INDICATORS AND METHODS FOR MEASURING TRANSITION TO CLIMATE NEUTRAL CIRCULARITY

TASK 1 – POLICY FRAMEWORK REPORT

FINAL DRAFT

Report for: DG RTD, Directorate B – Healthy Planet, Unit B1: Circular Economy & Biobased Systems

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Table 1 List of abbreviations

Abbreviation	Expansion
CDW	Construction and Demolition Waste
CE	Circular economy
CEF	Connecting Europe Facility
EIB	European Investment Bank
EU	European Union
GPP	Green Public Procurement
CEAP 2020	2020 EU Circular Economy Action Plan
ICT	Information and Communications Technology
MFF	Multiannual Financial Framework
MS	Member States
PSS	Product as service system
R&I	Research and innovation
REACH	Regulation on the registration, evaluation, authorisation and restriction of chemicals
ToR	Terms of Reference
WEEE	Waste Electrical and Electronic Equipment

1. INTRODUCTION

1.1 THIS REPORT

This is the Task 1 'Policy Framework Report' for study "*Indicators and methods for measuring transition to climate neutral circularity, its benefits, challenges and trade-offs*", which is being delivered under contract RTD/2022/OP/0003 to DG RTD. The study is being led by Ricardo Energy & Environment (Ricardo) with support from Norion, IEEP and Ecorys. This Task 1 report has been authored by Ecorys and Ricardo.

1.2 BACKGROUND OF THIS REPORT

The transition to a circular economy needs to occur on multiple levels, from households and individual consumers to national and cross-border ecosystems. Measuring and monitoring the development of this transition is an ambitious task and is ideally supported by indicators relevant to all steps in that process. While under revision[1], the European Commission's existing monitoring framework[2] on the circular economy is currently made up of ten indicators in total. These are broken down into sub-indicators and grouped into four thematic areas: production and consumption, waste management, secondary raw materials, and competitiveness and innovation.

This study has the following key objectives:

1. Developing and presenting a comprehensive understanding of:
    a. Current policy framework for circular economy and its monitoring, across the EU;
    b. Existing circular indicators in use at macro, meso and micro levels.

2. Identifying, assessing, developing and testing new potential indicators to facilitate a greater understanding of the following three facets of circular economy:

    a. Current levels of circularity - for horizontal comparison of circularity, such as for two products providing the same functionality;
    b. Transition progress – analysis to allow baselining and progress over time;
    c. Impact – analysis of the triple-bottom-line impacts of sectoral innovations and policy or regulatory interventions.

This report contributes to the first key objective through providing an overview of the current policy framework for the circular economy across the EU.

1.3 AIM OF THIS REPORT

The purpose of this report is to describe the context for all of the following elements of the study to develop and test indicators suggested in the Circular Economy Action Plan (CEAP) and the Green Deal and under Horizon Europe. It aims to develop a detailed, comprehensive, transparent and logical approach in line with the overall goals of the study. This requires an in-depth exploration of the regulatory, research & innovation and funding framework conditions and the objectives of the respective policies, in order to understand how the indicators to be developed will be used. This is also to ensure coherence and create synergies with ongoing Commission activities and studies in the fields of circular economy and environmental statistics.

The report provides an extensive overview of the relevant EU-level policy and funding framework. The overview is not just limited to waste management, but includes policy frameworks and objectives influencing the implementation of a circular economy in various value chains.

[1] As announced in the CEAP 2020, the Commission will update the Monitoring Framework for the Circular Economy. Relying on European statistics as much as possible, new indicators will take account of the focus areas in this action plan and of the interlinkages between circularity, climate neutrality and the zero pollution ambition.

[2] European Commission, n.d. Which indicators are used to monitor the progress towards a CE?

1.4 STRUCTURE OF THIS REPORT

This report is structured as follows:

- Section 2 describes the methodology of the analysis, including the desk-based research and interviews;
- Section 3 gives an overview of relevant targets and objectives in the policy framework of the respective value chains. Section 3.1 presents an overview of the European policy framework, followed from the policy framework of advanced Member States (Section 3.2) and an analysis of the funding framework on a European (Section 3.3) and national (Section 3.4) level;
- Section 4 presents conclusions from the analysis.

2. METHODOLOGY

This Section presents the key elements of the methodology adopted for defining the scope for the analysis (Section 2.1) as well as for the desk research and interviews (Section 2.2).

2.1 SCOPE FOR ANALYSIS ON LEGISLATION AND FUNDING SCHEMES

This Policy Framework Report aims to present a detailed overview of the knowledge gathered during the first phase of the project on the relevant framework conditions set by EU policies and funding schemes to enhance the circular economy transition. Building on the requirements of the study Terms of Reference, our Proposal as well as discussions held with DG RTD, the analysis focuses on:

1. The identification of objectives and targets influencing circularity that are included in the EU policies;
2. The identification of the main EU funding schemes relevant for circular economy investments;
3. The identification of policy and funding examples in a sample of Member States.

2.1.1 Scope for the analysis of targets and objectives legislation

For the purpose of facilitating the development of indicators, certain types of policy documents have been selected for review - either because of their strategic nature or because they include binding measures for Member States:

- **EU Strategies** and **EU Action Plans:** These specific types of EU Communications and Decisions were included based on their role in setting priorities and implementing EU policy.
- **EU Regulations:** Legislative acts applying automatically and uniformly to all EU countries as soon as they enter into force, without needing to be transposed into national law. They are binding in their entirety on all EU countries[3].
- **EU Directives:** Legislative acts that set out a goal that all EU countries must achieve. However, it is up to the individual countries to devise their own laws on how to reach these goals[4].

