use issues and GHG emissions, as well as potential labour issues around safety and wages. Recycled materials can have improved environmental impacts but may struggle with social issues such as child labour, wages, working hours and protections in collection processes. All of these actors may be slow to transform impacts due to weak demand signalling and incentives, or a lack of connection and interest with the textiles industry such as with oil and gas extraction or beef farming. Certification schemes exist and many governments are engaging directly on agricultural practices and forestry practices, but systemic challenges remain and are exacerbated by the often smallholder-based or informal production scales, locations in many less-developed and less-regulated areas, and a lack of access to technical best practice and financial solutions.

Material processing and sourcing and fibre preparations

Once materials are taken from source, they need to be prepared for spinning or further processing. Typically, these processes can require a lot of energy and chemicals, and may create large volumes of waste, such as in early leather processing. Health and safety can be a major issue for this phase of production, as well as other labour issues such as working hours and pay. These actors are quite far away from brands and customers in the value chain, and may be informal or highly dispersed, so engagement and incentives for improved practices can be challenging.

Yarn preparation/spinning

Most types of textiles need to be spun into specific fibres to form fabric. Spinning mainly has impacts through energy use and waste management, and may have challenges around worker rights and pay. Spinners are quite far away from brand and customer incentives in the value chain, but due to their use of machinery are at least more likely to be formalized and documented by governments, making policy interventions more feasible.

Source: WRI and Aii (2020) Roadmap to Net Zero: Delivering Science-Based Targets in the Apparel Sector
Weaving/knitting/bonding

Once fibres are brought for weaving, knitting or other fabric production, the sites are much more likely to be larger, formalized and more ‘visible’ to governments and supply chain actors like brands. Some brands purchase fabrics directly from fabric mills, which allows them to specify sustainable and circular criteria. Impacts from this phase include energy and potentially chemicals, as well as worker health and safety, wages, working hours and rights.

Wet processing (bleaching, dyeing and finishing as well as leather tanning)

Wet processing is one of the most impactful phases of production, with large volumes of chemicals, water use and wastewater, heavy energy use for heating, and hazardous waste from treated water and process leftovers. Wet processing may happen before weaving/knitting/bonding as the threads are dyed before making them into fabric, or it may take place after that phase. It can even happen after assembly, where products may be individually ‘piece dyed.’ Wet processing sites are most susceptible to government shutdowns in regions where impacts are not well managed, and are most likely to create negative impacts for people living nearby through pollution leakage and wastewater. Social issues include health and safety, pay, working hours and legal protections. Wet processors are often in tier 2 of brands, meaning that their customers are the direct suppliers of brands. This means that they are often engaged in industry data gathering and impact reduction/improved practice programmes, although not yet at a sufficient scale to drive a major transformation. Due to the complexity and running costs of their processes, these sites can be reluctant to experiment with improved practices, which can involve high costs of intervention with typically low access to credit and technical support outside a few specific programmes.

Assembly

Assembly suppliers (also known as cut-and-sew, CMT (cut, make, trim), manufacturers, or tier 1 suppliers) are those that actually produce the finished product as it is sold to the consumer. This is the final stage of production before shipping to the brand customer. These suppliers have a direct relationship with brands (or sometimes specialist sourcing agents), and so are much better mapped and often have immediate performance requirements and audits from their brand customers. Brands specify design and materials to these factories for many products, or the CMT sites themselves might propose materials and designs to brands. Where brands explicitly specify materials choices, manufacturers might have very little control over the impact of fabric processes further down the value chain. Manufacturers’ main impacts are likely to be energy for machinery, and social issues such as worker rights, hours and pay.

Micro, small and medium-sized enterprises (MSMEs)

Throughout the value chain, micro, small and medium-sized enterprises (MSMEs) are identified as a key group (e.g. sites that are very small, often informal and may have financial limitations). MSMEs find that costs are the greatest barrier – as standards and labelling can be expensive and challenging – while their informal nature limits their inclusion in NGO programmes or government regulation and support. Approaches to creating a sustainable and circular textiles value chain must account for the needs of these actors, and focus on supporting their formalization as well as ‘meeting them where they are’ in the design of standards, programmes and regulations.

Industry bodies: What is their role?

