

# The Circular Economy as a New Narrative for the Textile Industry



An analysis of the textile value chain with a focus on Germany's transformation to a circular economy

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## Zukunftsimpuls 23 | July 2022

### **Publisher:**

Wuppertal Institut für Klima, Umwelt, Energie gGmbH  
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### **Please cite this publication as follows:**

Gözet, B., & Wilts, H. (2022). The circular economy as a new narrative for the textile industry: An analysis of the textile value chain with a focus on Germany's transformation to a circular economy (Zukunftsimpuls no. 23). Wuppertal Institute.

This Zukunftsimpuls was originally published in German in May 2022.

The “**Zukunftsimpulse**” series provides theses, discussion papers, contributions, assessments, statements and research results related to current political debates. Up to and including issue 10, the series was published under the title “Impulse zur Wachstumswende” (Impulses for a Turnaround in Growth).

**Photo credit:** Title page Getty Images

Wuppertal, July 2022

ISSN 2701-3200

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## Ten key messages

- 1 | Textiles are a fundamental component of today's agricultural, construction and industrial sectors. They have always played a central role in different cultures and identities, especially in the form of clothing and footwear, and are key to human well-being.
- 2 | In recent decades, the surging demand for textiles has driven rapid growth. The increasing competition in the global textile market has in turn led to a value chain that seeks to keep costs to a minimum – an objective achieved by means of low-tech systems, inexpensive materials and the outsourcing of production processes to countries with low environmental and social standards.
- 3 | This growth has increasingly created a globally interconnected and complex clothing and textile industry, in which the EU has taken on a central role as an end consumer and manufacturing partner. Germany too has become a key trading partner: worldwide, Germany is the second-largest importer of clothing and footwear and the fifth-largest importer of textiles.
- 4 | Due to its current linear value chain, the textile industry's high production and consumption volumes have led to the generation of vast quantities of waste. This is regarded as one of the sector's crucial environmental impacts. Further impacts involve the intensive use of resources and land, water consumption and contamination, greenhouse gas emissions and the release of pollutants into the air and onto the land. Textile consumption by Europe alone is responsible for the use of 676 million tonnes of primary raw materials (e.g., natural fibres, fossil fuels for the production of synthetic fibres, transport and processing, and/or chemicals), 53 billion m<sup>3</sup> of water, 360,000 km<sup>2</sup> of land, and for the emission of 335 million tonnes of CO<sub>2</sub>eq.
- 5 | The waste issues arising at several points along the value chain underline the textile industry's need for a comprehensive transformation – away from the linear take-make-dispose model towards closed loops, in which waste flows are minimised and/or reintroduced into the system as secondary raw materials. The concept of a circular economy offers such a systemic approach and can be achieved by implementing circular measures along the value chain. It is thus regarded as a source of leverage or a tool that contributes to the reduction of resource consumption and associated environmental impacts.
- 6 | It has only been in the past few years that the textile industry received special attention in EU-wide sustainability strategies. Currently, there is still a lack of EU guidance on the question of how a circular economy for textiles could be implemented at the national level. It is therefore not surprising that measures, targets and indicators for implementing circularity and textile waste prevention have varied among member states so far. On the basis of the rationale that fragmented measures at national level will not be sufficient to bring about a transformation of such a globally interconnected industry as the textile business, the European Commission published its EU Textiles Strategy on 30 March 2022. This strategy provides – as part of the Circular Economy Package – the framework for a joint transformation project at the European as well as the national level.

- 7 | The EU Textiles Strategy visualizes a textile industry in 2030, where textile products brought onto the EU market are durable, recyclable, largely made from recycled fibres, free of hazardous substances and manufactured with respect for social rights and the environment. The strategy lists individual steps following circular economy principles that it is going to take to achieve this vision. Overall, those can be classified as follows: (1) reducing textile waste and promoting circular measures and (2) minimising environmental impacts.
- 8 | The future National Circular Economy Strategy announced by Germany's new federal government needs to have a specific focus on the topic of textiles and should represent the starting point for a Circular Textiles Roadmap. The goal of this roadmap should be to precisely define the responsibilities of policymakers and of the industrial sector as well as specific targets and scheduled milestones. Adequate funding must be provided to ensure the successful implementation of the roadmap.
- 9 | The move from increasingly excessive "fast fashion" towards a circular textile economy requires clear economic incentives. As soon as companies have to contribute to the costs of collection and recycling, these costs should be linked to the circularity of the products and business models: those who put poor-quality clothing on the market that is practically impossible to recycle after use should have to pay significantly higher contributions than companies that align their products and processes with circular economy principles.
- 10 | Given the globalised nature of the textile value chain, a roadmap for circular economy should be designed to avoid isolated national efforts. It should develop the foundations for the implementation of the EU Textiles Strategy and at the same time position Germany as a pioneer of the circular textile economy. This approach would require key flagship projects, supporting evaluations, and close dialogues with other EU member states.

## 1 The development of the textile industry – its increasing social and economic relevance

Textiles are an integral part of today's agricultural, construction and industrial sector and are also used in various areas of life; for example, in public transport as seating, in public and private interiors as curtains or carpets, or in the medical field as dressings. Textiles also play an elementary role in our lives in the form of clothing and shoes. Clothing in particular has always been an important aspect of cultures and identities, and is therefore fundamental to human well-being (Blum, 2021).

Over the last few decades, the demand for textiles and especially clothing, has increased in such a way that their use can no longer be attributed to the satisfaction of basic needs. Since 1975, population growth has almost doubled while textile production tripled (IVC, 2021). The number of garments manufactured worldwide doubled between 2000 and 2014 alone, and in 2014 amounted to the equivalent of around 14 items of clothing produced per person (Remy et al., 2016). This trend can be attributed to a textile industry that is increasingly geared towards mass consumption – in other words, fast fashion. The resulting international competition among textile suppliers to secure a monopoly position on the global market has led to value chains becoming more and more cost-optimised. This has driven the use of low-tech systems and inexpensive materials and the outsourcing of production processes to countries with low environmental and social standards and low labour costs. As a consequence, garments have come onto the market that have a much shorter lifespan and are increasingly treated as disposable products (Remy et al., 2016).

The unwavering revenue growth in the global apparel market (Figure 1) reflects this trend. Although the international market has been hit by the COVID-19 pandemic, with revenue falling back to 2014 levels in 2020, the industry is predicted to recover quickly. Revenue is expected to reach a new high as early as 2022, rising to a value of US\$2,247 billion by 2025.

