ETC CE Report 2025/7

Measuring Europe's textiles circularity – through the lenses of the EEA Circularity Metrics Lab

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1. Introduction

Textiles was identified as one of the key value chains in the EU's Circular Economy Action Plan. This was followed up by the EU Strategy on Sustainable and Circular Textiles proposed by the European Commission (EU, 2020; European Commission, 2022) and concrete implementation of the Strategy in concrete EU policy initiatives and revisions.

With its work, the European Environment Agency (EEA) and its European Topic Centre on Circular Economy and Resource Use (ETC CE) provide necessary data, information and knowledge to support the shift towards a circular economy in the EU. Despite a strong political attention on textiles in the EU in recent years, there are still significant monitoring, data and indicator gaps. The state of the European circular textile economy, as well as its drivers, pressures and responses remain difficult to assess. This report aims to contribute to filling these gaps, identify key textiles data streams and assess the circularity of the European textiles systems. This present report is a contribution to EEA's work on textiles and the environment in Europe's circular economy, building on previous reports and briefings.

The work is based on the newly developed textiles module of the EEA Circularity Metrics Lab (CML) framework that aims at contributing to monitoring and analyzing the circular economy of textiles in the EU. This work adapts, where possible, existing CML indicators to fit the textiles sector and identify and develop indicators that capture various aspects of circularity for textiles, starting from previous EEA and ETC reports on textiles from the past five years, supplementing with additional information sources. Hence this report assesses the possibility to conclude on the state of circularity of textiles in Europe using CML as a tool. The report provides a background report for the 2025 EEA briefing on "The textiles value chain in numbers – bending the trend in Europe's circular economy" and supplement the 2025 ETC CE report on "Textiles and the environment – the role of digital technologies in Europe's circular economy".

1.1 Background and policy context

From the perspective of European consumption, textiles are among the household consumption domains with the highest negative life cycle pressures on the environment and climate change (ETC CE, 2022, 2025). It has therefore been identified as one of the key value chains in the EU Circular Economy Action Plan (CEAP) which wants to pave the way for a cleaner and more competitive Europe (EU, 2020). The CEAP, adopted in March 2020, is one of the main building blocks of the European Green Deal, Europe's agenda for sustainable growth that wants to decouple economic growth from resource use and ensure no net emissions of greenhouse gases by 2050 (European Commission, 2021). The commitments of the European Green Deal and CEAP are implemented in the EU Strategy for Sustainable and Circular Textiles, which addresses the production and consumption of textiles. The objectives of the strategy are that:

- all textile products placed on the EU market are durable, reparable and recyclable, to a great extent made of recycled fibres, free of hazardous substances, produced in respect of social rights and the environment;
- consumers benefit longer from high quality affordable textiles;
- profitable re-use and repair services are widely available; and that
- the textiles sector is competitive, resilient and innovative with producers taking responsibility for their products along the value chain with sufficient capacities for recycling and minimal incineration and landfilling. (European Commission, 2022)

Another deliverable of the European Green Deal was the adoption of the EU Zero Pollution Action Plan in May 2021. One of the targets set in this plan is to reduce microplastics released into the environment by 30 % and to significantly reduce waste generation and by 50 % residual municipal waste by 2030 (European Commission, 2024b).

The objectives of the textiles' strategy are being implemented in various regulations and directives, such as the Ecodesign for Sustainable Products Regulation (ESPR), which entered into force in July 2024 and replaces the Ecodesign Directive. The ESPR, which includes textiles as a priority product group, establishes a framework for ecodesign requirements such as longer use, reparability, recyclability and the use or recycled content. At the same time the ESPR also introduces measures such as a ban on the destruction of unsold products and the digital product passport (DPP), a digital identity card for products, components, and materials, which will store relevant information to support products' sustainability, promote their circularity and strengthen legal compliance (European Commission, 2024a).

Another relevant regulation to textiles is the new Regulation on waste shipments, that entered into force in May 2024 and which ensures that the EU does not export its waste challenges, including textile waste, to third countries and contributes to environmentally sound management of waste (European Parliament and Council, 2024). Also, the proposed revision on the Waste Framework Directive (WFD) introduces mandatory and harmonized extended producer responsibility schemes for textiles in all EU Member States (European Commission, 2023). In the existing WFD, the separate collection of textile waste becomes mandatory as of 2025 (EU, 2018).

Additionally, the new Competitiveness Compass for the EU will 'guide the work in the coming five years and lists priority actions to reignite economic dynamism in Europe' (European Commission, 2025). The textiles and clothing sector in the EU is a significant contributor to our competitiveness, generation of value added and employment. Innovation in textiles production and consumption – including through digitalisation – and decarbonising the textiles industry can contribute to boosting EU competitiveness.

Within this policy context, the objective of the CML for textiles is to be able to track circularity uptake in the textile sector, in line with the direction and objectives set in the EU textiles' strategy.

1.2 EEA's work on textiles

This report is a continuation of the work on textiles in a circular economy by the EEA and its ETC CE, which started with the 2019 EEA briefing and underpinning ETC CE report on textiles and the environment in a circular economy and was followed up by other reports and briefings, most recently the 2022 briefings and reports on design for circularity and microplastic from textiles consumption in Europe, the 2023 EEA briefings and ETC CE papers on bio-based textiles and exports of used textiles and the 2024 EEA briefings and ETC CE reports on the volumes and destruction of unsold and returned textiles and on textile waste management in Europe. This report provides a background report for the 2025 EEA briefing on "The textiles value chain in numbers – bending the trend supplements" and supplement the 2025 ETC CE report on "Textiles and the environment – the role of digital technologies in Europe's circular economy". Together, these reports provide necessary knowledge for the shift to a circular textiles' economy in the EU.

1.3 EEA indicators and the CML

EEA indicators aim to simplify complex systems by focusing on relevant aspects for which data are available. The true significance of an indicator lies in the message it conveys about the complex system. Indicators are intended to communicate critical or typical aspects of the intricate interrelations between system components. Environmental indicators can be powerful tools for raising public awareness about environmental issues and supporting policy-making by providing information on environmental problems, measuring their seriousness, prioritizing them, and monitoring policy responses. EEA indicators are designed to support all phases of environmental policy-making, informing the reader about the trend or status of the phenomenon being investigated over time. They also indicate whether associated policy objectives are being met and quantitative targets achieved (EEA, 2024a).

The EEA's Circularity Metrics Lab (CML) is designed to complement other circularity monitoring frameworks, such as the Commission's Circular Economy Monitoring Framework (CEMF) or the official EEA indicators, by providing additional evidence on circularity. This includes metrics focused on the implementation of circular principles and practices. However, some aspects of the circular economy are less well covered in existing monitoring approaches due to fragmented or non-existent data flows. By offering additional information on the growth of the circular economy from novel sources and diverse perspectives, the CML enhances these frameworks by compiling responsive data on the circular economy (EEA, 2024a).

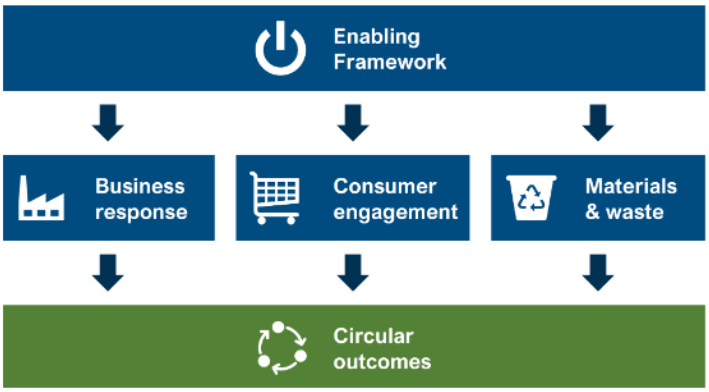
The 'Lab' aspect of the CML refers to the intention to not only rely on well-established data, but also to include important aspects that lack fully reliable long-term data. A key purpose is to gather a diverse set of metrics to inform on the status and trends towards a circular economy. Given the importance of data availability and reliability, the metrics are categorized into three groups (EEA, 2024a):

(1) **indicators**, which are well-established and EU-wide datasets with a sufficient time series, e.g. datasets provided by Eurostat;
(2) **signals** are such that, although they are informative, there is less reliable and/or complete data available – data may include scientific studies, surveys, and country-level datasets; and
(3) **potentials**, which would be highly informative and key to measuring circularity but lack data for formation of trends or assessment of current status. These are often presented in the form of single data spots.

Figure 1.1 presents the logic and structure used in the CML. The circularity metrics are grouped in four categories (EEA, 2024a):

(1) ***The enabling framework*** presenting the political and economic momentum in Europe, including possible growth in financing for circularity projects. The development and growth of a circular economy requires a framework of enabling factors to be in place, including policy, innovation, and financing.
(2) ***Business***, presenting signs of adopting circular approaches in European business models. The development of the circular economy requires a transformation in the operating models of companies to provide goods and services with reduced resource consumption.
(3) ***Consumption***, presenting signs of consumers' and producers' readiness to embrace more circularity in the products and services they consume or produce. Consumption patterns play a crucial role in moving towards the circular economy, related to organizations and individuals making sustainable choices when purchasing and using products and services.
(4) ***Materials and waste***, presenting waste generation and management trends, as well as measures to reduce the use of virgin raw materials by keeping products in use for longer.

Figure 1.1 The logic and structure used in the CML



Source: EEA (2024a)

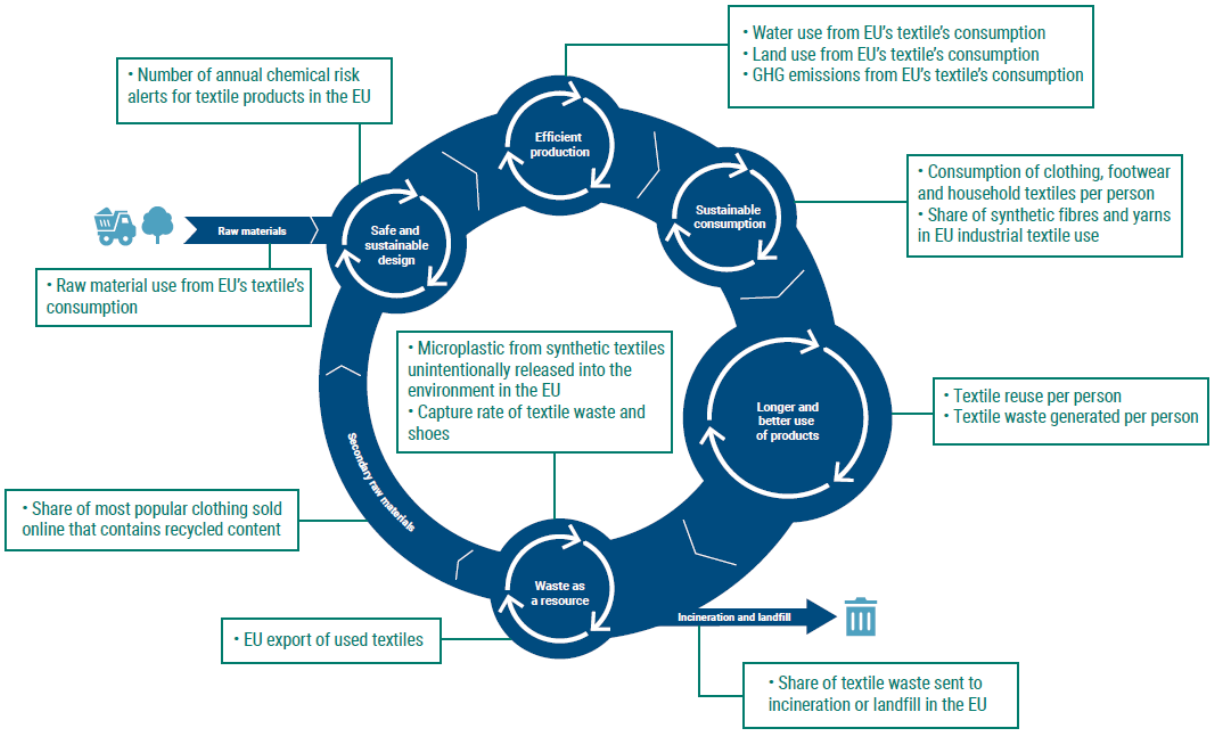
In addition, the CLM has thematic modules, dedicated to a specific circular economy aspect or to a circularity relevant economic sector. The thematic modules are waste prevention, product lifespans, plastics and textiles (EEA, 2024a). This report describes the development and metrics of the textiles module.

1.4 The textiles module of the CML

The EEA does not have official indicators for textiles. Therefore, the textiles module of the CML serves as a method for measuring the circularity of textiles in Europe. Figure 1.2 illustrates the metrics of the CML textiles module implemented into the EEA's Circular economy concept. The textiles module is designed to provide a snapshot of textiles circularity, acknowledging the challenges in data reliability. It complements other efforts to monitor the circularity of textiles. Similar to the general CML, the textiles module categorizes metrics based on data reliability into indicators, signals, and potentials.

The textiles module of the CML is available here.

Figure 1.2 The metrics of the CML textiles module implemented into the EEA's circular economy concept



Source: ETC CE, adapted from EEA (2024a)

2. Methodology

The process for developing the CML Textiles module, was initiated through the careful selection of metrics based on available data, reports and knowledge. This process was divided into two phases, where the first part aimed at collecting a long list of potential metrics. For this, the CML was explored to find potential metrics that could be directly transposed into a textile's metric. Other indicator sets were analysed with a specific focus on EEA and ETC CE reports from the past five years that presented high quality data on textiles (see chapter 1.2 on EEA's work on textiles). The result from this process was a list of 21 suggestions for metrics to measure textiles' circularity. Each potential metric was evaluated on the following criteria: (a) applicability to assess the state of circularity, (b) ability to fill key data/knowledge gaps, (c) ability to provide novel insights (and datasets), (d) updateability, (e) link to EEA's DPSIR framework (Driving forces, Pressure, State, Impact, Response), and (f) relevance to the EU textiles strategy.

