DUE DILIGENCE ON RECYCLING PROCESSES IN THE GARMENT AND FOOTWEAR SECTOR

Disclaimers

Foreword

This paper is designed to help companies understand risks and impacts within recycling processes in the garment and footwear sector and take practical action on responsible business conduct (RBC) due diligence. It first presents the context and current trends related to recycling processes (Section 1) and gives an overview of the various sources of textile inputs and typical actors in recycling processes (Section 2). It then examines structural and process-specific factors that may influence the severity and likelihood of potential and actual impacts in recycling processes (Section 3). Finally, the paper translates these insights into practical due diligence considerations for companies (Section 4).

For framing the due diligence considerations, this paper draws on the OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector (hereafter OECD Garment Guidance) (OECD, 2018[1])[1]. While drawing on research and examples from the garment and footwear sector, the considerations may also be relevant to other sectors.

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Executive summary

This paper supports companies in identifying and addressing responsible business conduct (RBC) risks and impacts within recycling processes[2] in the garment and footwear sector. It provides key due diligence considerations for all companies operating in the garment and footwear sector, including brands, manufacturers as well as key actors in recycling processes such as recyclers, waste collectors, aggregators and sorters. Most circular economy definitions, including the OECD's[3], emphasise reducing resource use and extending lifecycles of existing products and materials through reuse, repair, remanufacture and recycling. While all aspects of circularity warrant review with a due diligence lens, this paper focuses on recycling.

Recycling can significantly reduce environmental impacts as it can lower the demand for extracting new raw materials. However, it introduces new business relationships, processes and worker profiles that may change the severity and likelihood of adverse labour, environmental and governance impacts known from linear production. Scenario analyses in the Netherlands, for example, suggest potential annual reductions of 1 - 12% in greenhouse gas emissions and 4 - 46% in land use if consumers were to opt for more products with recycled content[4] (calculations based on Koch et. al (2025[2])). As more brands are transitioning to circular products and business models, where recycling plays a key role, and manufacturers are increasingly recycling post-production textile waste, this paper addresses an increasingly relevant topic and an area of the circular economy with comparatively high risks and impacts for workers and the environment.

The transition to circular products[5] and the growing need for recycling have underscored the need to tailor due diligence. Many potential and actual adverse impacts may mirror those in linear supply chains, but their severity and likelihood may differ due to the involved business relationships, processes and worker profiles. Companies do not need to develop entirely new approaches to due diligence but can build on existing policies and practices for conducting risk-based due diligence from linear supply chains and refer to existing OECD due diligence standards. As companies start to conduct due diligence on recycling processes, the following key areas require particular attention of companies:

- Scoping of potential adverse impacts associated with circular processes to identify where potential and actual impacts are most likely and severe and need to be prioritised for further action;
- Adequacy of current due diligence policies and management systems;
- Assessments of companies' relationship to adverse impacts, for example through purchasing practices and design choices;
- Identification of key actors and engagement with them through establishing expectations and partnerships, as well as building the capacities of key actors and making own commitments to source more responsibly recycled fibres to improve recycling outcomes and rates.

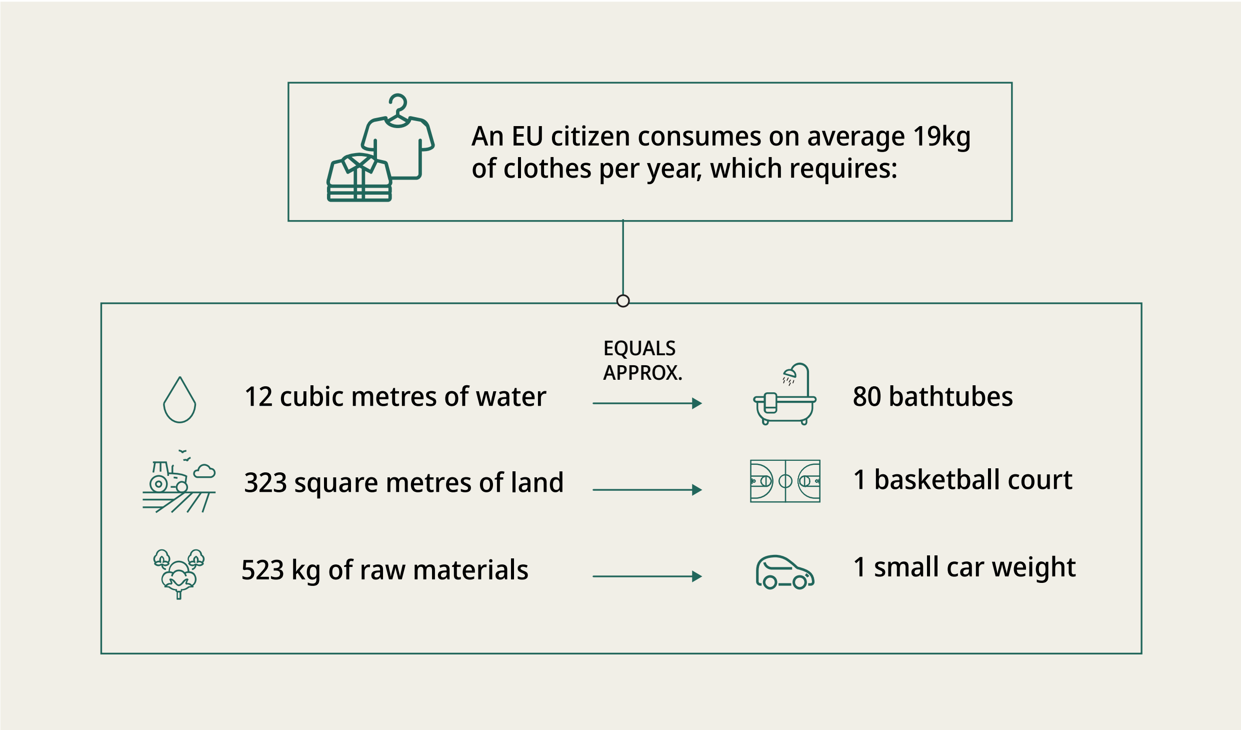
1 Context and current trends

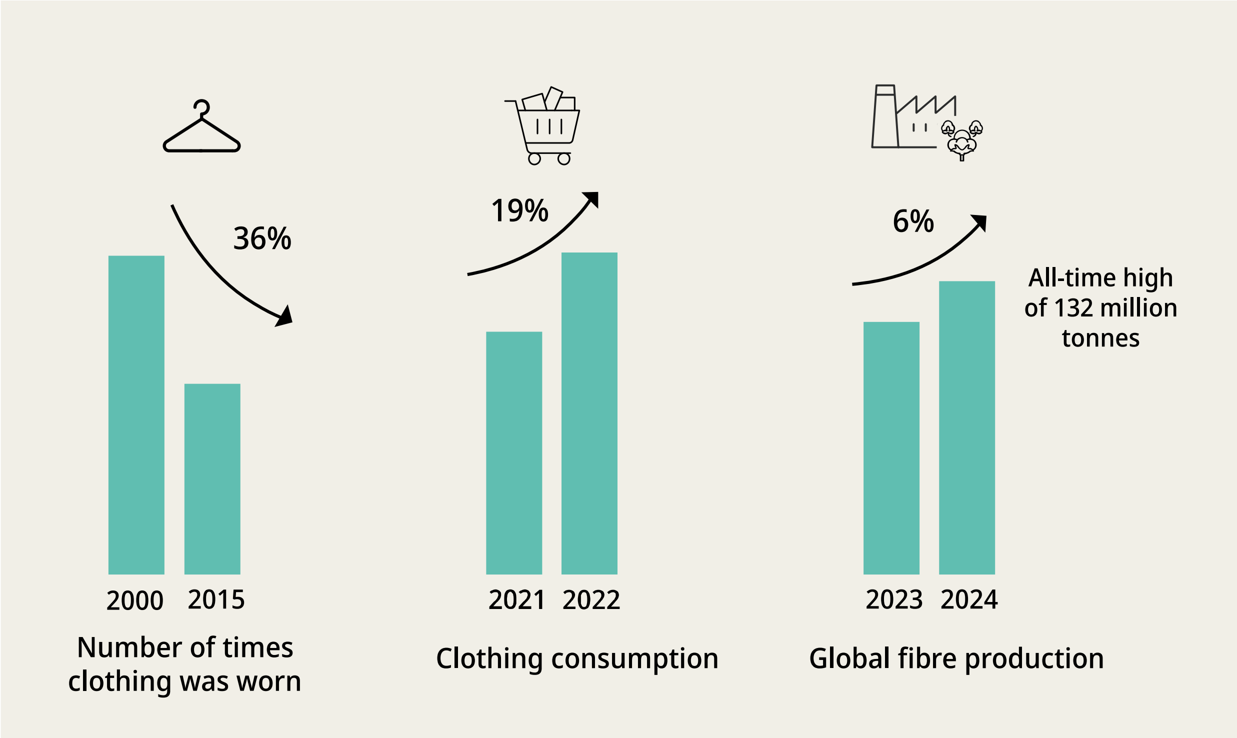
Linear supply chains and increased consumption

The garment and footwear sector supply chain to date has mainly been linear, in which products are manufactured, used and ultimately discarded, generating significant environmental pressures. The sector's use of raw materials, water, chemicals and energy contributes to notable resource depletion and pollution, further amplified by increasing global consumption. While recycling is central, sector experts caution that it cannot keep pace with the volume of textile waste currently generated (Ellen MacArthur Foundation, n.d.[3]).

