

Textile waste reduction: A case study for TexPlus

Nienke van Leeuwe

Bsc. Industrial Design Engineering

University of Twente

The Netherlands

Since the rise of fast fashion, the problems in the textile and apparel industry have increased worldwide. The Covid-19 pandemic has heightened the concerns by magnifying the unseen vulnerabilities and existing problems. Due to the pandemic, all parts of the value chain have issues and together have occurred an immense crisis. As a result, textile surpluses were created at regional and international levels. The volume of the textile waste surplus is caused by increased textile consumption resulting from lower garment prices and increased demands for textiles from consumers. Meanwhile, most of the textile value chain operates linearly: large amounts of non-renewable resources are extracted to produce garments, which are often used for only a short time. Afterwards, most textile products are sent to landfills or incinerated.

The purpose of this thesis is to develop connected products to optimise textile recycling. Textile recycling refers to the process where old garments and other textile products are recovered for reuse or material recovery. Using exploratory research based on qualitative interviews with relevant stakeholders, the study analysed the existing problems and barriers to the textile recycling.

From the thematic analysis with the interviews, four main themes were revealed that characterise the Covid-19 situation and barriers in the textile industry. The themes are textile surplus, the future of the textile industry, awareness, and Covid-19 measures in The Netherlands. A subtheme is collaboration between the stakeholders, which is necessary to achieve sustainable development goal 12, which focuses on responsible consumption and production. Furthermore, it is the key for an ultimately and optimal textile circulation. By working together in the circular chain, much could be improved in terms of sustainability and transparency. For the study, the focus was on three stakeholder groups, the producer, consumer, and retailer, to address the needs of the stakeholders and joined the strengths in connected products. The overall goal of this project was to optimise textile recycling by designing connected products for three relevant stakeholders:

- For the producer, a unique textile label was designed with a QR code that links the physical product to a digital platform. The platform gives product information, brand, and style content with full transparency over all the producers in the supply chain. All the stakeholders involved in the production process could add and edit their information in the platform. The platform will help the producer with brand visibility and traceability throughout the product life cycle.
- For the consumer, a foldable home box with an infographic is offered to collect textile waste at home. It creates visibility for textile recycling in Twente in all consumers' homes with extra focus on damaged and worn-out items.

- Last for the retailer, an approachable, accessible, and attractive redesigned take-back box is offered in the store that stimulates the textile collection. Small businesses could personalize the box and create own collection categories during the year.

The three connected products have their own purpose and combine the strengths to achieve responsible textile recycling.