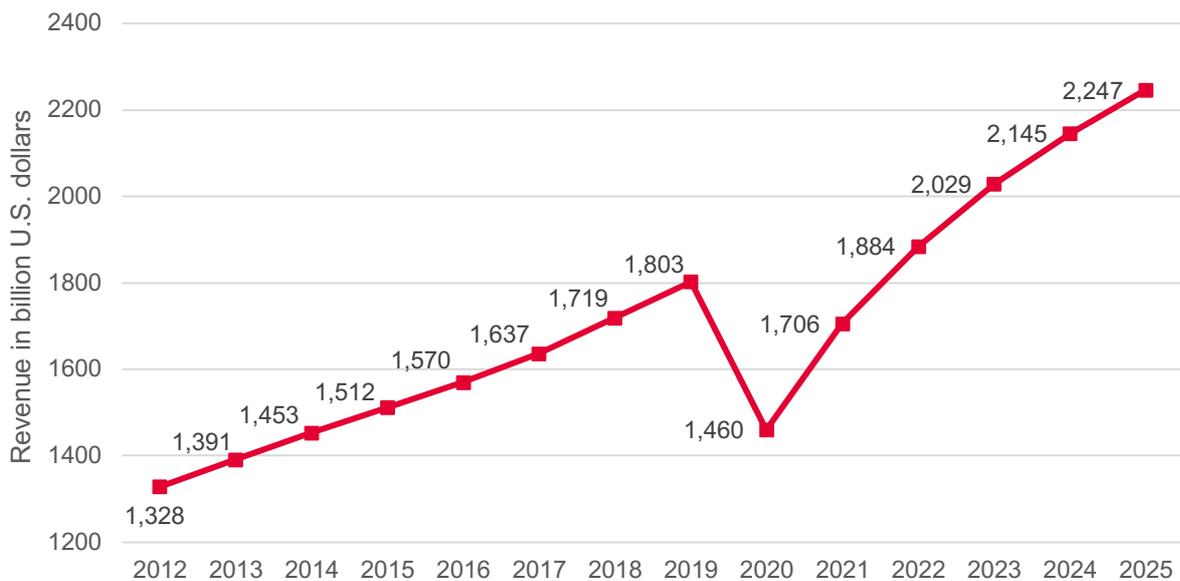


Figure 1: Revenue of the global apparel market (source: Statista, 2021b)

The rapid growth of the textile and clothing industry has also been accompanied by an increase in global interconnectedness and complexity. As a result, the value chain for an item of clothing can span several countries and continents. For example, while the cotton for a T-shirt is grown in Greece, spun into yarn in Turkey and processed to create cloth in India, the stitching process takes place in Bangladesh before the garment ultimately ends up on the European market (Köhler et al., 2021).

With a share of more than 20 per cent, the EU plays a key role in the international textile and clothing market, both as an end consumer and as a manufacturing partner (Köhler et al., 2021). In 2020 alone, around 6.9 million tonnes of textile products were manufactured in the EU (Duhoux et al., 2022). Production in the EU is focused on carpets, household textiles and other textiles (such as technical textiles).

In addition, the volume of textiles imported into the EU has reached a significant level; the EU imports around 63 per cent of its finished textile products and 70 per cent of its finished fashion products (European Commission, 2021). In 2020, the volume of imported finished textile products thus amounted to 8.7 million tonnes, of which 45 per cent was clothing,<sup>1</sup> making the EU the world's second-largest importer of textiles (after China). This volume can be attributed to the high demand of EU countries, which is currently around 15 kg per person per year.

Germany in particular plays a key role in both the EU and the global textile market. Calculated by weight, Germany is the world's second-largest importer of clothing and footwear and the fifth-largest importer of textiles (Statista, 2021a). The country's most significant import partners include China, Bangladesh and Turkey, with around half of the total import volume coming from China and Bangladesh

<sup>1</sup> This figure stands in contrast to an export volume of 3.9 million tonnes, of which clothing again accounted for approximately half (48 per cent).

(Oxford Economics, 2021). Germany also plays a central role as an export partner for textiles. Calculated by value, Germany ranks second worldwide (Statista, 2021a) and was responsible for around 12 per cent of all clothing exports in 2018.

Domestic production, however, is experiencing a downward trend leading to the assumption that Germany is becoming less attractive as a manufacturing location for textiles (bvse, 2020). Between 2015 and 2018, the production of clothing, shoes and leather goods had already declined by 9.7 per cent and household textiles by 3.2 per cent (bvse, 2020).

The German textile and clothing industry suffered additional revenue losses due to the COVID-19 pandemic. Compared with 2017 figures, revenue in the clothing sector fell by 25 per cent and in the entire textile industry by 11 per cent (Destatis, 2022). However, positive growth trends for the years ahead have been forecasted in these areas, too: by 2025, revenue is expected to rise by 17 per cent reaching pre-pandemic levels (Statista, 2021a).<sup>2</sup>

These developments not only underline the relevance of the EU and Germany in the global textile and clothing market – putting them in a position to act as key players in the trade and change-makers – they also illustrate the rapid development of a global textile industry whose unstoppable growth is predicted to continue in the future. This makes it all the more urgent to examine the associated negative impacts on the environment (Chapter 2) and to present possible solutions that envisage a comprehensive transformation (Chapter 3).

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<sup>2</sup> Note: The figures used for the forecast only considered companies with annual revenues of more than €17,500, which means that some of the revenue figures deviate from the actual revenues (e.g. in comparison with Destatis, 2022a).

## 2 Environmental consequences along the textile value chain

### 2.1 Overview of environmental impacts and the role of European consumption

The production and consumption of textiles has far-reaching social and environmental repercussions, which has been exacerbated by the relentless growth of the textile industry in recent decades. Not only do working conditions that are in contravention of human rights and harmful to health exist in production facilities (most prominently shown by the collapse of the Rana Plaza garment factory in Bangladesh in 2013) but the industry also causes irreversible damage to the environment. The impacts include the intensive use of resources and land, water consumption and contamination, greenhouse gas emissions and the release of pollutants into the air and onto land.

