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IMPACT ASSESSMENT REPORT

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amending Directive 2008/98/EC on waste

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ANNEX 7: PROBLEM DEFINITION

Annex 7 provides a detailed discussion of the problems and drivers that were identified in relation to food and textile waste, taking into account the outcome of supporting studies, stakeholders input and further analysis. Annex 8 provides the results of the preliminary analysis for other intervention areas that were subject to studies and stakeholder inputs.

1- Textiles

With regard to the textiles management, several problem drivers can be identified at all stages of the waste hierarchy. The full list is provided in the support study and includes those that cannot be tackled through a revision of the WFD.

The **visual problem tree** is presented as part of the intervention logic in Figure 2 - Intervention logic for textile waste.

The drivers that this initiative will attempt to tackle are detailed below and have been grouped according to their nature: regulatory and market failures as well as behavioural drivers.

Regulatory failures

- Different scopes and definitions
- Insufficient waste prevention activities
- Inconsistent separate collection schemes
- Insufficient sorting and recycling capacity

Market failures

- Distorted incentives for textile producers/brands to design long-lasting, reusable and recyclable products.
- Lack of circular business models at scale that extend the lifespan of products
- Insufficient funding to scale up separate collection and recycling
- Information failures

Behavioural drivers

- Consumption trends
- Insufficient citizen awareness
- Shift to online purchasing

Regulatory failures

Different scopes and definitions

Non-harmonised application of the notion of textiles

The Waste Framework Directive, albeit imposing specific obligations on the prevention and management of textile waste, does not provide a definition. In fact, there is no single notion of textiles as different EU legislation and strategies cover variable product categories under the term textile. Article 3(1)(a) of the Textiles Labelling Regulation defines 'textile product' as: "Any raw, semi-worked, worked, semi-manufactured, manufactured, semi-made-up or made-up product, which is exclusively composed of textile fibres, regardless of the mixing or assembly process employed". This definition is broad, and covers a wide range of products and materials, from yarns, fibres or fabrics to household textiles (towels, bed linen),

clothing, technical equipment and agricultural textiles containing at least 80 % by weight of textile fibres, as well as the textile component of other products such as floor coverings and coverings of mattresses and camping goods.

Textiles are also addressed at the industrial production statistics (Prodcom survey), that provides data on the production of manufactured goods carried out by enterprises on the national territory of the reporting countries. [1] Prodcom covers Mining and quarrying, Manufacturing and Materials recovery, i.e. sections B, C and E of the Statistical Classification of Economic Activities in the EU (NACE Rev. 2) [2], respectively. Production of textile goods is reported under divisions C13 (Manufacture of textiles) and C14 (Manufacture of wearing apparel), the latter including leather clothes, workwear, other outerwear, underwear, other wearing apparel and accessories, articles of fur, and knitted and crocheted apparel.

Common Nomenclature (CN) is an 8-digit goods classification tool set up to meet the requirements of both the Common Customs Tariff and the EU's external trade statistics used for export and statistical declarations[3]. The CN is also used in intra-EU trade statistics. At CN-classification, section XI is devoted to textiles and textile articles. In addition, Member States may also apply their own national codes for the classification of products, e.g. Basilea Codes in Spain.

There is no consistent application of any of these available definitions in the context of applying the rules on textile waste management in the Member States, in particular, in the context of applying extended producer responsibility schemes which create specific financial and reporting obligations on producers of textiles.

Non-harmonised definition of textile wastes and reporting on textile wastes

The WFD includes an obligation for Member States to separately collect textile waste from 1 January 2025. More generally, including in relation to textiles, Member States are required to take waste prevention measures, notably by encouraging the establishment of and support for preparing for reuse and repair networks, by facilitating, where compatible with proper waste management, their access to waste held by collection schemes or facilities that can be prepared for reuse but is not destined for preparing for reuse by those schemes or facilities, and by promoting the use of economic instruments, procurement criteria, quantitative objectives or other measures. However, the general definition of waste in the WFD is: "any substance or object which the holder discards or intends or is required to discard" and **there is no definition of textiles waste accompanying the obligations set out in the WFD.**

Member States have employed diverging practices in determining what is textile waste. **The categories how textile waste is grouped and accounted for under different reporting instruments in the EU also differ resulting in non-robust and non-comparable textile waste statistics.** Under the Waste Framework Directive, Member States report on municipal textile waste. The municipal waste reporting obligation stemming from the '2018 waste package' has a waste category W076_MUN 'Textiles' that will be reported annually from reference year 2020, in t +18. **The information that is collected is 'waste generated', 'waste collected separately' (voluntary), 'preparing for reuse'(voluntary), 'recycling' and 'other**

[1] EUROSTAT, *Prodcom - Statistics by products – Overview*, Overview - Prodcom - statistics by product - Eurostat (europa.eu).
[2] Complete list of all NACE Code (nacev2.com)
[3] European Commission, The Combined Nomenclature, The Combined Nomenclature (europa.eu)

recovery'. Some Member States reported the data already for year 2019 but as this was on a voluntary reporting there are big data gaps.

The European List of Waste (ELoW)[4] establishes a six-digit code for wastes, according to their origin and composition. Textile wastes are addressed in several headings both in chapters identifying the source of generation–subchapters 04 02 (waste from textile industries), 18 01 (human health care) and 19 12 (waste from the mechanical treatment of waste), and chapter 20 (municipal waste)–and in chapters based on the composition of waste–chapter 15 (packaging), subchapter 16 03 (off-specification batches and unused products). Certain headings relevant for textiles waste are therefore common for textile and non-textile wastes.

In principle, this classification would allow to differentiate between post-industrial textile waste (subchapter 04 02), pre-consumer waste (16 03), post-consumer waste (chapter 20) and textile waste generated at treatment facilities (19 12). However, interpretation on the codification of certain wastes may vary among Member (i.e. on consideration as municipal waste for waste generated by sources other than households).

Regulation on Waste Statistics (WSR) sets the legal framework for the Union level statistics on the generation, recovery and disposal of waste.

Waste generation data are provided granulated by two parameters: waste categories and source of waste generation. As for waste categories, data sets contain a breakdown into 51 aggregates according to the European Waste Classification for statistical purposes (EWC-Stat). Annex III of Regulation establishes a table of equivalence between EWC-Stat Rev4 and the European List of Waste.

There is a specific aggregate for textile waste (category W076 "textile wastes") as a segregated waste, that comprises worn clothing, miscellaneous textile waste and leather waste.

The scope for the reporting category 'textiles' at WSR includes some categories of waste that does not conceptually fall under the notion of textiles as relevant for the application of the specific textile waste management rules in the WFD, e.g., leather waste (fleshings and lime split wastes from the tanning sector) and organic matter from natural products (e.g., grease, wax).

Textile waste can also be part of other waste streams, such as W081 'Discarded vehicles' (e.g., in car seats), W101 'Household and similar wastes' (including bulky waste, such as furniture) and W102 'Mixed and undifferentiated materials'. In these cases, data correspond to the composed waste, so an estimation based on composition analysis would be needed to assess the content of textile.

Regarding its origin, generated textile waste can be broken down in 19 waste aggregations (18 economic activities according to the NACE rev. 2 classification, and waste generated by households).

Generation of household post-consumer waste could be obtained under this classification, but the share would also include leather waste. However, this statistic does not provide a breakdown into post-industrial, pre-consumer or commercial post-consumer waste, which are included into a broader range of categories and sources of waste.

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[4] 2000/532/EC: Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (notified under document number C(2000) 1147), EUR-Lex - 32000D0532 - EN - EUR-Lex (europa.eu).

Under WSR, waste treatment covers waste generated minus exported waste plus imported waste. Waste treatment statistics can be broken down into six treatment categories (three recovery and three disposal operations).

Waste treatment statistics can be broken down into six final treatment categories (three recovery and three disposal operations). They do not cover intermediate operations, such as sorting, and integrate within the same operation code (R3) preparing for reuse and recycling.

The Waste Statistics Regulation includes a textiles category that is frequently quoted in established literature and indicates that 2.03 million tonnes of textile waste are generated in the EU in 2020. Waste treatment shows even lower figures. The reason for that is that a big share of textile waste moving within the EU is seen as second-hand products and not as waste in the receiving country. Similarly, textiles may be seen as second-hand textiles by the collector but as waste by a treatment facility or vice versa. The waste criteria of article 3 (1) of WFD is difficult to apply in the household sector, because textiles or often only given away under the constraint that they are reused.

With regard to reporting under the WFD, in accordance with the Implementing Decision (EU) 2019/1004, Member States reported the first set of data for the year 2020 to Eurostat but data has quality problems.

The main issue with the data reported pursuant to Implementing Decision (EU) 2019/1004 is that countries should estimate waste generation by material breakdown (including a specific class for textiles) by applying waste composition analysis to the different waste streams. The Eurostat guidance [5] indicates that countries should estimate waste generation by material breakdown (including a specific class for textiles) by applying waste composition analysis to the different waste streams. However, Annex V of Commission Implementing Decision 2019/1004, footnote 1 reads: "The amount of generated waste per material may be based on data on separately collected waste and on estimates derived from regularly updated waste composition surveys of municipal waste. Where no such surveys are available, the category of mixed waste may be used". **From the 2020 data, 14 countries out of 22 seem not to have applied such waste composition analysis.** Such sentence allows for different interpretations when to use waste composition analysis. In fact, for those countries, the municipal textile waste generation reported is as very low. In addition, residual waste composition analysis in different Member States is undertaken for different purposes, the way it is conducted varies, and therefore they are not comparable. The 30% share of e-commerce accounts complicates the accuracy of data of amounts of textiles placed on the market and the responsible traders. Data on the actual management of textiles following their discard is also not very robust, with little consistent data on the volumes collected, their reuse, their recycling and their disposal.

In the Waste Shipment Regulation, classification of certain textile or textile related product categories (e.g., shoes) is not fully clear, creating administrative burden when trading textile waste, mixed with for example shoes. [6] Textile waste can be classified under Basel entry B3030

[5] EUROSTAT, 2021, https://ec.europa.eu/eurostat/documents/342366/351811/Guidance+on+municipal+waste+data+collection/
EUROSTAT, 2021, https://ec.europa.eu/eurostat/documents/342366/351811/Guidance+on+municipal+waste+data+collection/

[6] See footnote **Error! Bookmark not defined.**

if […] the materials are not mixed with other wastes. [7] Mixed waste does not generally have a separate code and is regarded as "unlisted", resulting in their shipment being subject to the notification procedure. Some shipments of "clothing, accessories and footwear" waste for sorting and subsequent reuse have been stopped as illegal shipments of waste. [8] Some combinations of materials have been included in Annex IIIA of the Regulation, which means they can be shipped without prior consent within the EU. However, clothes and shoes is not a combination included in Annex IIA. The proposal for a WSR includes an empowerment to expand this list of mixtures. It can be noted that while shoes are sought after and have a relatively high price in the secondary market, the have very low recycling potential as they involve different processes, raw material and chemicals compared to textile fibres. [9] Since there are no uniform rules on the sorting requirements for re-use, such as end-of-waste criteria, the enforcement of Union rules on the shipment of waste remains challenging and subject to varied national decisions on the waste or non-waste status of the loads.

The Harmonized System Codes (Basel codes) is developed and maintained by the World Customs Organization and is used by customs authorities worldwide to identify traded products, and specifically for the purpose of subjecting certain waste to one or the other shipment procedure[10]. There are efforts made, both at EU and the global level (WCO) to clarify the interrelation between the CN and the Basel codes which are not fully aligned because they have different starting points: CN typically codes identify materials, without regarding the waste definition, while the Basel or EWC start from wastes as defined by the Convention or the WFD respectively.

Beyond product categories, **there is also confusion on how to consider the origin of textiles, i.e., whether post-industrial, pre-consumer and post-consumer (both from businesses and households) should be included in the scope of the term "textile waste" in relation to obligations under the WFD.** How the industry and Member States apply these categories (i.e. which products are included in which category) is also unclear as relevant data is exceedingly limited. In relation to municipal waste reporting Member States do not consistently include post consumer commercial waste in the municipal waste statistics, such as waste from horeca, hospitals and prisons.

There are different points at which textile materials may or may not be considered as waste are created, with raw, semi-worked, semi-manufactured and semi-made-up products generally becoming waste at the pre-consumer / factory waste stage whilst manufactured and made-up products generally taking the form of post-consumer textiles generally become waste following their use by the consumer.

Waste versus non-waste status

Whether collected textiles are considered waste or not depends on what is understood by the notion of "discards which is central to the definition of waste. Discarding can be interpreted differently depending on the intention of the user and the communication from the collector on the bin or otherwise (requesting only reusable textiles or not, certain specific kinds of textiles

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[7] European Parliament, 2016, https://www.europarl.europa.eu/doceo/document/E-8-2016-003038-ASW_EN.html.

[8] EURIC, *Waste Shipment Regulation proposed legislative revision*, 2022, https://www.euric-aisbl.eu/position-papers/download/1687/586/32.

[9] Maletic, M., *Shoe Recycling Guide: Recycle Your Footwear Responsibly*, Green Citizen, 2022, Shoe Recycling Guide: Recycle Your Footwear Responsibly (greencitizen.com).

[10] Basel Convention, Harmonized System Codes for Wastes, Overview (basel.int)

(only clothes, clothes and shoes etc.) but also on what happens to the discarded item i.e., if a discarded item is collected and reused is it and should it be considered waste at any point or not. [11] There are no EU level harmonised criteria for differentiating waste textiles from used textiles destined for reuse. Therefore, there is confusion as to when the separately collected textile should be considered discarded and hence waste and when it could be considered as given as used good ready for reuse and hence not considered waste. Stakeholders indicate that typically what is collected over the counter or in other manned collection points is not considered waste while what is collected via containers is.

The waste status of used textiles is not applied consistently across Member States – and sometimes also different regions within one Member State. This difference has important implications for textile collection and subsequent treatment in relation to the obligations of the operators collecting, transporting and treating this material, statistics on textile waste. For instance, if textiles are defined as waste upon collection, waste collectors would need to be authorised to collect them, to be registered as a waste collector and to register the quantities collected [12].

In Italy, Austria, Germany, and the Netherlands, all collection of textiles via bring banks is classified as waste collection, regardless of the quality of the textiles or the intent of the deliverer. In France and Sweden, collected textiles are considered as used textile until they enter a waste sorting centre.[13] [14] In other countries, such as the Nordic countries, collection via bring banks is not classified as waste collection, provided collectors clearly indicate the type of material accepted or not.

Also, the WFD does not provide specific end-of-waste, i.e. sorting or other recovery criteria, for textiles so there is no common understanding under what circumstances (common waste categories, common standards for products "prepared for reuse" or "prepared for recycling") textile waste could be considered to have ceased to be waste and should be considered a product, in particular, for the purposes of recognising used textiles for re-use from waste) [15]. The need for harmonised EU level end of waste criteria for preparation for re-use and recycling are among the priority requests from the textile and textile waste industry to reduce the regulatory fragmentation and harmonise the sorting industry's standards and requirements to prepare textiles for reuse and recycling and therefore scale up these activities.

The inconsistent application of the waste and non-waste status to used textiles and the notion of textiles also impact the robustness of the new data flow on re-used textiles under Commission Implementing Decision (EU) 2021/19 on the reuse of products pursuant to which the first data will be reported to the Commission by the Member States in June 2023. The data on re-use of textiles cover used textiles that have never been defined as waste. It is expected that the first set of data available under this act will not be robust due to the lack of clarity that exists in that Implementing Decision, i.e. on the notion of textiles, when used textiles are categorised as waste or used product, under what circumstances reporting takes place under

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[11] ECAP, 2018, http://www.ecap.eu.com/wp-content/uploads/2018/07/ECAP-Textile-collection-in-European-cities_full-report_with-summary.pdf.

[12] ECAP, *Used textile collection in European cities*, 2018, http://www.ecap.eu.com/wp-content/uploads/2018/07/ECAP-Textile-collection-in-European-cities_full-report_with-summary.pdf.

[13] Interview with Refashion.

[14] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

[15] Call for evidence (Policy Hub, Circularity for Apparel and Footwear).

that act or under the Commission Implementing Decision (EU) 2019/1004 which defines the reporting format for reporting on municipal textile prepared for re-use and due to non-harmonised methods for data collection and representativeness of the data sampling that Member States use..

Insufficient textile waste prevention activities and monitoring

The EEA study on 'Progress towards preventing waste in Europe – the case of textile waste prevention' [16] examined approaches of Member States to address textile waste prevention. **Whilst 40 measures were recorded in total only 6 out of 31 national and regional waste prevention programmes included specific indicators on textile waste prevention.** In relation to targets, it was found that none of the programmes quantified targets for textile waste prevention. This is considered as a major drawback in monitoring the effectiveness of waste prevention efforts and policies.

While Member State programmes do contain some measures on the prevention of textiles, as the problem definition demonstrates, the trends in terms of consumption and re-use of textiles are continuing to raise. Various regulatory and economic instruments and incentives can facilitate textile waste prevention, such as, facilitation of re-use, repair, sharing operations and business models through preferable national taxation systems. These measures should also actively engage the users and the producers of textiles to raise the awareness of users on the negative environmental and human health impacts linked to the textile production and waste management to change consumption behaviours. Such awareness raising measures and campaigns are instrumental also for the successful introduction and engagement of the society in participating in the separate collection systems, as demonstrated in other separate collection targeting other waste streams.

Inconsistent and insufficient separate collection schemes

Delays in implementation of the 2018 separate collection obligation

Article 11 of the WFD specifies that Member States shall take measures to promote high-quality recycling and, to this end, requires Member States to set up separate collection for at least for paper, metal, plastic and glass, and, by 1 January 2025, for textiles. Most Member States have transposed the separate collection obligation for textiles in their national legislation and some have already taken steps in planning, regulatory and procurement processes, albeit the implementation planning for five Member States could not be identified. Where plans are in place **a significant number of Member States have yet to adopt the additional measures necessary to implement these provisions in practice (i.e. the organisation of the infrastructure and operational services for separate collection and the supporting infrastructure for the sorting and recycling of the separately collected material). The collection rates are at a very low rate** with 12 Member States that currently have separate collection systems collecting less than 20% of discarded clothing and household textiles. The support study, based on a questionnaire addressed to the Member State competent authorities and literature review, estimates that the **timely implementation of the 2025 separate collection obligation will prove challenging** for the majority of Member States. An overview of the state of planning in relation to textile separate collection in mid-2022 is provided below alongside the state of separate collection in 2021 for each Member State. It shows that most Member States have identified textiles as a priority waste stream with regard to which specific regulatory and organisational measures on separate collection need to be introduced and rolled

[16] EEA, Progress towards preventing waste in Europe – the case of textile waste prevention, 2021.

out across the national territory. It also identifies the countries with regard to which information on the state of planning could not be identified.

Table 1 Overview of textile separate collection rate (in 2021) and the state of planning of further measures across the EU pursuant to Article 11 WFD

Member State	Collection rate %	State of planning in relation to separate collection
AT	30%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
BE	55%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
BG	18%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
CY	20%	Textile waste is determined as a priority waste stream but collection rates remain low
CZ	18%	Textile waste is determined as a priority waste stream but collection rates remain low
DE	62%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
DK	42%	Textile waste is determined as a priority waste stream
EE	17%	No planning identified
EL	18%	Textile waste is determined as a priority waste stream but collection rates remain low
ES	21%	Textile waste is determined as a priority waste stream but collection rates remain low
FI	47%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
FR	39%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
HR	19%	Textile waste is determined as a priority waste stream but collection rates remain low
HU	18%	Textile waste is determined as a priority waste stream but collection rates remain low
IE	34%	Textile waste is determined as a priority waste stream
IT	39%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
LT	31%	Textile waste is determined as a priority waste stream but collection rates remain low
LU	25%	No planning identified
LV	12%	Textile waste is determined as a priority waste stream but collection rates remain low
MT	38%	Textile waste is determined as a priority waste stream but collection rates remain low
NL	45%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
PL	18%	No plannning identified
PT	15%	No plannning identified
RO	18%	No plannning identified
SE	62%	Introduction of preliminary measures and/or application of advanced prevention measures for textile waste
SI	12%	Textile waste is determined as a priority waste stream but collection rates remain low
SK	12%	Introduction of preliminary measures
Total	39%	

Textiles are different to many other materials concerning the way they are collected at the point of discard. Typically, textiles suitable for both reuse and recycling are collected together. This means that to determine their best method of treatment against the waste hierarchy sorting must be undertaken to separate out reusable and recyclable textiles. The reusability and recyclability of material collected can only effectively be assessed after collection, at the sorting stage, either through manual or automatised sorting.

Additionally, there is no available detailed and accurate information on the types and quantities of textiles typically collected (clothes, household textiles, etc.). Consequently, there is no indication if and which of these categories may have better prospects of being reused ore recycled, except for shoes for which sorters and recyclers confirmed that they have a relatively high reuse value but very little recycling potential. The **Member States** with some separate collection of textiles networks already in place, those in the process of rolling them out or those only considering the possible options have **identified different scopes in terms of the products covered by the separate collection activities** as detailed in Annex 6. There are also different approaches to collecting textiles both for reuse and recycling, with clothing and household textiles generally separately collected through separate collection bins but mattresses and other similar bulky materials containing textiles collected curbside or disposed of in civic amenity sites. Post-consumer textiles from commercial sources (e.g. horeca, hospitals, prisons, schools) are subject to private waste management operations which may also entail separate collection. Stakeholders consider that this fragmentation, making the collection largely limited to household used clothes, is an additional barrier to collection.[17] It also hinders the development of at scale sorting and subsequent treatment of sorted textiles that would provide a consistent supply, composition and quality of textiles for an integrated market in reuse markets for textiles and markets for secondary raw materials from textile waste.

The table below illustrates the wide variety of the textile products that are subject to separate collection systems nationally. This impacts the material composition of the collected material and the cost and therefore the feasibility of subsequent sorting for re-use or recycling since sorting operations generally have predefined acceptance criteria for the material composition it may process. The information in this table is gathered based on a questionnaire survey of Member State competent authorities and an analysis of available literature. Most collection schemes focus on the collection of small textile items from households.

Table 2– Scope of separate collection schemes in the EU Member States, 2022

Member State	Scope of products accepted in the separate collection systems for textiles
Belgium	Flanders: Clothing and accessories (belts, bags, shoes per pair) – Bedding (pillows, sleeping bags, sheets, blankets and duvets) – Kitchen and bathroom textiles – Home textiles (tablecloths, curtains, seat covers) – Cuddlies – Clean rags, textiles with small defects. Brussels: clothing, household textile, footwear, bedlinen, towels.
Bulgaria	EPR: textile and footwear.
Czechia	Clothing, household textile, footwear

[17] Stakeholder workshop.

Germany	Separate collection: clothing, household textiles and footwear
Denmark	Separate collection on textile waste: clothing and other household textile waste that is not suitable for reuse. Footwear is not included.
Greece	Clothing, household textiles, professional clothing and textiles. Also, an EPR for mattresses under study.
Finland	Clothing, textiles
France	Clothing, household textiles and footwear
Croatia	Clothing, household textile, professional clothing and textiles. Also, an EPR for mattresses under study.
Hungary	Currently: clothing, shoes. Planned EPR: clothing, household textiles, curtains, carpets and textile floor coverings.
The Netherlands	Clothing, household textiles, shoes. EPR: clothing

Lack of information on or fragmentation of waste management responsibilities

Further, **there is great variety in the responsible entities that are legally responsible for the collection of textiles**. **f**or many Member States, textile collection operates in the absence of specific legislation assigning responsibility for the management of textile waste, principally through charitable and commercial collectors. [18] In view of the mandatory separate collection obligation to be implemented, this responsibility should be specifically assigned since it entails management costs. The various approaches of Member States have led to significant diversity in the way that separate collection schemes operate as well as the level of Member State maturity with respect to amounts separately collected across the EU[19]. In some cases, due to the presence of several actors collecting textiles in the same territory, there can be situations where competition builds between them. Where social enterprises/charities operate in the same locations as commercial textile collectors this may also impact on the ability for social enterprises to operate effectively. An overall coordination of the instructions to citizens on the separate collection systems from all the actors is important to avoid the confusion of citizens who generate textile waste and, where appropriate, also of the citizens' desire to partake in social and charitable activities. To reduce confusion among citizens, some municipalities decide to grant permission to collect textile waste to only few actors. Municipalities also take part in textile collection and are responsible for the subsequent treatment and ownership decisions, including passing collected waste to charities or social enterprises or commercial collectors. [20]

[18] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

[19] See footnote 7, p. 6, stakeholder workshop.

[20] ECAP, 2019. ECAP and used textiles. http://www.ecap.eu.com/wp-content/uploads/2019/07/Guidance-for-Textiles-Collections.pdf

The great variety of actors engaged in collection and the fragmentation of the resulting material streams hampers coordinated investment planning in collection, sorting and subsequent management infrastructure, as noted in the stakeholder interviews undertaken and duplicated in the textile stakeholder workshops. The confusion in responsibilities, actors and collection systems put in place provide a source of confusion for stakeholders in how to manage their textiles at the point of discard and planning at the municipal level challenging.

Some **Member States have indicated that they are waiting for the outcome of discussions at EU level in the context of this initiative to take stance at national level on the separate collection implementation**. This is related to decisions both in terms of the scope of textiles subject to the obligation and to the collection approach, namely giving the responsibility of the separate collection obligation to municipalities (such as Finland) or to the producers of textiles through the setting up an EPR scheme, including its specific operational and organisational features (such as Netherlands) and the role of commercial and social/charitable enterprises (such as Spain mandating a specific share of textiles to be collected and managed by social enterprises).

Inconsistent application of extended producer responsibility

With regard to those Member States that have established an extended producer responsibility (EPR) to manage textile wastes or those that are assessing the feasibility of doing so and its features, **a divergence in approaches to defining the scope, operational and organisational features of the EPR schemes can be observed**. France is currently the only Member State with an EPR for textiles in place. The Netherlands, which was due to implement EPR for textiles on 1 January 2023 (and has been delayed until summer 2023 according to the latest information available) will be the second Member State to implement EPR for textiles and Sweden, based on the state of its national discussions, could become the third country to introduce it. The scope and operational and organisational features of these EPR schemes varies and the potential for other yet different EPR schemes for textiles across the EU risk the development of rapidly diverging schemes. This regulatory fragmentation would hamper the development of an integrated Union market for re-use and waste textile management and uptake of secondary raw materials because the compliance costs and the administrative burden resulting from the manoeuvring potentially 27 different EPR rules and uneven level playing field for the involved operators across the EU would hamper their ability for coordination and investment in sorting and recycling which are intrinsically cross-border activities and sensitive to the demand market needs as well as other market factors such as the labour costs of sorting operations.

The below table compares the approaches applied in the EPR schemes for France, the Netherlands and Sweden (based on a draft decree subject to public consultation) for certain operational and organisational features of the EPR schemes. Any divergences that apply across the Member States for the same product or the same obliged economic operator would create administrative burden that would impact their competitiveness and ability operate across the common EU market. As the facts and figures laid down in Annex 6 explain, the textile sector is highly integrated both at placing on the market of textiles, used textiles and sorting and recycling activities. The table demonstrates that there is a difference in the scope of products covered by the EPR schemes and the mode how the products are identified, namely, the degree of legal certainty offered on which products are within the scope and which not. These differences create uneven level playing field to the producers operating in different Member States and reduces the competitiveness of the producers operating across several Member States due to compliance costs resulting from understanding and operating under different

regulatory regimes for the same product and activity. The varied scope will also undermine the attainment of economies of scale for sorting and recycling which require consistent and standardised composition. Another key difference is the different approach to treating SMEs and the criteria for fee modulation.

Criteria	Member State		
	FR	NL	SE
Scope	New clothing textile products, shoes or household linen intended for private individuals and, from 1 January 2020, new textile products for the home, excluding those which are furnishing elements or intended to protect or decorate items of furniture. Note that CN codes are not specifically addressed in the Ministerial Decree;	Using the relevant CN codes: Household textiles : table, bed and household linen as referred to in Chapter 63, Part I, heading 6302 Clothing : consumer and industrial clothing as referred to in Chapters 61 and 62; Specifically excluded goods are: Shoes, bags, belts (no textile products); Unsold inventories at producers (not placed on the market); Returns to producers upon cancellation of purchase (not placed on the market); Blankets (6301); Net curtains , curtains and roller blinds (6303); Bedspreads (6304); Pockets (6305); Tarpaulins , sails , tents (6306); Mop , Dishcloths , Cleaning Cloths , Dusters (6307)	Using the relevant CN codes: 4202 1291 Bags with textile exterior 4202 1299 Bags with textile exterior 4202 2290 Bags with a textile exterior 4202 3290 Articles normally carried in the pocket or purse 4202 9291 Bags with textile exterior 4202 9298 Bags with textile exterior 57 Carpets and other textile floor coverings 61 Clothes and accessories for clothes knitted or crocheted 62 Clothing and accessories for clothing not knitted or crocheted 6302 Bed linen, table linen, toilet towels, kitchen towels and similar articles 6303 Curtains, blinds and draperies; curtain valances and bed valances 6304 Other furnishing articles
Reporting frequency	Annual	Annual	Annual
Reporting date	By March 31 on previous years data	By 1 August on previous years data	By March 31 on previous years data
SMEs addressed	Yes, albeit a flat fee of 75 euro per year is applied to producers with less than 750 000 euro turnover per year or if they sell less than 5 000 products in France	A further explanation is also requested of the possibility of exempting small producers from the reporting obligation in the ministerial regulation. The latter is indeed possible: an exemption can be included for producers who produce up to a certain size. In the case of plastic packaging, for example, it has been decided in the ministerial regulation on packaging reporting that producers who use less than 50,000 kilograms of packaging annually are exempt from the reporting obligation under the Decree. No decision has yet been taken on whether an exemption will be applied to textile producers and where the limit would be. This is laid down by ministerial regulation. A basis for this is included in Article 7(3) of this Decree. No decision on this has yet been taken	The investigation has assumed that all manufacturers, sellers and renters of textiles are producers. This would include SMEs.
Obligation to use a PRO	Producers can either set up an individual scheme for the recycling and treatment of this waste or can contribute financially to an organisation created for this purpose and to which they belong (a producer responsibility organisation - PRO).	Producers can jointly implement the obligations arising from the EPR textiles (Article 6 of the EPR Decree). The obligations resting on the individual producers will then be transferred to the producer organization, which will notify the Minister of Infrastructure and Water Management on behalf of these producers. It is estimated that the implementation of the Decree will cost 16.8 FTE at the level of individual producers, compared to an expected 5.8 FTE if a producer organization is present.	Producers can use a PRO but it is not obligatory.
Eco-modulaton	Eco-modulation is applied based on durability and recycled content of products	This is regulated in Article 6, third paragraph, of the UPV Decree. The fourth paragraph of this article obliges the producer organization to differentiate the contribution of producers if possible, in particular by taking into account the entire life cycle of products and the durability, reusability, recyclability and the presence of hazardous substances. In view of Article 6(4) of the EPR Decree, however, tariff differentiation falls under the responsibility of the producer organisation(s).	In order to obtain permission to operate a collection system, the applicant must thus demonstrate that the fee for an individual producer, whenever possible, adapted based on the properties of the textile that the collection system has undertaken to take care of when it becomes waste. When the fee is calculated, a life cycle perspective must be applied and special consideration must be given to properties that affect the textile's active lifespan and material recyclability. If the Commission publishes guidelines and adopts harmonized criteria, the operator of the collection system and the Swedish Environmental Protection Agency can use these as a starting point when applying this requirement.

Several other Member States are at different stages of planning or assessing the feasibility and appropriateness of introducing an EPR, including the different features of the EPR schemes. This increases the risk of further regulatory fragmentation for same products and economic operators. As these schemes develop it is expected that the divergences identified in the case of French, Dutch and Swedish systems will continue on a larger scale across the EU as Member States determine the scope and nature of their own schemes. In each of these cases variation of the requirements is likely to result in a lack of level playing field across the EU for producers, re-use and waste management operators, their competitiveness and ability to effectively and swiftly scale up re-use and recycling of textiles.

- **In Bulgaria**, there is a legal requirement in place to set up an EPR scheme for textiles, with a delegated act expected to follow shortly. The Bulgarian Waste Management Act (WMA) was amended in 2021 so as to include textiles as the seventh stream to be managed under EPR. All Bulgarian EPR schemes (including future textile ones) operate on a competitive basis, involving two or more EPR organizations. Regulatory details on the scope of the textile EPR scheme are meant be presented in the upcoming delegated act. That being said, one of the key regulatory aspects already clarified in the WMA has to do with the minimum requirements which future textile EPR organizations need to meet in order to start their operations. For example, these requirements relate to a minimum financial guarantee which has to be deposited by each EPR organization at the start of its operations, as well as a legally mandated minimum number of municipalities that must be served by every EPR organization. As of 2022, there are two prospective producer responsibility organizations (PRO) for textiles which have already paid the required financial guarantee and are currently in the process of concluding contracts with municipalities.

- In **Belgium**, a voluntary system called Circletex is in place. The aim of Circletex is to facilitate the collaboration between service providers, manufacturers and other stakeholders and meet the supply and demand of materials and products. They also facilitate separate collection, sorting and valorisation of pre-consumer and post-consumer textile flows. In doing this, they apply the principles of circular economy. In phase one, they created a PRO. At this stage, their focus is on reporting and data gathering. They collect fees which consist in provisions until the start of EPR scheme.

- In **Italy**, Sistema Moda Italia (SMI), a trade association for Italian textile companies at the industrial level, in view of making the textile industry more resilient, have argued for a harmonised EPR system and proposed the scope of EPR to include clothing, household textile, footwear, and leather accessories. The EPR scheme would include all types of textile products including household textiles and professional textiles. The EPR scheme also entails prevention of waste as part of the objectives of EPR.

- In **Spain**, the legislation on waste mandates the establishment of the separate collection of textiles by the 31st of December 2024, and the EPR will be mandated within 3 years. A law on EPR has been adopted in April 2022. The observatory of the textiles industry ("Observatorio español") was created by sectorial organisations (representing more than 350 organisations) - among others, they are engaged in the scoping and research work need to create a Spanish EPR for textiles.

- In **Slovakia**, the Slovak Ministry of Environment is considering EPR for the future collection, treatment and recycling of textile waste.

- **Finland** on the other hand has chosen to introduce separate textile waste collection by 2023 with a nationwide collection system involving all Finnish municipal waste companies and mechanical processing plant, with intentions to process post-consumer textile waste from Finland and potentially also from the Baltic Sea region. Research suggests a market potential in Finland for mechanical recycling of textiles worth between €60 million and €120 million with employment creation between 150 and 300 jobs following initial investment in the range of €20- 30 millions.

Insufficient sorting and recycling capacity

The lack of a harmonised definition of 'textiles' and of the scope of textiles subject to separate collection is not conducive to planning and scaling up sorting and recycling infrastructure across the EU where it negatively impacts the cross-border shipments in used and waste textiles and the consistency in scale and composition of material flows to attain economies of scale. It is also the responsibility of the Member States to identify in their national and regional waste management plans the amount of textile waste generated and the infrastructure needed to collect and treat it, including the financing sources; therefore, it is within the remit of the competent authorities to engage with the economic operators in securing the treatment installations for the treatment of its waste.

Sorters consulted in the context of this initiative have indicated that manual sorting remains profitable in the context of the overall reuse business case if a maximum of about 20% of the collected textiles are waste. Several studies have taken place to analyse the textiles currently disposed of in residual waste that would be additionally separately collected and their possibility to be reused or recycled.

The results of the analysis undertaken is summarised in the table below. The presented numbers give a wide range of reusable, recyclable and waste (not reusable or recyclable) textiles found in residual waste depending on the scope of textiles assessed in each study. This, in part, reflects the different levels of separate collection in place with lower levels of separate collection likely to inform higher levels of reusable and recyclable textiles found in residual waste and vice versa. As an average, therefore, it is considered that of textiles currently discarded in residual waste 24% is likely to be reusable on average, 31% would be recyclable (notwithstanding further technological developments in sorting and recycling technologies) and 42% would likely be residual waste.

Table 3 – Textile waste potential to be reuse and recycled

	Reusable	Recyclable	Waste (not reusable or recyclable)
NL 2015[1]	24%	32%	44%
NL 2016[1]	20%	31%	50%
NL 2017[1]	23%	29%	30%
NL 2018[1]	28%	30%	42%
DK[2]	23%	64%	13%
DK[3]	65%		
SE[4]	59%		
UK[5]	59%		
UK[6]	43%		

Sources: [1]Rijkwaterstaat 2020[21]; [2]Watson et al, 2018[22]; [3]Nørup, 2019[23]; [4]Hultén et al, 2016[24]; [5,6]JRC, 2021[25]

The information provided in Annex 6 indicates that at present 0.5 -1.0 Mt of used and waste textiles leave the EU unsorted due to a **gap in sorting capacity**. There is also a **lack of recycling infrastructure in the EU**. Closed-loop textile-to-textile recycling processes are still under development and have not yet reached commercial stage or market penetration on a large scale. [26] There is also a lack of funding for sorting capacity and recycling technologies. Many of the more promising chemical recycling technologies are still not operating at industrial scale. As such, only a minor share of used and waste textiles is recycled into new textiles (further information available in Annex 6), such as clothing. [27] Current textile recycling processes are often a matter of downcycling where the recycled material is of lower quality and functionality than the original material. Approximately 30% of the used textiles that are separately collected in Europe each year are used as industry wipes or for other recycling purposes on European and global markets. [28] The exact timescales and scale for rollout of greater recycling capacity and development of recycling technologies also remain unclear albeit Rehubs indicates funding needs of €6-7 billion up to 2030 with the source of this funding also unclear.

Looking at the level of collection of textile waste within the EU that sits at approximately 2.44 million tonnes per annum and reuse that is approximately 1.10 million tonnes per annum, the maximum amount of textiles that would be available for recycling sits at approximately 1.34 million tonnes per annum. However, current recycling capacity within the EU sits at approximately 0.70 Mt-0.85 Mt per year[29], dominantly for open loop recycling. A current recycling gap of approximately 0.49-0.64 million tonnes currently exists A move to use greater levels of closed loop recycling would see an even greater investment gap that would need to be addressed.

To make recycling economically viable, **the recycling industry needs sufficient and regular volumes of well-sorted textile waste of a certain quality**. The amounts of textile waste collected are not yet sufficient for recycling to take place at an industrial scale. An increase in

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[21] Rijkswaterstaat 2020. Samenstelling van het huishoudelijk restafval, sorteeranalyses 2019 (Composition of household residual waste, sorting analysis 2019). Rijkswaterstaat. Dutch Ministry of Infrastructure and Water. available at: https://www.afvalcirculair.nl/onderwerpen/linkportaal/publicaties/downloads/downloads-0/samenstelling-7/

[22] Watson, D, Trzepacz, S. & Gravgård Pedersen, O. 2018b. Mapping of textile flows in Denmark. Danish Environmental Protection Agency Project no. 2025.

[23] Nørup 2019. An environmental assessment of the collection, reuse, recycling and disposal of clothing and household textile waste. PhD Thesis from Danish Technical University (DTU).

[24] Hultén, J., Johansson, M., Dunsö, O., Jensen, C. 2016. Plockanalyser av textilier i hushållens restavfall, En kartläggning av mängder och typ av kläder, hemtextilier och skor. Report by IVL and SCB in Swedish for SMED.

[25] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

[26] See footnote **Error! Bookmark not defined.**

[27] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

[28] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

[29] Joint Research Centre. 2023. "Techno-scientific assessment of the management options for used and waste textiles - Preparatory study for the possible setting of preparation for re-use and recycling targets" (unpublished work).

collection rates would ensure that more textiles are collected, but not that the quality of the textile waste is sufficient to reintroduce these textiles into a circular loop. Indeed, the composition of non-reusable textiles waste arising in Europe is largely unknown, and this knowledge gap may be hindering private investment in industrial scale recycling facilities. In comparison to post-consumer waste, post-industrial waste is likely to consist of a smaller variety of fibre types and material blends [30] and have a well-identified material composition compared to post-consumer waste [31]. There is also a lack of industrial scale technologies for sorting the collected textile, separating blended fibres, separating fibres from chemicals including colour during recycling, and establishing which chemicals were used in the production in the first place. Manual sorting is unable to meet the demands of the recycling industry to provide the consistent quality and large volumes that are required for textile recycling at large scale, as the process is time-consuming and not cost-competitive.[32]

The support study found that sorting and recycling technologies are not presently mature enough to deal with the complexity of textiles. The input requirements for closed-loop recycling have specific needs in terms of purity of input and these often require manual and automated sorting that drive up the costs. There is also the need to remove disruptors like zips, buttons and the like prior to recycling. The recycled fibres are shorter and lower quality and thus lose 75% of their value. They are therefore not usually used to manufacturing new clothes, but are rather downcycled into insulation material, wiping cloths or mattress stuffing[33]. The recycling business model is weak due to high costs and low market demand since recycled textile fibres are not competitive compared to virgin fibres[34]. The JRC[35] notes that the use of waste in replacement of primary materials, if used by final consumers, is often prevented by the waste status of the material. Waste is associated with discarding and users may fear to use waste instead of primary materials with a predicted quality.

There are also limited research and development funding opportunities. The current research focuses on recycling of clothing and not of footwear or household textiles. There is lack of recycled content commitments by the industry or legal requirements setting such requirements in new textile products, which could boost the uptake of recycled materials in textiles, and would drive the demand side for recycled materials, engaging the recycling industry in long term infrastructure investments. In terms of the Technology Readiness Levels (TRL) of textile recycling technologies, a European Commission technical study[36] identified the following information.

Table 4 – Technology Readiness Levels of different recycling technologies

Textile recycling technology	**Current TRL**	**Year expected to reach TRL of 9**
Mechanical recycling	9	Present day

[30] See footnote 145, p. 87.
[31] See footnote **Error! Bookmark not defined.**
[32] Call for evidence (TOMRA).

[33] European Parliament, 2019. https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2019)633143.
[34] See footnote **Error! Bookmark not defined.**
[35] JRC, *End-of-waste criteria*, 2009.
[36] See footnote **Error! Bookmark not defined.**

Mechanical recycling to spinnable fibres	7	Not specified
Thermo-mechanical recycling of post-industrial waste	7	2023
Thermo-mechanical recycling of blends of thermoplastic materials	2-3	Not specified
Thermo-chemical recycling	9	Present day
Polymer recycling of cotton	7-9	2025 for those currently 7-8
Monomer recycling of PA6 and PET	9 for PA6 textiles, 4-& for PET textiles	Present day for PA6, 2023 for first PET textiles technologies
Recycling of polycotton blends using solvent-based dissolution and filtration	5	2024/2025
Recycling of polycotton blends using hydrothermal technologies	6-7	2023/2024
Recycling of polycotton blends using enzymatic route	6	2023

Further, hazardous substances can potentially be present in recycled materials obtained from textile waste, be it as a result of prior use of currently restricted substances in the textile itself or the textile getting soiled with hazardous substances during use or contamination resulting from mixing with other waste streams. [37] These information gaps about the amount and nature of hazardous substances in textiles make it difficult to assess whether the different recycling technologies will be effective in removing these substances and can make the recycling process more difficult and expensive. [38] In comparison to post-consumer waste, pre-consumer and post-industrial waste is likely to consist of a smaller variety of fibre types and material blends with the identification of the material composition simpler compared to post-consumer waste. Additionally, contamination by soiling of post-industrial and pre-consumer textile wastes is generally not an issue. Post-industrial pre-consumer wastes are also less likely to contain disruptors such as buttons and zips meaning that the waste materials that are generated are more suitable for recycling that post-consumer textiles and is part of the reason why some recycling technologies limit themselves to processing post-industrial or pre-consumer textile waste streams. This makes these types of waste a valuable input to supporting the development of recycling infrastructure across the EU.

[37] H&M group, IKEA, Adidas, Bestseller, PVH, Gap Inc, Kingfisher, *Collaborative study on chemicals in recycled textiles*, 2021, https://www.naturvardsverket.se/contentassets/be04327b5a874955a5402d4f663d1632/webinar-collaborative-study-chemicals-recycled-textiles-hm-ikea.pdf.

[38] See footnote **Error! Bookmark not defined.**

The JRC study "Assessment of the definition of recycling"[39] indicates that "quality of recycling is a rather complex concept, at the same time acknowledged as very important and left undefined in both EU acquis and scientific literature…The quality is important as it determines the type of use of the recyclate and its further recyclability. This in turn affects the closure of material loops in specific sectors/markets, i.e., the circularity".

The share of worn out and lower quality textiles has increased, due to the large market share of fast fashion (characterised by low-price, low-quality clothing) and to emerging trends of consumers selling their best quality textiles themselves via C2C exchange platforms[40]. There is also some confusion on what textiles to give for collection. Citizens typically don't give what they do not themselves consider reusable but this may in fact be reusable on global markets or, failing that, recyclable. A message that everything is accepted can solve this issue and increase collection rates. On the other hand, collecting worn-out textiles negatively affects the economics of the collector; collection costs per tonne remain relatively unchanged, sorting costs increase, and the price per kg that textiles can fetch on global markets falls rapidly as the reusable share reduces. The share of top-quality reusable clothing has also been decreasing because the amount of separately collected textiles is increasing in Europe[41].

In practice, re-usability and recyclability of the textiles collected can only effectively be assessed after collection, through professional sorting. [42] The **lowering quality of textile causes less possibility for reuse in the EU and the global market.** In France, for example, the volumes of items going for reuse has decreased by between 10% and 15% during the last 3-4 years. [43] Even textile collectors in the Nordic countries, with traditionally high shares of top-quality reuse clothing ('crème'), experience an increased used textile market pressure. Whereas collectors with long term contracts and higher than average quality can still sell collected textiles with no sorting ('original') at higher prices, the on the spot-market has dropped to 20-26 Eurocents per kilogram[44]. This represents less than a third of market prices reached some years ago [45]. This creates strain on the business models of charity actors, who rely on the good quality of reusable textile to finance their activities and also creates costs for the disposal of non-reusable textiles when charities receive such products.

Market failures

Distorted incentives

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[39] Grant, A., Cordle, M. and Bridgwater, E., Quality of Recycling - Towards an operational definition, Canfora, P., Dri, M., Antonopoulos, I. and Gaudillat, P. editor(s), Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-25426-3, doi:10.2760/225236, JRC122293.

[40] Köhler, A., Watson, D., Trzepacz, S., Löw, C., Liu, R., Danneck, J., Konstantas, A., Donatello, S., Faraca, G., Circular Economy Perspectives in the EU Textile sector, Publications Office of the European Union, 2021.

[41] Euwid Recycling & Entsorgung, (2019); Ljungkvist et al, (2018) in Danish Environmental Agency,2020. Towards 2025: Separate collection and treatment of textiles in six EU countries.

[42] Watson, D., Kirstine Aare, A., Trzepacz, S. and Dahl Petersen, C., *Used Textile Collection in European Cities*, ECAP, 2018 Technical report templates (ecap.eu.com).

[43] EEA, *Progress towards preventing waste in Europe - the case of textile waste prevention*, 2021.

[44] Euwid Recycling & Entsorgung (2019) in Danish Environmental Agency,2020. Towards 2025: Separate collection and treatment of textiles in six EU countries.

[45] Danish Environmental Agency, *Towards 2025: Separate collection and treatment of textiles in six EU countries*, 2020.

Textile producers/ brands lack incentives to design long-lasting, reusable and/or recyclable products[46]. In addition, prices of new textiles do not account for the negative environmental externalities of manufacturing, transport and waste management. These negative externalities are significant, with the EEA[47] noting that textiles have on average the fourth highest negative life cycle impact on the environment and climate change, after food, housing and mobility including in relation to:

- Raw material use amounting to 391kg per person in the EU per annum.
- Water use amounting to 9m3 per person for the production of textiles and 44m3 per person for the production of the raw materials used in textile production per annum. 88% of
- Land use in the supply of textiles to the EU of around 180 000 km^2.
- Greenhouse gas emissions of 270kg CO2e per person per annum.

Most of the environmental impacts generated by Europe's textile consumption takes place outside Europe, that is the case of 80% of primary raw materials, 88% % of water and 92% of land used, and 73% of greenhouse gas (GHG) emissions.

Additionally, the waste management costs of used clothing and household textiles are not addressed in the price of new products. On average, the costs of collection and treatment would equate to approximately 12c per item. However, these costs vary by item type, with those involving a mix of textile fibre types and the inclusion of disruptors (for example buttons and zips) costing more to manage and those that comprise a single fibre type with no disruptors such as T-Shirts costing less. Given the large volumes of textile wastes currently disposed of in residual waste the costs of disposal and the environmental externalities of that disposal including emissions from incineration / energy recovery and emissions from landfilling are also not addressed in the pricing of new textiles.

Furthermore, it is often cheaper to buy new products rather than repair broken ones, partly also due to their low quality. Labour costs in particular impact on the competitiveness of repair in comparison to buying new purchases that benefit from economies of scale producing the same good in a batch rather than tailor repairs that operate on an item-by-item basis.

There is also insufficient collection of non-reusable textile, given that **traditional collection focuses on collecting textiles for reuse** and concerns mainly post-consumer waste. There is little/no focus on collection for recycling because of the high costs of collecting non-reusable textiles[48] and according to stakeholders, little focus on post-industrial waste and post-consumer commercial waste.[49]

Lack of circular business models

Current product design practices hamper the development of circular business models at scale that could extend the lifespan of products: reuse, repair, remanufacture, product-as-a-service systems (textile leasing, rental, etc.)[50]. It also leads to some textiles not being fit for recycling.

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[46] Stakeholder workshop, call for evidence.
[47] EEA, 2022. Textiles and the environment: the role of design in Europe's circular economy
[48] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144
[49] Stakeholder workshop.
[50] Stakeholder workshop, call for evidence (Policy Hub, Circularity for Apparel and Footwear).

It is particularly difficult to determine the size and trends of the reuse market because of many sales taking place informally such as physical donations to known people, markets, and the numerous online platforms or apps. However, sales data from online platforms shows an explosion in growth with younger, style-conscious shoppers being the main driver of the growth[51]. It is also difficult to determine whether second-hand purchases replace new ones or not. Farrant et al. (2010) found that the purchase of 100 items of SHC was estimated to reduce the purchase of between 60 and 85 virgin clothes, depending on the place of reuse[52]. As of mid-2023, Member States will also have to report data on the amounts of textiles reused (from reference year 2021), in line with Implementing Decision (EU) 2021/19 [53] which lays down a common methodology and a format for reporting on reuse. In the annexes to the legislation, the format for reporting includes a section on quality of the data. Member States are required to identify and describe which public authorities are responsible for the adoption and implementation of measures on reuse, which products these measures address, which reuse operators are addressed by the measures and which actions Member States take to assess reuse through indictors and targets. Additionally, Member States are obliged to report the content of the measures, e.g., logistical, economic, physical and educational (including awareness raising campaigns) measures supporting reuse operators. The first data (on 2021) is to be reported by Member States mid-2023. As this is a novel exercise for many Member States, some data quality issues are to be expected.

Insufficient funding for waste management and low demand for recycled materials

Reuse sales currently finance the collection and sorting necessary to extract the 'crème' that can be sold for a profit. Sorting at this stage is manual as the market potential of the textiles is based on their quality and state but also on their potential to be sold, i.e., the tastes, seasons. Some sorters have their own second-hand shops in the EU and some have developed or plan to develop their own recycling facilities, such as Oxfam or Les Petits Riens. As indicated by EuRIC in their position paper, **waste streams that do not have a positive value**, i.e., whose costs for waste management cannot be covered by the sale of the raw materials recovered (and from reuse in the case of textiles), **require the setting up of an EPR scheme**. The French Law No. 2020-105 on the fight against waste and the circular economy in France (known as the AGEC law) provides for the establishment of a fund dedicated to the financing of reuse (and repair) activities within the framework of the EPR system, with funding allocated based on procedures, open to organisations of the social and solidarity economy.

Further, clothes' rental businesses (B to C) or informal resale (C to C) incentivise higher uptake of higher quality and more expensive clothes. **The C2C used textile market has also shown to encourage customers to buy more** reused products because they are cheaper. However, given the environmental impacts of reused products versus new products, the environmental benefits of second-hand garments still outweigh the potentially larger quantities bought. In addition, consumers could be incentivized to buy more new products as they know that they

[51] The Conversation, 2022, Do you shop for second-hand clothes? You're likely to be more stylish (theconversation.com).
[52] Farrant, L., Olsen, S.I. & Wangel, A., 2010, https://doi.org/10.1007/s11367-010-0197-y.
[53] Commission Implementing Decision (EU) 2021/19 of 18 December 2020 laying down a common methodology and a format for reporting on reuse in accordance with Directive 2008/98/EC of the European Parliament and of the Council (notified under document C(2020) 8976), EUR-Lex - 32021D0019 - EN - EUR-Lex (europa.eu).

