

# Accelerating Textile Recycling with Digital IDs

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## Current situation

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Every year, Europe generates around seven million tonnes of textile waste<sup>1</sup>. Only around 35% of this waste is separately collected and less than 1% recycled into new material. In response, the European Union is rolling up its sleeves and preparing legislation for a drastic overhaul. The vision is to curb overproduction and overconsumption of textiles, discourage the unnecessary destruction of unsold or returned goods, and limit the export of textile waste.

By 2030, the EU anticipates that collected textile waste volumes will double, necessitating a 2.5x increase in sorting capacity. Furthermore, fiber-to-fiber recycling is projected to reach 18 to 26 percent of gross textile waste in 2030. These goals, while ambitious, are necessary for creating a sustainable textile industry. To attain them, the EU must overcome three major challenges.

### The big 3: collection, sorting, and mixed quality

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From 2025, EU Member States will need to collect all textile waste separately, requiring scaling of infrastructure across jurisdictions. Post-collection, these textiles must be sorted according to the proposed waste hierarchy. This task is complicated by the fact that most waste streams will be composed of a wide variety of fabrics (cotton, polyesters, etc.), and the presence of dyes, finishes, and other chemicals used to enhance the performance of textiles.

Furthermore, today's textile recycling model is linear, with most recycling technologies reducing the quality of the material so recycled textiles only prolong the material's life by one additional cycle. Converting garment textiles into utility products like cleaning cloths and insulation material destroys tremendous value across the supply chain.

What if we could recycle textiles into equivalent or even higher quality products, extending material use for multiple cycles? That's the idea behind a circular

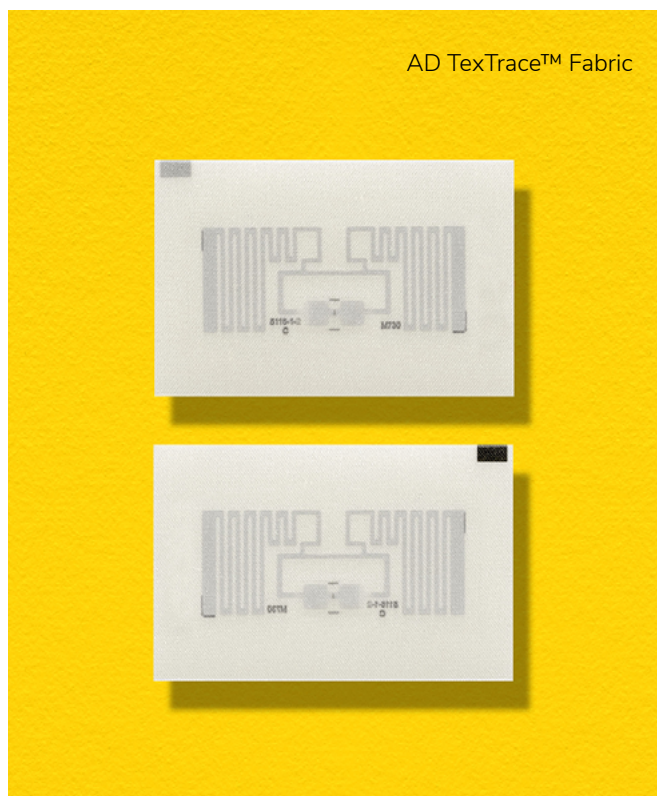
1. [State of Fashion | McKinsey](#)



recycling model. To make circularity happen we must embrace new recycling technologies that protect material integrity, and support new standards for fiber quality and material transparency. And we need to re-examine supply chain models to identify efficient ways of collecting, recycling and transporting materials from points of consumption to manufacturing locations, which are often thousands of miles apart.

## The regulatory push towards sustainability

While moving towards more circular models requires the textile industry to address multiple challenges, the industry has little option but to act. New legislation such as the Ecodesign for Sustainable Products Regulation, which includes Digital Product Passports (DPPs), and the Waste Framework Directive, which establishes EU-wide Extended Producer Responsibility (EPR) schemes, are all creating a regulatory push for a sustainable transition. Additionally, the export of waste will most likely be restricted by the EU Waste Shipment Regulation.



Such regulatory changes will increase the demand for new supply chain models and investment in EU-based recycling processes. We need a scalable process that can efficiently sort and process textiles and clothing based on fiber type, and free of impurities such as zippers and buttons.