High turnover of styles, constant marketing and low pricing have accelerated consumption. Overall, clothing consumption and global fibre production continue to rise, and the number of times clothing is worn decreased, pointing to possible reasons such as declining durability, faster changing consumer preferences or tendencies of wardrobe expansion (see Infographic 1). In the United States, inflation-adjusted garment prices in 2024 were roughly the same as in 1994, even as prices for other consumer goods rose. During this period, prices for women's and girls' clothing even fell by 15% and 21% (U.S. Bureau of Labor Statistics, 2025[4]).

Infographic 1. Clothing and fibre consumption





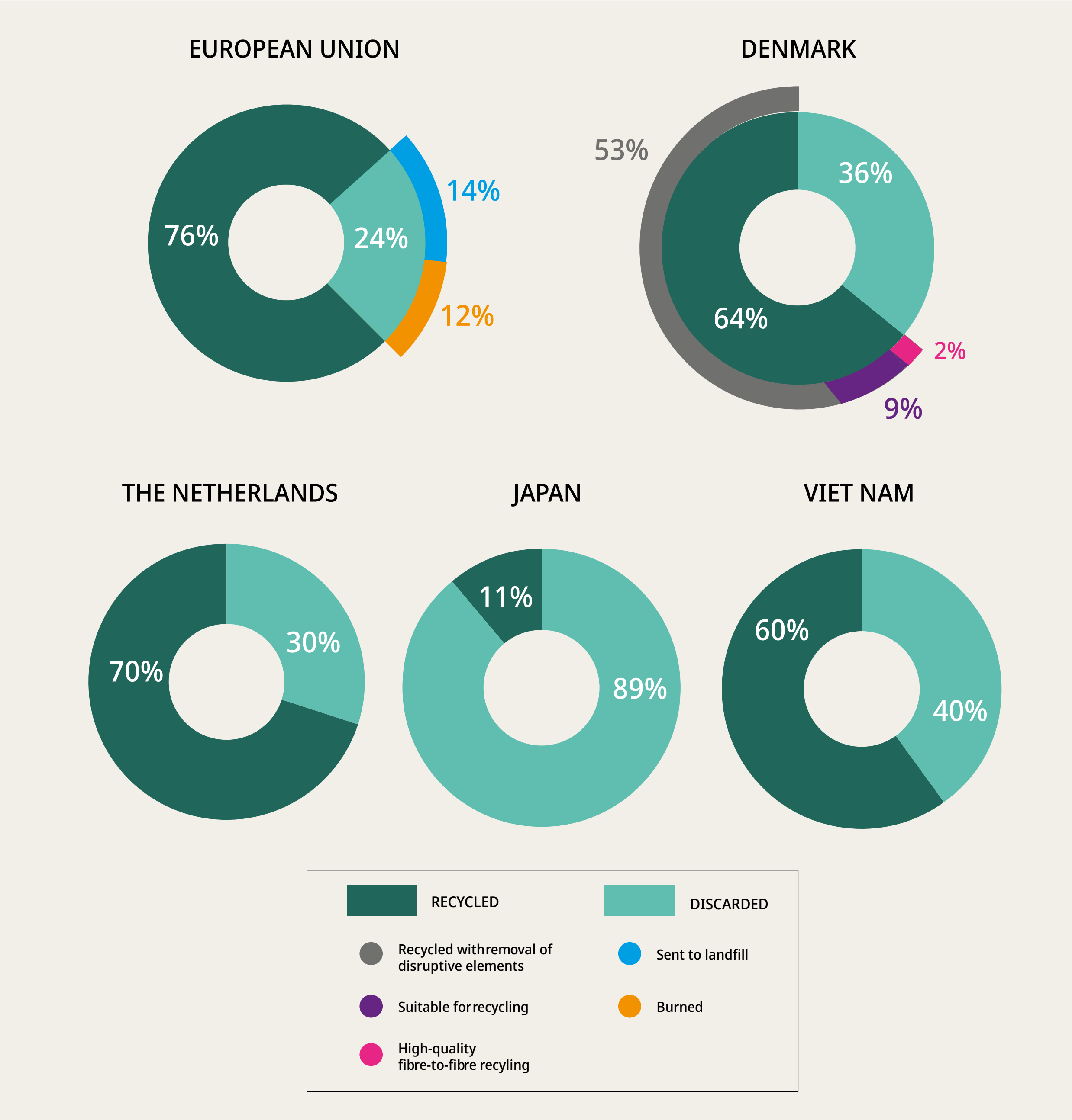
Source: Based on European Environment Agency (2025[5]); Ellen MacArthur Foundation (2017[6]); Textile Exchange (2025[7]).

Textile waste collection and recycling capacities

Collecting post-consumer textile waste separately remains a major challenge, limiting current recycling rates. It is estimated that the market share of recycled fibres stagnated at around 7.6%[6] in 2024 (Textile Exchange, 2025[9]). While some EU countries reach capture rates of separately collected textile waste of 50%[7], most post-consumer textile waste is still disposed of in mixed household waste (see Infographic 2). Textiles disposed in mixed household waste are easily contaminated and are therefore usually permanently removed from recycling streams. Waste characterisation studies indicate that textiles typically make up between 3% and 6% of all residual waste by weight (OECD, 2024[8]).

Studies in Japan (30%) and the Netherlands (53%) showed that a significant share of collected textiles could be reused [Ministry of Environment of Japan (2025[10]); Dutch Ministry of Infrastructure and Water (2024[11])]. The remaining share is then either recycled or discarded (e.g., burned or landfilled), with varying degrees across countries (see Infographic 2). While the share of separately collected textile waste that can be recycled has been increasing due to technological innovations, mixed-fibre products, conditions of the items (e.g., residues, moisture), attached accessories and coatings often prevent effective recycling or make it more costly. A waste study in Ontario, Canada concluded that 38% of clothing and 26% of home textiles that could be analysed were fibre blends (Weber et. al., 2024[12]).[8] In addition, not all fibres of textiles sent for recycling will be re-used but downcycled or discarded when fibres turn out to be too short for yarn production after mechanical recycling[9] (e.g., 20% of cotton in a study in Viet Nam, see German Development Cooperation Agency (2024[13])).

Infographic 2. Recycling rates of separately collected textiles that cannot be reused



Note: The selected countries are included as illustrative examples based on available studies. The results should not be interpreted as representative of global averages.
Source: Based on European Environment Agency (2025[5]) (EU); Heather Margaret Logan (2025[14]) (Denmark); German Development Cooperation Agency (2024[13]) (Viet Nam); Ministry of Environment of Japan (2025[10]) (Japan); Dutch Ministry of Infrastructure and Water (2024[11]) (The Netherlands).

Textile waste exports

The large-scale export of used textiles has implications for recycling outcomes. Exporting used textiles for sorting, reuse, recycling or other purposes limits the availability of feedstock for domestic recycling systems. A study found that sorting capacities are not always fully utilised for textiles collected domestically, citing the Netherlands, where half of the collected textiles are sorted abroad, and the local sorting capacity is used to sort textiles from Germany (Fashion for Good, 2022[15]). For importing countries, used textile imports can create waste management challenges, especially when lower-quality, damaged, or unsuitable clothing that cannot be resold domestically is exported[10]. Where waste management systems are limited or unable to absorb the high volume of imports, these textiles risk being discarded in landfills, burned or illegally discarded in nature, including rivers (Changing Markets Foundation, 2023[16]) (see Section 3 for more context).

Regulatory drivers

Regulatory developments and investor demands are accelerating interest in circular models. Key initiatives include the European Commission's Sustainable and Circular Textiles Strategy (2022[17]), the EU's Ecodesign for Sustainable Products Regulation (2024[18]) and the revised Waste Framework Directive (2025[19]), as well as national initiatives[11] to introduce extended producer responsibility (EPR)[12] schemes and growing investor interest in corporate net-zero commitments. For example, Chile (2025[20]) has recently included textiles in its existing EPR framework, requiring producers to finance and organise textile waste management systems. The EU's earlier Waste Framework Directive (2008[21]) and its amendment already required EU member states to set up separate collection systems for textiles by January 2025, and the 2025 revision requires them to establish their own EPR scheme by early 2028[13], and make sorting of collected textiles mandatory prior to any export[14].

