

## Phasing out carbon-based materials in the Fashion industry

### Researchers

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### Focus

In this project, we seek to learn from innovative efforts to phase out and recycle carbon-based – synthetic - materials in the fashion industry, including initiatives to promote the uptake of alternatives and the growth of niche grassroots initiatives.

### Innovative idea and objective

Our nine-month methodological innovation project sought to learn from innovative *efforts to phase-out and recycle carbon-based – synthetic - materials in the fashion industry*, including initiatives to promote the uptake of alternatives and the growth of niche grassroots initiatives. *The objective of our study was to review the legislative efforts; make a quick scan of the actors involved in reducing the fashion industry’s reliance on carbon-based material, and examine their diverse phasing-out/recycling strategies (recycling, the use of non-carbon-based materials, clothing swapping events, online second-hand clothes platforms, fashion in the metaverse, vegan fashion) and briefly review the materials transition of textiles.*

### Relevance to the materials transition in textiles and/or building materials?

The world’s biggest fashion brands fuel plastic pollution and the climate crisis by relying on synthetic fibre made from fossil fuels. The system seems locked into a focus on growth and disposability, however, there are bright spots. Concerns about plastics pollution and the climate crisis have resulted in a plurality of strategies to stimulate increased use of sustainable materials (supply side) and increased demand for sustainable fashion (demand side); and, policies that enable this transition have been adopted.

### What did you do?

For this project cases study research is conducted in which an analysis of outcomes of the case studies in light of the legislation is done. A quick scan of the actors involved in reducing the fashion industry’s reliance on fossil-based carbon-based material in the Netherlands was done. The main objective is to examine their diverse phasing-out/recycling strategies, recycling, the use of carbon-based materials, clothing swapping events, online second-hand clothes platforms, fashion in the metaverse, and vegan (plant-based fashion).

In total seven fashion or fashion related businesses were interviewed and analysed on the Circularity principles. which included gathering more information about these companies and interviewing key actors within the companies about their practices.

The findings of the case study research reveal the one of the seven companies interviewed indicated that they are not at all concerned with sustainability in a broad sense as part of their business operations. Most companies interviewed indicated they were aware of the (upcoming) legislation.

The interview with one of the fashion companies shows that the circular business model of “leasing” is not economically viable. Raising the question of whether such a circular business model works in the fashion industry.

### Main result, achievement and highlight

Our main findings were that although the sustainable fashion movement is gaining traction, the environmental and social impact of the fashion industry remains a huge issue. The fashion industry accounts for 8-10 % of worldwide carbon emissions. It is the second-largest consumer of the world’s water supply and is responsible for vast amounts of microfibre pollution in our oceans. And the problems are not confined to the environment. Workers around the globe continue to suffer from unliveable wages, child labour, modern slavery and unsafe working conditions.

Furthermore, the following notes need to be made on the textile materials.

The methodological innovation project seeks to learn from innovative efforts to phase out and recycle fossil feedstock based – synthetic - materials in the fashion industry, including initiatives to promote the uptake of alternatives and the growth of niche grassroots initiatives. To assess the sustainability of any specific material, it is essential to have a deeper look at the entire value chain, including the production processes. The idea behind circular economies is that the materials can be recovered at the end of the pipeline. However, the fashion industry uses many composite materials which cannot be recycled into new raw materials for the fashion industry. Also, for some uses, such as garments for sport and fitness purposes. In this case, synthetic materials have superior properties.

*Remarks need to be made regarding legislation. In the Netherlands, the introduction of the Extended Producers Responsibility (EPR) legislation for textiles is scheduled for the Spring/Summer of 2023. Although the instrument EPR is based on the Polluter Pays Principle, one of the key principles underlying the European Union's environmental policy, it is not free of criticism. There is concern that when the Dutch municipalities collect the textiles for the companies, not the taxpayer but the consumer will pay for the collection of the textiles.*

Finally, fashion without fossil-feedstock-based materials seems unlikely, as polyester and other synthetic fibres have utilities. Reduce and re-use initiatives need to be scaled up in order to make the transition to a Circular Fashion Economy. Furthermore, the challenge we faced in this project was that the willingness of fashion companies in the Netherlands to participate in the case study research. It was difficult to organize interviews for the case studies. Most of fashion companies are afraid of negative publicity and opening up their company and revealing their view on the topic of sustainability and circularity.

### **Key Message**

Our main findings were that although the sustainable fashion movement is gaining traction, the environmental and social impact of the fashion industry remains a huge issue.

Visual abstract

Smart design and use	R1	<b>Refuse:</b> <i>This strategy includes discarding products: “prevent material use by making product obsolete or replacing with different product/ service. Avoid both virgin and processed materials.</i> -Companies/ organizations: <b>Karl Lagerfeld/B-Spoken/Stitch</b>
Smart design and use	R2	<b>Rethink:</b> <i>This strategy includes using products more intensively by sharing them or making them multifunctional.</i> -Companies/ organizations: <b>PapajaRocks/Stitch</b>
Smart design and use	R3	<b>Reduce:</b> <i>Reduce is about manufacturing products more efficiently or making them more efficient in use.” reduce the use of raw and processed virgin materials”</i> -Companies/ organizations: <b>Karl Lagerfeld/Stitch</b>
Increase product lifespan	R4	<b>Re-use:</b> <i>Products can have a longer life through reuse:” re-using products, components, or virgin materials (whether or not they have previously been refurbished).</i> -Companies/ organizations: <b>Aarden Fashion</b>
Increase product lifespan	R5	<b>Repair:</b> <i>This strategy is also about extending the life span of products but by repairing them.</i> -Companies/ organizations: --
Increase product lifespan	R6	<b>Refurbish:</b> <i>Extending the life span of products: Refurbish products and parts such that they are ‘like new.</i> -Companies/ organizations: <b>B-Spoken (interior products)</b>
Increase product lifespan	R7	<b>Remanufacture:</b> <i>This strategy also involves extending the life of products by revising product components. making new products or parts from previously made products and/or parts.</i> -Companies/ organizations: --
Increase product lifespan	R8	<b>Repurpose:</b> <i>Reusing products and/or parts but with a different purpose/function, whether or not combined with Refurbish</i> -Companies/ organizations: --
Efficient use of materials	R9	<b>Recycle:</b> <i>This strategy involves processing and reusing raw materials.</i> -Companies/ organizations: <b>UPSET Textiles /B-Spoken</b>
Efficient use of materials	R10	<b>Recover:</b> <i>The strategy of recover involves recovering energy from materials (also called thermal upcycling)</i> -Companies/ organizations: <b>Aarden Fashion</b>