The extent of impact is firstly determined by the choice of fibre, which can be based on both natural and fossil-based resources; the production of natural fibres such as cotton, on the one hand, requires large areas of land, water, pesticides and fertilisers (Niinimäki et al., 2020). With an annual production volume of approximately 25 million tonnes, cotton production is responsible for about 10 per cent of pesticide use, 25 per cent of insecticide use and 2.5 per cent of water consumption globally (Koszewska, 2018). Producing one single cotton T-shirt consumes around 2,700 litres of water being equivalent to the amount of water a person drinks in 2.5 years (European Parliamentary Research Service, 2020). The production of synthetic fibres like polyester, on the other hand, is based on fossil raw materials like crude oil. The high demand for synthetic fibres explains the extensive use of non-renewable resources (including crude oil and chemicals) in textile production, amounting to about 98 million tonnes every year (Ellen MacArthur Foundation, 2017). As a result, the textile sector is responsible for up to 15 per cent of worldwide plastic consumption and is thus the largest consumer of plastics after packaging and construction (Changing Markets Foundation, 2021). This intensive demand for synthetic fibres gives rise to further environmental problems, as abrasion causes the plastic in clothing to be released into the environment in the form of microplastics. According to estimates, around half a million tonnes of these microplastics are generated annually, equivalent to 50 billion plastic bottles (Changing Markets Foundation, 2021; Ellen MacArthur Foundation, 2017). The textile industry is thus estimated to be the source of 9 per cent of the microplastics in the oceans (Manshoven et al., 2021; UNEP, 2020).

Large amounts of energy are also required at each stage of the value chain indicating the textile industry's significant impact on the climate (Niinimäki et al., 2020). A study by McKinsey concluded that the global fashion industry emitted around 2.1 billion tonnes of CO<sub>2</sub> in 2018, equivalent to 4 per cent of total global emissions (McKinsey, 2020).<sup>3</sup> Around 70 per cent of this can be attributed to upstream activities and 30 per cent to downstream activities, such as retail, the use phase and waste management (McKinsey, 2020).

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<sup>3</sup> This volume is equal to the combined emissions of France, Germany and the United Kingdom.

Given the EU's key role as an import partner, it is not surprising that European consumption accounts for a substantial share of these environmental impacts. A study by the European Environment Agency has shown that the EU's annual consumption of textiles (comprising clothing, footwear and household textiles) is dependent on around 676 million tonnes of primary raw materials (e.g., natural fibres, fossil fuels for the production of synthetic fibres, transport and processing, and/or chemicals). That is in addition to 53 billion m<sup>3</sup> of water, 360,000 km<sup>2</sup> of land and the emission of 335 million tonnes of CO<sub>2</sub>eq (Manshoven et al., 2019). In relative terms, this makes textile consumption the second-largest impact category with regard to European land use, the fourth largest in terms of raw material and water use (after the food, housing and transport sectors) and the fifth largest for greenhouse gas emissions (Manshoven et al., 2019). Due to the globally interconnected structure of the textile sector, the majority of these impacts take place in the countries of extraction and production outside the EU. This is the case for 85 per cent of the primary raw materials use, 92 per cent of the water consumption, 93 per cent of the land use and 76 per cent of the greenhouse gas emissions (Manshoven et al., 2019).

The current linear structure of the textile system with its high production and consumption volumes results also in high volumes of waste, which, due to the lack of end-of-life solutions, are to be seen as one of the main negative impacts of the textile industry and are elaborated in the following.

## **2.2 Issues surrounding textile waste and waste volumes in Germany**

The volume of waste generated by the fashion industry is estimated to be around 92 million tonnes per year worldwide. In addition, an increase of 60 per cent (compared with 2015 figures) is predicted by 2030 (Global Fashion Agenda, 2017). There are many reasons for the rising quantities of textile waste. However, one important point is that, despite the growing production volume, there is a lack of solutions to reduce the amount of waste being generated and/or to return it to the system as a secondary raw material with maximum resource efficiency. According to an evaluation by the Ellen MacArthur Foundation, only around 13 per cent of textile fibres are currently recycled worldwide and less than 1 per cent is recovered in fibre-to-fibre recycling (Ellen MacArthur Foundation, 2017). This ultimately means that around one truckload of textiles is sent to landfill or incinerated every second (Ellen MacArthur Foundation, 2021). Furthermore, the declining collection rates of high-quality textiles (that would be suitable for reuse and recycling) present another crucial issue due to poor product qualities: While 20 years ago, 65 per cent of used textiles were suitable for reuse, this proportion dropped to approximately 50 per cent (GIZ, 2017).

Within the EU, a decrease in textile waste generation of around 46 per cent can be observed for the period between 2004 and 2018 (see Figure 2). This is also reflected in the waste generation development of France (-51 per cent), Italy (-31 per cent) and the United Kingdom (-47 per cent). In Germany, on the other hand, textile waste increased by 52 per cent in the same period. With a textile waste volume of 339 thousand tonnes, Germany was responsible for 16 per cent of all EU textile

waste in 2018 and was therefore placed second highest in waste generation after Italy (covering 24 per cent).

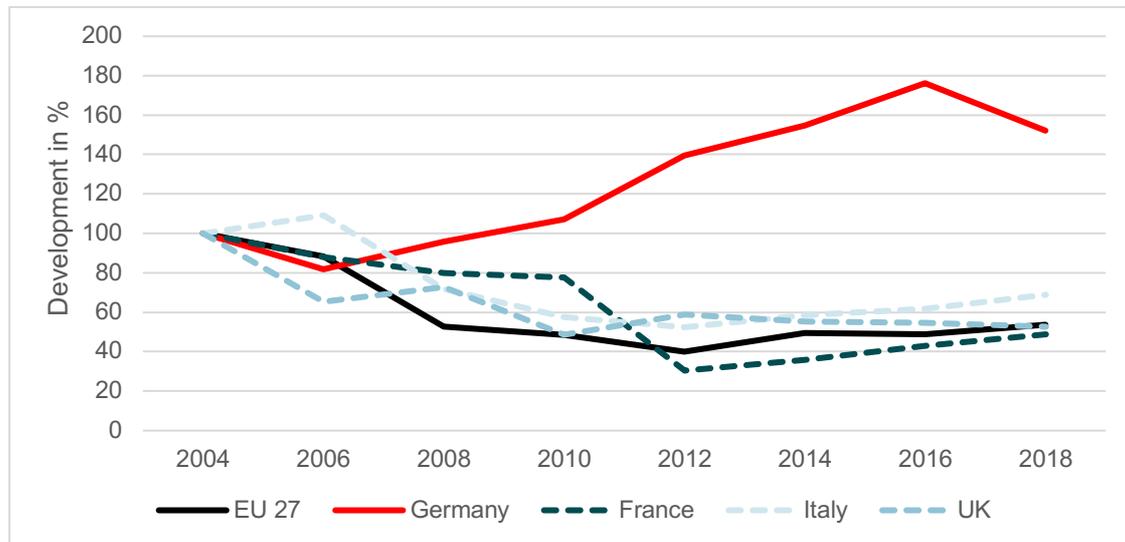


Figure 2: Development of textile waste volumes<sup>4</sup> in Germany and other economies compared to 2004 levels (source: Eurostat, own illustration)