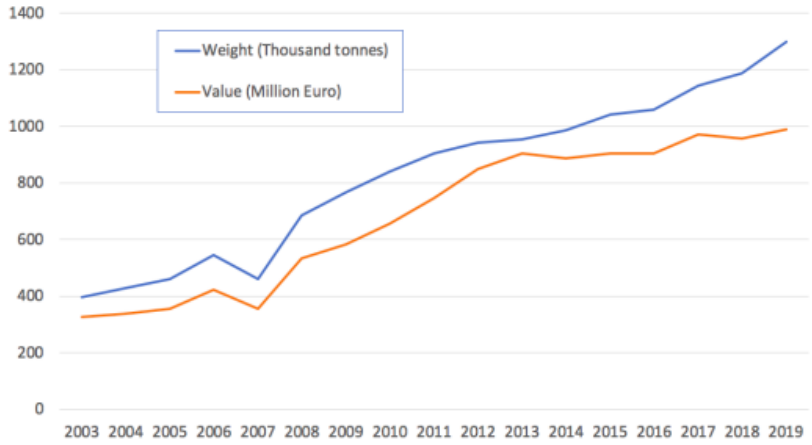
will be able to subsequently sell their products on the second-hand market.[54] [55] [56] The trend shows however that such new products are more expensive, of higher quality and have longer durability, which is also favourable from its environmental impact compared to fast fashion textiles.

Following the sale of the 'crème' in the EU, the next most profitable channel is to sell the remaining reusable items in third countries, mainly to developing countries causing pressure on the local textile production. Sorters are often dealing with a limited number of actors in specific markets to sort out the textiles that correspond to each market's criteria. Based on the support study, the estimated reuse rate is 58% of waste collected. This reuse rate as share of collection for the period 2030-2035 was estimated using the reuse rate as share of waste generation estimated by McKinsey base-case scenario for 2030.

The reuse market relies heavily on the export of the textiles with the declared purpose of reuse. However, the **increasing volumes of textiles mean that some reuse markets are saturating**, contributing to increased waste generation as products of low quality have a shorter longevity. Global markets for reuse have also been affected by a stagnation in demand, particularly because of cheap primary clothing available[57] affecting the value more than the volumes. EuRIC[58] notes that EU's export of textiles has increased from 400,000 tonnes in 2003 to 1.3 million tonnes in 2019, whilst the value of exported materials has followed a different trend with the price of used textiles falling from 0.95 euro per kg of textiles in 2013 to 0.70 euro per kg in 20203, making business less profitable for second-hand garment traders. Indeed, **there is some uncertainty about whether it is all in fact reused**. A recent investigation by Changing Markets indicates that those interviewed in Kenya were universally of the opinion that the amount of unusable clothing arriving from abroad has increased significantly in the last few years. This portion is mainly composed of cheap, synthetic clothing that ends up as fuel, burnt or dumped in rivers and dumpsites.[59]

Figure 1 – Growth in exports of sorted used textiles, including apparel and household textiles, from EU-27 by weight and value

[54] Carrasco Campos, P.A. (2022) Circular economy rebound effect in the context of secondhand clothing consumption in the Netherlands.
[55] Interview with RREUSE.
[56] Farrant, L., Olsen, S.I. & Wangel, A. Environmental benefits from reusing clothes. Int J Life Cycle Assess 15, 726–736 (2010). https://doi.org/10.1007/s11367-010-0197-y
[57] RREUSE, *Research study on developing reuse networks in Europe*, 2022.
[58] EuRIC, 2023. LCA-based assessment of the management of European used textiles
[59] Changing Markets Foundation, *Trashion: The stealth export of waste plastic clothes to Kenya*, 2023. (due for publication Feb 2023, http://changingmarkets.org/wp-content/uploads/2023/02/Trashion-Report-Web-Final.pdf.



Source: JRC

The WSR applies to waste. In the case of textiles that are considered fit for reuse, Member States may consider that such materials are not waste and that the WSR will not apply to the materials that are being shipped. This non-waste determination effectively removes the traceability requirements in relation to the textiles exported as well as the need to ensure their environmentally sound management (ESM). Since there is no traceability, waste textiles can also be mixed in with reusable materials and inappropriately shipped to third countries.

The local waste management rules and/or facilities in third countries are not always equivalent to the levels set in EU legislation. [60] In this context and due to the claim that the import of reusable textiles negatively impacts local manufacturing, some countries have placed bans on the import of used goods (Rwanda in 2018, Kenya temporarily in 2020). [61] A working hypothesis is that the 'crème' of those exported textiles is sold in the third country it was imported to and is enough to finance the purchase of the entire bale.

After the different reuse possibilities are exhausted, materials are sold for recycling and sorters will pay a fee for the textiles that are not suitable for recycling for them to be disposed of correctly in the EU (or elsewhere).

Information failures

There are significant information shortages in relation to textile waste that are further exacerbated by the disparate way in which Member States collect textile and waste textile data that prevents well informed actions to be put in place to address textile waste generation in the first place. The composition of post-consumer textiles if often unknown as labels get removed or are illegible. It would also be extremely time consuming to read the label of each textile item to determine its composition. The presence of hazardous substances is also an issue for recycling as explained above.

In 2020, the biggest net importers of global used textile were Ghana (USD 181M net trade value), Ukraine (USD 154 net trade value), Nigeria (USD 123M net trade value), Kenya (USD 122M net trade value) and Tanzania (USD 102M net trade value). Sorters claim that the costs

[60] Greenpeace, *Poisoned Gifts. From donations to the dumpsite: textiles waste disguised as second-hand clothes exported to East Africa*, 2022, https://www.greenpeace.org/static/planet4-international-stateless/2022/04/9f50d3de-greenpeace-germany-poisoned-fast-fashion-briefing-factsheet-april-2022.pdf.
[61] The Exchange, Africa is fighting a losing battle banning used apparel, 2021, https://theexchange.africa/industry-and-trade/africa-second-hand-clothes-imports-ban/.

of collection and sorting are high enough that it would not make sense to send reusable textiles for disposal in third countries. This was emphasised in the Commission's Staff Working Document accompanying the ecodesign proposal [62] that notes that garments exported for reuse often end up being burnt, which impacts the local environment and inhabitants as developing countries generally do not have the suitable infrastructure to discard them safely.[63] No official data exists on how much of the **exported used textile is or quickly ends up as waste**, as there is no traceability of the fate of these exported textiles. Several NGOs and press stories claim that around 40-50% (now up from the previous decades) of second-hand clothing which arrives from the UK, the EU, North America and Australia is of such poor quality that it is deemed worthless on arrival and sent to disposal.[64] [65] Considering waste sorting practices, McKinsey & Company estimated that up to 40% of the textiles exported to third countries are not sorted[66] while 60% of third country exports and all other textiles retained within the EU are sorted. In addition, 95% of what is sorted is manually sorted, and thus 5% is automatically sorted for the 2021-2035 period. This is because sorters concentrate on sorting for reuse, which is what they business model rests on. Sorting of the currently unsorted textiles will require additional capacity and the relevant investments to increase the capacity and run the facilities.

Funding for research and development

There are also limited research and development funding opportunities. The current research focuses on recycling of clothing and not of footwear or household textiles. There is lack of recycled content commitments by the industry or legal requirements setting such requirements in new textile products, which could boost the uptake of recycled materials in textiles, and would drive the demand side for recycled materials, engaging the recycling industry in long term infrastructure investments. In terms of the Technology Readiness Levels (TRL) of textile recycling technologies, a European Commission technical study[67] identified the following information.

Table 5 – Technology Readiness Levels of different recycling technologies

Textile recycling technology	**Current TRL**	**Year expected to reach TRL of 9**
Mechanical recycling	9	Present day
Mechanical recycling to spinnable fibres	7	Not specified
Thermo-mechanical recycling of post-industrial waste	7	2023

[62] SWD(2022) 82 final Part 4/4
[63] Matteis S. & Agro C., January 2018. What really happens to old clothes dropped in those in-store recycling bins, CBC News.
[64] ABC News, 2021, Dead white man's clothes: How fast fashion is turning parts of Ghana into toxic landfill - ABC News
[65] Hale, B., 2022, Dumped in the Atacama desert, the mountain of discarded cheap clothes from the West | Daily Mail Online
[66] McKinsey & Company, 2022.
[67] See footnote **Error! Bookmark not defined.**

Thermo-mechanical recycling of blends of thermoplastic materials	2-3	Not specified
Thermo-chemical recycling	9	Present day
Polymer recycling of cotton	7-9	2025 for those currently 7-8
Monomer recycling of PA6 and PET	9 for PA6 textiles, 4-& for PET textiles	Present day for PA6, 2023 for first PET textiles technologies
Recycling of polycotton blends using solvent-based dissolution and filtration	5	2024/2025
Recycling of polycotton blends using hydrothermal technologies	6-7	2023/2024
Recycling of polycotton blends using enzymatic route	6	2023

Further, hazardous substances can potentially be present in recycled materials obtained from textile waste, be it as a result of prior use of currently restricted substances in the textile itself or the textile getting soiled with hazardous substances during use or contamination resulting from mixing with other waste streams. [68] These information gaps about the amount and nature of hazardous substances in textiles make it difficult to assess whether the different recycling technologies will be effective in removing these substances and can make the recycling process more difficult and expensive. [69] In comparison to post-consumer waste, pre-consumer and post-industrial waste is likely to consist of a smaller variety of fibre types and material blends with the identification of the material composition simpler compared to post-consumer waste. Additionally, contamination by soiling of post-industrial and pre-consumer textile wastes is generally not an issue. Post-industrial pre-consumer wastes are also less likely to contain disruptors such as buttons and zips meaning that the waste materials that are generated are more suitable for recycling that post-consumer textiles and is part of the reason why some recycling technologies limit themselves to processing post-industrial or pre-consumer textile waste streams. This makes these types of waste a valuable input to supporting the development of recycling infrastructure across the EU.

The JRC study "Assessment of the definition of recycling"[70] indicates that "quality of recycling is a rather complex concept, at the same time acknowledged as very important and left

[68] H&M group, IKEA, Adidas, Bestseller, PVH, Gap Inc, Kingfisher, *Collaborative study on chemicals in recycled textiles*, 2021, https://www.naturvardsverket.se/contentassets/be04327b5a874955a5402d4f663d1632/webinar-collaborative-study-chemicals-recycled-textiles-hm-ikea.pdf.

[69] See footnote **Error! Bookmark not defined.**

[70] Grant, A., Cordle, M. and Bridgwater, E., Quality of Recycling - Towards an operational definition, Canfora, P., Dri, M., Antonopoulos, I. and Gaudillat, P. editor(s), Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-25426-3, doi:10.2760/225236, JRC122293.

undefined in both EU acquis and scientific literature…The quality is important as it determines the type of use of the recyclate and its further recyclability. This in turn affects the closure of material loops in specific sectors/markets, i.e., the circularity".

Behavioural drivers

Fast fashion trends

The "use-and-dispose" culture or "take-make-use-throw" mindset is still largely fostered across the whole supply chain and adopted by consumers[71]. Despite increasing concerns about conditions in which clothes are made and subsequent impacts, including those due to waste management (see Annex 2), complex consumption patterns maintain the gap between awareness and action, making it difficult for consumers to adopt new habits [72]. Therefore, there are increasing volumes of textile waste being generated and sent for disposal.

As noted in the EU Strategy for Sustainable and Circular Textiles[73] between 1996 and 2018 clothing prices in the EU decreased by over 30% relative to inflation making clothes increasingly inexpensive. At the same time, the quality of the clothes purchased and sold has shown a decreasing trend with Fashion For Good noting that the quality of the textiles collected is decreasing at least in part due to decreasing material quality[74].

Insufficient citizen awareness

There is a lack of consumer awareness of the true cost of production, i.e., considering the negative environmental externalities and the cost and impacts of managing textiles' end-of-life. For example, it is often cheaper to buy new products rather than repair broken ones, partly also due to their low quality.

Once goods are no longer wanted, there is lack of consumer awareness, accessibility, convenience on how to donate and/or sell and purchase reused products and confidence in their reliability and performance. Also, in some Member States a separate collection scheme for textile waste (not only for reusable textiles) is in place, but often citizens may be unaware of its existence[75] as well as potential gaps in knowledge about disposal methods with such gaps having previously been identified as needing additional promotional campaigns to improve textile disposal methods[76].

Shift to online purchasing

According to a Eurostat news item, in 2020, 22% of EU enterprises had e-commerce sales and 19% reported that their online sales reached at least 1% of their total turnover. This is 1 percentage point (pp) increase compared with 2019 and 6 pp up from 2010. The steady growth in the use of e-commerce sales in many countries, was heightened by the coronavirus pandemic and movement restrictions, which led both customers and businesses to an increased interest in online sales. E-commerce accounts for 30% of the EU's total fashion market in 2020. [77]

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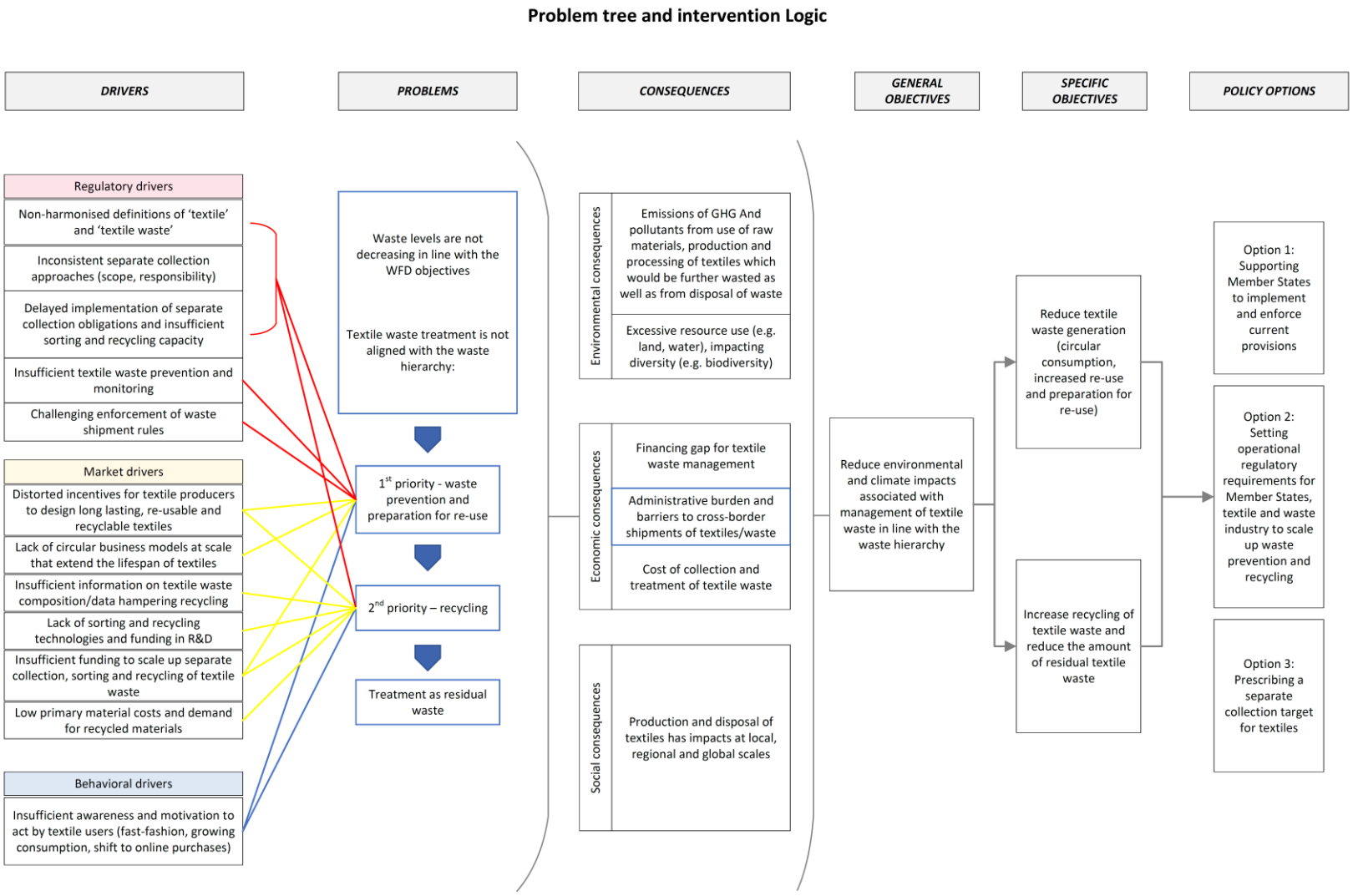
[71] Call for evidence (Municipal Waste Europe).
[72] RREUSE, *Vision for a new fashion season: social and circular, stakeholder workshop*, The Policy hub – response to interview questionnaire.
[73] COM(2022) 141 final
[74] Fashion For Good, 2022. Sorting for circularity Europe – an evaluation and commercial assessment of textile waste across Europe.
[75] Stakeholder workshop.
[76] Henzen R and Pabian S, 2019. Increasing Consumer Participation in Textile Disposal Practices: Implications Derived from an Extended Theory of Planned Behaviour on Four Types of Post- Consumer Textile Disposal
[77] The Global Fashion Business Journal, 2021.

Existing and upcoming textiles EPR schemes are considering online free riding. However, as only one EPR scheme for textiles is currently implemented within the EU, little quantitative data is available on current free riding. There is a risk that textiles EPRs may face the same issues observed for WEEE, packaging and batteries. The study procured by the Commission on Online Free-riding and EPR estimates that the total free riding of online WEEE sales is between 23.6 and 28.9% compared to an assumed level of free riding amongst traditional sales of 5%.

Figure 2 - Intervention logic for textile waste



Key environmental, economic and social consequences of the problem

As detailed above, there are several drivers that contribute to the main problem of increasing volumes of textile waste being generated and sent for disposal. The drivers and the consequences of the problem have been summarised in the problem tree presented below. Some drivers and some of the consequences cannot be tackled through a revision of the WFD as detailed in the study report and have therefore not been represented in the diagram. This is particularly the case in relation to unsustainable global supply chains, destruction of unsold or returned goods (these will be addressed through the implementation of the Ecodesign Directive), child labour and gender inequality. The EU Textiles Strategy as well as the Commission Communication on making sustainable products the norm foresee measures to tackle these issues and whilst they may be indirectly impacted by measures foreseen in this report, they are not specifically targeted by the scope of the WFD and are, therefore, addressed only indirectly in this assessment. The problem tree within the scope of the WFD as presented below.

Environmental impacts

The current system for producing, distributing, and using clothing operates in a linear way. The environmental impacts of textiles are spread out throughout their entire lifecycle. The textile sector represents the **fourth highest pressure category for use of primary raw materials and water**. It ranks as the **second highest for land use and the fifth highest for greenhouse gas emissions** (15-35 tonnes of CO2 eq. per tonne of textiles produced). It also has **high impacts in terms of chemicals and water pollution**. As the ecosystem is highly globalised with the production of clothing mainly outsourced to Asia, where environmental protection and working conditions are not strictly regulated and controlled. During both the production and end-of-life treatment phases, many workers are offered a poor and unsafe working environment.[78]

The **production of raw materials is responsible for a large share of the environmental impact of the textile and clothing industry**, notably from growing crops for natural fibres that globally required a lot of land and water. For example, estimates indicate that to make a single cotton t-shirt, 2 700 litres of fresh water are required, enough to meet one person's drinking needs for 2.5 years. Textile production discharges high volumes of water containing hazardous chemicals into the environment. As an example, 20% of industrial water pollution globally is attributable to the dyeing and treatment of textiles.[79]

As explained in detail in Annex 6, most textile raw materials and final products are imported into the EU, which means **long delivery routes, including for e-sales**. Large amounts of non-renewable resources are extracted to produce clothes that are often used for only a short period, after which the materials are largely lost to landfill or incineration. This puts pressure on resources,

[78] See footnote 82, p.84.
[79] Ellen Mac Arthur Foundation, 2017, https://ellenmacarthurfoundation.org/a-new-textiles-economy.

pollutes and degrades the natural environment and its ecosystems, and creates significant negative societal impacts at local, regional, and global scales[80].

Distribution generates waste through any soiled or damaged textile goods but also packaging, tags, hangers and bags. The use stage was estimated as having a large share of the environmental footprint in the lifecycle of clothes, owing to the water, energy and chemicals in detergents, tumble drying and ironing, and the microplastics shedding into water[81]. Doubling the lifespan of a textile product can reduce its environmental impact by 49%[82].

It is estimated that the fashion industry is responsible for 10% of global carbon emissions – more than international flights and maritime shipping combined. According to the European Environment Agency, textile purchases in the EU in 2017 generated about 654 kg of CO2 emissions per person.[83] It is estimated that the global warming potential of textiles placed on the EU27 market can be extrapolated to 198 million metric tonnes CO2eq[84].

Production: The production of raw materials is responsible for a large share of the environmental impact of the textile and clothing industry, notably from growing crops for natural fibres. With respect to fibre composition, it is estimated that cotton is the most prevalent fibre type covering 37%, followed by polyester (32%), polyamide (8%) and wool (4%). Polypropylene, viscose and acrylic recorded minor values (each ~3%)[85]. Cotton is considered especially problematic because it requires huge quantities of land, water, fertilisers and pesticides. [86]

It takes a lot of water to produce textile. It is estimated that the global textile and clothing industry used 79 billion cubic metres of water in 2015, while the needs of the EU's whole economy amounted to 266 billion cubic metres in 2017. The environmental impacts of organic cotton can be drastically reduced compared to conventional cotton, as it uses less water and pollutes less. The share of sustainable cotton increased from 6% in 2012 to 2013 to 19% in 2016 to 2017. [87]

Overall, in relation to both the production of raw materials and textile most of the pressures and impacts related to the consumption of clothing, footwear and household textiles in Europe occur in other regions of the world. This is the case for 85% of primary raw materials, 92% % of water

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[80] Ellen Mac Arthur Foundation, 2017, https://ellenmacarthurfoundation.org/a-new-textiles-economy.
[81] European Parliament, *Environmental impact of the textile and clothing industry: What consumers need to know*, 2019, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2019)633143.
[82] Swedish Environmental Protection Agency, *Response to interview questionnaire*, 2022.
[83] European Parliament, 2020, https://www.europarl.europa.eu/news/en/headlines/society/20201208STO93327/the-impact-of-textile-production-and-waste-on-the-environment-infographic.
[84] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144
[85] JRC Technical report on Material Flow Analysis of textile, forthcoming
[86] European Parliament, 2019. https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2019)633143.
[87] European Parliament, 2020, https://www.europarl.europa.eu/news/en/headlines/society/20201208STO93327/the-impact-of-textile-production-and-waste-on-the-environment-infographic.

and 93% of land used, and 76% of greenhouse gas (GHG) emissions.[88]The majority of these impacts are felt in Asia where most fibre production and textile manufacturing takes place[89].

Transport and distribution: Most textile raw materials and final products are imported into the EU, which means long delivery routes. However, according to the Pulse of the Fashion Industry report, this stage accounts for only 2% of the climate-change impacts of the industry (excluding e-commerce transport), as most large players have optimised the flow of goods. However, this phase is also characterised by waste generated through packaging, tags, hangers and bags, as well as by a proportion of products that never reach consumers as the unsold leftovers are thrown away.[90]

Consumer use: The use stage was estimated as having a large share of the environmental footprint in the lifecycle of clothes, owing to the water, energy and chemicals (primarily detergents) used in washing, tumble drying and ironing, and the microplastics shedding into water. [91] Washing synthetics releases an estimated 0.5 million tonnes of microfibres into the ocean a year. The EU Commission stated that up to 35% of all the microplastics released into the environment can be traced back to textile products. [92] A single laundry load of polyester clothes can discharge 700 000 microplastic fibres that can end up in the food chain. [93]

End of life: A large share of used textile is exported for reuse, partly to East Asian or African countries, leading to additional transport. In addition to export of textiles for reuse has prompted accusations that cheap second-hand clothes cause the decline of local textile industries. Also, there is some uncertainty that some of these textiles exported for reuse are or quickly become waste and that some of these third countries with less stringent waste management rules or enforcement are thus victims of pollution from the discarded textiles (e.g., on beaches). [94]

The majority of exports from the EU to third countries of used clothing and clothing accessories, blankets and travelling rugs, household linen and articles for interior furnishing and textile materials including all types of footwear and headgear are to non-OECD countries. An examination of data from Comext[95] for the period 2017-2021 shows that in 2021, 61 countries received 98.8% of volumes exported from the EU, amounting to at least 1 000 tonnes of used textiles from the EU. The controls in place for the management of these materials are likely to vary dramatically.

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[88] EEA. Textiles and the environment: the role of design in Europe's circular economy (2022). Available at: https://www.eea.europa.eu/publications/textiles-and-the-environment-the

[89] European Environment Agency, 2022. Textiles and the Environment - The role of design in Europe's circular economy

[90] European Parliament, 2019, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2019)633143.

[91] European Parliament, 2019, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2019)633143.

[92] European Commission, *Sustainable and Circular Textiles by 2030,* 2022, https://ec.europa.eu/commission/presscorner/api/files/attachment/872168/Textiles%20Factsheet.pdf.pdf.

[93] European Parliament, 2020, https://www.europarl.europa.eu/news/en/headlines/society/20201208STO93327/the-impact-of-textile-production-and-waste-on-the-environment-infographic.

[94] European Parliament, 2019, https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2019)633143.

[95] DS-045409

The top ten destination countries for EU exports the period 2017-2021 are shown below.

Table 6 : Destination countries for EU exports of used textiles

	Year				
	2017	**2018**	**2019**	**2020**	**2021**
Total EU exports	1,143,487	1,188,647	1,298,263	1,209,608	1,325,079
Country of destination					
Pakistan	119,989	158,959	181,650	174,302	213,549
United Arab Emirates	67,166	87,776	110,733	139,423	137,608
Tunisia	107,539	97,483	109,026	102,692	102,754
Cameroon	66,048	67,235	67,097	71,293	63,005
Türkiye	59,417	62,412	71,312	54,844	54,193
Togo	50,439	51,177	53,212	52,930	50,972
Ukraine	72,967	65,114	67,354	57,213	49,541
India	35,498	31,347	44,611	38,756	43,161
Ghana			37,196	42,785	42,104
Russian Federation (Russia)	36,311	37,014	37,986	35,874	39,472
Belarus	32,205	33,337			

Stakeholders in the context of the impact assessment accompanying the proposal for a revision of the Waste Shipments Regulation[96] raised the issue that third countries often welcome EU wastes as they are generally well sorted and have a higher economic value compared to domestic waste or waste from other countries. However, the import of EU wastes can displace domestically generated wastes in other countries with even less effective management of waste or cause them to be simply disposed or even dumped rather than being managed appropriately as shown in Table 57 below.

An examination of waste management practices in the top destination countries of used EU textiles listed using data from the World Bank[97] notes a high level of landfilling and open burning in those countries.

Table 7 : Waste management practices in importing third countries

[96] SWD(2020) 26 final

[97] World Bank (2020) What a Waste Global Database - Country level dataset – note that gaps in the data exist with no data reported for Ghana and in some cases only some percentages reported by treatment type

Country	Waste treatment method applied					
	Percentage of waste disposed of in controlled landfill	Percentage of waste disposed of in other landfill	Percentage of waste open dumped	Percentage of waste incinerated	Percentage of waste recycled	Percentage of waste composted
Pakistan		40	50		8	2
United Arab Emirates		9	62		20	9
Tunisia		70	21		4	5
Cameroon			80.3		0.4	
Türkiye			44			1
Togo			96.2		2	1.8
Ukraine		94.07		2.73	3.2	
India			77		5	18
Ghana						
Russian Federation (Russia)			95		4.5	
Belarus	76.9		7.1		16	

Source: World Bank, 2020

In general (except Turkey) within OECD and EU countries only 35% of waste is landfilled[98] meaning that these countries have more effective waste management in place in comparison to those countries receiving used EU textiles. To determine the environmental impacts resulting from textile waste management in third countries in comparison to the EU the support study used the dedicated waste LCA-model EASETECH[99] also used by the JRC applied the datasets describing open dump and open burning activities for individual waste materials. In the absence of a specific dataset for textile the impact of textile waste has been approximated as a mix of plastic (15%) and paper/cardboard (85%) based on the assumption that ca. 15% of the textile is composed of biological fibres while the rest is synthetic (Riber et al. 2009[100]). To calculate the net environmental benefits of managing textile wastes in the EU in comparison to third countries the following results from EASETECH have been applied a GHG saving by treatment in the EU in comparison to third countries of CO2 -Eq of 1.7 tonnes per tonne of textiles disposed of and saving in terms of externalities when 285 euro per tonne has been applied[101].

With regard to the disposal of textiles in residual waste in comparison to reuse and recycling within the EU the calculation of changes in CO2e emissions resulting from changes in management at the point of discard of used textiles and textile wastes the European Environmental Bureau (EEB) [102] value have been identified as presented below.

Table 8 – CO2 equivalent emissions saved by destination of textile at EoL (in tonnes per tonne of textile), EEB

Route	Cotton t-shirt	Wool jumper

[98] World Bank (2020) What a Waste Global Database - Country level dataset – note that gaps in the data exist with no data reported for Ghana and in some cases only some percentages reported by treatment type
[99] Clavreul et al. (2014) https://www.sciencedirect.com/science/article/pii/S1364815214001728
[100] Riber et al. (2009) https://www.sciencedirect.com/science/article/abs/pii/S0956053X08003322
[101] These are the same values used in SWD(2020) 26 final in relation to disposal of textiles in third countries in comparison to the EU.
[102] European Environmental Bureau, *Advancing resource efficiency in Europe*, 2014.

Direct reuse	12.8	9
Preparing for reuse	11	8
100% recycling	<1	<1
100% landfill	-0.2	-0.2

Further, when using recycled fibres, the environment and climate impact only decrease by about 5-10 % compared to if virgin fibres are used. Meanwhile, doubling the lifespan of a textile product can reduce its environmental impact by 49%. [103]

Economic impacts

At a global scale, the negative impacts of the industry are becoming more transparent and understood by customers, leading to reputational risks for brands and to regulatory trends that could affect the profits of businesses that fail to respond. Fashion brands could see a decline in earnings before interest and tax margins of more than three percentage points if they were to continue business as usual. This would translate into a profit reduction of approximately EUR 45 billion (USD 52 billion) for the industry. [104] The industry has also been challenged to find systemic solutions to tackle "overconsumption", moving beyond downstream, short-term approaches to reduce the industry's impact. [105]

The lack of definition of 'textiles' in the WFD leads to confusion as to what Member States are meant to be doing in relation to the 1 January 2025 deadline and what they are meant to report on in relation to the Implementing Decision on reuse. Member States have chosen different scopes in relation to textiles and textile waste as explained in Annex 6. This leads to differing implementation and data that is incomparable. This fragmentation of rules across the EU causes confusion and leads to additional admin burden as movements, sorting, and exports have to consider the differences in scope. If these diverging interpretations were to be carried into the scope of possible EPR schemes, producers would be subject to different requirements depending on the Member State. This would increase their administrative burden and would not allow a level playing field amongst the obliged industry actors. It can also create problems at collection and sorting stages with operators dealing with varied textile streams depending on their point of origin, and can pose barriers to cross-border shipment, intra- and extra EU due to variations in the composition of the materials shipped. Some stakeholders suggest clustering products which require similar collection and recovery systems when considering products categories for collection and treatment policy. Finally, the lack of a harmonised definition may lead to missed opportunities to fully align different pieces of legislation including the revised Ecodesign Directive and the Textiles Labelling Regulation to the same category of textiles threatening the coherence between EU policy instruments.

[103] Swedish Environmental Protection Agency, Response to interview questionnaire, 2022.
[104] Ellen Mac Arthur Foundation, 2017, https://ellenmacarthurfoundation.org/a-new-textiles-economy.
[105] Ellen Mac Arthur Foundation, 2017, https://ellenmacarthurfoundation.org/a-new-textiles-economy.

This lack of harmonised definition about when a textile becomes waste or ceases to be waste hampers a harmonised classification of textiles, which can hinder reuse and recycling. Textile reuse or waste management operators experience such barriers, for instance where export restrictions for collected clothing in one country and its administrative procedures to lift such restrictions in another make trade difficult. In other cases, shipping collected textiles outside the EU for reuse or recycling may require clothing to be de-constructed in the EU before shipment, which limits their use to recycling only. In the context of a developing textiles recycling market the lack of harmonisation creates uncertainty in relation to waste management decisions for textiles including producers and users of recycled materials. This is in keeping with the work of the JRC on end-of-waste criteria[106]. Additionally, as more Member States look to determine end of waste status for textiles the possibility exists for ever increasing divergence beyond the lack of uniform understanding of textile wastes found today.

The WFD imposes controls on the reuse of secondary materials, to protect human health and the environment in their collection, transport, treatment, storage and tipping. These administrative burdens in some cases might not be necessary where little risk is involved and the certainty of use is guaranteed – this is particularly the case for reusable and recyclable textiles that are generally inert in nature and for which in the case of reuse an already existing market for reusable textiles exists across the EU. Removing the administrative burdens, by changing the waste status of the material when it is no longer necessary, may be an economic incentive encouraging the recycling and reusing of wastes.

The JRC[107] also notes two additional factors to be considered in relation to wastes that are equally applicable to textile wastes:

i) For certain wastes, end-of-waste criteria can promote the production of higher quality secondary products by defining technical and environmental minimum requirements to be fulfilled by the materials. Information on the product characteristics facilitates their comparison and may enhance the final quality of the final product leading to an increase in their demand and a positive on the recycling rates.

ii) The use of waste in replacement of primary materials, in particular if used by final consumers, is often prevented by the waste status of the material. Waste is associated with discarding and users may fear to use waste instead of primary materials with a predicted quality. End-of-waste may help to alleviate any user prejudice, to increase the confidence of the users on quality standards and to encourage the use of secondary materials.

At the end-of-life stage, as seen previously, the lowering quality of textile reaching the reuse sector creates a risk for the actors of this sector, often charities, whose business model relies on the sale of good quality used textile. In terms of recycling, the increasing amounts of textile waste which will be sent to recycling in coming years will put pressure to scale recycling technologies, and thus in ensuring that the business models associated are viable. The lowering quality of textiles also affects their recyclability.

[106] JRC 2009. End-of-waste criteria.
[107] JRC 2009. End-of-waste criteria.

Further, there is no harmonised understanding of what can be considered as "reusable" and "recyclable" textile, causing difficulty at the separate collection, reuse and recycling stages to determine where the used textile and textile waste should be sent. Measures are proposed in the revision of Regulation No 1257/2013 on shipments of waste to address textile waste shipments to third countries and it is expected that this proposal will address this problem subject to the outcome of the ordinary legislative procedure for that proposal.

Social impacts

Almost 13 million full-time equivalent workers were employed worldwide in the supply chain to produce the amount of clothing, textiles and footwear consumed in the EU-27 in 2020. This makes the textiles sector the third largest employer worldwide, after food and housing.[108]

In 2018, the textile industry in the EU employed 1.66 million people (down from 2.03 million employed in 2010), of which 70% are women. In the EU, it represents 9% of manufacturing companies, 5% of employment and 2% of value added of the manufacturing sector. [109].

However, most production takes place in Asia, where low production costs come at the expense of workers' health and safety.

High cost and time pressures are often imposed on all parts of the supply chain, which can lead to workers suffering poor working conditions with long hours and low pay, with evidence, in some instances, of modern slavery and child labour. The potential for negative societal impacts does not stop at the factory door. Local communities, while benefitting from employment in the industry, may suffer from its poor environmental practices.

At the production stage, the use of substances of concern, as defined in Article 3(28) of the ESPR proposal, has negative effects on farmers, factory workers, and the surrounding environment as it pollutes local rivers used for fishing, drinking, or bathing.

Finally, the lowering quality of textile reaching the reuse sector creates difficulty for this sector to ensure their principal ambition: distributing used textiles of good quality to people in need as well as the generation of funds to support charitable activities.

How will the problem evolve?

This section makes use of several different sources of data and estimates/expected trends for the future. This also means that some of the data presented may not be consistent with other data referred to due to different reasons, including heterogenous scope, definitions and assumptions underlying projections.

The increased interconnectivity in the Asia-Pacific region and the rising number of e-commerce platforms is adding growth to regional and global markets. Furthermore, favourable demographics, rising income and growth levels, favourable government policies in manufacturing countries and

[108] European Environment Agency (2022) Textiles and the environment: the role of design in Europe's circular economy.

[109] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

improving marketing activities by textiles companies are expected to increase the market size in the future, both globally and in the EU. There is no reliable data on the textiles online sales in the EU market. However, Reuters[110] indicates that "secondary fashion sales are booming, with the global market for pre-owned apparel" growing at a rate of 15 percent per year, as consumers increasingly tap into the online consignment segment, new market entrants rush to meet burgeoning demand, and existing players look to differentiate themselves and their value propositions."[111]

The **global consumption of clothing and footwear is expected to increase by 63% by 2030 compared to 2019**, from 62 million tonnes now to 102 million tonnes in 2030.[112] Similar **historical and projected data in terms of quantities is not available for the EU market**. However, **fast fashion trends are expected to continue** with consumption patterns likely to accelerate and the overall quality of the discarded textiles to decrease. In addition, the prices of commodities are expected to rise in the future due to increasing global consumption and therefore, rising demand for resources.

Since waste generation is correlated with economic growth, it is likely that waste generation will increase along with the economic recovery expected following the COVID-19 pandemic. As previously explained, data on used textiles and textile waste is subject to significant variation depending on the scope of what is considered a textile. There are issues with the robustness and comparability of the data itself that should improve to some extent with subsequent reporting years.

The EU Textiles Strategy is the main EU policy scenario affecting the baseline consumption of textiles in the EU. It proposes actions for the full lifecycle of textile products, by targeting design and consumption patterns, in line with the commitments set under the European Green Deal and the Circular Economy Action Plan. It addresses the way textiles are designed and consumed, including by looking at sustainable technological solutions and innovative business models.

The most relevant set of measures is the implementation of the ESPR to textile products. Ecodesign requirements for textiles will aim at increased product durability reparability, recyclability and the use of recycled materials, contributing to a reduction in textile waste generation and facilitate increased recycling rates. The actual requirements for textiles and the applicable product scope will be determined in a dedicated impact assessment. In addition, the EU Textiles Strategy includes a review clause to assess mandatory targets for preparing for reuse and recycling of textile waste by 2024 and the assessment of measures to ban the destruction of unsold products under certain conditions, including unsold or returned textiles. However, the impact of these measures is unlikely to be felt until the end of the decade. That leaves a challenge of dealing with poorer quality textiles for reuse at present whilst recognising that measures proposed elsewhere should help to plug the quality gap in the future.

The amendment of the Textile Labelling Regulation, in line with the Textiles Strategy, will have an impact on the baseline. The potential introduction of digital and physical labels on the sustainability and circularity aspects of textile products will ensure the ease of access, intelligibility, and comparability of ecodesign information. The accessibility of information is

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[110] https://www.thefashionlaw.com/the-resale-market-watch-a-running-list-of-funding-and-ma/
[111] A Running Timeline of Resale Funding and M&A (thefashionlaw.com).
[112] Global Fashion Agenda, 2017.

expected to potentially increase the demand for higher quality textiles products, thus reducing the frequency of their replacement and the quantity of textiles placed on the market. Furthermore, the amendment is expected to review fibre identification rules, thus easing sorting and recovery of materials and fibre-to-fibre recycling. Other envisaged labelling elements are also expected to have a positive environmental impact. These include "care labelling", which can foreseeably play an important role in reducing energy consumption in washing and in extending the durability (and indirectly the re-usability and recovery of materials) of textile products; and "uniform size labelling", which is expected to boost the integration of the second-hand market across Member States.

Determining the impact of the separate collection obligation under Article 11 of the WFD that requires separate collection for textiles from 1 January 2025 is subject to a number of challenges, in particular with regard to progress to date and planned progress by Member States to meet the Directive deadline of 1 January 2025.

As noted in Annex 6, based on Member State data on separate collection schemes in place collection sits at around 39%. This assessment assumes that Member States are going to implement the separate collection obligation and to some extent encourage the reuse of products and the setting up of systems promoting repair and reuse activities (even though this is a softer requirement).

In order to determine the likely changes that will result from the obligation both up to 2025 and beyond two main sources of information have been used. The first source uses information from the JRC[113] that considered historical year-on-year improvements in countries/regions that had already made strong efforts to increase collection rates through target setting, communication and an emphasis on collection of the non-reusable collection waste (France, Flanders and Netherlands). In applying these trends to Europe, the JRC considered that as a result of the separate collection obligation that 65 000 to 90 000 tonnes will be collected in addition each year, that is a 50-80% total increase with respect to the 2020 volumes. However, this expected growth was expected to start slowly with less than half of this growth to be expected in the years up to 2025 with an acceleration of collection rates beyond that date.

The second source comes from McKinsey[114] that estimated that pre-consumer waste collection would increase from 30-35% in 2020 to between 50% and 80% by 2030. Under the 50% base case scenario the values were determined using France as a reference case because the study considered that France has the longest data record as the EPR for textiles was introduced in the country in 2009. In the French case textile collection increased from 15 percent in 2007 by 2.0-2.5 percentage points per year until it reached 35 percent, and then flattened to 1.5 percentage points per year. McKinsey then applied the French curve to their own determined collection rates giving different countries different growth rates based on how advanced they were in their current collection schemes. This scenario resulted in a collection rate growth of around 15 percentage points over ten years across the EU, taking its average to 50% in 2030. The McKinsey 80% scenario is based on the assumption that the separate collection obligation under the WFD requires 100% separate collection of textile wastes but that over the lifetime of the McKinsey optimistic scenario it would

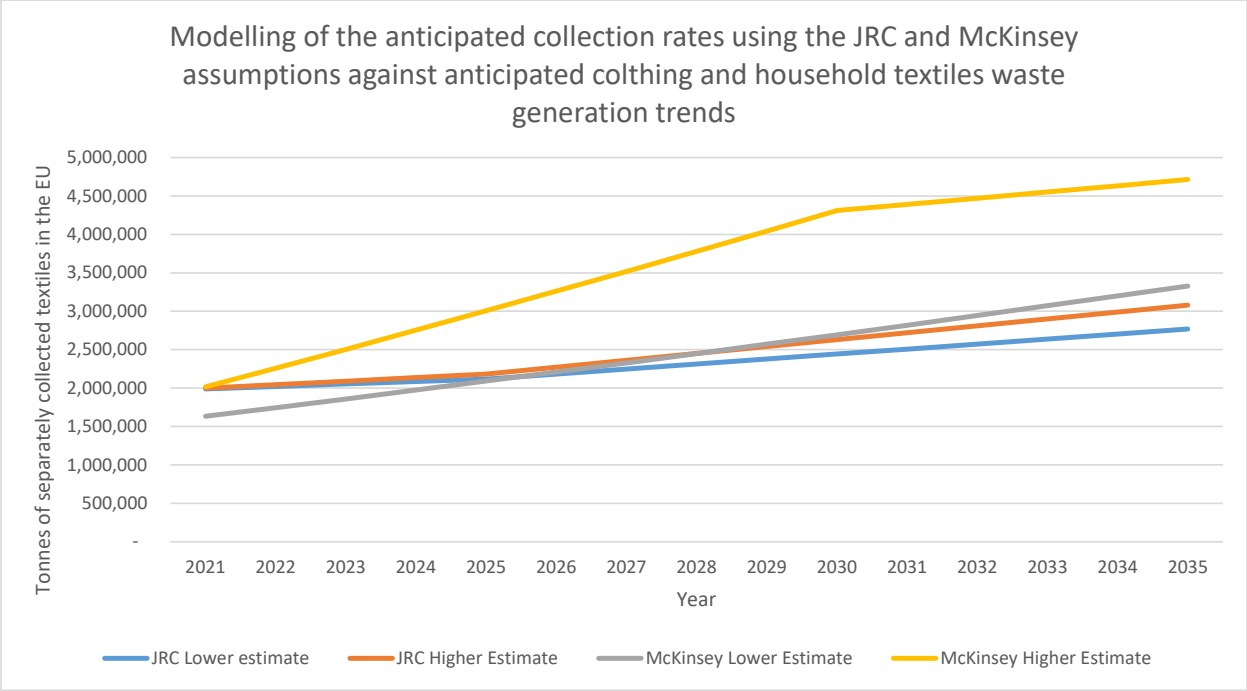
[113] See JRC, 2021. Circular economy perspectives in the EU Textile sector
[114] McKinsey & Company, 2022. Scaling textile recycling in Europe–turning waste into value

not be possible to reach the 100% value and that 80% appeared a more reasonable value to be attained by 2030.

The two sources above are not without their shortcomings, and both offer a degree of optimism bias in terms of the Member States that have been used as the basis for determining future trends in collection for the entire EU. In the case of the JRC extrapolation, FR, NL and Flanders are unlikely to be representative of the remaining EU and in the case of FR where a long-established EPR scheme has been in place to assist in funding the necessary infrastructure to improve collection over time, it is apparent that such mechanisms exist or are planned to exist in only a minority of Member States. In the case of McKinsey, the reliance on FR only data exacerbates this optimism bias to an even greater extent. Furthermore, the assumption that 100% of textiles will be separately collected as a result of the Article 11 WFD obligation appears unrealistic as no current separate collection obligation at the EU level achieves such collection rates.

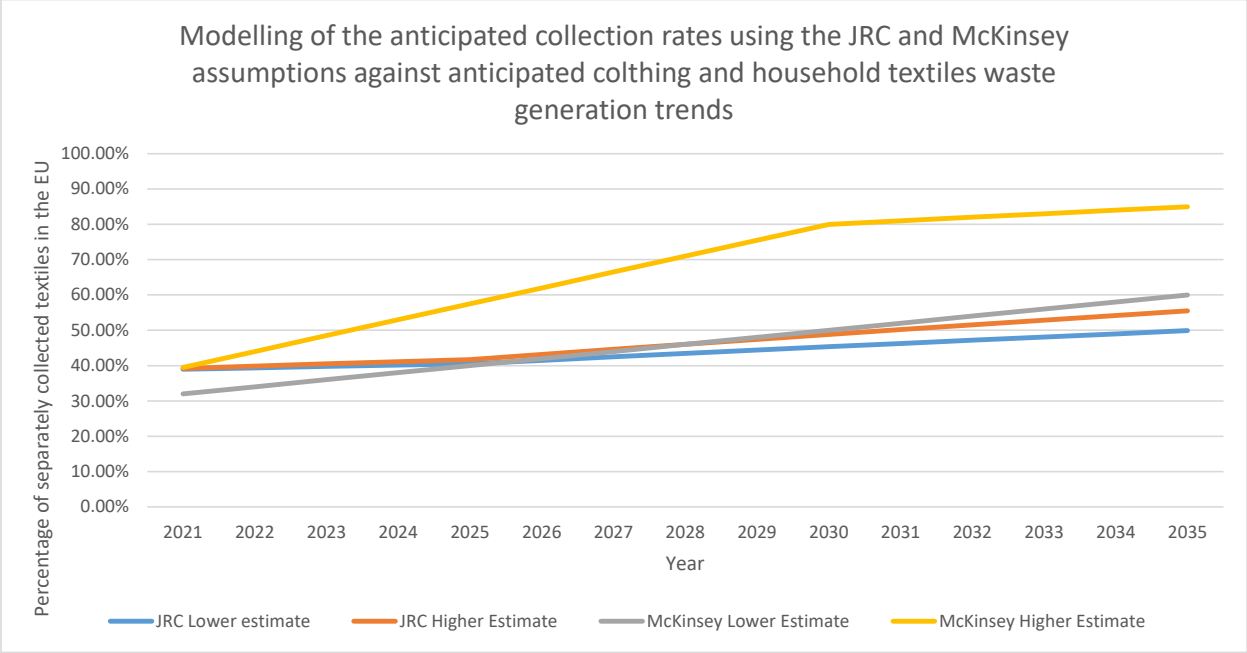
The figure below uses the JRC extrapolation and McKinsey assumed impacts of the separate collection obligation up to 2035. In the case of McKinsey, the growth rates under the base case scenario continue between 2030 and 2035. In the case of the optimistic scenario an assumption has been made that growth will increase by one percentage point per annum beyond 2030. This is because a 100% separate collection rate for textiles is considered unrealistic.

Figure 3 Modelling of changes in separate collection of textiles using data from the JRC and McKinsey in tonnes collected



As can be seen, the JRC extrapolation and McKinsey lower estimates result is somewhat similar collection rates by 2035, albeit the McKinsey estimates result in higher collection volumes than anticipated by the JRC. The McKinsey higher estimate appears very optimistic, as previously explained. Taking the same values and displaying them as percentages of separately collected textile wastes gives the following result.

Figure 4 Modelling of changes in separate collection of textiles using data from the JRC and McKinsey as a percentage of separately collected textiles wastes

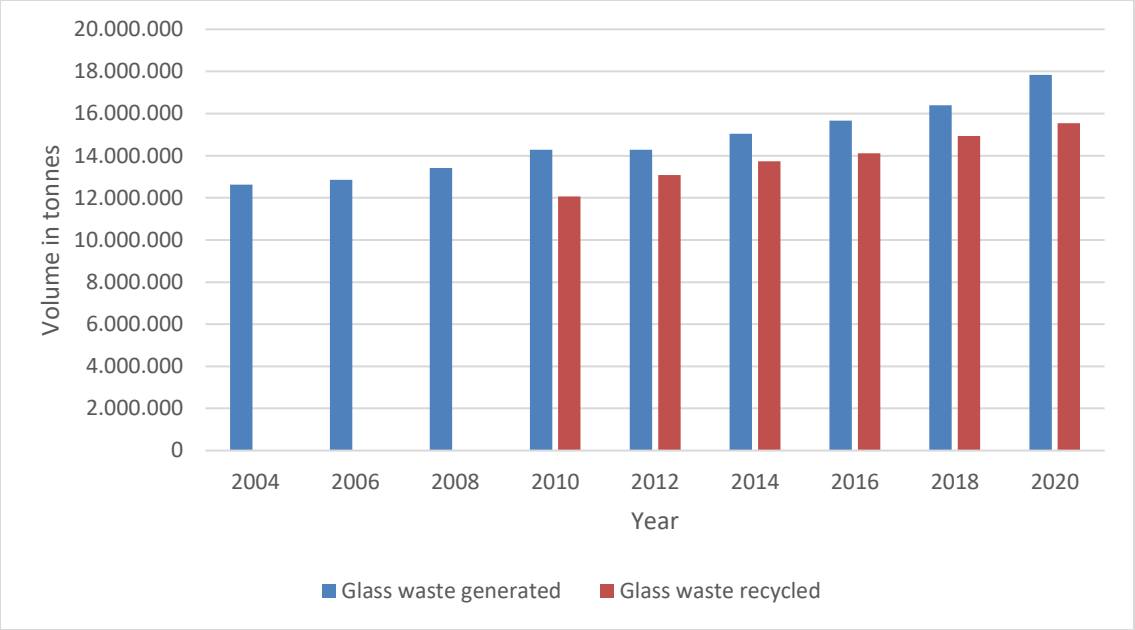


In order to determine the reliability of the trends in collection above, a comparison with the waste generation and recycling rates of glass for which targets have been set at the EU level has been made. Glass was chosen as the most realistic proxy to textiles as glass recycling is reliant on the collection of waste glass predominantly through kerbside collection and bottle bank recycling – very similar to the collection methods for textiles presently employed. As there is no data on actual collection rates for glass at the EU level the assumption has been made that all glass that is recycled has been collected. Data from Eurostat[115] indicates trends in glass waste generation and recycling over the period 2010-2020[116] showing a growth in recycling rates of approximately 29% over a ten-year period. This recycling required collection capacity to increase accordingly by at least the same rate. This compares well with the predicted fifteen-year increase in collection for textiles shown above between 2021 and 2035 of between 39% at the lower bound and 55% at the higher bound as presented by the JRC and suggests that the rates of McKinsey appear to be less realistic.

Figure 5 Glass waste generation and glass waste recycling for the period 2004-2020 within the EU

[115] Databases used from Eurostat were was_gen and env_wastrt

[116] Note that data on glass recycling quantities is not available for the years 2004-2008. For this reason, the data over the longest available data period has been used to determine glass recycling trends covering 2010-2020.

