



# Textile Waste at a Tipping Point: Unlocking Europe's Circular Potential

September 2025

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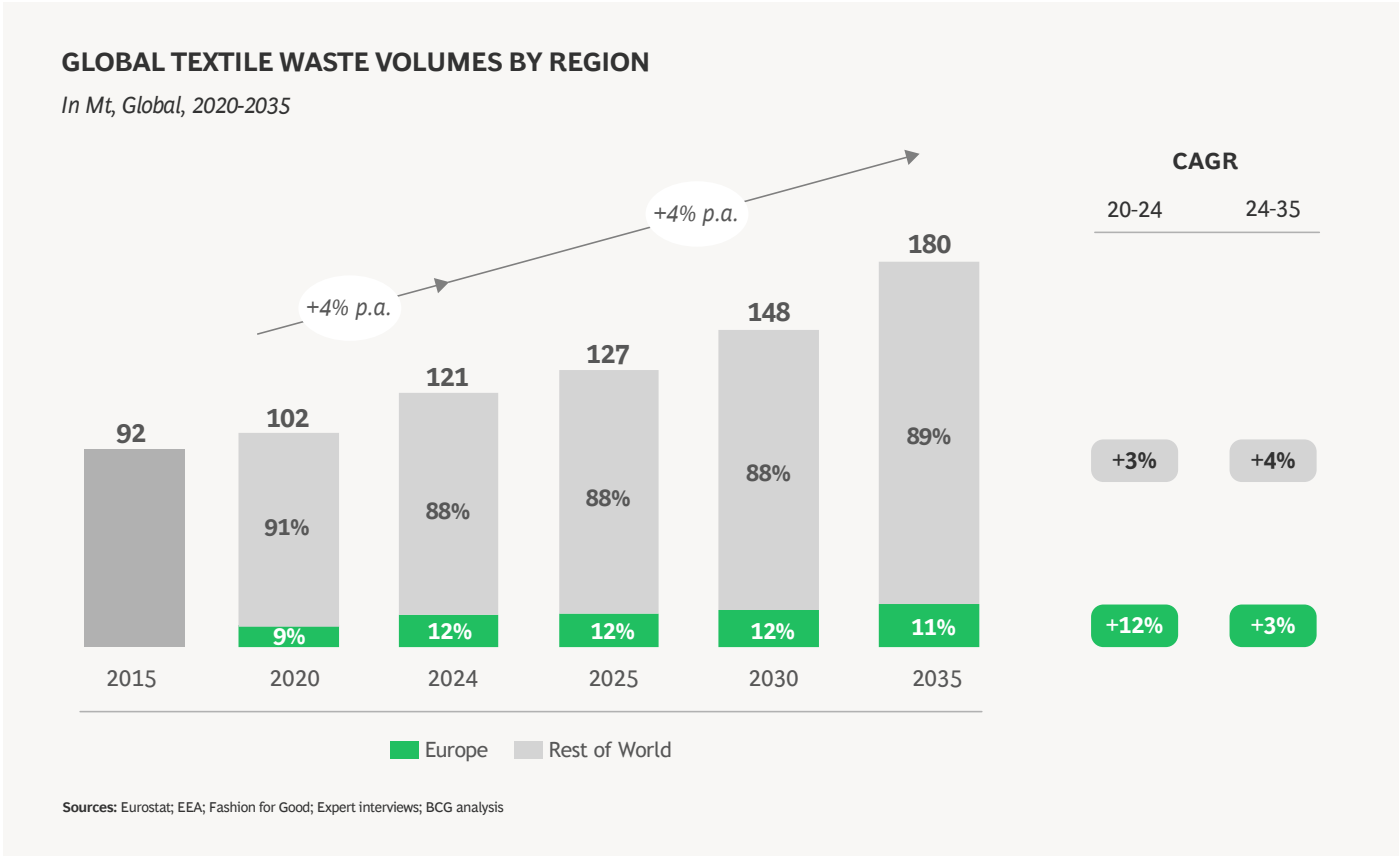
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# The textile industry’s waste crisis and the circular solution on the horizon

From clothing and curtains to uniforms and upholstery, textiles are deeply woven into our lives. However, the volume of these materials is increasing at a rapid and unsustainable rate, making it a significant environmental challenge, which is difficult to perceive.

An estimated 121 million metric tons of textile waste were generated globally in 2024, with projections suggesting this figure will rise to 180 million by 2035. The waste includes far more than worn-out garments. Towels, hotel linens, industrial textiles, and medical scrubs make up a strained system. Less than 1% of this waste is recycled into new textiles. The rest are mostly landfilled, incinerated, or improperly disposed of.

## EXHIBIT 1



While the fashion industry is often spotlighted, it is only part of the picture. Textile waste also includes production offcuts and unsold inventory, and much of it comes from non-fashion uses in hospitality, healthcare, and manufacturing. Despite growing attention, only around 20% of textiles are collected through dedicated channels today; the rest are discarded in general waste. As a result, collection and sorting systems are overwhelmed, and the risk of systemic overflow is rising.

Meanwhile, the second-hand market is weakening. Prices for reused textiles are falling, while collection costs are increasing. European exports to secondary markets in Africa are declining, partly due to rising low-cost textile flows from China. At the same time, global textile consumption grows 4% annually, driven by fast fashion, population growth, and rising incomes. Polyester—a low-cost but fossil-related synthetic—dominates production and waste streams.

The environmental toll is significant. The textile sector contributes to global CO<sub>2</sub> emissions, water overuse, microplastic pollution and landfill saturation. Many textiles also contain PFAS (per- and polyfluoroalkyl substances), which contaminate water, soil, and air when incinerated or landfilled.