Around 62 per cent of the volume collected in Germany ends up on national or international second-hand markets or is being reused. The recovery rate (e.g., downcycling to produce cleaning cloths) covers 14 per cent, while around 12 per cent goes to recycling. Approximately 8 per cent of textile waste in Germany is thermally recycled and 4 per cent is disposed of (bvse, 2020). Although it remains unclear what happens to old clothing from Germany and Europe sent to international second-hand markets (here, too, serious environmental harm must be assumed)<sup>5</sup>, it can be said that 52,500 tonnes of old clothes disposed of in Germany, probably end up on international landfill sites (bvse, 2020).

<sup>4</sup> Textile and leather waste, textile packaging, used textiles, waste from fibre preparation and production, waste from tanned leather, separately collected textiles and leather waste.

<sup>5</sup> A substantial share of the textile waste exported for reuse ultimately finds its way into landfill due to market oversaturation and poor quality, leading to the formation of huge mountains of textiles in, e.g., South America’s deserts or on the coasts of Africa. See also: ‘Mountains of second-hand clothes in the Atacama Desert in Chile’ (<https://www.tagesschau.de/ausland/amerika/muellhalde-atacama-wueste-101.html>) and ‘On the outskirts of towns and villages in Ghana’ (<https://www.deutschlandfunknova.de/beitrag/ghanas-muellberge-aus-klamotten-der-europaeische-secondhand-albtraum>).

### 3 Moving from a linear to a circular textile industry

#### 3.1 Conceptualizing a circular economy for textiles

In the textile industry, natural raw materials such as cotton or hemp are required to produce natural fibres, while man-made raw materials such as crude oil are processed into synthetic fibres. The choice or composition of fibres has a substantial influence not only on a product's upstream and downstream environmental footprint, as described above, but also on its properties like durability and longevity (Dissanayake & Weerasinghe, 2021). The individual production steps thereby involve preparing the fibres and yarns, bleaching, dyeing and finishing, followed by garment assembly (Fletcher, 2008). Textile waste can be created throughout these production steps due to, for instance, process errors or offcuts (so-called post-industrial waste). But textile waste is also generated in distribution and retail phase (commercial waste), for example when textile products do not meet a company's quality requirements or expectations, or when no end consumers are found (creating 'deadstock'). The textile waste produced up to this point occurs before the use phase and is thus classified as pre-consumer waste (Koszewska, 2018). The textile waste generated during or after the use phase (post-consumer waste), on the other hand, makes up the majority of textile waste. As this waste problem arises at several stages, it underlines the need for a comprehensive transformation of the textile industry – away from the linear take-make-dispose model and towards closed loops in which waste flows are minimised and/or reintroduced into the system as secondary raw materials. The concept of a circular economy offers just such a systemic approach and can be achieved by implementing circular measures along the value chain. It is thus regarded as a source of leverage or a tool that contributes towards reducing resource consumption and the associated negative environmental impacts (Gözet & Wilts, 2022).

The following figure illustrates how a circular textile industry of this kind can be envisioned at all stages of the value chain. It shows that various circular measures can minimise both pre-consumer and post-consumer waste and thus also other negative environmental impacts throughout the textile system.