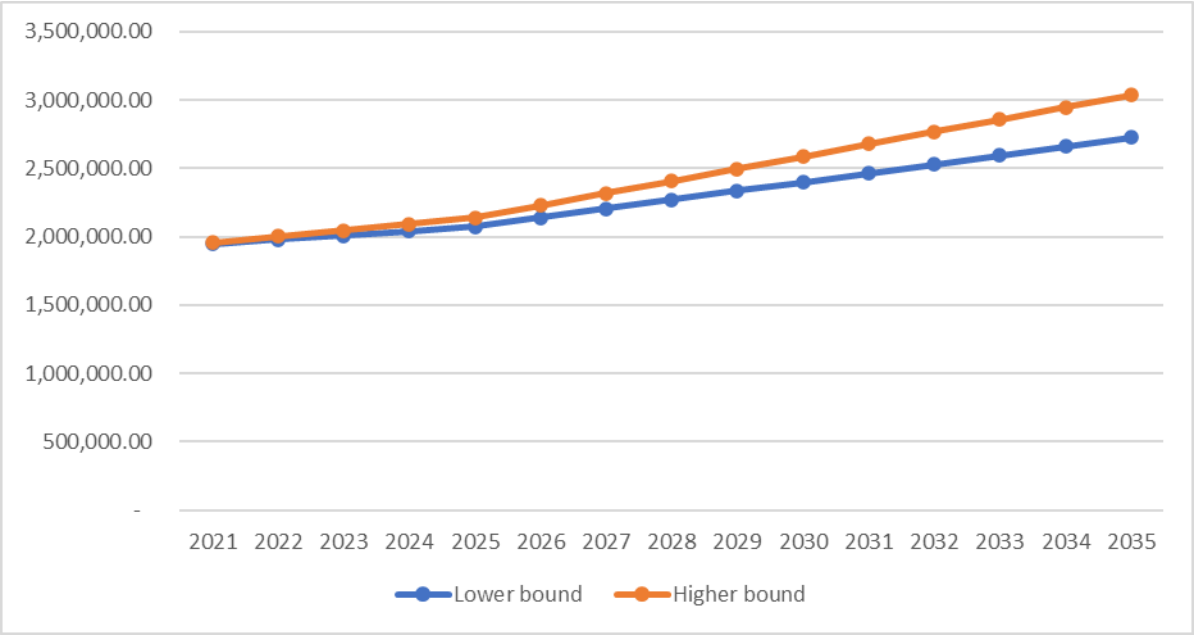


Based on the current status reported by the Member States in the context of the consultations, the support study expects that most Member States will face challenges for the timely implementation of the separate collection obligation.

Given the above, the support study uses estimates based on material from the JRC that considers that 65 000 to 90 000 tonnes will be collected in addition each year, that is a 50-80% total increase with respect to the 2020 volumes[117]. Less than half of this growth can be expected in the years up to 2025, as Member States would need to adjust their collection systems to implement the Directive. This estimated yearly increase in the tonnes of textile waste collected has been used to predict the forecasts for the period 2021-2035 starting from the tonnes of textiles collected by each Member State in 2020. The lower and upper trend for textile waste collected are estimated at 2.8% and 3.9%, respectively. The full forecast is shown in Figure *6* below, which shows an increase in textiles waste collected for the whole period, with an increasing rate after 2025. The trend shown above is based on the same measures currently in place in different Member States being still applicable, meaning that in some cases separate collection would be mainly undertaken by charitable organisations, whereas in others the commercial sector would be the dominant actor involved in the collection. There is a lack of infrastructure in the EU to deal with those volumes in terms of collection and sorting, this will mean that textiles will not be managed according to the waste hierarchy.

Figure 6 – Trends of textiles waste collected in the EU27 for the period 2021-2035

[117] See JRC, 2021. Circular economy perspectives in the EU Textile sector



Under this baseline it is anticipated that by 2025 approximately 2.1 million tonnes of discarded clothing and household textiles will be separately collected from a total of 5.2 million tonnes of such wastes likely to be discarded in the same year leaving approximately 60% of discarded clothing and household textiles in residual waste. This statistic hides the fact that some larger Member States already separately collect a large proportion of their textile wastes, meaning that in reality up to two thirds of Member States are unlikely to collect more than 30% of their textile wastes by the Article 11 implementation deadline.

Additionally, there is no clarity on **what share of textiles that are currently discarded may be fit for reuse or recycling**. Any measures aimed to increase reuse of the textiles currently discarded in mixed municipal waste, need to consider the likely quality of those textiles before they were discarded. The JRC[118] notes that there are a small number of such studies. For example, the NL has carried out surveys that indicate that between 2015 and 2018 the reusable fraction of textiles found in household mixed waste varied between 20% of the quantity discarded and 28% of the volume discarded. Similarly, a review in seven DK municipalities found that 23% would have been reusable[119], albeit a separate study indicated that the figure could be 65% after a repair operation[120]. Another study in SE found 59% of the textiles discarded in residual waste could have been reused and picking analyses in the UK indicated that in 2000, 59% of the textiles discarded in mixed household waste could have been reused, falling to 43% by 2008 in part due to increasing separate collection of textiles. The JRC also notes that there are range of factors that can affect the

[118] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144.
[119] Watson, D, Trzepacz, S. & Gravgård Pedersen, O. 2018. Mapping of textile flows in Denmark. Danish Environmental Protection Agency Project no. 2025. available at: https://www2.mst.dk/Udgiv/publications/2018/08/978-87-93710-48-1.pdf
[120] Nørup 2019. An environmental assessment of the collection, reuse, recycling and disposal of clothing and household textile waste. PhD Thesis from Danish Technical University (DTU).

results found above and that it is difficult to reach general conclusions accordingly. However, the JRC reaches the conclusion that at least 50% of the textiles discarded in mixed waste could have been reused or recycled. Combined with actual reuse and recycling figures this suggests that for all textile wastes discarded approximately 63% could be reused and/or recycled in total with the remaining share currently unsuitable for such reuse or recycling.

The share of collected textile suitable for reuse is likely to fall from 58% in 2021 to 50% in 2035. This will challenge the reuse actors' business model because of limited increase in their revenues from reuse activities while they will have to sort and dispose of more waste. In addition, the second-hand textiles sector is expected to double in 5 years. However, resale platforms drive the main growth with more consumers selling their 'crème' directly and hence reducing the amount available to reuse actors.[121]

The current model that relies heavily on social enterprises, will be threatened by the large amounts likely to be collected once the separate collection obligation comes into force and in the following decade. The larger quantities of textiles will increase the costs while revenues are unlikely to grow at a similar rate. With the increase of textile waste generation and the upcoming separate collection obligation, the entire used textiles and textiles waste management chain will have to be scaled up dramatically, requiring efforts to build additional infrastructure and train staff to manage the collected textiles. This is a key barrier to a better management of used textile and textile waste, as without separate collection textiles are either incinerated or landfilled as household waste. It is likely, therefore, that municipalities will increasingly be required to set up collection schemes or contract commercial enterprises to collect used textiles on their behalf to address this collection shortfall.

A general theme identified in relation to the quality of textiles found in residual waste by the JRC[122] is that the higher the share of textiles that are already separately collected, the lower the average quality and value of textiles discarded in residual waste. The JRC considers that this is partly because households already make fairly reasonable decisions about what has significant value and should thus be donated/sold for reuse, and what has little reuse value. A 2018 study in DK[123] corroborates this theory whereby the 42 000 tonnes of textiles discarded in Danish residual waste for incineration in 2017 were estimated to have had a value of 12-15 million euro prior to discarding whereas the 36 000 tonnes of separately collected textiles were sold on reuse markets for an estimated 65 million euro, i.e., 4 to 5 times the value per tonne.

However, the support study considers that these base-case figures are an optimistic scenario because with increased collection it is likely that the portion of unsuitable textiles will go up since they are the ones that citizens currently dispose of in the mixed waste bin. On average, it is predicted that by 2035, 50% to 56% of textile waste generated across the EU would be separately collected in the absence of additional measures put in place (this acknowledges that some Member

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[121] McKinsey & Company, 2022.

[122] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

[123] Watson, D, Trzepacz, S. & Gravgård Pedersen, O. 2018b. Mapping of textile flows in Denmark. Danish Environmental Protection Agency Project no. 2025. available at: https://www2.mst.dk/Udgiv/publications/2018/08/978-87-93710-48-1.pdf

States already have significant shares of separate collection as well as accounting for a larger proportion of total EU waste).

In addition, the **lower quality of textiles also affects their recyclability,** leading to them being mainly sent for disposal. It is apparent that there remains a fraction of textiles that are suitable for reuse that are currently discarded. However, the challenge is in developing a measure to address this fraction that is realistic in light of the apparent quality challenges in this faction as well as the global saturation of the second-hand clothes market.

McKinsey[124] considers that over time the share of unsorted textile waste exported from the EU is expected to decline by 30 percentage points, going from 40% of waste generated in 2020 to around 10% in 2030. However, the sources of funding to address the additional sorting that would be required are not addressed in that study. The growth rate of sorted waste follows the upper and lower bound of the collected rate. However, the same challenges in terms of the quality of sorting remain with some failing to correctly differentiate between reusable, recyclable and fractions for disposal. Manual sorting will keep playing an essential key role for the identification, distinction, and destination materials, especially for reuse purposes. Automatic sorting is still in its infancy and predictions as to its likely share of sorting in the future are not robust. However, its role will become increasingly important as it will allow to automatise the sorting of products to be recycled. As a matter of fact, it is the most preferred option for non-reusable waste outputs or for processing non-reusable pre-consumer waste.[125] Automated sorting could then be expected to be increasingly employed in the period up to 2035. The support study also estimates that 5% of manually sorted waste will then be subject to a second phase automatic sorted in the 2021-2035 period. To face additional volumes of textiles waste to be processed through automated sorting, significant investments are necessary. For example, sorting efficiency can be improved thanks to technologies processing clothing information in terms of fibre and material composition.[126] Staff previously in charge of sorting such products to be recycled will be then shifted to sorting additionally collected waste to focus on reusable materials with automated sorting applied to this manually screened material for recyclability. Nevertheless, manual sorting will keep playing an essential key role for the identification, separation, and sorting of textile waste. The entire sorting process will then speed up, become potentially less costly, and higher volumes of waste might potentially be processed.

Predicted rates of textile recycling will change from the status quo. This is particularly the case as focus moves away from mechanical open loop recycling to closed loop recycling. It is expected that through additional fundings and investment in R&D, recycling technologies will benefit from a potential commercial scaling and will become more affordable. Several studies have looked to predict changes in textiles recycling[127]. Annex 6 provides information on the nature of textile

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[124] See footnote 46, p. 47.

[125] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144.

[126] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144.

[127] See footnote **Error! Bookmark not defined.**; See footnote 46, p. 47.

recycling technologies both in use and in development. It is apparent that there are several challenges in relation to increasing recycling capacity, including the TRL of recycling technologies as well as the investment costs necessary to install and operate the necessary recycling capacity. The referenced studies indicate optimistic growth rates in closed-loop textile recycling with the most optimistic addressed in McKinsey that identified a base-case scenario of 36% of separately collected textiles being fibre-to-fibre recycled by 2030. The JRC report[128] had also identified potential trends in textile-to-textile chemical recycling with a predicted installed capacity of approximately 900 000 tonnes by 2025. Given the state current recycling capacity, these predictions appear optimistic. Based on trends in closed-loop recycling to date and the predicted investments in future[129] the support study has estimated that 28% of textiles collected that will be closed-loop recycled and 14% of textiles collected that will be open loop recycled in 2030[130]. It is assumed that such trends will remain constant up to 2035. Assuming a constant recycling growth rate between 2020 and 2030, recycling rates for the period 2021-2029 have been calculated by adding such growth rate to the rate in the previous year.

However, it has to be taken into account that a portion of textiles collected will not be reused, prepared for reuse or recycled and will contribute to waste being disposed. Textile waste 'crème' is likely to be already in the reuse market, either informally or through separate collection and subsequent sorting. The separate collection obligation entering info force in 2025 (especially when it is made easier for citizens through a kerbside collection) will probably encourage citizens to dispose of their old textiles which are damaged beyond repair. These would have previously gone to municipal waste and be landfilled or used for energy recovery. The JRC comes to the conclusion that "a large part of the 65 000 to 90 000 tonnes year-on-year growth in textiles diverted from mixed waste to separate collection each year are likely to be non-reusable or at least to have no value on second-hand markets."[131] This will put pressure on the business model of reuse actors who can currently finance collection and sorting via the reuse sales. The uncertainty of what share of those would be reusable in the EU or on the global market, and what share would be recyclable means is very difficult to determine if the sorters' business case would still be sustained.

The destination of reuse remains difficult to predict and is dependent upon the nature of consumer behaviour in the years to come. The trend of decreasing quality of textiles is expected to be counteracted by the implementation of the ESPR that will encourages more sustainable and long-lasting textiles of good quality, thus enhancing reusability and recyclability. Textile waste 'crème' (textile waste with the best quality) is already separately collected, and the generalisation of the separate collection of textile waste (especially when it is made easier for citizens through a kerbside collection) encourages people to put out their old clothes which are damaged beyond repair, these textiles previously would have gone to municipal waste and be landfilled or used for energy recovery[132]. Should that remain as present, then it could be expected that 15% of textiles suitable for reuse would remain within the EU with the remainder exported to third countries. The

[128] JRC, 2021.
[129] ReHubs, 2020
[130] More specifically as an example, McKinsey estimates that 50% of total waste is collected in 2030 and 25% of total waste is reused. Consequently, the share of collected that is reused is equal to 25%/50%=50%.
[131] JRC, 2021.
[132] https://www.letsrecycle.com/news/quality-concerns-kerbside-textile-recycling/

reuse rate as share of collection for the period 2030-2035 have been estimated using the 50% collection rate as share of total waste estimated by McKinsey base-case scenario for 2030.[133] Assuming a constant decline of reuse rate between 2020 and 2030, the reuse rates for the period 2021-2029 have been calculated by adding such rates of decline to the rate in the previous year. Considering an increasing collection rate, the proportion of collected textile that is suitable for reuse will fall during the period 2021-2035 (going from 58% to 50%). However, as the total volumes that are collected increases, the volume suitable for reuse is also likely to increase.[134] However, direct consumer sales on C2C platforms and global saturation are likely to have a negative impact on reuse rates that was not quantified due to a lack of reliable data.

Circle Economy & Fashion for Good (2022)[135] estimated the portion of textile waste collected not reusable nor recyclable to be 8% of collected waste in 2019. Considering that such estimate considers only a few Member States, and it thus highly optimistic, we have assumed that 8% represents the portion of waste collected not reused nor recycled for the EU27 in 2035. Similarly, the estimates for closed loop recycling from McKinsey are considered too optimistic given the status of this technology. Therefore, keeping the share of open loop recycled as originally calculated, the share of closed loop recycled for 2035 has been calculated as the remaining portion of collected waste that is not reused or prepared for reuse (50%) open loop recycled in 2035 (14%) or disposed (8%). Therefore, the share of textile waste that will be closed loop recycled in 2035 is estimated at 28%[136]. The share of textile waste that is closed loop recycled in the period 2022-2034, is then calculated assuming a constant growth rate and adding such growth rate to the 3% share estimated for 2021.

Considering an increasing collection rate, the share of collected textile that is going to be closed loop recycled will thus increase (going from 3% to 28%) during the period 2021-2035, while the share of collected textile that is going to be open loop recycled will decrease (going from 23% to 14%). Consequently, the share of collected waste that is not reused or recycled will decrease (going from 16% to 8%). The overall volumes of open loop recycled products will decrease over the period, while the volumes of closed loop recycled products will increase.

The Commission has proposed the revision of the WSR and at the time of writing this assessment the proposal was passing through the ordinary legislative procedure. The way textiles will be handled within the EU in the future according to the proposal are important to consider. The proposal aims to restrict the export of all waste to non-OECD countries. The EU exports of 'green-listed' waste should be authorised only for those non-OECD countries that explicitly notify the EU of their willingness to receive EU waste exports and demonstrate their ability to treat this waste, including textiles, in an environmentally sound manner. These third countries will be included in a list of countries to which export of green-listed waste would be authorized. The list will be drawn up by the Commission and export will not be possible for countries and waste not included therein. The proposal also looks to establish clear criteria to prevent waste from being falsely exported as

[133] As explained above, this is calculated using the JRC data on collection and waste generation, complemented by the same data provided by a number of Member States.
[134] More specifically as an example, McKinsey estimates that 50% of total waste is collected in 2030 and 25% of total waste is reused. Consequently, the share of collected that is reused is equal to 25%/50%=50%.
[135] Circle Economy & Fashion for Good, *Sorting for circularity Europe. An evaluation and commercial assessment of textile waste across Europe*, 2022.
[136] 28% = 100%-50%-14%-8%.

used goods. This would allow the Commission, working with relevant stakeholders and Member States, to adopt criteria for specific problematic wastes in order to differentiate between used goods and waste. This will ensure that items including textile waste, which are often labelled as used commodities, are not exported outside the OECD, where they are likely to create sizeable environmental and health damage. In particular, the impact assessment accompanying the Commission's proposal for the WSR, estimated the volume of waste retained in the EU, under the hypothesis that between 20 and 50% of currently exported waste are retained in the EU. Under the 20% scenario, an additional 0.3 to 0.4 million tonnes per year of textile wastes would be retained and disposed in the EU in the period 2019-2030. Such volume would grow to 0.7-1 million tonnes per year under the 50% scenario. The impact assessment has additionally specified that given the time necessary to adjust to the amended regulation, part of the textiles waste retained in the EU will not be sent to recycling, but to energy recovery. Therefore, if adopted, the proposal for a new regulation on waste shipment will affect the baseline through an increase in the textile waste to be managed at EU level. However, the impact will be felt most beyond the collection phase i.e., in relation to sorting, reuse and recycling as well as in relation to disposal. Quantification of these impacts has not been possible.

Stakeholders claim that there is a lack of research & development mainly due to insufficient funding opportunities to bring recycling solutions to scale and due to high recycling prices and low demand for recycled products that can rarely compete with virgin materials. At the same time, however, it is apparent that textiles can be significantly impacted by rising costs and global textiles supply chain stability as highlighted by the global federation of national Associations for the screen printing, digital printing and textile printing community (FESPA). In its 2022 Article, FESPA identified that inflationary pressures resulting from supply chain squeezes and raw material costs, including the cost of oil increasing cotton and polyester fabric prices, with for example, woven cotton fabric showing an 18.9% increase between 2020 and 2022[137]. Manual sorting will keep playing a necessary role in the distinction and destination materials, especially for reuse purposes.

As previously explained, it is estimated that less than 3% of separately collected used textiles in 2020 were recycled using current fibre-to-fibre recycling whilst approximately 23% of separately collected textiles were used for other recycling purposes. [138] McKinsey estimates that 36% of the textiles collected will be closed-loop recycled and 14% of textile waste collected that will be open loop recycled in 2030[139]. However, these rates appear optimistic given the state of closed-loop recycling at present and the study supporting this impact assessment uses a more conservative estimation with closed loop recycling expected to be applied to 28% of separately collected textiles in 2035 and open loop recycling to remain static as a percentage of 14% of collected textiles, reflecting in part the move to apply greater levels of closed loop recycling to materials subject to open loop recycling at present.

In 2020, EURATEX, the European Apparel and Textile Confederation, in coordination with its members (Creamoda, Fedustria, Consejo Intertextil Español, Finnish textile & Fashion, Sistema

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[137] FESPA, *The impact of rising costs and global textile supply chain instability – what you need to know?*, 2022.
[138] Approximation of McKinsey (2022).
[139] More specifically as an example, McKinsey estimates that 50% of total waste is collected in 2030 and 25% of total waste is reused. Consequently, the share of collected that is reused is equal to 25%/50%=50%.

Moda Italia and Textil + Modewith), launched a joint initiative to set European Textile Recycling Hubs, the **ReHubs**[140]. This joint initiative aims at turning the upcoming textile waste problem into an opportunity and to create value. The mission is to "establish 5 recycling hubs serving the whole Europe, for upcycling waste and circular materials by collecting, sorting, processing and recycling industrial, pre-consumer and post-consumer textile wastes[141]." The timeline for implementation of the ReHubs initiative runs to 2030. The immediate focus is on sorting technologies to accurately identify materials for subsequent circular recycling processes. Led by Texaid AG, of Schattdorf, Switzerland, the aim is to establish the first 50 000 tonne facility by the end 2024[142]. However, by 2030 fibre-to-fibre recycling should, according to EURATEX, reach 2.5 million tonnes per year, corresponding to 23% of Europe's total textile waste.

In line with the separate collection requirements, Spain and Italy have indicated in their national recovery plans that they are considering establishing Recycling Hubs to collect, sort and process textile waste into secondary raw materials. Implementing Recycling Hubs will require major investments[143]. Many researchers are also contributing to the improvement of textile waste recycling and its reuse. [144]

It is expected that through additional fundings and investment in R&D, recycling technologies will benefit from a potential commercial scaling and will become more affordable. Therefore, textile recycling will change from the current ones. This is particularly the case as focus moves away from mechanical open loop recycling to closed loop recycling. It is expected that through additional fundings and investment in R&D, recycling technologies will benefit from a potential commercial scaling and will become more affordable.

From a theorical perspective, pre-consumer textile waste is easier to recycle compared to household textile waste, because it is more homogenous, the identification of the fibre composition is simpler, and it does not usually require a decontamination step in the pre-treatment stage[145]. As previously stated, the pre-consumer textile waste is going to increase in the period under study. Of such waste, an increasing but limited portion will be available for recycling. However, it should be noticed that all recycling technologies require well-defined input for technology to scale. For this reason, processing pre-consumer textile waste is more limited and bigger volumes of waste are necessary. The quality of the input material to be recycled affects the quality of the output of the recycling process. Consequently, sorting textiles waste is an important first step as part of the pre-treatment stage, especially for household textile waste that consists of larger blend of materials and fibres compared to pre-consumer textile waste[146]. Most recycling technologies highly depend on well-sorted inputs, as they can only work with pre-treated textile waste. However, exceptions exist with some recycling processes having embedded pre-treatment stages[147].

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[140] ReHubs, 2020
[141] ReHubs, *A joint initiative for industrial upcycling of textile waste streams & circular materials*, 2020.
[142] Innovation in textiles, *ReHubs seeks €6-7 billion for bold plan*, 2022.
[143] ReHubs, 2020
[144] MDPI, 2021, https://www.mdpi.com/2071-1050/13/24/13732/pdf.
[145] See footnote **Error! Bookmark not defined.**
[146] See footnote **Error! Bookmark not defined.**
[147] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144.

McKinsey & Company[230] considers 18-26% of textiles could be fibre-to-fibre recycled by 2030. Additionally, other textiles would be available for other types of recycling, including open loop recycling accounting for another 7-11% of textiles handled.

Energy recovery from textile waste through incineration as well as disposal via incineration and landfill will remain for a share of textile wastes generated – namely those textile wastes that will not be collected separately as well as those collected that cannot be reused or recycled. It is expected that the share of textile waste that is either used for energy recovery via incineration or disposed of, will decrease in the period 2021-2035 as collection, sorting, reuse and recycling will increase. The main driver behind this is that a larger share of textile waste will be expected to be separately collected and sorted, allowing it to go through the waste hierarchy rather than being used for energy recovery or disposed of directly. Assuming that everything that is not collected is used for energy recovery through incineration or disposed of and that sorting, reuse and recycling remain efficient and in line with increased collection rates, and considering that the portion of textile collected that is not reused, prepared for reuse or recycled will be disposed, textile disposal will fall from 67% in 2021 to 54% in 2035, under the lower case baseline scenario, or from 67% in 2021 to 49% in 2035, under the upper case baseline scenario. While the situation is expected to improve, considerable amounts of textile waste would still be disposed and there is very little clarity of where the funding for some of the future projections would come from, thus making these optimistic.

The ongoing JRC work[148] highlights that there are different approaches to target setting, and the level of the proposed target would be highly dependent on the scope of textile waste and preparing for reuse. In addition, sufficiently robust data on textiles placed on the market, collected, sorted, reused and recycled needs to be available to develop a robust baseline and assess if the proposed targets potentially addressing one or more of these used textiles and waste textiles phases are realistic.

The JRC will commence work on a report to support the possible development of end-of-waste (EoW) criteria for textile waste in early 2023, focusing on separately collected clothing and other textiles prepared for reuse, on cellulosic fibres from textile waste and on mixed fibres. Such harmonised EoW criteria are expected to bring legal certainty and contribute to smooth shipment of materials derived from treated textile waste for reuse and recycling within the EU and, potentially OECD and non-OECD countries in line with the proposal on the Waste Shipments Regulation. The situation of used textiles which are not collected as waste would not be addressed therein, given such materials are not waste and therefore are shipped as ordinary textile goods. The revision for the WSR proposes that the Commission should be empowered to establish specific criteria to distinguish between used goods and waste for export purposes. This could, potentially be used towards bringing clarity to the shipment of sorted used textiles for reuse.

Diverging rules in national EPR schemes will cause confusion amongst producers as well as unnecessary compliance costs and administrative burden. The Statista Digital Market Outlook[149] estimates that e-commerce revenue from apparel, accessories and footwear will almost double

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[148] JRC, 2023 under development

[149] Statista, Fashion e-commerce revenue forecast in Europe from 2017 to 2025, by segment, 2022 Europe: e-commerce fashion segment revenue | Statista.

from 2020 to 2025. The growing trend of e-commerce increased market share and its expected continuation in the future is an important factor to consider for EU or national measures on extended producer responsibility for the purposes of ensuring level playing field among the obliged industry and enforcement.

The estimates below on the evolution of the problem are based on an ongoing study by the JRC[150], including a mass flow analysis of textile value chain and waste management in the EU in 2035. As previously stated, while the overall magnitudes remain fairly consistent with the above-mentioned figures, there might be important differences that are due to the scope, definitions and assumptions underlying the projections. The JRC considers the following assumptions on key aspects concerning the projections:

- *Apparent consumption*

In order to set the baseline scenario, the projection of import, domestic production and export (and then, apparent consumption) of textile products is estimated assuming a Compound Annual Growth Rate (CAGR) equal to 3%.

This value is aligned to the Strategy for Sustainable and Circular Textiles. In addition, this number is in line with the data provided in the JRC 2023 report (Joint Research Centre, 2023). During the JRC workshop on textile waste[151], stakeholders confirmed that a 3% compound annual growth rate is a realistic outlook for the EU.

Under these assumptions, **apparent consumption is expected to increase from 12.0 Mt in 2019 to 17.4 Mt in 2035.**

The value of each indicator (import, domestic production or export) of a product in 2035 is the calculated as:

$$I_{2035} = I_{2021}(1 + CAGR)^{\Delta t}$$

Where:

- I_{2035}: is the value of the indicator in 2035.
- I_{2021}: is the value of the indicator in 2021.
- $CAGR = 0.03$.
- $\Delta t = 14$, being the time (in years) between 2021 and 2035.

Note that projections are made starting from year when we have the most recent observation (2021).

- *Recycling of post-industrial and pre-consumer waste*

[150] Joint Research Centre. 2023. "Techno-scientific assessment of the management options for used and waste textiles - Preparatory study for the possible setting of preparation for re-use and recycling targets" (unpublished work).
[151] Workshop organised by JRC on 18-19 April 2023 to discuss a draft version of their report (Joint Research Centre, 2023). More than 150 organisations, including industry organisations active in the textile sector, participated in this workshop.

Post-industrial and pre-consumer waste generation are estimated as 37% of the textiles produced in the EU, with losses assumed from the production of yarns, fabrics, and finished textiles equivalent to 8%, 13%, and 20% of their total production, respectively (Sadowski et al., 2021). Pre-consumer waste was assumed to be 3% of the textile placed on the market (McKinsey & Company, 2022). It is assumed that these shares do not change in comparison with the status quo scenario (reference year 2019).

The recycling of post-industrial and pre-consumer textile waste is assumed a constant share of the total recycling capacity estimated. It is assumed that the ratio of the ratio (post-industrial plus pre-consumer waste sent to recycling)/total textile waste sent to recycling) remains equal to status quo scenario, at 33%.

The projection is thus based on two following assumptions:

- future total recycling capacity in 2035 of 1.3 Mt yr^{-1} (see section 2.6, estimate based on JRC 2023 report and ensuing discussions during the JRC workshop, to be fine-tuned).
- as for current-state scenario, 1/3 of total recycled textile mass is assumed to come from post-industrial waste.

Recycled post-industrial and pre-consumer waste in 2035 is then projected as:

$$\frac{1.3}{3} = 0.43\ \frac{Mt}{yr}$$

Note that this 0.43 Mt will include a minor share of post-industrial waste which is imported in EU (data retrieved from Comext database) and assumed to go directly to recycling.

- *Separate collection*

Total separately collected textile in 2035 assumed to be between 3.2 and 3.6 Mt yr^{-1}, based on Kohler et al. (2021). This assessment is based on an estimated growth of separately collection in the EU-27 of 65 000 to 90 000 tonnes yr^{-1}. The upper bound is preferred since separate collection is low in many EU countries and is likely to increase significantly before 2035. Based on these assumptions, the best estimate for separately collected textiles in baseline scenario is assumed 3.6 Mt yr^{-1}.

- *Export of unsorted separately collected textiles*

Relative to the 2019 status quo scenario, a decrease in the exports to third countries of unsorted textile waste is expected because:

(i) At present, approximately 50% of the textiles are exported to non-OECD countries. With a possible revised Waste Shipment Directive in place, environmental sound waste management practices and the demonstration thereof may be instated for such textile waste;

(ii) In addition, and potentially also in response to the point above, receiving countries may set stricter quality requirements on the amounts and types of textiles that are they import.

At present, no data are available to estimate the impact of such revised settings on the export of unsorted waste, but it seems likely that some of the exports may continue to take place to the same

or other third countries, whereas a different share of the fraction may be rerouted to the EU for domestic sorting. In the absence of sound data, it is assumed that the exports of unsorted textile waste may overall decrease by 25%, mainly due to reduced exports to non-OECD countries.

- *Textiles export after sorting in EU*

A lower quality in the separately collected textiles, and subsequent reductions in the fraction that is re-usable, could be expected in case increased separate collection circumvents certain (worn-out or damaged) textiles from ending up in mixed municipal solid waste. It can be assumed that this value decreases to 42% for the supplementary collected apparel and household textiles (Joint Research Centre, 2023; section 4.1.4 – with 42% is the average value of studies listed). Reuse share of sorted textiles is then projected in 2035 as the weighted average of the re-usability of currently separately collected textiles (2.44 Mt yr^{-1}) and the future fraction that will be separately collected (1.16 Mt yr-1), as follows:

$$Reuse\ [\%] = \left(\frac{2.44}{3.6}0.57 + \frac{3.6 - 2.44}{3.6}0.42\right) \times 100 = 52\%$$

Where:

- 2.44 Mt yr-1 is the mass of separately collected textiles in current-state scenario.
- 0.57 is the share of "high-quality" textiles going to reuse (in and outside EU) after sorting.
- 3.6 Mt yr-1 is the mass of separately collected textiles in baseline scenario.
- 0.42 is the share of "lower quality" (additionally collected) textiles going to reuse (in and outside EU) after sorting.

The exports involve both textiles that are destined for re-use as well as further sorting the third country of destination.

2.5 Re-use in the EU

Similar to the status quo scenario, it is assumed that re-use in the EU of the separately collected waste is only small fraction of the total fraction of the separately collected waste (~8%).

- *Recycling of post-consumer textile waste (after sorting)*

The current recycling capacity for the year 2023 is estimated in the EU is estimated at 0.75-0.80 Mt yr-1. In case we assume an average compound annual growth rate that is similar to historic capacity developments for the recycling of other secondary raw materials (paper and cardboard, packaging waste (with a compound annual growth rate of 3%-5.5%; Joint Research Centre, 2023), the total textile waste recycling capacity in 2035 would grow to approx. 1.3 Mt yr-1. Assuming that, similar to the status quo scenario, about 66% of this capacity is being used to process post-consumer waste, the total recycling of post-consumer waste would be projected as:

$$1.3 \times 0.66 = 0.87\frac{Mt}{yr}$$

- *Incineration and landfill rate*

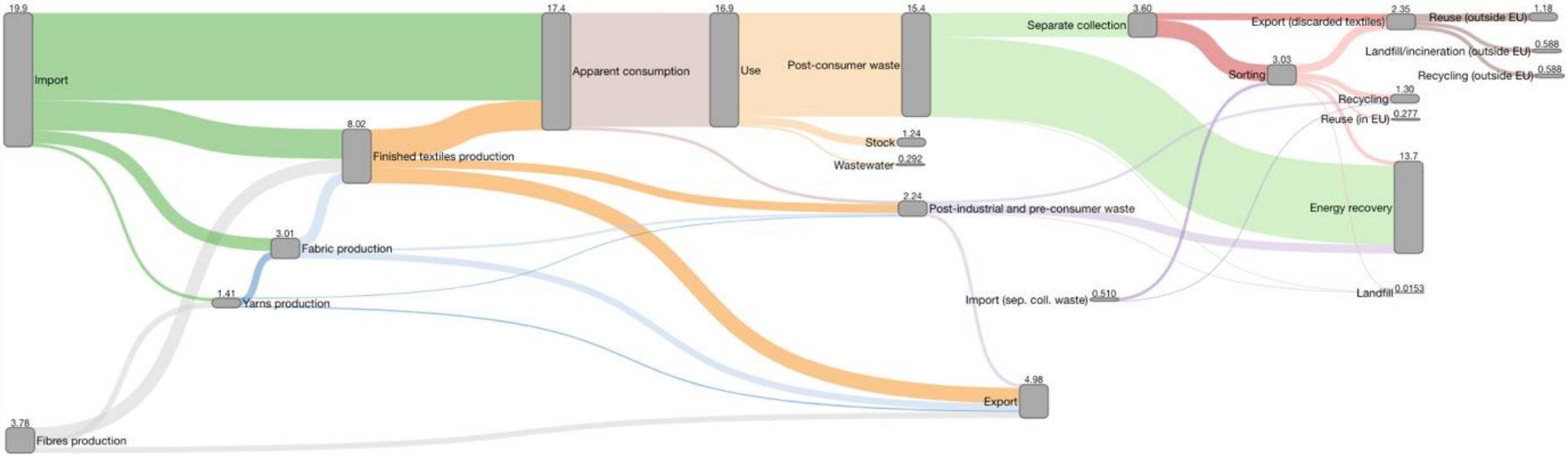
Mass of discarded textile not separately collected, selected for reuse or recycling or exported, was sent to energy recovery or landfill, based on proportions found in data on mixed waste treatment

in Eurostat. In case of current-state scenario, this proportion was calculated based on Eurostat data for 2019. In case of baseline scenario, the proportion for 2035 was projected by means of linear regression over time.

- *Import of textile waste*

Mass of imported textile was estimated based on data from Comext database. For current-state scenario, data referred to 2019 were used. In case of baseline scenario, imported textile waste in 2015 was projected by means of linear regression over time.

Figure 7 – Mass flow analysis for textile generation and waste management in the EU (for the baseline scenario for 2035). The mass flows in each node are expressed in Mt/year



2- Food Waste

Globally, consumer food waste occurs at the retail (13%), food service (26%), and household (61%) stages of the food supply chain and accounts for 17% of global food production[152]. Recent estimates suggest that household food waste accounts for a large share of consumer food waste regardless of a country's GDP.

In the EU, the situation is similar. The first EU-wide monitoring of food waste levels[153] shows that 71% of food waste generated arises at consumption (53% households, 9% restaurants and food services and 7% at retail). Eurostat roughly estimates that around 10% of food made available to consumers may be wasted.

The main drivers and situations that generate food waste in the food value and consumption chain are widely documented[154] and relate to: **insufficient consumer food management**; **inefficiencies and trade-offs in the food supply chain**; and **lack of understanding and certainty regarding food safety standards**. Moreover, in the EU – except for a few front runners – the **lack of evidence-based, coordinated approaches in MS** leads to food waste generation going largely unchecked.

Insufficient consumer food management

At the **consumer level**, the drivers[155] and behaviours that lead to food waste are complex and often inter-related. These can occur during planning, shopping, storing, preparing and/or consuming stages.

Food waste reduction depends on consumers' motivation, opportunity and ability to act[156,157]. There may be **insufficient motivation to take action** due to a number of factors including lack of awareness about food waste; attitudes and/or level of concern about food waste and its related impacts; lack of self-awareness on the amount of food generated; food prices in relation to household incomes; lack of role models and other examples pointing to food waste prevention as

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[152] United Nations Environment Programme Food Waste Index Report 2021, Nairobi, 2021.

[153] Food waste and food waste prevention - estimates - Statistics Explained (europa.eu), Eurostat, 2022.

[154] FAO, *The State of Food and Agriculture. Moving forward on food loss and waste reduction*, 2019; UNEP, *Food Waste Index Report 2021*; Champions 12.3, *Changing behaviour to help more people waste less food – a guide*, 2022; *Combating food waste: an opportunity for the EU to improve the resource-efficiency of the food supply chain* (see note 29, page 5)

[155] Attiq, S., Danish Habib, M., Kaur, P., Junaid Shahid Hasni, M., & Dhir, A., *Drivers of food waste reduction behaviour in the household context*, Food Quality and Preference, 94, 2021, doi:10.1016/j.foodqual.2021.104300; Canali et al. *Drivers of current food waste generation, threats of future increase and opportunities for reduction*, FUSIONS Project. ISBN: 978-94-6257-354-3, 2014.

[156] van Geffen, L., van Herpen, E., Sijtsema, S., van Trijp, H., 2020. *Food waste as the consequence of competing motivations, lack of opportunities, and insufficient abilities.* Resour. Conserv. Recycl. X 5, 100026. https://doi.org/10.1016/j.rcrx.2019.100026.https://doi.org/10.1016/j.rcrx.2019.100026.

[157] Vittuari, M., Herrero, L. G., Masotti, M., Iori, E., Caldeira, C., Qian, Z., ... & Sala, S. (2023). *How to reduce consumer food waste at household level: A literature review on drivers and levers for behavioural change*. Sustainable Production and Consumption.

a social norm[158]. **Lack of opportunity** such as time constraints affecting meal planning and preparation, not having access to technologies supporting food management (e.g., freezing) or to advice on how to store and re-use food safely can lead to food being wasted[159]. **Lack of ability** (knowledge and skills) can also contribute to insufficient food management, leading to food waste[160].

One of the main reasons leading to avoidable food waste in households is food not being used in time[161] including due to the misunderstanding of the meaning of date marking[162]. This results in perishable food products being wasted in larger quantities than other product types[163].

Consumers' motivation and ability to prevent food waste as well as opportunities and barriers in doing so may **vary according to different population groups**. For instance, child pickiness and disgust sensitivity are known drivers of food waste in households with young children[164]. **Cultural norms**, such as cooking more than the family or group of visitors could possibly eat, remain present in many Member States and worldwide.

Moreover, the consumer **trend towards healthier diets**[165] and increased demand for fresher, chilled and convenience foods will result in a greater share of grocery products within the food categories where date marking issues are more likely to drive food waste[166,167]. Consumer **expectations regarding the appearance of food** (such as the size and shape of fruit and vegetables) can contribute to food waste upstream in the food supply chain just as the **food**

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[158] Hebrok, M., Boks, C., 2017. *Household food waste: Drivers and potential intervention points for design – An extensive review*. J. Clean. Prod. 151, 380–392. https://doi.org/10.1016/j.jclepro.2017.03.069;

[159] van Geffen, L., van Herpen, E., van Trijp, H., 2020. *Household Food Waste—How to Avoid It? An Integrative Review, Food Waste Management*. Springer International Publishing, Cham, pp. 27–55. https://doi.org/10.1007/978-3-030-20561-4_2

[160] Bravi, L., Francioni, B., Murmura, F., Savelli, E., 2020. *Factors affecting household food waste among young consumers and actions to prevent it. A comparison among UK, Spain and Italy*. Resour. Conserv. Recycl. 153, 104586. https://doi.org/10.1016/j.resconrec.2019.104586

[161] Champions 12.3, *Changing behaviour to help more people waste less food – a guide*, 2022

[162] Flash Eurobarometer 425 (2015): while 58% of Europeans state that they always check 'use by' and 'best before' labels when shopping and preparing meals, less than half understand the meaning of 'best before' (47%) or 'use by' (40%).

[163] European Commission, Directorate-General for Health and Food Safety, *Market study on date marking and other information provided on food labels and food waste prevention : final report*, Publications Office, 2018, https://data.europa.eu/doi/10.2875/808514.

[164] Danish Centre for Food and Agriculture (DCA), *Consumer behaviour towards food waste in families with children*, DCA Report No. 196, p. 55 (2021).

[165] Moz-Christofoletti, M.A.; Wollgast, J., Sugars, Salt, *Saturated Fat and Fibre Purchased through Packaged Food and Soft Drinks in Europe 2015–2018: Are We Making Progress?*, Nutrients 2021, 13, 2416.

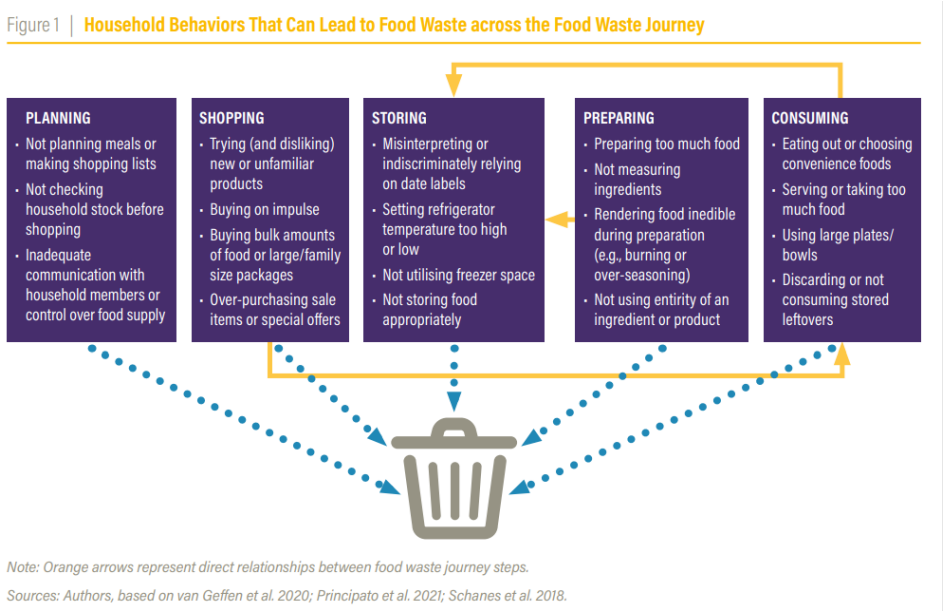
[166] Bumbac, R., *The European food market – increased consumer preference towards convenience and healthy food*. Junior Scientific Researcher, Vol V, No. 2, pp. 53-61.

[167]European Commission, Directorate-General for Health and Food Safety, *Market study on date marking and other information provided on food labels and food waste prevention*: final report, Publications Office, 2018, https://data.europa.eu/doi/10.2875/808514.

environment can also influence consumer food purchases and habits (e.g., availability of 'doggy bags' in restaurants to take home surplus food from meals)[168,169].

Figure 41 provides an overview of the type of behaviours that can lead to food being discarded in the home[170].

Figure 8 – Overview of consumer behaviours leading to food waste



Practices of food business operators at retail and in restaurants/food services can also influence food waste at consumption[171]. At **retail**, marketing strategies (two-for-one deals, for example), may promote food nearing the end of its shelf-life, addressing overstocking problems. However, this may shift some of the food waste from retail to households, where sufficient time to safely consume products is lacking.

In **cafeterias/canteens**, where portion sizes are imposed, food waste is generated that might have been avoided by allowing customers to serve themselves and pay for their serving by weight. In **restaurants,** proposing doggy bags to customers can help both raise awareness regarding the importance of food waste and avoid plate waste. The dynamics of the broader food environment

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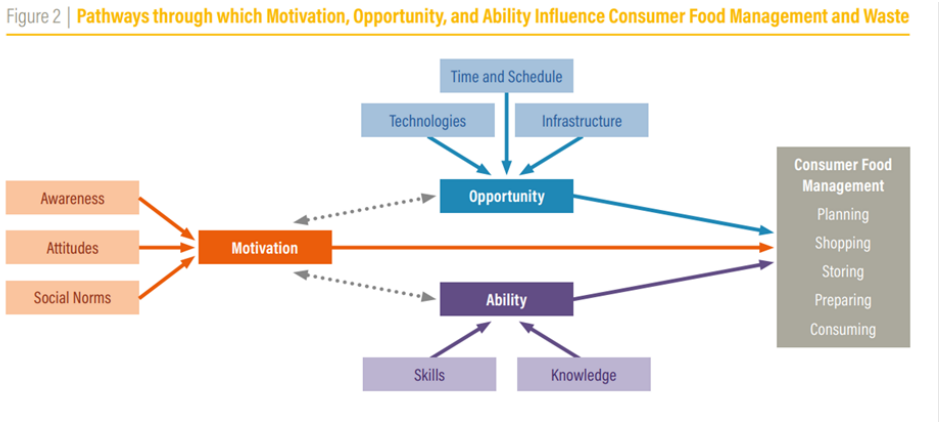
[168] REFRESH, *Policies against consumer food waste*, Background report contributing to "REFRESH Policy brief: reducing consumer food waste" (D3.4), 2019.
[169] HLPE, *Food losses and waste in the context of sustainable food systems*, 2014.
[170] Champions 12.3, *Changing behaviour to help more people waste less food – a guide*, 2022.
[171] Wu, Q., & Honhon, D. (2022). Don't waste that free lettuce! Impact of BOGOF promotions on retail profit and food waste. *Production and Operations Management*, doi:10.1111/poms.13884.
Calvo-Porral, C., Medín, A. F., & Losada-López, C. (2017). Can marketing help in tackling food waste?: Proposals in developed countries. *Journal of Food Products Marketing*, *23*(1), 42-60. doi:10.1080/10454446.2017.1244792

through marketing practices, offers and advertisements can also influence food waste at consumption[172].

At the consumer level, the drivers and behaviours that lead to food waste are also impacted by market causes, for instance, the **price of food**. As increased food productivity has, over the years, driven down the price of food, it may be perceived as having a relatively low value. Buying more for convenience is an option when food is relatively cheap, and when food is generally seen as abundant and always available. The **challenge however lies in how to ensure higher perceived value of food, without actually increasing the price of food**. The growing interest in short supply chains (as reflected in the recommendations of the Citizens' panel) may also help combat food waste by closing the gap between producer and consumer and building greater appreciation for food.

Evidence suggests that changing consumer behaviour as regards food waste cannot rely on simple awareness raising but requires a mix of different interventions targeted to address specific behaviours and population groups. There are numerous evidence-based behavioural change models that can be applied to help change food waste-related behaviours. The Motivation-Opportunity-Ability (MOA) model, particularly relevant for food waste prevention (see figure 42 below). According to the model, all three components (motivation, opportunity and ability) must be present to enable a given behaviour and interact with each other in influencing the behavioural outcome.

Figure 9 – Pathways to influence consumer food management and waste



In order to curb consumer food waste, joined-up action involving multiple players is needed, in particular: policy makers, food businesses, non-food businesses (e.g., technology providers), non-governmental organisations (consumer, environmental…) and educators/other influencers (including social media).

Countries which have achieved significant reduction of consumer food waste associate both **public-private partnerships** between government and actors in the food supply chain, committed to a common roadmap for food waste reduction at national level, with a **public behaviour change**

[172] Flanagan, K., Robertson, K., & Hanson, C. (2019). Reducing Food Loss and Waste: Setting a Global Action Agenda. World Resources Institute. https://doi.org/10.46830/WRIRPT.18.00130

campaign[173]. The United Kingdom achieved a 27% reduction in post-farm gate food waste per capita by 2018 relative to its base-year measurement from 2007 (for food excluding its associated inedible parts). The Netherlands achieved, from 2010 to 2022 a 30% reduction at the consumption stage of the food value chain[174,175]. In its **recommendations for action for food waste prevention**[176], the EU Platform on Food Losses and Food Waste highlighted the need to develop and use a wider range of methods to better understand consumer behaviour as regards food waste and design effective solutions. Of particular interest is the increased use and development of audience segmentation in order to design more effective food waste prevention interventions, tailored to address the needs and expectations of specific population groups.

In the EU, the **European Consumer Food Waste Forum**[177] brings together both academics and practitioners to work together to develop solutions and tools to address consumer food waste, and is expected to deliver a best-practice compendium by July 2023. The compendium will target consumers directly, educational institutions, and other relevant target groups, while it will support improving action design, monitoring, evaluation and knowledge sharing regarding food waste prevention interventions, addressing consumers' motivation, opportunity and capability to influence food waste-related behaviour.

Inefficiencies and trade-offs in the food supply chain

In pursuing an economically efficient approach, actors in the food supply chain may not always prioritise efficient use of natural resources and the reduction of environmental impacts. Moreover, issues relating to food business operations both within organisations as well as a lack of cooperation between supply chain actors can lead to food waste. Drivers of food waste in the food value chain include: inefficiencies in the production, handling, storage, processing, packaging, distribution and marketing of food; lack of measurement, diagnosis and corrective action to address food waste in business operations; poor stock management; inaccurate forecasting of supply and demand as well as lack of cooperation between key actors and unfair trading practices (e.g. last minute order cancellations) [178,179].

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[173] Champions 12.3. Food Loss and Waste. 2020 Progress Report.
[174] The Netherlands Nutrition Centre Foundation, 2019. Synthesis report on Food Waste in Dutch Households in 2019.
[175] The Netherlands Nutrition Centre Foundation, 2023. Synthesis report on Food Waste in Dutch Households in 2022. From 2010 to 2019 a reduction of 29% in Dutch households was achieved, however between 2019 and 2022, there was a decrease in the pace of reduction, leading to a 30% reduction overall from 2010 to 2022. The decrease in pace may be due to easiest gains having been achieved over the first years, with further reduction requiring a combination of actions and tools to achieve further behavioural change
[176] https://food.ec.europa.eu/system/files/2021-05/fs_eu-actions_action_platform_key-rcmnd_en.pdf.
[177] https://knowledge4policy.ec.europa.eu/projects-activities/european-consumer-food-waste-forum_en.
[178] Ghosh, R., & Eriksson, M., *Food waste due to retail power in supply chains: Evidence from Sweden. Global food security*, Global Food Security, Volume 20, March 2019, pp. 1-8.
[179] Messner, R., Johnson, H. and Richards, C., *From surplus-to-waste: A study of systemic overproduction, surplus and food waste in horticultural supply chains*, Journal of Cleaner Production. Volume 278, 1 January 2021, 123952.

There is a wide diversity of potential causes of food wastage in the food supply chain[180]. Each stage of the food supply chain has its specificity, still some causes originate in more than one stage.

- In the **agriculture (production) sector,** it is important to **distinguish between food losses and food waste.** Natural, unpredictable climatic variations or damage caused by pests may lead to food losses when crops are spoiled. Fruits and vegetables may also be bruised or otherwise damaged during harvesting. Overproduction may also lead to on-farm losses if there is a lack of demand for produce. In the EU, **food waste occurring in primary production** concerns crops that are harvested (or fish/animals after, respectively, catching or slaughter) and which are later discarded. Waste may be generated, for example, as a result of strict quality/size standards imposed by the market. It is especially relevant for fruit and vegetables, where there may be no market for products that do not comply with marketing standards (be they public or private). Handling and storage damage and logistical mismanagement (e.g., poor handling of produce) may also results in food waste.
  Cooperation with actors downstream in the food supply chain is also essential: unpredictable contractual terms and/or last-minute order cancellations by retailers can lead to produce being wasted if no other market opportunity can be found[181]. In 2018, the Commission's impact assessment accompanying the legislative proposal for an EU Directive on unfair trading practices in business-to-business relationships in the food supply chain[182] pointed to their possible impact on food waste. For example, economic operators who are not subject to UTPs may be left with more economic margin to invest in producing in environmentally sustainable and climate-friendly ways and to prevent food waste. Food waste is identified as a common side-effect of particular types of UTPs and addressing the systemic issue within the European grocery supply chain could be an opportunity to address both the commercial losses incurred by suppliers and food waste.
- The **manufacturing and processing sector,** shares some similar food wastage causes to the production side, where lack of market demand or poor demand forecasting can lead to overproduction. Conversely, inadequate processing capacity for seasonal production peaks can also lead to food waste. Also, the need for high quality/size/visual standards may be a cause of food wastage: for example, food sorted out as not suitable for processing and/or excessive trimming to attain certain quality and/or aesthetic standards. Damage caused by technical malfunctions during manufacturing processes (e.g., wrong size or damaged packaging, fish spilled or damaged during canning or smoking) and poor product handling are also causes of food waste. Some by-products from food from manufacturing (processing losses) may also end up as food waste if they are sent to landfill, incineration or composting, although they could

[180] ECA report SDG Target 12.3 on Food Loss and Waste, 2016, 2019 Progress Report: an annual update on behalf of Champions 12.3; SOFA, 2019; Impact Assessment on measures addressing food waste to complete SWD (2014) 207 regarding the review of EU waste management targets.
[181] European Court of Auditors (2016). *Combating food waste: an opportunity for the EU to improve the resource efficiency of the food supply chain.*
Feedback (2017). *Causes of food waste in international supply chains.* https://feedbackeurope.org/wp-content/uploads/2017/02/Causes-of-food-waste-in-international-supply-chains.pdf
Roels K. & Van Gijseghem D. (2017) The impact of cosmetic quality standards on food losses in the Flemish fruit and vegetable sector, summary report, Department of Agriculture and Fisheries, Brussels. D/2017/3241/301
[182] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018SC0092&from=EN.

also be processed into animal feed (in compliance with food safety and animal health regulations) or used for industrial processes.
Food manufacturers and processors may also be subject to unfair trading practices such as last-minute order cancellations or, depending on their contractual terms, be forced to take back products that were not sold.