These four types of policy documents (i.e. EU Strategies, Action Plans, Directives and Regulations) were reviewed and text was extracted on the **objectives** (i.e., qualitative description of the direction to achieve the circular economy transition) and **targets** (i.e., specific and quantitative indication of the intended outcome supporting the achievement of the objectives) for the five policy (sub-)areas defined in the study Terms of Reference:

- Policy Area 1: Product value chains highlighted in the CEAP 2020:
    - **Electronics and Information and Communications Technology (ICT)** (see relevant EU definitions in *Box 3* below);
    - **Batteries and vehicles** (see relevant EU definitions in *Box 4* below);
    - **Packaging** (see relevant EU definitions in *Box 5* below);
    - **Plastics;**
    - **Textiles;**
    - **Construction and buildings** (see relevant EU definitions in *Box 6* below);
    - **Food, water and nutrients** (see relevant EU definitions in *Box 7* below).
- Policy Area 2: **Product-service-systems** (see relevant EU definitions in *Box 8* below).
- Policy Area 3: The **bioeconomy sector** as a whole and its subsectors (see relevant EU definitions in *Box 9* below).
- Policy Area 4: **Cities and regions** (see relevant EU definitions in *Box 10* below)**.**
- Policy Area 5: **Households:** We work with the assumption that 'municipal waste' includes household waste (i.e. that municipal waste is an aggregation of household waste for a particular territory). As

[3] Definitions of EU legal acts taken from: https://commission.europa.eu/law/law-making-process/types-eu-law_en
[4] Definitions of EU legal acts taken from: https://commission.europa.eu/law/law-making-process/types-eu-law_en

such, Section 3.1.5 (Households) focuses only on the consumer perspective as 'household waste' is already covered in Section 3.1.4 (Cities and regions).

The findings on objectives and targets for certain waste streams for the seven value chains specified in the CEAP 2020 have been repeated in two sections of this report: in Section 3.1.1 (providing an overview of the findings for that respective value chain) and Section 3.1.4 (on the specific waste streams falling under the definition of municipal waste).

2.1.2 Scope for the analysis of funding schemes

The scope for the analysis of relevant EU funding schemes for circular economy consisted of identifying the main EU funds relevant to finance investments in the circular economy transition, capturing the variety of funding types made available to beneficiaries. These notably included looking for schemes such as:

- Grants;
- Loans;
- Equity and quasi-equity;
- Guarantees;
- Advisory services and technical assistance.

See Section 3.3. for a description of these.

The box below provides an overview of the initiatives falling outside of the scope of our analysis on legislation and funding schemes.

Box 1 Initiatives excluded from the assessment on EU Legislation

There are some additional 'perspectives' which are not included in the five policy areas presented by the Terms of Reference. The following initiatives therefore fall outside the scope of this report:

- **Perspective of individual organisations:**
  - Commission Recommendation on the use of Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations (December 2021) [5]
    - the **EU Environmental Footprint methods** (both PEF[6] and OEF[7]) which represent '*the most reliable, comparable and verifiable way to know the real environmental footprint of a product or organisation to date. These methods will help to improve environmental performance and help achieve a truly clean and circular economy*'[8].
  - The Green Consumption Pledge companies are invited to take a voluntary pledge to support sustainable consumption, beyond what is required by law.
- **Perspective of industry:**
  - The Updated Industrial Strategy (May 2021); The individual Transition Pathways for EU industrial ecosystems, other than those listed for CEAP 2020 value chains (construction) as set out in the Updated Industrial Strategy (May 2021).
  - The Industrial Emissions Directive (IED), which lays down rules on integrated prevention and control of pollution arising from industrial activities. It also lays down rules designed to prevent or, where that is not practicable, to reduce emissions into air, water and land and to prevent the generation of waste, in order to achieve a high level of protection of the environment taken as a whole.
- In accordance with DG RTD, initiatives from the **Common Agricultural Policy** are excluded from the analysis on food, water and nutrients and bioeconomy areas.

2.2 APPROACH FOR DESK RESEARCH AND INTERVIEWS

Our research used a three-stage approach.

1. Excel templates were developed to **map and store** relevant findings on the Policy and Funding frameworks.
2. For the analysis, a **literature review** was conducted on the official policy documents (Strategies, Directives, Regulations and Action Plans) and only the policy and funding schemes with specific objectives and targets for circular transition were recorded.
3. **Interviews** were conducted as a complement to the desk research. They were used as a tool to fill in gaps, ask for the validation of the preliminary findings of the desk research as well as to collect additional information on the advanced national legislation and/or funding schemes. Potential interviewees were selected based on their positions and expected expertise in each of the policy sub-areas. Priority was given to those flagged by DG RTD (who were presented with a long list proposed by the consortium) as relevant for the study. See Appendix 3 for an overview of inputs to questionnaires for this study.

[5] C(2021) 9332 final: Commission Recommendation on the use of the Environmental Footprint Method the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations. Found at: https://environment.ec.europa.eu/system/files/2021-12/Commission%20Recommendation%20on%20the%20use%20of%20the%20Environmental%20Footprint%20methods_0.pdf

[6] The Environmental Footprint methods measure and communicate about the environmental performance of products (both goods and services) and organisations across their whole lifecycle, relying on scientifically sound assessment methods agreed at international level. They cover 16 environmental impacts, including climate change, and impacts related to water, air, resources, land use and toxicity. The general methods are complemented with product- or organisation- specific calculation rules enabling comparison of environmental performances between similar products and companies active in similar sectors.