This preliminary list was presented at a stakeholder webinar in May 2024, to validate the relevance of the proposed metrics, to identify potentially lacking indicators or suggestions for alternative indicators, and to identify additional data sources. The feedback and suggestions resulted in a final list of 16 metrics that were further developed in a template (a 'fiche'), in line with the general CML. The fiche includes all data needed for the presentation of the metrics in the online version of the CML, whereas this report includes only the informative content of the fiche.

During the development of the fiches, two metrics, more specifically 'quality of recycling of textiles in Europe' and 'clothing lifespan in number of average wears', were found to be too unreliable for the time being to be included in the textiles module of the CML. This brings the final list of metrics to 14.

Finally, once the fiches and supporting data had been reported, a cross-cutting analysis was done to generate a holistic picture of both the coverage of the metrics, and their ability of measuring Europe's textiles' circularity. This is reported in chapter 5 on 'key observations'.

3. Metrics

The division of the metrics of the textiles module follows the same structure as the general CML into the categories of (1) the enabling framework (2) business (3) consumption, and (4) materials and waste:

(1) **Metrics for 'Enablers'**
- *Quality of recycling of textiles in Europe*

(2) **Metrics for 'Business'**
- EU export of used textiles

(3) **Metrics for 'Consumption'**
- Consumption of clothing, footwear and household textiles
- Share of synthetic fibres and yarns in EU industrial textiles use
- Microplastics from synthetic textiles unintentionally released into the environment in the EU
- Textile reuse per person per year
- *Clothing lifespan in number of average wears*

(4) **Metrics for 'Materials and waste'**
- Raw material use for EU's textiles consumption
- Water use for EU's textiles consumption
- Land use for EU's textiles consumption
- Greenhouse gas emissions from EU's textiles consumption
- Number of annual chemical risk alerts for textile products in the EU
- Share of most sold products that contains recycled content
- Textile waste generated per person per year in the EU
- Capture rate for textile waste and shoes in the EU
- Share of textile waste going to incineration or landfill in the EU

The two metrics in italic on the overview above, more specifically 'quality of recycling of textiles in Europe' and 'clothing lifespan in number of average wears', were developed within this project but were found to be too unreliable for the time being to be included in the textiles module of the CML.

The next section in the report includes the informative sections of the fiche for each metric. The online textiles module of the CML can be referred to for further reading, as well as details on methodology and metadata for each metric.

The presentation starts with an informative sentence about the metrics, followed by a 'tile' including the introductory information, such as

- Title – a short description of the metrics
- Indication if this metric is an indicator, or a signal
- A number for the metric
- A short sentence describing the number
- Indication if the trend of this metric is: 'Improving', 'Deteriorating', 'Stable', or 'No Trend'.

The tile is followed by a background section describing the metric in terms of why this topic is relevant for CE monitoring, including also some context for the metric itself. This is followed by a figure displaying the trend and assessment what the trend is showing and what impact this would have on textiles' circularity.

The textiles module of the CML is available here.

3.1 EU export of used textiles

The yearly volume of used textiles exported from the EU has nearly doubled since 2005, with continued high amounts of exports of around 1.4 million tonnes annually since 2015, and most exports going to Africa and Asia.

INDICATOR

Export of used textiles

1.4 mio tonnes

of used textiles were exported from the EU in 2023.

Trend: stable

Coverage: EU, 2005 - 2023

Background

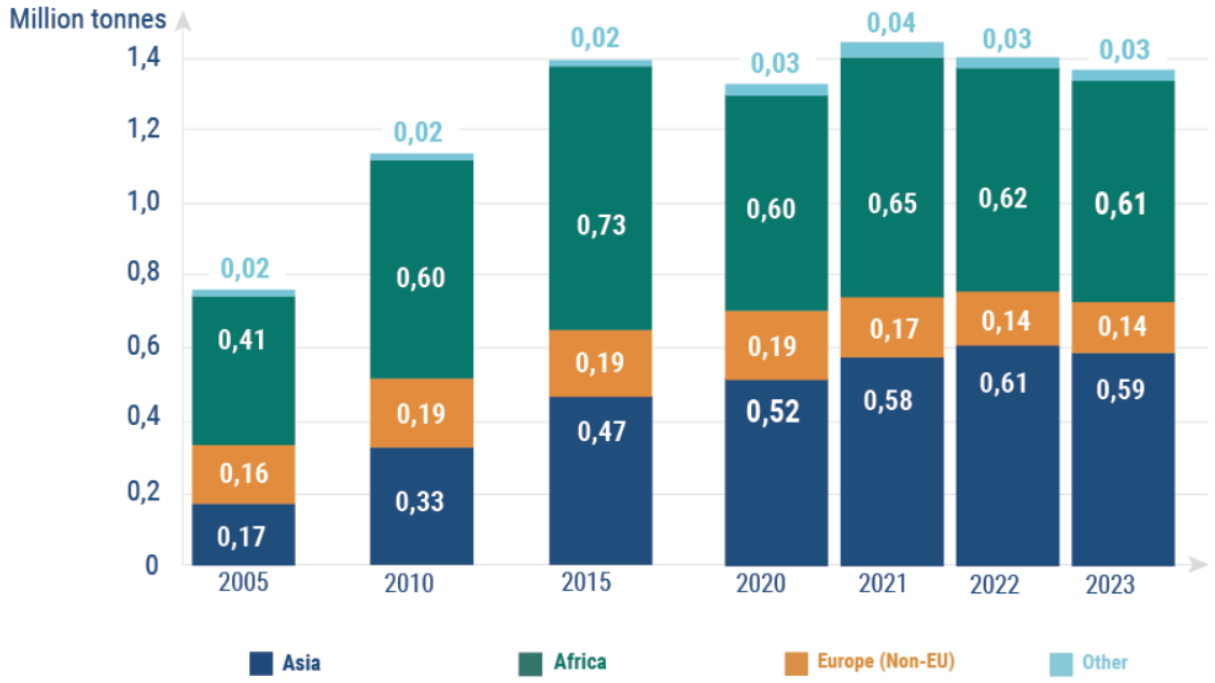
The high volumes of used textiles being exported from the EU have uncertain implications for circularity, since the faith of exported used clothes depends on product quality, type, and global market saturation, amongst other factors. Exported textiles may be reused or recycled, or they could end up in landfills or illegal waste dumping sites. While this complex trade provides a source of income for many globally, it also causes major pressures on the environment and climate (EEA, 2023).

In the EU Strategy for Sustainable and Circular Textiles, one of the key actions is to address the potential challenges from the export of used textiles (European Commission, 2022). In April 2024, the EU adopted a new Waste Shipments Regulation to prevent illegal exports of textile waste to countries without the capacity to ensure proper waste management, requiring exporters to prove that receiving facilities manage waste responsibly (European Parliament and Council, 2024). In the revision of the Waste Framework Directive, the EC also proposed to clearly define textile waste and distinguish it from reusable textiles, aiming to stop the export of waste disguised as reusable goods (European Commission, 2023). Since the volume of used textiles is expected to increase further following the requirement for all EU Member States to separately collect textile waste by 2025, understanding the destinations of used textiles and the potential challenges associated with these exports is becoming more important.

Furthermore, in March 2024 Denmark, Sweden and France proposed new global rules for exporting textile waste to developing countries to avoid harm to humans, animals and the environment related to the EU's export (Heunicke et al., 2024). They therefore propose to subject textile waste to the control mechanisms under the Basel Convention, requiring receiving countries to explicitly consent to import waste and prove that they can dispose of the waste in an environmentally-friendly way. This proposal was presented to the EU Environmental Council, with the ministers urging the European Commission to support their request for changes to the Basel Convention. As of now, this initiative is under discussion, and its adoption depends on broader international and EU-level negotiations.

Assessment

Figure 3.1 Exports of used textiles from the EU (EU-27 and the UK) to the rest of the world, 2005–2023, by weight (million tonnes)



Source: Eurostat ComExt

Between 2005 and 2023, the export of used textiles from EU countries more than doubled to over 1.37 million tonnes in 2023 or 3.1 kg per person, and previous EEA publications have shown that it nearly tripled since 2000 (EEA, 2023). The volume has been relatively stable since 2015, with Africa and Asia as the main receiving continents. In 2020, there was a drop in exports due to the COVID-19 pandemic.

The exports mainly include worn clothes and other worn textile articles and only a minor amount of rags and textile scraps. There is currently very limited information on the quality of used textiles due to the absence of specific reporting requirements for textiles that are not considered waste. Between 2005 and 2023 the main recipients of exported used textiles were Africa and Asia, with Asia steadily catching up with Africa to equal levels of 44,6% and 43,2% respectively in 2023. While exported textiles to Africa are mostly reused or end up in dumps or burned in open landfills, textiles exported to Asia are largely recycled or re-exported (EEA, 2023).

The introduction of mandatory separate collection of textile waste aiming to boost textile circularity is expected to lead to an increase in export volumes. A profound shift towards circular textile consumption in the EU, such as lower consumption, longer use, increased reuse and increased textile-to-textile recycling in the EU would likely decrease the volume of used textiles exported.

3.2 Consumption of clothing, footwear and household textiles per person

In 2022, each person in the EU consumed on average around 19 kg of clothing, footwear and household textiles. This amounts to around 8,5 million tonnes of total EU consumption of textiles.

INDICATOR

Consumption of clothing, footwear and household textiles per EU person

19 kg/person

of clothing, footwear and household textiles consumed in the EU in 2022

Trend: increasing

Coverage: EU27, 2010-2022

Background

Consumption of textile products is a key driver of value chain environmental and climate pressures and impacts arising from high-volume textile production and consumption.
Moving away from fast fashion is at the core of the EU Strategy for Sustainable and Circular Textiles (European Commission, 2022). It is to be achieved via overarching objectives for prolonging product lifetime through circular design, and producing high-quality, durable and circular textiles. Differentiation by product groups allows for a more nuanced understanding of consumption patterns and the circularity potential of each product group.

Assessment

Figure 3.2 Consumption of clothing, footwear and household textiles in the EU (EU27), 2010-2022, by weight per person (kilogram per person)

Source: Eurostat [DS- 056120] and [nama_10_co3_p3]

Different studies have yielded different numbers of textiles consumption volumes, ranging from 12-25 kg per person (ETC CE, 2022; European Commission. Joint Research Centre., 2021; ETC WMGE, 2019). When calculating the apparent consumption (production – import + export) based on Eurostat production and trade data – and excluding industrial/technical textiles and carpets - a total consumption for 2022 of 19 kg per EU capita is estimated, consisting of - on average - about 8 kg clothing, 4,4 kg footwear and 7,6 kg household textiles. This amounts to a total apparent household consumption of around 8,5 million tonnes of textile products (excl. carpets and other textiles) in Europe.

While consumption volumes dropped in 2020, they increased again in 2021 and 2022, continuing and even surpassing the trend from before the COVID-19 crisis (+13 % in comparison with 2019). This rise is mainly driven by an increase of consumption of footwear (+38 % in comparison with 2019), and to a lesser extent due to changes in consumption patterns of clothing (+3 % in comparison with 2019).

3.3 Share of synthetic fibres and yarns in EU industrial textiles use

In 2022, 58 % of fibres and yarns used by EU industry were of synthetic origin.

INDICATOR

Share of synthetic fibres and yarns in EU industrial textiles use

58 %

of fibres and yarns used by EU industry are of synthetic origin

Trend: stable

Coverage: EU27, 2010-2022

Background

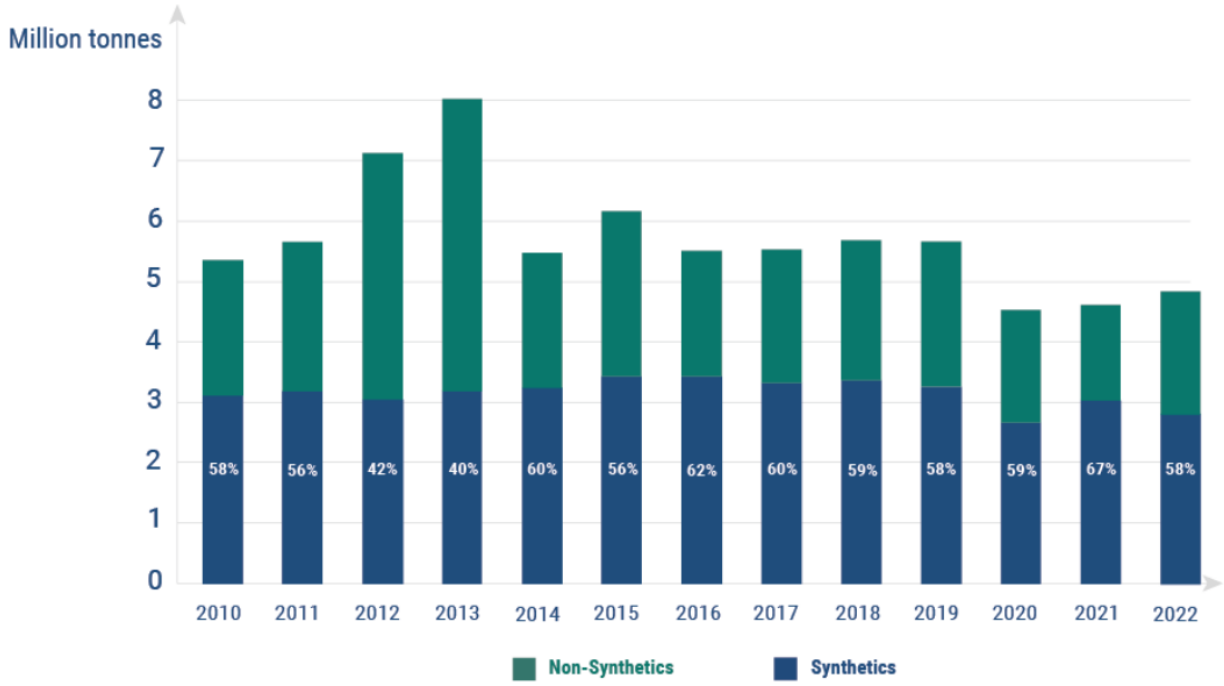
Plastics and textiles are highlighted in the Circular Economy Action Plan and European Green Deal as critical product value chains that should be prioritized in developing a circular economy in Europe. Plastic-based synthetic textiles are at the intersection of these priority areas. Synthetic textiles are integral to daily life, featuring in clothing, footwear, household linens, home furnishings, and a broad range of technical applications such as protective gear, transportation, and machinery. Europe stands as the largest importer of synthetic textiles, boasts significant domestic fibre production, and is a major exporter of synthetic textile products globally, with the EU industry excelling in specialty fibres and high-value technical textiles.