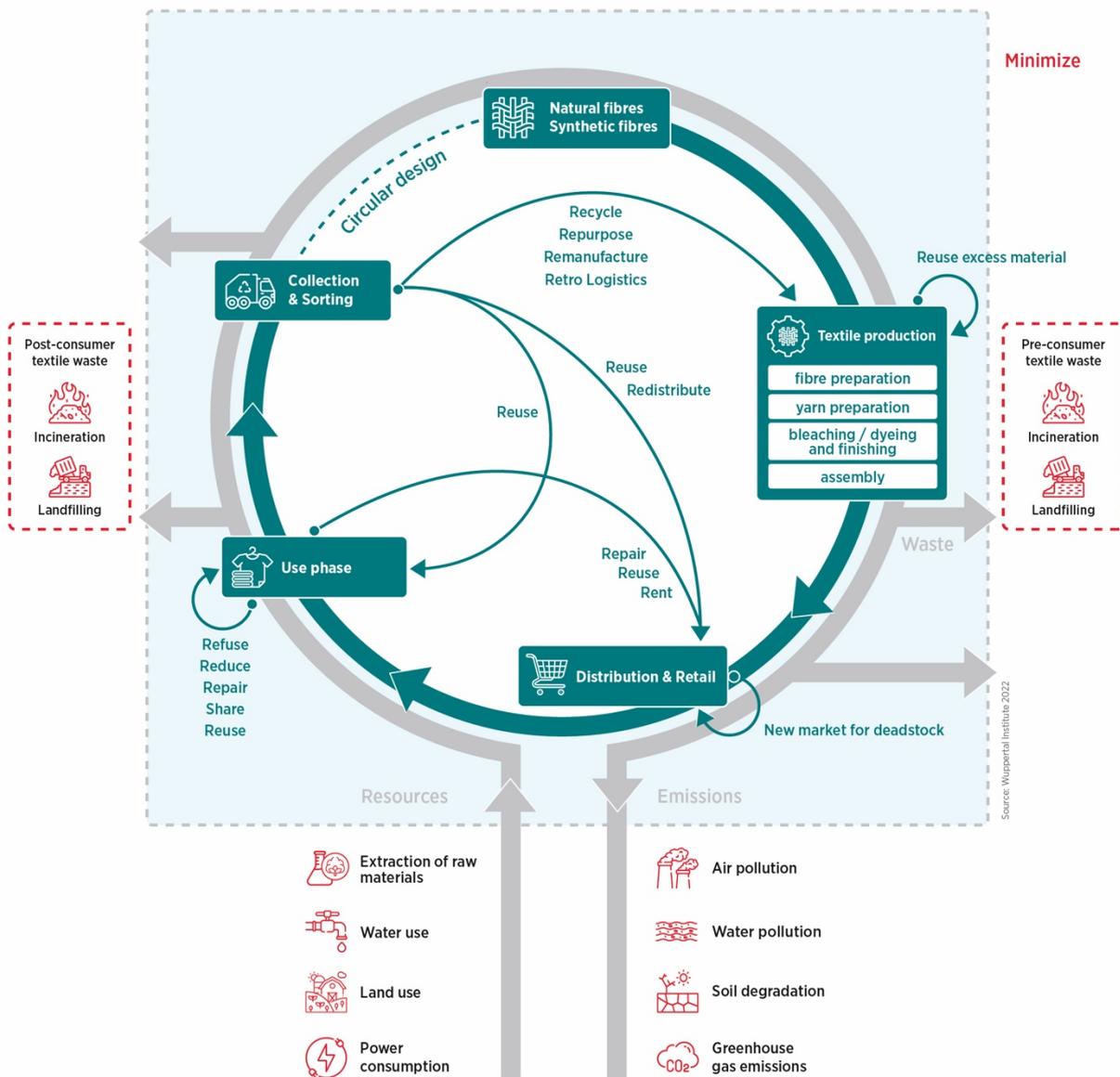


Figure 3: The circular economy for textiles (source: own illustration)

In the process of envisioning a circular economy, circular design is paramount. Design determines not only the longevity<sup>6</sup> of a product, but also the potential i.e. the frequency of returning it or its materials back to the system (ECOS, 2021). In the case of a recyclable product (i.e., one designed for recycling), for example, the materials can be spun back into fibres reducing the need for additional primary raw materials. In addition, a longer lifespan can be achieved through a design-for-reuse. Distribution and retail can also contribute to circularity by providing a marketplace for textile products that may still be suitable for reuse at the end of the use phase. A market can be created for the surplus deadstock in this phase as well.

Due to the relatively high proportion of textile waste generated during and after the use phase, a mix of measures should be emphasized at this point in particular. Crucial here is a change in consumption patterns referring to the refusal and

<sup>6</sup> Design for longevity incorporates two aspects: design for durability and design made to last, with the latter also taking emotional attachment to the product into account (Dissanayake & Weerasinghe, 2021).

reduction of new purchases and the reuse of products already in circulation. After all, textile products can often be repaired and shared within the network of consumers for further use.

Addressing the question of how a resilient textile industry could look like when consumption is reduced and products are designed to be long-lasting highlights the need for fresh entrepreneurial thinking carried forward into a holistically transformed system with the establishment of new business models (Gözet & Wilts, 2022). For this approach to succeed, the cooperation of companies, civil society and the political system will be required since future-oriented strategies can serve as a driving force for introducing efficient measures and provide the necessary framework (Gözet et al., 2021).

### **3.2 Current political framework**

It is only in the last few years that the textile industry has received special attention in EU-wide sustainability strategies.

The EU's Circular Economy Action Plan (European Commission, 2020) highlighted the textile industry as a key sector in terms of the transformation to a circular economy. In doing so, it paved the way for Europe to take responsibility for its textile waste and attached high political relevance to the textile industry as part of the European Circular Economy Strategy and the European Green Deal (European Commission, 2019).

The amended EU Waste Framework Directive ((EU) 851/2018), with its overarching goal of valuing waste as a resource for reuse, also requires EU member states to collect their textile waste separately from 2025. The purpose of doing so is to minimise the amount of non-recyclable textile waste and to stimulate activities that support repair, reuse and recycling.

However, there is still no EU guidance on how a circular economy for textiles could be implemented at national level. It is therefore not surprising that measures, targets and indicators for implementing and monitoring circularity and textile waste prevention vary among member states. This was also the conclusion of an analysis by the European Environment Agency, which examined national waste prevention programmes. The broad range of these measures and intervention points is presented in Box 1 by means of examples.

**Box 1: Overview of different measures taken by EU member states to prevent textile waste and implement circularity**

**Market-based incentives**

- Reduction of value added tax on repairs of bicycles, shoes, leather goods, clothing and electrical appliances from 1 January 2017 in Sweden (from 25 per cent to 12 per cent) and from 1 January 2021 in Austria (from 20 per cent to 10 per cent).
- A 50 per cent reduction in repair costs through the state subsidy of labour costs for textile repairs (Sweden).
- Reduction of patent taxes for small businesses whose activities lead to the reuse of a product (e.g., repair of shoes, furniture and clothing) (Bulgaria).
- Working towards setting environmental targets for public procurement of textiles and textile-related services (Denmark).

**Voluntary agreements and cooperation platforms**

- Partnerships with certain suppliers to increase the market share of textiles with eco-labels or textiles made with only a minimal amount of chemical substances (Iceland).
- Partnership with companies and organisations with the slogan “Give your clothes a longer life” (Denmark).

(Source: Gözet et al., 2021)

Although the revised waste prevention programmes take more account of textile waste and consider more measures, fragmented approaches at national levels will not be sufficient to bring about a transformation of such a globally interconnected industry as the textile system. On the basis of this rationale, the European Commission published its EU Textiles Strategy on 30 March 2022 as part of the Circular Economy Package. This strategy provides the future framework for a joint transformation project at both the European and the national level.

## 4. A new milestone: the EU Textiles Strategy and its significance for Germany

### 4.1 Overview of the EU Textiles Strategy

The EU Textiles Strategy puts forward a clear vision for the textile industry for 2030:

“By 2030, textile products brought onto the EU market will be durable and recyclable, largely made from recycled fibres, free of hazardous substances and manufactured with respect for social rights and the environment. Consumers will also benefit from high-quality, affordable textiles. Fast fashion will no longer be fashionable, while economically profitable reuse and repair services will be widely available. In the competitive, resilient and innovative textiles sector, producers will take responsibility for their products along the value chain, especially when they become waste. This will be possible with the support of sufficient capacities for fibre-to-fibre recycling, which will minimise the incineration and landfilling of textiles” (European Commission, 2022).

The strategy sets out clear action areas and outlines practical steps, which are presented below by referring to key circular economy principles.

#### ■ Reduction of textile waste and promotion of circular measures

##### ■ Binding Ecodesign Directive

In order to improve the performance of textiles in terms of durability, reusability, repairability, and fibre-to-fibre recycling capability, the Commission envisages the development of mandatory product-specific ecodesign requirements.

