

Clothing manufacturers aim to get fashionable with greener practices

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Infinited Fiber wet spinning process. Credit: © Infinited Fiber Company, 2023

Clothes made from recycled textiles are emerging in Europe, highlighting new business opportunities that also reduce the industry's environmental footprint.

Two textile plants in southern Finland point to the future of the industry.

At the sites in Espoo and Valkeakoski, pre-treated textile waste is turned into a cellulosic fiber that looks and feels like cotton.

In with the old

The activity is part of a research initiative called the [New Cotton Project](#) that received EU funding to help green the fashion business by recycling discarded [textiles](#) into new clothes. The three-year initiative is being extended by six months to March 2024 and builds on the notion of a "[circular economy](#)" in which goods get repaired, reused and recycled.

"We want to show that a circular economy for textiles is possible in Europe," said Paula Sarsama, who coordinates New Cotton Project and is program manager at Infinited Fiber Company in Espoo. The project uses the company's recycling technology.

Discarded clothing is an environmental menace in Europe and globally.

Much of the waste is dumped into landfills in poorer parts of the world, discharging methane into the air and chemicals into the soil and groundwater. An estimated 5.8 million tons of textiles, or about 11 kilograms per person, are thrown away annually in the EU.

The EU is one of the world's largest importers of clothing, with such shipments worth €80 billion in 2019.

While the EU gets most of its textiles from abroad, it also produces them in countries including Germany, Italy, France and Spain. Italy accounts for more than 40% of EU apparel production. Furthermore, European exports of discarded clothing have tripled in the past two decades.

The textile sector in Europe employs more than 1.5 million people and, with global textiles [production predicted to rise 63% by 2030 from 2022](#), the waste would only increase without action.

The European clothing industry is seeking to break the cycle by moving towards more sustainable production and consumption. The shifts promise to open new business opportunities while aiding the environment.

Commercial case

Under New Cotton Project, the used textiles were obtained by a Dutch company named Frankenhuis that collects and organizes them and is a partner in the initiative.

At Infinited Fiber, Sarsama and her colleagues work with numerous textile collectors and sorters. Most are located in northern Europe—an effort to keep transport routes, costs and emissions to a minimum.

"In the future we hope to see textile circularity hubs, sourcing textiles locally and having different recycling and circular solutions on site," said Sarsama.

After being broken down, the waste is revived as the fiber that looks and feels like cotton and is named "Infinna."

Hoodie and sweatpants

Actually making the clothes is the next step in the whole process.

German athletic apparel and footwear maker adidas and companies belonging to Swedish fashion retailer H&M are among the businesses

that will use the Infinna fiber to design, manufacture and sell their own items.

A milestone for New Cotton Project was getting the first garments made from textile waste into the marketplace in 2022, according to Sarsama.

The retailers' collections were limited product lines sold on the online market. Sarsama said this ensured a larger geographical spread than would have been the case from selling the items in a single European shop, however large.

The garments included an "adidas by Stella McCartney" set with a hoodie and sweatpants and an H&M denim jacket and pair of trousers.

All parts of the textile production chain—from initial design through to the shop floor—are represented in the project. The aim is to demonstrate that creating new clothing from cotton-rich textile waste can be commercially viable.

Collection is key

A key component in the transition to a circular economy is the organized collecting and sorting of textile waste.

Currently, less than 1% of materials used to produce new clothing comes from recycled textiles. As of 2025, EU law will require all 27 Member States to put in place a waste-collection system for household textiles and to comply with minimum recycling goals.

A big challenge is getting different parts of the sector to align on specifications, according to Sarsama.

For example, at the start of New Cotton Project, the partners planning

new collections had some specifications for required materials that were unclear to the collecting entities. This prompted the two segments to improve their exchange of information.

Collaboration in the sector got a boost with the launch in early 2023 of the [ECOSYSTE](#)X platform. Bringing together 23 EU-funded initiatives—including New Cotton Project—that focus on textile sustainability, ECOSYSTEX aims to deepen cooperation among the partners.

Sorting it out

Another European project that is part of the platform has received EU funding to demonstrate how a system to transform household textile waste into a feedstock for new products could work.

Called [T-REX](#)—short for Textile Recycling Excellence—the initiative began last year and is due to run through May 2025. The focus is on grouping the waste. That's because, to be repurposed on a large scale, discarded garments first need to be sorted according to their material.

"A problem for the sorters is that items are made from different materials," said Elizabeth Martin, T-REX's coordinator and a manager at adidas. "If we can harmonize the quality criteria for sorting practices, we can improve the scale-up as well."

New actors

On top of this hurdle comes an unknown: how consumers will become part of the process, as they'll be the ones discarding old garments.

Bringing this segment into the mix will require simpler textile waste-

disposal options. That in turn will mean changes in labeling as well as in production.

"The ways in which consumers are going to dispose of their household textile waste is going to play a role because this is going to affect the sorting process that follows," said Martin.

In a 2022 [Strategy for Sustainable and Circular Textiles](#), the European Commission proposed to establish an EU Digital Product Passport—an electronic record that would be required by 2030 to encourage customers to make more educated choices in the first place.

Basic data such as a garment's composition, sourcing, toxicity, maintenance options and disassembly possibilities would aid companies in adopting circular models.

The hope in Europe is that the knowledge generated through research initiatives like New Cotton Project and T-REX will also contribute to improving practices globally.

For any substantial change in the textile sector, international collaboration is needed.

"Europe is currently at the forefront of this push for change, but these problems need to be solved at a global level," said Sarsama.

More information:

- [New Cotton](#)
- [T-REX](#)

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