- In the **retail and other distribution** sector, stock management related issues are a key cause of food waste, particularly in relation to shorter shelf-life products, with difficulties in anticipating demand resulting in overstocking. This is linked to storage issues, with meat, fish and dairy products particularly vulnerable to temperature changes during transportation, storage and in-store, risking premature spoilage and impacting food safety. Variability in demand, products not sold despite 'mark down' and products sorted out due to cosmetic requirements are all reasons for food wastage at retail level.
  Supply chain management systems can also affect food waste. The length of remaining shelf-life on a product delivered to the retailer is a key factor driven by the stock control function of date marks ('use by' and 'best before'). While ensuring sufficient available shelf-life at retail and consumption is important, the setting by retailers of strict Minimum Life On Receipt (MLOR) criteria may result in product returns and food waste[183].

- In the **food service** sector similar logistical issues can cause food waste, with difficulty in anticipating number of clients leading to overstocking or cooking of surplus food. In addition, portion sizes and the 'one size fits all' approach have been identified as a significant cause of food waste within this sector. In relation to leftovers, the practice of taking leftovers home from restaurants is not yet as widely accepted across Europe as it could be. Catering in institutions such as hospitals creates particular food waste problems because individuals have specific needs and often have little control over-eating times, portion sizes or meal choices.
- As part of the food supply chain, **food banks and other charity organisations,** which collect surplus food, store and redistribute it to people in need, they may also generate food waste. This can happen due to incorrect storage and handling as well as due to logistical challenges linked to fluctuating demands of beneficiaries. Moreover, food banks may receive donations of products with insufficient shelf life, and food waste generated if products cannot be redistributed before the date has passed. At EU level, the European Food Banks Federation is leading efforts to establish an online Observatory on Food Donation[184], where food banks across Europe can report on their operations (e.g., quantities of redistributed food, number of volunteers etc.), including their food waste levels.

Several companies from the middle part of the food supply chain have committed to taking actions to reduce food waste, as part of their commitments to the EU Code of Conduct on Responsible Food Business and Marketing Practices[185]. The EU Code of Conduct contains 7 aspirational objectives that companies can set to improve their sustainability performance; the Code's second aspirational objective being the prevention and reduction of food loss and waste at consumer level,

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[183] European Commission, Directorate-General for Health and Food Safety, *Market study on date marking and other information provided on food labels and food waste prevention: final report,* Publications Office, 2018, https://data.europa.eu/doi/10.2875/808514.
[184] https://lp.eurofoodbank.org/feba-training-and-skill-sharing-sessions/data-collection-2020/.
[185] EU Code of Conduct on Responsible Food Business and Marketing Practices (July 2021).

within internal operations and across value chains. 40% of the signatory companies made commitments under this objective, mainly to minimise food loss and waste within their operations and across the supply chain, although most of these re-state the Code's aspirational target of halving food waste by 2030 without providing details on how to achieve this.

Nonetheless, there are also examples of **documented progress** in reducing food waste. The International Food Waste Coalition (IFWC), which represents key players in Europe's hospitality and food service sectors, launched a voluntary agreement to reduce food waste and developed a methodology for food waste measurement and reporting. New data reported by IFWC members in 2022[186] shows that food waste has dropped by more than 20% across Europe's hospitality and food service sector since 2019, representing an average of 108 grams of waste per cover. The results show that, despite the negative impact of the pandemic on the food services and hospitality sector, prevention measures such as forecasting, planning, consumer engagement and food redistribution are driving a sustainable trend towards more effective food waste reduction.

Lack of understanding and certainty as regards the implementation of food safety standards

Lack of understanding and certainty as regards the implementation of food safety and quality standards may lead to situations where food that is still safe for human consumption is unnecessarily removed from the food supply chain.

In the **manufacturing and processing sector**, and in some instances also in retail, food waste may occur due to the misunderstanding of date marking set out in EU food labelling rules[187]. According to these, it is the responsibility of the food business operator to decide– with the exception of table eggs and poultry meat – whether a pre-packed food product is marked with the date of minimum durability or the 'use by' date and the length of shelf-life. In doing so, food business operators are required to ensure food safety, and tend to act cautiously to take account of differences in storage conditions within the food supply chain and households. Assessing the length of shelf-life for some products can be a complicated exercise: with more certainty – and an easier applicability – of this assessment, food waste may be avoided for such products.

Mainly in the **retail and other distribution** sector, the traceability requirements for food safety purposes have been raised as a potential cause for food waste. Operators must at all times be able to identify from whom (suppliers) and to whom a product has been supplied (i.e., buyers or recipients of donated food such as food banks, except final consumers). Additional traceability requirements are imposed for foods of animal origin. Particularly the requirement to be able to trace a product forward in the chain is regarded by some retailers as an additional administrative burden, and thereby an obstacle for the donation of surplus food. Usually, retailers do not need to comply with this requirement as they mostly sell their products to final consumers. However, food safety must be ensured throughout the food supply chain, including food donation. It is therefore crucial to ensure full traceability to prevent and/or contain a possible food safety incident. As a growing number of retailers engage or wish to engage in food donation activities, the perceived

[186] https://internationalfoodwastecoalition.org/wp-content/uploads/2022/03/IFWC_FW-Report_Final.pdf.
[187] Regulation (EU) No 1169/2011 on Food Information to Consumers

obstacle has been recently raised by the EU Fit for Future Platform[188]. In its opinion, the Platform suggests that the Commission explore the possible benefits of updating the EU Guidelines on Food Donation.

Lack of evidence-based, coordinated approaches in Member States[189]

While Member States have committed to reaching SDG Target 12.3, overall, **action taken so far at national level is insufficient and not at the level and scale required** all Member States have some actions in place to prevent food waste; however, the level of ambition, the degree to which measures have been implemented, and results obtained vary considerably. Furthermore, the **lack of evidence-based, coordinated approaches** in Member States means that the systemic causes of food waste are not adequately addressed and that food waste is not decreasing at the pace and scale required.

The primary focus of food waste prevention should be to act at the source by avoiding the generation of surplus food at each stage of the food supply chain (i.e., production, processing, distribution and consumption) and, if such surplus arises, to recover them and ensure the highest value use of food resources, in line with the waste prevention hierarchy. Food waste prevention therefore requires an integrated approach, coordinated by various national authorities and involving all actors along the food value chain, including consumers, as well as NGOs and academia.

In this regard, the United Nations Environment Programme[190] calls on governments to follow the "Target-Measure-Act" approach promoted by the high-level coalition Champions 12.3[191] as a proven way (for both governments and companies) to achieve rapid and concrete results regarding food waste prevention. Targets set ambition and can help guide effective action based on food waste diagnostics (that is, carrying out a baseline assessment of food waste levels and "hotspots" in order to identify corresponding solutions). In 2022[192], the Champions 12.3 report that global progress by governments and companies on achieving SDG Target 12.3 is slower than needed, which is also reflected in the state-of-play in the EU.

The status of food waste prevention policy implementation was established by extracting information for each Member State from the EU Food Waste and Prevention Hub (EU Hub), complementing the available information with what was reported in the survey sent to Member States, conducted during summer 2022 as part of targeted consultations to support the impact assessment (for further details, see Synopsis Report). Additional information was extracted also from surveys carried out in 2020: by the Commission, on the EU Platform recommendations for

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[188] EU Fit for Future Platform, opinion adopted 5 December 2022.

[189] This assessment is based on: De Laurentiis, V, Mancini, L, Casonato, C, Boysen-Urban, K, De Jong, B, M'Barek, R, Sanyé Mengual, E, Sala, S. *Setting the scene for an EU initiative on food waste reduction targets*. Publication Office of the European Union, Luxembourg, 2023, doi: 10.2760/13859, JRC133967

[190] United Nations Environment Programme (2021). Food Waste Index Report 2021. Nairobi.

[191] Champions 12.3 is a coalition of executives from governments (including Commissioner Kyriakides), businesses, international organizations, research institutions, farmer groups, and civil society dedicated to inspiring ambition, mobilizing action, and accelerating progress toward achieving SDG Target 12.3 by 2030.

[192] SDG Target 12.3 on Food Loss and Waste: 2022 Progress Report | Champions 12.3 (champions123.org)

action; by the German Presidency, to sound Member States for their contributions in preparation of a progress assessment on implementation of the 2016 Council Conclusions on Food Losses and Food Waste. Finally, findings from a review of Member States' Country Profiles by the European Environment Agency, based on Member States' submission to the Commission, as part of the legal obligation for Member States to send updates on their National Waste Prevention Programmes (NWPP) by 5 July 2020 (following the 2018 revision of the Waste Framework Directive) were also considered.

Member States' feedback and description of their food waste prevention initiatives are varied and come from different sources, including their own updates on the EU Hub[193], making the exercise of an overview difficult. In many cases, the distinction between the political commitment to the SDG Target 12.3 and the concrete implementation is difficult to discern. The categorization of the level of Member States' policy implementation described below is based on the availability of evidence concerning related activities, both on the Hub and institutional documents, of commitment to specific policy objectives, clarity in charting a consistent action plan and the timeline of implementation.

While the majority of the Member States (20) have expressed a commitment to SDG Target 12.3 (with 3 doing so in the last year), the extent to which this commitment is matched by similarly ambitious targets is uncertain. **Three front-runner Member States (**Netherlands, Germany and France) **have actually taken an evidence-based approach in setting targets, implementing actions to address specific hotspots, and monitoring their effectiveness**, **following the recommended "Target-Measure-Act" approach.**

While the majority of other Member States have actions in place, it seems that only 9[194] of these have developed national strategies/roadmaps or plans in line with the SDG Target 12.3, however with limited or partial evidence of monitoring and evaluation of their effectiveness. Another 11 Member States[195] report on actions undertaken at national level; however, these appear to be still at an early stage of development and/or are limited to certain areas only (e.g., voluntary agreements, redistribution and awareness campaigns), whilst monitoring and evaluation of actions are either not defined or unclear. Significantly, for this group of Member States, overall coordination of efforts at national level is unclear. For the remaining 4 Member States[196], actions have been implemented only very recently, and measures are sporadic and/or limited, with little or no documentation of results available. **Overall, however, the situation in the EU – based on the nature and level of activity – shows that only three Member States are well positioned to make significant progress in achieving SDG Target 12.3.**

All Member States have adopted varied legislative and non-legislative national measures to reduce food loss and waste and continue to integrate them in their national strategies or relevant legal frameworks as part of an ongoing process to reduce food loss and waste. Generally, it can be

[193] Cyprus and Malta did not submit text to the MS HUB.

[194] Member States with mid-to-high level actions: Austria, Belgium (particularly Flanders and Brussels capital), Croatia, Finland, Ireland, Italy, Portugal, Spain, and Sweden.

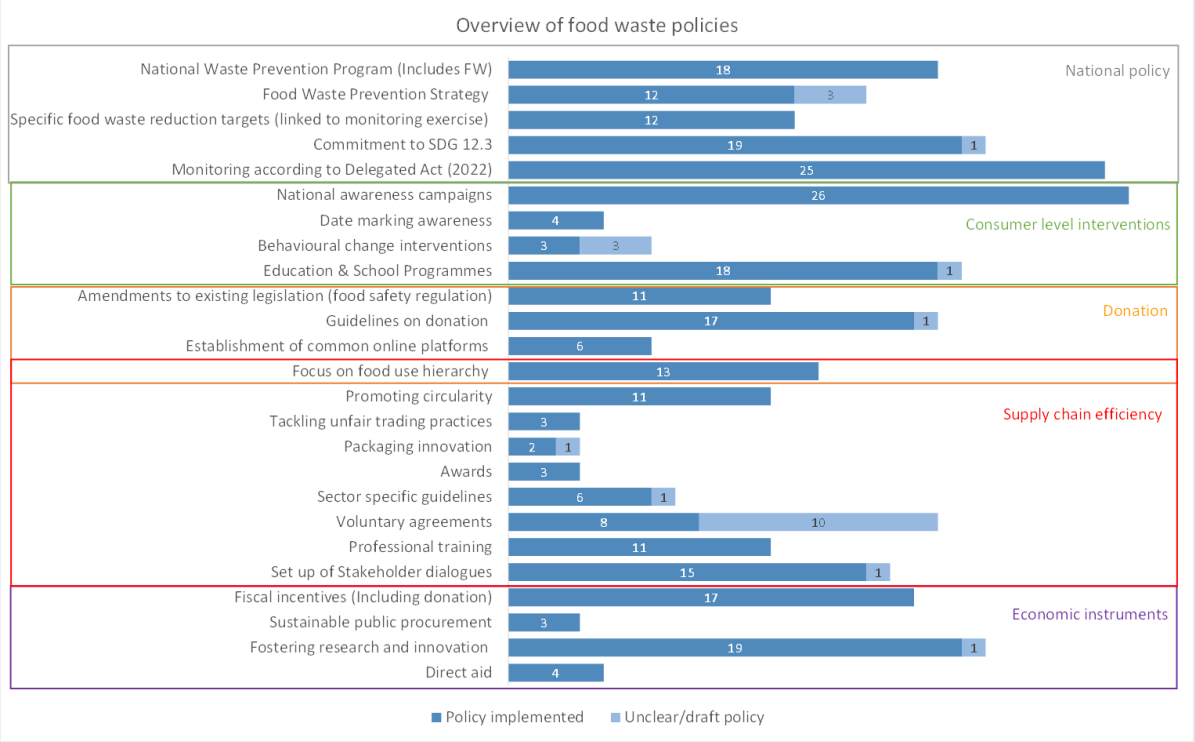
[195] Member States with low-to-mid level actions: Bulgaria, Czechia, Denmark, Estonia, Greece, Hungary, Latvia, Lithuania, Luxembourg, Slovakia and Slovenia.

[196] Member States with low level actions: Cyprus, Malta, Poland and Romania.

affirmed that the policy actions that are implemented mostly concern non-regulatory approaches, prioritising awareness raising and educational initiatives (towards citizens and, to a lesser extent, economic operators) with some undertaking more structured stakeholder engagement approaches through the establishment of "voluntary agreements" with actors in the food supply chain (e.g., Austria, Belgium, Denmark, Germany, Finland, Greece, Ireland, Hungary, Poland, Portugal and Sweden). Fewer Member States have taken legislative measures including umbrella legislation aiming to reduce food waste across the food supply chain (e.g., France, Italy and draft legislation in Spain); specific legislative measures imposing obligations as regards food donation (e.g., Czech Republic, France, Hungary, Poland). Economic instruments are also employed, especially through fiscal exemptions for donated surplus food, while direct financial aid is explicitly cited by France, Croatia and Netherlands (support to food business operators) and by the Czech Republic (as regards support to food banks).

Figure 43 shows the breakdown of national policies in detail and highlights the variability in the political response of Member States to food waste prevention: the actions are broadly divided into national policy (along with monitoring and targets); consumer level actions; facilitation of food surplus donation; supply chain efficiency and economic instruments. The lighter blue bars represent the Member States that cite the specific policy actions, but which are either at a draft stage or the implementation is not clear (absence of clear commitments).

Figure 10 – Overview of food waste policies and actions at MS level (apart from the category "Monitoring according to Delegated Act (2022)" the total reference number is considered to be 28, as the regions of Flanders and Wallonia were mapped separately)



A front runner outside the EU, demonstrating the "Target-Measure-Act" approach is the UK. The textbox below illustrates the main actions taken to date by the UK.

The "Target-Measure-Act" approach in UK (non-regulatory)

- **Overall strategy and roadmap:** Target in line with SDG Target 12.3 vs a UK baseline of 2007.
- **Food waste diagnosis and evidence-based approach:** WRAP has regularly published estimates or progress reports on food waste reduction since 2011.
- **Governance:** The Waste and Resources Action Programme (WRAP) a climate NGO, was established (2000) and has run all major food waste prevention actions (listed below) in the UK and supported from the UK Government. Many actions are also part of the UK resources and waste strategy (2018).
- **Supply Chain Engagement**
  - The **Courtauld Commitments** is an evolving series of **voluntary agreements**, funded by the UK governments and the food sector, delivered by WRAP (2005, 2010, 2013, 2015, 2021 – the current agreement running to 2030). In 2012, an independent voluntary agreement was launched for the **hospitality and food service sector**, covering approx. 25% of the sector.
  - **The Food Waste Reduction Roadmap** was launched as the key delivery mechanism for the food waste target for the Courtauld Commitment 2030 and in which food businesses are urged to commit and implement '**Target-Measure-Act'** principles to ensure they future-proof their business for potential regulatory requirements (2023).
  - Launch of the "**Guardian of Grub"** initiative, reducing waste from kitchen and plate by showcasing best practices and making business cases (2019).
  - The **Food Waste Reduction Fund** of £500,000 provided by the Department for Environment, Food and Rural Affairs, established to finance redistribution initiatives, requiring partnerships between FBOs and NGOs (2019).
- **Consumer behaviour:**
  - **Nationwide Consumer campaign** "Love Food Hate Waste" (2007-2012), succeeded in reducing more than 21% food waste from the hotspot of households.
  - The **Food Waste Action Week** (2021), an annual event bringing businesses, government organisations and global partners together to raise awareness and

National policies & monitoring

A distinction can be made according to the nature of the **national policies** introduced by each Member State: national food waste prevention strategies are mapped separately from national waste prevention programmes, which also include food waste prevention. The difference lies in the policy implementation mechanism, as the former is associated with a greater level of ambition and relevance, often encompassing several policy areas and engaging multiple stakeholders, while the latter is the consequence of the updated Waste Framework Directive calling for establishment of national food waste prevention programmes. 15 Member States have put in place specific national food waste prevention strategies, three of which are either in a draft stage or have unclear implementation status, while in 18 Member States food waste prevention is an action within a

national waste prevention plan. In some cases, Member States (France, Germany, Ireland, Portugal, Slovenia) have implemented both. Finally, some Member States have laid down legislative frameworks regarding food waste prevention (e.g., France, Italy), with such draft legislation in progress in Spain.

Monitoring of food waste levels according to the Delegated Act 2019/1597 was submitted in the course of 2022 by all Member States except Latvia and Romania. 18 Member States also refer clearly to monitoring as a continuous policy action in their respective web pages under the EU Food Loss and Waste Prevention hub.

Very few Member States provide documented evidence of food waste reduction achieved linked to actions taken and/or targets set at national level. Some examples are cited below:

- The Netherlands reported a reduction at retail[197] (3.6% over 4 years) and household level (30% from 2010 to 2022).
- In France, an evaluation of the impact of the Garot Law, obliging certain retailers amongst others to donate surplus food, showed both an increase in the number of retailers undertaking food donation as well as an increased share of donated surplus food. Following the evaluation, France extended, through the Egalim law, the scope of food donation obligations to collective catering and operators in the food and industry sector (in 2019) and the wholesale sector (in 2020).
- Through an ambitious national strategy for food waste reduction, Germany has set targets and adopted various measures to meet the targets, including stakeholder dialogue forums, voluntary agreements and a focus on addressing hotspots such as household waste with federal-led awareness campaigns. Monitoring of food waste is conducted both at national level and under the dialogue forums.

Figure 11– illustrates in a timeline the actions taken by The Netherlands addressing identified hotspots

[197] WUR, 2022. Minder voedselverspilling in supermarkten.

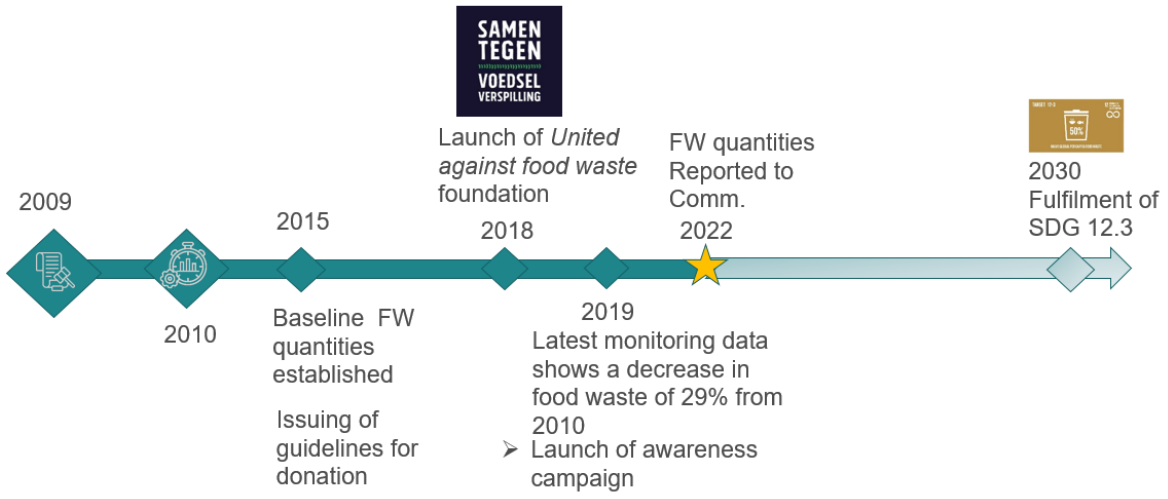
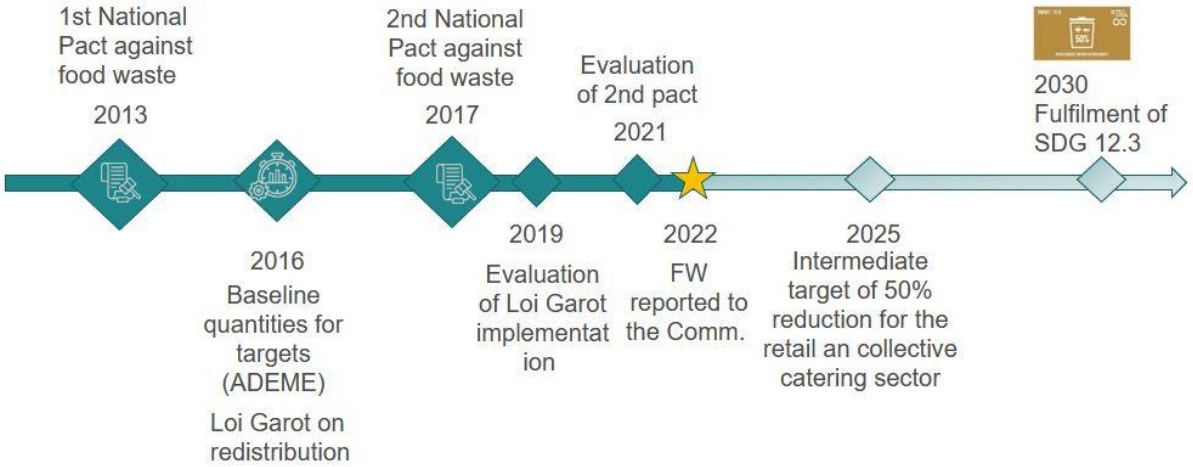


Figure 12– illustrates in a timeline the actions taken by France using strategy and legislative measures to reduce food waste



The apparent lack of evidence reported by Member States on the success of their strategies in reducing food waste at national level may indicate the need to **further emphasise and promote the use of measurement tools** and **evaluation frameworks** to support Member States and stakeholders in adopting a more evidence-based approach to inform their decision-making.

From the analysis it emerges that a few countries (Netherlands, France, Germany) can be considered pioneers in food waste prevention, having put the issue on the policy agenda since the early 2010s, while the majority have implemented strategies and related actions within the last 3 to 5 years. The duration of actions, combined with central coordination of actions, have enabled

certain Member States to establish capacity for monitoring and evaluation of their policy actions, whilst those Member States who only recently started their coordinated and dedicated actions do not yet have the basis for demonstrating or documenting the effectiveness of their efforts.

Policy actions aimed at consumers

Food waste at the consumption stage is the hotspot in food supply chains across Europe, therefore actions targeting consumers are especially important. However, policies implemented to target consumer food waste rely mostly on **awareness campaigns** (implemented by 26 Member States), whose effectiveness in fostering **behaviour change** is debatable[198]. Furthermore, it is often unclear how awareness campaigns are designed, who specifically is targeted, whether their outreach is monitored, and effects evaluated. As part of these efforts, a number of Member States have put in place awareness campaigns specifically addressing misunderstanding of date marking, which is a driver of consumer food waste and often included in consumer-targeted messages on food waste prevention. Behavioural change interventions, meaning those actions that go beyond the mere provision of information and aim to elicit changes in consumers' attitudes and behaviours are concretely implemented by at least three Member States (Germany, Netherlands, and Denmark) with three others recognizing the relevance of such interventions but without a detailed action plan in place. **School programmes** are also a popular policy initiative, implemented by 18 Member States by including food waste education in school curricula, either nationwide or through pilot projects.

Facilitation of donation

All MSs have taken different measures at national level to encourage food donation, which is often the first step in the establishment of national food waste prevention programmes. Some have taken measures and/or established guidance to clarify the roles and responsibilities of food business operators and **food banks and other charity organisations** or setting up stakeholder fora. Some Member States (e.g., Czech Republic, France, Poland and Hungary) have made donation of surplus food mandatory for specific sectors, typically retail. In fewer cases (e.g.: Sweden, Ireland, Finland, Portugal, Romania, and Netherlands), redistribution is facilitated by the introduction of **digital tools** to organize supply and demand of surplus food. 13 Member States also employ fiscal incentives through the reduction or exemption of VAT on donated food. In adopting the Waste Framework Directive, 13 Member States (e.g., Austria, Bulgaria, Czech Republic, France) specifically focused on the food use hierarchy, which foresees human consumption as the most favourable destination of surplus food that would have otherwise gone to waste, therefore the category is included in between food donation and supply chain efficiency.

[198] Reynolds, C., Goucher, L., Quested, T., Bromley, S., Gillick, S., Wells, V. K., Evans, D., Koh, L., Kanyama, A. C., Katzeff, C., Svenfelt, Å., & Jackson, P. (2019). Review: Consumption-stage food waste reduction interventions – What works and how to design better interventions. *Food Policy*, *83*, 7–27. https://doi.org/10.1016/j.foodpol.2019.01.009

Supply chain efficiency

Most Member States have put in place structured processes to engage and consult with different actors in the food supply chain and other stakeholders (e.g., **platforms, voluntary agreements**…). eight Member States have put in place **voluntary agreements** between public and private sector actors to define a common roadmap for food waste prevention, while 10 Member States are either in the process of establishing one or do not have a clear implementation pathway. Other Member States have put in place efforts to facilitate stakeholder collaboration through platforms specific to a supply chain stage (e.g., retail). Initiatives to improve supply chain efficiency and prevent food waste from all stages of the food supply chain include a variety of policy instruments: issuing guidelines for specific stages and sectors (6 Member States), enabling professional training (11 Member States), promoting circularity and industrial synergies to increase the correct application of the food use hierarchy (13 Member States) and, in a few cases (three Member States), legislation targeting Unfair Trading Practices (implementation of Directive (EU) 2019/633).

Economic instruments

17 Member States employ fiscal instruments to incentivise food waste prevention (often focussed on facilitation of food donation). Other types of support, such as fostering research and innovation, is also provided to help players take action in their operations. Direct financial aid to stakeholders to set up waste prevention initiatives is also mentioned by four Member States (France, Croatia, Czech Republic and The Netherlands), sometimes related to the direct financing of research and innovation projects. Sustainable public procurement and integration of food waste-related criteria for tenderers are indicated by three Member States only and without very clear information regarding the actual uptake in public catering.

Evaluation of Member State-level policies

Evaluation of national strategies is scarce, especially in terms of **quantitative KPIs**: most strategies have been implemented in the past 2 to 5 years, and it is not clear whether they are fully implemented or represent more "aspirational" objectives. Sweden, Netherlands, Austria, France and Germany seem to have established the capacity, or at least the awareness of the need for evaluation, together with a more transparent dissemination of monitoring and evaluation findings. France provides an evaluation of its legislation on facilitation of food waste redistribution[199].

In the Netherlands, the organization "Samen tegen Voedselverspilling" provides information on the success of its voluntary agreement and various initiatives linked to it; furthermore, through the collaboration between the organization and educational institutions scientific literature[200] is available on some of the initiatives conducted in this country. Austria has published a qualitative

[199] EY consulting (2019). Evaluation of the application of the provisions of the law of 11 February 2016 on the fight against food waste, and the implementing decree of 28 December 2016.

[200] de Visser-Amundson, 2020. A multi-stakeholder partnership to fight food waste in the hospitality industry: a contribution to the United Nations Sustainable Development Goals 12 and 17. *Journal of Sustainable Tourism*, *0*(0), 1–28.; van Dooren et al., 2020. Development and Evaluation of the Eetmaatje Measuring Cup for Rice and Pasta as an Intervention to Reduce Food Waste. *Frontiers in Nutrition*, *6*.

evaluation of its past food waste prevention strategy (which ran from 2013 to 2019) but does not provide information in terms of food waste quantities associated to specific actions. Germany has developed a dedicated platform for sharing information on the progress of its stakeholder dialogues, but as the food waste prevention strategy is quite recent, there is no evidence yet of its performance. In Denmark, the voluntary agreement run by the Danish Think Tank "One\Third" has published a report in which the development of food waste generated by its members have been monitored from 2015 to 2020[201].

[201] One\Third publikations: Danmark mod madspild udviklingsrapport 2015-2020.

ANNEX 8: OTHER INTERVENTION AREAS

The preparatory stages of this initiative, including the Call for Evidence and the PC, looked into other areas governed by the WFD as listed below.

- Waste prevention practices and performance in view of its paramount importance in the waste hierarchy and
- Waste separate collection systems and their importance in ensuring high capture and purity rates of waste destined for reuse and recycling. The preliminary analysis shows that further monitoring data is necessary to assess the necessity of EU action and therefore, as in the case of waste oils and waste prevention, it is considered premature for the Commission to propose legislative action.
- Waste oils in view of Article 21(4) of the WFD mandating the Commission to assess the feasibility to take measures at EU level to improve the management of waste oils in line with the waste hierarchy, including by setting EU recycling targets.

Waste prevention

Preventing waste is first step of the waste hierarchy, above reuse and recycling. It offers the best environmental benefits and some economic benefits as well. The WFD, as well as EGD, CEAP and ZPAP, national environmental legislation and other strategic documents define waste prevention as the priority in waste management. Article 9(9) of the WFD includes a mandate for the Commission to assess, by December 2024, the feasibility of introducing EU level measures to encourage reuse of products and other waste prevention measures as well as setting waste reduction targets. Therefore, the Commission, with the support of the EEA commissioned and published studies[202] and consulted the stakeholders as part of the stakeholder process supporting this initiative.

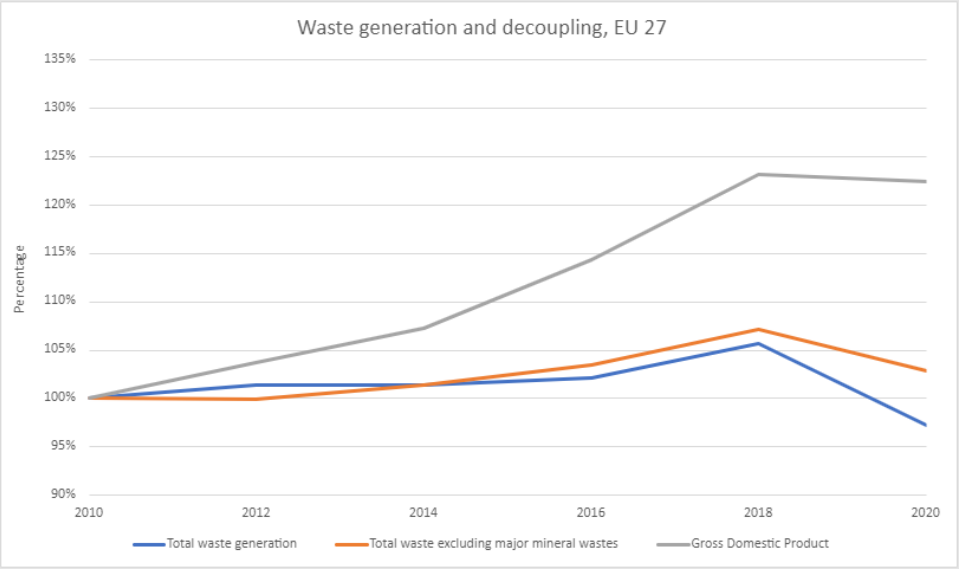
Findings: Despite the evolution of the EU waste policies and acquis, particularly of the WFD, there remains an ongoing, albeit reducing trend for linear patterns of consumption. In 2018, all economic activities in the EU generated 2 400 million tonnes of waste, equivalent to 5 tonnes per capita and representing a 5.1% increase since 2010 as illustrated in Figure 46. From 2018 to 2020, there is an observable drop in waste generation driven by the reduction in mineral waste from mining and quarrying and from construction activities. For total waste excluding major mineral wastes, the downwards trend 2018-2020 is mainly driven by a reduction in combustion waste (around -30% for 2018-2020). The reduction in combustion waste is closely linked to the reduction in the consumption of solid fossil fuels (around -30% for 2018-2020)[203]. The 2020 data point was probably also impacted by the COVID-19 pandemic and the related interruption of many economic

[202] European Commission, Directorate-General for Environment, Karigl, B., Neubauer, C., Kral, U., et al., *Scoping study to assess the feasibility of further EU measures on waste prevention: final report*, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2779/21588.

[203] Eurostat dataset 'Supply, transformation and consumption of solid fossil fuels ' (Eurostat - Data Explorer (europa.eu).

activities. As waste generation is historically linked to GDP, it likely that waste generation will go back to pre-pandemic levels when the economy is growing again.

Figure 13 – Waste generation and decoupling, EU-27 (%, with 2010 base)



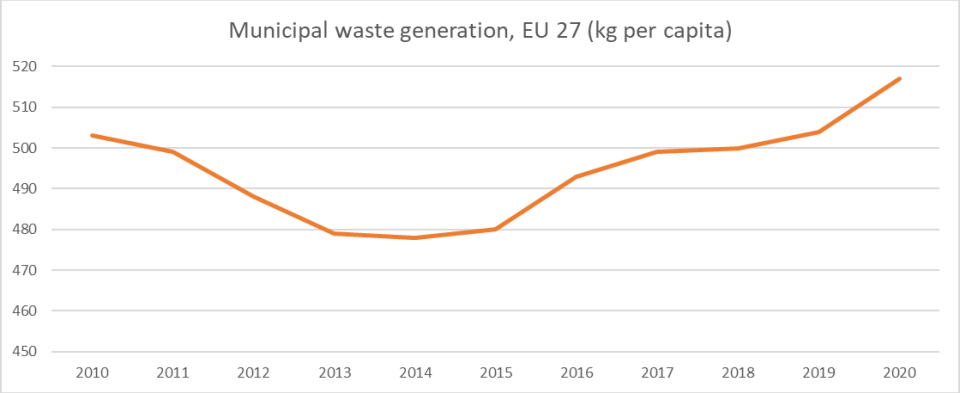
Source: Eurostat 2022

The EEA reviews of the EU's progress on waste prevention[204] and the decoupling of waste generation from economic growth[205], show that the EU-27 is not set to meet its policy goal of reducing waste generation. This points to the need to gather further data in the coming years to determine whether the provisions of the 2018 waste package that are being implemented in the Member States, can help maintain, at least partially, the achieved decrease in waste generation.

The data for 'household and similar waste' is not a good indicator of waste generation/prevention, as it only gives the amounts of mixed household and similar wastes and does not include recycled materials from households and similar sources. Therefore, the amount of 'household and similar wastes' goes down when more of the household waste is recycled. 'Municipal waste generated per capita' is a better indicator for waste generation and as shown in Figure 47, it has declined from 2010 to 2014 but then increased to 517 kg/capita in 2020 despite the economic crisis. However, the 2020 is also influenced by changes in reporting methodology in some Member States due to switching to the new definition for municipal waste in the Waste Framework Directive that will influence the EU-27 average. 20 out of 26 Member States (since CY did not yet respond) are now using the common methodology established under the '2018 waste package'. For example, data for Belgium and Austria went up dramatically from 2019 to 2020 (BE from 416 to 746 kg/cap, AT from 588 to 834 kg/cap), and the 2020 data are flagged as 'break in series', meaning that there is a new reporting methodology.

[204] Waste prevention: where do European countries stand? — European Environment Agency (europa.eu)
[205] Waste prevention: decoupling waste generation from economic growth — European Environment Agency (europa.eu)

Figure 14 – Municipal waste generated, kg per capita 2010-2020, EU-27



Source: Eurostat 2022

To fine tune the projections, the study team checked the indicator and data series for data gaps and trends in individual Member States. As the economic situation varies widely across the EU-27, waste generation varies from country to country. Consequently, projections were re-calculated on a country-by-country basis for the selected categories streams. An overview of the results for the selected waste categories for the period up to 2035 is provided in the Eunomia / UBA study but has not been included in this interim report as the results will likely be updated to reflect the ongoing work of the JRC[206].

The amendments to WFD adopted in 2018 by Directive (EU) 2018/851 introduced several new obligations on the Member States to improve their efforts in achieving decoupling of waste generation and economic growth. Member States are still in the process of transposing and implementing Directive (EU) 2018/851 in relation to waste prevention to take measures and adopt Waste prevention Programmes, including on Food Waste, and improve the monitoring of waste prevention, as well as other requirements that have an impact of waste generation, such as separate collection of waste obligations and quantitative targets for waste management operations. About half of the Member States have not yet aligned their Waste Prevention Programmes (WPP) to Directive (EU) 2018/851. Almost all EU-27 countries have some sort of quantitative target (25 countries) and quantitative indicators (22 countries) related to waste prevention. However, the targets and indicators vary widely. Some targets and indicators are, for example, more related to waste management than to waste prevention. This complicates the monitoring of waste prevention implementation progress. Since a comprehensive waste prevention strategy requires looking at a complex set of measures and levers and incentive mechanisms, the monitoring of impacts is also complex, and it is not possible to assign an impact to each individual measure. Furthermore, such measures take a considerable time to take up; therefore, impacts are best measures in longer periods of 3 to 5 years. The first set of Member State data on reuse of products, an important source of

[206] JRC, 2023 under development

information on the waste prevention monitoring, will be reported to the Commission by June 2023 in accordance with Article 37(3) of the WFD.

Regarding municipal waste, the Commission is pursuing a parallel initiative on the revision of the PPWD and one of the key objectives of that revision is to significantly reduce the generated packaging waste. This will be attained through several measures on the design of packaging for reuse, regulatory measures setting waste prevention and reuse targets for certain types of packaging as well as rules on the separate collection of packaging waste. Through this initiative the Commission will address about a third of the municipal waste generated.

With regard to waste other than municipal waste, the Commission has commissioned studies, that show that further analysis of the wider economic sectors generating around 90% of the waste are still needed to identify the need for EU level action.

Conclusions: The assessment of the information available to the Commission in support of possible measures to reduce waste generation show that there is still need for further monitoring data to assess the feasibility and necessity for EU level action because:

- Member States are still in the process of implementing Directive (EU) 2018/851 and the monitoring of waste prevention measures impacts should be done over a significantly longer period than the regular annual reporting periods.
- There is insufficient data on sectors producing waste other than municipal waste to complete an assessment assessing the feasibility and necessity of additional EU level measures. Also, the first set of data on reuse of products would only become available to the Commission by mid-2023.
- The EGD, CEAP and ZPAP and WFD objectives to significantly reduce waste and residual waste generation have been pursued by streamlining waste reduction objective in all new legislative initiatives of the past years: Batteries (2020), Waste Shipments (2021), industrial emissions (2022), ESPR (2022) and Packaging (2022). The impact of these measures should be assessed following the conclusion of the inter-institutional negotiations, which are not yet concluded. Most environmental impacts of products' end-of-life management are design driven. The ESPR proposal is expected to have the significant impact on the waste prevention potential. The Packaging and Packaging Waste Regulation proposal and setting quantitative targets on food considered as part of this initiative will address 60% of municipal waste generated.

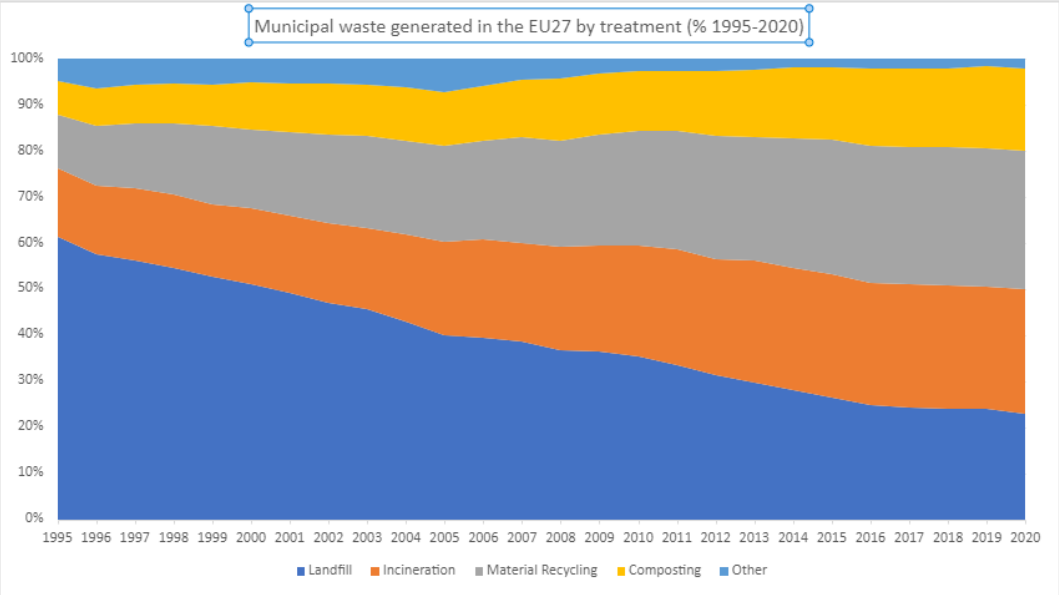
The EEA will adopt in 2023 an EU monitoring framework that sets out waste prevention monitoring indicators at EU level and guide the Union level performance assessment in decoupling waste generation from economic growth. To fulfil the obligation Article 9(9) of the WFD to assess the feasibility of introducing EU level measures to encourage reuse of products and other waste prevention measures as well as setting waste reduction targets, the Commission intends to continue the monitoring of the data. The rationale for the need to act on food and textiles sectors are explained in this impact assessment report.

Waste separate collection to improve preparation for reuse and recycling performance

Findings: While, encouragingly, waste treatment in Europe has largely evolved towards the preferred options in the waste hierarchy, further efforts are needed to achieve greater levels of

circularity of the Union economy in line with the existing Union targets as well as to contribute to the Union's climate, resilience and strategic independence objectives. At Union level, recycling or recovery targets are set for municipal waste, construction and demolition waste, packaging waste, batteries waste, end-of-life vehicles, waste electric and electronic equipment. According to data published by Eurostat, in 2018, only 38% of total waste and 48% of municipal waste is recycled. This means that the rest was disposed of (incinerated or landfilled), losing the potential recyclable materials in that waste with subsequent environmental and economic costs.

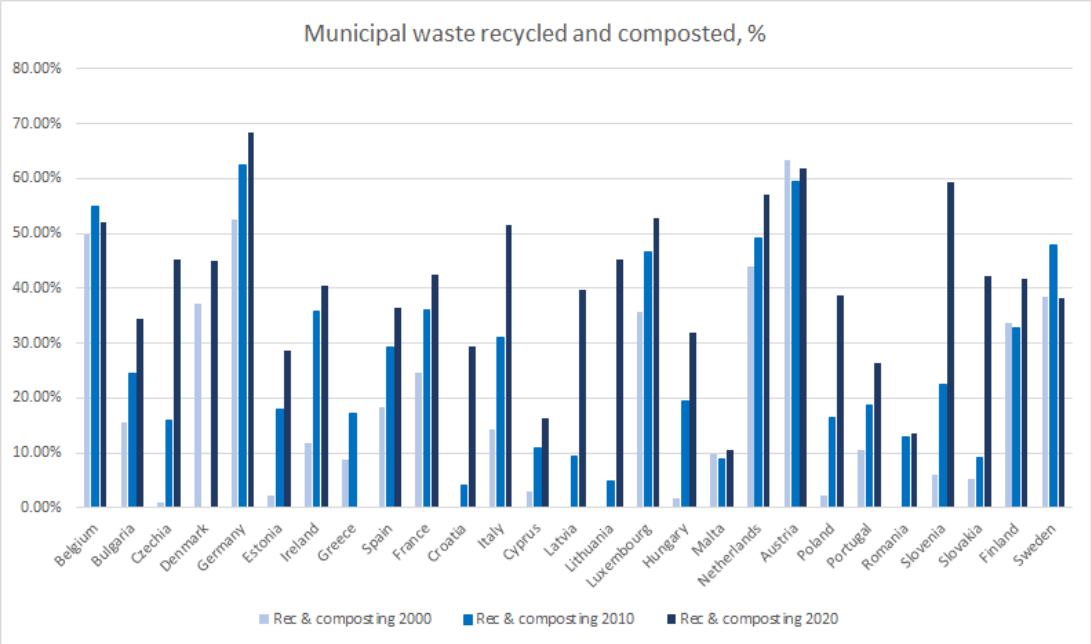
Figure 15 – Municipal waste generated in the EU27 by treatment (%, 1995-2020)



Source: Eurostat

There is also a large variation in the preparing for reuse and recycling rates of municipal waste achieved by the Member States (see Figure 49).

Figure 16 – Prepare for reuse and recycling rates of municipal waste in Europe (%)



Source: Eurostat

NB: due to methodology differences, data between countries and years may not be directly comparable

The preparatory work for the 2022 EWR on waste identifies 19 Member States at risk of not reaching the 2025 preparing for reuse and recycling of 55% set in the WFD and/or the PPWD. The EWR, developed in close dialogue with Member State administrations, identifies that the main drivers for low performance on preparation for reuse and recycling are insufficient source segregation and separate waste collection, particularly of dry recyclables and bio-waste, a lack of sorting and recycling infrastructure, overreliance on MBT plants and landfilling and ineffective incentives (including fees and ban on landfilling untreated waste) for different levels of governance, waste operators and citizens to reduce, sort and recycle waste.

Recent studies highlight the added value of reinforced source segregation and separate waste collection[207][208][209][210][211]. Separate collection is the first essential step to promote the reuse of products, to yield optimal recycling results, and to lessen the risk of cross-contamination of waste

[207] Bel, J.-B. and ACR+, *D4.5. Guidelines for successful implementation. Guidelines for improving local waste collection systems*, 2020, https://www.collectors2020.eu/wp-content/uploads/2020/12/COLLECTORS_D4.5Guidelines-final.pdf.

[208] Bel, J.-B., ACR+ & Flanagan, B., Eurocities, *D4.6. Policy recommendations & development needs related to the waste framework conditions. Policy recommendations*, 2020, https://www.collectors2020.eu/wp-content/uploads/2020/12/COLLECTORS-D4.6_Policy-recommendations-final.pdf.

[209] European Commission, Directorate-General for Environment, Dubois, M., Sims, E., Moerman, T., et al., *Guidance for separate collection of municipal waste*, Publications Office, 2020.

[210] European Commission, JRC Publications Repository, *Best Environmental Management Practice for the Waste Management Sector*, 2018, https://publications.jrc.ec.europa.eu/repository/handle/JRC111059.

[211] European Commission, Directorate-General for Environment, Weißenbacher, J., Dollhofer, M., Herczeg, M., et al., *Assessment of separate collection schemes in the 28 capitals of the EU: final report*.

streams where unrecyclable waste hampers the recycling of recyclable waste. Waste collection systems across the Union are very diverse. Some of their elements are determined based on certain local conditions as well as of overall waste management choices in the Member States. Nevertheless, there are certain principles and practices that deliver better environmental outcomes. These best practices are subject to several studies and are currently being analysed by the JRC to draw best practices and practical guidance.

As explained in Recital 41 of Directive (EU) 2018/851 amending the WFD, existing provisions require EU Member States to collect paper, metal, plastic and glass separately in order to increase preparing for reuse and recycling rates, enable high-quality recycling and boost the uptake of quality secondary raw materials. In addition, Member States will be required to set up further separation of certain waste streams: bio-waste shall be separated by 2024 and hazardous household waste and textiles shall follow by 2025. These requirements aim to ensure that increasing waste fractions are separately collected to facilitate their preparation for reuse and recycling.

Packaging waste fractions of paper, plastic, metal and glass, which represent the most important waste fraction of municipal waste that is subject to the separate collection obligation are also subject to a *lex specialis* legislation in the PPWD. The proposal revising this Directive aims to improve the capture rate and the purity rate of the separately collected fractions through regulatory measures mandating certain best performing separate collection practices at EU level, namely, the application of deposit return systems for beverage packaging as well as labelling of packaging to instruct the consumer on how to dispose of the packaging waste to enable its reuse or recycling. The recycling performance are also to be improved considerably through the revision of the packaging design requirements to ensure that all packaging is recyclable in an economically feasible way.

Conclusions: The Commission will complete this strand of work with the following outputs:

- Support the inter-institutional negotiations between the European Parliament and the Council in view of a swift adoption of the Packaging and Packaging Waste Regulation based on the Commission's legislative proposal of 30 November 2022 (COM(2022)677) final) mandating certain best practices on separate collection of waste at EU level and introducing a product and waste container labelling system to ensure effective consumer participation in the separate collection systems as well as ensuring a reduction of packaging waste as a result of increased re-use that is subject to re-use targets.
- Adopt a JRC technical report with recommendations on the best practices in separate collection of waste and quality management systems that deliver efficiencies in the downstream waste management chains and lead to high quality secondary raw materials (Q2 2023).

Waste oils

Article 21(4) of the WFD sets a mandate for the Commission to assess the feasibility of additional EU regulatory measures to improve the treatment of waste oils, including quantitative targets on the regeneration of waste oils. The Commission analysed the management of waste oils in the EU, including their collection and regeneration rates in Member States. There are two major types of competing uses for waste oils: they can be used to make new base oil (after regeneration) or to obtain energy, either by directly burning the waste oil (e.g., in a cement kiln or an incinerator) or

after its conversion into a processed fuel, for use in industrial boilers or in transport (e.g. as fuel for ships). These can substitute virgin material obtained from crude oil.

The EU produces a total of about 8.7 million tonnes of base oil per year. About 4 Mt is directly exported and the rest is used for domestic production of lubricant oils and additives. In 2017, the EU produced about 6 Mt of lubricating oils. About two thirds (4.3 Mt) were placed on the EU-28 market and the rest was exported.[212] Provisions that require the separate collection of lubricant and industrial waste oils have been in place for decades.

In the EU, on average, 61% of mineral and synthetic lubricant and industrial oils collected are regenerated (recycled) into base oil. The remaining collected waste oil is converted into fuels (24% of collected WO), co-incinerated in cement or lime kilns (11%) or burnt in a hazardous waste incinerator. These processes are lower in the waste hierarchy and as illustrated by the LCA results, generally, are understood to have a lower overall environmental outcome. However, the 2018 collection rates of Member States range between 38 and 100 % according to GEIR[213].

The RDC report procured by the Commission[214], analyses measures that could lead to an increase in the collection rates of waste oils in the EU. It forecasts the EU-27's waste oil generation up to 2050 (the baseline) with two modelling approaches:

- based on lubricant demand growth forecasts by McKinsey & Company[215]; and
- based on the same demand growth and considering the EU regulatory targets that aim to decrease GHG emissions from passenger vehicles and light-commercial vehicles.

The second model uses fleet composition and evolution estimates developed in support of the impact assessment for the Commission's 'EURO7 standards' proposal[216] and data from Raj Shah et al. (2021)[217]. These assume that the demand for lubricant in the EU electric and fuel cell fleet will be 10 % of that from a conventional fleet with a downward trend on the consumption of engine oils in the EU. Starting from 2036, it is assumed that the waste oil generation coming from the automotive sector decreases gradually from its 2035 level to 32.5 % in 2050 due to EU regulations aiming to ban combustion engine cars from 2035 onwards. According to these estimates, the EU-27 waste oil generation will be between 1.7 and 2 million tonnes in 2050.

In addition, RDC develops a collection cost model for waste oils and estimates the costs for EU Member States to determine the additional costs to increase collection to a given target value. The

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[212] European Commission, Directorate-General for Environment, Stahl, H., Merz, C., *Study to support the Commission in gathering structured information and defining of reporting obligations on waste oils and other hazardous waste : final report*, Publications Office, 2020, https://data.europa.eu/doi/10.2779/14834

[213] Groupement Européen de l'Industrie de la Régénération. https://www.geir-rerefining.org/.https://www.geir-rerefining.org/.