For many producers and manufacturers, there are structures in place to represent their interests collectively, such as business owners’ forums, sectoral representative bodies, cooperative groups or entities such as farming unions. These industry bodies have a clear role to play in not only helping members to access technical and financial support for transformation, but also convincing them of the importance of adapting business models for their future and representing their interests in potential interventions such as consultations with governments on appropriate regulations, adaptation needs and potential barriers. Industry bodies can also be a main connection point to suppliers where brands do not have direct relationships, providing insights into the pressures and reality of their representatives to stakeholders without such a direct connection. Industry bodies in several countries are also leading the roll-out of improvement programmes in collaboration with development and technical organizations, such as the collaboration between BGMEA in Bangladesh and GFA and Reverse Resources.
OPPORTUNITIES

If producers and manufacturers shift to more sustainable and circular solutions, the potential benefits will include reduced operational costs, reduced regulatory challenge risks, reduced supply volatility, enhanced trust resulting in new consumer opportunities, and reduced dependency on energy, chemical and material inputs. Further, suppliers will be able to attract investment for innovative measures and processes while being able to establish themselves as leaders in the market.

BARRIERS TO ACTION AND INTERDEPENDENCIES WITH OTHER STAKEHOLDER GROUPS

Disruptive events: For producers and manufacturers, the COVID-19 pandemic has brought disruption and financial uncertainty towards moving towards a sustainable and circular business model. There may be some important opportunities in making the transition, but it is also challenging to drastically reimagine ways of working with immediate pressures in terms of cost, price, short-term goals and continuing to operate. Suppliers who have taken action to reduce social or environmental impacts often report impressive business benefits, but others say that the drive to improve has been met with little recognition or commercial reward by the brand consumers who have requested it.

Value chain complexity: The production phase of the textile value chain can be complex and opaque, with multiple actors – many of them SMEs or informal and unregistered sites – involved in each stage, from raw materials extraction or cultivation to creating a final product for sale. While some producers may have ‘integrated’ operations, where many of these activities happen within one business unit – thus reducing the actors in the value chain – in many other cases 15 to 20 companies might be involved in different processes between raw materials sourcing and product assembly, with traders trading raw materials and products between businesses. These complex business relationships are often not tracked and lack transparency due to their informal nature and can constantly change unless deliberately locked into fixed or shorter value chains. This means that many producers may be in the value chain of a major high street brand without either themselves or the brand being aware, or collaboration to detect, prevent and mitigate production phase impacts might be made difficult.

In order to address supply chain complexity, many organizations use some form of traceability approach. Addressing supply chain traceability usually takes two different approaches:

- Establishing detailed traceability and more stable relationships within the value chain. Examples include the UNECE-UN/CEFACT approach and standard, which supports information collection and exchange for end-to-end traceability and transparency of value chains in the garment and footwear industry, or the chain of custody raw materials standards.
- Addressing outcomes for groups of producers rather than establishing full traceability. Examples are Better Cotton Initiative’s mass balance traceability system, or regional interventions such as the Chinese National Textile and Apparel Council’s work with all Chinese manufacturers.

What do the terms traceability and transparency mean?

“Traceability” is defined as the ability to identify and trace the history, application, location and distribution of products, parts and materials to ensure the reliability of sustainability claims in the areas of human rights, labour (including health and safety), the environment and anti-corruption, as well as the process by which enterprises track materials and products and the conditions in which they were produced through the supply chain.

“Transparency” relates directly to relevant information being made available for all elements of the value chain in a harmonized way, which allows for common understanding, accessibility, clarity and comparison.

Source: UNECE Recommendation N°46: Enhancing traceability and transparency of sustainable value chains in the garment and footwear sector
Financial barriers and lack of rewards: Many producers lack the in-house expertise to navigate the complex technical and financial elements of more innovative on-site solutions. Production countries may not have suitable financial products available, and may lack advisory and technical capacity for sites, while producers may be reluctant to take major financial and production setup risks without sufficient clarity around rewards. Return on investment information may be sufficient for some interventions, but others with large capital outlay or poor payback would require further business justification. Many producers look to brands for these business benefits, but brands are often reluctant to provide commercial rewards for sustainability activities alone.