[7] https://ec.europa.eu/environment/eussd/pdf/footprint/OEF%20Guide_final_July%202012_clean%20version.pdf

[8] https://environment.ec.europa.eu/news/environmental-footprint-methods-2021-12-16_en

The below specifies further details on the approaches taken for analysis on: the EU Policy Framework; EU Funding Framework, as well as for; the identification of a sample of Member States with advanced objectives and targets for circular economy.

2.2.1 Analysis of objectives and targets the EU Policy Framework

The below bullet points further detail the three-stage approach taken for the analysis of objectives and targets in the EU Policy Framework.

- **Mapping of EU legislation**: Policy areas were split among researchers. Each researcher mapped the EU Strategies, Action Plans and Legislation (i.e. Directives and Regulation) influencing circularity in their allocated policy areas and respective sub-areas. Proposals were also considered in this analysis: if these provisions are indeed adopted following negotiations with the co-legislators, this can also have a very significant impact. In the tables of results in Section 3.1, we have clearly indicated which of the pieces of legislation are at proposal stage. We have also included an overview in our conclusion. The final mapping can be seen in Appendix 1.
- **Literature review on EU legislation:** Based on the list of relevant policies identified for each area, researchers reviewed each document (the official EU Strategies, Action Plans, Directives and Regulations) to identify objectives and targets. They also identified relevant 'soft policy' measures to help achieve the objectives and targets influencing circularity set by the policies; these are included in the narrative above the tables of findings for each policy area.
- **Interviews on EU legislation:** European Commission Officers were approached to validate findings, clarify certain gaps as well as to identify examples of Member States with advanced targets, objectives and/or funding schemes. Interviewees were identified so that each policy sub-area was covered at least once. A template questionnaire was developed (see Appendix 2) and tailored for the specific questions of each sub-policy area. In the case where interviewees were identified as relevant for more than one policy sub-area, the questions were adapted so that they covered all of the relevant policy sub-areas. Interviewees received individual/personalised emails (with the tailored questionnaires attached). The interviews were conducted around the easter break (April 2023). In case policy officers were unavailable to interview, we encouraged them to share written answers or to suggest an alternative representative who had the expertise and availability to answer the questions. In total, 12 questionaries on objectives and targets in EU legislation were responded to (see overview in Appendix 3). Any experts identified as relevant for the discussion on indicators in Task 2 were noted for further consultation.

2.2.2 Analysis of the EU Funding Framework

The below bullet points further detail the three-stage approach taken for the analysis of objectives and targets the EU Funding Framework.

- **Mapping of the EU Funding Framework:** The mapping of relevant EU funds builds on the previous work conducted under the Urban Agenda Partnership for Circular Economy[9] and the Circular Cities and Regions and Initiative (CCRI)[10], two initiatives having centralised information on EU circular economy funding. Building on the Circular City Funding Guide[11] and the CCRI funding webpage, researchers compiled and mapped the existing relevant funding schemes.
- **Literature review on the EU Funding Framework:** Information extracted for these schemes included when available the total budget of the fund, the share dedicated to circular economy specifically, the type(s) of schemes covered as well as their relevance to the key value chains of the CEAP 2020.
- **Interviews on the EU Funding Framework:** The template questionnaire for the EU level interviews (see Appendix 2) included an overview of the findings of the desk research of EU Funding Framework. The EU level interviews (described in Section 2.2.1) asked the interviewees to identity gaps as well as the key funding schemes for the policy sub-area. Additionally, a dedicated interview was organised with the European Investment Bank (see overview of inputs received in Appendix 3).

[9] https://ec.europa.eu/futurium/en/node/1960.html
[10] https://circular-cities-and-regions.ec.europa.eu/about
[11] https://www.circularcityfundingguide.eu/

2.2.3 Analysing a sample objectives and targets in national strategies

This report also considers funding schemes and national legislation which go beyond what is currently required at the EU level. The below bullets further detail the approach taken for the analysis:

- **Mapping of the Member States:** It was agreed with DG RTD to set the initial focus on the EU Member States with the largest economies (i.e. Germany, France, Italy, Spain, NL, Poland), however other suggestions were encouraged in the interviews.
- **Literature review on the national policy and funding frameworks:** A literature review was conducted on any national level circular economy plans or strategies for the selected Member States. Furthermore, a mapping of national funding schemes was performed for the selected Member States, focusing on support provided by national or local governments.

The box below provides and overview of the challenges and limitations in the approach taken for desk research and interviews for this report.

Box 2 Challenges and limitations in the approach taken for desk research and interviews

The following are the limitations, challenges and solutions encountered when defining the scope of legislation and funding schemes for this report:

Literature review of legislation:

- Some proposals for (the revision of) EU legislation include objectives and targets for circular transition, however these are not yet official as the proposals are still being negotiated. In the tables of findings presented in Section 3, we have indicated which relevant pieces of legislation are at the proposal stage at the time of writing this report.

Literature review of funding:

- Difficulties were encountered in finding the budgets dedicated specifically to circular economy based on the limited information available. For example, in structural funds, Member States can specify areas in regional or thematic programmes. One needs detailed insights in these programmes to identify budgets allocated to circular economy.
- Little information was found on the type of schemes (i.e., grants, equity, etc) as usually descriptions provided on the funds mix all types of schemes.
- The two websites used as reference for this review offer a good overview on relevant funds for circular economy, but these databases are not updated regularly. Additional checks were performed through desk research (which provided limited additional information) and interviews (which provided the most comprehensive and up to date overview).
- Lack of a unified definition of circular activities/projects makes it harder to identify dedicated funding opportunities. An example related to this issue is that the funding options supported by the European Investment Bank do not explicitly target circular economy activities, but projects relevant to all value chains can apply for funding, hence the list of options presented is not exhaustive.