[214] Under contract 090202/2022/867657/SFRA/ENV.B.3

[215] Lubricating oil growth opportunities to 2035 | McKinsey

[216] Commission proposes new Euro 7 standards (europa.eu), Commission proposes new Euro 7 standards (europa.eu), EUR-Lex - 52022PC0586 - EN - EUR-Lex (europa.eu)

[217] Shah, Raj, et al. "Recent trends in batteries and lubricants for electric vehicles." Advances in Mechanical Engineering 13.5 (2021): 16878140211021730.

costs are associated to transport, storage and analysis and are described in further detail in the referred report.

In addition, the findings from a study by the JRC (which will be published following the adoption of the Commission proposal) to quantify the potential life cycle environmental and socio-economic effects of waste oil treatment (JRC, 2023). The modelling of the two studies was aligned in order for the baseline to be consistent. The baseline scenario of base oil demand and the resulting waste oil generation and their treatment (regeneration, conversion to fuel, energy recovery) until 2045 are based on extended projections from Bau et al. (2018) on lubricant oil demand to the year 2045, taking into account EU emission standards. EUROSTAT's [wasgen] database was used to validate the projections on waste oil.

The LCA was carried out in accordance with the guidelines of the ISO 14040/14044 standards (ISO, 2006a, 2006b[218]) and follows the established practice for waste management LCA (Clift et al., 2000; Finnveden, 1999; Joint Research Centre, 2012). Specific methodological and modelling rules of the Environmental Footprint (EF) Method relevant to the goal and scope of the study were also applied (European Commission, 2021). The functional unit (FU) of both the Life-cycle Assessment (LCA) and Life-cycle Costing (LCC), i.e., "the management of a unit-quantity of waste lubricant oil in the EU, defines qualitatively and quantitatively the service under assessment, to be used as a reference to quantify potential impacts and as a basis for comparison.

The assessment of the investigated waste management scenarios and technologies is conducted with the support of the LCA software EASETECH v3.4.0 (Astrup et al., 2012; Clavreul et al., 2014), specifically developed to assess waste management technologies and systems. This tool was applied to model the different waste management activities and processes included in each scenario, and to calculate the respective potential environmental impacts and life cycle costs. Life cycle inventory and economic data on the various waste oil management technologies/processes were collected for the JRC by a contracted consortium formed by Ifeu and RDC Environment. The LCC adheres to state-of-the-art LCC methodology as presented in Hunkeler et al. (2008) and Martinez-Sanchez et al. (2015). The LCC and LCA share the same object, scope, functional unit, and system boundaries. For the former, differently than the LCA where a zero-burden assumption was taken, the waste oil was assigned a price to reflect different qualities (represented in the default and sensitivity analysis). The cost assessment includes two types of costs: internal costs and externalities (external costs). Internal costs include budget costs and transfers; strictly speaking, budget costs are costs incurred by the different actors involved in the management chain of the waste oil (collectors, operators, transporters, etc.), while transfers refer to money redistributed among stakeholders (taxes, subsidies, value added tax - VAT, and fees). Externalities are non-monetary transactions representing the costs caused by each emission to society, reflected by the so-called shadow prices of emissions as proposed in Bijleveld et al. (2018). These include prices for air/soil/water emissions but not for disamenities such as nuisance, noise, odour, congestions, or other similar social effects.

For the overall assessment the JRC study distinguishes two types of LCC: the conventional LCC (CLCC) describes the financial cost as the sum of budgets costs and transfers, i.e., internal costs, of managing the waste oil, and thus represents a classic financial assessment. The societal LCC

[218] ISO - ISO 14040:2006 - Environmental management — Life cycle assessment — Principles and framework

(SLCC) sums internal and external costs, both expressed as shadow prices to quantify the total cost incurred by society, thus reflecting a socio-economic assessment. For the specific shadow price of CO_2 the JRC used the updated figure suggested by CE Delft and DG MOVE for 2030, i.e. 100 euro/tonne CO_2 that is recommended as a default value (van Essen et al., 2019; Bijleveld et al., 2018). The LCC was implemented using the software EASETECH v3.4.0 (Astrup et al., 2012; Clavreul et al., 2014).

In the study, five sensitivity analyses were performed to test important framework assumptions: with the first **(SA1 – Energy**), the sensitivity of the results to the average energy mixes applied in the model (e.g., average electricity, heat, and fuel mix at the kiln) was tested. The second sensitivity analysis **(SA2 - Waste quality)** tested the sensitivity of the results to the specific waste oil quality (physico-chemical composition). The third sensitivity analysis **(SA3 – Crude oil price)** tested the effect of crude oil prices on the LCC results. In the fourth sensitivity scenario (**SA4 – Intra EU emissions**), we only consider emissions that take place within EU countries. Finally, in the fifth sensitivity analysis (**SA5 – EU ETS**) assumes that GHG emissions are already covered by the EU ETS or by effort sharing regulations.

The study also analysed the associated uncertainties. In its study, the JRC applied the analytical method developed by Bisinella et al. (2016) and available in the EASETECH LCA model to propagate input-data uncertainties and calculate the overall result's uncertainty. Only uncertainties related to the technology input-output data (e.g., energy and chemical consumption, emissions, output products) are addressed in the study. The analytical (or stochastic) uncertainty produces a range around the 'default' result value. While this information is valuable when looking at a single scenario and the variability of its performance, often it is the case that two scenarios show overlapping uncertainty bars (ranges around the 'default' result), which makes it impossible to say when, or if, one is better than the other. For this purpose, the study performed **discernibility analysis** using the tools available in the EASETECH LCA model. Applying **Monte Carlo simulations** on two scenarios simultaneously, e.g., hydro-treatment versus solvent extraction, (i.e., a pair-wise comparison), the discernibility analysis quantifies the number of occurrences for which one scenario is better than the other under the parameter uncertainties considered in the study. The number of 1000 Monte Carlo iterations (runs) was set for this purpose, i.e., scenarios are compared in a pair-wise mode 1000 times by varying randomly their parameters under the given uncertainty ranges. The choice is a compromise between the need for a population of results propagated via Monte Carlo sampling and the related computational effort (beyond this number, significant computational time/efforts were observed).

Collection and regeneration rates of waste oils seem to depend on multiple drivers, often related to the national context and detailed implementation of measures at the national level. These include collection and treatment costs, especially for small producers, the density and remoteness of certain areas where collection services are less frequent or more costly, the effectiveness of awareness raising, and the enforcement mechanisms in place.

The economics of waste oil regeneration can be less advantageous than the different energy recovery options, especially in case of lower quality waste oils. Regeneration to base oil is also more complex and requires more treatment / technology than producing a mildly treated distillate oil that can be burnt as fuel. Competition from other fuel uses (e.g., cement kilns, boilers) and particularly the increased demand for low sulphur fuel in bunkering sector (fuel for ships) is another relevant variable.

The assessment of these studies, as well as the first set of reports on waste oils submitted by Member States in 2022 show that it is premature to propose action at EU level and therefore no measures on waste oils, additional to those already in place, should be proposed now.

The main arguments supporting this conclusion are:

- Evidence provided by LCA/LCC analysis indicates that although in general regeneration is advantageous over energy recovery from the environmental and societal point of view, this conclusion is not very robust in some cases, when comparing different regeneration treatments and treatments to produce fuel.
- There is no clear correlation between having a mandatory EPR system covering the collection of waste oils and higher collection or regeneration rates.
- There is a lack of a robust dataset regarding the performance of the different Member States in terms of waste oil generation, collection and treatment. The first data submitted by Member States in 2022 (for reference year 2020) presents gaps and inconsistencies.

In view of the obligation in Article 21(4) of the WFD, the Commission intends to adopt a report addressed to the European Parliament and the Council reflecting on the analysis summarised above and sharing best practices in sustainable management of waste oils (PLAN/2022/2112).

ANNEX 9: OBJECTIVES

As shown in Figure 2 in Annex 7, there are several specific objectives logically linked to the main identified problem and its drivers.

Textile waste objectives

In identifying the key problem drivers two specific objectives have been defined to address the resulting problems.

The first objective is to **reduce textile waste generation, primarily by encouraging reuse and raising consumer awareness of the negative impacts on the environment associated with textile production and waste management**. Indeed, the EU Textiles Strategy's objective is "create a greener, more competitive sector that is more resistant to global shocks". Textile products placed on the market should be durable, repairable and recyclable, to a great extent made of recycled fibres, free of hazardous substances, and produced in respect of social rights and the environment. These objectives are already being pursued by the ESPR legislative proposal of the Commission.

The second is to make sure that the **textile waste that is generated is treated as high up the waste hierarchy as possible, prioritising waste prevention, preparation for re-use and recycling over incineration and disposal**.

Food waste

The first specific objective of the initiative is to **assign clear responsibility to Member States for accelerating reduction of food waste** along the food supply chain and in households, **in their respective territories**, and thus make a solid contribution towards achieving SDG Target 12.3.

As second specific objective, the initiative also seeks to **ensure sufficient and consistent response by all Member States to reduce food waste**, in line with that of front-runners. This should lead each Member State to take ambitious action – deploying the most effective measures, tailored to its specific national situation – and aiming to support consumer behavioural change as well as strengthen coordination of actions between actors across the whole food value chain as well as with other relevant actors (e.g., academia, NGOs, financial institutions…).

In order to facilitate systemic action, Member States will need to **ensure an enabling institutional, policy and regulatory framework** that can adapt to evolving needs of key players. Findings from the public consultation showed strong agreement of respondents with the effectiveness of taking such food waste prevention measures, with the vast majority agreeing with the setting of EU-level legally binding food waste reduction targets (74% - 488 replies)[219].

[219] Further details are presented in Annex 2 – public consultation.

ANNEX 10: POLICY OPTIONS

This section presents the policy options in two separate sections, one for textiles and one for food waste.

1- Textiles

This section presents the options available to reach the objectives described in Annex 9. To do so, the study teams have developed a series of measures that will cause direct and indirect changes and that can address the different problems and problem drivers identified.

The measures were screened for feasibility and the options were assessed against the baseline, which is described below.

Options and measures

The following policy options have been identified that could achieve the two specific policy objectives. These options have been derived and verified following broad discussions with the stakeholders, including Member States, industry and environmental NGO representatives. Alongside the baseline which entails the maintenance of existing policy provisions, the following options have been considered:

- **Baseline**

Ongoing implementation of the current legislation as well as a realistic expectation of impacts of policy instruments currently in negotiation – this is the baseline or reference scenario (see for more information Annex 7 – how will the problem evolve?).

- **Option 1**

Supporting Member States to ensure full implementation and enforcement of the current WFD provisions by taking regulatory measures based on existing mandates granted to the Commission to adopt secondary legislation and by adopting relevant guidance documents.

- **Option 2**

Proposing an amendment to the primary legislation to improve the waste management performance in line with the waste hierarchy. These will establish new operational obligations on the Member States and economic operators.

- **Option 3**

Proposing an amendment to the primary legislation by establishing binding waste management performance targets for the Member States and economic operators.

Under each of these options, several measures have been considered to achieve the general and specific objectives. The first list shown below is a long list of measures that were considered in the first instance alongside the objective(s) they contribute to. The measures shown with no shading are those that have been taken forward to a more detailed assessment. Those shaded in grey have been discarded as explained in the next section.

Option 1 measures: Supporting Member States to implement and enforce current provisions

1.1 Clarifying definitions in relation to textiles and textile waste through guidance

- **Defining textiles: Alternative 1,** Align definition to Textiles Labelling Regulation; **Alternative 2,** Align definition to CN codes; **Alternative 3,** Align definition to Textiles Labelling Regulation and take a sub-set of CN codes to clearly define the scope of operational measures.
- **Defining textile waste: Alternative 1,** All separately collected textiles to be considered waste; **Alternative 2,** All separately collected textiles to be considered waste only after sorting.

1.2 EU-wide waste prevention monitoring framework: Set measurable indicators in relation to textile waste prevention that are more consistently applied by Member States.

1.3 Providing Member States with guidance and support in dialogue on the management of textile waste between actors involved: Guidance on a range of topics related to textile waste for which problems have been identified, further develop existing platforms, issuing recommendation on EPR for textiles.

Option 2 measures: Setting additional regulatory requirements to improve performance

2.5 Setting sorting obligations for separately collected textiles: Ensure that all separately collected textiles are subject to a sorting operation with the objective of identifying fractions suitable for re-use and preparation for re-use, as a priority, as well as fractions suitable for recycling. Legally operationalise measure 1.1.

2.6 Adopting end of waste criteria: Pursue the adoption of the implementing act setting harmonised EU end-of-waste criteria following the development of technical criteria by JRC. Harmonises the sorting requirements in measure 2.5.

2.8 Setting requirements for shipments of textiles for re-use: Facilitate the enforcement of illegal shipments of waste disguised as non-waste.

2.9 Mandating the use of EPR for textiles: Implement the polluter pays principle by securing the necessary funding to manage used textiles according to the waste hierarchy from producers.

2.14 Improving reporting obligations for textiles: Clarify existing and add new reporting requirements to improve the knowledge base at EU level and enable proper monitoring of the environmental impact of the textile industry.

Option 3 measures: Prescribing performance targets

3.1 Setting an EU textile waste reduction target: Reduce the amount of textile waste generated, EU level target to ensure coherence between the different Member States and to harmonise industry effort towards reaching the target.

3.4 Setting a preparation for reuse target for textiles: Checking, cleaning, or repairing, recovery operations, by which textile products that have become waste are prepared so that they can be reused without any other pre-processing, improve the reuse of textiles for MSs by setting a realistic preparation for reuse target.

3.5 Setting a reuse target for textiles: increase the amount of textiles reused.

3.6 Setting a collection target for textiles: Improve separate collection rate for textiles thereby increasing reuse rates, recycling rates and decreasing disposal rates **Sub-measure 1,** Setting an EU-wide quantitative target on separate collection; **Sub-measure 2,** Member

States defining preparation for reuse targets based on a common framework set by the WFD.

3.7 **Setting a target for textiles found in residual waste:** Improve separate collection system for textiles if the MSs find excessive textiles contained in the mixed household waste.

3.8 **Setting a recycling target for textiles:** Increase the recycling capacity of the MSs by setting a realistic recycling target that takes into account likely changes in recycling capacity and technologies, target at EU level to ensure coherence between MSs and to harmonise industry efforts towards reaching the target.

Some additional measures considered on textiles waste were discarded mainly because they are not proportional or coherent with other EU policies. These measures relate to supporting the upscale of circular business models (1.5); providing instruments and indicators to decrease the overconsumption of textiles (1.6); sharing of best practices on promoting repair services, second-hand shops and shopping centres (1.7); discouraging discount vouchers in product take-back schemes and encourage repair vouchers (1.8); advertising and marketing practices for waste prevention (1.9); establishing an EU-wide consortium of PROs to ensure that all stakeholders abide by the same rules and to exchange experiences (1.10); supporting dialogue and collaboration across the sector (1.11); establishing minimum requirements on separate collection for textile reuse (2.2); establishing minimum requirements on separate collection for textile recycling (2.3); defining textile sorting instructions for citizens (2.4); defining textile sorting instructions for sorters and waste operators, including at collection stage (2.5); setting sorting obligation for residual waste before final treatment (2.8); supporting Member States and investing in the upscale of infrastructure for collection, sorting, preparing for reuse and recycling (2.11); setting a lower VAT for repair and reuse of textiles (2.12); setting a lower VAT or no VAT for recycled fibres (2.13); setting a standardised and consistent tracing and identification system for textile reuse and recycling throughout the European Union and beyond (2.14); setting a target for second-hand market share (3.2); setting a resource use reduction target (3.3); target for maximum textile waste landfilled or incinerated (3.9); banning the incineration of textiles waste (3.10); banning the landfill of textiles waste (3.11); ban the destruction of unsold textile products (3.12). More information on the discarded measures can be found below.

Discarded textiles measures

The following measures were discarded through the application of the key criteria for screening the viability of options according to the Better Regulation Toolbox, namely:

Legal feasibility – the need to ensure that measures remain within the limits of the competencies of the EU Treaties as well as respecting obligations under those Treaties and ensuring respect of fundamental rights as well as already existing legal obligations in EU law.

Technical feasibility – technological and technical constraints that may restrict the implementation, monitoring or enforcement of measures.

Previous policy choices – where measures have been ruled out by previous policy choices or mandates then unless there is compelling evidence to the contrary of those previous decisions these measures should be discarded.

Coherence with other EU policy objectives – measures may be ruled out due to poor coherence with other general EU policy objectives.

Effectiveness and efficiency – some measures would with certainty achieve a worse cost-benefit balance than some alternatives and can be ruled out accordingly.

Proportionality – some measures may clearly restrict the scope for national decision-making over and above what is needed to achieve the objectives satisfactorily.

Political feasibility – measures that would clearly fail to garner necessary political support can be discarded, albeit if the measures are superior to others, then a minimal assessment should be performed.

Relevance – measures that do not address the needs of the policy intervention should not be retained.

Identifiability – when two measures are unlikely to differ materially in terms of their impacts or distribution only one should be retained.

Table 9 – Discarded measures in each option

Measure number	Title and description	Criteria requiring measure to be discarded and detail behind decision
1.4	Supporting the upscale of circular business models According to the EEA[220] to implement and upscale circular business models, the following elements are required: 1) Circular goals, such as reuse, repair and recycle, need to be agreed on by policymakers. 2) New business models need to be developed through innovation by companies. This is called business model innovation. 3) Technical and/or social innovation in companies and society need to go hand in hand with business model innovation. More specifically in relation to textiles there are three main circular business model types (1) models to increase textile longevity and durability (repair by commercial or social enterprises) (2) access-based models (renting and leasing) offered by social or commercial enterprises; (3) textile collection (by commercial enterprises or local governments)	**Coherence with other EU policy initiatives** – the Commission's Strategy for sustainable and circular textiles already foresees a number of measures in relation to support to circular business models including in relation to sharing best practices through the likes of the European Circular Economy Stakeholder Platform. Furthermore, support in relation to funding are specifically addressed in that strategy. Additional action taken under the WFD has the potential to set up competing and incoherent measures looking to address the same problem. Rather it would be preferable to await the results of these other ongoing policy initiatives to identify if additional action is required under the WFD at a later date. **Identifiability** – measures related to textiles collection, resale, recycling and reuse are addressed in support to Member States through guidance and

	and resale; and (4) recycling and reusing materials. This measure would look to provide support to each of these business models for textiles in the EU through the sharing of best practices, highlighting sources of information and sources of funding.	an online platform under measure 1.3.
1.5	Providing instruments and indicators to decrease the overconsumption of textiles One of the key challenges in relation to textile waste is the consumption of textiles in the first place. Under this measure specific indicators would be developed to measure consumption of textiles and, on the basis of the data collected, to consider specific instruments to counter overconsumption identified. The dataset to be used in relation to consumption would come from PRODCOM and COMEXT data targeting textile products, with trends in consumption measures against these data sources. Defining the indicator of what constitutes overconsumption is likely to be challenging. For example, if the global average for textile fibre consumption per capita was used as a marker for what is required, on average, per person the value would be 12.5kg per capita[221]. According to the EEA[222], European consume on average 26kg of textiles per person per year. The target to address overconsumption within the EU could be, therefore, to reduce consumption by 52% from 2015 figures per capita.	**Coherence with other EU policy initiatives** – Whilst the development of an indicator for textiles consumption could work, developing measures to specifically address consumption are already being considered under other EU instruments as specified in the Commission's Strategy for sustainable and circular textiles. Additional action taken under the WFD has the potential to set up competing and incoherent measures looking to address the same problem. Rather it would be preferable to await the results of these other ongoing policy initiatives to identify if additional action is required under the WFD at a later date.
1.6	Sharing of best practices on promoting repair services, second-hand shops and shopping centres. Under this measure best practice examples for the reuse sector would be shared between Member States including on assessment of capacity needs and siting of services to promote	**Legal feasibility –** Measures related to national development control do not fall within the competence of the EU Treaties and this measure is considered not legal feasible.

	repair, reuse and second-hand sales (e.g. French directory on reparation providers). Member States would be asked to provide information as to how needs are assessed, how services are sited and the support provided to such services to improve reuse of textiles.	
1.7	Discourage discount vouchers in product take-back schemes and encourage repair vouchers. Recognising that take-back vouchers do not necessarily ensure that the materials taken back are reused or recycled in the textile sector[223] this measure would encourage the issuance of repair vouchers enabling the clothes that would otherwise be taken back to be repaired to enable their reuse either by the original owner or in the second-hand market.	**Proportionality** – This measure is likely to restrict national decision making in the textiles reuse and recycling sector by obliging all to apply a discount voucher system that may not be compatible with other existing or planned schemes e.g. extended producer responsibility. **Political feasibility** – it is considered that an intervention of this scale in the textiles market would be very unlikely to garner sufficient support of Member States to be agreeable as noted in consultation with Member States where this measure was ranked as the lowest in the possible interventions that could be used at the EU level.
1.8	Advertising and marketing practices for waste prevention Under this measure specific advertising and marketing practices would be encouraging the sharing of best practice between Member States in undertaking such awareness raising campaigns whilst at the same time developing an EU advertising campaign in relation to textile waste reduction for consumers.	**Coherence with other EU policy initiatives** – The Commission's Strategy for sustainable and circular textiles already notes the work that will be undertaken to address changes in textile consumption and production patterns under the motto #ReFashionNow via the European Circular Economy Stakeholder Platform, European Bauhaus, the Sustainable Consumption Pledge as well as the European Year of Youth. In January 2023, the Commission will launch the "Reset the Trend" awareness raising campaign. In the context of multiple crises, including planetary and cost-of-living crises,

		the campaign will illustrate the environmental, social, economic, health-related benefits of the EU Textiles Strategy, as well as the textile sector's potential for saving resources, tackling pollution and contributing to the EU's climate objectives. In particular, the campaign will engage young citizens to make fast fashion "out of fashion" and encourage them to play their part in making fashion more durable, reusable, repairable, recyclable, ethical and sustainable.
1.9	Establishing an EU-wide consortium of PROs to ensure that all stakeholders abide by the same rules and to exchange experiences. Under this measure in order to standardise the approach to PROs for textiles under any EPR that Member States may choose to apply an EU wide consortium of PROs would be created to ensure that stakeholders face the same rules and experiences in application are shared universally amongst all PROs.	**Political feasibility** – the nature of EPR schemes and PROs has been left to individual Member States to determine for themselves for the likes of packaging and batteries. Given the different PROs that exist under these schemes it is considered that developing an EU-wide consortium would be unlikely to be politically acceptable to the EU Member States.
1.10	Supporting dialogue and collaboration across the sector Under this measure dialogue between all actors in the textiles sector, including producers, reusers and textile waste managers would be promoted through either an online platform, a stakeholder group that meets together or a mix of both.	**Coherence with other EU policy initiatives** – The Commission's Strategy for sustainable and circular textiles already notes the work that will be undertaken to address stakeholders dealing with textiles via the European Circular Economy Stakeholder Platform, European Bauhaus, the Sustainable Consumption Pledge as well as the European Year of Youth. This measure would duplicate this action and is, therefore, incoherent with the already existing EU policy.

Measure number	Title and description	Criteria requiring measure to be discarded and detail behind decision
2.1	Establishing minimum requirements on separate collection for textile reuse This measure would entail establishing harmonised rules at the EU-level for separate collection-for-reuse models in Member States. Whilst the collection systems should be tailored to the reality of each MS and its regions, high-level minimum requirements would be included in the WFD to ensure that collection schemes and facilities safeguard the reusability of textiles during collection, transport and storage. Member States would be required to specify minimum requirements addressing inter alia: • Setting a quantitative target for separate collection, based on their understanding of current national situation. • Collection to be organised in a way that preserves textile quality and ensures the management of collected textiles for reuse. • Avoiding contamination of collected textiles by water or other liquids to prevent contamination inhibiting reuse • Collection vehicles to protect textiles from water or other liquids to prevent contamination inhibiting reuse. • Incoming collected post-consumer textile waste to be stored in a way that prevents contamination by water or other liquids to prevent contamination inhibiting reuse.	**Proportionality** – the details envisaged would be set at a level that is likely to interfere with systems already in place in Member States as well as setting measures that are better dealt with at the Member State level. **Political feasibility** – the level of detail foreseen is likely to significantly interfere with the systems in place and be politically unacceptable to Member States accordingly. **Relevance** – The measure looks to address aspects of separate collection that are generally already addressed in relation to the economic models already applied i.e. it is in the interests of those separately collecting textiles to prevent their contamination and specifying such measures at the EU level is unlikely to change approaches significantly accordingly.
2.	Establishing minimum requirements on separate collection for textile recycling The focus would be on establishing harmonised rules at the EU-level for separate collection for recycling models in Member States, considering the separate collection obligation as of 2025. Similar minimum requirements would be set with recycling as the main aim in relation to	**Proportionality** – the details envisaged would be set at a level that is likely to interfere with systems already in place in Member States as well as setting measures that are better dealt with at the Member State level. **Political feasibility** – the level of detail foreseen is likely to

	targets for collection, the manner of collection and the safekeeping of textile materials following collection to enable their recycling. An additional consideration that was discarded early on related to consideration of requiring as part of the separate collection of textiles two separate bins – one for recycling and one for reuse.	significantly interfere with the systems in place and be politically unacceptable to Member States accordingly. **Relevance** – The measure looks to address aspects of separate collection that are generally already addressed in relation to the economic models already applied i.e. it is in the interests of those separately collecting textiles to prevent their contamination and specifying such measures at the EU level is unlikely to change approaches significantly accordingly. **Effectiveness and efficiency:** The consideration of requiring as part of the separate collection of textiles two separate bins was discarded because of: • The practicalities of changing the approach currently applied across the EU whereby 85% of separately collected textiles are collected in single bins. • The determination that citizens are generally unable to distinguish between textiles suitable for reuse and those suitable for recycling. • The need for sorting to take place in nearly all cases to determine fractions suitable for reuse, recycling or other treatment.
2.	Defining textile sorting instructions via a textile label for (1) citizens and (2) sorting operators (1) This measure would entail labelling all textiles that are likely to be able to be reused and recycled with a label indicating that such materials should be discarded by citizens in separately collected waste rather than in residual waste. This would follow the type of labelling approach used in several countries to	**Coherence with other EU policy initiatives** - The development of measures to specifically address the lifecycle of textiles through digital product passport (DPP) are already being considered under other EU instruments as specified in the Commission's Strategy for sustainable and circular textiles, namely, there is a mandate for the development of DPP for textile

	inform consumers of what should be separated from residual waste. (2) This measure would also entail labelling of textiles to include information that would enable recognition of the material composition to enable sorting (in particular automatic sorting) for recycling.	products under the ESPR and the textile labelling Regulation which is currently under review. These tools would be the most appropriate to consider the feasibility and necessity to embed certain information on the composition of textiles in the textile products upon their placing on the market that would facilitate also the end-of-life treatment of textiles, in particular, to align with the progress in research and development projects on automatic textile sorting for recycling. **Effectiveness and efficiency –** The effectiveness of a labelling informing citizens on how to discard textiles is considered very low because all textiles should be subject to a separate collection obligation. In view of the complexity to assessing the re-usability or recyclability of textiles which is to be carried out by professionals based on the actual state of the textile at the point of sorting, citizen is not capable to make those decisions. The citizen may be more effectively informed about his role in separate collection through information campaigns by separate collection operators. Furthermore, removal of label or its fading during use stage also limits the effectiveness of this measure. For professional sorters, labels are reported as not the key source of information for their activities.
2.7	Setting sorting obligation for residual waste before final treatment. Under this measure, Member States would be required to ensure that materials found in residual waste are sorted prior to determining their final destination.	**Technical feasibility –** It can be considered that there is insufficient capacity for sorting (either manual or automated) of all residual waste at EU level. **Effectiveness and efficiency –** The costs of requiring sorting for all

		residual waste before the EU for all textiles would be prohibitively expensive. **Political feasibility** – Due to the difficult technical and economic feasibility of the measure, it is unlikely to garner the necessary political support.
2.10	Supporting Member States and investing in the upscale of infrastructure for collection, sorting, preparing for reuse and recycling. Under this measure specific funding would be provided to upscale infrastructure for collection, sorting, preparing for reuse and recycling. This would address a call from stakeholders to ensure that sufficient EU financial support is given to these activities for which the commercial costs and benefits are currently deterring investment. Funding would be provided under the Directive directly, with a mechanism put in place to identify where investments should be made to best effect. Funding would come from the existing EU budget.	**Coherence with other EU policy initiatives** – The Commission's Strategy for sustainable and circular textiles already proposes support for technological innovation for circular fashion business models under LIFE with support to also be provided under the European Regional Development Fund. A separate support and investment model under the WFD would be incoherent with this already existing policy. Furthermore, additional action taken under the WFD has the potential to set up competing and incoherent measures looking to address the same problem. Rather it would be preferable to await the results of these other ongoing policy initiatives to identify if additional action is required under the WFD later.
2.11	Setting a lower VAT for repair and reuse of textiles Under this measure a lower VAT level would apply for repaired and reused textiles than for virgin textiles.	**Coherence with other EU policy initiatives** – Council Directive 2006/112/EC already sets the rules on a common system of value added tax across the EU. Specifying different measures with the WFD would be incoherent with this already existing EU policy. Further, taxation falls outside of the scope of EU competence.
2.12	Setting a lower VAT or no VAT for recycled fibres Under this measure a lower VAT level or no VAT would apply for recycled fibres.	**Coherence with other EU policy initiatives** – Council Directive 2006/112/EC already sets the rules on a common system of value added tax across the EU. Specifying different

		measures with the WFD would be incoherent with this already existing EU policy. Further, taxation falls outside of the scope of EU competence.
2.13	Setting a standardised and consistent tracing and identification system for textile reuse and recycling throughout the European Union and beyond Under this measure textiles sent for reuse and recycling would be traced using specific information included with the textiles themselves. This would enable full understanding of the nature of the textile volumes that are being generated across the EU, the fate of those materials and the changes in approach over time by Member States in the management of textile waste. The track and trace system would be developed at the EU level and applied by Member States digitally.	**Effectiveness and efficiency –** The costs of enacting a track and trace system across the EU and beyond for all textiles would be prohibitively expensive. Whilst data would be comprehensive and comparable across all Member States the costs would outweigh any benefits obtained from such detailed data. **Proportionality -** standardised and consistent data flow on textiles collected, reused, and recycled would be ensured through less onerous means under the measure on reporting 2.14, facilitated by the EPR scheme under measure 2.9. Furthermore, there are cost saving opportunities to managing data flows on textiles placed on the market by making use of the DPP data availability which is to be developed under the ESPR for textiles.

Measure number	**Title and description**	**Criteria requiring measure to be discarded and detail behind decision**
3.2	Resource use reduction targets Under this measure resource reduction targets would set in relation to the textiles sector, requiring the resources used in production of textiles are reduced over time. Targets would be set as a percentage of textiles produced with a reduction in resources used per kg of product expected to see a decline over a time period to be specified in the WFD.	**Coherence with other EU policy initiatives** – The EU Textiles Strategy already announces the establishment, subject to the necessary impact assessment, of ecodesign requirements in the context of the implementation (via a Delegated Act) of the Ecodesign for Sustainable Products Regulation, which is being negotiated by co-legislators. The strategy also indicates

		that providing support to industry in improving resource efficiency will be provided through the Transition Pathway for the Textiles Ecosystem.
3.6	Targets for second-hand market share Under this measure Member States would be expected to meet targets for the second-hand textiles market share as a total of textiles sold. The global textile market size is valued at USD993.6 billion[224] with the second-hand apparel market valued globally at USD96 billion[225]. A target for the second-hand market share would look to set a target higher than the current 10% market share for a future point to be achieved by all Member States and would be measured via reporting against a dataset allowing weight sold per capita per year to be calculated against total market share. The target would be as weight (kg) per capita per year.	**Proportionality** – It is considered that this measure would be disproportionate to the problem looking to be addressed and may have unintentional consequences for the textiles sector by artificially changing the nature of the market without necessarily increasing reuse of textiles. **Political feasibility** – It is considered that this measure would fail to garner necessary political support as it would constrain consumer behaviour and would inhibit level-playing field between the reuse sector and other textile producers. **Political feasibility** – Member States are unlikely to accept a measure that determines the nature of the textiles sector within their territory.
3.7	Targets for textiles in residual waste The objective of this measure would be to drive Member States to improve their separate collection system for textiles if they find excessive textiles contained in the mixed household waste. The measure would entail setting a maximum share (either in terms of weight, items or value) of textiles found in residual waste. Member States would carry out compositional analyses to determine the volume of textiles found in residual waste at national level and should set a target requiring improvement on that figure.	**Proportionality** – It is considered that this measure would be disproportionate to the problem looking to be addressed in view of the proposed scope of the separate collection obligation, sorting obligation and EPR requirements in measures 1.1.1.3, 2.5 and 2.9. Measure 2.9 envisages EPR schemes to adapt their collection networks and awareness raising activities where compositional analysis show textiles presence in residual waste.

[226] Directive 94/11/EC relating to labelling of the materials used in the main components of footwear for sale to the consumer. OJ L100, 19.4.1994, p.37

[226] Directive 94/11/EC relating to labelling of the materials used in the main components of footwear for sale to the consumer. OJ L100, 19.4.1994, p.37

3.9	Target for maximum textile waste landfilled or incinerated Under this measure the Commission would propose a maximum target for separately collected textile waste that are landfilled or incinerated.	**Effectiveness and efficiency –** Since there is always going to be a fraction of textiles that are dirty or otherwise compromised and their disposal with reusable and recyclable fraction would undermine their reuse or recovery, this measure does not appear practicable. It is also already addressed under the existing WFD and Landfill Directive that prohibit incineration or landfilling of separately collected waste for recovery. in addition, it could bring an unwanted situation that a MS with a low rate of separate collection (focussing on reuse) but of very high-quality would likely also have a low rate of incineration and landfill. This MS would likely fulfil the proposed target. However, the objective of moving up the waste hierarchy would not be achieved. It may also limit possibilities to further distinguish between high-quality and low-quality recycling technologies, if required.
3.10	Banning the incineration of textiles waste Under this measure the incineration of textile wastes would be banned.	**Technical feasibility –** Presently, a part of textile waste cannot be reused or recycled (approximately 45% of the textiles currently found in residual waste would fall under this category). An outright ban for incineration of all textiles would, in the absence of measure 3.10 lead to increased textile waste being sent to landfill. No suitable alternatives exist at present for such materials. **Coherence with other EU policy objectives –** a ban on the incineration and landfill of separately collected waste was already enacted as part of the 2018 waste amendments. Hence, this measure could lead to

		incoherence with this already existing policy.
3.11	Banning the landfill of textiles waste	**Technical feasibility –** Presently, a part of textile waste cannot be reused or recycled (approximately 45% of the textiles currently found in residual waste would fall under this category). An outright ban for landfill of all textiles would, in the absence of measure 3.10 lead to increased textile waste being sent to incineration. No suitable alternatives exist at present for such materials. **Coherence with other EU policy objectives –** a ban on the incineration and landfill of separately collected waste was already enacted as part of the 2018 waste amendments. Hence, this measure would possibly lead to incoherence with this already existing policy.
3.12	Ban the destruction of unsold textile products Under this measure operators would be banned from the destruction of unsold textile products with such products either having to be reused or recycled.	**Coherence with other EU policy initiatives –** The Commission's Strategy for sustainable and circular textiles already proposes measures in relation to such a ban through the revision to the Ecodesign Directive.

The following table provides an overview of the viability screening of the measures discarded according to the criteria defined by the Better Regulation Toolbox:

Table 10 – Overview of screening of the options

Measure number and title	Legal	Technical	Policy	Coherence	E&E	Proportionality	Political	Relevance	Identifiability
1.4 Supporting the upscale of circular business models				✗					✗
1.5 Providing instruments and setting indicators to decrease the overconsumption of textiles				✗					
1.6 Sharing of best practices on planning for promoting repair services, reuse and second-hand shopping centres	✗								
1.7 Discouraging discount vouchers in product take-back schemes and encourage repair vouchers						✗	✗		
1.8 Advertising and marketing practices for waste prevention				✗					
1.9 Establishing an EU-wide consortium of PROs to ensure that all stakeholders abide by the same rules and to exchange experiences							✗		
1.10 Supporting dialogue and collaboration across the sector				✗					
2.1 Establishing minimum requirements on separate collection for textile recycling					✗	✗	✗	✗	
2.2 Defining textile sorting instructions for citizens				✗	✗				
2.3 Defining textile sorting instructions for sorters and waste operators									✗

2.5 Setting sorting obligation for residual waste before final treatment (landfilling, incineration)		X			X		X		
2.8 Supporting Member States and investing in the upscale of infrastructure for collection, sorting, preparing for reuse and recycling				X					
2.9 Setting a lower VAT for repair and reuse of textiles				X					
2.10 Setting a lower VAT or no VAT for recycled fibres				X					
2.11 Setting a standardised and consistent tracing and identification system for textile reuse and recycling throughout the European Union					X	X			
3.2 Setting a target for second-hand market share				X					
3.6 Setting a resource use reduction target						X	X		
3.7 Setting a target for textiles in residual waste						X			
3.9 Target for maximum textile waste landfilled or incinerated		X		X					
3.10 Banning the incineration of textiles waste		X		X					
3.11 Banning the landfill of textiles waste				X					
3.12 Banning the destruction of unsold textile products				X					

Legend: Legal = Legal feasibility, Technical = Technical feasibility, Policy = Previous policy choices, Coherence = Coherence with other EU policy objectives, E&E = Effectiveness and efficiency, Political = Political feasibility

For those measures that have been taken forward into the detailed impact assessment their description is provided below.

Option 1: Supporting MS to implement and enforce current provisions

Detailed analysis of the measures under Option 1 - Supporting Member States to implement and enforce current WFD provisions

Measure 1.1 – Clarifying definitions in relation to textiles and textile waste

In the context of the evolving policy context concerning textiles at EU level (EU Textiles Strategy and ESPR), and where each country is developing its own framework to determine what is covered by textile measures, it is essential to guarantee harmonisation both in the definition for the term "textile" and in the differentiation between used textile and textile waste amongst Members States. This measure will clarify existing definitions in the waste legislation to provide a common understanding of the notion of "textiles" and "textiles waste" to ensure a level-playing field for the different stakeholders in the EU, involved competent authorities and a consistent and comparable and clear textile and textile waste flow mapping and monitoring of the other measures addressed in this initiative.

In doing so the measure looks to specifically address the following problem drivers:

- different scopes and definitions employed by Member States in relation to textile waste management at present;
- delays in implementation of the separate collection obligation that are, in part, caused by a lack of clarity as to the scope of textiles falling under the obligation;
- information shortages that are caused in part by a lack of understanding of the scope of textiles for which data should be collected and reported.

This measure entails the adoption of guidance documents by DG ENV and/or adaptation of existing guidance documents provided by Eurostat for the purposes of guiding Member States on their reporting obligations on textile waste which clarify the scope of waste streams covered.

This measure, in a legislative format, is proposed to be taken up in the context of all the measures under Options 2 and 3, i.e., the scope and operational elements of the measures in Option 2 take up the proposed definitions of measure 1.1.

Two alternatives are foreseen proposing two different definitions as detailed below.

1. Defining 'textiles' for the purpose of the WFD application and, in particular, of the separate collection obligation. Subsets of that definition could be applicable for other measures proposed in this initiative.
2. Defining the point at which separately collected textiles become waste for the purpose of the WFD application as well as for other measures proposed in this initiative.

1. Definition of textiles

This alternative is proposed in three alternatives in relation to defining textiles as outlined in the table below:

Table 11 – Alternative definitions of 'textiles'

Alternative	Approach	Description
1	Defining textiles in accordance with the textile labelling Regulation	This alternative would consist in using Article 2(2) of Textiles Labelling Regulation that defines the following scope of textiles to define the products covered under the term "textile": "2. For the purposes of this Regulation, the following products shall be treated in the same way as textile products: (a) products containing at least 80 % by weight of textile fibres; (b) furniture, umbrella and sunshade coverings containing at least 80 % by weight of textile components; (c) the textile components of: (i) the upper layer of multi-layer floor coverings; (ii) mattress coverings; (iii) coverings of camping goods; provided such textile components constitute at least 80 % by weight of such upper layers or coverings; (d) textiles incorporated in other products and forming an integral part thereof, where their composition is specified. 3. This Regulation shall not apply to textile products which are contracted out to persons working in their own homes or to independent firms that carry out work from materials supplied without the property therein being transferred for consideration. 4. This Regulation shall not apply to customised textile products made up by self-employed tailors." Paragraphs 3 and 4 effectively remove labelling obligations for smalls-scale bespoke clothing manufacture. This broad description of textiles would appear to be the most relevant at the EU level for determining what is a textile and what is not. It should be noted that footwear is explicitly excluded from the textile labelling Regulation and is addressed in its own law.[226] In this case, therefore, footwear would not be included in the scope of textiles using this definition. Additionally, Article 3 makes clear that a textile product is any raw, semi-worked, worked, semi-manufactured, manufactured, semi-made-up or made-up product which is exclusively composed of textile fibres, regardless of the mixing or assembly process employed.

[226] Directive 94/11/EC relating to labelling of the materials used in the main components of footwear for sale to the consumer. OJ L100, 19.4.1994, p.37

<table>
<tr><td></td><td></td><td>Whilst mattress coverings would be addressed under this definition the remaining part of the mattress would not.

Finally, leather clothing and apparel would be excluded using this definition.</td></tr>
<tr><td>2</td><td>Defining textiles using CN codes from the Combined Nomenclature Regulation targeted at customs codes</td><td>This alternative enables to address, albeit with different operational obligations, all textile wastes generated (post-industrial, pre-consumer and post-consumer textile waste), and offers the potential to aim specific non-textile waste types that are subject to the same operational schemes than textile wastes (such as footwear, leather clothing and apparel), using CN codes that define specific categories of goods.

Section XI of the CN Regulation addresses textile and textile articles. Wastes resulting from the production of these articles as well as the articles at their end of life falling under the following chapters would be considered as textile waste:
<table>
<tr><th>CN code</th><th>Description</th></tr>
<tr><td>50 – all codes listed in the chapter</td><td>Silk</td></tr>
<tr><td>51 - all codes listed in the chapter</td><td>Wool, fine or coarse animal hair, horsehair yarns and woven fabric</td></tr>
<tr><td>52 - all codes listed in the chapter</td><td>Cotton</td></tr>
<tr><td>53 - all codes listed in the chapter</td><td>Other vegetable textile fibres, paper yarn and woven fabrics of paper yarn</td></tr>
<tr><td>54 - all codes listed in the chapter</td><td>Man-made filaments, strip and the like of man-made textile materials</td></tr>
<tr><td>55 – all codes listed in the chapter</td><td>Man-made staple fibres</td></tr>
<tr><td>5601</td><td>Wadding of textile materials and articles thereof; textile fibres, not exceeding 5 mm in length (flock), textile dust and mill neps</td></tr>
<tr><td>5602</td><td>Felt, whether or not impregnated, coated, covered or laminated</td></tr>
</table></td></tr>
</table>

		58 – all codes listed in the chapter	Special woven fabrics, tufted textile fabrics, lace, tapestries, trimmings and embroidery
		60 - all codes listed in the chapter	Knitted or crocheted fabrics
		61 – all listed codes within the chapter	Articles of apparel and clothing accessories, knitted or crocheted.
		62 – all listed codes within the chapter	Articles of apparel and clothing accessories, not knitted or crocheted
		6301	Blankets and travelling rugs
		6302	Bed linen, table linen, toilet linen and kitchen linen
		6303	Curtains (including drapes) and interior blinds; curtain or bed valances
		6304	Other furnishing articles, excluding those of heading 9404[227]
		630710	Floor-cloths, dish-cloths, dusters and similar cleaning cloths
		6308	Sets consisting of woven fabric and yarn, whether or not with accessories, for making up into rugs, tapestries, embroidered tablecloths or serviettes, or similar textile articles, put up in packings for retail sale
		6309	Worn clothing and other worn articles
		6504	Hats and other headgear, plaited or made by assembling strips of any material, whether or not lined or trimmed

[227] 9404 refers to mattress supports, articles of bedding and similar furnishing (for example mattresses, quilts, eiderdowns, cushions, pouffes and pillows) fitted with springs or stuffed or internally fitted with any material or of cellular rubber or plastics, whether or not covered.

6505	Hats and other headgear, knitted or crocheted, or made up from lace, felt or other textile fabric, in the piece (but not in strips), whether or not lined or trimmed; hairnets of any material, whether or not lined or trimmed

Additionally, in relation to leather clothing and apparel as well as footwear the following CN codes could be applied:

CN Code	**Description**
4203	Articles of apparel and clothing accessories, of leather or composition leather (excl. footware and headgear and parts thereof, and goods of chapter 95, e.g. shin guards, fencing masks)
6401	Waterproof footwear with outer soles and uppers of rubber or of plastics, the uppers of which are neither fixed to the sole nor assembled by stitching, riveting, nailing, screwing, plugging or similar processes
6402	Other footwear with outer soles and uppers of rubber or plastics
6403 (with the exception of 6403 12 00 – Ski-boots, cross-country ski footwear and snowboard boots)	Footwear with outer soles of rubber, plastics, leather or composition leather and uppers of leather:
6404	Footwear with outer soles of rubber, plastics, leather or composition leather and uppers of textile materials:
6405	Other footwear

Having defined textile wastes and other wastes that follow the same operational schemes using the CN code system, it would be possible to address specific measures to specific codes.

In this way, for example, measures that specifically focus on municipal clothing and textiles could address a more limited set as below:

CN code	**Description**
61 – all listed codes within the chapter	Articles of apparel and clothing accessories, knitted or crocheted.
62 – all listed codes within the chapter	Articles of apparel and clothing accessories, not knitted or crocheted
6301	Blankets and travelling rugs
6302	Bed linen, table linen, toilet linen and kitchen linen
6303	Curtains (including drapes) and interior blinds; curtain or bed valances
6304	Other furnishing articles, excluding those of heading 9404[228]
6309	Worn clothing and other worn articles
6504	Hats and other headgear, plaited or made by assembling strips of any material, whether or not lined or trimmed
6505	Hats and other headgear, knitted or crocheted, or made up from lace, felt or other textile fabric, in the piece (but not in strips), whether or not lined or trimmed;

[228] 9404 refers to mattress supports, articles of bedding and similar furnishing (for example mattresses, quilts, eiderdowns, cushions, pouffes and pillows) fitted with springs or stuffed or internally fitted with any material or of cellular rubber or plastics, whether or not covered.

		hairnets of any material, whether or not lined or trimmed This scope is broader than the scope of textiles considered by the JRC[229] as codes 6309, 6504 and 6505 were not addressed in the waste generation numbers in that study. To the above-mentioned set an additional set of CN-codes corresponding to certain non-textile wastes could be added to include them into the scope of the same operational measures as textiles.
3	Using a combination of alternative 1 and 2 to clearly define operational measures in relation to textiles waste management under the WFD as well as the scope of those measures	The WFD applies to waste in general save for the exclusions listed in Article 2 of the Directive. Establishing a universal definition of textile from the Textile Labelling Regulation would solve the problems of harmonisation among the MS. However, using this definition to universally set the scope of all operational measures, including in relation to the existing provisions on textiles may render certain provisions impractical. This alternative takes a combined approach of options 1 and 2. The definition of alternative 1, from the Textile Labelling Regulation, would apply to textile materials in the strict sense, according to their composition. The CN-code listing under alternative 2 would then be used to define the scope of specific measures (for example by defining the textiles and other closely linked wastes subject to an EPR and a separate collection obligation in a specific annex to the WFD).

The alternatives described above would entail the following regarding the existing separate collection obligation:

According to Eurostat guidance for municipal waste statistics[230], in addition to household waste, municipal waste also encompasses waste originating from other sources, whether collected by municipal or by private collectors, such us: commerce and trade, small businesses, office buildings and institutions (e.g. schools, hospitals), enterprises if it similar in kind and composition to household waste and does not come from production, etc.

With regard to the fraction of municipal textiles and disposed of as municipal waste, information collected from eleven Member States reveals that the scope of textiles covered by existing collection systems and planned ones converge around municipal textile and clothing and footwear, i.e., circa 85% of the textile waste generated. For the remaining Member States for which

[229] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

[230] Guidance for the compilation and reporting of data on municipal waste according to Commission Implementing Decisions 2019/1004/EC and 2019/1885/EC, and the Joint Questionnaire of Eurostat and OECD. European Commission. Eurostat (2021)

information is not available, the picture is unclear. However, in the two stakeholder workshops that considered the scope of textiles, the focus of discussions tended to be in relation to clothing and, to a lesser extent, other municipal textiles (see Table 22).

In view of their different waste collection and treatment processes, mattresses, rugs and floor coverings are excluded from the lists used to define operational measures in alternatives 2 and 3. Rugs and floor coverings also cover a very broad category of products making their inclusion in a collection system with textiles even more complex. However, the small rugs that the industry may sell as household linens would be captured. When disposed of in the separate collection system for household waste this would be treated either as a target or non-target material by the waste manager depending on the rug.

With regard to post-industrial and pre-consumer, the existing waste regime already requires that the waste producer treats the waste in line with the waste hierarchy. It is assumed that where there is a market value for the textile waste and transport to the recycling infrastructure is economically feasible it is valorised in view of its clear and consistent composition that requires far less pre-processing for recycling. For the purposes of these textile waste categories, the use of relevant CN codes may also be a useful demarcation tool for the measures addressed in this initiative (e.g., measures 2.5, 2.14).

2. Definition of waste

To address the problems identified in relation to the categorisation of textiles as waste two alternatives are considered.

1. Adopting a precautionary approach to determine the point at which a textile item becomes waste. The following definition would be applied: Textile waste is a textile that is discarded by its holder in a separate collection scheme (irrespective of the actor managing the separate collection system), when donated or returned to a store or when deposited in residual waste. As such, any textile that is separately collected in a dedicated bin would acquire waste status, including the separate collection schemes managed by the (preparation for) reuse sector and non-profit organisations. However, following sorting, reusable textiles would no longer be considered as waste but rather considered as a used textile, if they meet the relevant end-of-waste criteria.
2. Adopting an approach where separately collected textiles and those donated or returned to a store are given waste status after those materials have been sorted into reusable textiles (that would therefore not be defined as waste at any point), recyclable textiles and textiles for disposal (both of which would obtain waste status following sorting).

An additional consideration that was discarded early on related to consideration of requiring, as part of the separate collection of textiles, two separate bins – one for recycling and one for reuse. However, this was discarded because of:

a. The practicalities of changing the current approach applied across the EU whereby 85% of separately collected textiles are collected in single bins.
b. The evidence showing that citizens are not always able to distinguish textiles suitable for reuse and suitable for recycling.
c. The need for sorting to take place to determine fractions suitable for reuse, recycling or other treatment.

The point at which collected textiles are considered waste varies across the EU Member States. There is no comprehensive source of information as to which Member States define textiles collected in textile collection bins as waste. There is anecdotal evidence that this can also vary regionally. As part of the stakeholder consultation there was some disagreement between Member States as to whether separately collected textiles should always be considered waste at the point of collection or not with the likes of Germany and Austria applying such waste categorisation at the point of collection and other Member States such as Italy and Sweden not doing so. In the case of Germany, it was emphasised that the Member State considered that there was a risk in not defining such materials as waste in terms of their handling post collection as well as the possibility for the contamination of reusable materials with waste at the point of collection. For Italy and Sweden, the risks to social enterprises business models in defining such separately collected materials was the greater concern. However, during the consultations, the social enterprises' sector indicated that generally such entities already hold the relevant waste management authorisations required to collect and sort waste.

The choice of either alternative would, therefore, require changes in approaches in some Member States but it is impossible to determine how many due to a lack of information.

Measure 1.2 – Adopting EU wide waste prevention indicators for textiles

The objective of the measure is to set measurable indicators in relation to textile waste prevention that are more consistently applied by Member States. This allows the identification of progress in textile waste prevention as well as data to support sharing of best practices and development of future policy on consistent datasets in relation to textile waste prevention. Waste prevention indicators can focus on several aspects of the textile life cycle, including prevention of items entering the waste management system; and reuse after preparation-for-reuse once the item has entered the waste management system. These indicators would build on the existing reporting obligations of the Member States under Article 37 of the WFD on reuse of products and waste generated, including as proposed to be improved under measure 2.14 which concerns the improvement of data flows on textiles as well as other data available at EU level based on existing reporting obligations indicating the economic activity in the countries. They would also be based and/or embedded in the overall waste prevention monitoring indicators which apply also to textiles being developed by the EEA for the purposes of measuring decoupling of waste generation from economic growth. Overall, the most pertinent indicator on waste prevention is on the quantity of reuseable textiles made available for re-use which is already subject to Member State monitoring under Article 37 of the WFD.