Lack of enabling policy environment: Actors in the producer phase struggle to implement circular processes and models in the absence of sufficient regulatory incentives to create a level playing field and ensure sufficient access to financial support and technical capacity-building. Without clear governmental support to spur coordinated transformation across the sector, even large producers are reluctant to act due to risk aversion. Companies fear becoming financially exposed, losing production time, or being ‘outcompeted’ by others who are not investing.

HOW TO PRIORITIZE

Raw materials producers and manufacturers can leverage their unique role in the textile value chain in its transformation towards sustainability and circularity. While there are a range of key actions listed in the following section, the three ways that raw materials producers and manufacturers should leverage their role and actions can be summarised as:

"Identify and implement the best technical practices for production sites"

Prioritize on-site improvements and innovation for environmental impact reduction: Identify opportunities, where possible based on recommendations from a third-party technical evaluation and either: a) invest in technical upgrade of machinery or processes; b) invest in infrastructure such as renewable energy, water management, effluent treatment or recycling processes; c) invest in innovation around circularity or product longevity; or d) implement environmental goals and management plans and validate with relevant bodies.

"Protect and invest in staff"

Empower workers: Implement best-in-class social and labour standards on site and pay workers a living wage, implement health and safety protections, training, rights, and protections for vulnerable workers (including specific protection for women, young people, migrants, older people, indigenous and tribal peoples, persons affected by HIV or AIDS, persons with disabilities, domestic workers and subsistence farmers), encourage active worker engagement and consultation on key decisions and planning, and invest in staff training and behaviour change for environmental performance.

"Work together to address shared barriers"

Work together to benefit from symbiotic opportunities and drive system change: Join collective efforts with other producers, whether facilitated by NGOs, technical organizations, government bodies or international organizations, share best practices and challenges in implementing improvement, and engage with brands and policymakers to help shape brand and policy solutions.
The following list of actions aims to offer a sense of the most urgent priorities for each stakeholder type, based on industry consultation and scientific analysis (i.e. actions that hold the most potential to address hotspots are prioritized). This does not mean that each stakeholder should undertake each action, but instead it is recommended that you further prioritize actions based on a number of key criteria, including:

<table>
<thead>
<tr>
<th><strong>What has already been done</strong> by the actor (i.e. you might have already implemented some of the actions proposed). Further, identify existing goals or KPIs and evaluate whether they are sufficiently relevant and ambitious.</th>
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<tr>
<td><strong>The degree of impact likely to be driven by each action</strong>, based on your organization's own specific impacts, scale and challenges or the possible influence in the wider value chain. Ideally your organization should have some overall sense or full analysis of impacts in different areas to make informed decisions.</td>
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<td><strong>Which actions are feasible within the policy, influence and physical limitations of your organization. For example, rooftop solar panels might not be feasible in a location with no rooftop space, while purchasing renewable energy might not be feasible where private energy purchase is not legally permitted, or a lack of leverage with key stakeholders like the petrochemical industry might make it challenging to address impacts.</strong></td>
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<td><strong>Whether an activity is likely to ‘unlock’ other actions</strong> – e.g. an evaluation of company or country impacts, an on-site audit of potential investment opportunities, a reversal of a key legal barrier to activity, or infrastructure that unlocks impact reduction – for either your organization or your value chain partners.</td>
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<td><strong>Whether there are any potential trade-offs that could be problematic</strong> based on the specific situation, if there are important sustainability disadvantages to implementing an action, e.g. a major increase in impacts in another area, or social trade-offs. This should ideally be based on a systems analysis of your organization’s structure and dynamics as well as an analysis of sustainability impacts. Engagement with key stakeholders should be prioritized when developing actions to avoid unintended consequences.</td>
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<td><strong>The outcomes of consultation with relevant and credible stakeholders</strong> – e.g. NGOs, technical organizations, workforce, affected communities, suppliers, consumers, citizens – and what they would prioritize for your organization.</td>
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<tr>
<td><strong>Practical implementation resources required and financial factors</strong> such as available capital and return on investment. These should be considered as a secondary factor after the potential scale of impact of an action, but ‘low-hanging fruit’ with low implementation costs and positive impacts can be implemented immediately compared with large investments that might take more time to authorize or obtain investment for. If you are an SME, smallholder or another actor with lower access to capital, you might find that high-cost activities are not feasible without non-commercial financial support from another actor and thus you should prioritize identifying this financial support wherever possible.</td>
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<tr>
<td><strong>The availability of collaboration mechanisms and resources</strong> for a specific action – e.g. collective programmes that can be joined or supported, forums where issues can be raised, funding sources that could be applied for, collective advocacy or influencing opportunities – that can help to deliver either internal or industry-wide solutions.</td>
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Based on all of these factors, you can review the relevance of the actions below – or identify additional actions – to create your own plan for circular and sustainable textiles. The Roadmap report recommends prioritizing upstream and holistic actions, such as on product design, business models or changing aspirations.
## ACTIONS TO DELIVER THE NINE BUILDING BLOCKS