Interviews:

- The identification of relevant interviewees at EU level was done in collaboration with DG RTD. It was found that the Policy Officers who were originally identified as relevant, referred instead to other colleagues at the Commission who were better placed to answer the specific questions on objectives and targets.

3. FRAMEWORKS IN THE EU FOR CIRCULAR ECONOMY TRANSITION

This Chapter presents the key outcomes of the analysis of the study, giving an overview of the **objectives** and **targets** identified in EU Strategies, Action Plans and Legislation (i.e. Directives and Regulations) influencing circularity. Each subsection of the Chapter presents an overview of objectives and targets for one policy area, thus indicating the relevant policies for this area. Some policies have objectives and targets that are relevant for multiple areas and are thus mentioned multiple times. If in this case objectives and targets can be linked directly to one policy area, these will be specified in the respective overview, otherwise the general objectives and/or targets are presented in the policy area. Furthermore, it maps key objectives and targets identified in the policy framework of six Member States[12], as presented in section 2.2.3 and an outline of relevant funding schemes for a circular economy.

The chapter is structured as follows:

- Section 3.1 provides an overview of the objectives and targets influencing circularity in the European policy framework. Each subsection gives an outline of the five policy areas for this analysis, and the respective sub-areas as introduced in Section 2.1;
- Section 3.2 provides examples of objectives and targets in European Member States that have advanced policies targeting circularity;
- Section 3.3 provides an overview of European funding schemes relevant to the transition to a circular economy;
- Section 3.4 outlines funding schemes relevant to the transition to a circular economy in Member States that are advanced in supporting the transition to a circular economy.

3.1 POLICY FRAMEWORK: EU OBJECTIVES AND TARGETS FOR CIRCULAR TRANSITION

The Green Deal is the EU's growth strategy[13] and sets a clear target for EU policies to align to. It is a policy to address climate and environmental challenge, with a primary aim to make Europe the first climate-neutral continent by 2050. In the EU Green Deal, no singular, overarching target for circular transition across the EU has yet been set. Instead, the circular ambitions of the EU have been captured through the 2020 EU CEAP, as one of the main building blocks of the EU Green Deal. While there is only one quantitative target in the 2020 EU CEAP (the EU needs to "*strive to reduce its consumption footprint and double its circular material use rate in the coming decade*" - i.e. by 2030), the 2020 CEAP proposes new policy initiatives as well as the revision of existing Directives and Regulations currently target specific policy areas. While many of these (depicted in Appendix 4) have yet to be formally adopted, they bring forward new or revised objectives, and some targets, to push forward on circular transition in the EU.

The EU's long-term vision to 2050 is reiterated in the 8th Environment Action Programme (May 2022), which sets the EU's legally agreed common agenda for environment policy until 2030. It sets out priority objectives for 2030 and the conditions needed to achieve these. Building on the EU Green Deal, the action programme aims to speed up the transition to a climate-neutral, resource-efficient economy, recognising that human wellbeing and prosperity depend on healthy ecosystems.

Table 2 below provides an overview of the overarching EU targets and objectives for circular transition, which do not specifically apply to the five policy areas considered for this study.

Please note: the EU Policy framework for waste is not included in Table 2, but instead in Section 3.1.1 (providing an overview of the findings for that respective value chain) and Section 3.1.4 (on the specific waste streams falling under the definition of municipal waste).

[12] As agreed with DG RTD, the leading EU Member State with the largest economies were selected for the analysis on objectives, targets and funding schemes/framework influencing circular economy.

[13] https://ec.europa.eu/commission/presscorner/detail/en/ip_19_6691

Further objectives and targets in EU legislation have been mapped according to the five policy areas (see Appendix 5 for an overview). Each subsection presents the overview of one policy area:

- Section 3.1.1 presents an overview of the relevant objectives and targets for the key products value chains as described in the 2020 EU Circular economy action plan (CEAP);
- Section 3.1.2 describes the objectives and targets relevant to product service systems;
- Section 3.1.3 describes the objectives and targets relevant to the bioeconomy;
- Section 3.1.4 describes the objectives and targets relevant to cities and regions, and
- Section 3.1.5 describes the objectives and targets relevant to households as consumers.

Table 2 Overview of objectives and targets – general

Policy		Objectives	Targets
Action Plan (2020)	A new Circular Economy Action Plan For a cleaner and more competitive Europe	The new action plan announces initiatives along the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented and the resources used are kept in the EU economy for as long as possible. Measures that will be introduced under the new action plan aim to: • Make sustainable products the norm in the EU. • Empower consumers and public buyers. • Focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT, batteries and vehicles, packaging, plastics, textiles, construction and buildings, food, water and nutrients. • Ensure less waste. • Make circularity work for people, regions and cities. • Lead global efforts on circular economy.	To fulfil this ambition, the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and **double its circular material use rate in the coming decade.**
Action Plan (2022)	The 8th Environment Action Programme	The long-term priority objective is that, by 2050 at the latest, Europeans live well, within planetary boundaries, in a well-being economy where nothing is wasted. Growth will be regenerative, climate neutrality will be a reality, and inequalities will have been significantly reduced. Significantly decreasing the Union's material and consumption footprints to bring them into planetary boundaries as soon as possible, including through the introduction of Union 2030 reduction targets, as appropriate; There are six priority objectives to 2030: • Swift and predictable reduction of greenhouse gas emissions and, at the same time, enhancement of removals by natural sinks in the Union to attain the 2030 greenhouse gas emission reduction target as laid down in Regulation (EU) 2021/1119, in line with the Union's climate and environment objectives, whilst ensuring a just transition that leaves no one behind;	N/A