With a capture rate for used textiles of only 15 % (see Section 3.13), the majority of the textile waste ends up in the residual waste and is incinerated or landfilled. A specific concern is that synthetic textiles do not naturally degrade entirely but persist in the biosphere in the shape of macro-, micro- or even nanoplastics, unless they are incinerated. Furthermore, in textile applications synthetics fibres and yarns are often used in blends with other (natural) fibre types for cost or functionality reasons. From a circularity perspective, however, the use of blends hinders recycling of these textiles.

As discusses in other metrics, the production and consumption of textiles have considerable environmental impacts, and the extent of these impacts varies significantly dependent on the fibre type. Synthetic fibre and textiles, in particular, are major contributors to fossil resource depletion, greenhouse gas emissions, and the release of microplastics (ETC WMGE, 2021).

Assessment

Figure 3.3 Synthetic fibres and yarns used by industry in the EU (EU27), 2010-2022, by share in total fibre and yarn use (percentage)



Source: Eurostat PRODCOM

A total of 3.3 million tonnes of fibres and yarns were produced in the EU in 2022. In the same year, almost 2.3 million tonnes of fibres and yarns were imported, and 0.82 million tonnes exported. This implies that the total 2022 use of fibres and yarns by EU industry was around 4.8 million tonnes, a decrease of 10 % compared to 2010 with significant fluctuations in volumes consumed over this time period. In 2022, 58 % of the fibres used by industry were of synthetic origin, representing a volume of 2.8 million tonnes. These volumes have remained relatively constant, although synthetic fibres have also seen a 10 % decrease compared to 2010, along with a drop in the volumes consumed by industry during the COVID-19 years. The outputs of this industrial use are intermediate and finished products, which are meant for internal EU use as well as for export.

These numbers support the hypothesis that a large share of our textile products are of synthetic origin, and the reported share of synthetics is in the same order of magnitude as what Textile Exchange reports on a global scale in their Materials Market Report (Textile Exchange, 2023).

3.4 Microplastic from synthetic textiles unintentionally released into the environment in the EU

In 2019, DG Environment estimates that between 1,6 and 61,1 kilo tonnes of microplastics were unintentionally released into the environment in the EU.

SIGNAL

Unintentional release of microplastics from synthetic textiles

1,6 – 61,1 kT/year

of microplastics from synthetic textiles are unintentionally leaking into the EU environment, every year

Trend: no trend

Coverage: EU27, 2019

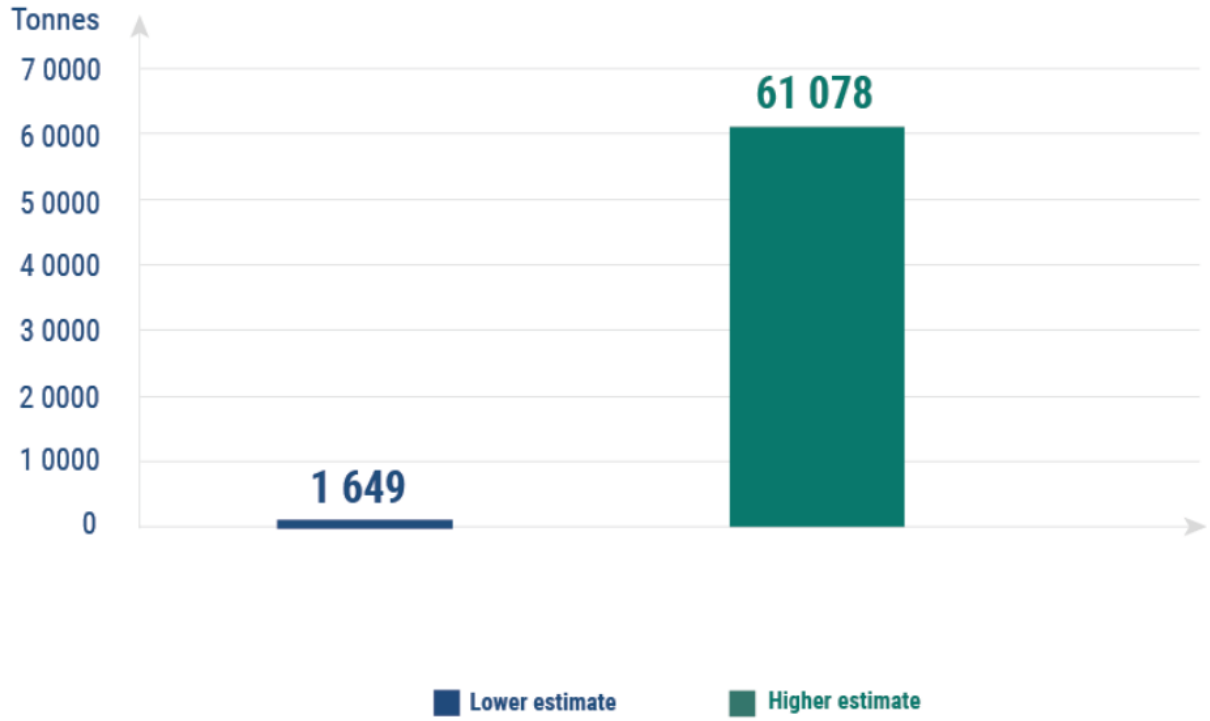
Background

In the Circular Economy Action Plan, the European Commission is committed to addressing the presence of microplastics in the environment by addressing unintentional releases of microplastics. In 2021, the Zero Pollution Action Plan provided further impetus by setting a 30 % reduction target for microplastic releases by 2030 (European Commission, 2024b).

Washing of synthetic textiles is considered an important pathway of microplastic release, via which they find their way into wastewater. Wastewater treatment plants retain most of them in sewage sludge, of which about half is applied as a fertiliser in agriculture. Nonetheless microplastic shedding takes place throughout the entire lifecycle of a synthetic textile product, from manufacturing, through use to waste treatment. Microplastics may also be released to air, for example, during the drying and wearing of garments.

Assessment

Figure 3.4 Microplastic from synthetic textiles unintentionally released into the environment in the EU (EU27), 2019, by weight (tonnes) per year



Source: DG Environment (European Commission) (2023)

DG Environment estimates that between 1,6 and 61,1 kilo tonnes of microplastics were unintentionally released into the environment in the EU in 2019 (DG Environment (European Commission), 2023). This makes textiles the fourth largest source of unintentional microplastic release into the European environment, following paints, tires, and pellets.

Although it is not possible to deduce a trend based on the data available, the amounts of microplastics released from synthetic clothing are expected to be on the rise, given that the use of synthetic fibres is increasingly common in the production of clothing, household textiles and technical textiles. Unfortunately, factors determining the release of microplastics are still poorly understood and the long-term effects on ecosystems and human health remain unclear.

Furthermore, not all microfibres released from textiles are plastic-based. A significant portion comes from natural sources. It's important to differentiate between man-made fibres of natural origin, such as viscose and lyocell, and natural fibres like cotton, wool, and silk. Man-made fibres are derived from natural materials like wood pulp but are chemically altered into cellulosic fibres for textile production. Although they originate from natural substances, these fibres are considered semi-synthetic, and their biodegradability remains uncertain. Like microplastic fibres, they have been found in natural ecosystems and indoor air, raising concerns about their environmental persistence. Moreover, textiles can also be a source of non-fibrous types of microplastics, originating from the various types of materials or accessories used in clothes and textile products, such as prints, coatings, buttons and glitter.

3.5 Textile reuse per person per year

In 2021, on average 2.3 kilograms of textiles per person were reused in the EU.

SIGNAL

Reused textiles

2.3 kg/person

of textiles were reused in the EU in 2021

Trend: no trend

Coverage: AT, BE, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, PT, RO, SE, SI, SK, 2021

Background

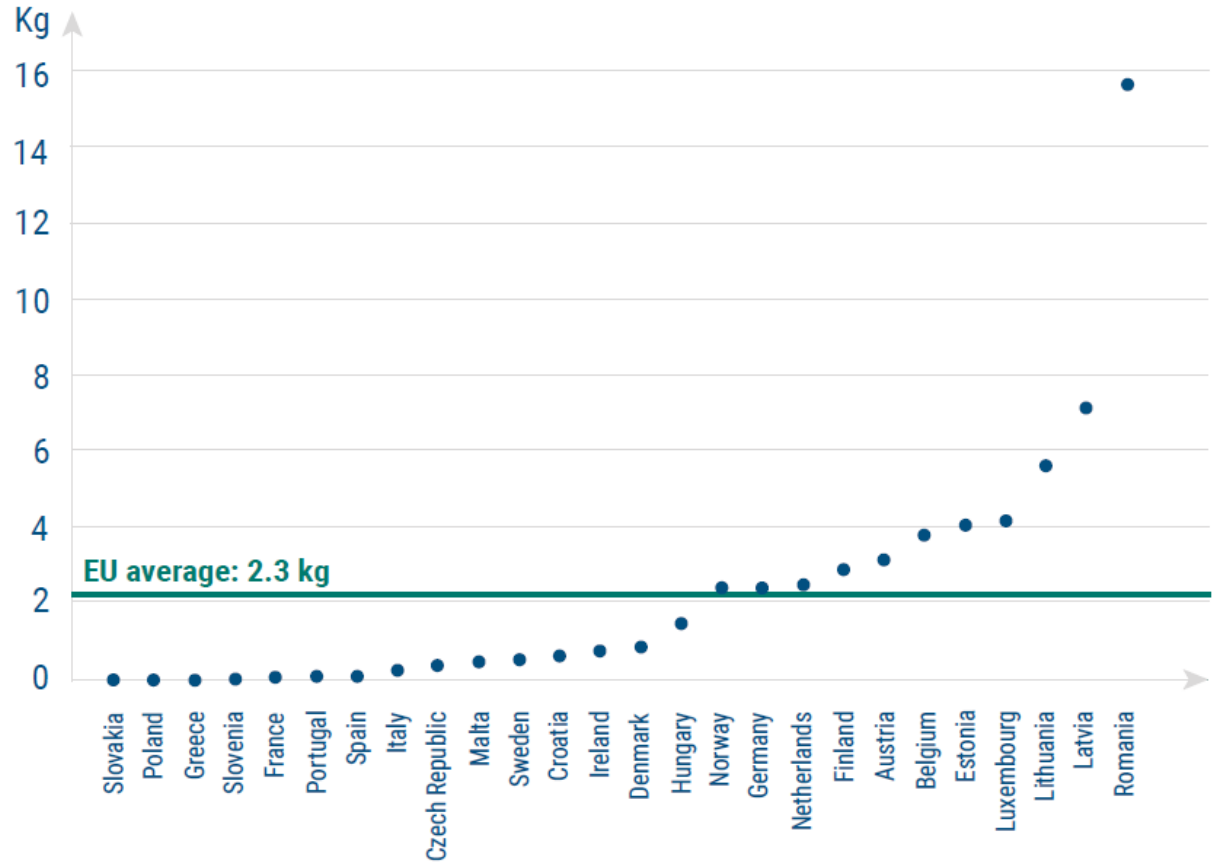
Directive 2008/98/EC obliges Member States to take measures to encourage reuse as part of their waste prevention programmes and to monitor and assess these measures on reuse. In accordance with Articles 9(4) and 37(3) WFD and Implementing Decision (EU) 2021/19, EU Member States are required to report data on the reuse of textiles. Member States are required to report quantitative data every three years and qualitative data annually. In 2023, Member States provided both quantitative and qualitative data to the European Environment Agency for reference year 2021. In 2024, the reporting focused only on measures for the reference year 2022. This initial reporting cycle marks the beginning of efforts to assess and quantify reuse activities. While data quality is anticipated to improve over time, current data should be interpreted with caution.

Reporting countries are free to select the approach or a combination of approaches that seems most suitable for their purposes. Therefore, the dataset comprises data gathered using different approaches, and so it is critical that no inter-country comparisons are made using this dataset. As 2023 was the first cycle of reporting, the relative accuracy and robustness of the approaches is not yet clear. It is expected that this data will strengthen as the reporting process matures (European Environment Agency, 2024c).

The consumption of textile products is a key driver of environmental and climate pressures across the value chain. The EU Strategy for Sustainable and Circular Textiles seeks to address these challenges by promoting sustainable practices and reducing overconsumption (European Commission, 2022). A central focus of the strategy is to extend product lifespans through circular design and encourage a shift towards high-quality, durable, and circular textiles that support reuse. Monitoring the amount of textiles reused per person provides a valuable indicator of reuse uptake across the EU.