The measure looks to specifically address the following problem drivers:

- Insufficient waste prevention activities and monitoring employed by Member States at present;
- Information shortages that hamper the development of effective waste prevention programmes; and
- A lack of circular business models at scale that extend the lifespan of products.

The indicators would be adopted through an implementing act (already envisaged in Article 9(7) of the WFD). This action would be made in line with the monitoring framework that is being developed by the European Environmental Agency as part of its obligations to monitor waste prevention in the EU in accordance with Article 30(2) WFD.

The application of such indicators by Member States would facilitate the monitoring of waste prevention at national and EU level and would allow the Commission to better identify those Member States that appear to be applying best practices in relation to waste prevention and those that appear to be encountering challenges. This could then be used to facilitate sharing of best practices identified as well as to target support to Member States that are struggling to reduce textile waste. The information and assessment of the Union's progress towards waste prevention are to be made available to the public by the European Environmental Agency as part of its obligations to report in Article 30(2) WFD.

This measure would apply to all textiles wastes, including post-industrial, pre-consumer and post-consumer textile wastes.

Measure 1.3 – Providing Member States with guidance and support in dialogue on the management of textile waste

Measure 1.1. looks to address the issue of defining what textiles mean in the context of specific regulatory measures on textiles under the WFD. However, this only solves part of the challenge of implementing the existing measures on textiles. Even with a clearer definition there would remain inquiries about the application of the definition to specific textile products as well as how to best finance and develop sufficient textile management infrastructure. This is not currently provided neither in the WFD nor in the available guidance. This could prolong divergences in implementation and inhibit the identification of best practices that can speed up the textiles waste management systems as required.

In doing so the measure looks to specifically address the following problem drivers:

- Different scopes and definitions employed by Member States in relation to textile waste management at present;
- Delays in implementation of the separate collection obligation that are, in part, caused by a lack of clarity as to the scope of textiles falling under the obligation;
- Information shortages that are caused in part by a lack of understanding of the scope of textiles for which data should be collected and reported;
- Insufficient funding to scale up separate collection, sorting and recycling;
- Insufficient sorting and recycling capacity; and
- Insufficient waste prevention activities and monitoring.

This measure would consist of the Commission working with stakeholders to develop guidance on a range of topics related to textile waste for which problems have been identified by the stakeholders including:

- Best practices in relation to the development of suitable collection, sorting, reuse and recycling infrastructure as well as best techniques for managing textiles that cannot be reused or recycled;
- The risks associated with unsorted separately collected textiles and their export to third countries for reuse;
- Mechanisms for monitoring the management of textiles and textile wastes, namely, improvements in textile waste related data collection through guidance of the Eurostat to clarify the definitions referred to in measure 1.1. ; and
- Financing the development and management of textiles and textile waste systems, including through the establishment of a national EPR schemes, for example, adopting a

Commission Recommendation suggesting the use of EPR to finance the improvement of the sustainable management of textile waste in line with the substantive elements of measure 2.9. and to minimize the impact on the industry in terms of compliance costs where several national schemes are established and vary in terms of their regulatory frameworks.

The Commission would further develop existing platforms such as the European Circular Economy Stakeholder Platform or setting up a complementary Platform, like the EU Platform on Food Losses and Food Waste, specifically addressing textiles and textile wastes. The platform could provide a knowledge hub on best practices, strategies, etc. for textiles management, a concrete toolbox (amongst which the guidance described above). Operational actors involved in existing textile management schemes (e.g., EPR PROs) could use this platform to share experiences and best practices with all relevant stakeholders.

Whilst these types of measures exist for other waste types, there is no platform targeted to textiles and Commission guidance has not focussed on the specific needs of textiles. The guidance and platform highlighted above would look to fill this gap. This measure would apply to all textiles wastes, including post-industrial, pre-consumer and post-consumer textile wastes.

Existing platforms and hubs are either already in existence such as the Circular Economy Stakeholder Platform[231] or planned such as the wider dissemination activity on the ESPR (e.g., following the Ecodesign website model). The existence of these models allows either the addition of materials in relation to textiles via these already existing or planned guidance and knowledge platforms or to use the approaches already in existence as a model for a specific platform and guidance in relation to textiles.

Option 2: Setting additional regulatory requirements to improve performance

Measure 2.5 – Setting sorting obligations for separately collected textiles and textiles waste

Under this measure Member States would be required to ensure that all separately collected textiles are subject to a sorting operation with the objective of identifying fractions suitable for reuse and preparation for reuse, as a priority, as well as fractions suitable for recycling. Sorting may take place in one or several subsequent stages and/or facilities but shall exclude subsequent operations like repair or pre-processing operations in view of recycling, like the removal of materials that hamper recycling (e.g., zippers and buttons). This entails placing obligations on the waste collectors and waste sorters.

The measure looks to specifically address the following problem drivers:

- Inconsistent application of the “textile waste” and “used textile" definitions application;
- Insufficient sorting and recycling capacity;
- Insufficient funding to scale up separate collection, sorting and recycling;
- Low demand for recycled materials; and
- Delays in implementation of the separate collection obligation.

[231] https://circulareconomy.europa.eu/platform/

Since waste may be sorted outside the country of collection, to ensure traceability of waste [232], the obligation to ensure that the collected waste is handed over to a licensed or registered waste management operator (which may also be the same as the waste collector) and undergoes a sorting operation for preparation for reuse and recycling purposes, should be targeted at entities collecting textile waste separately from other waste, namely, municipalities or waste management operators they have outsourced, commercial and non-profit entities, such as social enterprises.

This measure would apply to all textiles wastes, including post-industrial, pre-consumer and post-consumer textile wastes. Regarding post-consumer textiles separately collected the sorting operation must ensure the separation of textiles for reuse and recycling. Since there are no automatic sorting technologies yet available to separate the reusable and recyclable fraction from other textile waste, this sorting should be manual. In view of cost and logistical efficiency gains, sorting for reuse and recycling generally takes place simultaneously. Manual sorting stage may be followed by subsequent manual or automatic sorting stages to identify more targeted factions. Automated fibre sorting and pre-processing facilities are critical to scale the recycling of post-consumer waste. It is also common practice to remove textile items and other items and materials and waste that may contaminate the collected textile fraction at all stages of the collection stage (and treat it as waste destined for disposal), including at the opening of the waste collection bins and loading/unloading of the transportation vehicles destined to the sorting facility.

Under this measure the mandated collection, subsequent handling of waste (transportation, storage) and sorting operations would be required to comply with certain minimum principles and requirements to ensure that the collected textile waste treatment, including the collection stage, adheres to the waste hierarchy. This measure operationalises an already existing obligation in Article 11(1) WFD read in conjunction with Articles 4 and 10 WFD which requires Member States to separately collect textiles to facilitate their treatment in line with the waste hierarchy. Whilst the economics of separately collected post-consumer textiles will push for reuse in the first instance as this remains the most profitable outlet for textiles, these criteria also mandate a sorting obligation to identify fractions suitable for preparation for reuse and recycling.

The following minimum requirements would be mandatory for the collection of textiles waste and handling prior to sorting:

- Collection, loading and unloading, transportation and storage infrastructure and operations and other handling of textile waste should ensure protection from weather conditions (i.e. dry/clean conditions) and other sources of contamination to prevent damage and cross-contamination of the collected textiles;
- Collection containers should be frequently emptied by trained personnel at the place of collection;

[232] Sorting may take place in the Member State of collection or other Member State or outside the EU. In the case measure 1.1 is applied in terms of harmonising the application of definition of waste, the collected textiles are considered waste at the point of collection and may only cease to be waste following a preparation for reuse operation or another material recovery operation. Therefore, the shipment of collected textiles would need to comply with the WSR for the purposes of shipments to other Member States or outside the EU.

- A first screening of waste shall be carried out at the place of collection to remove non-target items or materials/substances that are a source of contamination;
- With regard to pre-consumer textiles, the different fractions of textiles materials and textiles items should be kept separate at the point of waste generation where this facilitates subsequent preparation for reuse or recycling and subject to recovery operations.

There is significant potential to reduce textile waste and ensure that it creates further value by boosting its preparation for reuse and recycling, notably through sorting of reusable textiles and textile waste whilst prioritising recycling when reuse is not feasible. The following minimum requirements would be mandatory for ensuring high quality sorting for reuse and for preparation for reuse, as a priority, and secondly for recycling, followed by other recovery options:

- All collected textiles shall be subject to a sorting operation. Sorting for reuse, preparation for reuse and recycling is mandatory for all loads of collected textiles.
- The purpose of the sorting operation is to produce a textile fraction that is suitable for reuse, prioritising reuse in the Union market, and that meets the criteria for ceasing to be waste as a result of the sorting operation or to produce a textile fraction that is destined for subsequent preparation for reuse operations (e.g., cleaning, repairing).
- For those fractions of textile waste, where reuse, including preparation for reuse, is not possible, the purpose of the sorting operation is to produce a textile fraction that is suitable for recycling. The remainder of the textiles is to be subject to energy recovery or disposal operation.
- The fractions for reuse, preparation for reuse and recycling shall be separated from each other as well as from textiles suitable for energy recovery, or that would have to be disposed of. Damaged, dirty or otherwise contaminated items of textiles and other non-target materials (e.g., non-textile items) shall be removed from the reusable fraction and, where necessary in view of the subsequent processing operations, from the recyclable fraction.
- Sorting for reuse operations must be carried out by sorting textiles in an appropriate level of granularity, separating fractions that are fit for direct reuse from fractions that are to be subject to further preparation for reuse operations (e.g., repair), target a specific reuse market applying up-to-date criteria reflecting the needs of the receiving market, inter alia, the national customs, clothes size, weather conditions, fashion and quality of textiles.
- Sorting for recycling operations shall meet the requirements of the subsequent preliminary treatment for recycling and final recycling processes (e.g., by material composition, colour) prioritizing items for high quality textile to textile recycling over recycling for wipes or other non-woven applications.
- Sorting for reuse and preparation for reuse needs to be carried out manually for each item by trained personnel. Similarly, sorting for recycling generally needs to be carried out manually for each piece of item by trained personnel but, where equivalent output is attainable through automated sorting processes, can be carried out through appropriate automatic sorting.
- The sorting facility shall be a dry and clean workplace and be appropriately equipped.
- Sorted textile fractions must be packaged according to their quality and value and must be properly stacked during subsequent transportation, loading and unloading to safeguard from any damage.
- Bales of sorted post-consumer textiles for reuse shall not contain mixed sorted textiles; they shall be labelled with very granular information on the type of textile products (e.g.,

targeted gender, type of clothes in sub-categories, size, colour, material) to facilitate use in multiple reuse markets, material composition they contain, year of production of the bale. Records shall be kept and fixed to the packaging of sorted bales. The records shall contain information about the contents, level of granularity of the produced textile fractions that the sorting was carried out, and the name and address of the company responsible for the sorting.

The above requirements are considered by some industry members as minimum good practices for ensuring that textiles are not damaged during the collection and sorting steps and would provide a minimum level of environmental protection rules across the Union in the quality of the processes to maximise the retention of value from textile through the identification and preparation of items for reuse and recycling.[233] More detailed sorting requirements are to be observed by the sorting operators to meet the requirements for the reuse and recycling markets. The sorting specifications for reusable items differ by specific reuse market (regionally and even locally) and may change according to the local fashion and season in the year. Since this generally concerns several hundreds of sorting grades, a greater granularity cannot be captured in the above requirements. The minimum requirements however should already facilitate a greater consistency across the Union in the quality of textiles destined for sorting and sorted textiles therefore facilitating shipment across the EU for reuse or further processing. The measure would also address the wide concerns linked to the impact of export of EU used textiles outside the EU where it concerns the export of unsorted textiles.

As indicated by recyclers, mandatory sorting for recycling would provide for the necessary consistency in the quantities of the different feedstocks available for recycling to scale up the recycling facilities in the EU. Stakeholders indicate that scaling these technologies requires sufficient funding and the certainty of having a market for recycled fibres. Demand in feedstock for recycling changes based on technology development, which will affect sorting specifications for recycling.

This measure would entail also providing a mandate to the Commission for setting more detailed technical rules setting out sorting requirements to provide a higher level of harmonisation of the textile fractions to facilitate the material flows across the Union for re-use or further treatment. Such criteria, for example, would also be useful to guide how to address the risk that re-useable textiles are destined for recycling rather than re-use as a result of sorting which could be addressed by providing further technical rules how to classify textiles for re-use and preparing for re-use and for recycling.

These minimum requirements do not constitute end-of-waste criteria following a sorting operation or any other subsequent preliminary or final treatment operation, but they are a pre-condition for being considered for end-of-waste operations since minimising contamination through collection and sorting are fundamental steps to further treatment. Development of EU harmonised end-of waste criteria addressing preparation for reuse processes and recycling processes are addressed in measure 2.6. and would define detailed sorting as well as further interventions like repair requirements.

This measure takes up in a legislative form measure 1.1.2.1 which proposes to consider all separately collected textiles as waste until they undergo a sorting process that generates reusable

[233] EuRIC Textile, 2021. Handling & Sorting specifications for reuse and recycling of used textiles.

fractions of textiles or recycled textiles. This means that collected textiles that are not sorted in the country of collection would be subject to waste shipment requirements where they are destined for subsequent sorting operations elsewhere in the EU or outside the EU. This addresses the concerns raised by the stakeholders that unsorted textiles are exported as goods and that a significant fraction of that is not reusable in the country of destination.

Member States will have to ensure that the requirements of this measure applicable to collectors and sorters are reflected in the operator and facility permitting requirements and subject to monitoring and enforcement action by the competent authorities. In this context it is to be verified that the sorting practices are adapted to the target markets for reuse to prevent that the produced reusable fraction may be regarded as waste in the destination reuse markets, in particular regarding the granularity of the fractions produced and that the sorting operator gathers information on the specificities of the target reuse markets. Reporting obligations on the entities shipping used textiles (shipment of product) are already a requirement under current regulatory framework. This information would facilitate the enforcement and monitoring of the obligation on sorters.

The waste collector should be required to keep records of the weight of waste collected, handed over to a licenced/registered sorting facility and subject to sorting operations. In line with the rationale of Article 34 of the WFD on record keeping, the records should be kept for three years and shall make that information available, on request, to the competent authorities. Other reporting obligations that apply to waste collectors are considered under Measure 2.14.

In line with the principle of subsidiarity and its implementation in the context of the Waste Framework Directive, this measure does not regulate which entities should be involved in the management of textile waste (collection and sorting, preparation for reuse). Currently it is observed that both commercial and non-commercial (social, charity enterprises) as well as municipalities directly are engaged in these activities. In view of the heterogeneous, innovative and social nature of the reuse sector and the currently dominant role for social enterprises, it should be recommended to the Member States to implement the separate collection obligation for textiles safeguarding and facilitating the access to textile waste to the non-commercial entities [234].

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[234] The role of social enterprises as described in Spanish Law is significant. Under the Spanish Law 5/2011, art. 4, social economy entities operate on the basis of the following guiding principles: (a) The primacy of individuals and of the social purpose over capital, (b) Application of the results obtained from the economic activity mainly on the basis of the work provided and the service or activity performed by the partners or their members (c) Promoting solidarity within and with society that promotes commitment to local development, equal opportunities for men and women, social cohesion, the integration of people at risk of social exclusion, the creation of stable and quality employment, the reconciliation of personal, family and work life and sustainability and (d) Independence on public authorities. According to the Spanish Waste Law among the obligations of the waste producer is to deliver waste to a public or private waste collection body, including social economy entities, for treatment. In the same Law it is stipulated that the competent authorities shall, in their respective areas, promote the activities of preparing for reuse, in particular by promoting the establishment of and support for preparing for reuse and repair networks, especially in the case of social economy entities authorised to manage waste. Further, when an extended producer responsibility scheme is established the Spanish waste law requires that the roles and responsibilities of, among others, the social economy entities would be clearly defined. Particular attention is also being paid to the promotion of social economy entities in relation to the waste prevention measures and, more

Measure 2.6 – Adopting end of waste criteria

This measure entails the adoption by the Commission of an implementing act based on the mandate it is given in Article 6(2) of the WFD setting out harmonised end-of-waste criteria for the preparation for re-use and recycling of textile waste in accordance with the requirements set out in Article 6(1) and (2) of the WFD. This measure entails the preparation of the Commission of a draft implementing act and negotiation of the act with the industry and the Member States in the framework of the Technical Adaptation Committee on waste leading to the adoption of the act.

End-of-waste criteria specify when certain waste ceases to be waste and becomes a product or a secondary raw material. According to Article 6 (1) and (2) of the WFD, certain specified waste ceases to be waste when it has undergone a recovery operation (including recycling) and complies with specific criteria, in particular, when:

- The substance or object is commonly used for specific purposes.
- There is an existing market or demand for the substance or object.
- The use is lawful (substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products).
- The use will not lead to overall adverse environmental or human health impacts.

Article 6 of the WFD also defines the methodological requirements that the development of the criteria ought to follow, namely, that they have to define input material, requirements on the recovery process, quality management system requirements and output material criteria.

The measure looks to specifically address the following problem drivers:

- Different scopes and definitions on the definitions of "textile waste" and "used textile", "secondary raw material from recycled textile waste";
- Insufficient funding to scale up separate collection, sorting and recycling;
- Insufficient waste prevention activities;
- Lack of circular business models at scale that extend the lifespan of products; and
- Low demand for recycled materials.

This measure would consist in developing criteria for textiles which entails a process that engages with the industry stakeholders as well as Member State competent authorities and taking as a reference the national or industry standards in place. End-of-waste criteria for textiles at national level are rare at present. According to the JRC[235] the following Member States have applied end of waste status to certain textiles:

- France - order on end of waste for objects and chemicals that have been prepared for reuse that includes textiles (2018) and order on end of waste for cut wiping cloths made from used textiles for use as rags (2019),

specifically, for the management of collection and reuse centres. The Nineteenth additional provision to the law explicitly provides for the tender and award of public administration's contracts on a preferential basis through reserved contracts. More specifically, it is stated that at least 50 % of the amount awarded must be the subject of a contract reserved to Insertion Companies and Special Employment Centres of Social Initiative authorised for the treatment of waste. Otherwise, the public administration and the contracting authority must provide a duly substantiated justification in the file and may be subject to special review or review procedures in the field of public procurement.

[235] JRC 2020. Study on Member States practices on by-products and end-of-waste: Final Report

- Czechia - end of waste decision on textile cord,
- Romania - end of waste decision on processed textile fibres.

In keeping with measure 1.1.2 – which proposes to clarify that separately collected textile waste ceases to be waste only after undergoing a sorting operation – the development of end-of-waste criteria would define detailed requirements to sort out reusable textile fractions.

In relation to textile recycling, consideration needs to be given to the different waste streams likely to be encountered due to:

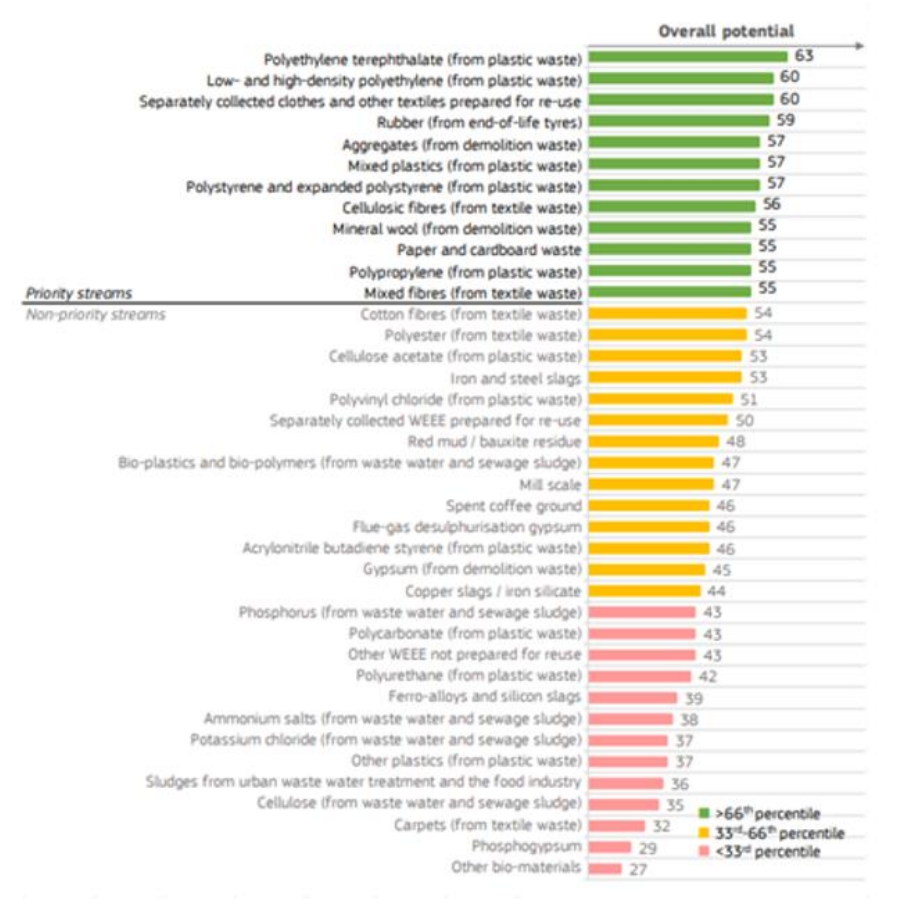
- Post-consumer textile having a large variety of textile types, product types and contaminant types (including the collection of non-textiles in textile collection facilities like shoes, the composition of textile products separately collected that includes buttons, zippers and other contaminants and the possible soiled nature of the textiles collected);
- Pre-consumer waste likely to be better defined in terms of its composition at the point of collection as a result of a better understanding of the waste feedstock, less likely to be contaminated than post-consumer waste and containing less variability in terms of the material types contained therein.

As regards the scope of determining end-of-waste criteria and based on consultation with stakeholders by the JRC an initial scope of end-of-waste criteria could be set for six textile waste streams:

1. separately collected clothes and other textiles prepared for reuse
2. cellulosic fibres (from textile waste)
3. mixed fibres (from textile waste)
4. cotton fibres (from textile waste)
5. polyester fibres (from textile waste)
6. carpets (from textile waste)

The first three streams were identified as priority streams as part of the consultations with four and five falling just below the cut-off line of priority streams. Stream six is at the bottom of the priority ranking but could be included in the scope if enough evidence is provided following the approach outlined above. Additional textile streams could also be included dependent on the acquisition of additional data by the JRC. Overall, this measure would apply to all textiles wastes, including post-industrial, pre-consumer and post-consumer textile wastes.

Figure 17 – Final ranking of the candidate streams for which to develop further EU-wide end-of-waste or by-product criteria based on their overall potential



Source: JRC

This measure builds on measure 2.5 which establishes a sorting obligation for all separately collected textiles and certain minimum requirements for those processes. This measure would entail developing more detailed sorting requirements for specific textile types and subsequent treatment and product requirements that would produce used textiles or recycled textiles for specific applications.

The act will ensure a harmonised application of the non-waste status to textiles that have been subject to specific recovery processes therefore facilitating textile re-use and recycling. This has a particular relevance to the certainty for operators engaged in the cross-border movements of used textiles and textile waste and operating waste management facilities.

The rationale for the inclusion of this measure in Option 2 rather than in the baseline, which currently only reflects the envisaged preparatory work by the JRC, is that developing end-of-waste criteria is a long process and entails uncertainties in terms of scope and adoption process. This is due to the resource intensity (additional human resources would be needed in DG ENV to proceed with this work stream and for the development of other implementing acts for other priority waste streams with regard to which preparatory work by JRC is already underway) and the adoption process. The existing EU end-of-waste decisions exist only for waste fractions where clean and homogenous fractions are ensured through separate collection - glass, metals. Textiles are more complex in composition, and the end-of-waste criteria would thus have to reflect the existing diversity which is a more complex endeavour. The preparatory work for the development of end-

of-waste criteria for textiles is planned to commence in 2023 by the JRC and would follow a detailed stakeholder consultation and data gathering process.

Measure 2.8 – Setting requirements for shipments of textiles

Under this measure, all natural or legal persons acting in their professional capacity transporting textiles for reuse shall be able to demonstrate that the used textiles for shipment are not waste and comply with any applicable criteria to distinguishing waste from non-waste textiles during transport. The holder of the textiles intending to transport or transporting textiles shall have the following obligations:

- They shall make available information to demonstrate the non-waste status of the textiles they transport: a copy of the invoice or contract relating to the sale of the textiles specifying that it is destined and fit for direct reuse; evidence that all textiles have been subject to a sorting operation for reuse or a preparation for reuse operation following the requirements set out in measure 2.5; a declaration of the textile holder or the person arranging the transport that the textiles are not waste.
- They shall ensure appropriate protection against damage during transportation, loading and unloading, in particular, through sufficient packaging and appropriate stacking of the load.
- Labelling of bales of sorted household and post-consumer textiles for reuse in accordance with the requirements set out in measure 2.5.
- Every load of used textiles shall be accompanied by a relevant transport document and a declaration by the liable person on its responsibility.

The measure looks to specifically address the following problem drivers:
- Different scopes and definitions on the definitions of "textile waste" and "used textile",
- Challenging enforcement of waste shipment rules;
- Insufficient funding to scale up separate collection, sorting and recycling;
- Insufficient waste prevention activities and lack of circular business models at scale that extend the lifespan of products;
- Inconsistent separate collection schemes; and
- Insufficient sorting and recycling capacity.

This measure is designed based on existing EU rules and best practice for facilitating enforcement of illegal shipments of waste. The requirements in this measure therefore follow the provisions of the Union legislation currently in place for several other product/waste streams which have raised concerns about the shipment of waste disguised as used non-waste items, namely, electric and electronic equipment (see Annex VI of the Directive 2012/19/EC), batteries (Annex XIV of the upcoming Regulation on batteries for which a political agreement was reached on 9 December 2022) and vehicles (Correspondent's Guidelines No 9 on shipment of waste vehicles under the framework of the WSR).

This measure builds on measure 2.5. which mandates sorting for all separately collected textiles before an end-of-waste status may be applied to used textiles. Therefore, where compliance is ensured with measure 2.5., the requirements in this measure may be readily complied with since the information on the sorting process is available and the bales for transportation are prepared fully or partially by the sorters. It is also the obligation of the sorters under measure 2.5. to ensure that the sorting for reuse is carried out to a level of granularity that allows the selection of fractions fit for reuse in the specific destination markets considering such criteria as the climate, size,

customs etc. to minimise the potential presence of fractions that may not be fit for reuse in those markets. Therefore, the knowledge of the needs of the receiving markets and the fate of the sorted textiles in those markets should be kept up to date by the sorters to comply with the obligations under measure 2.5.

Where textiles are not sorted in accordance with the requirements in measure 2.5., they should be considered as waste and their shipment should follow the requirements of the WSR. The WSR, in particular following the adoption of its recast (COM(2021)709[236]), regulates the shipments of waste and the applicable administrative and authorisation procedures, including an assessment that the countries where waste is shipped is able to manage waste in an environmentally sound way.

The informal reuse market (shipments on a consumer-to-consumer basis (C2C) via C2C platforms) is excluded from this measure.

This measure does not entail any additional obligation on the Member State competent authorities responsible for the supervision and control of shipments of waste under the Waste Shipment Regulation, but the additional requirements on the packaging and evidence base should facilitate those activities. Measures 2.6 and 2.7, and this measure would largely address the scope of the mandate given to the Commission to develop criteria facilitating the distinction of waste from non-waste items with regard to textiles under the WSR (see Article 28(4) of the legislative proposal for a recast of the WSR). In accordance with the WSR (Article 28 of the legislative proposal and the existing Regulation), where there is a disagreement between the competent authorities of shipment and transit countries about the classification of the shipment as to its waste or non-waste status, it should be regarded as waste for the purposes of the application of the WSR. In order to minimise the potential for such disagreements, the WSR proposal indicated that further guidance could be provided through secondary legislation, e.g., by determining contamination thresholds. This proposed WSR mandate is broader in scope as it would potentially also cover for example by-products. Since the WSR mandate is still subject to negotiations between the co-legislators and in view of its still further delayed entry into force, it is proposed to advance the tackling of the specific regulatory barriers related to textile waste management in this initiative clarifying the rules in the primary legislation under the WFD, like it has been done for other lex specialis acts on batteries and electric and electronic equipment which govern the specific treatment requirements for that waste stream.

Measure 2.9 – Mandating the use of extended producer responsibility for textiles

There is a funding gap that needs to be filled to provide the necessary funding to manage used textiles and similar items in strict accordance with the waste hierarchy. In this respect extended producer responsibility (EPR) is based on the polluter-pays principle: producers (who manufacture, distribute or import a product) are responsible for the entire life cycle of this product, from its design to its end of life. They must therefore finance, organise and implement the appropriate collection, reuse or recycling solutions for that product. EPR transfers all or part of the costs of waste management to producers.

[236] EUR-Lex - 52021PC0709 - EN - EUR-Lex (europa.eu)

This measure would require Member States to set up EPR schemes[237] within their territory to ensure the treatment of textiles in line with the waste hierarchy and to ensure producers of textile products–including those selling online– finance and/or organise the collection, sorting, preparation for reuse, recycling, recovery and environmentally sound disposal of textiles as well as contribute significantly to the reduction of textile waste generation. This measure would provide harmonised requirements for the EPR schemes in line with the requirements of Articles 8 and 8a WFD, as adapted to the textiles sector, and therefore address existing and minimise potential for such national schemes to diverge as well as create the conditions for economies of scale.

The measure looks to specifically address the following problem drivers:

- Insufficient funding to scale up separate collection, sorting and recycling;
- Information shortages and funding for research and development;
- Lack of incentives for textile producers to design long lasting, re-usable and recyclable textiles and lack of circular business models at scale that extend the lifespan of products;
- Delays in implementation of the separate collection obligation;
- Different scopes and definitions of definition of "textile";
- Insufficient sorting and recycling capacity;
- Low demand for recycled materials;
- Insufficient waste prevention activities; and
- Insufficient awareness by textile users.

Following the requirements of Articles 8 and 8a WFD, generally the establishment of an EPR has to follow all the requirements for EPRs laid down in those provisions. This measure therefore envisages an EPR that meets the requirements set out in those provisions. Some specific adjustments to those provisions are also proposed to shape an EPR relevant to the textile sector, e.g., the potential for reuse and its positive socio-economic and environmental impacts. The text that follows therefore will determine the substantive elements forming an EPR scheme for textiles: scope, objectives, obliged entities (producers), roles and responsibilities of producers and other stakeholders, organisational features, fee modulation, producer register, transparency, monitoring and enforcement.

(1) Scope of an EPR for textiles

The scope for an EPR should be harmonised to ensure a level playing field for the obliged industry across the EU and provide conditions for economies of scale at regional and Union level for the setting up and operation of the end-of-life management operations. The proposed scope of EPR is broadly aligned with the scope of existing (voluntary or mandatory) or planned separate collection systems for textiles which generally focus only on post-consumer municipal clothing, footwear and textiles. The reason for that is to ensure the capture of textiles that are suitable for reuse or recycling, with the aim of diverting textile waste from disposal and incineration operations. The

[237] EPR has been defined by the OECD as an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle. EPR is typically understood to involve a shift in responsibility (administratively, financially or physically) from governments or municipalities to producers as well as an encouragement of producers to take environmental considerations into account during the design and manufacture phases of product development. EPR seeks to achieve a reduction in the environmental impact of products, throughout their lifespan, from production through end-of-life.

other textile waste generators are themselves the producers of textiles and therefore already required under EU law to ensure the treatment of this waste in line with the waste hierarchy.

It is proposed to define the **scope of EPR** covering the following **municipal post-consumer textile wastes, representing 87%[238] of textile waste generated:**

a) Clothing, articles of apparel, clothing accessories and household textiles (including clothing, apparel and accesories whose composition is not mostly textile).

Household post-consumer textile waste consists predominantly of clothing and other household textiles.

However, citizens find hard it to differentiate some garments among their main components. Hence, established collection schemes address all kind of clothing, irrespective of their composition.

For this reason, it is proposed to include all kind of clothing and apparel into the EPR scope.

It is estimated that non-textile clothing and apparel represent approximately 0,75% of post-consumer clothing and apparel.

b) clothing and waste from commerce and trade, small businesses, office buildings and institutions (e.g. HORECA, hospitals, schools, prisons, senior residences, etc.) that are similar in nature and composition to household waste, and do not come from production.

The main reason to include these wastes into the scope of EPR is that they are already being collected as municipal wastes in a certain number of Member States, and they follow the same treatment route as household textiles. In fact, according to Eurostat's guidance for compilation and reporting data on municipal waste, these wastes should be reported as municipal waste under WSR[239].

Even when MS do not collect them as municipal waste, after sorting and once the traceability on the initial producer has been lost, it is unlikely that operators of treatment facilities will be able to distinguish them, as they are similar in composition and nature to household wastes.

After use, worn textiles from households as well as post-consumer commercial waste have high reuse potential to extend the lifetime of the textile products (reuse) and can also be subject to recycling. The methods currently applied for the collection of clothing and other household textiles are similar and involve a broad network of container collection points with post-commercial wastes generally collected through waste contractors. Whilst the collection methods vary, the subsequent sorting and treatment are similar requiring a significant amount of effort to sort textiles that are fit for reuse, preparation for reuse and recycling from those to be destined for energy recovery or disposal.

c) footwear

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[238] European Commission, Joint Research Centre. *Techno-scientific assessment of the management options for used and waste textiles*. 2023 (under development)

[239] Eurostat. *Guidance for the compilation and reporting of data on municipal waste according to Commission Implementing Decisions 2019/1004/EC and 2019/1885/EC, and the Joint Questionnaire of Eurostat and OEC* (2021).

Some footwear and accessories contain a relevant share (>80% by weight) of textiles and thus fall in the scope of the Textiles Labelling Regulation.

As for footwear and accessories whose main components are not textiles, it is unlikely that citizens will differentiate the composition when discarding them. In fact, Member States that currently include footwear into the textile fraction that is separately collected, collect all kind of footwear. Changing the current approach would generate confusion upon citizens and municipalities and would hamper the separate collection of footwear.

Discarded footwear represents around 5% of post-consumer textile waste and has been reported to present a high reuse potential.

Consequently, all footwear is proposed for inclusion under the EPR scheme.

It is proposed to **exclude from the EPR scope**:

a) Bulky materials

Bulky materials (e.g., furniture containing a variable share of textiles, including sofas, carpets, mattresses, tents and sails) have a reuse or recovery potential for the different materials it consists of. However, they cannot be managed through similar collection systems and are typically collected kerbside or in civic amenity sites. [240] [241]

For this reason, they will not be covered under the proposed EPR scheme.

Nevertheless, Member States, in accordance with Article 8 WFD, may consider these products for national EPR schemes to facilitate waste prevention and recovery.

b) Textile materials that are not placed on the market as final goods

Textile materials that are not placed on the market by retailers as final goods for citizens and non-textile industries will not be covered by the EPR. This would consist of post-industrial waste (e.g., trimmings) as well as any textile products that do not reach the final consumer (i.e., all pre-consumer textile waste). Such textiles are likely to be of clearer and more consistent composition and subject to lower levels of soiling which are more suitable for recycling and certain fractions also for reuse. It seems more practical and effective to regulate their sustainable management through reporting and mandatory management requirements, such as separate collection.

c) Textile packaging

Directive 94/62/EC on Packaging and Packaging Waste and the proposal for PPW Regulation, have both an all-inclusive approach to packaging definition. Equally, the EPR obligations under this legislation apply without distinction of the packaging material and without exclusion.

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[240] An old mattress? Find a collection point near you. (valumat.be). An old mattress? Find a collection point near you. (valumat.be).

[241] Les joyeux recycleurs, *Recyclage de vos tapis et moquettes, mode d'emploi*, 2018, Recyclage de vos tapis et moquettes, mode d'emploi - Les joyeux recycleursRecyclage de vos tapis et moquettes, mode d'emploi - Les joyeux recycleurs.

Consequently, textile packaging will be excluded from the scope of EPR for textile wastes.

It is proposed to define the textiles placed on the market that will be subject to the EPR scheme by reference to specific CN codes to ensure legal certainty to the obliged industry. The CN codes that reflect the scope described above that reflects the approach in measure 1.1.1.3, are as follows:

Table 12 – CN codes subject to the textiles EPR scheme

CN code	**Description**
4203	Articles of apparel and clothing accessories, of leather or composition leather (excl. footware and headgear and parts thereof, and goods of chapter 95, e.g. shin guards, fencing masks)
61 – all listed codes within the chapter	Articles of apparel and clothing accessories, knitted or crocheted
62 – all listed codes within the chapter	Articles of apparel and clothing accessories, now knitted or crocheted
6301	Blankets and travelling rugs
6302	Bed linen, table linen, toilet linen and kitchen linen
6303	Curtains (including drapes) and interior blinds; curtain or bed valances
6304	Other furnishing articles, excluding those of heading 9404[242]
630710(selected goods)	Dishcloths, dusters and similar cleaning cloths (excluding floorcloths)
6309	Worn clothing and other worn articles
64 – all listed codes within the chapter except 6406 (parts of footwear) and 6403 12 00 – Ski-boots, cross-country ski footwear and snowboard boots	Footwear, gaiters and the like
6504	Hats and other headgear, plaited or made by assembling strips of any material, whether or not lined or trimmed
6505	Hats and other headgear, knitted or crocheted, or made up from lace, felt or other textile fabric, in the piece (but not in strips), whether or not lined or trimmed; hairnets of any material, whether or not lined or trimmed

(2) Producers subject to EPR on textiles

[242] 9404 refers to mattress supports, articles of bedding and similar furnishing (for example mattresses, quilts, eiderdowns, cushions, pouffes and pillows) fitted with springs or stuffed or internally fitted with any material or of cellular rubber or plastics, whether or not covered.

In accordance with Article 8a WFD, it is necessary to define the roles and responsibilities of all stakeholders that are involved in the EPR scheme. The entities that are to be subject to an EPR for textiles are those that **place finished textile products falling in the CN code categories listed above on the EU market**. Several EU acts that establish EPR for products and waste (batteries, electric and electronic equipment, packaging, single use plastic products) are available to be used as a reference in defining the entities that are subject to EPR rules to ensure a harmonised approach across the different EPR systems and facilitate implementation as well as positively impact the compliance costs for the concerned stakeholders.

The notion of a producer should entail any manufacturer, importer or distributor who, irrespective of the selling technique used, including by means of distance contracts as defined in Article 2(7) of Directive 2011/83/EU on consumer rights, supplies finished textile products[243] corresponding to the listed CN code categories for the first time for distribution or use within the territory of a Member State on a professional basis under its own name or trademark. Finished textile products are destined to an end user ('end user' means any natural or legal person residing or established in the Union, to whom a product has been made available as a consumer).

To define the scope of the obligated producers, it is necessary to consider that the textile sector is dominated by small enterprises at the manufacturing and placing on the market stage and social enterprises (also mainly SMEs) currently dominate the collection and reuse markets for used textiles.

Artisanal and small-scale entities

In keeping with the approach of the Textile Labelling Regulation and to avoid placing disproportionate costs on such actors, an exclusion from the producer obligations under EPR is proposed for the same entities that comprise:

- Contracted persons producing textile goods in their own homes;
- Self-employed tailors, making customised textile products.

Micro enterprises and SMEs

In the case of EPR it is considered that compliance costs are likely to be challenging for SMEs to ensure. The EU is both a manufacturer of textiles, wearing apparel and leather as well as an importer of textiles, wearing apparel and leather from other countries. Producers in the context of these two sources of textiles will vary with some being manufacturers who place goods on the market that have been manufactured within the EU and others more likely to be wholesalers or retailers that import goods from third countries that place goods on the EU market for the first time.

The composition of these two groups in terms of enterprise size is similar and is well reflected in the data found in the 2022 review of the European Apparel and Textile Confederation[244] that notes that 99.8% of total companies in the industry are micro and SMEs.

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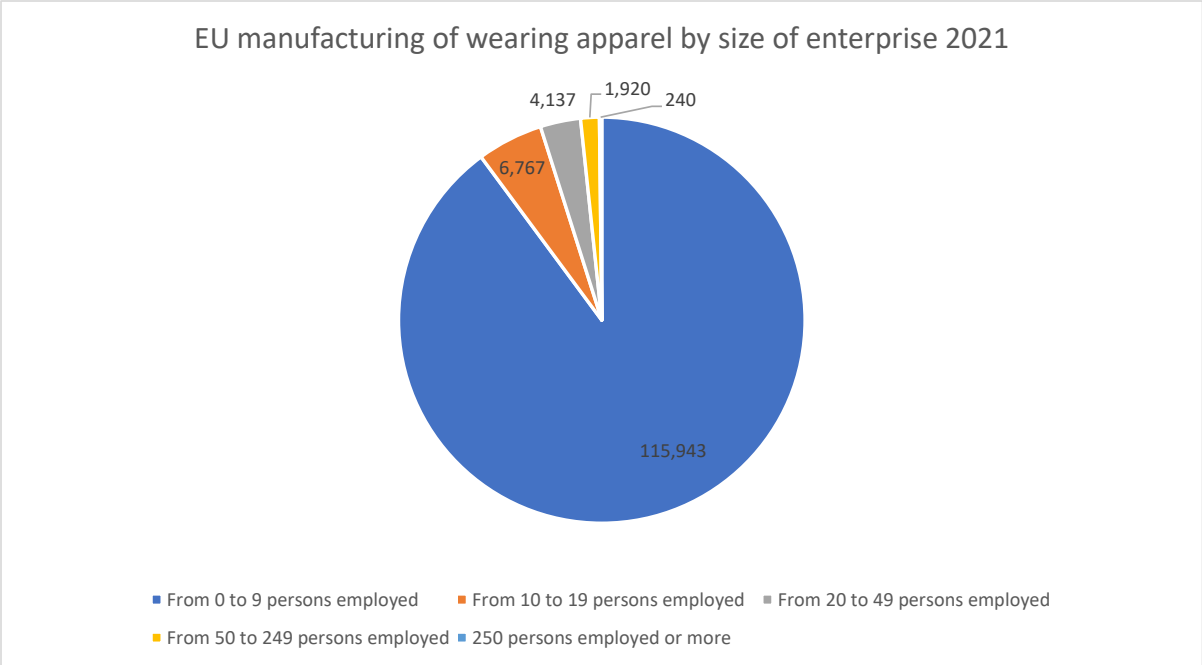
[243] ~~Textiles and other products that contain a >80% textiles, and which during production is given a special shape, surface or design, which determines its function to a greater degree that does its chemical composition, and that have completed the manufacturing process.~~

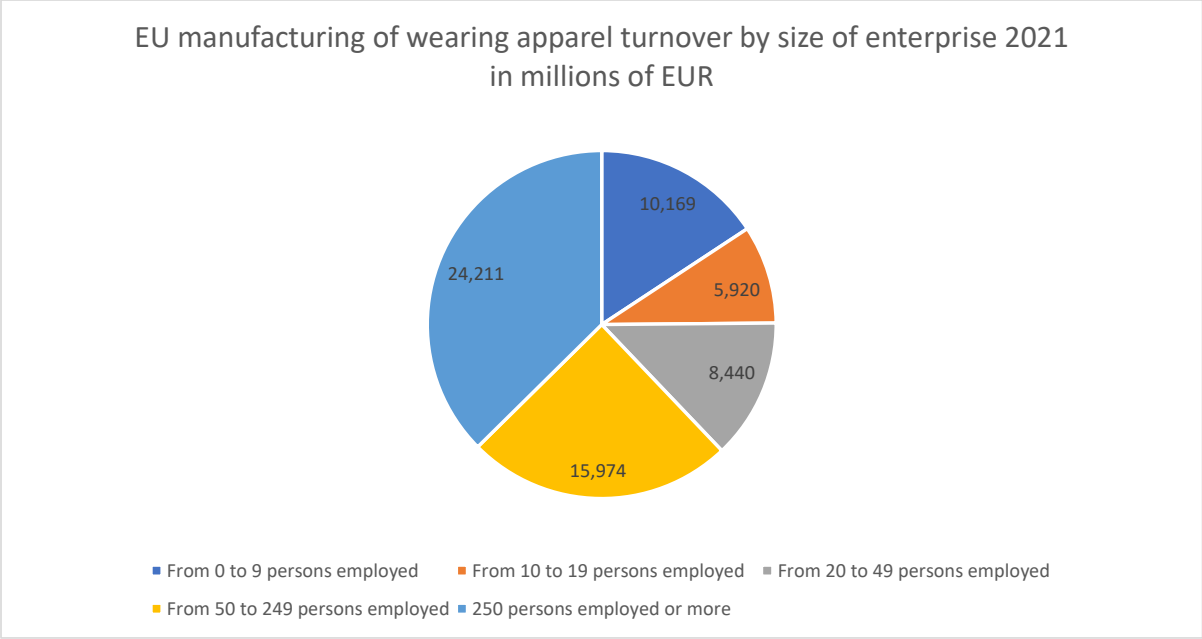
[244] EURATEX, 2022. Facts & key figures of the European textile and clothing industry 2022

In relation to EU textiles, wearing apparel and leather manufacturing, data from Eurostat[245] indicates that out of 226 624 total enterprises, 198 443 (87.6%) are micro-enterprises (0-9 employees), 27 485 (12.1%) are SMEs (10-249 employees)[246] and the remaining 696 (0.3%) employ 250 persons or more. The split of turnover by enterprise size indicates a different split with enterprises in the size 20 employees and up accounting for 80% of industry turnover. Inclusion of the 10–19-person size enterprises raises this value to 88% of industry turnover. Effectively this means that 12% of manufacturers generate 88% of industry turnover.

Figure 18 – EU textiles manufacturers and turnover by size of enterprise

[245] Annual enterprise statistics by size class for special aggregates of activities (NACE Rev. 2) [SBS_SC_SCA_R2__custom_3996079]
[246] 13 758 employee 10-19 persons, 9 106 employ 20-49 persons and 4 621 employ 50-249 persons.





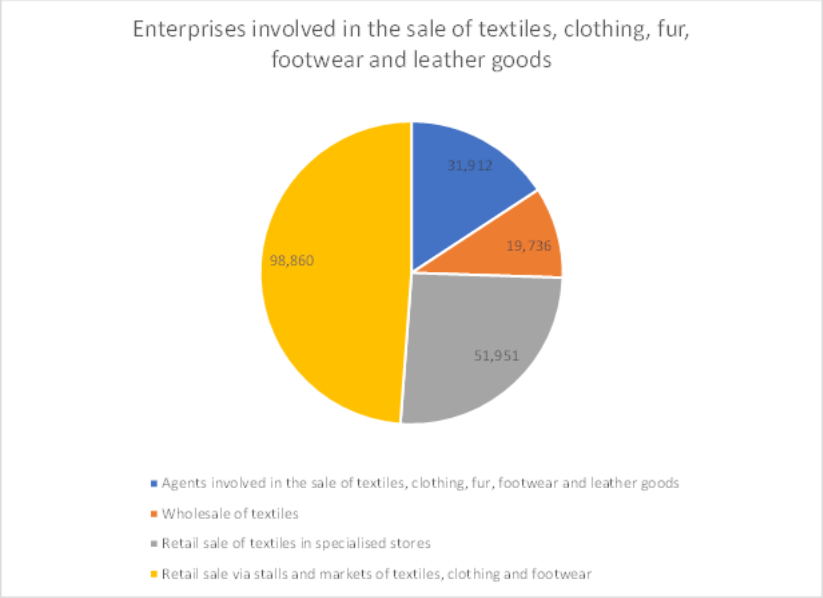
Source: Eurostat, 2022

For the textile and leather wholesale and retail sector this kind of data broken down by size of enterprise is not available. However, information on the nature of the enterprises, numbers and average number of employees is available from Eurostat[247] that shows splits by agents involved in the sale of textiles, clothing, fur, footwear and leather goods, wholesalers, retail sales of textiles in

[247] SBS_NA_DT_R2

specialised stores and retail sale via stalls and markets. In terms of the number of enterprises involved in retail the values from Eurostat for 2020 are as shown below.

Figure 19 – Enterprises involved in the sale of textiles, clothing, fur, footwear and leather goods

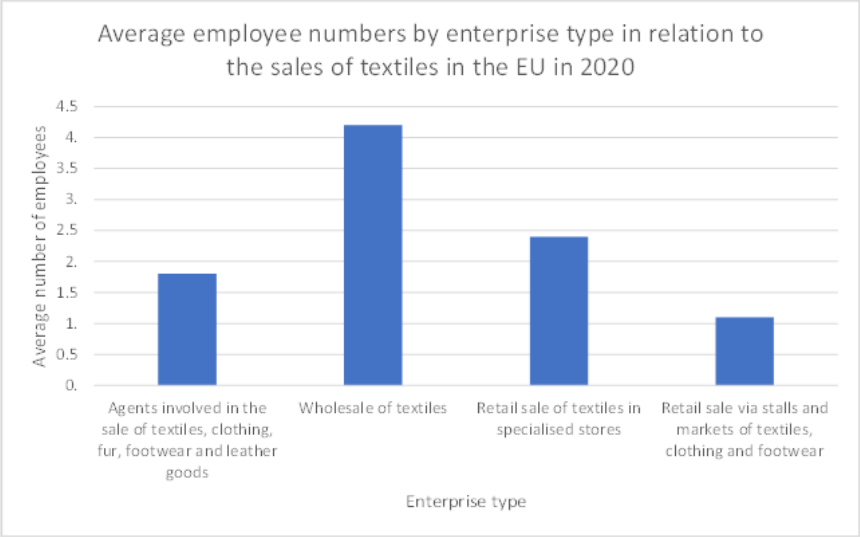


Source: Eurostat 2022[248]

The number of employees per enterprise at the retail level is only provided as an average. However, the values are provided below.

Figure 20 – Average employee numbers by enterprise type in relation to the sales of textiles in the EU in 2020

[248] Enterprise statistics by size class and NACE Rev. 2 [SBS_SC_OVW]



Source: Eurostat 2022

Even without the ability to split enterprises by number of employees it is apparent from the Eurostat Annual detailed enterprise statistics for trade (NACE Rec. 2 G as found in SBS_NA_DT_R2) that the retail sector is dominated by smaller companies with a small number of employees, typically sole trades and stores with 2-3 employees at the store side, with agents similarly small in terms of number of employees and wholesalers generally larger in size.

Given this split, and in order to minimise the burdens placed on smaller producers that contribute a small proportion of textile waste generated, the following options were considered:

i. The exclusion of micro-enterprises;
ii. The inclusion of micro-enterprises and the application of a single low flat fee for the purposes of compliance with the EPR obligations.

In comparison to manufacturers, determining whether exclusions for micro-enterprises or smaller are warranted for sellers of textile goods is more challenging. It is expected that agents (these are wholesalers that operate on a fee or contract basis for textile goods sold) and wholesalers are likely to be those most impacted by EPR obligations as they will generally be selling goods on to independent retail stores and market stalls. Larger household name clothing brands will have a large number of suppliers from around the world and will be placing goods on the market for the first time and therefore would be addressed by EPR obligations. Recognising that EPR obligations would fall on those placing goods on the market a similar exclusion for micro-enterprises is considered unnecessary as they will not be generally impacted by the obligations themselves because they will be selling products that have already been placed on the market by the wholesalers and agents that will be subject to the EPR obligations directly.

Entities placing on the market used textiles

Reuse operators are commercial or non-commercial entities (non-for profit, charity organizations and social enterprises) which following a preparation for reuse operation (e.g., sorting, repair) place used textiles back on the market. This section addresses the pros and cons of including these operators in the notion of a producer in view of their significant contribution to waste prevention.

There are several reasons for including operators placing used textiles on the market within an EPR scheme. Reuse markets are growing 15% per year. Used textiles placed on the market will be discarded again and enter a separate waste collection stream. Therefore, new costs will be incurred for the purpose of managing collection, sorting and subsequent waste management operations. Subsequent reuse for this fraction of already reused textiles and therefore recovery of costs is unlikely.

This may pose a greater cost-coverage issue in countries that are important markets for textile reuse, but where the textiles were not first placed on the market. Were all second-hand sales to be excluded the additional burden on those Member States that have a larger resale sector with textiles collected in other countries and for which no EPR fee had been collected from the producer placing the good on the market for the second time could have an impact on the waste textile management sector in the Member State concerned. Excluding reuse operators from the EPR may have some economic impact on the EPR and the level playing field for the producers across the Member States. Using Comext data[249] in relation to movements of worn clothing within the EU in 2021 the following countries are top net importers of worn clothing within the EU (i.e. they import more from other Member States than they export): NL, PL, LT, RO, BG, HU, BE, SK. This data indicates the flow but not the ultimate use or management of textiles but is still indicative. This aspect has been addressed in the EPR planned in Bulgaria which considers the inclusion of the second-hand sales in the EPR to ensure that the costs of managing second-hand clothes at the end of their life is addressed in the fees payable.