Addressing this growing challenge demands both behavioral shifts and structural reform. Europe has taken a leading role: new measures include mandatory separate textile collection by 2025, stricter landfill rules, expanded EPR schemes, and eco-design legislation. But implementation across member states is uneven, and infrastructure remains underfunded and undersized.

Investment is urgently needed to scale collection, sorting, and fiber-to-fiber recycling. Circularity in textiles is no longer a fringe ambition—it is a climate, health, and resource imperative.

## What are PFAS and how can we prevent them?

**Why do we use PFAS?** PFAS (per- and polyfluoroalkyl substances) are synthetic chemicals valued for their resistance to heat, water, oil, and stains. They are widely used in textiles, food packaging, non-stick cookware, cosmetics, and industrial products like firefighting foams.

**What is the issue with PFAS?** Once released, PFAS persist for decades, contaminating soil, air, and water. They accumulate in the human body and are linked to serious health issues—such as hormonal disruption, immune dysfunction, and organ damage. They are now found in drinking water, ecosystems, and nearly all blood samples tested.

**Why preventing PFAS matter?** Preventing further PFAS pollution is crucial as these chemicals are extremely difficult and costly to remove once released. Continued use not only compounds environmental damage, but also increases future health and clean-up burdens. Finding ways to prevent additional substances and to treat existing ones is therefore key. In textile recycling, chemical processes offer the unique opportunity to aggregate and densify these substances to be recovered and treated, even when it is disseminated everywhere in textiles in very low amounts.

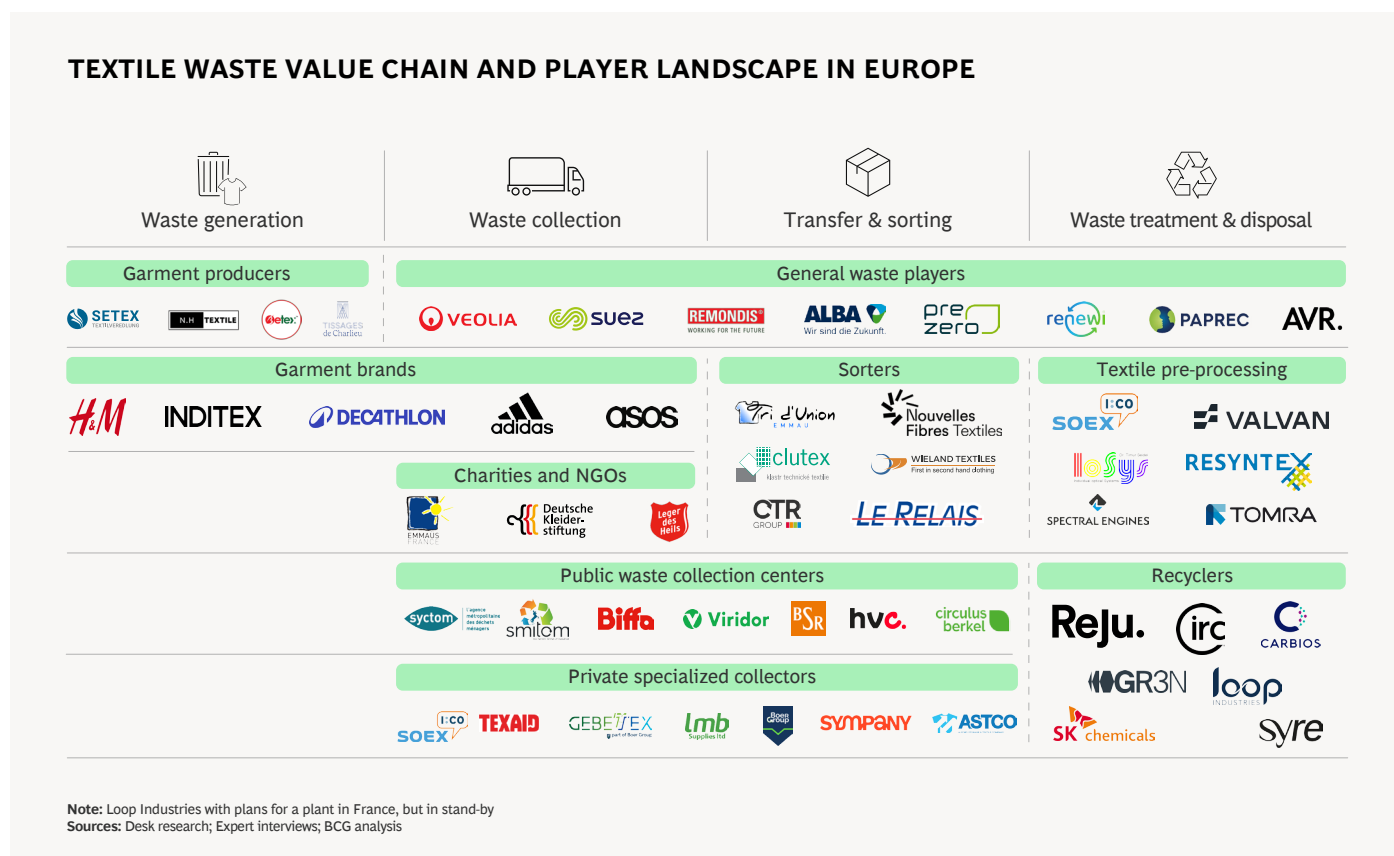
**What is Europe doing about it?** In 2023, five EU countries proposed a broad PFAS restriction under the REACH regulation, aiming to ban nearly all uses, including consumer products like textile. If adopted, this regulation could come into effect as early as 2026, with limited exemptions for essential uses during a transition period.