Policy		Objectives	Targets
		• Continuous progress in enhancing and mainstreaming adaptive capacity, including on the basis of ecosystem approaches, strengthening resilience and adaptation and reducing the vulnerability of the environment, society and all sectors of the economy to climate change, while improving prevention of, and preparedness for, weather- and climate-related disasters; • Advancing towards a well-being economy that gives back to the planet more than it takes and accelerating the transition to a non-toxic circular economy, where growth is regenerative, resources are used efficiently and sustainably, and the waste hierarchy is applied; • Pursuing zero pollution, including in relation to harmful chemicals, in order to achieve a toxic-free environment, including for air, water and soil, as well as in relation to light and noise pollution, and protecting the health and well-being of people, animals and ecosystems from environment-related risks and negative impacts; • Protecting, preserving and restoring marine and terrestrial biodiversity and the biodiversity of inland waters inside and outside protected areas by, inter alia, halting and reversing biodiversity loss and improving the state of ecosystems and their functions and the services they provide, and by improving the state of the environment, in particular air, water and soil, as well as by combating desertification and soil degradation; • Promoting environmental aspects of sustainability and significantly reducing key environmental and climate pressures related to the Union's production and consumption, in particular in the areas of energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system.	

Policy		Objectives	Targets
Regulation (2020)	Regulation on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088	It establishes the basis for the EU taxonomy by setting out four overarching conditions that an economic activity has to meet in order to qualify as environmentally sustainable: • compliance with the minimum safeguards of the OECD Guidelines on Multinational Enterprises; • compliance with the minimum safeguards of the UN Guiding Principles on Business and Human Rights; • make a substantial contribution to at least one of the six environmental objectives; • while doing no significant harm (DNSH) to any of them. For the purpose of determining the environmental sustainability of a given economic activity[14], an exhaustive list of environmental objectives should be laid down. The six environmental objectives that this Regulation should cover are: • climate change mitigation; • climate change adaptation; • the sustainable use and protection of water and marine resources; • the transition to a **circular economy**; • pollution prevention and control; and • the protection and restoration of biodiversity and ecosystems.	N/A

[14] "An economic activity can contribute substantially to the environmental objective of transitioning to a circular economy in several ways. It can, for example, increase the durability, reparability, upgradability and reusability of products, or can reduce the use of resources through the design and choice of materials, facilitating repurposing, disassembly and deconstruction in the buildings and construction sector, in particular to reduce the use of building materials and promote the reuse of building materials. It can also contribute substantially to the environmental objective of transitioning to a circular economy by developing 'product-as-a-service' business models and circular value chains, with the aim of keeping products, components and materials at their highest utility and value for as long as possible. Any reduction in the content of hazardous substances in materials and products throughout the life cycle, including by replacing them with safer alternatives, should, as a minimum, be in accordance with Union law. An economic activity can also contribute substantially to the environmental objective of transitioning to a circular economy by reducing food waste in the production, processing, manufacturing or distribution of food". Source: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R0852

Policy		Objectives	Targets
Action Plan (2018)	Action Plan on Sustainable Finance	The action plan set out a comprehensive strategy to further connect finance with sustainability. It included ten key actions: 1. Establishing a clear and detailed EU taxonomy, a classification system for sustainable activities. 2. Creating an EU Green Bond Standard and labels for green financial products 3. Fostering investment in sustainable projects 4. Incorporating sustainability in financial advice 5. Developing sustainability benchmarks 6. Better integrating sustainability in ratings and market research 7. Clarifying asset managers' and institutional investors' duties regarding sustainability 8. Introducing a 'green supporting factor' in the EU prudential rules for banks and insurance companies 9. Strengthening sustainability disclosure and accounting rule-making 10. Fostering sustainable corporate governance and attenuating short-termism in capital markets	N/A

3.1.1 EU CEAP 2020 – Key products value chains

This subsection presents an overview of the policy framework relevant to the areas listed as key product value chains in the CEAP. This subsection is structures as follows:

- Section 3.1.1.1 provides an overview relevant to the electronics and ICT value chain;
- Section 3.1.1.2 provides an overview relevant to the batteries and vehicles value chain;
- Section 3.1.1.3 provides an overview relevant to the packaging value chain;
- Section 3.1.1.5 provides an overview relevant to the textiles value chain;
- Section 3.1.1.6 provides an overview relevant to the construction and buildings value chain, and
- Section 3.1.1.7 provides an overview relevant to the food, water and nutrients value chain.

3.1.1.1 Electronics and ICT

This subsection presents an overview of the policy framework regarding the electronics and ICT value chain. The Box below provides key definitions of the policy area that are included in European Legislation.

Box 3 EU definitions for Electronics and ICT

The following are EU definitions for electronics and ICT:

- **Electrical and electronic equipment** or 'EEE' means equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields and designed for use with a voltage rating not exceeding 1,000 volts for alternating current and 1,500 volts for direct current (WEEE Directive, 2012)[15].
- **Waste electrical and electronic equipment** or 'WEEE' means electrical or electronic equipment which is waste within the meaning of Article 3(1) of Directive 2008/98/EC, including all components, sub-assemblies and consumables which are part of the product at the time of discarding.
- **WEEE from private households** means WEEE which comes from private households and WEEE which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households.