The funding and investment opportunities coming from EPR schemes, combined with better design choices (e.g., reduction of mixed-fibre products), have great potential to make recycling more viable in the long-term (Ellen MacArthur Foundation, 2024[22]). For example, the French EPR regulation had a positive effect in creating separate collection systems for used textiles (OECD, 2024[8]). However, some sorters are concerned that EPR legislation may increase the volume of lower-quality and damaged textiles entering collection schemes that were previously discarded in mixed household waste, thereby affecting their already low margins (see Sections 3 and 4). A study of sorting facilities in European countries confirmed that the revenue for sorters was primarily derived from 30% of the highest quality textiles (Fashion for Good, 2022[15]). The study also confirmed that 74% of non-rewearable and low-value rewearable textiles, while financially less viable, could be used as feedstock for recycling. Thus, impacts from higher volumes of lower quality garments may only be mitigated as recycling technologies and semi-automation scale.

Company approaches

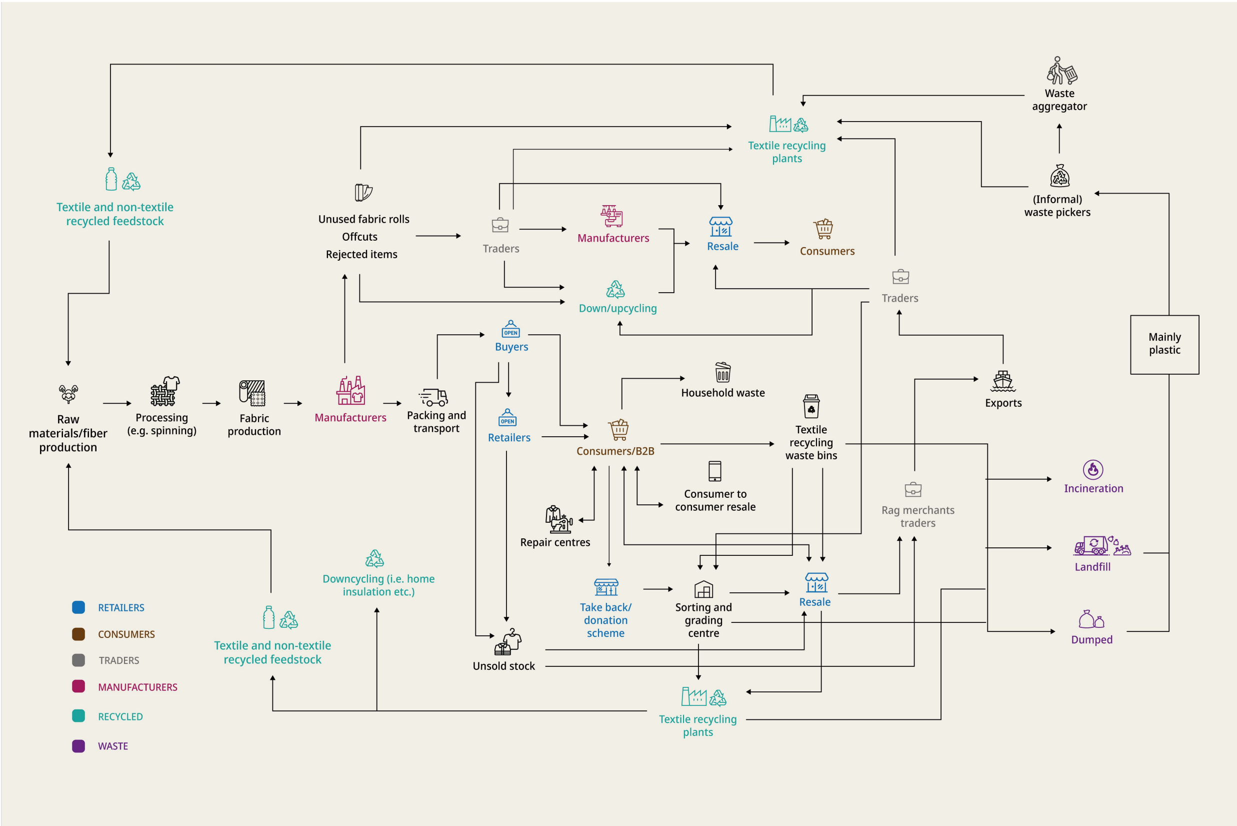
Several companies in the sector have developed their own circular principles and recycling targets. For example, IKEA (2024[23]) has adopted eight circular design principles, while ASOS, BESTSELLER, H&M, and Zalando formed a Circular Design Consortium to align approaches (2023[24]). Many companies make commitments to increase the share of recycled content in their collections to achieve their net-zero commitments and broader environmental impacts [(Patagonia, n.d.[25]; Adidas, n.d.[26]); (Haglöfs, n.d.[27]; H&M, n.d.[28]); (G-Star Raw, 2025[29])]. Some companies use certifications[15] to verify claims on recycled content in their products or circular design.

Some companies also choose to invest directly in companies in the circular value chain and digital waste registries. For example, H&M (2025[30]) invested in the recycling company Syre, while BESTSELLER (2025[31]) cooperates with textile-to-textile recycler RE&UP. Digital technologies increasingly facilitate waste traceability. For example, Reverse Resources, a digital information platform, connects waste handlers and recyclers with manufacturers have registered their pre-sorted waste on the platform. H&M (2022[32]) has a platform through which its manufacturers can register textile cutting waste, which is then made available to a network of recyclers.

2 Sources of textile inputs and actors in recycling processes

Inputs into recycling processes can be grouped into three categories: post-production textile waste, post-consumer and post-commercial textile waste, as well as open-loop inputs. The infographic below illustrates how these input streams interrelate with the linear value chain.

Infographic 3. Overview of recycling processes in the garment and footwear sector



Note: This is a simplified overview for exemplary purposes.
Source: Adapted from the circular value chain mapping by the Ethical Trading Initiative (2025[33]), Circular value chain mapping, https://www.ethicaltrade.org/resources/blog/redress-fashioning-fairer-future.

Post-production waste

Post-production waste, also referred to as post-industrial waste, refers to products, fabrics or textile scraps discarded during or after manufacturing or spinning, such as damaged yarns, fibre slivers, scraps, excess fabric stock, as well as defective or rejected fabrics, garments or footwear[16]. Conventional production is estimated to generate 15% offcut waste per garment (Rissanen & McQuillan, 2016[34]). Post-production textile waste is collected, aggregated and sorted. Sorters typically categorise textiles for sale to other manufacturers for reuse (e.g., textile-to-textile recycling[17], upcycling) or recyclers (e.g., recycled fibres, downcycling into new consumer or industrial products such as rags or insulation), disposal or energy recovery streams (e.g., firing boilers, kilns). Post-production textile waste is increasingly recognised as valuable input for recycled textiles, especially when it is kept clean and sorted by colour and fibre type at the manufacturing stage.

Companies handling post-production waste range from small informal workshops to large formal companies. Companies can specialise in sorting, pre-processing (e.g., shredding into smaller pieces, washing, dyeing, bleaching), or recycling, or cover several steps. Mechanical recycling[18] is accessible to small-scale operators due to its low-tech nature compared to chemical recycling[19]. Recycling hubs, specialised in processing and recycling post-production scrap materials, are often located in key production regions such as Prato in Italy, Faisalabad in Pakistan and Tirupur in India.

While it varies across geographies and contexts, labour involved in post-production waste processing is predominantly manual. For example, cuttings are often sold as aggregated mixed waste, which has to be sorted, usually by hand. As activities remain highly manual, margins remain low, which leads to these activities often being carried out in informal, small-scale or family-run units (see Section 3 for more context).

Post-consumer and post-commercial waste

Post-consumer and post-commercial waste refer to waste from private households and commercial entities such as hotels or hospitals (OECD, 2024[8]). Used and returned textiles are collected and sorted for repair, reuse, recycling and downcycling. As post-consumer and post-commercial waste is more diverse and complex than post-production waste, it often requires advanced sorting technologies.

Waste collection and sorting involve municipalities, independent collectors, charities, brands, repair companies, resellers and informal settings. Sorting can be formal or informal, often involving numerous small-scale sorters and aggregators. Waste handlers typically collect, sort, and sometimes pre-process waste before selling it - or recycling it in case of own facilities. Some waste is exported to lower-income countries for sorting and processing (see Section 1), though automated sorting near collection sites is increasingly cost-effective.

Sorting of post-consumer and post-commercial textiles is highly labour-intensive. It often involves classification into hundreds of categories by quality, fibre type and colour. This task demands a high level of material knowledge and visual judgement. In countries with high labour costs, sorting centres are often supported by semi-automated systems (e.g., conveyor belts, optical scanners). However, manual labour remains indispensable due to the variety of textile waste. Where economic incentives to invest in automation are weaker or investment capital is unavailable, textile sorting is often organised through labour-intensive systems commonly operating in informal or semi-formal contexts (see Section 3 for more context).