## A one-way system: What happens to used textiles

Globally, and in Europe as well, textile waste travels through a system that remains largely linear. Once textiles reach the end of their life, they enter a fragmented and under-resourced infrastructure, where most are either incinerated or landfilled. Globally, less than 1% of textile waste is recycled into textile, and in Europe that share stands slightly above 1%. The textile waste value chain involves several archetypes of players, which should all be involved in tackling this issue.

### EXHIBIT 2



## Textile waste sources

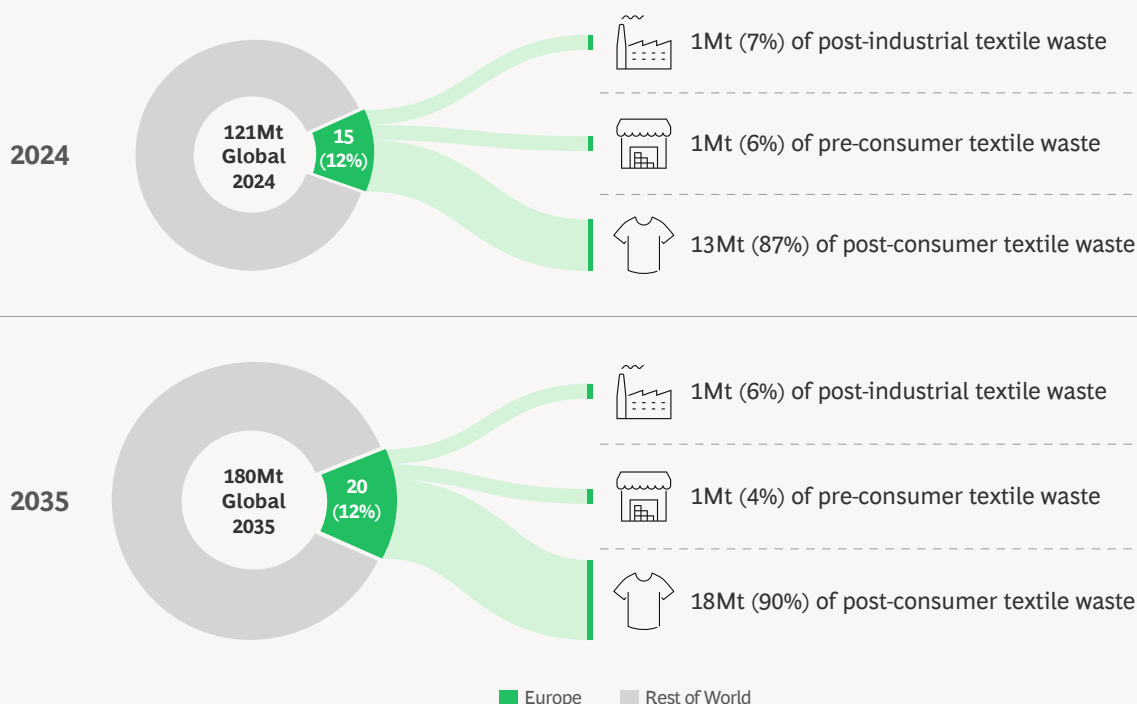
Textile waste in Europe originates from three main sources: post-industrial, pre-consumer, and post-consumer. Post-industrial waste is generated during manufacturing: fabric scraps, off-spec products, production overruns all fall into this category. Pre-consumer waste includes unsold and returned finished goods, typically discarded by retailers. But the largest and fastest-growing category is post-consumer waste: garments and home textiles discarded by households and business after use. This includes everything from T-shirts and towels to uniforms and hotel linens.

While regulations are putting pressure on textile manufacturers and brands to reduce pre-consumer and post-industrial textile waste volumes, post-consumer waste is expected to grow and to dominate even further in the years ahead, especially driven by the preponderant role of fast fashion. This shift places new pressure on municipal collection schemes, social enterprises, and downstream processors to manage the bulk of Europe's discarded textiles.

## EXHIBIT 3

### EUROPEAN TEXTILE WASTE BY SOURCE

In Mt, Global, 2024 and 2035



Sources: Eurostat; EEA; Fashion for Good; Expert interviews; BCG analysis

## Textile collection and sorting channels

Textile waste in Europe is still largely discarded through general waste streams. A significant share (~55%) is thrown into black bins alongside household waste, while an additional ~10-15% is estimated to be improperly disposed of in unauthorized areas like roadsides and forests.

Only about 30% of textile waste is collected separately through dedicated channels. These include municipal drop-off points (e.g., French *déchèteries*), charity-led systems like Emmaüs or the Salvation Army, in-store take-back programs by brands, and specialized commercial collectors serving industry. Collection performance varies widely: Germany collects around 60–65% of its textile waste, while France collects 30% and the Netherlands about 45%.

Collection systems are increasingly strained, unable to absorb the rising flow of discarded textiles. This creates risks of stockpiling and uncontrolled disposal. To address this, the EU will enforce mandatory separate collection of textiles starting in 2025, accelerating efforts to expand both existing and innovative channels—such as building-level textile bins. As a result, the share of separately collected textiles could reach ~50% by 2035, reducing reliance on black bin disposal and illegal dumping.

However, collecting alone is not enough. Sorting infrastructure remains a critical bottleneck. In many countries, sorting capacity lags well behind collection. Germany, for example, sorts only 19% of what it collects. The Netherlands leads with 97% sorting capacity. Improving textile circularity requires urgent investment in both collection and sorting systems to prepare for the sharp rise in textile waste expected over the next decade.