##### ■ Ending the destruction of unsold/returned textiles

The Commission plans to introduce bans on the destruction of unsold products, potentially including unsold or returned textiles. To this end, it proposes the introduction of a transparency obligation under the Ecodesign for Sustainable Products Regulation that will require large companies to disclose the number of products (including textiles) discarded and destroyed and their further treatment in terms of preparation for reuse, recycling, incineration or landfill.

Furthermore, the Commission will work together with the industry to explore options to reduce the high return rates in e-commerce via digital precision technologies and on how to encourage on-demand customised manufacturing.

##### ■ Controlled export of textile waste

In accordance with the latest Commission proposal for new EU rules on waste shipments, the export of textile waste to non-OECD countries will only be allowed under certain proof of sustainability. The aim of this measure is to prevent textile waste consignments from being exported as supposed second-hand products only to end up in international landfill sites. In addition, the Commission has set the goal of creating more transparency in the global trade of used textiles and textile waste.

#### ■ Sustainability expectations

The successful realisation of a circular economy will require well-informed consumers. Under the plans, they would need to be provided with information about the guarantee of durability and the reparability of a textile product directly at the point of sale. Claims relating to the sustainability of a product would only be permissible if they are supported by evidence such as certifications (minimum criteria are due to be presented in the context of the Green Claims Initiative).

The Commission intends to support projects that strengthen the sustainability of fashion while meeting the requirements in terms of aesthetics and inclusivity.

#### ■ Closed-loop material cycles

In its strategy, the Commission also stresses that closed-loop recycling processes should be prioritised. Where textiles are concerned, this would involve fibre-to-fibre recycling, while the addition of r-PET to the closed-loop model is undesirable.

Among other things, this approach requires an increased focus on industrial research and innovation, which the Commission aims to develop within the framework of a Circular Industrial Technologies Roadmap.

#### ■ Producer responsibility

In order to reduce textile waste and decouple it from the growth of the textile sector, the Commission will propose a harmonised EU Extended Producer Responsibility (EPR) scheme for textiles with eco-modular fees in the upcoming revision of the Waste Framework Directive in 2023.

In this regard, a significant proportion of the contributions from the EPR system will be used for waste prevention measures and preparation for reuse.

#### ■ Minimising negative environmental impacts

The Commission also aims to use a design approach to reduce the environmental footprint of the textile industry. By developing a list of criteria for safe and sustainable chemicals and materials, it will support the industry in substituting substances of concern as far as possible and minimising their use.

The environmental pollution caused by microplastics, which are released through the abrasion of synthetic fibres, is also addressed in the Textiles Strategy. Binding design requirements including prevention and reduction measures, will be introduced to minimise this issue. The measures will target manufacturing processes, pre-washing in industrial production facilities, labelling, and the promotion of innovative materials.

## 4.2 New political requirements for Germany

With regard to the practical implementation of this extremely ambitious EU Textiles Strategy, Germany has the opportunity to position itself as a pioneer of a circular textile value chain and thus to play a significant role in protecting the climate and environment on the one hand, while at the same time it can contribute to the long-term competitiveness of its industrial sector.

In recent decades, Germany's relevance as a production location for the textile industry has declined steadily. The transition to a circular economy could help to reverse this trend and give the textile industry in Germany a new lease of life with innovative concepts. At the same time, Germany would also honour its pledges to assume international responsibility as a key trading partner in the global textile market.

The German federal government has already taken various steps in this direction. For example, it announced the development of a National Circular Economy Strategy, which should have a specific focus on the textile value chain. On the subject of textiles, Germany's Waste Prevention Programme ("Wertschätzen statt wegwerfen" – "Value it, don't throw it away") already contains numerous ideas for preventing waste, which are aimed at federal, state and municipal governments as well as consumers and economic operators. What is needed now is a clear and binding implementation process for these measures that places the specific waste prevention dimension within the overall process of a transformation to a circular system.

This requires a clear roadmap, which

- precisely defines the responsibilities of policymakers and the industrial sector,
- contains specific targets and scheduled milestones and
- is backed by adequate funding to ensure its successful implementation.

As part of a roadmap of this kind, it is important to build on existing resources and areas of potential. Actors such as Germany's consumer associations, the Gemeinschaft für Textile Zukunft (Future of Textiles Association) or the German Corporation for International Cooperation (GIZ) and its Partnership for Sustainable Textiles have long been working on pivotal adjustments to the textile value chain. The task of the roadmap should be the integration of concepts developed there into a consistent overall approach that, building on the provisions of the Textiles Strategy, encompasses the following aspects and positions Germany as a pioneer of a circular textile industry:

#### ■ Transparent definition of responsibilities

The core design principle behind a climate-neutral and resource-efficient circular economy is the EPR concept. The idea involves that whoever places products on the market takes responsibility for both the environmental effects associated with the production phase as well as the post-use phase (OECD, 2004). In Germany, this principle already applies to various products including packaging, vehicles and batteries – but not to textiles. In the 1990s, Germany played a global pioneering role in the implementation of the producer responsibility concept with, for example, the introduction of the 'Grüner Punkt' industry-funded packaging recycling system, from which it continues to see economic benefits today (Prognos AG, 2020). Appropriate concepts are also needed specifically for the large clothing chains. The licence fees raised in such a scheme should be put towards not only collection and recycling, but also reuse and waste prevention.

So far, the German federal government has announced its intention to introduce a Transparency Ordinance, in accordance with which companies will need to give detailed reports on the quantities of their unsold or returned products and the further process of those. Building on this, manufacturers should be required to set clear and binding targets for the prevention of textile waste, while the destruction of unused goods should be banned. Of course, such targets and stipulations only become truly relevant when the consequences of failing to achieve them are clearly defined.

At the same time, Germany's Act on Corporate Due Diligence Obligations in Supply Chains (LkSG) should be expanded to take the circular economy and sustainable waste management along the entire value chain into consideration. Importantly, this would also need to encompass international platforms on which clothing in particular is increasingly purchased: the same rules must apply to all, regardless of where the goods come from.

#### ■ Economic incentives for circular products

The move away from increasingly excessive “fast fashion” towards a circular textile economy needs clear economic incentives. As soon as companies have to contribute to the costs of collection and recycling, the costs should be linked to the circularity of the products and business models: those who put poor-quality clothing on the market that is practically impossible to recycle after use should have to pay significantly higher contributions than companies that align their products and processes with the circular economy. Such concepts have already been successfully introduced in France, for example, and for packaging in Italy; similar solutions are also needed for the clothing sector in Germany.