Assessment

Figure 3.5 Amounts of reused textiles, kilograms per person, 2021



Source: European Environment Agency (2024)

In 2021, a total of 451 268 tonnes of textiles were reused in the EU (excluding Bulgaria and Cyprus and including Norway). This corresponds to an average of 2.3 kilograms of textiles per person. In the same data year, the average consumption of new textiles was 15.9 kilograms per person in the EU27 (ETC CE, 2025) which means approximately 13 % of the total consumption of textiles consists of reused textiles.

The countries that reported zero amounts may represent a declaration that no reuse activity occurred, or otherwise may represent a declaration that these data were unavailable for reporting. For now, caution is needed in interpreting zero entries within the dataset. The data reported by Norway is on a voluntary basis. Bulgaria and Cyprus did not report by the cutoff date of the dataset presented. (European Environment Agency, 2024c)

3.6 Raw material use for EU's textiles consumption

In 2022, the estimated volume of primary raw materials used for the production of textile products purchased by EU households was 234 million tonnes, or 523 kg per person.

INDICATOR

Raw material use for EU's textiles consumption

523 kg/person

of primary raw materials have been estimated to be used in the supply chain of textile products purchased by EU households in 2022.

Trend: no trend

Coverage: EU27, 2010 – 2022

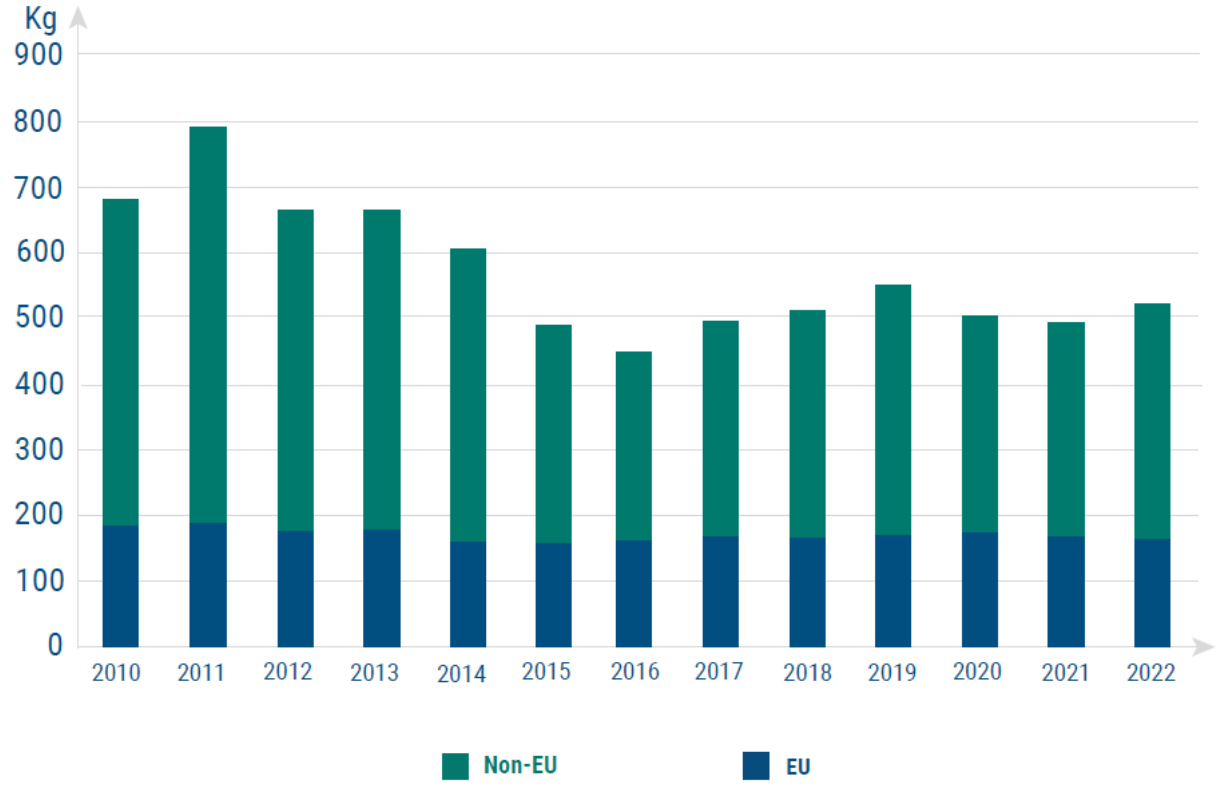
Background

The European Commission has identified textiles as a key product value chain for the circular transition to reduce significant resource and environmental pressures arising from EU consumption. The EU Strategy for Sustainable and Circular Textiles highlights the importance of reducing the sector's dependency on virgin raw materials (European Commission, 2022). It therefore aims to curb unsustainable resource use by increasing resource efficiency in the textile industry.

The textile value chain is highly complex and geographically fragmented, hence attempts to map material flows and related environmental pressures are difficult and rare. Despite its limitations, this metric sheds light on the large scope of primary raw material use and the dependency on resource imports for EU textile consumption.

Assessment

Figure 3.6 Primary raw material use in the upstream supply chain of EU27 household consumption domains, kg per person, 2010-2022



Source: Eurostat-FIGARO 24ed Exiobase v3.8.2

To produce all of the textile products purchased by EU households in 2022, an estimated 234 million tonnes of raw materials were used – about 523 kg per person. This ranks textiles as the fifth highest consumption domain for primary raw material use, after food, housing, mobility, and hotels and restaurants (ETC CE, 2025). Between 2010 and 2022, overall raw material use for EU consumption of textiles declined slightly. The most notable decrease took place between 2010 and 2016. Following that period, raw material use levels rose again, only to decline in 2020 and 2021 due to COVID-19, before experiencing a slight recovery. The results for raw material consumption vary quite a lot, ranging between 447 and 791 kg per person, reflecting some uncertainty linked to this indicator (ETC CE, 2025).

Comparing raw material consumption with the total apparent consumption of textiles in the EU in this period, a relative decoupling can be observed. While consumption per person increased by 15 % between 2010 and 2022, raw material use for EU consumption of textiles decreased by 24 %. This suggests that the raw material intensity of textile consumption – thus the amount of raw materials used per volume of textiles – has decreased considerably. However, these intensity gains seem to have slowed down in recent years (ETC CE, 2025). Only about 32 % of raw materials are produced or extracted in Europe itself, with the remaining 68 % of raw materials stemming from outside Europe (ETC CE, 2025). This is because the production of cotton and other fibres, as well as the manufacturing of textiles, primarily takes place in Asia (ETC CE, 2022). This share has remained relatively constant over the years, with the highest share of materials extracted in Europe, occurring during periods when overall raw material consumption for textiles was at its lowest.

Increasing the circularity of textiles through extended use, enhanced reuse, and improved recycling of textiles would reduce primary raw material use because this would lower the demand for new textiles and virgin fibres, hence the need for raw material inputs.

3.7 Water use for EU's textiles consumption

In 2022, the estimated "blue" water used in the production of textile products purchased by EU households was 6.000 million m^3, or about 12 m^3 per person. "Blue" water only includes surface water or groundwater consumed or evaporated during irrigation, industry processes, or household use. Thus, it excludes rainwater.

INDICATOR

Water use for EU's textiles consumption

12 m^3/person

of "blue" water was estimated to be used in the supply chain of textile products purchased by EU households in 2022.

Trend: stable

Coverage: EU27, 2010 – 2022

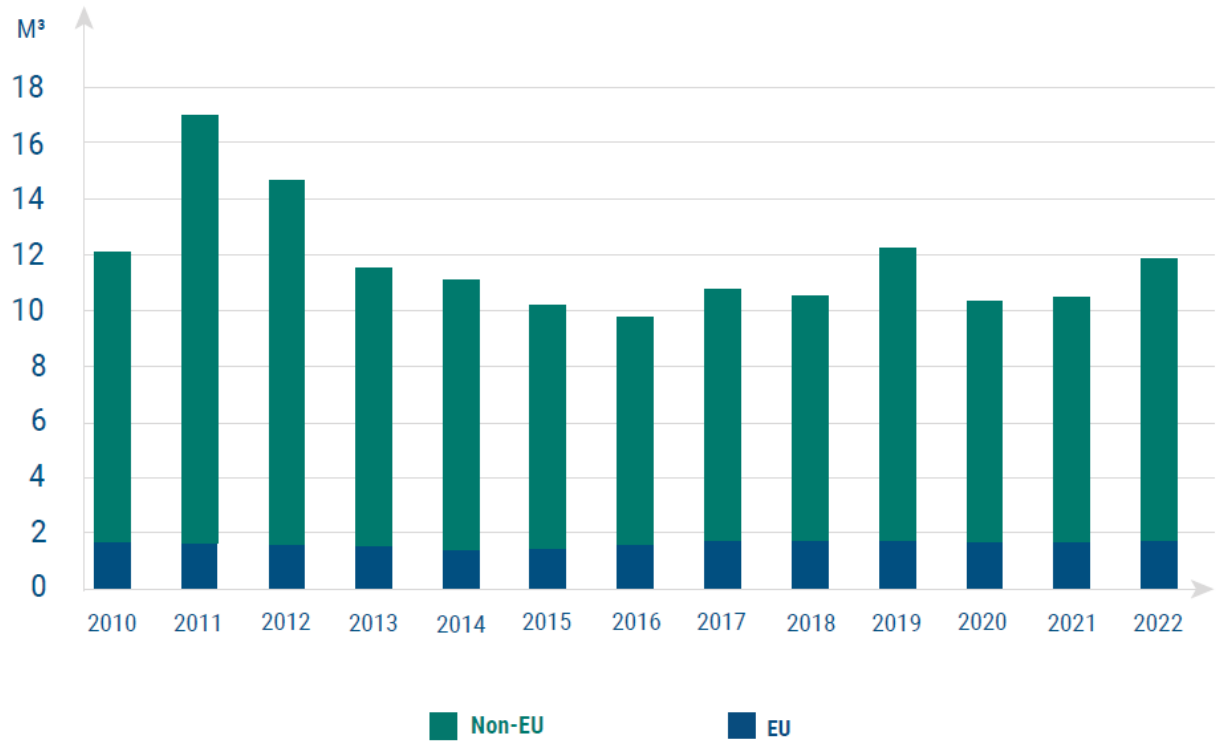
Background

The European Commission has identified textiles as a key product value chain for the circular transition to reduce significant resource and environmental pressures arising from EU consumption. The EU Strategy for Sustainable and Circular Textiles highlights that the consumption of textiles has a severe negative impact on water use from a global life cycle perspective (European Commission, 2022). The strategy acknowledges that the negative impacts have their roots in a linear model with low rates of reuse, repair and fibre-to-fibre recycling of textiles as well as unsustainable patterns of overproduction and overconsumption.

The textile value chain is highly complex and geographically fragmented; hence, attempts to map material flows and related environmental pressures are difficult and rare. Despite its limitations, this metric sheds light on the large scope of water use and the unequal global distribution of pressures arising from EU textile consumption.

Assessment

Figure 3.7 Water use in the upstream supply chain of EU27 household consumption domains, m³ "blue" water per person, 2010-2022



Source: Eurostat-FIGARO 24ed Exiobase v3.8.2

The water used to produce the textile products purchased by EU households in 2020 is estimated at 5 300 m³, or about 12 m³ per person. This ranks textiles as the fourth highest consumption domain for water use, after food, housing and restaurants/hotels (ETC CE, 2025).

Between 2010 and 2022, water use remained relatively constant. After a slight drop in 2020 and 2021, due to the reduced consumption levels following the COVID-19 pandemic, water use increased again. Comparing water use with the total apparent consumption of textiles in the EU in this period, a relative decoupling can be observed. While consumption per person increased by 15 % between 2010 and 2020, water use remained almost constant (-1 %). This suggests that the water intensity of textile consumption – thus the amount of water used per volume of textiles – has decreased considerably. However, these intensity gains have been offset by increasing consumption volumes (ETC CE, 2025).

Only about 15 % of water for textile production is used in Europe itself. Thus, about 85 % of water consumption for textiles consumed in Europe takes place outside of Europe, mostly in Asia where fibre production and textile manufacturing take place. This share has remained relatively constant over the years (ETC CE, 2025). Negative effects related to this are water depletion – and hence water scarcity – as well as water pollution in some of the production countries.

Transitioning to a more circular textile production and consumption system, which emphasises longer use, increased reuse and recycling, and reduced overall consumption, is expected to lower production levels. This reduction would, in turn, decrease the amount of water used - and polluted - in the growing and processing of textile materials.

3.8 Land use for EU's textiles consumption

In 2022, the estimated land used for the production of textile products purchased by EU households was 144.000 km^2, or 323 m^2 per person.

INDICATOR

Land use for EU's textile consumption

323 m^2/person

of land was estimated to be used in the supply chain of textile products purchased by EU households in 2022.