# The collection crisis: European textile collection on the brink of collapse

The backbone of Europe's textile waste management system, its collection and sorting infrastructure, is under critical strain. Several major players are halting operations or going bankrupt, triggering a breakdown in the system.

- In France, social enterprise Le Relais stopped all textile collection in mid-2025 and began unloading unsorted waste outside major retailers to protest underfunding. Without emergency support, it warned it would not survive beyond year-end. Smaller collectors are also closing quietly.
- In Germany, two major collectors, SOEX and Texaid, have filed for insolvency, respectively in October 2024 and June 2025, due to collapsing export markets and rising sorting costs.
- In the UK, closures and layoffs have hit textile recyclers including Textile Recycling International which entered administration in early 2024. The Textile Recycling Association has warned of a “sector-wide collapse” as processing capacity disappears and resale prices plummet.

At the heart of this collapse is a funding gap: eco-organizations and public authorities are not paying enough per ton collected to cover operational costs. Meanwhile, saturated second-hand markets, fast-fashion waste, and stricter export conditions are all compounding the pressure. Without urgent intervention, Europe's textile circularity ambitions risk unravelling.

## Textile treatment and disposal

In Europe, only around 1% of textile waste is recycled into new textiles. The rest is either reused through second-hand markets, downcycled into lower-value applications like rags or insulation, processed into Solid Recovered Fuel (SRF), or sent to landfill or incineration.

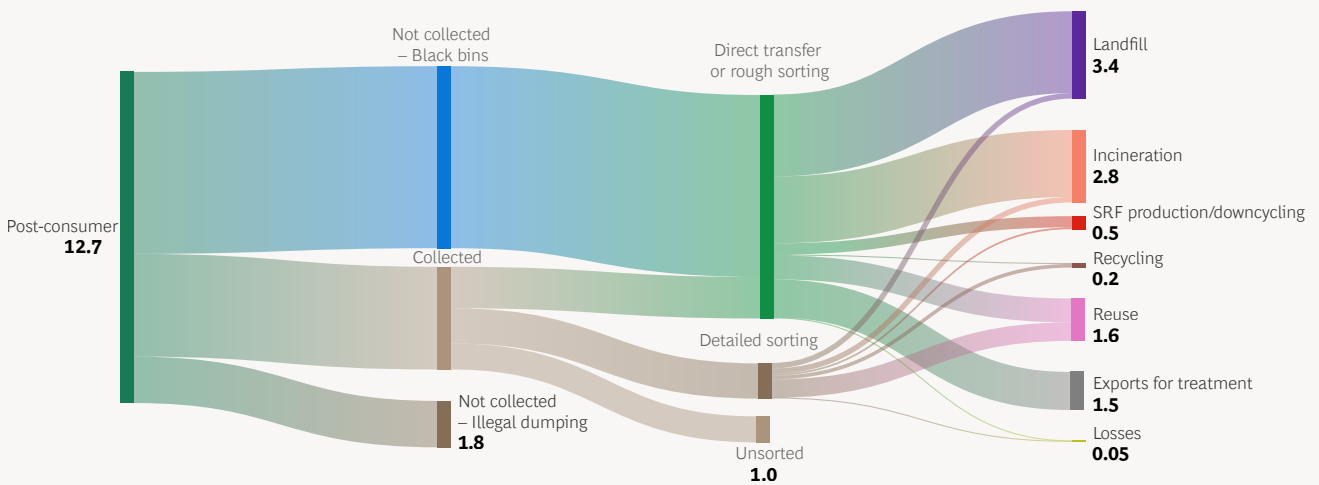
- **Landfilling** is expected to decline sharply by 2035 (from 26% of total textile waste in 2024 to 17% in 2035), driven by regulatory and environmental pressure. The EU Landfill Directive mandates that municipal waste landfilling fall below 10% by 2035, prompting many countries to implement landfill taxes and bans on specific products. Environmental concerns also play a key role: synthetic textiles like polyester can take centuries to degrade and contribute to methane emissions in landfills.
- As landfilling decreases, **incineration** remains widely used, especially for waste that cannot be reused or recycled. Framed as “energy recovery,” incineration is seen as a way to reduce landfill volumes while generating electricity and district heating, with the added benefit of lowering reliance on imported fuels. However, incineration is still carbon-intensive and risks undermining climate objectives unless paired with mitigation measures.
- **Reuse** is the most sustainable option and has been enabled by charity networks, resale platforms, and exports. Yet the ecosystem is under pressure and the second-hand textile market in Europe is stalling slightly, driven by the rise of ultra-fast fashion and the saturation of traditional export channels. As resale prices fall and collection costs rise, operators are left with declining margins and increasing volumes of low-quality, unsellable garments.

- **SRF/Downcycling**, the most common destination for non-reusable textiles, offers a short-term outlet but limited circularity, merely delaying final disposal.
- **Recycling**, though only representing 1% of volumes today, is critical for long-term circularity. Mechanical, that some players like Re&Up focus on, is more mature but is constrained by quality and performance issues, often needing to be complemented by a share of virgin textile (e.g., 25% of recycled polyester for 75% of oil-derived polyester) to meet performance targets. Chemical recycling, still with players like Circ, Reju, Syre for Polyester or Circulose for Cotton, offers true fiber-to-fiber regeneration from blended or contaminated textiles. Scaling both will be essential to closing the loop.