However, this approach must be based on clear assessment criteria: What is the technical durability of garments? When can a garment be repaired with reasonable effort? Which method of recovery should be used for which type of material? Standards and norms will be required, such as those currently being identified in the DIN CE Standardisation Roadmap. Circular business concepts such as borrowing instead of buying and second-hand models must also be considered as an essential part of these assessment criteria.

#### ■ Closed-loop material cycles

The European Commission announced the requirement of separate collection of textiles from 1 January 2025. The recycling bank collection concept commonly used in Germany today, however, is already reaching its limits. The textiles collected in this system are often dirty, not sorted according to any obvious criteria and usually include items of clothing only. According to the latest analysis of non-recyclable waste undertaken by the German Environment Agency (Umweltbundesamt), more than 4 kg of textile waste per person is binned each year and is thus not recovered in any recycling process (Dornbusch et al., 2020).

What is needed, therefore, are nationwide pilot projects to identify intelligent ways of collecting textiles that lead to the establishment of closed-loop material cycles of the highest-possible quality and incorporate reuse and preparation for reuse. Some initial ideas exist already, such as smart container concepts, take-back systems in

shops and deposit systems – but a coordinated overall system has not yet been envisioned. There should also be much greater focus on the consumers: What sorting criteria are easily understood? How can incentives be introduced to ensure the return of textiles to the most appropriate collection structure at the end-of-life? A significant improvement in transparency is another requirement: What happens to the clothes that are thrown into recycling banks? Here, digitalising product characteristics and information flows could be expedient, as incompatible systems and media usage unfortunately still prevail.

#### ■ Putting technical innovations into practice

The increasing quantity of textiles collected through measures outlined above needs to go hand in hand with an extensive recycling and reuse structure. In principle, Germany is in an excellent position when it comes to innovative sorting and recycling technologies. The technologies developed to facilitate high-quality recycling, for example for polycotton blends, needs to be implemented more widely – but the investments required are often not sufficient.

This is where tax incentives are needed including, for instance, options for setting off necessary equipment against taxable income or making investments in research and development tax-deductible. In this context, a general reduction in the rate of value added tax for repair services would also provide important stimulus, and has already been implemented in certain EU countries.

#### ■ Building awareness

Ultimately, a successful transformation to a circular economy will need to consider consumers, as they will decide on the success or failure of circular alternatives through their consumption decisions. Labelling was a popular approach in the past but is no longer considered effective due to the overwhelming labyrinth of labels that already exist today.

What is needed here is a communication concept, jointly supported by politicians and consumer institutions on the one hand and manufacturers and retailers on the other, that informs consumers on certain issues relating to clothing, such as its relevance to climate change. Today, most people are aware of the negative impacts of air travel; a similar awareness is needed with respect to the use of textiles. Consumers must thereby be able to see and evaluate best solutions at a glance.

Throughout all these action areas, the clear requirement should be to avoid isolated national efforts. Given the globalised value chain, all activities should aim at developing the foundations for the joint implementation of the EU Textiles Strategy, while at the same time, Germany should target to position itself as a pioneer of the circular textile economy.

This approach would require adequate funding to run key flagship projects, perform supporting evaluations and enter close dialogues with other EU member states.

## Literaturverzeichnis

- Blum, P. (2021). *Circular Fashion: Making the Fashion Industry Sustainable*. Laurence King Publishing.
- bvse. (2020). *Textilstudie 2020: Bedarf, Konsum, Wiederverwendung und Verwertung von Bekleidung und Textilien in Deutschland*. Bundesverband Sekundärrohstoffe und Entsorgung e. V. [https://www.bvse.de/dateien2020/1-Bilder/03-Themen\\_Ereignisse/06-Textil/2020/studie2020/bvse%20Alttextilstudie%202020.pdf](https://www.bvse.de/dateien2020/1-Bilder/03-Themen_Ereignisse/06-Textil/2020/studie2020/bvse%20Alttextilstudie%202020.pdf)
- Changing Markets Foundation. (2021). *Fossil Fashion. The hidden reliance of fast fashion on fossil fuels*. [http://changingmarkets.org/wp-content/uploads/2021/01/FOSSIL-FASHION\\_Web-compressed.pdf](http://changingmarkets.org/wp-content/uploads/2021/01/FOSSIL-FASHION_Web-compressed.pdf)
- Destatis. (2022). *Genesis-Online Datenbank—42271-0003*. Statista. <https://www-genesis.destatis.de/genesis/online?operation=previous&levelindex=3&levelid=1648464611928&levelid=1648464591724&step=2#abreadcrumb>
- Dissanayake, D. G. K., & Weerasinghe, D. (2021). Towards Circular Economy in Fashion: Review of Strategies, Barriers and Enablers. *Circular Economy and Sustainability*. <https://doi.org/10.1007/s43615-021-00090-5>
- Dornbusch, H.-J., Hannes, L., Santjer, M., Böhm, C., Wüst, S., Zwisele, B., Kern, M., Siepenkothen, H.-J., & Kanthak, M. (2020). *Vergleichende Analyse von Siedlungsrestabfällen aus repräsentativen Regionen in Deutschland zur Bestimmung des Anteils an Problemstoffen und verwertbaren Materialien (Abschlussbericht Nr. 113/2020)*. Umweltbundesamt. <https://www.umweltbundesamt.de/publikationen/vergleichende-analyse-von-siedlungsrestabfaellen>
- Duhoux, T., Le Blévenec, K., Manshoven, S., Grossi, F., Arnold, M., & Fogh Mortensen, L. (2022). *Textiles and the environment: The role of design in Europe's circular economy* (Nr. 2/2022; European Topic Centre Circular Economy and Resource Use). <https://www.eea.europa.eu/publications/textiles-and-the-environment-the>