Open-loop inputs

Open-loop[20] inputs come from non-textile sources, primarily post-consumer plastic bottles, synthetic components or packaging. Most recycled feedstock comes from plastic bottles[21], also referred to as bottle-to-fibre recycling. The use of plastics recovered from the environment (e.g., marine plastics) is increasingly popular but its share remains minimal. Recovered materials require collection, sorting, and cleaning, and often produce lower-quality fibres unsuitable for high-performance or long-lasting products.

Open-loop inputs typically offer an alternative to sourcing newly produced synthetic fibres, but their use is increasingly being challenged. This includes beverage companies that set their own recycled-content targets, as well as sector stakeholders and policymakers[22] who call for the scale up of closed-loop textile-to-textile recycling systems to manage the sector's textile waste. Polyester textile-to-textile recycling is estimated to account for around 2% of all recycled polyester content (Textile Exchange, 2025[7]). In addition, once converted into textiles, the plastic can no longer be recycled into packaging applications, permanently removing high-quality feedstock from another industry, leading to in packaging being produced from newly extracted raw materials.

Actors include municipal waste services, recycling firms, networks of collectors and aggregators, as well as specialised recovery facilities. Buyers also partner with certified recyclers or civil society organisations to source marine plastics or post-consumer plastic bottles. Polyester pre-processors may source directly from manufacturers or via networks of waste handlers (German Development Cooperation Agency, 2025[35]).

While it varies across geographies and contexts, manual labour remains central due to the variability of plastic inputs and lack of waste infrastructure. In many regions, informal waste pickers, sometimes organised in collectives, play a vital role in supplying intermediaries and aggregators with plastic waste for recycling (see Section 3 for more context). In more structured settings, workers may be involved in manual sorting, quality assessment and pre-processing tasks such as washing and shredding plastics. Growing interest in marine plastics has created additional labour activities in coastal collection and marine debris handling.

3 Risks and impacts associated with recycling processes

This section presents unique structural and process-specific factors in recycling processes that, when present, can make RBC impacts more likely or severe. The structural and process-specific factors are relevant for textile-to-textile as well as open-loop recycling processes, noting that their relative significance may vary depending on the specific RBC impact. Many risks and impacts may mirror those in linear supply chains, but their severity and likelihood may differ due to involved business relationships, processes, worker profiles, as well as the country-specific context (e.g., regulatory environment, infrastructural capacity, access to finance, scale and fragmentation of operations, labour market characteristics). This section seeks to provide a starting point, but companies should conduct their own risk scoping and assessments.

Structural factors influencing the severity and likelihood of impacts

Informal employment[23] and low profit margins are two key structural factors influencing the severity and likelihood in recycling processes. It is estimated that about 80% of all jobs in the recycling sector are informal, with informality particularly prevalent in countries with lower labour costs (International Labour Organisation, 2025[36]). In textile recycling specifically, informal employment is most common where work is highly manual and can be carried out in small workshops, home-based units and open-air settings or is viewed as low-status work (e.g., plastic waste picking, waste and textile sorting, cleaning and shredding). As informal workers are typically not registered, regulated, or protected by existing legal frameworks, some adverse impacts tend to be more likely and severe than in formal settings. Profit margins in recycling processes are comparably low due to the highly manual nature of many processes and unstable waste volumes. While many sorters and waste shop owners can derive value from the resale of post-consumer textiles, the decreasing quality of materials and competition with cheap new products increasingly limits their profits (see Section 1). A survey of waste shop owners in Bangladesh [24] found that almost 25% were in debt, with income directly tied to the volume of waste processed (The Centre for Child Rights and Business, 2024[37]).

Working conditions

Working conditions in informal settings are usually considered to be harsher and less safe than those in formal settings. The conditions vary based on the local access to certain protections, income fluctuations, process-specific health and safety risks and the degree of workers' awareness of labour rights. While recycling requires specific equipment and infrastructure, collection, aggregation and sorting are often performed manually, especially in context where automated systems are not common. In such cases, these tasks are often performed by the most marginalised groups. While such jobs offer income and flexibility to those groups, the limited access to alternatives and their perceived status in society typically facilitates their acceptance of harsh conditions, reinforcing their vulnerability, which is further exacerbated when work is disrupted (see Box 1). A study of informal waste pickers in Lao PDR found that they face constant risks from handling sharp or contaminated materials, accidents and enhanced vulnerability due to the limited bargaining power over the price for waste (World Bank, 2024[38]). Governments and the waste pickers themselves, for example, in India, Kenya and the Philippines[25], have started initiatives to improve the conditions of waste pickers and their access to social protection systems.

Low margins constrain investment in occupational health and safety and environmental safeguards. Facilities may lack personal protective equipment, proper ventilation, support for handling heavy bales of textiles or safe machinery, which increases workers' exposure to injuries, chemical hazards, or respiratory problems (see Box 1 and Box 2). Similarly, limited financial capacity can reduce compliance with waste-handling standards, raising the risk of environmental pollution and illegal waste disposal (see Environmental risks).

Box 1. Climate-related impacts on informal waste pickers

Waste pickers and sorters are physically and economically more vulnerable to climate-related impacts such as heat or floodings. A study in Bangladesh (2025[39]) found that informal textile waste sorters typically operate outdoors or in makeshift tin and mud structures and therefore face intensely hot working environments during heat waves. Hot, dry weather also increases dust levels, leading to respiratory issues, throat irritation and occasional skin problems. During heavy rainfall, the temporary sorting sites offer minimal protection, leaving workers exposed to unsafe conditions. Humidity can cause mold, which not only reduces the value of the waste when being sold but also exposes workers to respiratory symptoms and infections. Because they are paid daily, workers continue working despite these conditions, as any lateness or absence can lead to immediate income loss. A study in Brazil (2023[40]) found that more than 90% of waste pickers surveyed across Brazil have experienced climate-related extreme weather events in the last year, with many reporting negative impacts on their health, earnings and ability to work.

Source: Zaman (2025[39]), Adapting to Climate Change: Workers in Bangladesh's Garment and Textile Recycling Value Chains in Bangladesh, https://ced.bracu.ac.bd/wp-content/uploads/2025/06/Sameera-Zaman-Adapting-to-Climate-Change-Workers-in-BD-Textile-Recycling.pdf; WIEGO (2023[40]), Climate-Change Impacts and Adaptation Strategies: Waste Pickers' Experiences from Brazil, https://www.wiego.org/wp-content/uploads/2023/10/wiego-policy-brief-n29-brazil.pdf.

Forced labour

Informality also heightens the risk of forced labour. Limited oversight by authorities, weak grievance mechanisms and support networks, as well as dependence on intermediaries, increase the vulnerability of workers. Migrant workers, predominant in sorting and recycling facilities in certain regions, face an increased economic dependency (e.g., to support their families back home, debt) or restricted mobility that can benefit forced labour practices by employers or labour brokers (see Box 2). This also includes inter-state migrants (Arisa & Sympany, 2020[41]). In Bangladesh's textile waste markets, research (2024[37]) found an informal workforce largely composed of migrant families from surrounding provinces.

Box 2. Risk of exploitation of migrant workers in the UK in the recycling and waste industry

In 2020, the UK Gangmasters & Labour Abuse Authority published findings on the risk of exploitation of migrant workers in the recycling and waste industry. Findings included:

- Recruitment fees to labour brokers, which can be an indicator of forced labour;

- Unsanitary and unsafe accommodation, including limited reports of workers living in outbuildings or in a vehicle and reports of rat infestations and fire safety concerns;
- Non-payment of the national minimum wage and reported earnings of between GBP 2 and GBP 4 per hour (the UK national minimum wage in 2020 was GBP 8.72 per hour);
- Dangerous and/or unsanitary working environment and lack of personal protective equipment (some workers reported being burnt and explosions occurring).

Source: Gangmasters & Labour Abuse Authority (2020[42]), Industry Profiles - Recycling and Waste Industry, https://www.gla.gov.uk/who-we-are/modern-slavery/industry-profiles-recycling-and-waste-industry-2020/.

Child labour

Child labour in recycling processes is a key area of concern. While child labour remains a general concern in the sector due to many factors that heighten the risk[26], studies document the existence of child labour in sorting, pre-processing, cleaning and mechanical textile recycling, as well as in the recycled plastics sector. A study in India (2020[41]) recorded children and young workers in bleaching facilities, often working seven days a week, while an assessment in Pakistan (2023[43]) confirmed that a substantial number of children and young workers were involved in waste-picking. Another study in Bangladesh (2024[37]) concluded that children were often engaged because low-skill recycling activities can generate earnings close to adult wages, creating economic incentives for families with limited livelihood options. In addition, textile waste that has been used for firing kilns in brick factories in Cambodia has reportedly involved child labour (Cambodian League for the Promotion and Defense of Human Rights, 2023[44]).