#### EXHIBIT 4

### ESTIMATION OF SPLIT OF TEXTILE WASTE FLOWS FROM WASTE GENERATION TO TREATMENT IN EUROPE

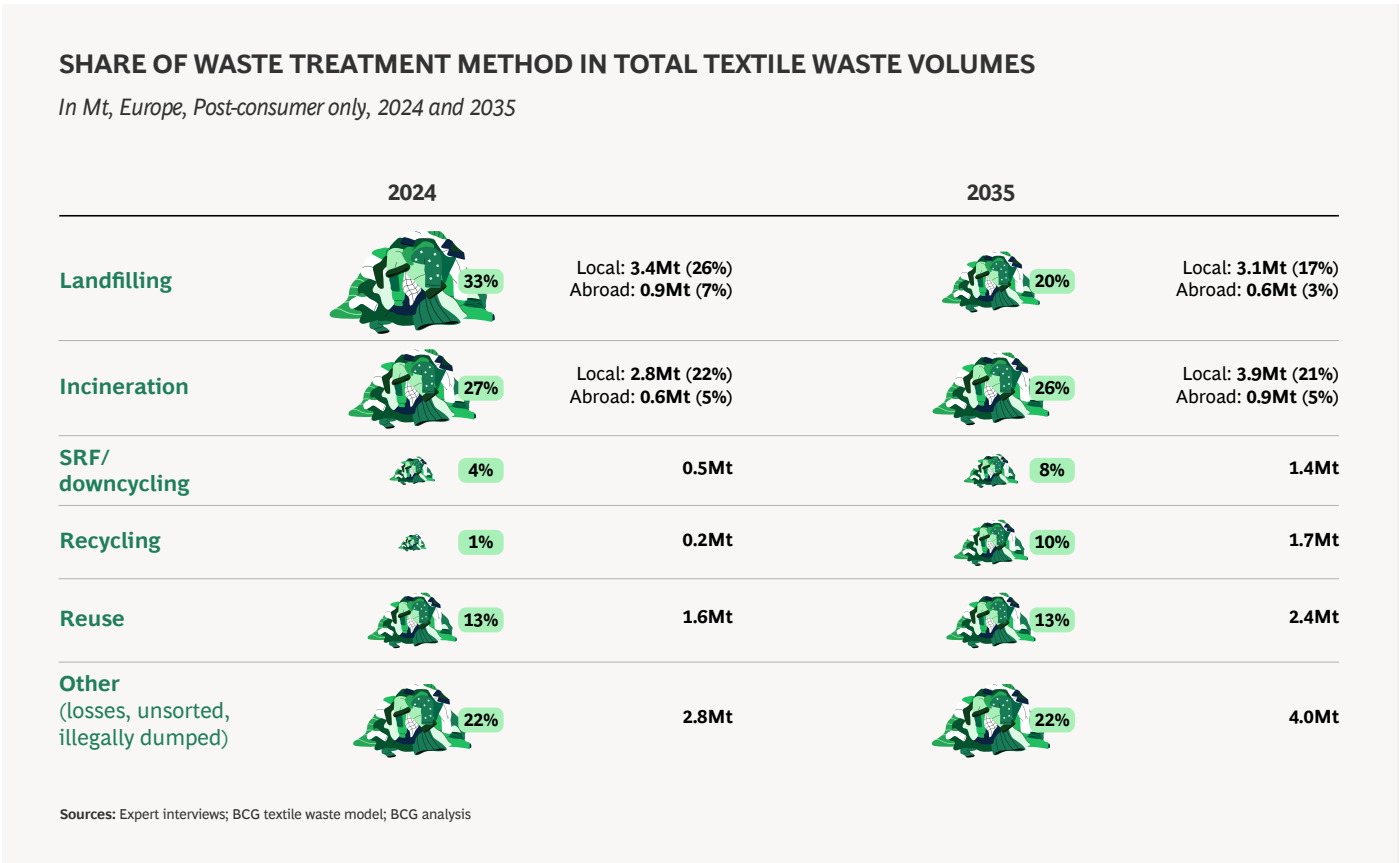
In Mt, Europe, Post-consumer only, 2024 (Total = 12.7 Mt)



1. Internal losses, impurities, mixing  
Sources: Desk research; Expert interviews; BCG analysis



EXHIBIT 5



With the mandatory segregation of textile waste in the EU, we are expecting to see “new” volumes of waste appear. Indeed, Nordic countries, which have implemented the mandatory segregation as soon as it was required, i.e., in 2025, have seen volumes of textile waste that were completely imperceptible before as they ended up in black bins and then in landfill or incineration, without being separated from other waste. This led to a recognition of the actual volume of textile waste that needs to be collected and treated.

Quantifying the problem: European textile waste in numbers

As textile waste volumes grow across Europe, quantifying what can realistically be collected and processed is essential to planning circular infrastructure. To this end, a modelling of the collected and sorted textile waste was derived from the estimated volumes of waste in Europe. Quantifying the problem is key to better understanding what we can do to help solve the textile waste issue in Europe.

Methodology and key inputs

The modelling aims at breaking down the volumes of textile waste in Europe into post-consumer textile waste, and then into what can be collected and sorted, in line with the following issue tree. Focusing on collected and sorted post-consumer textile waste in Europe allows to gauge the potential for textile recycling that could exist in Europe, in terms of input volumes for recycling processes.