Trend: stable

Coverage: EU27, 2010 – 2022

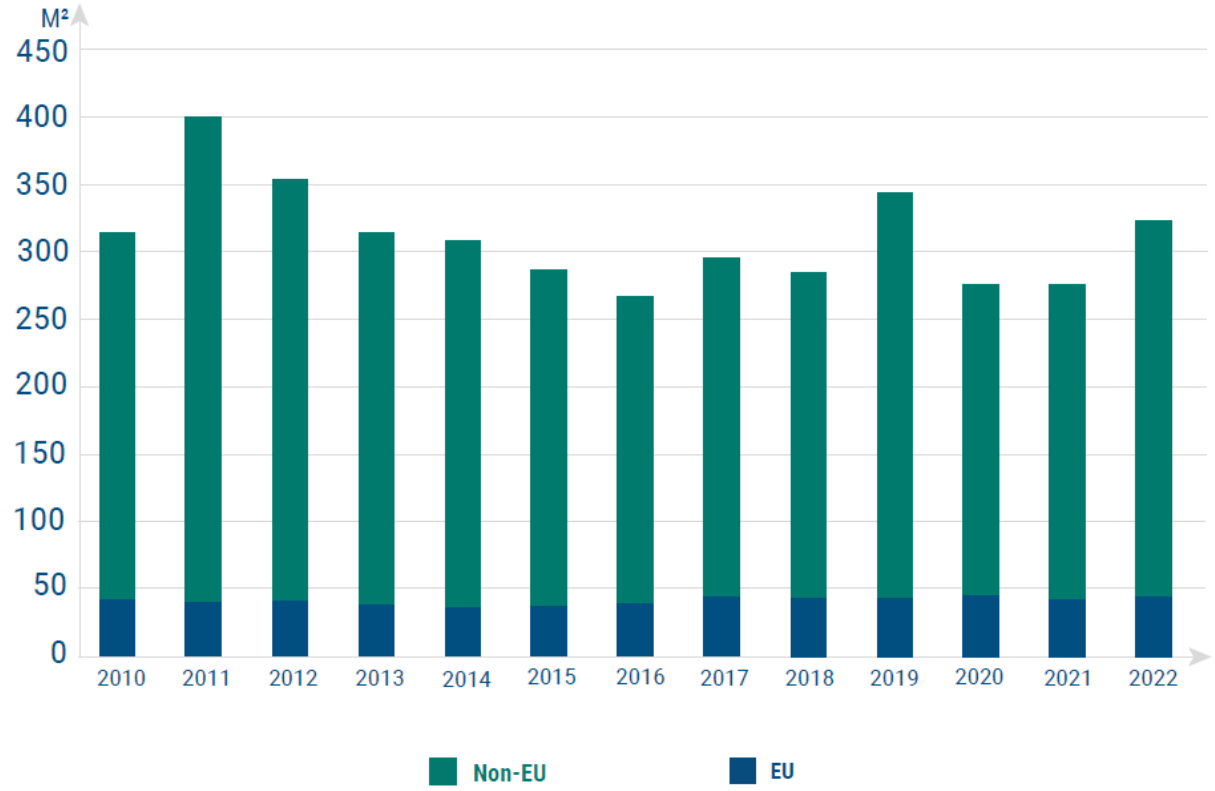
Background

The European Commission has identified textiles as a key product value chain for the circular transition to reduce significant resource and environmental pressures arising from EU consumption. The EU Strategy for Sustainable and Circular Textiles highlights that the consumption of textiles has the third highest negative impact on land use from a global life cycle perspective (European Commission, 2022). The strategy acknowledges that the negative impacts have their roots in a linear model with low rates of reuse, repair and fibre-to-fibre recycling of textiles as well as unsustainable patterns of overproduction and overconsumption.

The textile value chain is highly complex and geographically fragmented, hence attempts to map material flows and related environmental pressures are difficult and rare. Despite its limitations, this metric sheds light on the large scope of land use and the unequal global distribution of pressures arising from EU textile consumption.

Assessment

Figure 3.8 Land use in the upstream supply chain of EU27 household consumption domains, m^2 per person, 2010-2022



Source: Eurostat-FIGARO 24ed and Exiobase v3.8.2

The total land used to produce the textile products purchased by EU households in 2022 is estimated at 144.000 km^2 – roughly twice the size of the Czech Republic and about 323 m^2 per person. This accounts for 15-17 % of total land use for consumption by EU households (ETC CE, 2025).

Between 2010 and 2022, land use per person for textiles has remained relatively constant. After a drop in land use in 2020 and 2021, land use is rising slightly again. Comparing land use with the total apparent consumption of textiles in the EU in this period, a relative decoupling can be observed. While consumption per person increased by 15 % between 2010 and 2022, land use only increased by 3 %. This suggests that the land intensity of textile consumption – thus the amount of land used per volume of textiles – has decreased. However, these intensity gains seem to have slowed down in recent years (ETC CE, 2025).

Only 15 % of this land use takes place in Europe itself. Over 85 % of land use is outside Europe, mostly related to (cotton) fibre production in China and India (ETC CE, 2025; ETC WMGE, 2019). Only 15 % of this land use takes place in Europe itself. Over 85 % of land use is outside Europe, mostly related to (cotton) fibre production in China and India (ETC CE, 2025; ETC WMGE, 2019). Animal-based fibres, such as wool, also impact land use significantly (Global Fashion Agenda and Boston Consulting Group, 2018). Thus, the rapid increase in the use of synthetic fibres might also have contributed to the relative decoupling of land use and production volumes.

Increased use, reuse, repair, and recycling of textiles would reduce land use because this would lower the demand for new textiles and, hence, the need for land use to produce raw materials such as cotton or wool.

3.9 Greenhouse gas emissions from EU's textiles consumption

The total greenhouse gas emissions in the supply chain of EU's textile consumption were 159 million tonnes of CO_2 equivalent, or 355 kg per person in 2022.

INDICATOR

Greenhouse gas emissions from EU's textiles consumption

355 kg CO_2 eq./person

is estimated to be emitted in the supply chain of textile products purchased by EU households in 2022.

Trend: stable

Coverage: EU27, 2010-2022

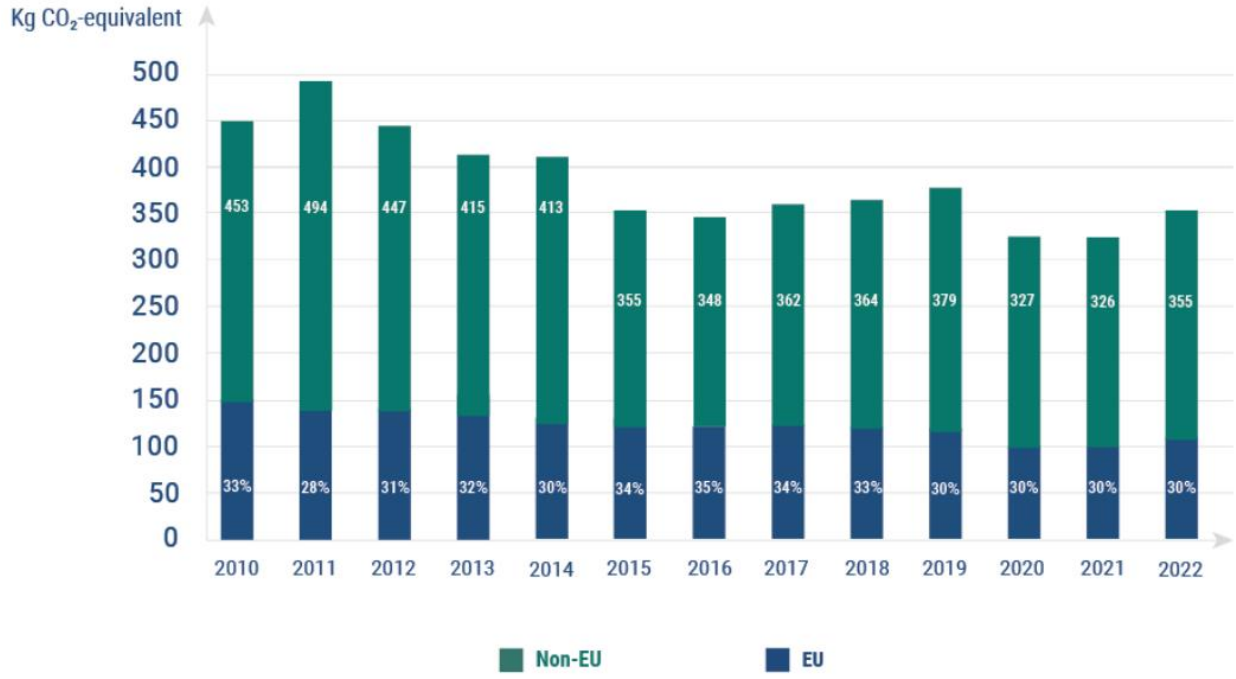
Background

The European Commission aims to achieve carbon neutrality by 2050 and considers textiles as a key product value chain for the circular transition to reduce significant climate and environmental pressures arising from EU consumption. The EU Strategy for Sustainable and Circular Textiles highlights that the consumption of textiles has the fifth highest negative impact on greenhouse gas emissions from a global life cycle perspective based on a previous EEA/ETC study (European Commission, 2022). The strategy aims to introduce product-specific eco-design requirements to enhance durability, reusability, recyclability and the uptake of recycled fibres to reduce climate impacts.

The textile value chain is highly complex and geographically fragmented; hence, attempts to map material flows and related climate impacts are difficult and rare. Despite its limitations, this metric sheds light on the large scope of emissions caused within the global production chain of textiles consumed in the EU.

Assessment

Figure 3.9 GHG emissions in the upstream supply chain of EU27 household consumption domains, CO_2-equivalent per person, 2010-2022



Source: Exiobase v3.8.2 and Eurostat-FIGARO 24ed

The total greenhouse gas emissions in the supply chain of the textile products purchased by EU households in 2022 is estimated at 159 million tonnes of CO_2 equivalent, or 355 kg per person. This makes textiles the sixth most important climate impact among household consumption domains, after housing, food and mobility, and comparable to restaurants and hotels, and recreation and culture (ETC CE, 2025).

Between 2010 and 2022, greenhouse gas emissions per person decreased by 22%, while consumption levels increased by 15 %. This indicates an absolute decoupling of emissions from consumption, driven by a reduction in the GHG emission intensity of textile consumption (ETC CE, 2025). However, the overall increase in consumption has partially offset these efficiency gains. Since 2015, greenhouse gas emissions have stabilised, with a drop in 2020 and 2021 due to the reduced consumption caused by the COVID-19 pandemic. Afterwards, emissions have increased again.

Only 30 % of emissions take place in Europe itself. The remaining 70 % of greenhouse gas emissions occur outside Europe since nearly all stages of textile production, from fibre production to manufacturing, take place in countries with lower production costs (ETC CE, 2025). This is often due to lower wages, poor working conditions and less stringent environmental standards. The greenhouse gas emissions from fibre production vary between materials. Textiles made from cotton generally have the lowest climate impact. In contrast, textiles made from synthetic fibres usually account for more emissions due to their fossil fuel origin and the large energy consumption during production (ETC CE, 2022; Niinimäki et al., 2020). The use of synthetic fibres such as polyester has grown rapidly and has surpassed cotton as the most widely used fabric (Niinimäki et al., 2020).

Increasing textile circularity through extended use, enhanced reuse, and improved recycling can reduce reliance on virgin materials and lower the greenhouse gas emissions associated with textile production. Shifting to circular business models emphasising eco-design, reuse, repair, and recycling would decrease the textile industry's dependency on fossil fuels and mitigate their negative impacts on climate change.

3.10 Number of annual chemical risk alerts for textile products in the EU

In 2023, 70 chemical-related alerts for clothing, textiles and fashion items were reported to the EU Rapid Alert System, indicating risks for humans and the environment.

INDICATOR

Number of annual chemical risk alerts for textiles

70

textile products have been reported to pose a chemical risk in the EU Rapid Alert system in 2023.

Trend: deteriorating

Coverage: EU + Iceland, Liechtenstein and Norway; 2014-2023

Background

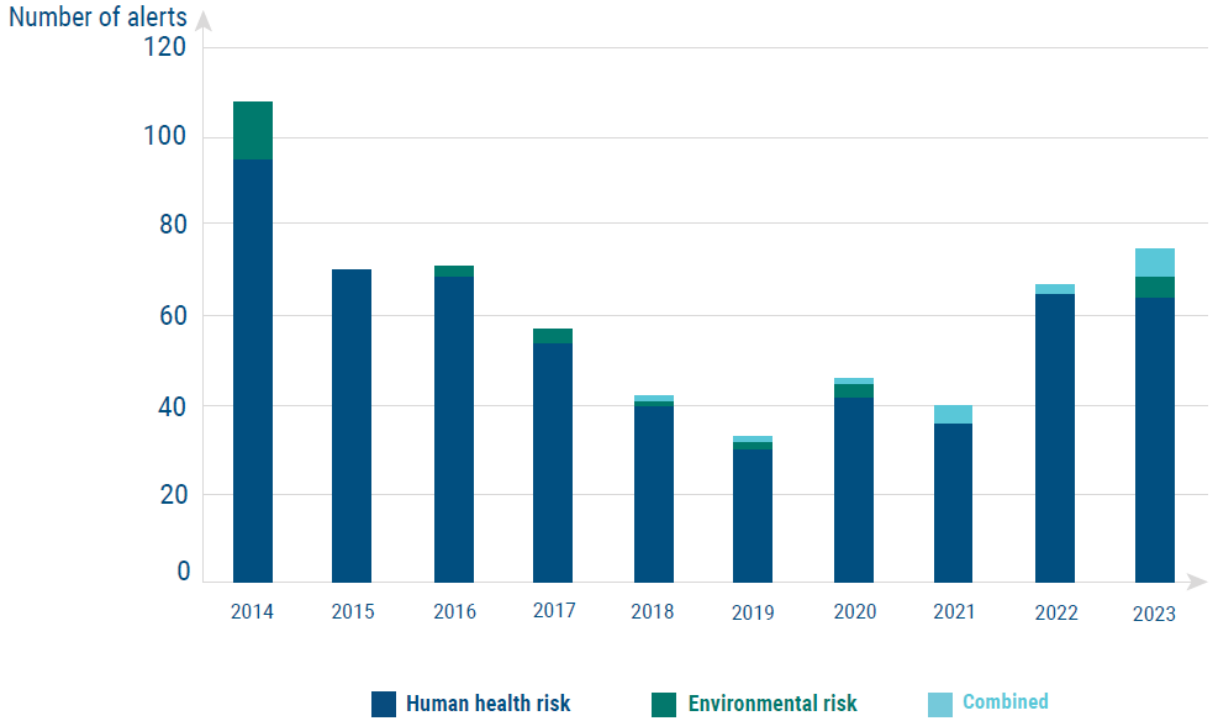
The use of hazardous chemicals in textile products on the EU market, including substances identified as carcinogenic, mutagenic, or toxic to reproduction, presents significant concerns. To address these risks, the European Commission is taking action through the REACH regulation. Additionally, as outlined in the Chemicals Strategy for Sustainability, the Commission is developing criteria for safe and sustainable chemicals and materials (European Commission, 2020). Furthermore, the strategy includes the ambition to phase out all non-essential uses of per-and poly-fluoroalkyl substances (PFAS), which would also concern textile products. More generally, the EU Strategy for Sustainable and Circular Textiles wants to support the textile industry replace harmful substances wherever possible and minimise their presence in textiles entering the EU market (European Commission, 2022).

