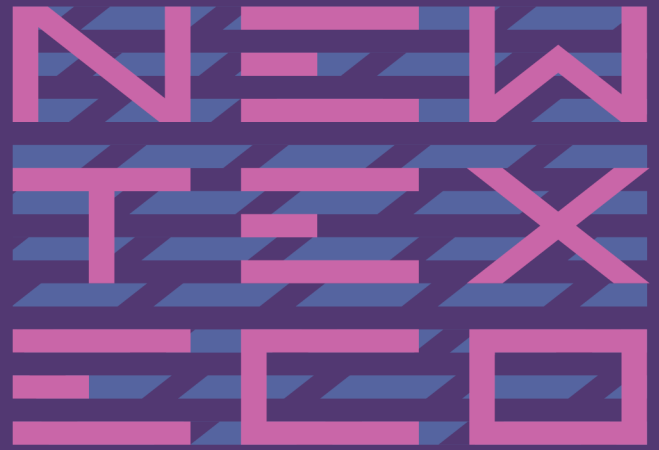




SYSTEMIC VALUE CHAIN TRANSFORMATION IN THE TEXTILE CLOTHING LEATHER AND FOOTWEAR (TCLF) SECTOR

The potential Impact of Upcoming Legislations and
Digitalization Trends

ArtEZ

ArtEZ University of the Arts

Perica Savanovic &
Daniëlle Bruggeman
Email: newtexeco@artez.nl



Hogeschool
van Amsterdam

Hogeschool van Amsterdam

Troy Nachtigall &
José Teunissen
Email: newtexeco@hva.nl

SAXION

Saxion Hogeschool

Jens Oelerich &
Haroutioun Askanian
Email: newtexeco@saxion.nl

Contents

Authors:
Francesco Sollitto, Tejaswini Nagesh, Lucie Huiskens, Marco
Mossinkoff, Menno Drontmann, Borre Akkersdijk, Troy Nachtigall

1. Introduction	1
2. The Transformation of the TCLF sector	4
2.1 The economic, technological, social, and environmental perspectives	4
2.1.1 Trade dependency in EU and the Netherlands	5
2.1.2 Affordability, Value Added, and Innovation	7
2.2 The actors in the circular value chain	8
2.2.1 Fibers, Yarn, and Fabrics producers: at the source of value generation	10
2.2.2 Brands and Manufacturers: from collections design to finished products	10
2.2.3 Retail and Wholesale: circulating the textile stock	12
2.2.4 Users: On top of the value hill	12
2.2.5 Collectors: Facilitating the redistribution of textiles	12
2.2.6 Sorting companies: Mining the residual value	13
2.2.7 Recyclers: From waste burden to resource	14
3. Legislation	15
3.1 Global trade: overproduction, transparency, and regulation	15
3.2 Extended Producer Responsibility (EPR)	17
4. Digitalization	20
4.1 Macro applications: government monitoring and policy calibration	20
4.1.1 Mapping ecosystems	20
4.1.2 Algorithmic calibration of incentives and the	

1. Introduction

*“If Europe cannot become more productive, we will be forced to choose. We will not be able to become, at once, **a leader in new technologies**, a **beacon of climate responsibility**, and an **independent player on the world stage**. We will not be able to finance our social model. We will have to scale back some, if not all, of our ambitions. This is an existential challenge.”*

- The Future of European Competitiveness (aka. The Draghi Report), Sept. 2024

Most economic sectors are undergoing a fast-paced transition with the emergence of sustainability imperatives and ground-breaking technologies. With a focus on the Textiles, Clothing, Leather, and Footwear (TCLF) sector, we look for direction in the upcoming legislative changes by analyzing the current state of affairs, recalling the motives that led to globalized value chains. There is a need in the Netherlands and other EU countries to clarify the conditions that will pave the way in creating a safe and sustainable Europe through changing legislation and new trajectories in digital technologies and data science. The EU promises to be a leading figure in this transition, having adopted legislation in the 2025 Omnibus Package, and through initiatives like the Textiles of the Future Partnership (2025), the Circular Economy Action Plan (CEAP, 2020), and the Twin Green & Digital Transitions (2022). In this paper, we summarize the challenges faced by all stakeholders in the textile ecosystem, highlighting opportunities and challenges surrounding new policy implementations and digitalization trends.