## METHODOLOGY TO ESTIMATE COLLECTED AND SORTED TEXTILE WASTE IN EUROPE



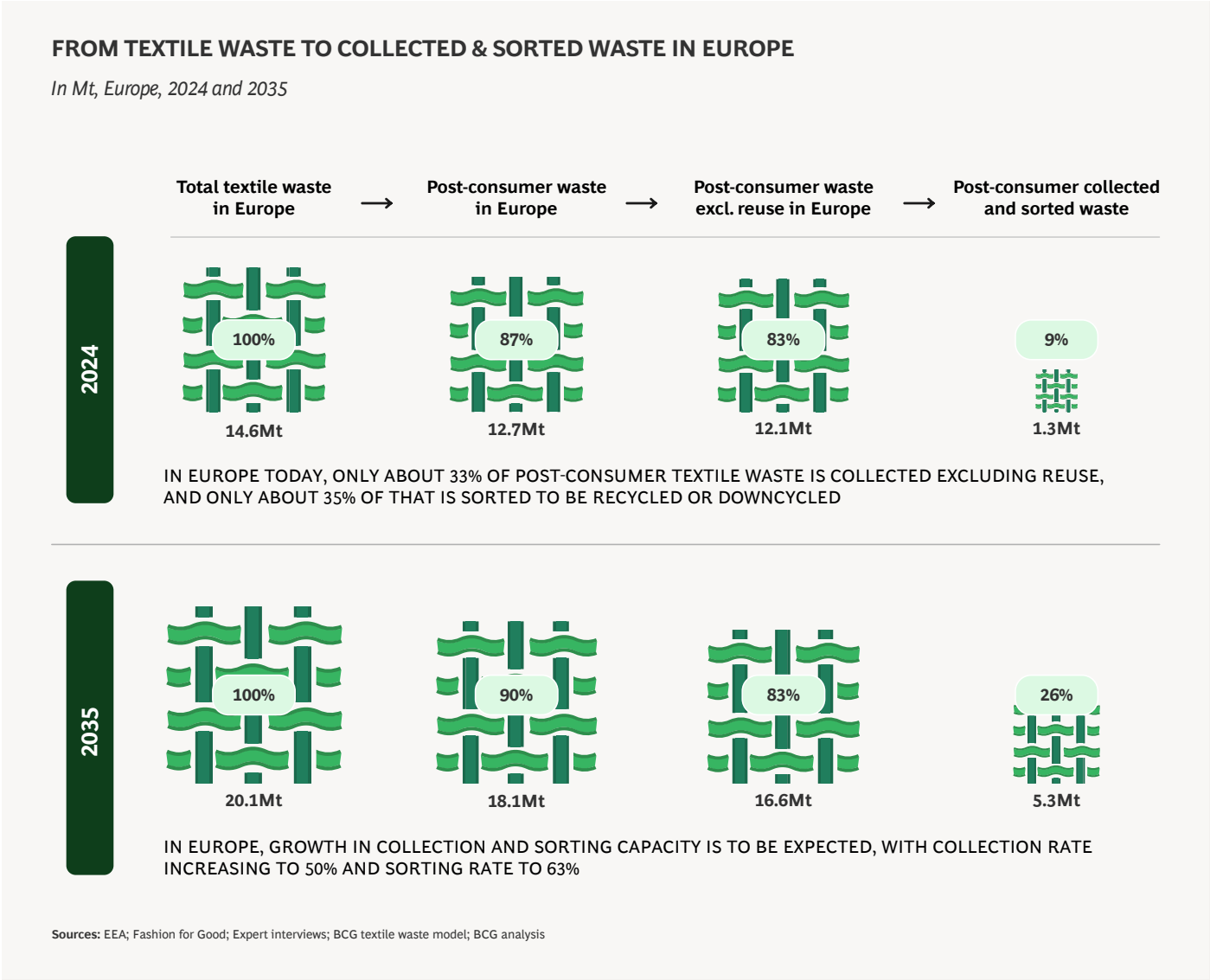
Source: BCG analysis

Europe's textile waste is mostly driven by post-consumer sources, as production of textile in Europe is more limited than in other regions like India or China. Most waste collected and sorted today are post-consumer textiles and the first way to better manage textile waste is to improve collection and sorting infrastructures of post-consumer waste.

When possible, differentiated assumptions were taken for selected countries, including France or Germany. For instance, France is estimated to represent ~1Mt of textile waste today, 32% of which are collected and 74% of which are sorted (within collected volumes). For other inputs, assumptions were kept uniform at European level, when difficult to assess at country level. This includes the share of reused, set at 5% in 2024 and slightly growing to 2035. Reuse is excluded to neutralize the fact that it does not really enter waste streams in the year they are discarded and will only be accounted for when truly discarded after secondary use.

Collected and sorted waste today and tomorrow

EXHIBIT 7



Total textile waste in Europe was ~15Mt in 2024 and is expected to grow to ~20Mt in 2035, directly driven by overall higher textile consumption, especially from fast fashion, and an expected increase of the average purchasing power in Europe. Beyond impacting the sheer volume of textiles, fast fashion also impacts the average textile lifespan, with an expected decrease of the average lifespan of a piece of textile, driven by overall poorer quality of fast fashion. From an estimated 5-year lifespan for textile, it could decrease to 3 years, thus leading to additional waste flows, additional consumption, and a continued vicious cycle.

Of these 15Mt, about 87% is post-consumer today and this share is expected to increase to 90% in 2035, due to higher constraints on manufacturers and brands to better manage the post-industrial and pre-consumer waste streams. Out of the ~13Mt of post-consumer waste today, about 5% are reused textiles, either locally or abroad, and thus do not enter the waste stream. This share of reuse is expected to increase to c.8% by 2035.

Average collection rate in Europe stands in 2024 at 33% and is expected to increase to 50% by 2035. Sorting capacities today represent in Europe an average of 33% of total collected volumes, increasing to 64% by 2035.

Overall, collected and sorted currently stands at 1.3Mt in Europe and is expected to grow to 5.3Mt by 2035 (+13% p.a.). This growth would be enabled by the dedication towards expanding infrastructures of collection and sorting throughout Europe, facilitated by increasing regulatory pressure to tackle textile waste.