At the national level, some countries are considering or have already posed bans on certain products containing PFAS, including textile products. Additionally, a proposal by five EU Member States (Denmark, Germany, the Netherlands, Norway and Sweden) for the restriction of PFAS is under review by the European Chemicals Agency (ECHA), aiming to reduce PFAS emissions into the environment and make them safe for human consumption (ECHA, 2023). However, upcoming regulations might not apply to the reuse and recycling of textiles, since it is difficult for reuse and recycling actors to ensure compliance and as it would likely hinder increased product circularity[1].

[1] This concern was shared in a written correspondence via e-mail with the Environmental Ministry in Denmark.

Assessment

Figure 3.10 EU Safety Gate alerts for chemicals per risk type for clothing, textile and fashion items, 2014 – 2023



Source: EU Safety Gate, web portal for the EU Rapid Alert System

Textile articles put on the EU market need to comply with EU safety requirements for placing chemicals on the market. When a national enforcement authority identifies chemical risks in consumer products through product checks, it has to inform counterparts in other countries by notifying the EU Rapid Alert System as part of the EU internal market surveillance of restricted chemicals (European Commission, n.d.).

The EU Rapid Alert System was established established under the General Product Safety Directive (European Parliament and the Council, 2002), to be replaced by Regulation 2023/988 in December 2024 (European Parliament and the Council, 2023).

From 2014 to 2023, an average of 58 alerts per year were reported regarding restricted chemicals in textiles, indicating risks for humans and the environment. The number of alerts per year for these products decreased between 2014 and 2019 and increased again in the years after 2019 (European Commission, n.d.).

In 2023, 70 chemical risk alerts have been reported for textiles. Most alerts were related to human health risks, accounting for 85 % of all risks reported. Out of this, more than 60 % were related to amounts of chromium (VI) that exceeded safety thresholds under the REACH Regulation, and which may trigger allergic reactions. Amongst all consumer goods reported in the EU Rapid Alert System, clothing, textile and fashion items are the product category with the fifth most frequently alerted products due to human health risks, after toys, cosmetics, chemical products such as household cleaning products and jewellery (European Environment Agency, 2024a). Regarding environmental risks, most alerts are related to products that do not comply with the EU regulation on persistent organic pollutants (POPs Regulation), posing a risk to human health and the environment.

Chemical risks in textiles pose a challenge to textile circularity since there is a lack of traceability at the after-use stage. Problematic chemicals – either used before being classified as harmful or not detected when entering the market, can potentially hinder efforts to increase material reuse and recycling. For example, the presence of PFAS in textiles has been identified as a barrier to longer use, reuse and recyclability of textiles, since this might amplify the risk of exposure by extending the duration of PFAS in circulation (European Environment Agency, 2024b). Thus, by increasing the circularity of textiles, the potential environmental and health hazards related to harmful chemicals are prolonged.

3.11 Share of the most popular clothing sold online that contains recycled content

In May 2024, on average 8 % of the most popular clothing items sold online on Zalando in five different European countries contained at least some recycled content. The share of men's clothing containing recycled content is higher than the share of women's clothing containing recycled content.

SIGNAL

Use of recycled content

8 %

of the most popular clothing items bought online contains some recycled content

Trend: no trend

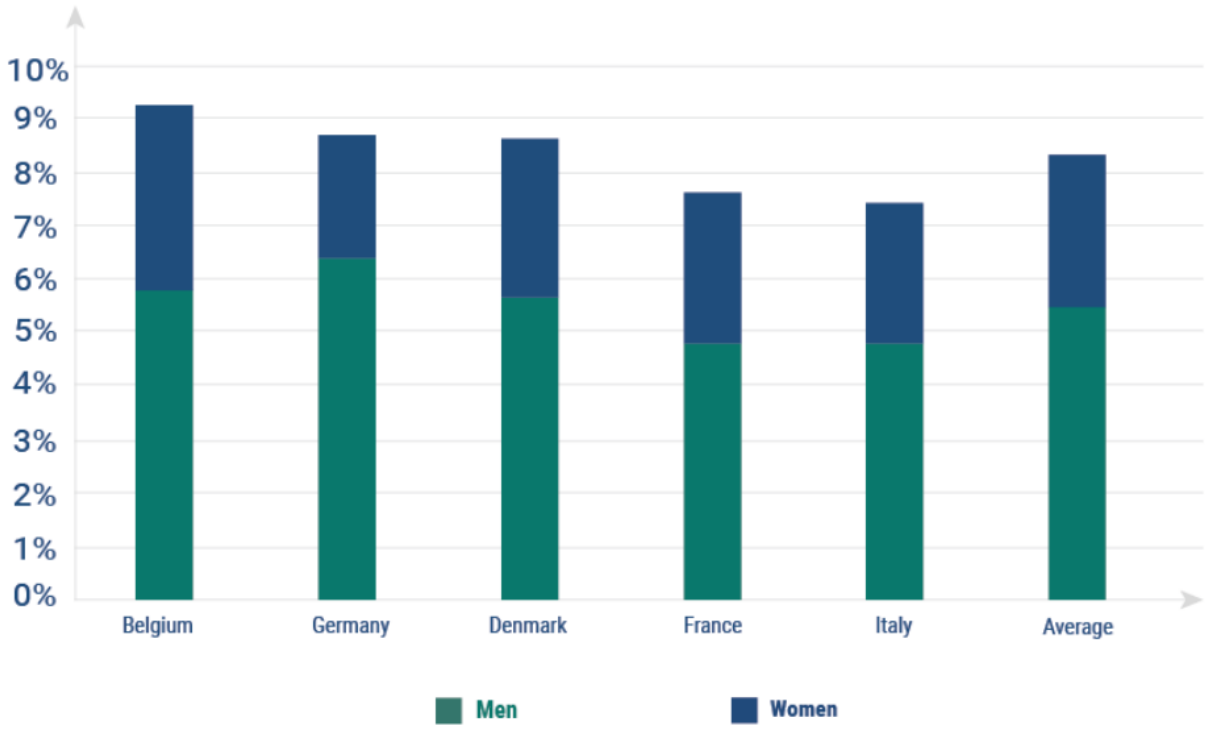
Coverage: BE, DE, DK, FR, IT; May 2024

Background

One of the objectives of the EU strategy for sustainable and circular textiles, is that by 2030, all textile products placed on the EU market are to a great extent made of recycled fibres (European Commission, 2022). This objective has been included in the Ecodesign for Sustainable Products Regulation (ESPR), which entered into force in July 2024 and replaces the Ecodesign Directive (European Commission, 2024a). The ESPR establishes a framework for ecodesign requirements, such as longer use, reparability, recyclability, use of recycled content. To date, no target has been set on the amount of recycled content or for which products the (partial) use of recycled content would become mandatory. Monitoring the use of recycled content on products put on the market is important as it is an indicator for the uptake of recycled content by the market which on its turn drives the collection, sorting and recycling of waste textiles.

Assessment

Figure 3.11 Share of most online sold men's and women's clothing that contains some recycled content



Source: ETC CE, based upon the analysis of 3066 records retrieved from Zalando (2024)

An analysis of the most popular clothing items sold online in May 2024 on five different Zalando web shops throughout Europe, shows that on average 8 % of these items contains recycled content. Although there are differences between the analysed countries, the differences are relatively small, ranging from 7.4 % in Italy to 9.2 % in Belgium. However, there is a more significant difference between men's and women's clothing: recycled content is almost twice as prevalent in the most popular men's clothing sold online compared to women's clothing.

Between the various clothing categories, swimwear (22 %), coats (18 %) and tracksuits (18 %) are the product categories that have the highest shares of 'most sold products' that contain recycled content. On the other hand, none of the most sold shirts, underwear or dresses contain recycled content.

Polyester, polyamide and cotton are the dominant recycled fibres used. However, it is unclear which shares they represent.

3.12 Textile waste generated per person in the EU per year

Total textile waste generation in the EU27 was 16 kilograms per person in 2022 and has remained rather stable since 2016.

INDICATOR

Textile waste generated

16 kg/person

of textile waste is generated annually in the EU27

Trend: stable

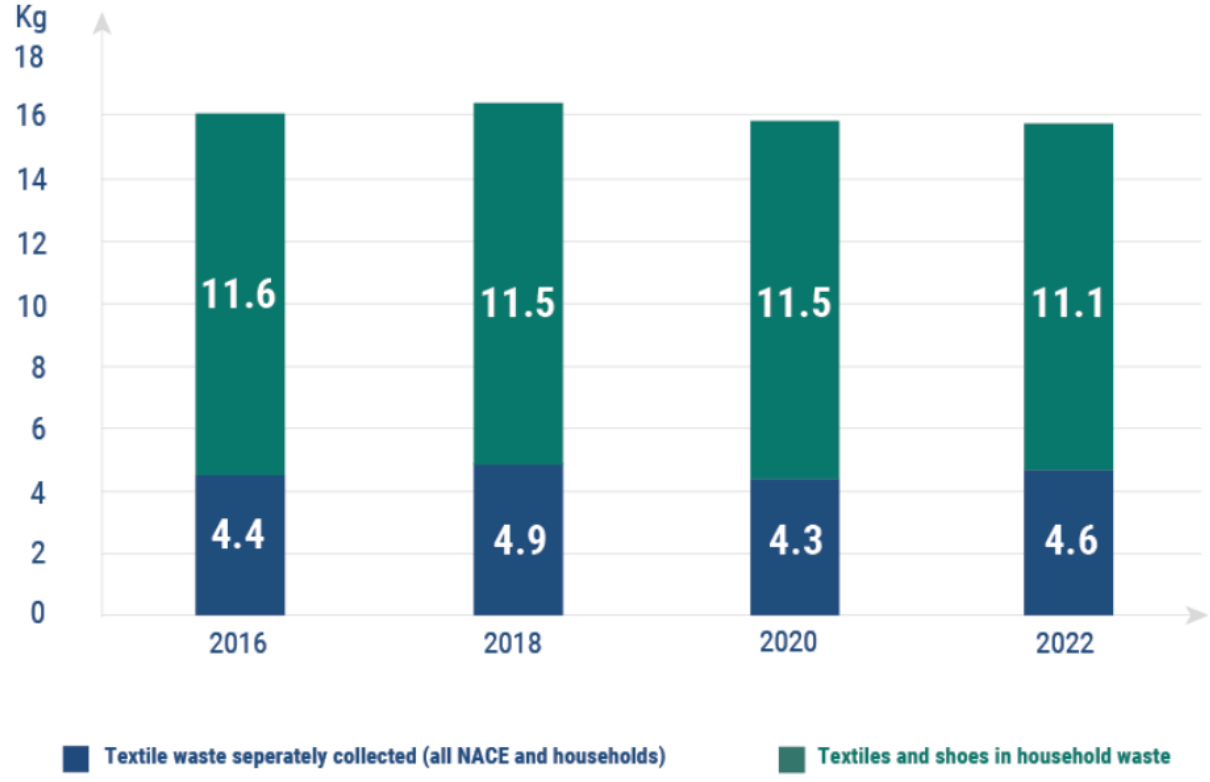
Coverage: EU27, 2016-2022

Background

Monitoring textile waste generation is important as reducing textile waste generation is a primary objective of EU waste and circular economy policies. The EU Waste Framework Directive sets out a waste hierarchy, the guiding principle of EU and national waste policies. The main driver of increasing waste generation is economic growth, with gross domestic product (GDP), the most commonly used indicator of economic growth, increasing by 26 % between 2016 and 2022 (Eurostat, 2024b). Over the same time period, the amount of textile waste generated remained rather stable, indicating the relative decoupling of textile waste generation from economic growth.

Assessment

Figure 3.12 Textile waste generation per person per year, 2016 - 2022



Sources: Eurostat (2024a, 2024c); ETC CE (2024)

In 2022, the EU27 generated an estimated 6.94 million tonnes of textile waste, equivalent to approximately 16 kilograms per person. Overall, the total amount of textile waste generation has remained quite stable since 2016. Post-consumer textile waste coming from household sources, which is textile waste that has been disposed of after consumption and use by the citizen (excluding textiles for reuse), is the main source of textile waste generation (ETC CE, 2024).

Within the total amount of textile waste generated, the amount of textiles and shoes that are not separately collected (11.1 kg per person in 2022), is more than twice of what is reported to be separately collected from households and all economic activities (4.6 kg per person in 2022). Textiles that are not separately collected end up in mixed household waste, where they are processed as residual waste. This waste typically goes to landfills or incineration, representing a missed opportunity for reuse and recycling.

The amounts of textile waste in mixed municipal waste from household sources are estimations based on waste composition analyses (WCAs) provided by the EU Member States (ETC CE, 2024). As there is no harmonised method for the WCA throughout Europe, caution should be taken when interpreting these numbers.

