# Europe could boost polyester recycling tenfold by 2035 with strong government reforms



A significant shift towards recycling polyester textiles could provide a vital pathway to enhance social and environmental sustainability, according to a recent study conducted by Systemiq. This movement, however, hinges on the implementation of substantial governmental reforms to create an effective recycling ecosystem.

The impact of abandoned and discarded apparel poses a severe risk, contributing to the worrying rise of microplastics contaminating groundwater, soil, and even rainfall. The scale of this issue is daunting for the global textile sector; however, a robust recycling approach could be one part of a larger solution. Despite the availability of advanced recycling technologies, the cost remains prohibitively high, making recycled polyester 2.6 times more expensive than its virgin counterpart. Currently, out of the approximate 125 million tonnes of natural and synthetic fibres consumed annually in the textile industry, less than 1% is sourced from recycling.

According to the Systemiq analysis, closing the price gap between recycled and virgin polyester may enable Europe to achieve a tenfold increase in textile-to-textile recycling of polyester by 2035. Such a leap would necessitate new waste sorting processes and stringent regulatory measures. At the heart of these efforts is depolymerisation—the process that breaks polymers down into their fundamental components, or monomers, which can then be repurposed to manufacture new materials. This method stands out for its ability to handle blended, coloured, or degraded textile waste, presenting a viable solution even for the most challenging materials.

Projecting forward, the amount of recycled polyester produced in Europe through depolymerisation could surge from the anticipated 30,000 tonnes per year by 2028 to about 300,000 tonnes annually by 2035. This significant increase underscores depolymerisation’s efficacy over other recycling methods, particularly as it generates substantially fewer emissions compared to the production of virgin polymers.

The study highlights the importance of introducing an ambitious Extended Producer Responsibility (EPR) system, which would mandate European textile retailers to bear the costs associated with product collection, sorting, and recycling. The anticipated EPR charge of around US $284 per tonne by 2028, rising to US $374 by 2035, would enhance the market competitiveness of recycled polyester by offsetting a considerable portion of recycling costs. Implementing further measures, such as mandating that new products incorporate recycled materials and tightening regulations on textile waste trade, would also prove beneficial.

If these policies are enacted, Europe could pave the way for a thriving circular economy, decreasing greenhouse gas emissions while simultaneously creating jobs. While recycling polyester is not an all-encompassing solution to the problem of textile waste, it is crucial for managing non-reusable polyester refuse. Initiatives aiming to innovate recycling methodologies, such as the LIFE POLITEX project, further bolster these efforts by focusing on the depolymerisation of polyester into its basic constituents, thereby ensuring higher quality secondary raw materials.

Additionally, advancements in recycling technologies, such as the low-temperature, low-pressure method developed by Petshka for converting polyester waste into polyol polyester, illustrate the industry's potential for innovation. This environmentally friendly approach not only minimises pollution but also enhances the recyclability of polyester across various industrial applications.

The road ahead for textile recycling is challenging but promising. Systemiq’s recommendations, which include enhancing the infrastructure for collection and sorting, alongside scaling up recycling capabilities, have the potential to reshape the polyester market substantially. Through effective implementation of these strategies, Europe could not only reduce its reliance on fossil fuels but also emerge as a leader in sustainable textile practices.

Ultimately, fostering a circular economy for polyester textiles may not only mitigate the burgeoning problem of textile waste but also herald a new era in sustainable manufacturing, driving economic growth and environmental stewardship alike.

## Reference Map:

* Paragraph 1 – [[1]](https://apparelresources.com/business-news/sustainability/study-shows-shift-towards-textile-recycling-europe-boon-sustainability/), [[2]](https://www.systemiq.earth/pet-polyester/)
* Paragraph 2 – [[1]](https://apparelresources.com/business-news/sustainability/study-shows-shift-towards-textile-recycling-europe-boon-sustainability/), [[3]](https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE23-ENV-ES-LIFE-POLITEX-101148221/fibre-to-fibre-full-circularity-in-the-textile-sector-through-novel-polyester-recycling-technologies), [[4]](https://circulareconomy.europa.eu/platform/en/good-practices/petshka-recycling-polyester-waste)
* Paragraph 3 – [[5]](https://recyclinginternational.com/commodities/plastics-recycling/petcore-sets-out-roadmap-for-circular-polyester-textiles/59598/), [[6]](https://www.zerocarbonacademy.com/posts/can-a-circular-economy-really-be-established-for-polyester-textiles-in-europe)
* Paragraph 4 – [[1]](https://apparelresources.com/business-news/sustainability/study-shows-shift-towards-textile-recycling-europe-boon-sustainability/), [[2]](https://www.systemiq.earth/pet-polyester/), [[5]](https://recyclinginternational.com/commodities/plastics-recycling/petcore-sets-out-roadmap-for-circular-polyester-textiles/59598/)
* Paragraph 5 – [[6]](https://www.zerocarbonacademy.com/posts/can-a-circular-economy-really-be-established-for-polyester-textiles-in-europe)
* Paragraph 6 – [[3]](https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE23-ENV-ES-LIFE-POLITEX-101148221/fibre-to-fibre-full-circularity-in-the-textile-sector-through-novel-polyester-recycling-technologies), [[6]](https://www.zerocarbonacademy.com/posts/can-a-circular-economy-really-be-established-for-polyester-textiles-in-europe)
* Paragraph 7 – [[1]](https://apparelresources.com/business-news/sustainability/study-shows-shift-towards-textile-recycling-europe-boon-sustainability/), [[2]](https://www.systemiq.earth/pet-polyester/), [[3]](https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE23-ENV-ES-LIFE-POLITEX-101148221/fibre-to-fibre-full-circularity-in-the-textile-sector-through-novel-polyester-recycling-technologies)