## Opportunity for textile recycling expansion

While textile waste in Europe is expected to be increasingly collected and sorted due to regulations supporting the development of the associated infrastructures, there is a need to find better ways to treat this waste, as landfilling is no longer a viable option in the long term.

### SCENARIO A: NO PUSH TOWARDS RECYCLING

In the first scenario, we expect a continued decrease of landfilling as Europe and individual countries remain committed to tackling the landfill issue and continue to apply landfill taxes and ban rules throughout Europe. However, recycling remains limited and no strong push to increase recycling infrastructures is seen.

Under those circumstances, as landfilling decreases throughout Europe, it would be fully replaced by incineration, with remaining volumes mainly going to SRF or downcycling facilities. Thus about ~30 of textile waste volumes would be incinerated. While incineration remains a better treatment approach than landfilling, as it enables energy resilience, it remains a highly CO<sub>2</sub>-emitting method, which can generate between -0.6 to 0.9tCO<sub>2</sub>e per ton of textile (depending on textile composition). This emission rate is especially high when considering blended synthetic fibers like polyester. Assuming post-consumer textile volumes in Europe grow to 18Mt by 2035, this would generate up to +2.6MtCO<sub>2</sub>e in addition to existing emissions from textile incineration.

Thus, disposing of textile waste through mainly incineration is not a viable solution as it only shifts the issue from a textile waste issue to a CO<sub>2</sub> emission issue and is misaligned with Europe's trajectory towards reducing emissions and mitigating climate change.

### SCENARIO B: STRONG PUSH TOWARDS RECYCLING

In a second scenario, while landfilling also decreases in line with Europe and countries' commitments, there is a strong push for recycling of textile waste, with incineration falling second in the merit order. Still, under those circumstances and considering the CAPEX intensity required for recycling infrastructure, only 10% of textile waste volumes would be recycled into new textiles (up from 1% today) and about 20% would be incinerated (flat compared to today).

Textiles previously treated in landfills thus find new paths to higher-value treatment options like recycling, as sufficient investments are made to enable scaling of textile recycling infrastructure. This would unlock a circular loop of textile waste being regenerated into new textiles. From a CO<sub>2</sub> emission standpoint, treating 10% of textile waste through recycling and 20% through incineration would avoid up to 2.5MtCO<sub>2</sub>e of emissions. Already, we are seeing several companies in Europe as well as globally developing technologies and building plants to make textile circularity a reality (e.g., Circ, Reju, Syre). Still, further proofing and testing of these processes requires scaling and thus investments, as well as offtakes from textile companies with an interest in the circularization of textile waste flows.

Unlocking the push towards higher recycling capacity is not only key to creating higher-value textile treatment paths, but also to tackle the waste issue while limiting the cost for society.

Overall, a strong push for textile recycling and the associated development of infrastructures could prevent 5MtCO<sub>2</sub>e per year of emissions, which is equivalent to the emissions of 625 thousand EU households or 20 thousand Paris-New York round-trip flights.



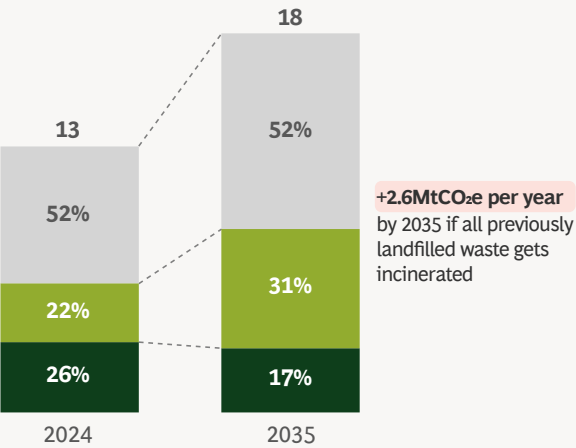
EXHIBIT 8

IMPACT ON SOCIETY OF MAIN METHODS OF TEXTILE WASTE TREATMENT, WITH OR WITHOUT PUSH TOWARDS RECYCLING

In Mt, Europe, 2024 and 2035

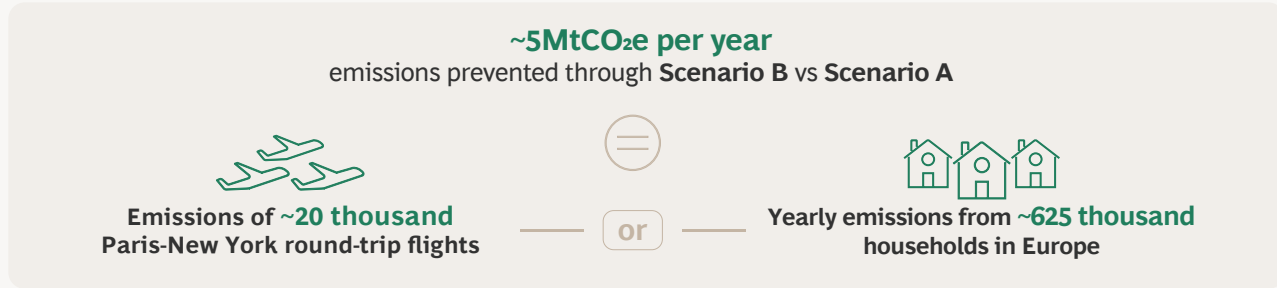
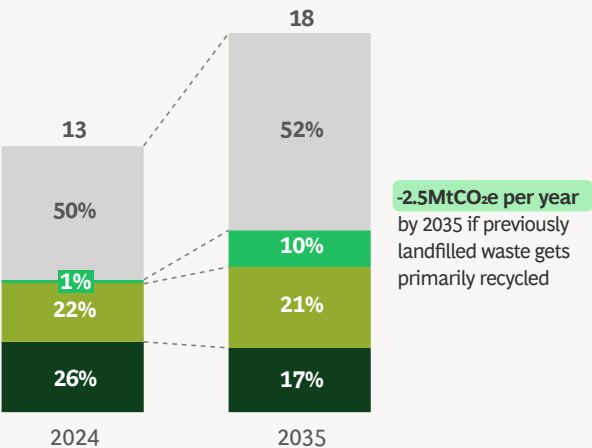
Scenario A