Climate imperatives demand that the TCLF sector consider not only economic competitiveness but also the hidden costs stemming from the manufacturing, use, and disposal of products. To move towards a European Union that is Safe and Sustainable by design (SSbD), along with the climate goals of Europe, a series of EU legislation proposals have been passed into law, attempting to **increase transparency on the**

environmental, economic, and social impacts of all the “things” made, used, and recycled in Europe. According to the European Environmental Agency, the TCLF sector is the third highest for water and land use pressure, and the fifth for material use and greenhouse gas emissions¹. The same source also expresses concern

shopping behaviors, a pattern of under-use and overconsumption. Cheap, lower-quality, and easily damaged clothing is contributing to a growing amount of textile waste that is extremely difficult to recycle. EU households have reached a new record high of 19 kg per capita of textile products, including clothing, footwear, and household textiles bought in 2022⁶. At the same time, the recycling infrastructure for textiles is still far from being capable of dealing with those volumes and it is struggling to deliver recycled materials appreciated by the sector, due to high cost and uncertainty regarding the quality.

Recent EU Legislative reforms aim to increase competitiveness and sustainability through digitalization, transparency, monitoring, information sharing, and research actions through the Extended Producer Responsibility (EPR, or UPV in the Netherlands) and the Ecodesign for Sustainable Product Regulations (ESPR) which includes the Digital Product Passport (DPP), Market Surveillance Regulation (MSR), and Waste Framework Directive

manufacturing, and digital and sustainability-related skills.
6 According to the EEA, the export of used textiles from Europe has tripled since 2000 despite the population not having increased much in the same time period.

(WFD). However, it is still unclear how the data disclosure requirements will be implemented and federated in EU member states and how the actions will affect the sector’s operations and economics.⁷ As the implementation of ESPR and EPR comes into focus, all stakeholders in the ecosystem (including users) seek involvement and higher levels of collaboration. This is often made more difficult by the different size of companies and the influence that they can exert.

In Figure 1, we illustrate the stakeholder classes operating within or in support of the textile value chain. Within the NewTexEco research community, our goal is to facilitate cooperation among the various actors in the ecosystem and to share research outcomes that improve the economic and environmental performance of the TCLF sector in the Netherlands. Importantly, as the Dutch textile ecosystem is deeply embedded within the EU

7 Different national organizations are working to achieve the most effective policy implementation, like the Center of Excellence for Digital Product Passports in the

2. The Transformation of the TCLF sector

With a series of developments in the EU legislation and in the competitive landscape, there is a common feeling that the TCLF sector stands at a crucial point⁹. **Transformative systemic change is needed to depart from current scenarios that do not show a promising future for the sector in Europe.** An ecosystem that includes quintuple helix stakeholders from Industry, Government, Environment, Academia and Society are needed to transform the TCLF sector. Based in the Netherlands, the New Textile Ecosystems research community (NewTexEco or NTE) is one of the network organisations aiming to steer the TCLF sector and the overarching ecosystem towards a more sustainable present and future. 30 institutions, including businesses, policy experts, academics, environmental, societal institutions and other network organisations have **co-developed practical research agendas, identifying the most important topics to be considered in the transformation of the textile ecosystem.** After the definition of seven research

9 [Report on an EU Strategy for Sustainable and Circular Textiles- Link](#)

themes¹⁰, and thanks to the interactions with external partners, industry experts, and a combination of interested parties that continue to bring precious insights (e.g. from Circular Textile Days), the development of a new narrative has started to take shape in parallel with the writing of this white paper.

2.1 The economic, technological, social, and environmental perspectives

The Economic, Technological, Social, and Environmental perspectives are deeply interrelated and their topics hold implications for one another. **Figure 2** displays the mindmap that helps to visualise dependencies between topics and to **promote holistic approaches to policy-making, business practice, and practice-based research.** At the heart of the four domains, we place “Research, Innovation, and

10 [Article on the seven research themes on the NewTexEco website - Link](#)