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## Bibliography

1. <https://apparelresources.com/business-news/sustainability/study-shows-shift-towards-textile-recycling-europe-boon-sustainability/> - Please view link - unable to able to access data
2. <https://www.systemiq.earth/pet-polyester/> - Systemiq's study outlines a roadmap for achieving a high-circularity, low-emissions system for PET packaging and polyester textiles in Europe. It identifies six priority actions across the entire plastics life-cycle, including demand reduction, reuse, mechanical recycling, and chemical recycling. By 2040, these measures could lead to a one-third reduction in overall PET/polyester consumption, a 70% decrease in waste to landfill or incineration, and a 50% reduction in greenhouse gas emissions. The study also highlights the creation of 28,000 net new jobs and an additional €5.5 billion per year in revenues for the recycling industry. ([systemiq.earth](https://www.systemiq.earth/pet-polyester/?utm_source=openai))
3. <https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE23-ENV-ES-LIFE-POLITEX-101148221/fibre-to-fibre-full-circularity-in-the-textile-sector-through-novel-polyester-recycling-technologies> - The LIFE POLITEX project aims to reduce and eliminate the amount of polyester textiles sent to landfill or incineration by implementing new recycling methodologies. It focuses on depolymerising polyester into its basic constituents or monomers (BHET), which are then used as secondary raw materials to obtain new recycled polyester filament yarns. The project includes innovative technologies for polyester sorting and classification, as well as chemical processes to depolymerise textile waste into high-quality BHET. By the end of the project, it aims to process 4,500 tonnes of textile waste per year, increasing to 10,000 tonnes per year at full capacity. ([webgate.ec.europa.eu](https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE23-ENV-ES-LIFE-POLITEX-101148221/fibre-to-fibre-full-circularity-in-the-textile-sector-through-novel-polyester-recycling-technologies?utm_source=openai))
4. <https://circulareconomy.europa.eu/platform/en/good-practices/petshka-recycling-polyester-waste> - Petshka, an R&D company based in France, has developed a process for turning polyester waste into recycled polyol polyester. This efficient process involves collecting polyester waste from businesses and converting it into polyol polyester through a low-temperature, low-pressure chemical recycling method that releases only water, with no pollution or waste. The resulting recycled polyol polyester has various industrial applications, including in the production of polyurethane insulation materials, coatings, adhesives, synthetic fibres, and construction materials. In 2024, Petshka collected and transformed 70 tonnes of polyester textiles and plans to expand operations to North America by 2025. ([circulareconomy.europa.eu](https://circulareconomy.europa.eu/platform/en/good-practices/petshka-recycling-polyester-waste?utm_source=openai))
5. <https://recyclinginternational.com/commodities/plastics-recycling/petcore-sets-out-roadmap-for-circular-polyester-textiles/59598/> - Petcore Europe, the association covering the PET lifecycle in Europe, has published a position paper on the EU’s Ecodesign for Sustainable Products Regulation (ESPR), which came into force in July 2024. The organisation stresses the need to improve collection efforts, establish mandatory EU-wide harmonised sorting guidelines, and implement pre-processing infrastructure to convert collected textile waste into consistent usable feedstock for both mechanical recycling and depolymerisation processes. These measures are vital for securing the viability of recycling facilities and ensuring the industry can achieve the ambitious targets set by the ESPR Ecodesign framework. ([recyclinginternational.com](https://recyclinginternational.com/commodities/plastics-recycling/petcore-sets-out-roadmap-for-circular-polyester-textiles/59598/?utm_source=openai))
6. <https://www.zerocarbonacademy.com/posts/can-a-circular-economy-really-be-established-for-polyester-textiles-in-europe> - Systemiq recommends six priority actions to establish a circular economy for polyester textiles in Europe by 2040. These actions include expanding reuse to extend product lifetimes, reversing trends of high-consumption business models in the fashion sector, standardising product design to improve reuse and recycling economics, securing long-term demand for recycled PET/polyester, developing sufficient high-quality feedstock flows for recyclers by improving collection and sorting, and scaling up recycling infrastructure and optimising performance. If implemented effectively, these actions could collectively transform the PET/polyester system, leading to a one-third reduction in overall PET/polyester consumption, a 70% decrease in waste to landfill or incineration, and a 50% reduction in greenhouse gas emissions compared to a continuation of historical trends. ([zerocarbonacademy.com](https://www.zerocarbonacademy.com/posts/can-a-circular-economy-really-be-established-for-polyester-textiles-in-europe?utm_source=openai))
7. <https://www.ri.se/en/expertise-areas/expertises/depolymerisation> - RISE offers validation services for feedstock, solvent systems, and catalysts used in the depolymerisation of plastics and textiles. Depolymerisation enables the recycling of partially degraded or mixed materials by breaking down polymers like polyesters, polyamides, polyurethanes, and polycarbonates into their monomers. These monomers can then be repolymerised into new polymers or used as base chemicals in other processes. RISE has extensive experience in polyester depolymerisation through methods such as glycolysis, alcoholysis, and hydrolysis, along with purification of the obtained monomers. Their reactors can handle samples ranging from a few grams to several kilograms, with capacities of 150 mL, 2,000 mL, or 50 L, and can withstand pressures up to 250 bar. ([ri.se](https://www.ri.se/en/expertise-areas/expertises/depolymerisation?utm_source=openai))