Box 3. Informality in textile waste markets in India and Bangladesh

Recycling hubs in India

In Panipat, textile recycling activities span sorting, bleaching, fibre and yarn production, as well as the making of carpets, daris and other household textiles taking place in both factory and home-based settings. A study (2020[41]) concluded that most units are unregistered and rely on casual labour without formal contracts. Women dominate sorting and cleaning, while men handle loading and unloading. Child and young workers are also observed, especially in smaller and informal units. In Delhi, textile cuttings are sorted in informal settlements near garment factories, involving inter-state migrant women and young workers working outdoors in all weather conditions. Regardless of links to recycling processes, women migrant workers in the garment and footwear sector are particularly vulnerable to labour impacts.

Waste pickers and waste processing in Bangladesh

Many cities rely on informal workers to manage up to half of daily waste. A study (2024[37]) concluded that in Dhaka alone, around 100 000 women and children work as informal waste pickers, earning between BDT 1 000-4 000 (Bangladeshi Taka)(EUR 7-28) per month. Wages in the informal textile waste sector are typically lower than those offered in manufacturing, with more physically demanding tasks like loading and carrying paying slightly better. Textile waste is often handled outside factories and sold to ‘waste markets’ which depend on informal migrant labour. In Mirpur in Dhaka, Bangladesh, many workers come from the surrounding Bihari-minority camp that take the jobs due to limited alternatives.

Source: The Centre for Child Rights and Business (2024[37]), Child rights and informal textile waste recycling in Bangladesh, https://www.childrights-business.org/resources/new-research-paper-child-rights-and-informal-textile-waste-recycling-in-bangladesh; Arisa Sympany (2020[41]), Textile Recycling Unravelled: Exploring post- and pre-consumer textile recycling value chains in Panipat, India, https://arisa.nl/wp-content/uploads/TextileRecyclingUnravelled.pdf.

Wages

Low margins directly impact the prevalence of low wages. Wage data from 29 countries shows that workers in waste management and recycling typically earn far less than in other sectors, with earnings in half of these countries being 36 - 75% below the national average (International Labour Organisation, 2024[45]). Such low-paying roles are often filled by vulnerable groups such as workers in elementary occupations, migrants and members of marginalised communities who have few alternative options, often earning below their country's minimum wage. A study in India points to a disproportionate income distribution, finding that although sorting increases textile waste value by 1.5 - 4 times, sorting workers, who are mainly women, received less than 5% of the added value (IDH, 2025[46]). Due to lack of alternatives, workers can rarely negotiate wages. Intermediaries often play an important role in facilitating access to work opportunities and linking workers to recycling plants. However, their presence often adds an additional layer between workers and recycling facilities, which can weaken direct employment relationships, lower take-home pay and reduce transparency (Barford & Ahmad, 2021[47]). The broader socio-economic context in a country further shapes wage outcomes and workers' financial stability.

Process-specific factors influencing the severity and likelihood of impacts

This section outlines selected risks associated with recycling processes themselves. The list is not exhaustive, and the determination of which risks are most significant is context-specific.

Occupational health and safety

Recycling processes pose significant occupational health and safety risks. Workers are frequently exposed to cramped seating and repetitive motions, heavy lifting, prolonged standing and exposure to hazardous substances such as fine dust (e.g., from mechanical textile shredding). Heavy machinery at recycling plants, such as shredders, can pose serious physical injury risks [Arisa & Sympany (2020[41]); Fashion For Good (2022[48]); Gregson (2016[49])]. A study in Bangladesh reported back pain and respiratory illnesses as the most common health issues (The Centre for Child Rights and Business, 2024[37]). Outdoor and informal work settings introduce additional health and safety vulnerabilities, especially under extreme weather conditions (see Box 1).

The construction of sorting warehouses and insufficient safety measures enhances the risk of fires. The flammable nature of textiles, combined with the lack of safer material testing methods, exposes workers to severe fire risks. Warehouses, including largely fragile and makeshift sheds or occupied abandoned houses, reportedly lack effective fire prevention systems and emergency response plans [(German Development Cooperation Agency (2024[13]); Siddika, A. & Riisgaard, L. (2025[50])].

Chemical exposure is a major risk in both pre-processing and recycling. Substances used in mechanical and chemical recycling processes pose risks to workers and surrounding communities, especially where chemical management systems are absent or inadequate. Chemicals can lead to allergies, skin irritation, respiratory disorders and even fatal lung diseases when handled without protection (Arisa & Sympany, 2020[41]). Informal operations often cannot treat effluents properly, with bleaching water being released in open drains identified as a key source of community health impacts. Additionally, rising temperatures in certain production environments may discourage workers from wearing protective gear, with long-term exposure and repeated contact with hazardous substances leading to health issues (Siddika, A. & Riisgaard, L., 2025[50]).

Sorting post-consumer textiles poses health risks to workers. Post-consumer textile waste processors will also have much less information about the original chemical content and chemical stability of the materials than post-industrial waste processors, where information is more likely to be passed on. Unknown chemical histories, including restricted or banned substances such as carcinogenic azo dyes and alkylphenols that were used in components, coatings, fillings or finishing before they were banned, combined with the absence of chemical or burn testing due to costs, increase risks. Workers may generally not be informed about the chemical hazards they face, preventing them from taking necessary precautions. In some cases, reliance on tactile sorting methods using haptic touching of the products makes wearing gloves impractical (Gregson, 2016[49]). Even today, textiles pose chemical hazards, with the EU reporting 70 alerts in 2023 for excessive chromium or non-compliance with persistent organic pollutant regulations (European Environmental Agency, 2025[51]).

Environmental risks

Improperly disposed textiles in landfills or burning, as well as chemical release, impact soil, water, air and biodiversity.[27] The decomposition of textiles can release methane, fibre fragments and chemical leachates, affecting soil fertility and crop safety. Open burning on landfills, especially synthetic garments, contributes to toxic fumes leading to respiratory health risks for nearby communities and emissions (Lundberg, 2022[52]) (Tony Blair Institute for Global Change, 2021[53]) (Refinery29, 2023[54]). Improper disposal of textile waste can also harm sensitive ecosystems. For example, discarded clothes have been found dumped in protected wetlands in Ghana, threatening biodiversity and local water quality (The Guardian, 2025[55]). When textile waste is discarded in rivers, chemicals and microfibres from synthetic fabrics can leach into the water, potentially causing skin irritation or rashes on direct contact, and leading to long-term toxic effects when they enter food chains and drinking water. Similar to observations in wet processing, the release of chemically contaminated wastewater from bleaching processes into open drains and channels has been observed for recycling processes affecting the environment.

Transport of post-consumer textiles impacts the environment. Transporting used textiles across continents for resale, cheaper sorting, or recycling generates substantial emissions from shipping and trucking.

Energy demands for chemical treatments and recycling processes, especially those requiring high heat or pressure, contribute to greenhouse gas emissions. The environmental impact of textile recycling depends on the type of fabric used – either mechanically, in which fibres are pulled apart and reworked into yarn, or chemically, where fibres are repolymerised and spun. In contexts where energy comes from non-renewable sources, the environmental impact of recycling operations is amplified.

Criminal activity linked to waste collection and sorting

Criminal activity across formal and informal collection, sorting and recycling activities presents significant risks. Crimes include illegal dumping; falsifying documentation, such as the misclassification of waste; abuse of permitting and exemptions; money laundering; and bribery of customs officers, inspectors, law enforcement or waste managers (Waste Management World, 2023[56]). In Romania, environmental inspectors have lodged complaints against several local companies accused of illegally importing dirty, poorly sorted textiles and discarding much of it improperly (Organized Crime and Corruption Reporting Project, 2024[57]). The lack of transparency in textile handling after collection is a key enabler of waste crime, as organisations are rarely required to track the final destination of waste (Interpol, 2020[58]). In some regions, the trade in textile waste is an important economic activity for criminal networks. Manufacturers may feel pressured to sell their factory waste to these groups to ensure protection for their business. Risks are amplified in jurisdictions with high corruption, weak legal frameworks, opaque procurement practices, or ineffective regulatory enforcement.

4 Due diligence considerations

Due diligence is the process enterprises should carry out to identify, prevent, mitigate and account for how they address these actual and potential adverse impacts in their own operations, their supply chain and other business relationships, as recommended in the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct (OECD, 2023[59]) and applied in the OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector (OECD, 2018[1]) to the particular risks and characteristics of the sector.

The transition to circular products[28] and the growing need for recycling have underscored the need to tailor due diligence. While companies may not always have direct control over all circular activities, they may still contribute or be directly linked to potential and actual adverse impacts through their business relationships or textile waste. Companies do not need to develop entirely new approaches to due diligence but can build on existing policies and practices for conducting risk-based due diligence in linear supply chains and refer to existing OECD due diligence standards. This includes meaningful engagement with stakeholders, adapting due diligence to changing circumstances and the focus on continuous improvements with credible targets (OECD, 2018, pp. 16-18[60]). While due diligence is applicable to all enterprises regardless of their size, small and medium-sized enterprises may choose to adapt mechanisms and collaborate with others to apply due diligence in light of their resources, position in the supply chain and leverage, noting that they also often have smaller operations and fewer business relationships to manage.