## Digital identification technologies: bridging the gap

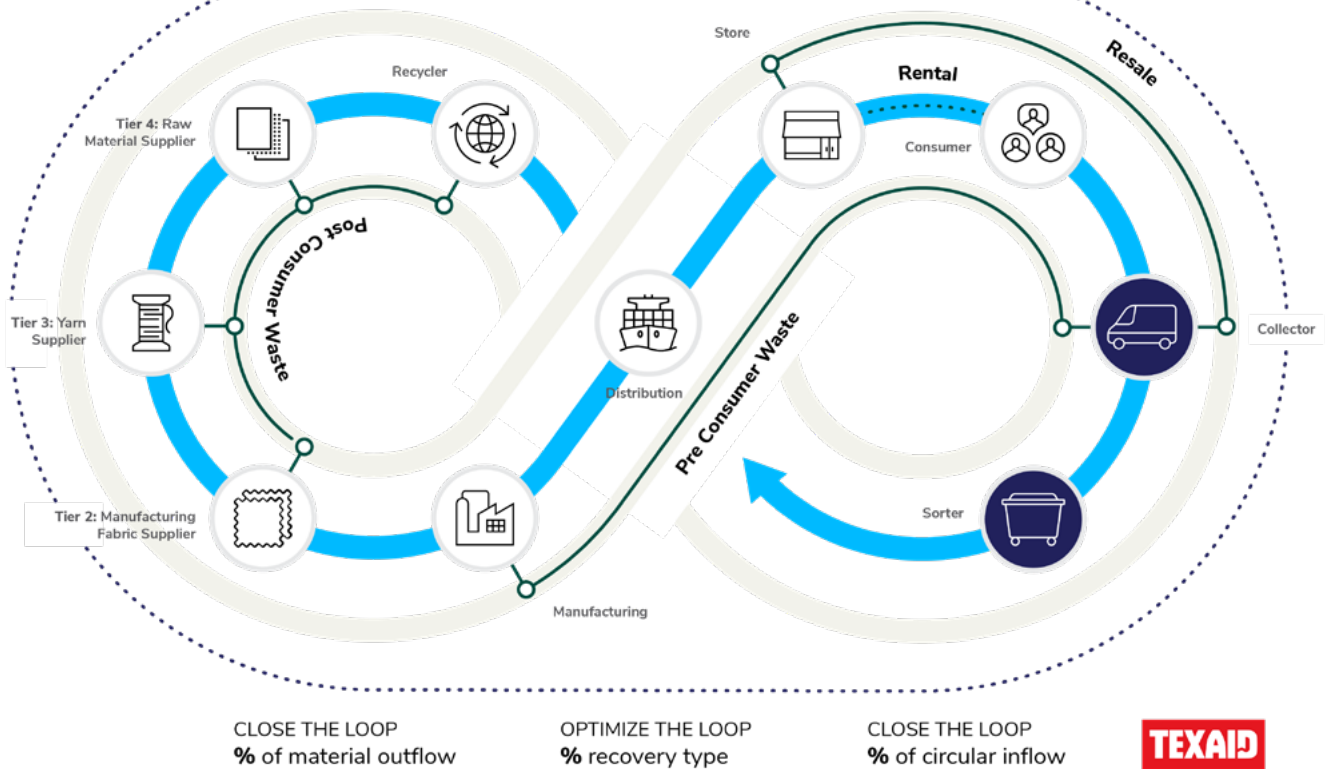
The EU is poised to set new standards for traceability with new rules establishing DPPs. And while this legislation will be transformational, the digital identification technology that will enable it will have an even greater impact. By attaching technologies like UHF RFID and NFC to garments through labels, which are already present on every textile product today, companies can implement DPPs. Beyond aligning with standards, the technologies also present a tantalizing opportunity. Intelligent, digital labels provide brand owners and retailers the ability to streamline and improve supply chains, enable transparency, drive omnichannel selling models, enhance product authenticity, create new retail experiences (e.g. self check-out), and engage the consumer post-purchase.

These intelligent labels are also crucial in improving the traceability for collection and takeback services, as well as sorting processes for re-use or recycling.

Current textile sorting processes are manual, capital intensive, and time-consuming. Digital identifiers on textiles can significantly reduce the processing time of the sorting process, increasing capacity, and driving down costs. This system also allows for detailed tracking of the lifecycle of a product, paving the way for new circular business models.

The collaboration<sup>2</sup> between TEXAID, a European based company specialized in the collection, sorting and recycling of textiles in Europe, and Avery Dennison will offer a glimpse into the future, demonstrating a path forward through innovation.

2. [Transforming Textile Recycling | Avery Dennison](#)



## Technology is unlocking the textile recycling stream

A key aspect of this collaboration is the integration of cutting-edge technologies. As a provider of market-leading digital identification solutions for the apparel industry, Avery Dennison will work with TEXAID to explore how technology can enable traceability of garments through the sorting and recycling process. Digital identifiers, tracked via Avery Dennison’s atma.io connected product cloud platform, carrying vital fiber information, will aid TEXAID to process apparel into relevant resale or recycling streams.

As Martin Bösch, CEO, TEXAID, points out: “The traditional textile recycling facilities will fail if they remain small scale. We are showing today how technology can deliver both scale for the growing volume and ensure the high quality feedstock the industry needs.” Digital identification technologies are the key to bringing tomorrow’s circular models to life, automating and tracking the sorting and recycling, and scaling to meet demand.

Integrated RFID as scaling technology for sorting, resale and recycling of textile waste.

## Circularity starts with collaboration

To transition into a truly circular business model, all stakeholders in the industry must proactively collaborate - from the designer and the manufacturer to the user and the recycler. Retailers and brands must incentivize their customers to return their used products and ensure the labels are not removed. Encouraging this change in behavior would align perfectly with the communications guidance emphasized by UNEP and UN Climate Change<sup>3</sup>, which calls on influential brands to 1) reduce messages perpetuating overconsumption, and 2) to redirect aspiration to more sustainable lifestyles.

The time for talking about what needs to happen is over. To meet the challenges facing the textile industry, organizations must have the courage and conviction to adopt technologies that will drive change.

We have the technology and partnerships. Now we need to prioritize change.



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