However, including reuse operators within an EPR could also have negative impacts on textile reuse. While including reuse operators as producers would be beneficial in terms of financing the management of waste textiles, the impact on both commercial and social enterprises is likely to be highly negative. Also, existing EPR schemes exclude operators placing used textiles on the market from the EPR fees. For example, charities might be subject to EPR fees for the textile products they normally donate for free, severely impacting their business model. According to Cross Border Commerce [250] in 2019 traditional thrift and donation shops comprised textile sales of approximately €9.3 billion whilst commercial resale comprised sales of €3 billion. This compares to the primary textile producer market of €162 billion in the same year [251]. This means that reused textiles represent approximately 7.6% of the total textiles market. However, there is expected to be significant growth in the reuse market in the years to come with a doubling of market share in the next five years [252] driven heavily in the commercial resale sector rather than the social-enterprise resale sector. In view of the exceedingly low prices offered by reuse operators, the actors engaged in the reuse operations consider that the EPR charge may affect their business model and the reuse market growth.

In light of the above considerations, that exclusion of both commercial and social enterprises placing reused textiles on the market should be pursued. In view of the currently small scale of reuse, albeit growing, this is unlikely to place significant additional burdens on the primary

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[249] EU trade since 1988 by HS2-4-6 and CN8 (DS-045409) – 6309 00 00 worn clothing and other worn articles

[250] Cross Border Commerce 2021. The rise of the resale second-hand market in fashion

[251] European Commission https://single-market-economy.ec.europa.eu/sectors/fashion/textiles-and-clothing-industries/textiles-and-clothing-eu_en

[252] https://www.cbcommerce.eu/press-releases/the-rise-of-the-resale-second-hand-market/

producers in terms of their covering the entire lifetime costs of the goods that they place on the market. In fact, part of the costs of managing end of life costs would already be covered by the fees upon the first placing on the market. And additional costs linked to separate collection and sorting should be factored in the EPR during the first placing on the market as a contribution of the producers towards reuse. This approach would be most consistent with the objective to prioritise reuse of textiles.

In relation to the situations where the reuse markets differ from the market where the textiles were first placed on the market and EPR due, specific measures may prove to be necessary if the reuse markets become disproportionate compared to the EU averages and the share of textiles placed on the market. Setting appropriate monitoring requirements in the EPR to determine the contribution of reused textiles to waste generated in the future will be an important source of data to assist in informing such an EU wide future policy decision. Given the potential time-lag in data to inform such a decision there should be an option for Member States receiving used textiles from other countries to choose to include commercial (for profit) resale operators should they consider such inclusion warranted.

(3) Objectives of the EPR scheme

The objectives of the EPR scheme should follow the waste hierarchy and prioritise waste prevention, i.e. reuse and preparation for reuse, followed by recycling. Only where textiles are not possible to recycle, other recovery options should be considered or disposal. These objectives, in view of Article 8a(1) WFD, should be defined in the form of quantitative and qualitative objectives as well as operational obligations in view of those objectives.

With regard to quantitative targets, these are considered specifically under Option 3. In the absence of EU targets, it would be important to achieve a high level of consistency in respect to targets that Member States may choose to set themselves to reduce the potential for distortion of competition and fragmentation in the obligations that increase compliance costs for the economic operators.

Qualitative objectives of the EPR should be aligned with the operational obligations defined in the section below. The primary objective of the EPR scheme should be to reduce the generation of textile waste and where textile waste is generated to reduce the amount destined to incineration or disposal. With regard to reuse, the objectives of the EPR scheme should be to prioritise reuse in the Union and for recycling to prioritise textile to textile recycling.

(4) Financial and organisational obligations of producers

The operational obligations of the EPR schemes and the producers and other relevant stakeholders are described below in the following order: prevention, separate collection, sorting, recycling, reporting and other financial and organisational obligations. This section describes the financial obligations of the producers as well as in certain cases the operational obligations.

Waste prevention

The primary objective of the EPR scheme is to ensure that all textiles within the scope of the EPR are reused where this is possible. Several operational obligations are envisaged to achieve this.

The producers are required to finance separate collection of textiles subject to EPR for the purpose of separating the reusable textiles and ensure that they are made available on the reuse markets, prioritising and maximising the share destined for local and EU market. This entails carrying out

separate collection, sorting as well as other preparation for reuse operations like repair and awareness raising.

The separate collection and awareness raising obligations are described below.

The producer responsibility organisations would have to use a variety of approaches to grow the reuse markets. Practices like increasing the number and accessibility of shops selling used textiles and carrying out washing and other repair actions to improve the saleability of items have been identified to increase the sales of used textiles in the EU from high performing reuse operators.

Separate collection

The producers are required to finance and/or organise the separate collection of textiles within the scope of EPR for the purpose of reuse and recycling. This entails providing for the infrastructure for the collection of waste (bins, containers) as well as the maintenance of that infrastructure that ensures that textiles are kept safe from external elements that undermine the quality of textiles. This also entails the services for unloading the bins, removing visible contaminants at the collection point until unloading for subsequent sorting, transportation to and storage prior to subsequent sorting operations.

Article 8a(3)(a) and (b) WFD require collection networks to have an appropriate availability of waste collection systems across the entire territory of the Member State concerned. An EPR obligation for textiles should carry the same obligations. The measure requires producers to set up separate collection systems for all of the volume of textiles placed on the market covered by the scope of EPR that are estimated to be discarded by household, commerce and institutions, regardless of their nature, brand or origin in the territory of a Member State where they make textile available on the market for the first time. Since all textiles covered by the EPR would at some point be discarded, the separate collection network should be broad enough and convenient enough for the consumers to be able to capture all textiles placed on the market and discarded and avoid them being discarded as mixed municipal waste. The collection network should enable the end-users to discard textiles at an easily accessible point in their vicinity taking into account population size, expected volume of textiles. It should not be limited to areas where the collection and subsequent management of textiles waste is profitable. The disposal of textiles in the separate collection network should not involve any costs to the end-users when discarding. Considering the different starting points among the Member States in terms of the separate collection point density (ranging from 10% to 65% across the EU with the average of 38%), this measure would entail different implications for the producers financially. It is only the textile waste generated by post-consumer households that should be covered by wide-spread and accessible separate collection systems.

As reflected in this assessment, separate collection systems vary across the EU as well as the types of actors engaged in this process. In view of the subsidiarity principle, this measure does not prescribe a single separate collection model to allow for local circumstances to be respected. Also, in view of the subsidiarity principle and the agreed principles under other EU EPR schemes, Member States should be allowed to determine the scope of the organisational responsibility of producers in terms of the waste collection. This means that the Member States may decide the scope of the organisational obligations of producers for the setting up of the separate collection, in particular, where those activities are already in the competence of local authorities or other actors. However, considering the currently prominent role of the non-for-profit sector actors in the textile collection and reuse and their contribution to the social economy, the setting up of EPR schemes

should envisage that their activities and contribution to the sustainable textiles management is preserved and encouraged. Therefore, the EPR system shall be obliged to ensure the participation in the separate collection of other interested actors without discrimination, inter alia, in terms of the geographical or material basis.

The producers therefore would be required to finance and/or operationally establish or enlarge textile separate collection points across the territory of the Member States where textile waste is generated. They should also be obliged to do that in cooperation with the following actors (already operating in the market or new actors):

- social enterprises;
- public authorities or third parties carrying out waste management on their behalf, commercial collectors;
- textile distributors, retailers;
- other voluntary collection points hosted by private or public entities (e.g. schools).

In relation to the above participating actors, except for social enterprises and commercial waste collectors, the producers are required to provide, upon request, for the bins/containers and/or service their emptying and waste collection. In keeping with existing collection systems, social enterprises should be allowed to operate their own collection points as part of the separate collection network that the Member States should ensure. To avoid their networks being undermined due to the availability of other collection points, Member States should ensure that they are given equal or preferential treatment in the location of the collection points (e.g. in the context of authorisation of by local authorities). This is to address a concern raised by the social enterprises and other stakeholders (NGOs, non-commercial waste managers) as already recognised in the EU Textiles Strategy and also addressed in some national legislation regulating textile management which specifically carve out a role for social and non-profit entities engaged in collection and sorting for re-use activities.

In relation to textile distributors and retailers, it is reported that there are retailers that offer to take used textiles from consumers and that generally the subsequent sorting of the collected waste is outsourced to professional sorting facilities. Several stakeholders have pointed out that such practices have also been accompanied with incentives to participating consumers in the form of vouchers for the purchase of new textile products at the retailer. They argue that such incentive mechanisms run counter to the objectives to minimise waste generation. While incentives to consumers to take part in separate collection are considered to be positive and are recommended by several Commission policy instruments, it is proposed in this measure to not support such practices in the scope of the EPR schemes as going against the primary objective of waste policy – prevention – as far as they facilitate the consumption of textiles.

With regard to specific requirements on the separate collection infrastructure and operations, this measure should entail the requirements set out in measure 2.5. In brief, those requirements look to preserve the reusability and recyclability of textiles in terms of avoiding contamination.

In order to verify and improve the effectiveness of the collection network and the information campaigns (addressed below), regular compositional surveys at least at NUTS 2 level[253] should be carried out on mixed municipal waste to determine the amount of waste textiles still collected as residual mixed waste. The cost of these analysis is to be covered by the producers. These surveys may be carried out in the framework of regular compositional analysis being carried out by the competent authorities or economic operators for the purposes of national statistical and waste data collection and verification policies.

Treatment of textiles

In line with the principles of the EPR, producers would be obliged to finance and/or organise the subsequent treatment of collected textiles in line with the waste hierarchy. This measure specifies obligations of producers and other actors of the sector in relation to sorting for reuse and recycling, preparation for reuse and recycling and other treatment.

Sorting is a key stage in determining whether textiles will be treated according to the waste hierarchy. Producers are required to finance the sorting of all collected textiles following the requirements set out in measure 2.5, namely, manual sorting of every collected textile item within the scope of the EPR to produce a fraction that is destined for reuse and a fraction that is destined for further preparation for reuse operations, such as cleaning and repair. A secondary objective of the sorting process, for the fraction that is not possible to reuse, is to produce a fraction that is to be destined for recycling. The sorting process shall also separate fraction that is to be recovered in other ways that recycling or disposed of.

The producers are required to finance the sorting of all textiles that are separately collected through its network or in cooperation with other entities as specified above, including the social enterprises. While social enterprises collecting textiles through their collection network would likely carry out certain sorting operations themselves, the producers should be obliged to accept outputs of sorting from social enterprises for subsequent sorting, in particular, in view of recycling or other treatment.

The producers are required to finance preparation for reuse operations other than sorting, such as repair and washing, for the fraction of collected textiles that they collect to increase the sale of used textiles in the Union and global markets. The fraction that is feasible for reuse following preparation for reuse activities other than sorting should be identified as part of the collection operations. The output of such operations is sold in the Union and global used textile markets for re-use.

The producers are required to finance recycling and all preliminary treatment operations in view of recycling (e.g. processing removing buttons, zippers) of collected textiles, including those collected through the networks of social enterprises. The output of the recycling operations are sold in the secondary raw material markets for uptake in new textiles or other applications.

The producers are required to finance all other treatment operations for the fraction that is collected and not removed for reuse and recycling, such as other recovery operations (incineration with

[253] Regulation (EC) No 1059/2003 of the European Parliament and of the Council of 26 May 2003 on the establishment of a common classification of territorial units for statistics (NUTS)(OJ L 154 21.6.2003, p. 1).

energy recovery) and disposal. The producers shall also cover the costs of treatment for textiles collected through the networks of social enterprises.

In accordance with Article 8a WFD, the funds required for these activities will need to consider the revenues generated by reuse and from sales of secondary raw materials from textile and therefore would overall reduce the costs of the operation of the EPR scheme and the fees due by producers.

Information to end-users

Article 8a(2) requires Member States to take the necessary measures to ensure that the waste holders targeted by the extended producer responsibility are informed about waste prevention measures, centres for reuse and preparing for reuse, take- back and collection systems, and the prevention of littering.

Producers shall finance and organise regular awareness campaigns to consumers on the environmental, social and economic impacts of textile consumption patterns (i.e. on the impacts of fast fashion) and promoting separate collection of textiles and their reuse. Producers shall also finance the campaigns organised by local authorities where they are responsible operationally for the separate collection. They shall also finance and/or organise the information to consumers about waste prevention measures consumers can take, collection points and centres for preparation for reuse, including those not operated by the PROs, centres selling used textiles.

Research and development

In view of the objective to prioritise recycling over energy recovery or disposal, producers shall support research and development of automated sorting, pre-processing and recycling technologies, notably to enable fibre-to-fibre recycling and recycling of all textile materials including synthetic fibres and blends of materials. As the recycling technologies develop, the feedstock specification requirements will also evolve, which will require continuous development of automated sorting technologies (e.g. detection of construction of materials (weave or knit), solutions for pre-processing (shredding, removing buttons, zippers, non-textile contaminants, etc.), advanced colour sorting options, solutions for deconstructing/processing of multilayer materials). These solutions should be explored in cooperation with umbrella organisations representing and bringing together producers, recyclers and other actors of the textile value chain. This shall be financed from the fees collected from the producers. Similar requirement is included in the French EPR.

Reporting

Article 8a(1)(c) requires Member States to have in place a system of reporting to gather data on the products placed on the market of the Member State by the producers of products subject to extended producer responsibility and data on the collection and treatment of waste resulting from those products specifying, where appropriate, the waste material flows, as well as the attainment of EPR objectives.

As described under Measure 2.12, there are a number of reporting mechanisms that are already in existence that would address such monitoring and reporting as well as several others proposed to address existing data gaps. The collection of data for most of the aspects will fall on the PROs to increase understanding of material flows and provide the necessary harmonised data to monitor the objectives of the EPR scheme, e.g. textiles quantities placed on the market, collected and

subject to final treatment, including the quantities sent to the various treatment types and their final destinations (country of destination in the case of exports) and relevant actors involved in line with the principles of other EPR schemes established under EU law. In order to minimise the impact on the industry which is largely made up of SMEs, the reporting requirements should be harmonised across the EU and with regard to the reporting by industry to the PRO should concern limited amount of categories for reporting as well as reporting frequencies.

Commencement of the EPR obligations

Given that the proposed EPR measure would take time to be agreed through the ordinary legislative procedure that would be estimated to be completed by mid-2024 there will be a significant quantity of textile products that have been placed on the market and purchased by consumers that will need to be managed. As EPR funding is based on the fees generated by products placed on the market once the EPR obligations are established no fees will have been collected for this historical group of textiles already on the market. Given the average lifespan of clothes of 5.4 years[254] and the approximately 5 million tonnes of textiles concerned being discarded per year, approximately 25 million tonnes of non-EPR fee related textiles will be required to be managed by textile waste infrastructure.

With an assumed adoption of a revised Directive in mid-2024, producers would be considered to have been informed of their obligations at that time. Member States would have a further maximum two years for transposition of the revised legislation into national law and to two additional years to put in place their national EPR schemes – mid 2028.

There is no immediate remedy to this challenge. It is apparent that Member States will develop their textiles management infrastructure in the years to come driven in part by the obligations of Article 11(1) WFD. However, there will still be a need for Member States to make transitional arrangements to contribute to the costs of collection that should take into account the gradual increase in collection rates anticipated as well as the benefits from the resale of collected historical waste. As 2024 is the date from which what is being placed on the market should be subject to EPR with an expected average lifetime of 5.4 years of those textiles, and since it will take several years to put in place the necessary textile management infrastructure the costs of collection of post 2024 textiles placed on the market should be addressed by the EPR fees collected at the latest as of 2028. It is expected that the cost of the EPR scheme in its first years will be high to establish the infrastructure for collection, sorting and treatment, even if the waste resulting from the post 2024 placed on the market textiles is not immediately generated. Therefore, EPR schemes would likely capture historical waste to recover those investments early and at scale.

(5) Organisational rules, monitoring and enforcement

Article 8a(5) WFD requires Member States to establish an adequate monitoring and enforcement framework with a view to ensuring that producers of products and organisations implementing extended producer responsibility obligations on their behalf implement their extended producer responsibility obligations, including in the case of distance sales, that the financial means are

[254] Oslo Metropolitan University and Norwegian National Institute for Consumer Research, 2015. Age and active life of clothing.

properly used and that all actors involved in the implementation of the extended producer responsibility schemes report reliable data.

This section describes the measures that facilitate monitoring, compliance and enforcement of EPR rules. In view of minimising the compliance costs for the involved public and private entities, existing practices in Member States and mandated under EU law are used as a basis.

Producer Register

In order to ensure appropriate monitoring and compliance with the obligations of producers, a producer register is proposed to be established by each Member State. The producer register would generate an EPR registration number(s) demonstrating proof of compliance with EPR requirements. This register shall also include information of the PRO membership and shall allow PROs to register producers on their behalf as a means to reduce the administrative and cost impact on the obliged producers. A register is proposed in line with the enforcement policies for other EPR schemes required under EU law (under Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators (as well as the recently agreed Batteries Regulation that replaces the Directive), Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) and Directive 94/62/EC on packaging and packaging waste (as well as the recently proposed Packaging and Packaging waste Regulation that would replace the Directive). As such, integration of the textile producer register in the existing producer register systems offer opportunities for synergies and cost reduction for the administrations sand this option has been used by several Member States in the context of implementing other EPR schemes.

Registrations exist or will exist in the case of Member States that have already implemented EPR for textiles. However, as noted at the start of this measure, only two Member States have an EPR in place – France and the Netherlands. The majority of Member States will, therefore, require setting up a register of producers. In order to minimise the compliance costs for the obliged producers, it is proposed that the information to be submitted in the register is harmonised and therefore the information it should contain should be clearly defined in the WFD and clear to the industry from the outset.

In keeping with existing EPR obligations under the EU law on electric and electronic equipment, batteries and packaging and single use plastic products Member States would be able to decide whether the register of producers is publicly accessible or not. As described in a later section below on enforcement, certain actors engaged in the enforcement activities will require access to the register data.

The operation of a Register would have a number of benefits in terms of enforcement needs. An obligation to be part of a register that can be searched by consumers and other businesses means that finding whether a producer is registered would enable more informed consumer choices to be made, as well as allowing a swifter identification of potential producers that have failed to meet their obligations where they are not found on the register. For smaller independent clothes retailers and market stall operators that will generally deal with Agents and Wholesalers (who will be considered as producers under EPR) an online register would allow such retailers to be able to confirm that their supplier is EPR compliant.

Producer responsibility organisations

Extended producer responsibility carries two main approaches for producers in terms of compliance. Under WFD, it is upon Member States to decide whether the producers should be able to fulfil their EPR obligations individually or collectively, i.e., where a producer responsibility organisation fulfils the EPR obligations on behalf of its member producers. Producers may fulfil EPR requirements individually, ensuring compliance at the individual producer level. This is generally more applicable to larger producers that have the capacity to meet all EPR requirement in-house and is normally applied in the minority of cases. To date the majority of producers under EPR schemes cooperate with Producer Responsibility Organizations that provide full management of post-consumer waste collection and subsequent treatment and ensure the producer's compliance with the EPR obligations concerned.

As noted in the problem definition, one of the challenges of EPR is in relation to ensuring compliance. The larger the number of producers concerned, the greater the challenge in ensuring compliance on behalf of the competent authority and the greater the likelihood of non-compliance existing. The use of PROs reduces this risk somewhat by placing the compliance obligation on the PROs themselves requiring competent authorities to ensure compliance with a smaller number of legal entities overall and reducing regulatory compliance burden accordingly.

A PRO approach is proposed because of its inherent nature of providing cost saving opportunities to the producers in terms of administrative obligations and well as the operational obligations with gains from economies of scale.

In the context of textiles with such a broad range of possible producers and the majority being SMEs it is appropriate to make membership of a PRO mandatory. This will greatly facilitate the compliance verification for the enforcement authorities, compliance costs for the industry and generally lead to greater efficiencies in application and scale in managing textile waste feedstocks to enable investments in sorting, reuse and recycling. In fact, this would be hampered if actors are provided with the opportunity to operate outside of a PRO. The main impact of making membership of a PRO mandatory would be in relation to larger producers that may otherwise have chosen to meet their EPR obligations individually. Whilst a PRO operates on a contractual basis with producers to manage EPR fees, to engage with obliged companies and issue contracts with waste management operators and municipalities there will be an overhead cost related to the operation of the PRO itself that must be covered by fees from producers. Whilst this fee is likely to be small, addressing administrative costs such as PRO salaries, overhead costs (rent and utilities) and information technology and system costs to operate the EPR, in the case of larger producers this fee may represent an additional cost in comparison to meeting their obligations individually.

Fee modulation

In accordance with Article 8a(4) of the WFD, EPR schemes must implement a fee modulation requirement for the fees that are due by producers to cover the costs of the EPR scheme. The purpose of the fee modulation is to ensure that the fees of each producer reflect the true cost of managing their products as well as to encourage a design of products that further the compliance with the waste hierarchy. Therefore, this measure is to determine the criteria for the fee modulation for textiles.

A harmonised EU-wide approach to eco-modulation would be most effective and as such is called for strongly by all stakeholder groups. Since the proposal for the Ecodesign for Sustainable Products Regulation (ESPR) contains textiles in its scope and they are considered as a priority

group of products for the development of the delegated acts defining product sustainability criteria and the measurement methods (the EU strategy for sustainable and circular textiles provide an indicative date of 2024), it is proposed that the fee modulation under EPR is strictly aligned with those eco design requirements and related performance measurement rules. ESPR ecodesign requirements are going to be minimum requirements to secure that the least performing textiles are not allowed on the market or information requirements that may be based on classes of performance, taking into account a variety of parameters relevant for the assessment of the sustainability of textiles, including at the end-of-life stage.

Mandatory criteria under ESPR should form the minimum criteria and measurement tools, whereas EPR modulated fees can provide significant incentives for businesses to go further and deliver more ambitious results based on the same parameters. By aligning eco-modulation with the umbrella legislation under the ESPR, EPR policies can deliver the strongest possible push on ecodesign, reinforcing the existing and future framework instead of adding new eco-design principles. Where such criteria and measurement methods are not defined in the framework of the ESPR, the EPR schemes should apply a simple fee modulation based on the weight and the costs incurred in the waste management.

The number of criteria applied for the fee modulation also has an impact on the costs of administration both for producers and for the PRO. In view of the composition of producers in this sector, attention should be paid to limit those impacts while ensuring that the fee modulation targets the key criteria that can improve the management of textiles, prioritising reuse and recycling. Therefore, it is proposed that the fee modulation criteria should focus on durability, recyclability and recycled content. These are also key sustainability factors envisaged in Annex I of the ESPR for the development of the delegated acts on eco design for sustainable textiles. These are also factors part of the existing EPR in France. Since certain criteria may pursue different objectives, the eco design criteria will need to weigh their relevance, for example, durability and repair requirements compared to recyclability requirements. Therefore, the criteria may require differentiated application per different product types. As a principle the fees shall be based on the weight of the products placed on the market, modulated by a value reflecting the criteria.

This approach reflects the positions of the industry and other stakeholders calling for high level of harmonisation in the fee modulation criteria and the measurement methods underpinning their application. Therefore, this measure envisages that the fee modulation should be applied across the EU following the development of the ESPR delegated act defining the ecodesign requirements for textiles and be based on the measurement methods envisaged therein. This measure also envisages the possibility for the Commission to adopt implementing act to provide for further harmonisation rules on the fee modulation application in view of the development of the rules under EPSR, for example to address textile products that are outside the scope of ESPR but subject to an EPR. This is deemed necessary to further minimise the costs of compliance by the obliged industry, in particular, for those that operate across several Member States. The WFD already includes a mandate to the Commission for an implementing act to develop such harmonised criteria (Article 8(5) of the WFD).

In the case of footwear, that is different in nature to the other clothing and apparel that would be addressed by this measure, fee modulation would be based on the weight of the good only.

Enforcement

The nature of monitoring and enforcement is somewhat dependent on the number of registered entities involved in EPR at the national level. As noted above in relation to Producer Responsibility Organisations, it is proposed that membership of a PRO should be obligatory and this measure also proposes a reduction of scope for the obliged industry to alleviate the impact on the SMEs. Were this to be the case the monitoring and enforcement would be more limited for the relevant PRO than would be the case of numerous actors participating independently to an EPR scheme. This would also alleviate the identification of free riders since the proof of compliance would be verifiable through producer and PRO registration that can be cross-referenced with the registers on economic activities.

A key enforcement challenge is linked to the enforcement of EPR obligations in relation to products sold online, a market that has shown extremely steep growth in the textile sector. Regulation (EU) 2022/2065 of the European Parliament and of the Council lays down rules on the traceability of traders (DSR), which more specifically contain obligations for providers of online platforms allowing consumers to conclude distance contracts with producers offering products to consumers located in the Union. The DSR aims to address the online sector in relation to compliance with the product and other rules, including environmental rules such as EPR. Its Article 30 addresses conformity of online sales with relevant EU law placing obligations on the online platforms the verify that the traders that aim to sell products using that platform are registered in trade registers and have declared compliance with the applicable rules of Union law. In order to prevent free riding from the extended producer responsibility obligations, it should be specified how such providers of online platforms should fulfil those obligations with regard to textiles and the measures envisaged under the EPR in this measure.

In the case of EPR rules being set at EU level, these provisions in the DSR are to be applied in a way that include the verification of EPR rule compliance. In that context, providers of online platforms, falling within the scope of Section 4 of Chapter 3 of Regulation (EU) 2022/2065, allowing consumers to conclude distance contracts with producers, should obtain from those producers information about their compliance with the extended producer responsibility rules set out in this Regulation. This means that the online marketplace would be verifying the presence of a trader in the textile producer register that is also envisaged in this measure. And they would be required to ask for a self-declaration of the trader that they comply with the EPR requirements in the country where they sell their products to the end users. The rules on traceability of traders selling textiles online should be subject to the enforcement rules set out in Regulation (EU) 2022/2065. This measure would entail that the textile producer register to be established as part of the EPR scheme should be accessible to the online platforms to enable them to comply with their obligations under the DSR as read in conjunction with the obligations under the EPR (this requirement does not limit the Member State competences in the organisation of the registers).

This follows the approach taken in all legislative initiatives following the adoption of the DSR, namely, the new Batteries and Batteries waste Regulation that was subject to a political agreement in December 2022 and the Commission proposal for the Regulation on packaging and packaging waste. Both the DSR as well as the sectoral environmental legislation referred to above respond to the long-standing concerns expressed both by the Member State competent authorities as well as the PROs and industry representatives calling for legislative tools at EU level to allow effective enforcement and ensuing level playing field among the producers.

Measure 2.14 – Setting reporting obligations for textiles

This measure would entail, first, a clarification of the scope of the existing reporting requirements in relation to textile waste management to close the regulatory gaps that undermine attaining sound and consistent EU level data and, second, new data collection requirements to complete the knowledge base at national and EU level. This would enable proper monitoring of the textile end-of-life stage and its adherence to the waste hierarchy, including compliance with the regulatory framework as well as setting the knowledge base to enable further performance target setting to reinforce the waste hierarchy. Focus is on reusing existing datasets where they meet data needs, adjusting existing reporting requirements to ensure that they are fit for purpose and only adding reporting requirements where a data gap has been identified. Reporting obligations vary depending on the type of measure implemented, as detailed in the previous sections on reporting requirements for each of the measures.

This measure takes up the proposed changes to definitions as envisaged in measure 1.1.1.3 and 1.1.2.1 but in a regulatory form of amending the scope of the reporting obligations under the WFD and the implementing acts setting out reporting formats.

It looks to specifically address the following problem drivers:

- Information shortages;
- Delays in implementation of the separate collection obligation; and
- Different scopes and definitions of "textile waste" of separate collection activities.

This measure would entail an amendment to the WFD clarifying the scope of the reporting obligations to cover **all textiles under the scope of EPR schemes (measure 2.9)** and introduce mandatory reporting for collection and the different treatment operations. The following obligations on different actors are involved:

- The European Commission would be required to revise existing and set new reporting formats specifying the obligations for Member States and the reporting criteria/ platform to be applied; and to verify the data sets and make available to the public as Union statistics.
- Member State competent authorities will be required to collect the new data, verify and to report to the European Commission.
- The pertinent actors under measure 2.9, i.e. textile producers, waste generators other than households (institutions and commerce) and producer responsibility organisations, will be required to collect and report data on textiles placed on the market and waste generated.
- Textile waste operators will be required to collect and report data the on waste fraction that is collected, prepared for reuse, recycled, recovered with energy, otherwise recovered and disposed of.

Changes to the obligations under the WFD would entail the following:

(a) adaptation of the existing reporting requirements on textiles for municipal waste to the categories of textiles clarified under the CN codes referred to in measure 1.1.1.3

The WFD would need to be amended to clarify the scope of the reporting obligations under Article 37 of the WFD in terms of the textile waste and the types of waste management operations to be covered by the obligation. Subsequent adjustments would be required to Implementing Decision

(EU) 2019/1004/EU and the accompanying Eurostat guidance[255] both in terms of the scope of the data reported and the voluntary nature of some of the reporting requirements.

The Implementing Decision currently refers to the EWC and three main entries in relation to municipal textiles - 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging. In terms of the data that would be preferred to be reported, the reference should be moved to EWC that cover textile wastes under the scope of EPR (defined by the pertinent CN-codes in measure 1.1.1.3.). Consequently, the reference should be changed to 20 01 10 and 20 01 11 only, with textile packaging removed. The provisions requiring reporting of tonnes subject to separate collection and preparation for reuse should be changed from 'voluntary' to 'mandatory'.

Adjustments would be required in relation to Implementing Decision (EU) 2021/19 to specify these changes.

(b) Collection of data from producers of textile goods placed on the market

Under measure 2.9 concerning EPR, producers would be obliged to provide information on the volume of goods placed on the market to the PRO as this would determine the scope of the operational obligations and financial needs of the PRO and the fees to be paid by the producer to the PRO. This would be an annual submission and is expected to result in little additional administrative burden as the volumes of production are already likely to be collected by producers already under normal business operating practices. The reporting frequency to the PRO is proposed to be harmonised and reduced to minimum, i.e. annual, to reduce the administrative impacts for the producers. A PRO would be required to report this data to the competent authorities for the purposes of monitoring compliance with the EPR obligations. This obligation would be specified in the WFD provisions linked to producer and PRO obligations under EPR nationally.

It is possible to extract data on the volume of textiles placed on the market from the Eurostat PRODCOM and COMEXT data source. Although these data do not meet the precision and granularity required to determine the financial contributions of producers (see *Table 13*), they could be used at EU level for the purposes of monitoring and verification of data. The JRC already has a suitable tool and set of instructions that can be populated with extracted data to determine the relevant product volumes as well as to examine trends over time. For data of products placed on the market, focus will be given to the methodology used in the JRC's "Circular Economy Perspectives in the EU Textile sector", which identified the volumes placed on the market using PRODCOM data supplemented by Comext data. Given the existence of such a tool, it is envisaged that a small number of changes would be required to assist in further automating the extraction and calculation tool itself, amount to potentially two months development time.

*Feasibility of reporting data under Regulation (EC) No 2150/202*2 on waste statistics

In terms of waste generation, under Regulation (EC) No 2150/2002 data are provided granulated by waste categories and the source of waste generation; i.e., for every covered economic activity, statistics on every waste category are compiled.

[255] Eurostat, 2021. Guidance for the compilation and reporting of data on municipal waste according to Commission Implementing Decisions 2019/1004/EC and 2019/1885/EC, and the Joint Questionnaire of Eurostat and OECD https://ec.europa.eu/eurostat/documents/342366/351811/Guidance+on+municipal+waste+data+collection/

Municipal waste is tagged as a specific aggregate which enables to differentiate it from other sources of waste generation.

However, regarding waste categories, Regulation (EC) No 2150/2002 defines textiles wastes under the 07.6. category encompassing three headings:

- 07.61 Worn clothing
- 07.62 Miscellaneous textile wastes.
- 07.63 Leather wastes

This waste category may include non-textile wastes that are not covered by the established scope for EPR, such as leather waste other than clothing and apparel, which prevents the use of Regulation (EC) No 2150/2002 for reporting on the required data of generation of textile wastes.

Data on recovery and disposal of textile wastes are affected by the same limitation at the identification of textile wastes. Moreover, reporting is due by final waste treatment operation and does not cover intermediate treatment operations (such as collection and sorting) and, as it lays on the treatment operation codes defined in WFD, it does not enable to distinguish between preparation for reuse and recycling (both operations under the same R3 code). Reporting under this Regulation is also restricted to the country of final treatment and not traceable to the country of waste generated.

As such, the use of the "env_wasgen" statistics does not provide the knowledge base to monitor with precision the generation of municipal textile waste in terms and the adherence to the waste hierarchy.

It does not allow for the determination of the exact textile waste generation data, because the reporting is not exclusive on textiles. It does not allow to trace and link the treatment performance for textile waste to the waste generated because the reporting is due by final waste treatment operation.

Therefore, if further waste treatment performance targets were to be set in the future (as considered under Option 3), the statistics generated as a result of Regulation (EC) No 2150/2002 would not allow to monitor compliance with those targets at Member State level or any other level of granularity in relation to the specific types of waste or sources of textiles.

In conclusion, monitoring textile wastes and their adherence to the waste hierarchy would require extending the existing reporting obligation under Article 37 of the WFD for textiles to all textile waste generated and treated. That reporting obligation would then require an amendment to Implementing Decision (EU) 2019/1004/EU. All data would be mandatory rather than voluntary and would address textile wastes:

- Waste generated in tonnes,
- Prepared for reuse in tonnes,
- Recycled in tonnes,
- Energy recovery in tonnes,
- Other recovery in tonnes,
- Disposal in tonnes.

In order to ensure consistency with the existing data collection efforts and minimise additional administrative burden, the data collection and reporting frequency could be aligned with that under the Regulation (EC) No 2150/2002.

The table below summarises the assessment in relation to data needs, the current reporting mechanisms and their suitability to meet data needs.

Table 13 – Assessment of data needs textiles wasted and closely related wastes under EPR scope, current reporting mechanisms and their suitability

Data required	**Why is it needed**	**Does a collection mechanism already exist?**	**Does the current system meet the data needs?**	**What would need to change?**
The quantity of goods placed on the market	As a verification of data on waste generated In relation to EPR (measure 2.9) this is required information to determine the financial contributions of producers.	Yes – PRODCOM and COMEXT can provide this information	No – in some cases the volume by weight is not recorded in PRODCOM. In keeping with the approach of the JRC to determining weights using COMEXT data proxies can be applied to determine weight but with less precisions than were it to be reported in PRODCOM directly. In relation to EPR (measure 2.9) this data source would not be sufficient as information is required per producer and at a more granular level on different products for the administration of the scheme.	Existing data may be used a data source and one of the verification tools to verifying at EU level the data reported by Member States on waste generated. For this purpose, the Commission would need to set up a data extract from the PRODCOM and COMEXT databases, apply certain calculations to determine weights (where this is necessary). Should an EPR scheme (measure 2.9) be applied for textiles then to determine the financial contributions of producer, this information would need to be reported by the producers to the producer responsibility organisations. This obligation would need to be placed on the producers.
The quantity of textile wastes generated	To determine the size of the textile waste generated that allows effective monitoring whether the treatment of textiles is in line with the waste hierarchy (i.e. its	Implementing Decision (EU) 2019/1004/EU addresses municipal textile wastes and clothing according to the ELoW[256].	No – reporting under Decision (EU) 2019/1004/EU is not aligned with CN codes that would be subject to separate collection Data on municipal waste fractions is	The EWC currently reflected in the reporting formats on municipal waste for Member States would need to be brought in need to be more closely aligned to the CN codes proposed under measure 1.1. This could be done by revising Decision (EU) 2019/1004/EU by adjusting the scope of textile wastes subject to specific performance

[256] 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging

Data required	Why is it needed	Does a collection mechanism already exist?	Does the current system meet the data needs?	What would need to change?
	comparison to the quantities collected, sorted, reused, recycled and recovered, disposed of).	Regulation (EC) No 2150/2002 on waste statistics addresses municipal textile waste but includes in the same waste category some non-textile wastes.	available every two years under Regulation (EC) No 2150/2002 but does not allow for direct monitoring of the textile waste generated, since under the same waste category textile and non-textile waste are reported.	requirements under the WFD brought forward by this initiative and to establish a knowledge base for developing further performance requirements as indicated in Option 3 of this initiative. In this case reference to textile packaging would be removed.
The quantity of textile waste separately collected	To ensure monitoring of compliance with the waste hierarchy and the separate collection obligation under Article 11(1) WFD as well as for measure 3.6 on separate collection	Implementing Decision (EU) 2019/1004/EU addresses municipal textile wastes and clothing according to the ELoW.[257] Regulation (EC) No 2150/2002 on waste statistics does not entail this data.	No - reporting under Decision (EU) 2019/1004/EU is not aligned with the pertinent CN codes, and is voluntary	The EWC currently reported would need to be brought in line with the CN codes proposed under measure 1.1. and the data requirement would also need to be changed from 'voluntary' to mandatory in Decision (EU) 2019/1004/EU. The main change, therefore, would be to remove textile packaging from the list of reported wastes under the textiles category.
The quantity of textiles prepared for reuse	To ensure monitoring of compliance with the waste hierarchy and of waste prevention under measures 1.2, 2.10, 3.1, 3.4, 3.5 (enable future target setting)	Implementing Decision (EU) 2019/1004/EU addresses municipal textile wastes and clothing according to the ELoW[258] Regulation (EC) No 2150/2002 does not entail this operation at this level of granularity[259]	No - reporting under Decision (EU) 2019/1004/EU is not aligned with the pertinent CN codes, reporting is voluntary. Regulation (EC) No 2150/2002.[260] addresses municipal textile waste but includes in the same waste category some non-textile wastes, and does not consider individually the preparing for reuse	The EWC currently reported would need to be brought in line with the CN codes proposed under measure 1.1 and the data requirement would also need to be changed from 'voluntary' to mandatory in Decision (EU) 2019/1004/EU. The main change, therefore, would be to remove textile packaging from the list of reported wastes under the textiles category.

[257] 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging
[258] 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging
[259] 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging
[260] Under Regulation (EC) No 2150/2002, preparing for reuse, recycling and other material recovery of textiles are reported under the same operation code (R3).

Data required	Why is it needed	Does a collection mechanism already exist?	Does the current system meet the data needs?	What would need to change?
			operation[261]. Information under this Regulation is available only on the country of final treatment not traceable to the country of waste generated	
The quantity of textiles reused	To ensure monitoring of compliance with the waste hierarchy and measures 1.2, 2.10, 3.1, 3.4, 3.5 (enable future target setting)	Partially via Commission Implementing Decision (EU) 2021/19. Regulation (EC) No 2150/2002 on waste statistics does not entail this data.	No-the scope of textile products under Decision (EU) 2021/19 is not defined or aligned with CN-codes	The broad categories currently reflected in the reporting formats for Member States would need to be brought in line with the CN codes proposed under measure 1.1 in Decision (EU) 2019/1004/EU.
The quantity of textiles recycled	To ensure monitoring of compliance with the waste hierarchy and measures 2.10 and 3.8 (enable future target setting)	Implementing Decision (EU) 2019/1004/EU addresses municipal textile wastes and clothing according to the ELoW[262] Regulation (EC) No 2150/2002 does not entail this operation at this level of granularity[263]	No - reporting under Decision (EU) 2019/1004/EU it is not aligned with the pertinent CN codes. Regulation (EC) No 2150/2002.[264] addresses municipal textile waste but includes in the same waste category some non-textile wastes, and does not consider individually the recyling operation[265]. Information under this Regulation is available only on the country of final	The EWC currently reflected in the reporting formats for Member States would need to be brought in line with the pertinent CN codes proposed under measure 1.1 in Decision (EU) 2019/1004/EU. The main change, therefore, would be to remove textile packaging from the list of reported wastes under the textiles category.

[261] 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging
[262] 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging
[263]
20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging
[264] Under Regulation (EC) No 2150/2002, preparing for reuse, recycling and other material recovery of textiles are reported under the same operation code (R3).
[265] 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging

Data required	Why is it needed	Does a collection mechanism already exist?	Does the current system meet the data needs?	What would need to change?
			treatment not traceable to the country of waste generated	
The quantities of textiles subject to energy recovery, other recovery and disposal	To ensure monitoring of compliance with the waste hierarchy and measures 2.10 and measures under Option 3 (enable future target setting)	Implementing Decision (EU) 2019/1004/EU addresses municipal textile wastes and clothing according to the ELoW[266]. Regulation (EC) No 2150/2002 on waste statistics addresses municipal textile waste but includes in the same waste category some non-textile wastes. Information available only on the country of final treatment not traceable to the country of waste generated.	No - it is not aligned with the pertinent CN codes. Regulation (EC) No 2150/2002.[267] addresses municipal textile waste but includes in the same waste category some non-textile wastes. Information under this Regulation is available only on the country of final treatment not traceable to the country of waste generated	The EWC currently reflected in the reporting formats for Member States would need to be brought in line with the CN codes proposed under measure 1.1 in Decision (EU) 2019/1004/EU. The main change, therefore, would be to remove textile packaging from the list of reported wastes under the textiles category.

Option 3: Prescribing performance targets

Measure 3.1 – Setting an EU textile waste reduction target

This measure consists of setting a textile waste reduction target, which would be aimed at reducing the amount of textile waste generated. This target should be set at EU level, to ensure coherence between the different Member States and to harmonise industry effort towards reaching the target. It could be a percentage improvement rate based on the amount of textiles waste generated in a baseline year.

This measure looks to specifically address the problem driver of insufficient waste prevention activities.

[266] 20 01 10 clothes, 20 01 11 textiles and 15 01 09 textile packaging

[267] Under Regulation (EC) No 2150/2002, preparing for reuse, recycling and other material recovery of textiles are reported under the same operation code (R3).

It is estimated that the first full reporting year following an improved data collection and verification exercise in accordance with measure 2.14 would be three years after the legislation enters info force. With an estimate that the amendments to the WFD would enter into force mid-2024, implementing acts setting out new reporting formats are adopted in 2026 and the first reporting year is 2027 for which data would become available mid-2029. This would enable an element of stability to the figures to be arrived at after three years of reporting.

It is proposed that any target for waste reduction is set after a baseline verification period – potentially starting at 2030 and then requiring reductions each year beyond until 2035. It would be expected that the targets could be introduced through subsequent revision of the WFD.

Measure 3.4 – Setting a preparation for reuse target for textiles

The objective of this measure would be to drive Member States to improve their reuse of textiles by setting a realistic preparation for reuse target, in comparison to solely relying on the application of the separate collection of textiles under Article 11(1) of the WFD. Preparing for reuse in the context of textiles means checking, cleaning, or repairing recovery operations, by which textile products that have become waste are prepared so that they can be reused without any other pre-processing. Presently, the costs of preparation for reuse within the EU generally mean that such preparation is limited as the economic costs of such preparation are higher than the value added to the repaired product. However, one of the expected impacts of the EU strategy for sustainable and circular textiles is to facilitate the reuse and repair sector such that repair within the EU becomes more profitable and a preparation for reuse target would be set with this expected outcome in mind.

Setting a preparation for textile reuse target, which would be aimed at increasing the amount of textiles reused in comparison to the status quo. This target should be set within the WFD across the EU to ensure coherence between the different Member States and to harmonise industry efforts towards reaching the target i.e., the same preparation reuse target would apply to all Member States. The target could take the form of a percentage improvement by volume of textile waste or an absolute target in tonnes – both of these are considered below.

This measure looks to specifically address the following problem drivers:

- Insufficient funding to scale up separate collection, sorting and recycling;
- Insufficient waste prevention activities and lack of circular business models at scale that extend the lifespan of products
- Delays in implementation of the separate collection obligation.

It is estimated that the first full reporting year following an improved data collection and verification exercise in accordance with measure 2.14 would be three years after the legislation enters info force. With an estimate that the amendments to the WFD would enter into force mid-2024, implementing acts setting out new reporting formats are adopted in 2026 and the first reporting year is 2027 for which data would become available mid-2029. This would enable an element of stability to the figures to be arrived at after three years of reporting.

Any preparation for reuse target would need to be set beyond this baseline verification period – potentially starting at 2030 and then requiring increasing levels of reuse each year beyond until 2035. It would be expected that the targets could be revised through subsequent revision of the WFD either through the ordinary legislative procedure or via delegated act.

In discerning what could be a reasonable preparation for reuse target the reuse targets applied by Member States at present have been considered. It should be noted that preparation for reuse and actual reuse are likely to vary. This is because whilst efforts under this specific measure would look to prepare textiles for reuse in reality some of the materials prepared may not actually be fit for reuse.

France and the Netherlands have targets on the management of textile waste as part of their EPR schemes. In the Netherlands, the EPR scheme establishes a common target on reuse and recycling, with sub-targets on reuse and on domestic reuse.

Table 14 – Reuse targets for the EPR scheme in the Netherlands

	Objectives for 2025	**Objectives for 2030**
Reuse and recycling	50% of the textiles placed on the market are reused for product reuse or recycling	75% of the textiles placed on the market are reused or recycled
Target on reuse	There should be at least 20% of reuse, the remaining 30% may be achieved by recycling or reuse	There should be at least 25% of reuse, the remaining 50% may be achieved by recycling or reuse
Target on domestic reuse	Regarding the reuse part (20% of the textiles placed on the market), 10% will be reused in the Netherlands, and the remaining 10% may be reused abroad	Regarding the reuse part (25% of the textiles placed on the market), 15% will be reused in the Netherlands, the remaining 10% may be reused abroad

To note that the Dutch EPR scheme specifically sets a target for reuse, while what is considered under this measure is a preparation for reuse target.

In France, there are common targets on reuse and recycling.

Table 15 – Reuse, recycling and disposal targets for the EPR scheme in France

	Objective
Reuse and recycling	95% of what is sorted should be reused or recycled
Disposal	A maximum of 2% of what is sorted is disposed of (undergoes no form of recovery)

Under this measure, and to confirm that the 50% reuse level is reached a 50% preparation for reuse target could be set, a more ambitious target of 60% could also be applied, albeit a determinant of the ability to reuse textiles is its quality in the first place. It is assumed under the Sustainable Textiles Strategy that product quality will improve allowing greater repair and reuse. This could

mean that a 60% target is feasible. Therefore, it would be opportune to assess the potential implications of the measure at a 50% and 60% reuse target.

In alternative to setting a percentage target, an absolute target in tonnes could be set per Member State. The tonne target could be set in the same manner as requiring a percentage reduction. However, fluctuations in the volumes of textile waste generated would need to factored into any absolute target and based on existing data the setting of tonnage targets is considered to be technically challenging. In this respect a total target does not seem feasible and a percentage target is, therefore, considered in relation to the detailed assessment below.

Based on the targets set Member States would report to the Commission on achievement of the target, starting in advance of the target deadline to allow progress to be monitored by the Commission.

There is a need for improved data knowledge at Member State and EU level to define a preparation for reuse target and the baseline year against which it is measured in the first place. It is estimated that the first full reporting year following an improved data collection and verification exercise in accordance with measure 2.14 would be three years after the legislation enters info force. With an estimate that the amendments to the WFD would enter into force mid-2024, implementing acts setting out new reporting formats are adopted in 2026 and the first reporting year is 2027 for which data would become available mid-2029. This would enable an element of stability to the figures to be arrived at after three years of reporting.

Any preparation for reuse target would need to be set beyond this baseline verification period – potentially starting at 2030 and then requiring increasing levels of preparation for reuse each year beyond until 2035. It would be expected that the target setting could be revisited through subsequent revision of the WFD.

Measure 3.5 – Setting a reuse target for textiles

The objective of this measure would be to drive Member States to improve their reuse of textiles by setting an overall reuse target that they should achieve in comparison to solely relying on the application of the separate collection of textiles under Article 11(1) of the WFD. The focus on this measure is beyond preparation for reuse and is on actual reuse rates.

This sub-measure consists in setting a textile reuse target, which would be aimed at increasing the amount of textiles reused in comparison to the baseline year. This target should be set at EU level, to ensure coherence between the different Member States and to harmonise industry efforts towards reaching the target. The target could take the form of a percentage improvement by volume of textile waste or an absolute target in tonnes – both are considered.

This measure looks to specifically address the following problem drivers:

- Insufficient funding to scale up separate collection, sorting and recycling;
- Insufficient waste prevention activities and lack of circular business models at scale that extend the lifespan of products
- Delays in implementation of the separate collection obligation.

It is estimated that the first full reporting year following an improved data collection and verification exercise in accordance with measure 2.14 would be three years after the legislation

enters info force. With an estimate that the amendments to the WFD would enter into force mid-2024, implementing acts setting out new reporting formats are adopted in 2026 and the first reporting year is 2027 for which data would become available mid-2029. This would enable an element of stability to the figures to be arrived at after three years of reporting.

Any reuse target would need to be set beyond this baseline verification period – potentially starting at 2030 and then requiring increasing levels of reuse each year beyond until 2035. It would be expected that the target setting could be revisited through subsequent revision of the WFD.

In discerning what could be a reasonable reuse target the reuse targets applied by Member States at present are identified. Both France and the Netherlands have targets on the management of textile waste as part of their EPR schemes. In the Netherlands, the EPR scheme establishes a common target on reuse and recycling, with sub-targets on reuse and on domestic reuse.

Table 16 : Reuse targets for the EPR scheme in the Netherlands

	Objectives for 2025	**Objectives for 2030**
Reuse and recycling	50% of the textiles placed on the market are reused for product reuse or recycling	75% of the textiles placed on the market are reused for product reuse or recycling
Target on reuse	There should be at least 20% of reuse, the remaining 30% may be achieved by recycling or reuse	There should be at least 25% of reuse, the remaining 50% may be achieved by recycling or reuse
Target on domestic reuse	Regarding the reuse part (20% of the textiles placed on the market), 10% will be reused in the Netherlands, and the remaining 10% may be reused abroad	Regarding the reuse part (25% of the textiles placed on the market), 15% will be reused in the Netherlands, the remaining 10% may be reused abroad

In France, there are combined targets on reuse and recycling.

Table 17 : Targets for the EPR scheme in France

	Objective
Reuse and recycling	95% of what is sorted should be reused or recycled
Disposal	A maximum of 2% of what is sorted is disposed of (undergoes no form of recovery)

The baseline trends (see below) indicate that even without a fixed reuse target, reuse of separately collected textiles should be around 50%. Under this measure, and in order to confirm that the 50% reuse level expected in the baseline is reached, a 50% preparation for reuse target could be set. A more ambitious target of 60% could also be applied, albeit a determinant of the ability to reuse textiles is its quality in the first place. It is assumed under the Sustainable Textiles Strategy that

product quality will improve allowing greater repair and reuse. This could mean that a 60% target is feasible. The measure was assessed for both a 50% and 60% reuse target are proposed.

Alternatively, to setting a percentage target, an absolute target in tonnes could be set per Member State. The tonne target could be set in the same manner as requiring a percentage reduction. However, fluctuations in the volumes of textile waste generated would need to be factored into any absolute target and based on existing data the setting of tonnage targets is considered to be technically challenging. In this respect a total target does not seem feasible, and a percentage target is, therefore, considered in relation to the detailed assessment below.

Based on the targets set, Member States would report to the Commission on their achievement, starting in advance of the target deadline in order to allow progress to be monitored.

Measure 3.6 – Setting a separate collection target for textile waste

The objective of this measure is to drive Member States, particularly those for which separate collection is low, to improve their separate collection rate for textiles thereby increasing reuse rates, recycling rates and decreasing disposal rates. The target would incentivise investment in collection systems which will then enable increased sorting and recycling capacity by setting a realistic recycling target that considers likely changes in recycling capacity and technologies – see for example the ReHubs initiative that looks to achieve 2.5 million tonnes of fibre-to-fibre recycling by 2030[268]. This target would be in comparison to solely relying on the application of the separate collection of textiles obligation under Article 11(1) of the WFD.

This measure would apply to the municipal post-consumer textile waste under the scope of EPR schemes (measure 2.9).

This measure consists in setting a separate collection target, the concept being that increased separate collection will in turn lead to greater levels or reuse and recycling and lower levels of disposal. This target should be set within the WFD across the EU to ensure coherence between the different Member States and to harmonise efforts towards reaching the target, i.e., the same collection would apply to all Member States. The target could take the form of a percentage improvement by volume of textile waste or an absolute target in tonnes – both are considered below.

This measure looks to specifically address the following problem drivers:
- Insufficient sorting and recycling capacity;
- Insufficient funding to scale up separate collection, sorting and recycling;
- Insufficient waste prevention activities and lack of circular business models at scale that extend the lifespan of products;
- Delays in implementation of the separate collection obligation; and
- Low demand for recycled materials.

As is the case for measure 3.4, the setting of a target for collection is dependent on good quality data to inform the target itself to ensure that it is realistic and achievable. As indicated in measure 2.14, existing reporting mechanisms were assessed and some changes were proposed to collect additional data. Therefore, it is important to consider how this newly reported data could be used

[268] ReHubs, 2020

to set an ambitious target and, whether, in the interim a less ambitious target based on baseline projections should be applied.