As companies start to conduct due diligence on recycling processes, the following key areas require particular attention:

Scope potential adverse impacts associated with circular processes

Conduct a broad scoping of recycling processes and identify where potential and actual impacts are most likely and severe.

Recycling processes introduce new business relationships, processes and worker profiles, making it important for all companies to build their understanding of the dynamics. This can include identifying actors that control key processes ('choke points'[29]) (see Box 4). Many relevant business relationships are indirect, so collaboration with other companies, industry initiatives and local stakeholders can be helpful to identify key processes and actors. Once the company has gained that knowledge, the process for scoping potential adverse impacts in recycling processes follows the same principles as in linear supply chains. Companies are recommended to determine the likelihood and severity of known sector risks, taking into account a number of risk factors, including product, country, sourcing-model and business-model risk factors (OECD, 2018, pp. 47-50[1]). Companies should use internal and credible external sources, information from effective grievance mechanisms, and input from stakeholders and experts, where feasible, to conduct the scoping exercise (OECD, 2018, pp. 28 -28, 61-73[1]).

Box 4. Visibility over high-risk value chains

To assess potential and actual adverse impacts linked to recycling processes companies can:

- Build a macro-level understanding of textile waste flows and onward trade, using sources such as disclosures, customs data and local reporting. A more precise picture can be obtained through on-product tracking of post-consumer items or specific collection methods, as shown in investigations of corporate take-back schemes (Changing Markets Foundation, 2023[16]). However, traceability[30] is not an end in of itself but a means for transparency in particularly high-risk contexts and needs careful weighing of the costs and benefits (OECD/IEA, 2025[61]).
- Identify and engage with 'choke points' related to post-industrial and post-consumer textile inputs such as waste pickers and collector cooperatives, sorters, logistics providers and recyclers as well as worker representatives to understand onward trade of sorted waste streams, common sourcing practices, capacity constraints and risk hotspots. These actors often hold the most practical insight into formal and informal waste flows and local challenges.
- Prioritise engagement with workers, workers' representatives and trade unions. Where representation is not formalised, companies could start engaging with workers through informal dialogues or roundtables, also in collaboration with other companies.
- Engage with manufacturers on specific practices related to post-production textile inputs, including questions on how it is handled, to whom it is sold and who processes it, ensuring that companies have an overview of the realities on the ground.
- Engage with recyclers related to their sourcing of open-loop inputs such as plastics, including questions whether they source from specific sorters and their relationships to informal waste pickers. Estimate their own market share (e.g., volume of textiles placed on the market) to gauge the potential scale of impacts.
- Join geographic or issue-specific initiatives that seek to provide information in the areas identified (e.g., country roundtables, industry initiatives, local networks). Especially where risks are systemic in nature (e.g., informality), collaboration among multiple actors, including governments, is key to achieve meaningful improvements.

Source: OECD/IEA (2025[61]), The role of traceability in critical mineral supply chains, DOI: 10.1787/edb0a451-en; Changing Markets Foundation (2023[16]), Trashion: The stealth export of waste plastic clothes to Kenya, https://changingmarkets.org/wp-content/uploads/2023/02/CM-Trashion-online-reports-layout.pdf.

Acknowledge that including recycling processes in due diligence can change priorities.

The severity and likelihood of potential and actual adverse impacts known from linear supply chains may differ in the context of recycling processes. For example, as a result of the scoping exercise, companies may need to prioritise other high-risk business relationships or processes for further in-depth assessments (see Box 5). This may also include conducting high-level assessments on countries where textiles are collected or recycled, rather than focusing on traditional manufacturing locations. The determination of which adverse impacts are most significant will be context-specific.

Box 5. Difference between the high-level scoping exercise and in-depth assessments

Scoping refers to an initial, high-level process of identifying general areas, across own operations, supply chains and business relationships, where potential adverse impacts are most likely and severe. It is generally a desk-based exercise that involves gathering information internally (e.g., from exchanges with suppliers, expert organisations, workers or their representatives, grievance mechanisms, supplier surveys) and from credible external sources (e.g., public reports, media sources, stakeholder feedback). The scoping exercise is intended to be broad and helps the enterprise identify areas of the business for further in-depth assessment. For enterprises with less diverse operations a scoping exercise may not be necessary before moving to the assessment stage.

In-depth assessment refers to a more in-depth process that seeks to identify and assess specific adverse impacts. Assessments do not necessarily focus on individual business relationships but can also focus on understanding adverse impacts associated with a specific business area, geography, sector, product or service. In some cases, adverse impacts may be so prevalent in a particular region that assessing individual business relationships will not produce any new information. In this case, the enterprise may choose to focus immediately on prevention and mitigation.

Note: Further details can be found in Step 2 of the OECD Garment Guidance.

Reflect the adequacy of current due diligence policies and management systems

Assess whether existing policies and management systems need to be adapted to account for recycling processes.

RBC policies and management systems may be tailored towards linear supply chains and own operations, leaving potential gaps related to recycling processes. Policies should include commitments to risk-based due diligence across all business relationships (OECD, 2018, pp. 38-39[1]). Companies, especially those working with waste handlers, should ensure their internal governance is robust (e.g., adequate anti-bribery policies, internal controls) (see Section 3 on criminal activities related to waste handling). Companies should also ensure their internal systems support engagement with new actors, including adequate resources, they incorporate due diligence considerations into decision-making around new products and incentivise functional alignment and coordination across relevant teams (OECD, 2018, pp. 42-42[1]).

Consider the relationship to adverse impacts

Assess whether purchasing practices contribute to adverse impacts.

The relationship between the company and the adverse impact determines the enterprise's response and helps companies to prioritise and tailor prevention and mitigation measures (OECD, 2018, pp. 65-67, 72-74; Box 4[1]). Last-minute order changes, unclear product specifications or rejecting finished goods are significant drivers of waste. Such purchasing practices, combined with the lack of shared responsibility for costs of waste handling, can contribute to adverse impacts, for example, by increasing the likelihood that waste is diverted into informal or insufficiently regulated recycling systems due to cost considerations (Ministerie van Infrastructuur en Waterstaat, 2023). While further research will need to quantify the scale of this issue, companies can start by reviewing their purchasing practices and engaging with manufacturers regarding post-industrial waste and recyclers regarding sourcing recycled fibres and materials to identify opportunities for improvement.

Factor in handling and disposal costs of post-production waste into price negotiations.

While post-production waste ownership questions may arise most frequently in relation to deadstock and excess inventory, the cumulative volume of textile scraps can be significant, and the ownership question should not be overlooked. In cases where manufacturers have to pay for disposal, they are more likely to choose the cheapest disposal options if buyers do not support with costs (see Box 6). The waste composition and level of sorting determines whether, manufacturers have to pay waste handlers to collect and treat the waste or get paid by handlers. By factoring handling and disposal costs of estimated post-production waste for their orders into price negotiations, buyers can prevent that waste enters in informal handling systems, being used for energy generation in other industries (e.g., firing kilns or boilers), or ending up in landfill, further undermining recycling goals.

Box 6. Prices for post-production waste

In a study in Viet Nam, the average prices for sorted pre-consumer textile waste ranged between 0.08 and 0.22 USD per kilogram, with cotton achieving higher prices than blended textile waste and fluctuating further based on colour, purity and amount. In contrast, a recent shortage in supply reportedly led to 70% price increases of cotton scraps. Industry stakeholders consulted in that study estimated that about 40% of textile waste that was coming from garment factories and 60% from footwear factories was subject to waste-to-energy incineration, sometimes using the resulting ash for cement production known as co-processing.

Source: German Development Cooperation Agency (2025[35]): Pre-consumer textile waste recycling in Viet Nam. https://www.giz.de/de/downloads/giz2025-en-ecosystem-mapping.pdf

Examine if product design choices contribute to adverse impacts.

Design choices determine the feasibility of recycling and influence the likelihood and severity of risks and impacts downstream (see Section 3). Products designed for easy disassembly and transparency on their material composition can prevent or mitigate impacts, whereas complex material mixes, coatings, the use of hazardous chemicals and insufficient information about their use hinder recycling and increase worker exposure risks. In such cases, design choices can contribute to adverse impacts. In addition, products containing banned substances or exceeding regulatory thresholds cannot be legally recycled in such jurisdictions. For example, post-commercial waste such as textiles from hotels, hospitals or other workwear usually comes with various coatings (e.g., protection against ultraviolet light, water repellence, fire resistance) that are difficult for recyclers to handle and can reduce the quality of recycled products (Ndagano et. al., 2025[62]). Design choices and the arrangement of cut patterns on fabrics can also impact the amount of post-production waste that is generated during manufacturing (for example, see (ASOS, n.d.[63])). Integrating circularity considerations into design and establishing coherence on, for example, chemical inputs, requires collaboration and feedback loops with recyclers.