- Ellen MacArthur Foundation. (2017). *A New Textiles Economy: Redesigning Fashion's Future*. <https://emf.thirdlight.com/link/2axvc7eob8zx-za4ule/@/preview/1?o>
- Ellen MacArthur Foundation. (2021). *Fashion—Overview*. <https://ellenmacarthurfoundation.org/topics/fashion/overview>
- Environmental Coalition on Standards (ECOS). (2021). *Durable, Repairable and Mainstream: How Ecodesign Can Make Our Textile Circular*. <https://ecostandard.org/wp-content/uploads/2021/04/ECOS-REPORT-HOW-ECODESIGN-CAN-MAKE-OUR-TEXTILES-CIRCULAR.pdf>
- Europäische Kommission. (2019). *The European Green Deal, COM(2019) 640 final*. [https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF)
- Europäische Kommission. (2020). *A New Circular Economy Action Plan For a cleaner and more competitive Europe, COM(2020) 98 final*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>
- Europäische Kommission. (2021). *Data on the EU textile ecosystem and its competitiveness: Final report*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2873/23948>
- Europäische Kommission. (2022). *EU Strategy for Sustainable and Circular Textiles, COM(2022) 141 final*. [https://ec.europa.eu/environment/publications/textiles-strategy\\_en](https://ec.europa.eu/environment/publications/textiles-strategy_en)
- European Parliamentary Research Service. (2020). *What if fashion were good for the planet? (At a Glance - Scientific Foresight: What if?)*. [https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/656296/EPRS\\_ATA\(2020\)656296\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/656296/EPRS_ATA(2020)656296_EN.pdf)
- Fletcher, K. (2008). *Sustainable Fashion and Textiles: Design Journeys by Kate Fletcher*. Earthscan.

- GIZ Deutsche Gesellschaft für Internationale Zusammenarbeit. (2017). *Circular Economy in the Textile Sector* (Nr. 223; Study for the German Federal Ministry of Economic Cooperation and Development (BMZ)). <https://www.adelphi.de/de/publikation/circular-economy-textile-sector>
- Global Fashion Agenda. (2017). *Pulse of the Industry 2017*.  
<https://www.globalfashionagenda.com/download/10958>
- Gözet, B., & Wilts, H. (2022). Kreislaufwirtschaft als Baustein nachhaltiger Entwicklung. In C. Meyer (Hrsg.), »*Transforming our World*« – *Zukunftsdiskurse zur Umsetzung der UN-Agenda 2030* (S. 173–180). transcript. <https://www.transcript-verlag.de/978-3-8376-5557-5/transforming-our-world-zukunftsdiskurse-zur-umsetzung-der-un-agenda-2030/>
- Gözet, B., Wilts, H., Manshoven, S., & Bakas, I. (2021). *Progressing towards waste prevention in Europe – the case of textile waste prevention*.  
<https://doi.org/10.2800/494502>
- Industrievereinigung Chemiefaser e. V. (IVC). (2021). *Die Chemiefaserindustrie in der Bundesrepublik Deutschland 2020/2021*. <https://www.ivc-ev.de/sites/default/files/informationmaterial-dateien/IVC%20Jahresbrosch%C3%BCre%202021.pdf>
- Köhler, A., Watson, D., Trzepacz, S., Löw, C., Liu, R., Danneck, J., Konstantas, A., Donatello, S., & Faraca, G. (2021). *Circular economy perspectives in the EU textile sector*. Publications Office of the European Union.  
<https://data.europa.eu/doi/10.2760/858144>
- Koszewska, M. (2018). Circular Economy—Challenges for the Textile and Clothing Industry. *Autex Research Journal*, 18(4), 337–347. <https://doi.org/10.1515/aut-2018-0023>
- Manshoven, S., Maarten, C., Vercalsteren, A., Arnold, M., Nicolau, M., Lafond, E., Fogh Mortensen, L., & Coscieme, L. (2019). *Textiles and the environment in a circular economy* (Nr. 6/2019; European Topic Centre on Waste and Materials in a Green

Economy). <https://www.eionet.europa.eu/etcs/etc-wmge/products/etc-wmge-reports/textiles-and-the-environment-in-a-circular-economy>

Manshoven, S., Smeets, A., Arnold, M., & Fogh Mortensen, L. (2021). *Plastic in Textiles: Potentials for Circularity and Reduced Environmental and Climate Impacts* (Nr. 1/2021; European Topic Centre on Waste and Materials in a Green Economy). [https://emis.vito.be/sites/emis/files/articles/91/2021/ETC\\_2.1.2.2.\\_plastic%20in%20textiles\\_final\\_edited%20for%20website.pdf](https://emis.vito.be/sites/emis/files/articles/91/2021/ETC_2.1.2.2._plastic%20in%20textiles_final_edited%20for%20website.pdf)

McKinsey. (2020). *Fashion on Climate: How the Fashion Industry Can Urgently Act to Reduce Its Greenhouse Gas Emissions*. <https://www.mckinsey.de/news/presse/2020-08-27-fashion-on-climate>

Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment*, 1(4), 189–200. <https://doi.org/10.1038/s43017-020-0039-9>

OECD. (2004). *Economic Aspects of Extended Producer Responsibility*. Organisation for Economic Co-operation and Development. [https://www.oecd-ilibrary.org/environment/economic-aspects-of-extended-producer-responsibility\\_9789264105270-en](https://www.oecd-ilibrary.org/environment/economic-aspects-of-extended-producer-responsibility_9789264105270-en)

Oxford Economics. (2021). *Status Deutscher Mode 2021*. [https://www.bmwi.de/Redaktion/DE/Downloads/Studien/status-deutscher-mode-2021.pdf?\\_\\_blob=publicationFile](https://www.bmwi.de/Redaktion/DE/Downloads/Studien/status-deutscher-mode-2021.pdf?__blob=publicationFile)

Prognos AG. (2020). *Statusbericht der deutschen Kreislaufwirtschaft 2020*. Prognos. <https://www.prognos.com/de/projekt/statusbericht-der-deutschen-kreislaufwirtschaft-2020>

Remy, N., Speelman, E., & Swartz, S. (2016, Oktober 20). *Style that's sustainable: A new fast-fashion formula*. McKinsey Sustainability. <https://www.mckinsey.com/business-functions/sustainability/our-insights/style-thats-sustainable-a-new-fast-fashion-formula>

Statista. (2021a). *Textil- und Bekleidungsindustrie in Deutschland 2020* (Dossier Nr. 14051–1). <https://de.statista.com/statistik/studie/id/14051/dokument/textil-und-bekleidungsindustrie-in-deutschland--statista-dossier/>

Statista. (2021b). *Revenue of the global apparel market 2013-2026 (in billion U.S. dollars)*. Statista. <https://www.statista.com/forecasts/821415/value-of-the-global-apparel-market>

United Nations Environment Programme (UNEP). (2020). *Sustainability and Circularity in the Textile Value Chain: Global Stocktaking*. <https://wedocs.unep.org/xmlui/handle/20.500.11822/34184>