No push towards recycling



Scenario B

Strong push towards recycling



Landfill Incineration Recycling Others

Sources: A Larsen et al. - CO<sub>2</sub> emission factors for waste incineration: Influence from source separation of recyclable materials, 2011; JRC Environmental and economic assessment of plastic waste recycling, 2023; IEA; ZeroWasteEurope; Expert interviews; BCG textile waste model; BCG analysis

## The policy engine: Europe's regulatory framework comes into force

In recent years, the EU has pushed advanced policy frameworks for textile circularity. This regulatory momentum spans the entire value chain, from design and production to collection, sorting, and end-of-life treatment, and is gradually being transposed into national laws across states.

At the heart of this framework are **three pillars**:

- **The EU Strategy for Sustainable and Circular Textiles (2022)**, which introduces principles like durability, repairability, traceability, and digital product passports (DPP).
- **The Waste Framework Directive**, mandating separate textile collection by January 2025 and introducing Extended Producer Responsibility (EPR) for textiles.
- **A series of complementary measures**, including landfill bans, anti-destruction laws for unsold stock, and proposed minimum thresholds for recycled content.

France leads the way with the AGEC law, in effect since 2020, which prohibits the destruction of unsold goods and enforces mandatory recyclability labeling. Its EPR system for textiles (Refashion) has been operational since 2008, supported by €1.2 billion in public funding for scaling collection, sorting, and recycling infrastructure. France also introduced eco-modulated EPR fees, rewarding durable and recyclable products while penalizing harmful substances like PFAS. Still, fee levels remain low compared to investments needed to scale infrastructure.

The Netherlands has focused on setting clear reuse and recycling targets, with an EPR decree mandating fiber-to-fiber recycling and landfill/incineration bans for collected textiles by 2025. Germany and Spain are taking steps to meet the EU-wide mandates but show slower progress—Spain, for instance, records high share of landfill as it lacks incineration infrastructure and is experimenting with high landfill taxes.

Looking ahead, the EU must complement regulation with investment-enabling mechanisms. This includes using EPR fees not only to cover end-of-life costs but also to de-risk infrastructure through blended finance, public guarantees, and potentially contracts for difference (CfDs), such as the ones used in energy transition sectors.

Policy needs to accompany the development of infrastructure at each step of the value chain, from the collection and sorting to the recycling. This infrastructure needs to reach industrial scale to tackle the significant volume of waste already existing and expected to further increase in the coming years. However, the initial economics for such infrastructure are often insufficient and do not match the expected returns from traditional investors. Through subsidies (like NIKI in the Netherlands or ongoing discussions on CAPTE in France), public funding, and other financial mechanisms like EPR, governments and public organizations can help to improve the economics of industrial-sized collection and treatment units to tackle the textile waste issue.

While implementation varies, Europe's regulatory push is shaping clearer expectations for circularity. Still, policies must be matched with investment, enforcement, and industry coordination to turn regulatory ambition into real transformation.

## Europe's turning point: A call to rework the system

Europe is approaching a critical inflection point. Without a rapid expansion of recycling capacity and infrastructure, most textile waste collected under new policies will still be sent to landfill or incineration—undermining the circularity ambitions set in motion across the EU. But with full implementation and targeted investment, textile reuse and recycling can be scaled significantly, reducing environmental impact and dependency on carbon-intensive treatment routes.

Now is the time to align all players across the value chain:

**Public authorities** can lead the way by accelerating implementation of EPR mandates, enforcing separate textile collection, and funding the infrastructure needed to collect, sort, and process growing volumes. Harmonized definitions and reporting standards will also be key to track progress and coordinate action at EU level.

**Brands and producers** hold responsibility for designing products that are easier to recycle and for funding their end-of-life management. Their role is to embed recyclability upstream, invest in reverse logistics, and co-develop efficient take-back systems with recyclers and collectors.

**Recyclers** must focus on scaling fiber-to-fiber recycling technology and infrastructure, particularly chemical processes, and work to meet quality specifications for closed-loop systems. They should also engage with upstream collection and sorting operators to ensure feedstock consistency and traceability, as well as with clothing brands and textile manufacturers to scale capacity through substantial offtakes.

**Investors** play a critical role in de-risking infrastructure development through long-term commitments. Public-private funding models and mechanisms like contracts for difference can help bridge the cost gap between virgin and recycled materials and accelerate technology deployment.

**Ecosystem validators**, including NGOs, academic institutions, and thought leaders, are essential to give visibility to circular transition efforts, anchor initiatives in high-impact platforms, and ensure legitimacy across stakeholders. They also play a key role in amplifying results, providing external perspectives, advocating for change and regulation, and reinforcing credibility through transparent communication and cross-sector engagement.

Reworking Europe's textile system will require bold coordination—but the opportunity to act is now.

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## Acknowledgements

The authors are grateful for the insights and assistance provided by our colleagues to make this report possible. Our many thanks to Catharina Martinez-Pardo, Managing Director & Partner at BCG, and Elian Evans, Senior Analyst at BCG, for their support and inputs.





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