Box 7. Product design considerations

Guidelines for designers

Sympatex, a company producing recyclable polyester membranes, provides guides to designers to help them create garments and footwear that are easier to recycle. The guidelines promote mono-materials, minimalist designs, detachable closures, dissolvable yarns, and separable seams, while reducing reflective, metallic, or chemically treated trims. They also recommend grouping non-recyclable components, using alternative textures and finishes, and applying fluorocarbon-free, water-repellent treatments to enhance recyclability.

Circular design strategy

ASOS has published a dedicated guidebook describing strategies to make garments easier to recycle or re-use. For example, ASOS uses mono-materials to promote textile-to-textile recycling in their circular knitwear and puffer-jacket collections. Their strategy also involves avoiding mixed-fibre blends, minimising accessories (e.g., using knitted patterns instead of sewn-on extras), optimising lay planning (e.g., arranging pattern pieces efficiently on fabric, sometimes combining multiple styles in one lay), reducing material complexity, including the number of components, trims, and fibres used, as well as avoiding substances that might prevent recycling or harm recyclers.

Source: Sympatex (2024[64]), Responsible Design Guide Footwear, https://www.sympatex.com/wp-content/uploads/2024/11/Small_Responsible_Design_Guide_FW_EN.pdf; Sympatex (2023[65]), Circular Design Guide, https://www.sympatex.com/wp-content/uploads/2023/10/Eco-Design-Guide_english.pdf; ASOS (n.d.[63]), Circular Design Guidebook, https://asos-12954-s3.s3.eu-west-2.amazonaws.com/files/9516/3766/4620/asos-circular-design-guidebook.pdf?utm

Assess how collected post-consumer and post-industrial waste is handled.

Some brands try to address post-consumer waste handling through take-back schemes, where their customers can return their products to them[31]. If implemented correctly, such schemes contribute to keeping textile waste separated from other household waste, which improves recyclability (OECD, 2024, p. 13[8]). Matching platforms and digital tracking technologies can further help connect waste holders with recyclers and consolidate waste stream data (see Company approaches). Brands can also support sorters and recyclers by passing on accurate material and chemical input data, for example, through sewn tags, or printed information on the inside of products, as appropriate.

Unless relevant for identifying key actors during scoping, or where assessment results warrant heightened attention, it may not be efficient for brands to continuously trace their offcuts and used textiles all the way to recyclers. Instead, it may be more effective for brands to focus on responsible waste handling with manufacturers and on ensuring that their recycled materials are sourced responsibly (see Box 4 and the next sub-section for related considerations).

For manufacturers, it will be important to explore how their post-industrial textile waste can be kept as clean as possible during storage. For example, actions to reduce dust and other contamination or documenting the composition of post-production waste can mitigate occupational health and safety risks at the handling plant. This reinforces the protection that personal protective gear provides, underscoring the need for companies to assess whether such gear is consistently available and worn.

Identifying key actors, sharing expectations and building leverage

Build leverage by partnering with actors that control key processes.

Companies should build long-term relationships with key actors to increase their own knowledge about the dynamics and build leverage to improve practices. Bilateral engagement with actors may not be sufficient to prevent and mitigate adverse risks and impacts. Where individual leverage is limited, companies can combine efforts with other companies. Where identified impacts are systemic and assessing individual actors is likely not to produce any new information, companies are encouraged to partner with existing initiatives and organisations which have demonstrated impact in addressing relevant risk areas and their root causes, governments and other companies in the sector. Where an identified impact is prevalent in more than one sector within a particular region, cross-sector collaboration can facilitate the identification and scaling-up of more effective solutions (OECD, 2018, p. 29; 58[1]).

Establish expectations for suppliers and actors involved in recycling processes to prevent and mitigate adverse impacts.

Brands and manufacturers can aim to pre-qualify waste handlers and recyclers and set expectations for them to conduct due diligence on their own operations, including expectations on responsible sourcing from sorters to safeguard labour conditions in sorting and waste collection facilities, including fair and stable pricing for informal waste pickers, where relevant (see Box 8). This not only increases the likelihood of preventing and mitigating adverse impacts, but also improves visibility of where post-industrial waste is being processed and where recycled fibres originate.

Efforts to establish expectations and increase visibility should be designed to improve conditions and access to social protection systems for workers, for example. When setting expectations, especially when related to formalisation, brands and manufacturers should take into account potential impacts on existing informal workers as they may not be able to participate in the formal economy due to various factors (see, for example [Ethical Trading Initiative (2025[66]), WIEGO (n.d.[67])]. Trade unions and workers' representatives focusing on the informal economy will be able to provide further insights on impacts and needs.

Once expectations and pre-qualifications are set, brands can then ask manufacturers to divert waste to these pre-qualified actors. This is only effective when the ownership of waste has been clarified and purchasing practices allow for responsible waste handling (see Consider the relationship to adverse impacts). Similarly, manufacturers themselves can use pre-qualified waste handlers and recyclers to ensure responsible management of their waste. When companies decide to assess waste handlers or other actors, they should carefully assess the benefits, suitability and quality of assessments. For example, a study in Viet Nam (German Development Cooperation Agency, 2025[35]) noted that waste handlers have received an excessive number of audits, citing a waste handler who received around 50 audits annually, estimating that fewer than five provided actionable insights. An OECD paper (2025[68]) provides key recommendations to companies on the role of certifications in due diligence in the sector.

Box 8. Resources on responsible sourcing from informal waste pickers

Relevant resources include:

- Module 12 on responsible sourcing from homeworkers in the OECD Garment Guidance can be helpful for responsible sourcing from waste pickers.
- The Fair Circularity Principles apply the UN Guiding Principles on Business and Human Rights to the informal waste sector.
- WIEGO provides an overview of common risks and challenges of waste pickers and recommendations on policies and programmes.
- The Circulate Initiative and partners have created a Harmonized Responsible Sourcing Framework for Recycled Plastics, a repository of tools to support the assessment of risks, remediation and monitoring on conditions throughout the recycled plastics value chain.
- Tearfund together with First Mile have developed an online human rights due diligence toolkit for organisations working with the informal sector to reduce waste.

Source: OECD (2018[11]), Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector, DOI: 10.1787/9789264290587-en; Fair Circularity Initiative (n.d.[69]), Fair Circularity Principles, https://faircircularity.org/fair-circularity-principles/; Shift (2022[70]), Executive Summary: Principles for Corporate Engagement on Human Rights with the Informal Waste Sector – Applying the UN Guiding Principles on Business and Human Rights to the Plastic Packaging Recycling Value Chain, https://faircircularity.org/app/uploads/2022/11/Principles-for-Corporate-Engagement-on-Human-Rights-with-the-Informal-Waste-Sector.pdf; The Circulate Initiative (2024[71]), Harmonized Responsible Sourcing Framework for Recycled Plastics, https://www.thecirculateinitiative.org/wp-content/uploads/Harmonized-Responsible-Sourcing-Framework-for-Recycled-Plastics.pdf,; Tearfund (2023[72]), Online waste picker rights due diligence toolkit, https://learn.tearfund.org/en/resources/tools-and-guides/2023/human-rights-due-diligence-toolkit; WIEGO (n.d.[73]), Waste Pickers, https://www.wiego.org/informal-economy/occupational-groups/waste-pickers/?utm.

Consider making recycled-content commitments to help stabilise recyclers' revenue.

As the market for recycled products is still small and fragmented, it remains difficult for recycled fibres producers to find buyers and make recycling financially viable (Ndagano et. al., 2025[62]). More predictable sourcing commitments from buyers of recycled materials can play a critical role in underpinning investments in capacity building, operational improvements and responsible sourcing. Co-financing infrastructure or technology upgrades are other examples that can also strengthen collaboration and shared responsibility. Companies can also aim to coordinate at the sectoral and regional level.

Build the capacity of key actors to improve recycling outcomes.

The results from the risk scoping and in-depth assessments of prioritised areas, as well as engagement with key actors and workers, will be crucial to identifying training needs and ensuring that training is appropriately targeted and context-specific. Examples include training manufacturers on sorting and storing waste to improve feedstock transparency and prevent health and safety impacts on workers. Efforts to build the capacity of key actors to improve recycling outcomes are most effective when supported by favourable market conditions, underscoring the importance of aligning training initiatives with buyer commitments to continuously source recycled fibres and materials, including larger volumes.

Building - or as a buyer supporting – knowledge-sharing between waste collectors and the manufacturers to improve waste management, as well as supporting key actors such as recyclers to engage meaningfully with trade unions and workers representing waste pickers and aggregators, can be useful. As local waste economies can be controlled by criminal networks, buyers should also engage both with suppliers and at sectoral or governmental levels to identify mutually acceptable solutions and mitigate risks.