The policy framework for the value chains regarding **Electronics and ICT** as detailed in the Circular Economy Action Plan is shaped by:

- Chemicals Strategy for Sustainability: Towards a Toxic-Free Environment;
- Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)
- Directive 2008/98/EC (amended 2018) on waste and repealing certain Directives (Waste Framework Directive);
- Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment;
- Directive 2012/19/EU on waste electrical and electronic equipment (WEEE);
- Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency;
- Regulation (EC) No 1013/2006 on shipments of waste;
- Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products;
- Proposal for a Regulation establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020.

[15] Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)

Implementation of the REACH Regulation[16] has been an important step in mapping the environmental impact of electronic appliances and ICT. The regulation is currently under review and a proposal for a revision is expected in 2023. The current EU policy framework clearly establishes several **objectives** to make the electronics and ICT value chain more circular. Some of these key objectives are:

- *'Minimising the presence of substances of concern in products by introducing requirements';*
- *'The re-use, recycling and other forms of recovery of waste electrical and electronic equipment so as to reduce the disposal of waste and to contribute to the efficient use of resources and the retrieval of valuable secondary raw materials'*;
- *'Identifying strategic value chains in particular for technologies and applications relevant for the green and digital transition where critical chemicals are important building blocks'*.

The **targets** set by the different legislation focus on reducing use of hazardous substances in electronic appliances.

The detailed objectives and targets per policy are presented in Table 3.

[16] Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency

Table 3 Overview of objectives and targets – CEAP 2020 Electronics and ICT value chain

Policy		Objectives	Targets
Strategy (2020)	Chemicals Strategy for Sustainability Towards a Toxic-Free Environment	• Ensuring the development, commercialisation, deployment and uptake of safe and sustainable-by-design substances, materials and products. • Minimising the presence of substances of concern in products by introducing requirements, also as part of the Sustainable Product Policy Initiative, giving priority to those product categories that affect vulnerable populations as well as those with the highest potential for **circularity**[17]. • Supporting research and development in advanced materials for applications in the energy, construction, mobility, health, agriculture and electronics sectors to deliver the green and digital transition. • Increasing the current deployment rate of available technologies for manufacturing purposes such as internet of things, big data, artificial intelligence, automation, smart sensors and robotics. • Identifying strategic value chains in particular for technologies and applications relevant for the green and digital transition where critical chemicals are important building blocks	N/A

[17] Strategy provides the following examples: '*textiles, packaging including food packaging, furniture, electronics and ICT, construction and buildings*'

Policy		Objectives	Targets
Directive (2002)	Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)	• Encourage the design and production of electrical and electronic equipment which take into account and facilitate dismantling and recovery, in particular the re-use and recycling of WEEE, their components and materials. • Separate collection is the precondition to ensure specific treatment and recycling of WEEE and is necessary to achieve the chosen level of protection of human health and the environment in the Community	• Target introduced of a collection of WEEE of 4 kg per person per year from private households in 2010
Directive (2008)	Directive 2008/98/EC on waste and repealing certain Directives	• The introduction of extended producer responsibility to support the design and production of goods which take into full account and facilitate the efficient use of resources during their **whole life-cycle** including their **repair, re-use, disassembly** and **recycling** (cradle to grave approach). The Directive also bans the mixing of hazardous waste with other categories of waste. • Account for **recycled** and **recovered** waste the amounts of waste which have ceased to be waste when the **recycling or recovery** requirements of legislations, such as WEEE, are satisfied. • Adopt guidelines to **promote certainty and consistency and to specify in certain cases when substances or objects become waste**, especially for electrical and electronic equipment and vehicles.	N/A
Directive (2011)	Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment	• Laying down rules on the restriction of the use of hazardous substances in electrical and electronic equipment (EEE) with a view to contributing to the protection of human health and the environment, including the environmentally sound **recovery** and disposal of waste EEE.	• For the purposes of this Directive, no more than the maximum concentration value by weight in homogeneous materials as specified in Annex II shall be tolerated.

Policy		Objectives	Targets
Directive (2012)	Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)	• Contributing to sustainable production and consumption by, as a first priority, the prevention of WEEE and, in addition, by the **re-use, recycling** and other forms of **recovery** of such wastes so as to **reduce** the disposal of waste and to contribute to the efficient use of resources and the retrieval of valuable secondary raw materials.	• Each Member State shall ensure the implementation of the '**producer responsibility'** principle and, on that basis, that a minimum collection rate is achieved annually. • From 2016, the **minimum collection rate** shall be 45 % calculated on the basis of the total weight of WEEE collected in a given year in the Member State concerned, expressed as a percentage of the average weight of WEEE placed on the market in the three preceding years in that Member State. • From 2019, the **minimum collection rate** to be achieved annually shall be 65 % of the average weight of WEEE placed on the market in the three preceding years in the Member State concerned, or alternatively 85 % of WEEE generated on the territory of that Member State. • Regarding all WEEE separately collected and sent for treatment Member States shall ensure that producers meet the following minimum targets set out in Annex V[18].
Regulation (2006)	Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency	• Ensuring a high level of protection of human health and the environment, including the promotion of alternative methods for assessment of hazards of substances, as well as the free circulation of substances on the internal market while enhancing competitiveness and innovation.	N/A

[18] Annex V of Directive 2012/19/EU gives minimum recovery and recycling targets for specific product categories. This means that for example, for large household appliances such as refrigerators, at least 80% shall be recovered and 75% shall be recycled from 13 August 2012. From 15 August 2015, for large household appliances such as refrigerators, at least 85% shall be recovered and 80% shall be prepared for re-use and recycled. From 15 August 2018 onwards, for large household appliances such as refrigerators, at least 85% shall be recovered and 80% shall be prepared for re-use and recycled.