### 1. Sustainable and circular textile business models are adopted globally

- This requires a significant shift in perception of what ‘value’ means for consumers, brands and retailers. The focus must be placed on shifting the market and business revenue away from linear models towards circular models that have demonstrated environmental and social impact reduction across the life cycle, or focusing on selling experiences or other non-material goods rather than physical products.
- Trial new circular processes and practices on site. Explore new business models like the refurbishment or disassembly of pre-owned items, new opportunities around processing recycled feedstock, or other alternative business opportunities.
- Be transparent about your challenges and needs in pivoting to a sustainable and circular model, particularly with policymakers and customers. Proactively sharing these barriers ahead of imposed requirements from customers or the government is likely to result in more workable solutions and support, especially if done in collaboration with others in the same region/operation type.
- Collaborate proactively and collectively with decision owners such as brands to ensure better decisions on product specification solutions for circular models.
- Engage with policymakers to help shape policy interventions that are practical for producers, and transparently share information and encourage information sharing along supply chains.

### 2. Textile overconsumption and overproduction are addressed

- A significant decrease in overconsumption is required, particularly in developed countries. This can be achieved through a combination of increased clothing utility (how long a product is used) and shifting consumer norms and aspirations towards lower consumption through engagement with the social and emotional aspects of behaviour. Reducing overproduction will be important for brands and retailers, and can be achieved through improved stock and demand management, as well as exploring new models such as on-demand production.
- Focus on quality production to ensure that products are usable and enjoyable for longer, including:
  - considering elements such as raw material quality and wear, and optimizing material production to ensure the best available fibres;
  - optimizing textile processing to result in higher performance standards for pilling, colour fastness, etc.;
  - pushing standards in cut, make and trim so that products are finished well, have durable seams, and are tested to ensure that they support a minimum number of wears;
  - ensuring that increased product quality is coupled with product design that supports a longer use phase through improved adaptability and emotional durability.
- Work with brand and retail customers on product development cycles, purchasing practices and innovative models such as on-demand production to reduce overproduction. Engage with brands and technical partners to examine and agree on optimal approaches to business partnership, covering pricing for reduced production runs, safeguards for cancelled orders and other important risks for producers.

### 3. All textile products are designed to minimize impacts and support circular models

- Design must be informed and intentional. Improved data and feedback loops will be critical to take into account knock-on effects of design at each stage of production, use and end of use. Products should be designed to consider the relevant circular business model (e.g. durability for rental), and with the assumption that they will be an input to closed loop recycling.
- Where feasible, proactively create or adopt circular and sustainable design innovations, such as alternative fibres, treatments, or product specifications and engage and educate brand customers on the benefits of these improved circular offers.
- Work with brands and retailers to identify design decisions or specifications that can reduce or eliminate dependent impacts such as chemicals of concern, significantly reduce waste within production processes, or increase material durability and recyclability.
- Work through potential design, model and production trade-offs to optimize sustainability and circularity outcomes while ensuring adequate business rewards.
- Work with technical support to realistically evaluate options for more circular and sustainable design and production and explore return on investment (ROI) for each intervention.
Better product care reduces impacts and improves product durability

The consumer ‘use’ phase for textiles has chemical, energy, and water impacts, alongside microfibre and product durability issues. However, most textile brands do not include the consumer use phase in their impact evaluations and there are no large initiatives working on this phase. There is especially a need for more data on product care impacts and behaviour, also considering that consumers are diverse and global:

Explore how material selection and production techniques can support improved use phase impacts.