It is expected that the share of separately collected textile waste within the total amount of generated textile waste will increase in the coming years. Currently, only about half of EU Member States have separate textile waste collection in place (EEA, 2024b), but as of 1 January 2025, separate collection of textile waste will become mandatory across the EU (EU, 2018). Additionally, most separate collection systems in place today mainly focus on capturing reusable textiles. In some Member States, the collection of used textiles is not considered as waste collection and therefore these textiles are not reported as waste (EEA, 2024b). With the revision of the Waste Framework Directive, these amounts will have to be reported, which will also result in an increase in the amount of separately collected textiles.

3.13 Capture rate for waste textiles and shoes in the EU

In 2022, the average capture rate for textiles and shoes waste from households in the EU27 was just under 15 %, which means that most of the textiles and shoes waste are not separately collected and end up in the mixed household waste.

INDICATOR

Capture rate

15 %

of textiles and shoes waste discarded by households in the EU are separately collected

Trend: improving

Coverage: EU27, 2016-2022

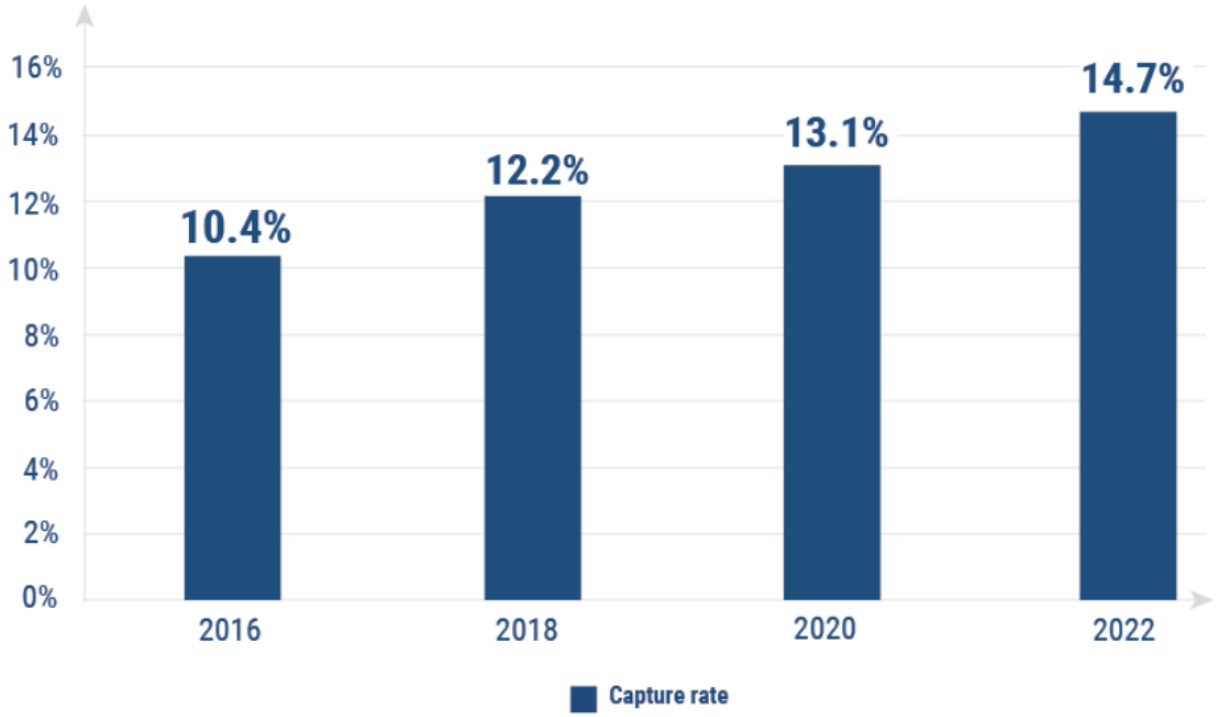
Background

Textile waste currently collected in Europe is predominantly deposited in street containers (bring points). Such facilities are often complemented by civic amenity sites where residents can dispose of household waste and recyclables that are not collected through regular curb-side collection services (EEA, 2024b). It should be noted that the collection of used textiles, and reusable textiles in particular, has a substantial social dimension. In countries such as Austria, Belgium (Brussels and Wallonia), Czechia, Iceland, and Sweden, charitable organisations and social-economic enterprises are considered the main collection actors (ETC CE, 2024).

Unless a target has been set for separate collection or reuse, Member States are not expected to report on separately collected quantities nor the amounts that are directed to preparation for reuse (ETC CE, 2024). The Waste Framework Directive (WFD) mandates that starting from 2025, EU Member States must establish separate collection systems for used textiles (EU, 2018). This is a crucial step toward fostering circularity and reducing the environmental impact of textile waste as diverting textile waste from the residual waste stream enables subsequent reuse and recycling efforts. The capture rate, as a proxy for the effectiveness of the separate collection system, monitors this boundary condition to enable reuse and recycling of used textiles.

Assessment

Figure 3.13 Capture rate for textiles and shoes, in %, 2016-2022



Sources: Eurostat (2024a, 2024c); ETC CE (2024)

In 2022, the average capture rate in the EU27 Member States, which is an indicator for the effectiveness of the separate collection system, was just under 15 %. Although the capture rate has been increasing with 4.3 percentage points since 2016, this shows that there is significant room for improvement in the separate collection systems of textiles (ETC CE, 2024) as 85 % of all textile waste from households is not separately collected and ends up in the mixed household waste where it cannot be reused or recycled. With the implementation of the EU regulation on separate textile waste collection by 2025, the capture rates for textiles from households are expected to significantly increase (ETC CE, 2024).

The capture rate of 15 % is the calculated average of all EU27 Member States, which means that there are large differences between countries. Countries with the highest capture rate are Belgium (50 %) and the Netherlands (38 %), followed by Luxembourg (36 %), Austria (30 %) and Czechia (30 %). Most of these countries have a diversity of collection systems across all levels of urbanisation (ETC CE, 2024).

The capture rate for textiles and shoes is calculated by dividing the amount of separately collected textile waste from households by the sum of the amount of separately collected textile waste from households and the amount of textile waste in the mixed municipal waste from households. The latter is calculated based on waste composition analyses (WCA) performed by the EU Member States. As there is no harmonised method for the WCA throughout Europe and the reference year of the WCA differs per country, caution should be taken when interpreting these numbers.

3.14 Share of textile waste sent to incineration or landfill in the EU

The share of separately collected textile waste sent to incineration or landfill has remained rather stable since 2010, standing at 26 % in 2022 in the EU27.

INDICATOR

Textile waste treatment

26 %

of separately collected textile waste is sent to incineration or landfill in the EU27

Trend: stable

Coverage: EU27, 2010-2022

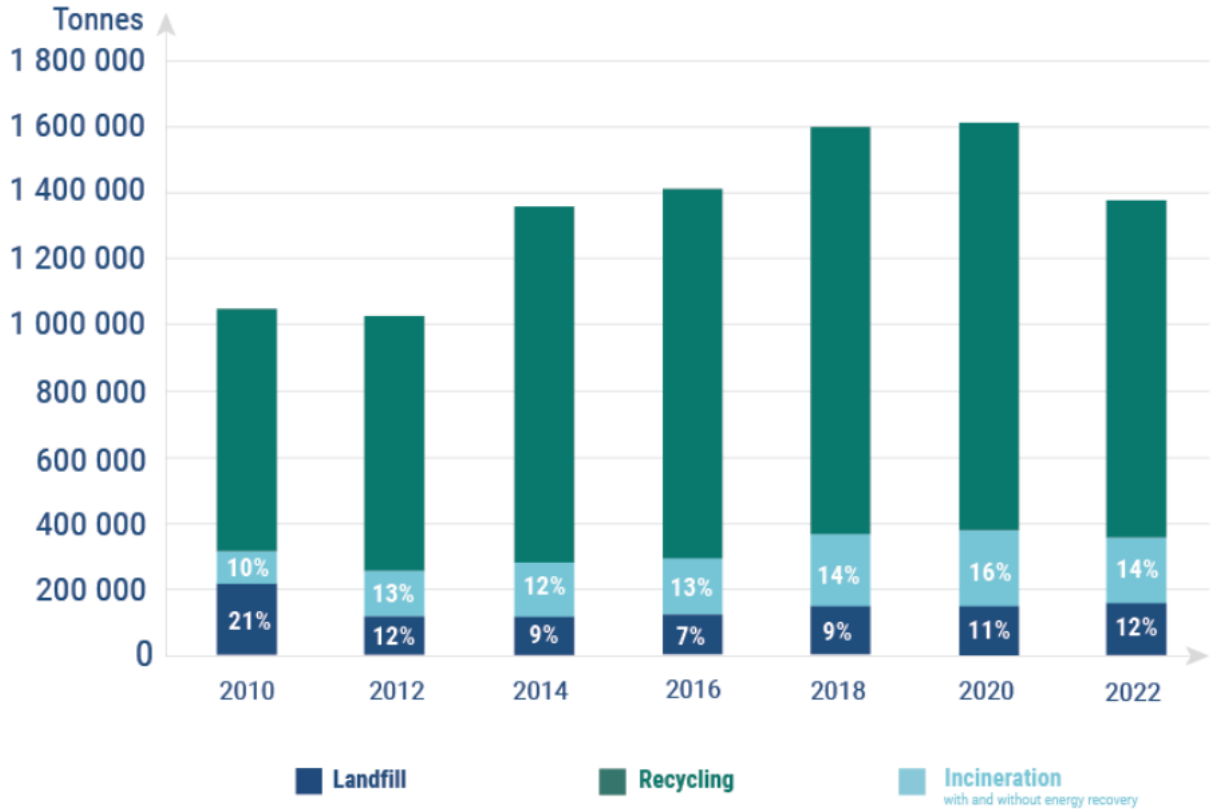
Background

In the EU Strategy for Sustainable and Circular Textiles, one of the key goals is to boost reuse and recycling of textile waste. Within this context, the Commission will consider requiring that separately collected textile waste from households and similar waste is prepared for reuse as a necessary first step, which will boost preparing for reuse, reuse and repair activities and reduce the volumes for types of waste treatment that are lower in the waste hierarchy, such as incineration and landfill (European Commission, 2022). In a circular economy, the share of separately collected textiles going to incineration or landfill should be zero, as separately collected textiles that cannot be reused should go to recycling. Monitoring the share of separately collected textiles going to incineration or landfill is therefore an important indicator of the uptake of the textile reuse, recycling and the recyclability of textile waste.

Since the volume of textiles to be treated is expected to increase further following the requirement for all EU Member States to separately collect textile waste by 2025, the timely scaling of sorting and treatment capacity is becoming more important (ETC CE, 2024).

Assessment

Figure 3.14 Treatment of textile waste in the EU27, 2010-2022, in tonnes and shares



Source: Eurostat (2024d)

Used and waste textiles that are separately collected but cannot be reused, enter a textile waste treatment process, where they can be recycled, incinerated or landfilled. The amount and share of textile waste being redirected towards landfill has decreased from 21 % in 2010 to 12 % in 2022. This corresponds to, respectively, 220 000 tonnes and 160 000 tonnes of textile waste. On the other hand, the amount of textile waste going to incineration (with and without energy recovery) has increased from 10 % in 2010 to 14 % in 2022, corresponding to 100 000 tonnes and 200 000 tonnes, respectively. Overall, the total share of separately collected textile waste going to incineration and landfill has remained rather stable over this time period, from 30 % in 2010 to 26 % in 2020. (Eurostat, 2024d)

During the same time period, the total amount of textile waste treated has increased from 1.05 million tonnes in 2010 to 1.38 million tonnes in 2022. It should be noted that this only comprises the treatment of separately collected textile waste and not the treatment of textile waste in the mixed municipal waste. If the amount of textiles and shoes that is not separately collected and that ends up in household waste is taken into account, the share of discarded textiles that goes to landfill or incineration would be 73 % in 2022 (ETC CE, 2024; Eurostat, 2024a, 2024c, 2024d). Furthermore, these figures only consider textile waste treated within the EU27. Separately collected textiles that are exported to outside the EU and end up being landfilled or incinerated are not included in these figures. Especially exported textiles to Africa are mostly reused or end up in dumps or burned in open landfills (EEA, 2023).

Within the EU27, the countries that redirect the highest amount of textile waste to landfill in 2022 are Poland (55 298 tonnes), Czechia (28 635 tonnes) and Spain (14 895 tonnes). While most countries show a decreasing trend, landfilling in Latvia, Bulgaria, Poland, Romania and the Netherlands increased over the past ten years. (Eurostat, 2024d)

The countries within the EU27 that redirected the highest amount of textile waste to incineration (with energy recovery) are Germany (54 228 tonnes), the Netherlands (46 296 tonnes) and Czechia (17 426 tonnes) (Eurostat, 2024d). The Netherlands and Poland are among the primary receiving countries of exported textile waste within the EU, both with large sorting capacities (EEA, 2024b). The observation that countries such as Poland, Czechia and the Netherlands divert a noteworthy share of textile waste to landfill or incineration emphasize the concern that without timely capacity scaling, there is a risk of separately collected amounts of textile waste end up being sent to landfills or incineration (ETC CE, 2024).

4. Key observations

4.1 Key observation 1: Increasing the circularity of textiles would reduce the associated negative impacts on health, environment and climate

Throughout the lifecycle of textile products, significant environmental and climate pressures arise from the lifecycle of textiles, including material extraction, production, processing, transportation, consumption and handling of used textiles and textiles waste. This includes the pollution and depletion of clean water sources through cotton farming and the dyeing and finishing of textiles in the production process, the release of toxic chemicals and micro-fibres into the environment, and the contamination of soil and water through improper handling and irregular disposal of textile waste. The high and increasing levels of production and consumption of textiles have led to unsustainable levels of land and water use, extraction of raw materials and climate-related pressures. Other negative impacts are related to the use of chemicals and the release of microfibres, of which long-term effects still have to be understood better.