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Notes

[1] The OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector (OECD, 2018[1]) applies the concept of risk-based due diligence established in the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct (OECD, 2023[59])_and the OECD Due Diligence Guidance for Responsible Business Conduct (OECD, 2018[60]) to the particular risks and characteristics of the sector.

[2] For this paper, recycling processes refer to all activities from waste collection, aggregation, and sorting to the final stage of reprocessing into new materials or products, known as recycling. Recycling is defined as any reuse of material in a production process that diverts it from the waste stream, except reuse as fuel. Reprocessing as the same type of product, and for different purpose, are both included (OECD, 2004[83]). After exhausting opportunities to reuse and repair garments, recycling is a next best way to recover some material value (OECD, 2024[8]). The International Standard Organisation provides slightly different definitions in ISO 5157:2023 (International Organization for Standardization, 2023[82]).

[3] The paper uses the definition in the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct (OECD, 2023, p. 37[59]) which defines a circular economy as "[…] a model in which products and materials are designed so that they can be reused, repaired, remanufactured, recycled or recovered and therefore maintained in the economy for as long as possible, along with the resources they are made of, and in which the generation of waste, especially hazardous waste, is avoided or minimised, and greenhouse gas emissions are prevented and reduced".

[4] This is based on an analysis of three types of products, namely a pullover, shirt and trousers and two possible shares of recycled content (5% and 50%). The lower number of reduction potential given in the text corresponds to a 5% share of recycled content, while the higher number to a 50% share of recycled content. Thus, the reduction potential highly depends on the share of recycled content and also on the type of product. See SI6 in the accompanying spreadsheet of the study for more details.

[5] The paper uses the definition in the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct (OECD, 2023, p. 37[59]) which defines a circular economy as "[…] a model in which products and materials are designed so that they can be reused, repaired, remanufactured, recycled or recovered and therefore maintained in the economy for as long as possible, along with the resources they are made of, and in which the generation of waste, especially hazardous waste, is avoided or minimised, and greenhouse gas emissions are prevented and reduced".

[6] Of all recycled fibres, more than 90% was recycled polyester made from open-loop plastic bottles and less than 10% from actual post-consumer textiles, with polyester and wool leading.

[7] The highest capture rate is found in Belgium (50 %), the Netherlands (38 %), Luxembourg (36 %), Austria (30 %) and Czechia (30 %).

[8] Only 48% of the textile waste could be analysed due to missing or faded fibre content labels.

[9] Mechanical recycling of textiles involves collection, sorting, grinding, and re-spinning into new fibres. It is water-efficient since minimal chemical processing is required, but it needs high-purity feedstock, and fibre quality declines with repeated recycling. Chemical recycling converts waste polymers into monomers, fuels, or other valuable

chemicals, producing fibres of comparable or superior quality to virgin materials, though it struggles with blends, dyes, and additives. Biochemical recycling uses enzymes to depolymerize textiles into monomers but is costly and slower (Ndagano et. al., 2025[62]).

[10] Common destination countries of second-hand clothing in 2021 were Pakistan, Ukraine, Kenya, Chile, the Netherlands and Guatemala (UNECE - ECLAC, 2024, p. 54[80]). Interviews with traders in Kenya suggest that 20–50% of the used clothing in imported bales are unsellable due to poor condition, inappropriate sizing, or incompatibility with local climate and styles (Changing Markets Foundation, 2023[16]).

[11] This includes, for example, Australia, Chile, France, Hungary, Kenya, the Netherlands, Latvia and the State of California of the United States.

[12] The EPR approach extends producers' responsibility for a product to the postconsumer stage of the product's lifecycle. By shifting the costs of end-of-life product management from the public to producers, the approach aims to implement the polluter pays principle, increase recovery rates, and incentivise design for the environment (OECD, 2024, pp. 10-11[8]).

[13] Under such schemes, textile and footwear producers will pay a fee for each product they place on the market. This fee will finance collection schemes and the management of the collected textiles, providing for their re-use, preparing for re-use, recycling and disposal. EPR fees will be adjusted based on sustainability criteria, such as the ones developed under the Ecodesign for Sustainable Products Regulation (ESPR), considering factors such as durability and recyclability. This approach, known as eco-modulation, links the cost producers pay for EPR to the sustainability of their textiles, thus encouraging them to design more circular and environmentally friendly products (EU Directorate-General for Environment, 2025[81]).

[14] All separately collected textiles will be considered as waste, ensuring a uniform interpretation across Member States of what constitutes "waste" versus "used" textiles. This means Member States will have to ensure that separately collected textiles undergo sorting operations before their possible shipment, preventing waste from being falsely labelled and exported as reusable. If not sorted, textile waste will be subject to the Waste Shipment Regulation (EU Directorate-General for Environment, 2025[81]).

[15] An OECD policy paper (OECD, 2025[68]) explored the role of certifications in due diligence in the sector, including those for fibres and materials.

[16] The International Standard Organisation provides slightly different definitions in ISO 5157:2023 (International Organization for Standardization, 2023[82]). This paper adopts a slightly simplified framing.

[17] Textile-to-textile recycling, also known as fibre-to-fibre recycling, refers to recycling processes that enable used textiles to be used again as similar textile products in the garment and footwear sector. In contrast, downcycling refers to reprocessing (e.g., shedding) used textiles for new consumer or industrial products outside of the garment and footwears sector such as for rags or insulation.

[18] See note 6 for a definition of mechanical recycling.

[19] See note 6 for a definition of chemical recycling.

[20] If post-industrial or post-consumer textiles are recycled, the process is referred to as closed loop recycling.

[21] Polyester continued to have the highest proportion (12%) of recycled fibres in 2024, with 98% of recycled polyester originating from plastic bottles (Textile Exchange, 2025[7]).

[22] See for example the EU Strategy for Sustainable and Circular Textiles (2022[17]):"A specific source of growing concern is the accuracy of green claims made on using recycled plastic polymers in apparel where these polymers do not come from fibre-to-fibre recycling, but in particular from sorted PET bottles. Beyond the risk of misleading consumers, such a practice is not in line with the circular model for PET bottles, which are fit for being kept in a closed-

loop recycling system for food contact materials and are subject to extended producer responsibility obligations, including fees, with a view to meeting the objectives of the EU rules on single-use plastic products and on packaginghttps://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52022DC0141 - footnote39. […] The Commission also encourages businesses to prioritise their efforts on fibre-to-fibre recycling and rather make claims on achievements to address this important challenge in closing the loop for textile products".

[23] According to the International Labour Organisation (2023[78]) informal employment refers to "working arrangements that are in practice or by law not subject to national labour legislation, income taxation, or entitlement to social protection or other employment guarantees; for example, advance notice of dismissal, severance pay or paid annual or sick leave."

[24] While Bangladesh is not the only country where these impacts occur, a substantial share of available research comes from Bangladesh due to the scale of its recycling hubs and the volume of circular activities taking place there.

[25] See for example the government-led initiative NAMASTE (National Action for Mechanised Sanitation Ecosystem) in India, the worker-led Kenya National Waste Pickers Welfare Association as well as the worker-led National Alliance of Waste Workers of the Philippines.

[26] Limited access to education (e.g., availability of schools in rural areas, school fees) or the exclusion of specific groups of schools (e.g., children of minorities or migrants) can heighten the risk of child labour. Low wages and high debt (e.g., due to borrowing money for medical emergencies at high interest rates in the absence of social protection) can create financial pressure, forcing families to send their children to work, illustrating the link between wages and child labour.

[27] For example, the World Health Organisation (2021[75]), the UN Special Rapporteur on the human right to a healthy environment (OHCHR, n.d.[76])[27] and the UN Special Rapporteur on toxics and human rights (OHCHR, n.d.[77]).

[28] The paper uses the definition in the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct (OECD, 2023, p. 37[59]) which defines a circular economy as "[…] a model in which products and materials are designed so that they can be reused, repaired, remanufactured, recycled or recovered and therefore maintained in the economy for as long as possible, along with the resources they are made of, and in which the generation of waste, especially hazardous waste, is avoided or minimised, and greenhouse gas emissions are prevented and reduced".

[29] The Garment Guidance defines choke points as: key points of transformation in the supply chain; stages in the supply chain that generally include relatively few actors that process a majority of the commodity; stages in the supply chain with visibility and control over the circumstances of production and trade upstream. (OECD, 2018, p. 13[1]).

[30] Traceability can be understood as the capacity to determine where a particular product originates, where it has travelled, who has handled it, and what modifications it has undergone (OECD/IEA, 2025[61]).

[31] WRAP UK reported (2024, p. 21[74]) a 60% increase in the volume of used textiles collected via Textile 2030 signatory brand and retailer takeback schemes between 2019 and 2021 however they still make up a very small proportion of collection activities in the UK market with brand and retailer collection representing around 5% of collector, sorter and graders' sources of used textiles. However, one EU-based collector interviewed by the OECD expects in-store collection to be a growing area of their business activity in view of increased regulation for brands on EPR.