Work with brands to invest in solutions that reduce common challenges around use phase impacts, such as washing and drying temperatures, pilling, fading or staining, as well as microfibre and chemical release in washing.

Textile production sites – especially wet processing sites – require major support and investment to substitute machinery and apply circular production methods. This is particularly important for sites beyond tiers 1 and 2 of large multinational brands, or production countries without strong policy enforcement on cleaner production:

Carry out a full evaluation of production impacts, where possible in collaboration with a credible third party, and identify priority cost-effective interventions at the site level. Evaluate how on-site setup and processes as well as purchasing decisions can be optimized to reduce social and environmental impact and the material and inputs per unit of business value.

Identify if financial support is available for on-site improvements, including through NGO, government or private financial sources. Communicate clearly with financial providers on the uses of capital – such as for upscaling purposes, energy infrastructure, waste treatment or other individual functions – to enhance the tailoring of financial support to producers’ needs. Engage with policymakers and other stakeholders to ensure that they are aware of financial project needs for your operational changes and other organizations and can tailor potential solutions.

Continuously improve resource efficiency practices.

Invest in production innovation and R&D while ensuring compliance with all relevant legislation.

Create and deliver ambitious commitments towards:

- power production and the distribution of products with renewable energy;
- eliminating chemicals of concern and pollutants (including addressing microfibre and water quality issues through capture and water treatment) and creating chemical extraction and recycling programmes;
- adopting on-site water recycling technologies, and exploring methods for controlling microfibre release in the consumer use phase.

Minimize production by-products through patterning and fabric management processes to minimize the volumes of offcuts and – where unavoidable – using them as high-value resources. Segregate waste at source, managing waste streams to ensure that they can be used or sold for optimum utility, and explore approaches to utilizing waste materials in new products, trace waste to recycling facilities and verify that there is no landfill or incineration of waste.

Invest in environmental management systems and staff training to support impact reduction and circularity goals and ensure that processes are optimized.

Work with brands, technical organizations and other stakeholders to explore effective incentives for action, including the relevant brand-specific role in supporting the transition.
### A just transition with skilled, safe, and empowered people takes place and social issues in the textile value chain are addressed

This includes collaborating with less-developed countries and previously marginalized communities, including – but not limited to – women, young people, indigenous and tribal peoples and persons with disabilities, which will help to avoid significant trade-offs and negative consequences:

- Identify social and labour issues throughout the production phase through a detailed due diligence and risk assessment process, and consider the social impacts of business decisions driven by sustainable and circular practices and models.
- Invest in workers through training, workers’ rights and protections, fair and living wages or through active engagement and consultation on key decisions and planning. Demonstrate alignment with best practices through audit processes.
- Focus on worker occupational health and safety, e.g. training workers on the proper use of chemicals.
- Communicate clearly with brand customers on necessary requirements for circular initiatives, e.g. increased margins to ensure that fair wages are paid, additional lead time, financial support and technological needs.
- Work with experts and policymakers to ensure a suitable transition for workers, including adopting suitable formalization mechanisms, implementing skills development and considering social impacts of business model decisions.
- Work with experts and policymakers to support agriculture-dependent livelihoods, including adaptation support for environmental impacts and shifts in employment locations, conditions and practices. Support the analysis of potential future changes in sourcing due to climate and population changes, competition with other land and resource uses and changes in global dynamics.

### Textile raw materials are shifted to sustainable or recycled sources

There is a need to rapidly scale new and more sustainable production and cultivation practices for virgin raw materials, and to mainstream fibre-to-fibre recycling through improved practices as well as investment in waste management systems and infrastructure:

- Engage with governmental or NGO/technical organizations to understand and implement available better practices for farming, forestry, or extractives, or join collective efforts and programmes to improve industry practices and address system-level barriers to prioritize on-site improvements and innovation for environmental impact reduction in production.
- Identify feasible funding sources to support on-site improvements, potentially through industry-level collaboration or government finance as well as commercial means. Engage with policymakers and other stakeholders to ensure that they are aware of financial project needs for your operational changes and other organizations and can tailor potential solutions.
- Invest in improved agricultural technologies and methods, including electrification and the use of renewable energy, water management, the elimination of chemicals of concern and the implementation of regenerative practices to improve soil health and biodiversity.
- Invest in high-quality agricultural seeds, farm-level growing practices and harvesting to ensure that natural materials are of optimal strength and quality.
- Invest in improved processes for man-made cellulosic and synthetic fibres to ensure that the highest quality fibres are available to the market, and that fibre property innovation delivers options that reduce the need for washing, drying or other maintenance.
- Close the loop on synthetic and man-made fibres and explore options around sustainable bio-based inputs including the chemical recycling of cotton. Maximize the chemical recycling of cotton, taking account of quality limitations.
- Consider implementing a voluntary certification scheme that validates and rewards best practices.
- Ensure that production performance data is recorded and shared with relevant stakeholders.
- For tier 1-3 suppliers, proactively source sustainable and circular raw materials, and share these options with brand and retail customers as well as other value chain partners. Buy larger orders from fewer suppliers to consolidate spend and drive change. Ensure that wet processes are optimized to ensure colour fastness and do not damage fibre strength.
Significant improvements in shared infrastructure are made globally for a sustainable and circular textile value chain. This includes renewable energy, waste management and water treatment, as investment in shared infrastructure is essential to unlock the potential of individual actors to make changes in their own systems: Explore potential for setting up operations in eco-industrial parks, or technical options for operating industrial ecology solutions, such as waste reuse, investing in shared infrastructure for renewable energy or wastewater treatment.

Work with other producers as well as technical organizations, policymakers and others to create collective demand signals for improved infrastructure and make a clear case for investment. Explore the feasibility of innovative financial solutions to infrastructure investment, such as blended finance.

Shifting consumer behaviour and global dynamics are required to avoid the need for landfill and incineration, for example, through circular solutions that reduce waste outputs. Solutions are needed to avoid shifting responsibility for waste disposal, such as trade of used textiles to locations that cannot use them and lack the infrastructure to adequately process textile waste.

Explore the attractiveness of on-site solutions that utilize post-consumer waste to create new fibre-to-fibre recycled materials or up-cycle textile items into new products to future-proof your business model and open up new revenue streams.

Explore any barriers to post-consumer textile recycling on site, such as import/export restrictions for used textiles, limited volumes or quality of feedstock or other operational constraints, and feed this input to technical organizations working to understand and address barriers to closed-loop recycling solutions.

INTERNAL AND EXTERNAL COORDINATION

Coordination is crucial in achieving a sustainable and circular textile value chain. Coordination actions that cut across all building blocks are outlined below.

Build internal capacity and systems

- Create internal processes to identify risks and opportunities around sustainable and circular solutions, and build staff capacity on technical aspects are much as possible, keeping pace with emerging technologies and data.
- Engage all relevant team members on sustainability and circularity, so that it is embedded as much as possible in day-to-day activities and future plans.

Coordinate with other value chain stakeholders

- Collaborate with industry bodies, technical organizations, policymakers, and financial institutions to enable the roll-out of circular and sustainable value chains, including through peer-to-peer learning and access to finance.
- Create or join in-country networks to help support circularity at the production stage. Engage with other producers on successful best practices and explore options for financial and technical support.
- Transparently share information with supply chain partners and customers, and encourage information sharing along supply chains.
This document forms the Raw Materials Producers and Manufacturers Annex to the United Nations Environment Programme report *Sustainability and circularity in the textile value chain – A global roadmap*.

This document is intended for raw materials producers and manufacturers within the textile value chain; for the full report, as well as annexes for other stakeholders, please visit: [www.unep.org/resources/publication/sustainability-and-circularity-textile-value-chain-global-roadmap](http://www.unep.org/resources/publication/sustainability-and-circularity-textile-value-chain-global-roadmap).

For more information on UNEP’s ongoing work on textiles, please visit [www.unep.org/sustainabletextiles](http://www.unep.org/sustainabletextiles).

**Endnotes**

1 UNECE (2021). Enhancing traceability and transparency of sustainable value chains in the garment and footwear industry, Recommendation N°46.
3 ILO (2021). Exposure to hazardous chemicals at work and resulting health impacts: A global review.