Policy		Objectives	Targets
	Regulation (EC) No 1013/2006 on shipments of waste	• The Regulation aims at limiting the export of WEEE. The person arranging the shipment of waste, such as electronic waste, must ensure that the waste is accompanied by a document (Annex VII) to assist with tracking. The contract between the person arranging the shipment and the consignee must include an **obligation to take the waste back** or ensure its recovery in an alternative way if the shipment cannot be completed or if it is an illegal shipment. The contract must also provide for storage if necessary. Member states can require information on shipments for inspection, enforcement, planning, and statistical purposes.	N/A
Proposal for a Regulation (2022)	Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products	• Improving the environmental sustainability of products have already emerged, ranging from information requirements on the duration of software compatibility of electronic devices to reporting obligations on handling unsold **durable** goods. • Establishing horizontal ecodesign requirements where the technical similarities of product groups (such as textiles and electronic appliances) allow their environmental sustainability to be improved based on the same requirements.	N/A

Policy		Objectives	Targets
Proposal for a Regulation (2023)	Proposal for a Regulation establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020	• Strengthening the different stages of the strategic raw materials value chain with a view to ensure that, by 2030, Union capacities for each strategic raw material[19] have significantly increased. • Improving the Union's ability to monitor and mitigate the supply risk related to critical raw materials[20]; • Ensuring the free movement of critical raw materials and products containing critical raw materials placed on the Union market while ensuring a high level of environmental protection, by improving their **circularity** and sustainability.	• Union extraction capacity is able to extract the ores, minerals or concentrates needed to produce at least 10% of the Union's annual consumption of strategic raw materials, to the extent that the Union's reserves allow for this; • Union processing capacity, including for all intermediate processing steps, is able to produce at least 40% of the Union's annual consumption of strategic raw materials; • Union **recycling** capacity, including for all intermediate recycling steps, is able to produce at least 15% of the Union's annual consumption of strategic raw materials. • Diversify the Union's imports of strategic raw materials with a view to ensure that, by 2030, the Union's annual consumption of each strategic raw material at any relevant stage of processing can rely on imports from several third countries, none of which provide more than 65% of the Union's annual consumption;

[19] Annex I, Section 1 presents a list of raw materials that should be considered strategic raw materials, such as: cobalt, copper and lithium.

[20] Annex II, Section 1 presents a list of raw materials that should be considered critical raw materials, such as: bauxite, magnesium, and phosphorus.

3.1.1.2 Batteries (and accumulators) and vehicles

This subsection presents an overview of the policy framework regarding the batteries (and accumulators) and vehicles value chain. The Box below provides key definitions of the policy area that are included in European Legislation.

Box 4 EU definitions for Batteries (and accumulators) and vehicles

The following are EU definitions for batteries (and accumulators) and vehicles:

- **'Battery'** or **'accumulator'** means any source of electrical energy generated by direct conversion of chemical energy and consisting of one or more primary battery cells (non-rechargeable) or consisting of one or more secondary battery cells (rechargeable) (Battery Directive, 2006);[21]
- '**Automotive battery** or **accumulator'** means any battery or accumulator used for automotive starter, lighting or ignition power;
- '**Waste battery** or **accumulator'** means any battery or accumulator which is waste within the meaning of Article 1(1)(a) of Directive 2006/12/EC;
- '**Vehicle**' means any vehicle designated as category M1 or N1 defined in Annex IIA to Directive 70/156/EEC, and three-wheel motor vehicles as defined in Directive 92/61/EEC, but excluding motor tricycles (End-of-life vehicles Directive, 2000)[22];
- '**End-of life vehicle**' means a vehicle which is waste within the meaning of Article 1(a) of Directive 75/442/EEC (End-of-life vehicles Directive, 2000).

The policy framework for the value chains regarding **Batteries and vehicles** is shaped by:

- Sustainable and Smart Mobility Strategy – putting European transport on track for the Future;
- Strategic Action Plan on Batteries: Building a Strategic Battery Value Chain in Europe;
- Directive 2000/53/EC on end-of life vehicles;
- Directive 2005/64/EC on the type-approval of motor vehicles with regard to their reusability, recyclability and recoverability and amending Council Directive 70/156/EEC
- Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators;
- Directive 2008/98/EC (amended 2018) on waste and repealing certain Directives (Waste Framework Directive);
- Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles;
- Directive (EU) 2019/1161 amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles;
- Regulation (EU) 493/2012 of laying down, pursuant to Directive 2006/66/EC detailed rules regarding the calculation of recycling efficiencies of the recycling processes of waste batteries and accumulators;
- Regulation (EU) 2019/631 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles;
- Proposal for a Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020;
- Proposal for a Regulation establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020.

The current EU policy framework clearly establishes several **objectives** to make the batteries and vehicles value chain more circular. Some of these key objectives are:

[21] Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC.

[22] Directive 2000/53/EC on end-of life vehicles.

- *'Building a battery value chain in Europe, embracing raw materials extraction, sourcing and processing, battery materials, cell production, battery systems, as well as re-use and recycling';*
- *'Improving the environmental performance of batteries and accumulators';*
- *'Establishing CO2 emissions performance requirements for new passenger cars and for new light commercial vehicles'.*

The **targets** set by the different legislation focus on reuse and recovery of vehicles and batteries, restriction of CO2 emissions of vehicles, and collection, recovery and reuse of materials in batteries.

The detailed objectives and targets per policy are detailed in Table 4.