GHG emissions are released throughout the lifecycle of textiles, although the majority originates from resource extraction and production (EEA, 2022; ETC CE, 2022; Östlund et al., 2020). The GHG emissions vary between different materials, with textiles made from synthetic fibres usually accounting for more emissions due to their fossil fuel origin and the high energy consumption during production (EEA, 2022; ETC CE, 2022; Niinimäki et al., 2020). Because of the rise of fast fashion, synthetic fibres such as polyester have grown rapidly and surpassed cotton as the most widely used fabric (Niinimäki et al., 2020). The increased use of secondary raw materials can help reduce emissions from production, but a general shift towards less and more circular consumption is needed to reduce the climate impacts caused by EU textile consumption.

Hazardous chemical substances, including PFAS, are widely used in textile production and can have potential negative long-term impacts on environmental and human health (European Environment Agency, 2024b). Restricted chemicals found in certain textile products in the EU exceed safety thresholds under the REACH regulation, and clothing, textile and fashion items are amongst the most frequently alerted products in the EU Rapid Alert System for consumer protection (European Environment Agency, 2024a). Chemical risks in textiles also pose a challenge to textile circularity since they can potentially hinder efforts to increase reuse and recycling since it would prolong exposure to harmful chemicals (European Environment Agency, 2024b). Thus, limiting chemical risks is an important prerequisite for increasing the circularity of textiles.

Microplastics released from synthetic fibres are estimated to be the fourth largest source of unintentional microplastic release into the European environment (DG Environment (European Commission), 2023). Once microplastics reach the environment, they are extremely difficult to remove. While the long-term effects on ecosystems and human health remain unclear, the increased presence of microfibres in the soil, air and water is considered a serious risk and growing concern. Fast fashion accounts for particularly high levels of such release because most microplastics are released the first few times textiles are used, and fast fashion items are often used for a short time and replaced often (EEA, 2022). Thus, sustainable design and enabling changes in consumer behaviour towards longer use and increased reuse could decrease microplastic pollution.

Enhancing circularity in the EU textile value chain by extending product lifespans through longer use, increased reuse, repair, and more efficient recycling can reduce the demand for new raw materials – and potentially also reduce microplastic pollution. While recycling primarily reduces the need for virgin resources rather than reducing overall consumption, the combined effects of these strategies contribute to lowering the environmental and climate-related pressures associated with the textile value chain. However, addressing chemical risks in textiles is crucial, as harmful substances can hinder material reuse and recycling by prolonging exposure to hazardous chemicals.

4.2 Key observation 2: Increasing consumption levels have (partially) offset gains from the decoupling of environmental pressures from textile production

Between 2010 and 2022, the textile production necessary for European consumption made efficiency improvements, resulting in varying degrees of decoupling between environmental pressures and production levels. However, the benefits of these gains have largely been counteracted by rising levels of textile consumption.

Absolute decoupling of pressures from consumption growth has been achieved for GHG emissions and raw material use. During this period, raw material use for textiles consumption per person decreased by 24 %, and GHG emissions for textiles consumption fell by 22 %, even as consumption levels increased by 15 % (ETC CE, 2025). This indicates a substantial reduction in the intensity of raw material use and GHG emissions per volume of textiles, allowing for environmental savings despite increased production and consumption. Nevertheless, these efficiency gains have slowed in recent years, and levels of GHG emissions and raw material use for textiles consumption have stabilised (ETC CE, 2025).

For land and water use, the data show relative decoupling. Land use related to textile consumption increased slightly by 3 %, while water use remained virtually unchanged (-1 %) (ETC CE, 2025). This suggests that, despite growing consumption and production, the pressures related to land and water use have not significantly worsened. In the case of land use, this might also reflect the increased use of synthetic fibres, which require less land for production than growing cotton, but which perform worse concerning other environmental pressures and GHG emissions.

Even when absolute decoupling of greenhouse gas emissions and raw material use has been achieved, higher consumption levels have offset some potential environmental benefits. In all measured impact categories — land use, water use, raw material use, and GHG emissions – a marked decline was observed in 2020/21 due to reduced consumption during the COVID-19 pandemic. However, these impacts increased again afterwards (ETC CE, 2025). This underscores the missed opportunities for environmental and climate benefits that could be realised by addressing overconsumption and the rapid turnover of fast fashion, alongside promoting greater textile circularity, such as reuse and repair.

4.3 Key observation 3: Effective separate collection systems are needed to divert textile waste from incineration and landfill

Despite an increasing consumption of textiles in the EU27 (+18 % between 2016 and 2022, standing at 19 kg/person in 2022), textile waste generation has remained rather stable (-2 % between 2016 and 2022, standing at 16 kg/person in 2022). It is unclear whether this is because textile products are kept longer, because they are being reused or because of data challenges and uncertainty. Data on textile waste generation comprise both separately collected textile waste from households and economic activities, as well as textile waste that ends up in the mixed household waste. Most separate collection systems in Europe mainly focus on capturing reusable textiles. In some Member States, the collection of used textiles is not considered as waste collection and therefore these textiles are not reported as waste. With the revision of the Waste Framework Directive (WFD), these amounts will have to be reported, which will most likely result in an increase in the reported amounts of separately collected textiles and a rise in the reported generation of textile waste.

The amount of textile waste and shoes that is not separately collected is more than twice of what is reported to be separately collected. Also, the capture rate (15 % in 2022), which is a proxy for the effectiveness of the separate collection system, shows that there is significant room for improvement in the separate collection systems of textiles. As the textiles that are not separately collected end up in the mixed household waste, these are processed as residual waste that goes to landfills or incineration which is a missed opportunity for reuse and recycling.

To date, only about half of the EU Member States have separate collection of textile waste in place (EEA, 2024b). The WFD mandates that starting from 2025, EU Member States must establish separate collection systems for used textiles (EU, 2018). It could be expected that this will most likely also increase the share of separately collected textile waste within the total amount of generated textile waste in the coming years, as well as the total amount of textile waste generated.

Nearly three-quarters (74 %) of the used and waste textiles that are separately collected but cannot be reused are sent for recycling. This means that 26 % end up in incineration or landfill. Over the past years, there has been a shift of textile waste going from landfill towards incineration. It is important to emphasize that the data on textile waste treatment only comprise the share of separately collected textile waste, which is only a small fraction of the actual textile waste generated.

Additionally, these figures only consider textile waste treated within the EU27. Although the volume of used textiles exported from the EU has remained stable over the past few years, 1.41 million tonnes of used textiles were exported from the EU in 2022. This is almost exactly the same amount as the amount of textiles treated within the EU in the same data year (1.38 million tonnes in 2022). Due to the introduction of the mandatory separate collection of textile waste, it is expected that this will lead to an increase in export volumes. Textiles that are exported to Africa are mostly reused or end up in dumps or burned in open landfills while textiles exported to Asia are largely recycled or re-exported (EEA, 2023). At the same time, this also emphasizes the need for additional treatment capacity within the EU to reduce the risk of separately collected textile waste being sent to landfills or incineration (EEA, 2024b).

Implementing effective separate collection systems for used textiles and timely capacity scaling are crucial steps toward fostering circularity and reducing the environmental impact of textile waste. Diverting textile waste from the residual waste stream enables subsequent reuse and recycling efforts.

4.4 Key observation 4: Significant data, information and knowledge gaps limit effective monitoring and analysing the circular economy of textiles in the EU

Reliable and publicly accessible information, knowledge, indicators, and data are essential for measuring the circularity of textiles in Europe and supporting informed decision-making. European textile policies, such as the EU Strategy for Sustainable and Circular Textiles and the Ecodesign for Sustainable Products Regulation (ESPR), have relied on insights provided by the EEA and others. The CML on textiles offers a valuable, complementary knowledge source to further guide the formulation and implementation of EU textile policies.

However, significant data gaps on textile flows within and beyond Europe continue to exist. The lack of transparent, comprehensive, and reproducible data limits the ability to effectively monitor the evolution of key metrics, draw sound conclusions, and develop actionable policy options. While EU-level data on textile production, consumption, and waste volumes (expressed in weight) are relatively robust, information about use-phase aspects and the implications of fast fashion vs. circular business models is scarce. Specific gaps exist in areas such as the number of products put on the EU market, the speed of collections and product lifespans, but also repair efforts, reuse rates, and recycling performance - factors critical to assessing circularity dimensions like lifetime extension and intensified product (re)use.

Addressing these gaps requires the formalization of new data streams, consistency in data collection and assessment methods, and improved transparency and accessibility of data. These steps would enhance the ability to evaluate the state of textile circularity in Europe, detect trends and disruptions, and support decision-making from a systemic perspective.

To illustrate, two metrics originally identified as relevant for monitoring textile circularity – quality of recycling of textiles in Europe and clothing lifespan in number of average wears – currently lack sufficient reliable and comprehensive data to produce representative outcomes. Similarly, other metrics are included as signals rather than indicators due to limited geographical and temporal coverage of input data, which restricts Europe-wide trend analysis, or lack of transparency and reproducibility in assessment methods. Examples are *unintentional release of microplastics from synthetic textiles* and *use of recycled content*.

Challenges like incomplete data collection arise even with metrics for which it was feasible to develop an indicator. An example is *the number of annual chemical risk alerts for textiles,* which faces underreporting of alerts due to limitations in enforcement. In general, indicators should be interpreted in 'orders of magnitude' and 'indicative trends', rather than as absolute quantities. This due to rapidly evolving modelling approaches and new data sources emerging.

4.5 Key observation 5: The effects of policy implementation are likely to be reflected in the data for the metrics in the coming years

The EU Strategy for Sustainable and Circular Textiles, alongside related policies (see section 1.1), outlines ambitious goals and policy means to address various challenges in the textiles value chain. One of the ambitions of the Waste Framework Directive is to curb waste exports misrepresented as reusable goods while requiring Member States to establish separate textile waste collection by 2025 (European Commission, 2023). This measure will likely increase the volume of separately collected textiles. On the other hand, stricter export criteria might offset the increasing exports of used textiles resulting from the increased volumes collected to some extent, leaving the net effect uncertain. A shift away from fast fashion is central to the strategy, focusing on circular design to extend product lifetimes and create durable, high-quality textiles. Over time, these measures are expected to reduce consumption, particularly of clothing and footwear, by addressing consumption patterns and the circularity potential of various product groups.

Microplastic pollution is addressed through the Circular Economy Action Plan and the Zero Pollution Action Plan, which set a 30 % reduction target for unintentional microplastic releases by 2030 (European Commission, 2024b). Textiles are a major source of microplastics so these efforts should be reflected in the respective metric in the textiles CML, yet gaps in understanding their release and accumulation hinder effective mitigation strategies (EEA, 2022). Reversing the overconsumption of clothing and incentivising and scaling circular business models, including reuse, is at the core of the EU Strategy for Sustainable and Circular Textiles (European Commission, 2022). By prioritizing textiles designed for durability and reuse, reuse rates, monitored on a per capita basis, are expected to increase with the successful implementation of the strategy.

Furthermore, the Strategy seeks to minimize the environmental and climate impacts of textiles, to be reflected in the CML monitoring efforts in raw material use, water use, land use, and greenhouse gas emissions from household consumption. Reductions in these metrics will reflect progress in decoupling environmental impacts from production volumes. Chemical risks are addressed through the REACH regulation and the Chemicals Strategy for Sustainability, which aim to minimize hazardous substances in textiles (European Commission, 2020). More broadly, the EU Strategy for Sustainable and Circular Textiles aims to help the textile industry replace harmful substances wherever possible and minimize their presence in textiles entering the EU market (European Commission, 2022). Stricter regulation combined with enhanced market surveillance at the EU level will initially lead to an increase in the alerts on the detection of chemicals labeled as hazardous, but over time, these measures will reduce their prevalence in EU markets.

Another key focus is promoting recycled content, with the Ecodesign for Sustainable Products Regulation (ESPR) aiming for a significant share of textiles to contain recycled fibers by 2030 (European Commission, 2024a). This goal, supported by mandatory recycled content requirements, will boost market adoption and drive improvements in collection, sorting, and recycling processes, to be reflected in the respective metric. Monitoring textile waste generation is also crucial, with the WFD's waste hierarchy guiding policies to reduce, reuse, and recycle textiles. The capture rate of separately collected textiles, a measure of collection system effectiveness, is expected to improve with mandatory separate collection from 2025 (EU, 2018). This will enhance reuse and recycling while diverting textiles from residual waste streams.

Finally, the EU Strategy for Sustainable and Circular Textiles prioritizes textile reuse and recycling. In a circular economy, none of the separately collected textiles should go to incineration or landfill, with non-reusable textiles directed to recycling instead. Monitoring this share is crucial to gauge recycling uptake and waste recyclability. Implementing the strategy should result in a significant decline in textile volumes sent to incineration or landfill. The two latter metrics should also improve with the introduction of mandatory and harmonized extended producer responsibility schemes for textiles in all EU Member States (European Commission, 2023).

5. List of abbreviations

Abbreviation	Name	Reference
CEAP	EU Circular Economy Action Plan	
CML	Circularity Metrics Lab	https://www.eea.europa.eu/en/circularity/
EEA	European Environment Agency	www.eea.europa.eu
EC	European Commission	
ETC	European Topic Centre	
ETC CE	European Topic Centre on Circular Economy and Resource Use	https://www.eionet.europa.eu/etcs/etc-ce
ETC WMGE	European Topic Centre on Waste and Materials in a Green Economy	
EU	European Union	
EU27+3	EU member states + Norway, Switzerland, and the UK	
ESPR	Ecodesign for Sustainable Products Regulation	
GDP	Gross domestic product	
GHG	Greenhouse gas	
WCA	Waste composition analyses	
WFD	Waste Framework Directive	

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