The main difference between setting a target for separate collection in comparison to the other targets is that it specifically addresses an already existing obligation under the WFD – the separate collection obligation that was introduced in the 2018 revision of the WFD with a deadline for separate collection of textiles to be in place in all Member States by 1 January 2025. Member States should already be in the process of tackling this obligation and consequently the necessary actions to achieve improvements in the level of separate collection should, in theory, be in the planning or implementation phase. As noted previously, in general Member States already cover a significant share of the textiles that would be addressed under this measure in their separate collection schemes. The understanding of the levels of textile wastes generated and currently collected, should, therefore, be better than in relation to levels of subsequent sorting, reuse and recycling where no specific obligation for textiles exists in the WFD.

However, it is considered that the feasibility of this measure is directly linked to measure 2.14, that requires collection of data on waste generation and collection. Without this additional measure there would be significant challenges relying on existing datasets to measure compliance with the target set.

Setting a specific target would clarify exactly what minimum level of separate collection should be targeted under this existing provision, assisting Member States and producer responsibility organisations (PROs) in their understanding as to what needs to be achieved to be in compliance with the Directive. In the absence of such a target, Member States and PROs may currently interpret the obligation in terms of whether it requires separate collection of 100% of all textile wastes generated or only a fraction thereof that may be well below what has been proven to be technically and economically feasible by the forerunner Member States that already separately collect over 50% of textile wastes generated.

Based on the assumption that the proposal to amend the WFD will be adopted in July 2023, the ordinary legislative procedure would be completed and the amendments to the Directive enter into force by mid-2024, Member States would have two years to transpose the legislation, i.e., until mid-2026 and the first reporting year would be the year 2027 for which the data would become available mid-2029. An implementing act setting out the reporting formats would be adopted by the end of 2026. A target based on this data for 2035 or beyond could then be set through further amendment of the WFD.

Unlike Measure 3.4 that would require a specific formula to determine the correct target, here data on textile waste generation and separate collection would be used as the basis for determining the right target. In this respect, measures 3.6 and 2.14 are linked, with the data expected to be generated under 2.14 that would offer reliable information on textile waste generation and collection rates used to determine compliance with the target set.

In determining whether the separate collection target had been met the numerator would be the amount of separately collected textiles in tonnes and the denominator would be the textile waste generated in tonnes in the same year, for the textile under the scope of EPR.

The proposed scope of the EPR measure (2.10) is defined as below:

Table 18-CN codes subject to the EPR scheme according to measure 2.9

CN code	Description
4203	Articles of apparel and clothing accessories, of leather or composition leather (excl. footware and headgear and parts thereof, and goods of chapter 95, e.g. shin guards, fencing masks)
61 – all listed codes within the chapter	Articles of apparel and clothing accessories, knitted or crocheted
62 – all listed codes within the chapter	Articles of apparel and clothing accessories, now knitted or crocheted
6301	Blankets and travelling rugs
6302	Bed linen, table linen, toilet linen and kitchen linen
6303	Curtains (including drapes) and interior blinds; curtain or bed valances
6304	Other furnishing articles, excluding those of heading 9404[269]
630710(selected goods)	Dishcloths, dusters and similar cleaning cloths (excluding floorcloths)
6309	Worn clothing and other worn articles
64 – all listed codes within the chapter except 6406 (parts of footwear) and 6403 12 00 – Ski-boots, cross-country ski footwear and snowboard boots	Footwear, gaiters and the like
6504	Hats and other headgear, plaited or made by assembling strips of any material, whether or not lined or trimmed
6505	Hats and other headgear, knitted or crocheted, or made up from lace, felt or other textile fabric, in the piece (but not in strips), whether or not lined or trimmed; hairnets of any material, whether or not lined or trimmed

Textile waste generation and collection will be reported under WFD requirements. Consequently, data will be provided relying on the following categories of waste according to the ELoW:

- 20 01 10 clothes; and

- 20 01 11 textiles.

The fact that these two ELoW codes do not match precisely the list of CN codes proposed to be subject to the EPR measure may lead to challenges in determining a consistent numerator and denominator by all Member States.

The main problem may arise in relation of bulky textile waste (e.g. carpets), and sacks and bags which are out of the EPR scope. As there is not a specific ELoW code for such waste, the possibility

[269] 9404 refers to mattress supports, articles of bedding and similar furnishing (for example mattresses, quilts, eiderdowns, cushions, pouffes and pillows) fitted with springs or stuffed or internally fitted with any material or of cellular rubber or plastics, whether or not covered.

remains from Member States to report them additionally to the materials subject to the EPR scope under the two relevant ELoW categories.

Using data (see the table below), it is estimated that these wastes would represent up to 14.3% of the reported totals.

In order to eliminate this possible error in calculation, this measure would also entail:

1. Adjusting the guidance from the Commission[270] on reporting under the ELoW to make clear to Member States that bulky textiles waste (e.g. carpets), and sacks and bags should not be reported under these headings but rather under 20 03 07–bulky waste or 20 01 99 – other fractions not otherwise specified, respectively.
2. Providing for Member States to undertake analysis of the fractions generated and collected and excluding the bulky textile waste and leather accessories from the overall textile target fraction under this measure.

*Table 19-Estimated composi*tion of flows at category and subcategory level of post-consumer textile waste

Category	**Subcategory**	**Post-consumer waste**	
		Category share	Subcategory share
Clothing and footwear	Jackets and coats	48.2%	9.7%
	Sweaters and midlayers		7.6%
	Pants and shorts		6.4%
	T-shirts		4.8%
	Closed-toed shoes		4.6%
	Apparel accessories		3.4%
	Shirts and blouses		3.1%
	Leggings, stockings, tights and socks		2.8%
	Dresses, skirts and jumpsuits		2.2%
	Boots		2.0%
	Underwear		0.9%
	Swimwear		0.8%
Home textiles	Carpets	15.7%	7.2%
	Bedding		4.3%

[270] OJ C 124, 9.4.2018, p. 1Commission notice on technical guidance on the classification of waste

Category	Subcategory	Post-consumer waste	
		Category share	Subcategory share
	Toilet and kitchen linen and towels		1.8%
	Curtains		0.9%
	Blankets		0.6%
	Table linen		0.4%
	Furnishing		0.2%
	Other personal care		0.1%
	Sleeping bags		0.0%
Technical textiles households	Non-woven articles	20.8%	7.8%
	Cleaning articles		7.0%
	Sacks and bags		6.0%
Technical textiles professional use	Non-wove articles	15.1%	7.5%
	Mixed technical articles		3.5%
	Cleaning articles		2.6%
	Workwear and protective clothing		0.9%
	Carpets		0.5%
Total		**100%**	

It is apparent that relying on a new reporting mechanism to address a target for collection may result in a significant delay in driving collection forward – up to ten years for the setting of a target as explained above. Therefore, this report considers a target based on the trends identified in the baseline. This ensures that, at the very minimum, the foreseen positive trend in quantities of textiles separately collected is mandated into a legislative obligation at the EU level or at the Member State level through reporting of PROs.

In determining what could be a suitable level for a collection target, the collection rates currently achieved by the forerunner Member States have been considered alongside the collection rates of all other Member States for the last year where data exists[271]. These are shown in the table below.

It should be noted that these data are overall consistent with the Sankey diagrams of current flows shown in Annex 6. However, there are difference on what is considered to fall under the categories 'post-consumer waste' and what is 'separately collected'. The difference in the scopes refer in particular to bulky waste (e.g. carpets, pieces of furniture), clothing that has no textile component (e.g. leather, fur) and also non-leather accessories. Additionally, the Sankey diagrams refer to 2019 data, where the table below considers 2021/2022 data.

Table 20 –Textile waste generation and collection in Member States, tonnes and collection rate reported for 2021 and/or 2022

Note: only textile waste that is commonly subject to separate collection schemes have been considered into "waste generation" to calculate the share of collection

[271] As noted in Annexes 6 and 7 Member States were specifically asked to provide information on textile waste generation, collection and sorting rates. In some cases the information provided related to 2021 and in some cases 2022. The most recent data has been applied for all Member States where available.

Member State	Waste generation (tonnes)	Waste collected (tonnes)	Waste collection percentage
AT	146 000	43 120	30%
BE	213 000	116 100	55%
BG	33 000	6 000	18%
CY	3 000	600	20%
CZ	78 000	14 100	18%
DE	1 267 000	784 640	62%
DK	85 460	36 000	42%
EE	22 400	3 900	17%
EL	98 000	17 850	18%
ES	451 000	95 160	21%
FI	85 500	40 000	47%
FR	517 000	204 000	39%
HR	53 000	10 200	19%
HU	79 000	14 400	18%
IE	167 500	57 500	34%
IT	615 000	242 200	39%
LT	45 000	14 000	31%
LU	4 000	1 000	25%
LV	20 000	2 400	12%
MT	2 000	750	38%
NL	305 100	136 100	45%
PL	362 000	65 700	18%
PT	144 000	20 880	15%
RO	149 000	27 000	18%
SE	62 000	38 300	62%
SI	14 000	1 700	12%
SK	44 000	5 300	12%
Total	5 064 960	1 998 900	39%

In determining likely growth rates in collection, the impacts of the 2018 separate collection obligation and the plans and programmes of Member States to meet this obligation have been taken into account. Additionally, for those Member States with currently high levels of collection the rate of growth is considered as likely to be lower than those with currently low levels of collection that are, in effect, most likely to invest in collection going forward.

On average, it is predicted that by 2035 49% to 55% of clothing and household textile waste across the EU would be separately collected in the absence of additional measures put in place (this acknowledges that some Member States already have significant shares of separate collection as well as accounting for a larger proportion of total EU waste).

A 50% target is considered to be set given that:

1. It would seem imminently achievable given that BE, DE and SE are already well above this collection target and several others are close (DK, IT, FR and NL). Using predicted growth in collection rates from the JRC[272], AT, BE, DE, DK, FI, FR, IE, LT, LU, MT, NL and SE would be predicted to meet or exceed such a target by 2035. Even the Member States with the lowest collection rates would be expected to be above 40% of separate collection for textiles by that year and could take additional measures to reach the 50% target.
2. Given the challenges in the reliability of data from Member States on their collection rates at present, including variations in scope of what Member States consider as textiles and the years for which data is held, the risk of setting a higher target is that it would be unrealistic and unachievable.
3. Similarly, setting different targets by Member States is subject to the same data shortcomings that may result in the setting of unachievable targets for each Member State concerned. Setting different targets would also be at odds with the targets that exist for Member States under the WFD for other wastes at present.
4. However, setting a target would also have downsides. For instance, the defining, implementing and monitoring of the target results in administrative burden and costs for Member States. Additionally, as detailed further below, there is a large heterogeneity across predictions for where Member States are likely to be in 2035 with the separate collection rate, making it challenging to set a specific target at this stage. Also, the existing 2025 separate collection obligation is likely to have the same effect on increasing the separate collection rate.

Table 21 - Predicted collection rate per Member State in 2035 (under the baseline assumptions of implemented existing and announced measures) and reported collection rate per Member State in 2021 and/or 2022

[272] European Commission, Joint Research Centre, Donatello, S., Danneck, J., Löw, C., et al., Circular economy perspectives in the EU textile sector: final report, Publications Office, 2021, https://data.europa.eu/doi/10.2760/858144

Member State	Waste collection percentage	Predicted collection rate in 2035	Volume separately collected in 2035 in tonnes
AT	30%	51.50%	70,034
BE	55%	76%	154,357
BG	18%	45.50%	13,355
CY	20%	47%	1,214
CZ	18%	45.50%	31,565
DE	62%	83%	1,032,203
DK	42%	63%	53,385
EE	17%	44%	9,065
EL	18%	45.50%	39,659
ES	21%	47%	175,747
FI	47%	68%	34,600
FR	39%	60%	297,111
HR	19%	44%	21,448
HU	18%	45.50%	31,970
IE	34%	56%	77,834
IT	39%	60%	347,280
LT	31%	53%	19,561
LU	25%	50%	1,859
LV	12%	42.50%	8,694
MT	38%	59%	929
NL	45%	66%	190,591
PL	18%	45.50%	146,495
PT	15%	44%	56,114
RO	18%	45.50%	60,298
SE	62%	83%	26,950
SI	12%	42.50%	5,246
SK	12%	42.50%	16,486
Total	39%	52.70%	2,924,050

It should be noted that the resulting figures are more optimistic regarding the share of separate collection that can be reached by 2035 compared to the baseline scenario Sankey diagram in Annex 6. Based on a rough calculation, 58% of the category 'post-consumer waste' in the Sankey diagram from the JRC would be cover by separate collection systems (i.e. clothing, footwear and home/household textiles, accounting for 56.6% and in addition workwear and protective clothing, accounting for another 0.9%) and the scope of this measure (as set out in measure 2.9), while effectively everything that is covered by the category 'separate collection' in the JRC Sankey diagram would indeed be covered by the scope. This would result in an estimate of a separate collection rate of roughly 40-44% across the EU in 2035. The higher estimate would be the result by further including leather and other non-textile elements in the separate collection figure (resulting in up to 4 Mt yr-1 separately collected by 2035). Again, the difference stem from the scope as previously mentioned, but also on the assumptions of waste generation and separate

collection in 2035. A preliminary JRC estimate for 2030 would suggest post-industrial waste generation of 13.3 Mt yr-1 and separate collection of 3.15 Mt yr-1. Applying the same approach would result in an EU-level average estimate of roughly 41-45% separate collection in 2030.

In alternative to setting a percentage target, an absolute target in tonnes could be set per Member State. The tonne target could be set in the same manner as requiring a percentage reduction. However, fluctuations in the volumes of textile waste generated would need to be factored into any absolute target. Based on existing data, setting a tonnage target is technically challenging. Therefore, a percentage target is assessed in detail below.

With regard to the enforcement and the governance structure for the target, one way is for Member States to report to the Commission (or the EEA) on the achievement of the target, with the first reporting period being the first full calendar year following the adoption of the Implementing act revising the existing format established by the Commission Implementing Decision (EU) 2019/1004. The data collection at national level is regulated by the Member States. In accordance with Measure 2.9, data on textiles management, including collection is to be provided to the competent authorities by the producer responsibility organisations and waste management entities engaged in the collection of used and waste textiles, including municipalities and social enterprises.

The collection and validation of textile waste data would be carried out by Eurostat or the EEA, with annual reporting of data by Member States. This data would be the basis for the Commission to assess compliance of MS with the EU target. In the event of non-compliance, the Commission uses a broad toolbox of measures to facilitate compliance promotion (capacity building programmes, guidance, exchange of best practices, Waste Committee and enforcement platforms). The Commission also has enforcement powers through the launch of infringements, which the Commission has exercised in the past for failure to meet environmental performance targets. MS decide on their national governance structures by defining roles and responsibilities of individual actors, including deciding whether to pass on the responsibility for meeting the targets to national actors, including financial responsibility. This is the case, for example, in some MS which pass on the target compliance obligations to regional authorities or to producer responsibility organisations in the case of EPR, including with financial penalties.

Another way of reporting would be through PROs, which would need to report to Member States in any case the necessary data to calculate the separate collection target. This would reduce the administrative burden for Member States of not having to report the data to the Commission (or the EEA). It would also support the timeliness of data collection since there would be no delay of 18-24 months for data collection. Lastly, it would further set a performance target for the EPRs themselves given that the waste covered under the EPR would essentially be monitored through the reporting of PROs themselves.

Measure 3.8 – Setting a recycling target for textiles

The objective of this measure would be to drive Member States to improve their recycling of textiles and, thereby, increase recycling capacity by setting a realistic recycling target that considers likely changes in recycling capacity and technologies – see for example the ReHubs initiative whose stated objective is to achieve 2.5 million tonnes of fibre-to-fibre recycling by 2030. This target should be set at EU level, to ensure coherence between the different Member

States and to harmonise industry efforts towards reaching the target. The recycling target(s) could be set to promote recycling operations that induce the highest environmental benefits, including considerations to minimise the risk that re-usable textiles are sorted for recycling instead of destined for re-use.

This measure looks to specifically address the following problem drivers:

- Insufficient sorting and recycling capacity;
- Insufficient funding to scale up separate collection, sorting and recycling; and
- Low demand for recycled materials.

Practically, preparing for reuse and recycling targets could be defined as the amount of waste textiles that are "prepared for reuse" and “recycled" divided by the amount of separately collected textiles that are not reused. Calculation rules would have to account for imports/exports of sorted and unsorted textiles and textile waste[273] (see schematic overview of calculation rules indicated below).[274] In addition, the fraction of the input material that is reused after repair actions and/or recycled and associated potential differences in the environmental performance of recycling technologies, would be considered.

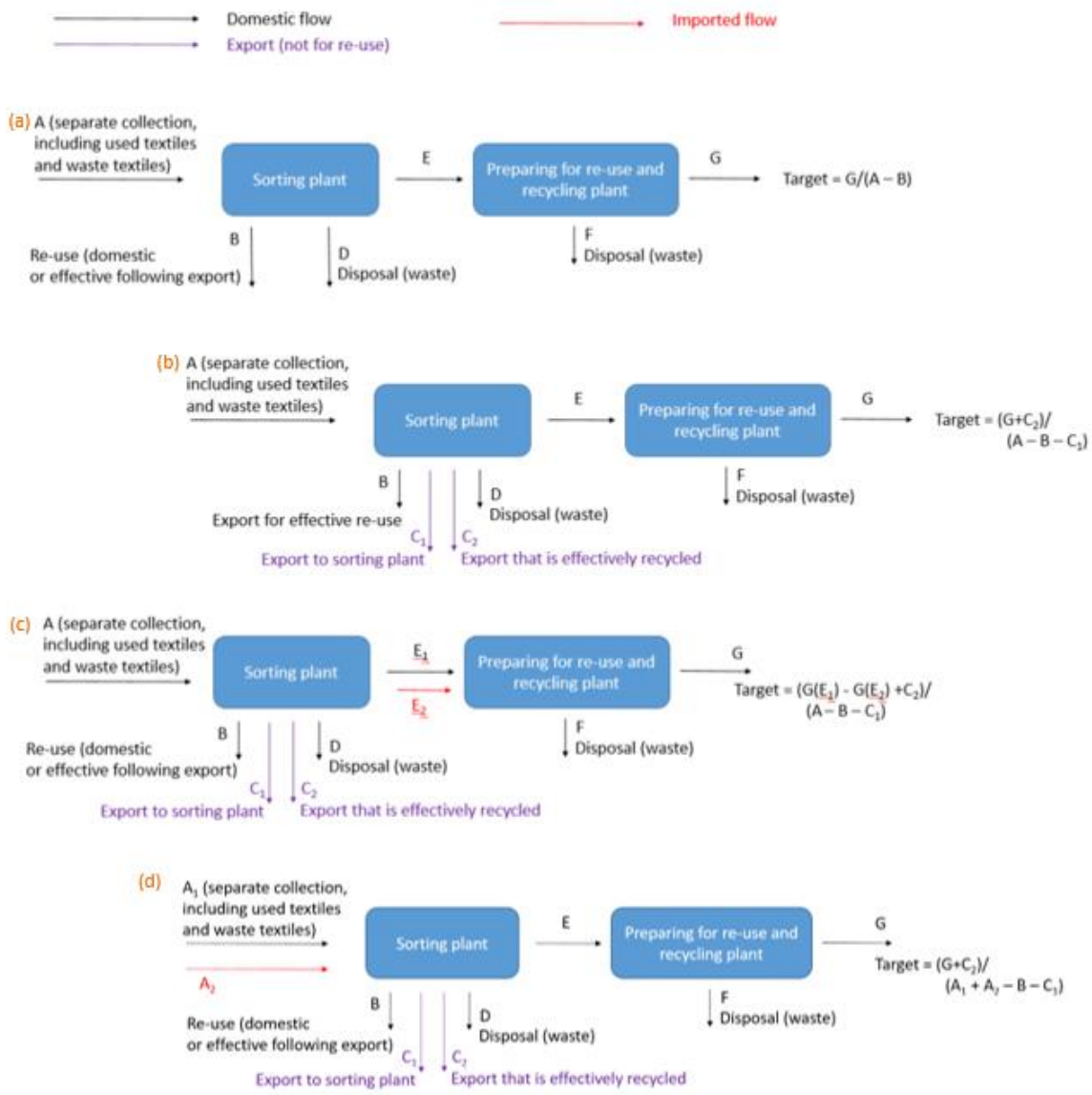
An important consideration is to ensure that setting a recycling target does not have the unintended consequence that textiles are sent to recycling to meet the recycling target when they could be reused (this is proposed to be address in measure 2.5).

An alternative may be to set a target for the sum of reuse, preparing for reuse, and recycling. Taking inspiration from the French and Dutch that have set combined targets for reuse and recycling, a combined target could drive Member States to improve both their reuse of textiles and their recycling of textiles by setting a realistic combined target, in comparison to solely relying on the application of the separate collection of textiles under Article 11(1) of the WFD. Setting a combined target has the advantage of reducing the risk that textiles that would be suitable for reuse or preparation for reuse would be recycled to achieve the target whilst they could be managed higher up the waste hierarchy.

Figure 21 – Schematic representation for calculating targets under different situations, including imports and exports

[273] In case textiles are imported for recycling, they would not count towards the targets in the receiving MS. The share of textiles that are exported to other EU Member States (or outside of the EU) can only be accounted as recycling in the MS of generation in case they are actually recycled (see Annex I, Figure 1 for a schematic representation).
In case separately collected textiles are exported without prior sorting or go to another (secondary) sorting facility in another MS, they should be excluded from the calculation in the MS that exports (in numerator and denominator) (see Annex I, Figure 1 for a schematic representation).

[274] In case textiles are imported for recycling, they would not count towards the targets in the receiving MS. The share of textiles that are exported to other EU Member States (or outside of the EU) can only be accounted as recycling in the MS of generation in case they are actually recycled (see Annex I, Figure 1 for a schematic representation).
In case separately collected textiles are exported without prior sorting or go to another (secondary) sorting facility in another MS, they should be excluded from the calculation in the MS that exports (in numerator and denominator) (see Annex I, Figure 1 for a schematic representation).


Domestic flow
Imported flow
Export (not for re-use)
(a) A (separate collection, including used textiles and waste textiles)
Sorting plant
E
Preparing for re-use and recycling plant
G
Target = G/(A – B)
B
Re-use (domestic or effective following export)
D
Disposal (waste)
F
Disposal (waste)
(b) A (separate collection, including used textiles and waste textiles)
Sorting plant
E
Preparing for re-use and recycling plant
G
Target = (G+C2)/ (A – B – C1)
B
Export for effective re-use
D
Disposal (waste)
F
Disposal (waste)
C1
C2
Export to sorting plant
Export that is effectively recycled
(c) A (separate collection, including used textiles and waste textiles)
Sorting plant
E1
E2
Preparing for re-use and recycling plant
G
Target = (G(E1) - G(E2) +C2)/ (A – B – C1)
B
Re-use (domestic or effective following export)
D
Disposal (waste)
F
Disposal (waste)
C1
C2
Export to sorting plant
Export that is effectively recycled
(d) A1 (separate collection, including used textiles and waste textiles)
A2
Sorting plant
E
Preparing for re-use and recycling plant
G
Target = (G+C2)/ (A1 + A2 – B – C1)
B
Re-use (domestic or effective following export)
D
Disposal (waste)
F
Disposal (waste)
C1
C2
Export to sorting plant
Export that is effectively recycled

2- Food Waste[275]

1.1. Baseline

1.1.1. Assumptions

The baseline or 'business as usual' (BAU) for the assessment of the food waste reduction targets assumes a continuation of current policies, regulations, and market trends on the future situation of the wider bioeconomy up to 2050. To motivate the baseline shocks, projections are taken from the European Commission's Global Energy and Climate Outlook (GECO) reference (Keramidas et al., 2021), which is updated annually by the JRC. At the outset, this publication offers a consistent set of economic-energy-climate assumptions to 2050, whilst it has the additional advantage of accounting for the recent economic shock to the global system arising from the COVID pandemic. The macroeconomic-energy-climate assumptions are supplemented by land and feed productivity assumptions consistent with shared socio-economic pathway 2 (SSP2) as well as EU trade, CAP and biofuels policy shocks, meat and dairy demand shocks, forestry biomass availability shocks and food waste projections. The baseline drivers are summarised in Table 22. While in the baseline, the effect of the Covid-19 pandemic is considered, it should be noted that the baseline does not take into account Russia's invasion of Ukraine and its potential impacts on global food prices or the refugees' migration from Ukraine to the European Union.

Table 22 – *Detailed baseline drivers and assumptions*

Driver	Explanation and implementation	Sources of data
Economic growth	Country specific macroeconomic (GDP) rates of growth. Fixed capital to output ratio: Capital stock changes at the same percentage rate as real GDP Fixed long-run employment rate: Labour force changes at the same percentage rate as regional population	(Keramidas et al., 2021)
Demographic development	Country specific exogenous rates of population change	(Keramidas et al., 2021)
Land use and management	Land productivities consistent with the "middle of the road" Shared Socio-economic Pathway 2 (SSP2)	(Daioglou et al., 2016)

[275] This assessment is based on: De Jong B, Boysen-Urban K, De Laurentiis V, Philippidis G, Bartelings H, Mancini L, Biganzoli F, Sanyé Mengual E, Sala S, Lasarte-López J, Rokicki B, M'barek R. *Assessing the economic, social and environmental impacts of food waste reduction targets. A model-based analysis.* Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/77251, JRC133971.

Technology change	**Production technology development:** anticipated outlook for agricultural and forestry technology development, and industry **Feed efficiency**: Feed productivities consistent with the "middle of the road" Shared Socio-economic Pathway 2 (SSP2) **Forestry biomass:** Baseline EU forestry sector dry matter biomass potentials calibrated to input-output technology shifters DG RTD (2017). In the forestry sector in each EU member state, projections for forestry biomass potentials in Giga grams (=1000 tonnes) of dry matter to 2050 are implemented. The projections are taken from the EFICSCEN model and are consistent with the baseline scenario in DG RTD (2017). For the Rest of the World, an estimate of additional round wood harvesting provided by EFI (based on work in the FORMIT project) is used to calibrate ROW forestry production in the baseline (it is assumed that compared with the 1.6 billion cubic metres of roundwood harvested in 2020, by 2050 under business as usual conditions, it could increase to 2.1 billion cubic metres, whilst at the upper level, this figure could rise to 2.6 billion cubic metres. Thus, in the baseline a per year growth rate for ROW forestry production is calculated and calibrated into MAGNET.	(Keramidas et al., 2021) (Daioglou et al., 2016; European Commission, 2018a) (European Commission, 2018b; Philippidis et al., 2022)
Energy	Global trends in electricity and heat usage (million tonnes of oil equivalent) by four broad classes of (non-energy) activities – agriculture, fishing and forestry; manufacturing; services; transport. Global trends in electricity and heat generation technologies (fossil, biological and non-biological renewables) by the "blended" electricity and heat generation sector: coal, gas, oil, biomass and waste, nuclear, hydroelectric, wind and solar) World prices of fossil fuels (in dollars per barrel at 2015 prices) and carbon taxes, and global trends in: electricity and heat usage, electricity and heat generation technologies, and oil, gas, petroleum and electricity usage by private households Projected increases in the carbon taxes ($/tonne) on EU emissions trading scheme (ETS) activities and non-EU region activities. Carbon taxes ($/t) by different activities at regional level calculated from the Social Accounting Matrices (five-year intervals) of the GEM-E3 model (only available for the reference scenario). The MAGNET model determines changes in greenhouse gas (GHG) emissions endogenously as a consequence of the carbon tax, energy balance and growth assumptions	(Keramidas et al., 2021)
Policy mechanisms and reforms	**Biofuel mandates:** Biofuel mandates on first-generation and advanced-generation biofuels by region. BF2nd mandate ratcheted up to 2.2% (single counted) by 2030 and then held there to 2050. In the ROW, assume it is ratcheted up gradually to 2.5% (single counted) by 2050 (and 1.5% by 2030). For BF1st, the CAPRI trends are mimicked using productivity shocks, whilst BF1st	Keramidas *et al.* (2021), CAPRI model

	mandate for the ROW are chosen to generate plausible aggregate EU mandate values. **EU Agricultural Policy:** Common Agricultural Policy (CAP) payments shocks to 2050 employing the latest available data from DG AGRI (Clearance Audit Trail System - CATS) and assumptions. The configuration of decoupled EU agricultural market support payments is also allocated to agricultural primary factors.	(Boulanger et al., 2021; Boulanger and Philippidis, 2015)
Consumer preferences	Tops-down 'EU-wide' and 'non-EU-wide' per capita demands for red and white meats, and dairy products. To capture the consumption trends for red meat, white meat and dairy products, per capita trends from OECD FAO (2021) are implemented tops-down at the EU level and for the ROW. These per capita trends are targeted using household expenditure share budget shifters. As a first step, in the decade 2020-2030, the FAO-OECD per capita trends are correlated with the FAO-OECD real GDP growth assumptions to generate an 'elasticity'. This elasticity is applied to the GECO assumptions regarding real GDP growth to generate projections of red meat, white meat and dairy per capita consumption in each of the three decades of the baseline experiment.	(OECD-FAO, 2021)
Food waste	Food waste is projected from 2014 to 2020 following the FW MFA data. For the periods 2020 to 2050, food waste is projected following the GDP per capita development following Verma et al., 2020 and Kaza et al., 2018.	(Caldeira et al., 2021; De Laurentiis et al., 2021)

1.1.2. Projection of food waste amounts

The projection of food waste from 2020 to 2030 aims to deliver a plausible starting point for the scenarios of food waste reduction in 2030. Furthermore, coherence with ongoing projections of all municipal waste was seen as a pre-requisite for the impact assessment. At the same time, an econometric estimation of the impact of different drivers (of food waste) was planned. However, the scarcity of data, i.e., only one data point on food waste per Member State, did not allow to proceed accordingly.

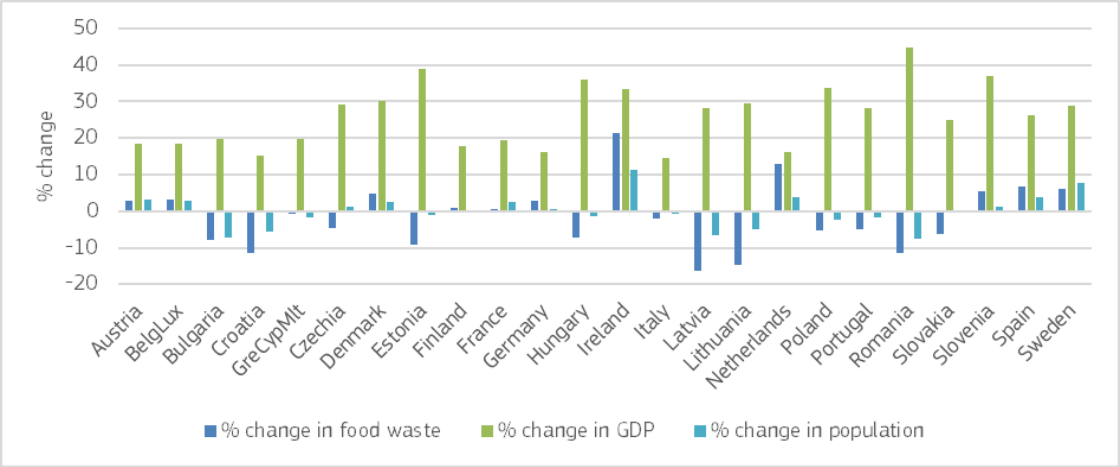
To align the various quantitative assessments related to waste, the municipal waste projections were approximated within the MAGNET simulations as a top-down approach. In the overall approach followed by the JRC, the total waste generated for the baseline is calculated using a regression on GDP and population, resulting in an increase of 8.3% over the time period 2020 (225 732 000 tonnes) to 2030 (244 471 244 tonnes). The actual value for the waste increase in the EU from 2020 to 2030 in MAGNET - after different calibration steps-is 8.5%.

This value of 8.5% waste increase for the EU27 translates in different ways in the Member State-specific food waste values per food chain step and subsector. The main drivers are population, GDP, production and demand elasticities as described in the preceding section. The importance of the population growth in the determination of the Member States' food waste growth (or even

decline), is demonstrated in Figure 225. While a group of EU14 [276] countries with positive demography and well-performing economy and agri-food sectors show an increase in food waste generation, a number of Central and Eastern European countries experience a strong demographic decline, resulting in a reduction of food waste, in spite of comparatively high economic growth rates.

For the EU-27 as a whole, a stable development from 56.98 million tonnes to 57.04 million tonnes of food waste is projected.

Figure 22 – Food waste, GDP, Population, % change 2020-2030, MSs



Source: MAGNET simulation results

Building on the JRC MFA shares, the food waste distribution across stages of the supply chain and across food groups in 2020 is calculated and projected to 2030 in Table 23.

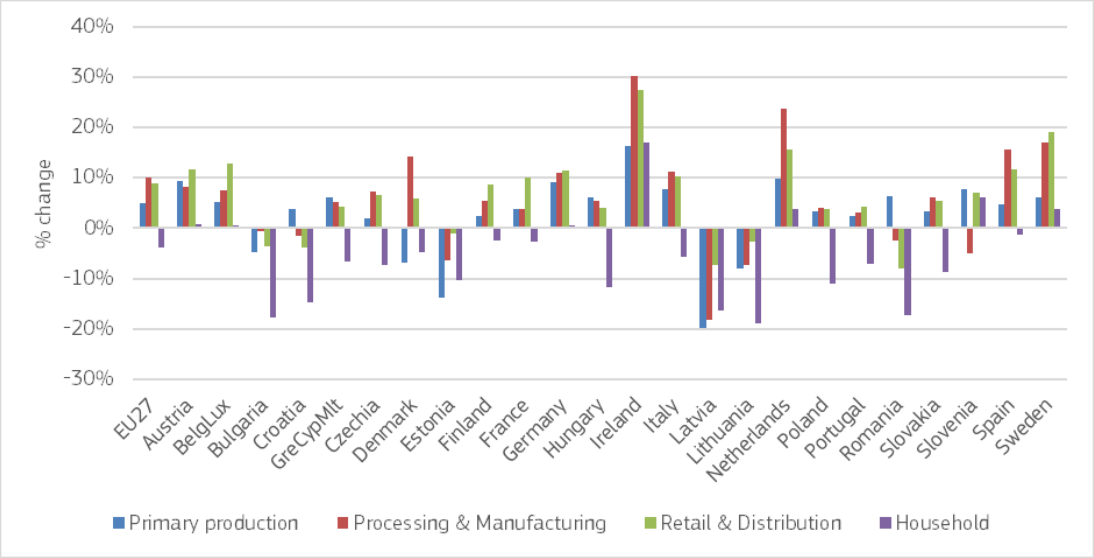
Table 23 – Food waste distribution across stages of the supply chain and across food groups for 2020 and 2030, EU-27

	2020					2030				
	Primary production	Processing & Manufacturing	Retail & Distribution	Household	Total	Primary production	Processing & Manufacturing	Retail & Distribution	Household	Total
Cereals	3.5	8.6	22.3	6.5	7.7	3.1	8.6	21.5	5.8	7.2
Dairy	4.8	11.4	7.4	7.1	7.6	5.1	12.0	7.7	7.6	8.1
Eggs	1.0	0.8	0.8	0.1	0.4	1.1	0.8	0.8	0.1	0.4
Fish	10.7	4.1	6.9	1.7	3.5	9.7	4.0	7.4	1.8	3.5
Fruits	32.6	29.7	19.4	18.3	22.0	32.7	29.3	19.1	17.0	21.4
Meat	0.0	18.0	17.0	8.0	9.5	0.0	18.2	18.0	7.5	9.6
Oils	0.7	0.8	2.0	1.3	1.2	0.6	0.8	1.9	1.1	1.0
Sugarbeets	0.0	0.0	8.0	0.3	0.8	0.0	0.0	7.8	0.3	0.8
Vegetables	46.8	26.6	16.2	21.3	24.6	47.8	26.3	15.8	19.7	23.8
Other food	0.0	0.0	0.0	18.5	11.9	0.0	0.0	0.0	18.8	11.5
Others	0.0	0.0	0.0	2.5	1.6	0.0	0.0	0.0	2.5	1.5
Food service	0.0	0.0	0.0	14.5	9.3	0.0	0.0	0.0	17.9	11.0
						0.0	0.0	0.0	0.0	0.0
Total	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*	*100*

[276] EU14 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Republic of Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and Sweden.

Source: MAGNET simulation results

Figure 23 – Food waste along the food chain, % change 2020-2030, MSs



Source: MAGNET simulation results

The main purpose of the baseline remains to provide a reference (scenario) for assessing the impacts of the policy scenarios and comparing the different options among themselves. The starting point for food waste reduction is nevertheless important for the costs as, in principle, the rule holds that the higher the initial food waste value, the costlier the reduction.

1.2. *Discarded food measures*

While on food waste the only measures considered were different forms of reduction targets, during consultations (inception impact assessment, public consultations, EU Platform) stakeholders requested that additional food waste prevention measures be considered..

1.2.1. Extend the scope of the WFD onto food lost in primary production and set relevant target

In particular, some stakeholders suggested extension of the scope of the WFD in order to cover food lost in primary production before, during or soon after harvest. This would allow setting up of reduction targets that would also address food lost on farm, that is which is left on the field or managed on farm, but not discarded as waste.

This measure was discarded on the basis of the criteria of political feasibility and proportionality. Extension of the scope of the WFD on this new area would require analysis of the consequences of applying existing waste management rules on biomass from primary production (which is currently excluded). In any case, it would add a completely new set of rules for primary producers.

Moreover, drivers behind food waste at farm level are linked to economic rather than environmental aspects of farm operations, in particular if such food waste savings are profitable

and who should carry related prevention costs. Therefore, the use of environmental legislation for regulating such aspects is not proportional.

1.2.2. Modify food safety legislation to reduce amount of food wasted due to safety measures

Several stakeholders suggested to use this opportunity to modify other legislation, in particular the Regulation on Animal By-Products in order to facilitate – where safe to do so - easier use as animal feed of food that is currently discarded. This measure was discarded using the criterion of coherence with other EU policy initiatives. Food safety remains a priority and any new developments in this area - even if linked to sustainability- need to be proven to be safe before they can be proposed. Therefore, such measures can only be proposed in the relevant food safety legislation.

1.3. Considered policy options

With a view to design the options, three main aspects have been taken into account: the scope of any potential targets (coverage of food supply chain), the way in which targets are expressed, and the way targets are implemented in Member States. The analysis covered the following choices:

- Scope:
  - S1 – target covering the whole food supply chain, from primary production (e.g. farm) to final consumer;
  - S2 – target covering only selected stages of the food supply chain (for example SDG Target 12.3 sets targets at retail and consumer levels).
- Expression
  - E1 – target expressed as % of food waste reduction from the amount of food waste in the baseline year (2020) to target year (2030);
  - E2 – targets expressed as absolute amounts, i.e., in kilograms per capita per year to be achieved by 2030 (per country).
- The way the targets are set for Member States
  - T1 – the same target level for all Member States;
  - T2 – target level differentiated by Member State;
  - T3 – collective target on EU level – based on MS contributions.

Following input received from stakeholders including consultations (see in particular Annex 2, section 1, Inception Impact Assessment), the Commission has further analysed modalities for setting the targets and proposes the following approach.
Scope: S1 - Policy options should explore target (or targets) along the whole food supply chain, albeit target levels may differ amongst the different stages. This is reflected in the selection of scenarios that model the results for different target levels and for different stages of the food supply chain.

Expression: E1 - target should be expressed as % of food waste reduction from the amount of food waste in the baseline year (2020 or earlier if credible data are available) to target year (2030).

The way the targets are set for Member States: T1 - the same target level for all Member States

Table 24 : Advantages and challenges of the different settings for food waste reduction targets

Possible approaches for setting the scope of the targets	Advantages	Challenges
Consumption and retail only (including households, restaurants/food services, retail)	• Better focus on identified hotspots and highest environmental gains (including embedded emissions); • Higher acceptability by Member States; • Likely acceptability from industry (depending on levels); • Lowest administrative burden and potential cost for food industry and farmers;	• Less incentives for cooperation between actors in the food supply chain; • Lowest acceptability from NGOs and probably general public (viewed as lowest level of ambition); • Risk of being accused by some stakeholders of "putting the burden on consumers and not recognising the role of other actors in the food value chain". • Better aligned to SDG Target 12.3 which only sets a quantitative target (50% reduction) at retail and consumption but also calls on reducing food losses along the whole food supply chain.
Consumption and retail + food processors/manu-facturers	• Additional coverage of large food processors/manufacturers, in line with commitments made under Code of Conduct, Champions 12.3 *etc.*; • Better cooperation to reduce food waste along the food supply chain; • Additional support for addressing date marking challenges, in line with FIC revision; • Better acceptability from general public.	• Member States' implementation may lead to additional administrative and financial burden on food processors/manufacturers (not expected to be significant); • Food processors declare commitment to SDG 12.3 target, but acceptability of targets is uncertain; • Relatively low additional environmental gains; • Implementation is susceptible to legal interpretation (waste vs by-products).
Consumption and retail + food processors/manuf acturers + primary producers (farmers)	• Full coverage of the food supply chain; • High acceptability from general public and by environmental NGOs; • Awareness raising at farm level; • Could be a precursor for addressing (pre-harvest) farm losses;	In addition to the abovementioned points: • Risk of strong opposition from farmers and their organisations which may require guarantees that during implementation they will not carry the burden caused by other actors in the food chain; • Possible reluctance from some Member States;

		• Relatively low additional gains from covering of primary production (food waste negligible amount of waste addressed); • Poor data coverage so far; • Implementation is susceptible to legal interpretation (waste vs-by-products + exclusion of certain types of farm biomass from WFD).
Options related to expression of the targets	**Advantages**	**Challenges**
E1: target expressed as % of food waste reduction	• Easiest and most understandable option; • Harmonized with potential future reduction targets of the WFD; • Less likely to be affected by the selection of reporting methods, errors/inaccuracies and modification of the measurement methodology.	
E2: target expressed as absolute amounts, i.e. in kilograms per capita per year to be achieved by 2030	• More results-orientated; • "Fair" method as the countries with low food waste generation need little or no effort.	• Not effective to set targets for the stages of primary production and processing and manufacturing of food; • More susceptible to the selected reporting methods, reporting errors/inaccuracies and modification of the measurement methodology.
Options related to the way in which targets are set for MS	**Advantages**	**Challenges**
T1: the same target level for all Member States	• Simple approach; • EU-wide level playing field; • Least hampered by potential data problems; • Consistent with other targets in WFD.	• Less consideration for national situations • Less involvement from Member States.
T2: target level differentiated by Member State	• Better takes into account national situations.	• Lack of time series data to assess evolution of food waste amounts (and potential for reduction) for each Member State; • Criteria for differentiation of the targets would require further

		development, which would further delay the process.
T3: collective target on EU level – based on MS contributions	• Greatest support during Inception IA[277]; • Potentially most involving Member States; • Incentivises action across EU while taking into account national situations.	• Most complicated; • Requires negotiations on share of each MS, which are expected to take very long and are very resource consuming; • Lack of time series data to assess evolution of food waste amounts (and potential for reduction) for each Member State.

As the Inception IA focussed on the Commission's commitment to propose legally binding targets, setting voluntary targets on food waste reduction was not part of stakeholders' consultations.

1.4. Recommended actions for Member States to reach the targets

Setting targets in EU waste legislation is a policy instrument, which requires that Member States take action in specific areas of waste management but gives Member States full flexibility in selecting the measures needed to achieve the targets. The advantage of targets is that they allow Member States to take into account the specific situation in their respective territories in order to choose the policy instruments that would be the most efficient and effective in order to reach the waste targets.

Examples of key actions taken by countries which have made significant progress in reducing food waste can be found hereunder:

[277] Based on feedback received, 21 contributions favoured T3, 14 called for T1 and 5 supported T2.

Examples of key actions by countries

- **Setting a target** to stimulate action by all players in the supply chain, in accordance to those set at international level (Courtauld commitment in the UK: https://wrap.org.uk/taking-action/food-drink/initiatives/courtauld-commitment)
- **Conducting periodic measurement to assess progress** against a baseline/benchmark (e.g., The Netherlands – United Against Food Waste, Norway)
- **Launching and coordinating actions between public authorities** (government, agencies) and private businesses in the food supply chain as well as other enabling actors including NGOs, academia, media, financial institutions. This can take the form of:
    - public-private partnership/Voluntary Agreements (e.g., The Netherlands – United Against Food Waste, Germany – Dialogue Forums)
    - and/or legislative framework to ensure engagement of all actors towards a common, agreed goal (France – anti-waste law for a Circular Economy)
- **Creating an enabling policy and legislative environment for implementation of the waste hierarchy**, i.e., to:
    - **facilitate redistribution** of surplus food for human consumption (e.g., clarification through guidance and amendments, if/as needed, of relevant food safety legislation; legal obligations for food business operators to donate surplus food – France, Czech Republic, fiscal incentives for food donation – France, Spain, Portugal…)
    - **promote circularity in the food supply chain**, in particular the use of former foodstuffs and by-products in animal feed (e.g., by national legislation in Lithuania clarifying procedures for the use of food of non-animal origin for feed and in Latvia on registration of businesses involved in animal feed valorisation and guidelines in Denmark with examples of the use of feed from food products of both animal and non-animal origin).
- **Providing clear direction and guidance** (e.g. UK Food Waste Reduction Roadmap, Ireland's National Food Waste Prevention Roadmap 2023-2025) and associated resources to support food businesses in implementing Target-Measure-Act (e.g. French Environment Agency – ADEME- supporting diagnoses by food business operators, the Netherlands – tailor-made advice to cut food waste in business operations)
- **Engaging consumers** through awareness raising campaigns and behavioural change interventions (e.g., UK – Love Food, Hate Waste, Germany, The Netherlands...).

Specific actions targeting food waste at consumption level

Food waste at consumption represents the major hotspot for food waste generation in the EU and should therefore be a key focus area for Member States' intervention. There is no single solution, and the evidence suggests that changing consumer behaviours (better food management, better understanding and use of date marking...) is not easy and requires sustainable action carried out over time and involving multiple partners. (For more information on consumer behaviour drivers, see Annex 7). Simple awareness raising is not enough. It is important to understand the drivers for food being wasted at a household level and real change requires a mix of interventions that target specific behaviours and are tailored to the needs of specific consumer groups. This will be best achieved by a **partnership of actors in the food system working together**, with strategies and tools (including use of digital solutions as appropriate) adapted to the awareness, attitudes, motivation and information needs of targeted population groups in the Member States.

A Guide on Changing Behaviour to help more people waste less food, developed by the Champions 12.3 network, provides guidance to help key actors in the food system, including government,

focus on how they can help consumers reduce food waste through behaviour change. In the EU, the **European Consumer Food Waste Forum** (ECFWF) – bringing together both academics and practitioners to work together to develop solutions and tools to address consumer food waste- is expected to deliver a best-practice compendium by July 2023.

Countries which have achieved significant reduction of consumer food waste associate both **public-private partnerships** between government and actors in the food supply chain, committed to a common roadmap for food waste reduction at national level, with a **public behaviour change campaign.**

The examples in the textbox below illustrate the type of initiatives implemented by governments and private sector organisations to help consumers reduce food waste (in the EU and beyond).

Examples of different types of consumer targeted actions

- In the United Kingdom, the Waste and Resources Action Programme's (WRAP), '**Love Food, Hate Waste' (LFHW) programme** helped reduce consumer food waste by 21% in 5 years. Its consumer-focused campaigns, developed in collaboration with government, celebrities and businesses, aim to **increase awareness about the costs of food waste and provide practical strategies** for reducing food waste. WRAP's **behaviour change programme** includes a range of interventions, for example a nudge on bread packaging designed to change the existing perception that bread (one of the top 5 wasted items) is only fresh for four days. The LFHW programme cost £26 million over five years to implement but was responsible for £6.5 billion in savings to households in avoided food costs, as well as £86 million in savings to UK government authorities in avoided waste disposal costs. Altogether, the initiative reaped a total benefit-cost ratio of 250:1 and avoided 3.4 million tons of greenhouse gas emissions and saved 1 billion cubic meters of water.
- In the **Netherlands**, the ongoing **national food waste activation campaign** contributed to a significant reduction of food waste in Dutch households: a reduction of 17% compared to 2016 and 30% compared to 2013.
- In **Portugal**, as part of the 'United against Waste Alliance', the Portuguese Retailers Association launched a national campaign in supermarkets to educate consumers about the difference between 'use by' and 'best before' dates.
- **School education materials** have been developed in many countries and regions including: Flanders (Belgium), Estonia, Hungary and Ireland.
- **Technology providers,** in particular **digital,** also have a role to play. For example, Too Good to Go, a **mobile application** that connects customers to restaurants and stores that have unsold food surplus, **initiated national pacts with food business operators** on **date marking**, sometimes in collaboration with public authorities in Member States (e.g., Belgium, Denmark, France, Poland, Spain, etc). **Smart bin technologies** have been used to track and reduce food waste in the **food services sector** and are now being developed for **use by consumers** as well as **mobile apps** to monitor food waste in households. The **online platform**, Foodiverse, run by the social entreprise, FoodCloud, and operating in four markets (Ireland, United Kingdom, Czech Republic and Slovakia) **facilitates the redistribution of surplus food** by connecting food businesses, government and non-profit organisations such as food banks and other charities. Digital technology is also **used by supermarkets to reduce the price of fresh food** based on its expiry date (e.g., Wasteless, operating in cities located in Germany, Italy, the Netherlands, Poland, Slovakia and the United States).
- **Large employee-based organisations** can work with their employees, to engage them in making small changes that can make a big difference to food waste, recycling and health (EU Small Change Big Difference campaign, funded by LIFE).

Selection of target levels to reduce food waste.

Selection of target levels is always to some extent arbitrary. To gather more information on what level of target would be feasible, the European Commission funded a study by LEI Wageningen UR on "Reducing food waste by households and in retail in the EU; A prioritisation using economic, land use and food security impacts" in 2013. (http://edepot.wur.nl/290135). The report concluded with proposing three food waste reduction target levels: 50% ("ambitious"), 40% ("realistic") and 30% ("modest"), which were to be realised over the period 2012-2020. When confronting results of that study with actual reductions achieved then by Member States, which have started to measure progress at least in some sectors (UK, NL) as well as several pilot studies from other countries, the proposed targets have been lowered respectively to 15%, 20% and 30%.

The 15% level is at the lower end of ambition, relatively easily achieved (catching the 'low hanging fruit') with awareness raising actions and sharing of best practice; a 20% reduction target would require a more concerted effort and a higher initial cost of prevention activity; while 30% was assessed as ambitious, but not impossible. These targets were planned to be achieved over 9 years (2014-2025).

In this impact assessment we propose to test again lower and upper band limit of the 2014 Impact Assessment (i.e., 15% and 30%) and add a scenario equivalent to SDG 12.3 - i.e., 50% reduction. While there is significant progress in knowledge about the drivers behind food waste and possible solutions as well as established definitions and a monitoring framework, it should be noted that there is much less time for action if the targets are to be achieved by 2030. If targets are adopted in 2024, it leaves only 6 years, which may be challenging, given the time required to build and implement a wide-ranging food waste prevention campaign specific to the individual Member State.

The 25% target for food waste from processing and manufacturing is based on the call of the UNFSS Coalition on *Food is Never Waste*, which proposed in addition to SDG Target 12.3, to also set a specific target on food losses (which in the EU is equivalent to food waste from processing and manufacturing) at 25%. 25% is an ambitious target, especially bearing in mind that operators have an inherent economic incentive to reduce food waste and state that the potential for further reduction, linked to targets, is limited and that, in any case, will vary according to the type of business operation. For that reason, we have also proposed a more moderate target for this stage at the level of 10%, which is generally in line with commitments to reduce food waste made under the Code of Conduct.

Finally, to ensure covering the whole food supply chain, a 10% reduction target is also set on primary production for policy option 3 (advanced). However, there is very limited available evidence about reduction achieved or even potential for reduction of food waste in that sector. It should be noted that primary production is not covered by the index measuring progress towards SDG 12.3 (FWI - Food Waste Index).

The 2014 Impact Assessment proposed one target for the whole food supply chain, allowing Member States to decide whether to reduce food waste along the whole food supply chain or to focus on selected stages only. However, for this impact assessment, it was decided to consider a specific target for retail and consumption stage (as suggested by SDG 12.3) as well as separate target (or targets) for the supply side (primary production and processing and manufacturing). By

following such an approach, no stage is neglected, and Member States are obliged to address both supply and consumption in the food value chain.

Finally, it has also been decided to test Option relying on setting voluntary target for Member States. The voluntary target would be based on formulation of SDG Target 12.3 i.e., 50% reduction of food waste for the retail and consumption stages (jointly), with no numerical commitment assumed for earlier stages. This option would not be subject to enforcement mechanisms other than annual reporting of food waste levels.

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