Table 4 Overview of objectives and targets – CEAP 2020 Batteries (including accumulators) and vehicles value chain

Policy		Objectives	Targets
Strategy (2020)	Sustainable and Smart Mobility Strategy – putting European transport on track for the Future	• Boosting the uptake of low- and zero-emission vehicles as well as renewable and low-carbon fuels and related infrastructure; • Making interurban and urban mobility more sustainable and healthier; • Greening freight transport; • Pricing carbon and providing better incentives for users to drive the transition to zero-emission mobility; • Making connected and automated multimodal mobility a reality.	• By 2030, at least 30 million zero-emission cars and 80,000 zero-emission lorries will be in operation on European roads. • By 2050, nearly all cars, vans, buses as well as new heavy-duty vehicles will be zero-emission. • By 2030, scheduled collective travel under 500 km within the EU should is carbon neutral. • By 2030, there will be at least 100 climate-neutral cities in Europe.
Action Plan (2019)	Strategic Action Plan on Batteries: Building a Strategic Battery Value Chain in Europe	• Building a battery value chain in Europe, embracing raw materials extraction, sourcing and processing, battery materials, cell production, battery systems, as well as **re-use and recycling**; • Supporting the demand for batteries from the drive for clean mobility, storage for renewable energy; • Overcoming Europe's energy and raw material dependency.	N/A

Policy		Objectives	Targets
Directive (2000)	Directive 2000/53/EC on end-of life vehicles	• Preventing and **limiting waste** from end-of-life vehicles and their components; • Improving the environmental performance of all economic operators involved in the **life-cycle** of vehicles.	• By 2006, for all end-of life vehicles, the **reuse and recovery** shall be increased to a minimum of 85% by an average weight per vehicle and year. Within the same time limit the reuse and recycling shall be increased to a minimum of 80% by an average weight per vehicle and year; for vehicles produced before 1 January 1980, Member States may lay down lower targets, but not lower than 75 % for **reuse and recovery** and not lower than 70 % for reuse and **recycling.** • By 2015, for all end-of life vehicles, the **reuse and recovery shall** be increased to a minimum of 95 % by an average weight per vehicle and year. Within the same time limit, the **re-use and recycling** shall be increased to a minimum of 85% by an average weight per vehicle and year.
Directive (2005)	Directive 2005/64/EC on the type-approval of motor vehicles with regard to their reusability, recyclability and recoverability and amending Council Directive 70/156/EEC	• Laying down the administrative and technical provisions for the type-approval of vehicles with a view to ensuring that their component parts and materials can be **reused, recycled and recovered** in minimum percentages.	• Vehicles belonging to category M1 and those belonging to category N1 shall be so constructed as to be: i) **reusable and/or recyclable** to a minimum of 85 % by mass, and ii) **reusable and/or recoverable** to a minimum of 95 % by mass. • The component parts listed in Annex V shall: (a) be deemed to be non-reusable for the purposes of calculating the recyclability and recoverability rates; and (b) not be reused in the construction of vehicles covered by Directive 70/156/EEC[23].

[23] Annex V addresses the component parts of vehicles belonging to category M1 and those belonging to category N1 which must not be reused in the construction of new vehicles, such as: airbags, automatic or non-automatic seat belt assemblies, and emission after-treatment systems.

Policy		Objectives	Targets
Directive (2006)	Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators	• Improving the environmental performance of batteries and accumulators and of the activities of all economic operators involved in the life cycle of batteries and accumulators, e.g. producers, distributors and end-users and, in particular, those operators directly involved in the treatment and **recycling** of waste batteries and accumulators.	• Member States shall achieve the following minimum collection rates: (a) 25 % by 26 September 2012; (b) 45 % by 26 September 2016
Directive (2008)	Directive 2008/98/EC on waste and repealing certain Directives	• The introduction of extended producer responsibility to support the design and production of goods which take into full account and facilitate the efficient use of resources during their **whole life-cycle** including their **repair, re-use, disassembly** and **recycling** (cradle to grave approach). The Directive also bans the mixing of hazardous waste with other categories of waste. • Account for **recycled** and **recovered** waste the amounts of waste which have ceased to be waste when the **recycling or recovery** requirements of legislations, such as WEEE, are satisfied. • Adopt guidelines to **promote certainty and consistency and to specify in certain cases when substances or objects become waste**, especially for electrical and electronic equipment and vehicles.	N/A

Policy		Objectives	Targets
Directive (2009)	Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles	• Requiring contracting authorities, contracting entities as well as certain operators to consider lifetime energy and environmental impacts, including energy consumption and emissions of CO2 and of certain pollutants, when purchasing road transport vehicles with the objectives of promoting and stimulating the market for clean and energy-efficient vehicles and improving the contribution of the transport sector to the environment, climate and energy policies of the Community.	N/A
Directive (2019)	Directive (EU) 2019/1161 amending Directive 2009/33/EC on the promotion of clean and energy-efficient road transport vehicles	• Requiring contracting authorities, contracting entities as well as certain operators to consider lifetime energy and environmental impacts, including energy consumption and emissions of CO2 and of certain pollutants, when purchasing road transport vehicles with the objectives of promoting and stimulating the market for clean and energy-efficient vehicles and improving the contribution of the transport sector to the environment, climate and energy policies of the Community.	• Revised definition of clean vehicles: Clean light-duty vehicle: any car or van meeting the following emission thresholds: until 31 December 2025: no more than 50g/km CO2 and up to 80% of applicable real driving emission (RDE) limits for NOx and PN; from 1 January 2026: only zero-emission vehicles; • National targets are defined as a minimum percentage of clean vehicles in the aggregate public procurement across a Member State. The targets are found in the Annex.
Regulation (2012)	Regulation (EU) 493/2012 of laying down, pursuant to Directive 2006/66/EC detailed rules regarding the calculation of recycling efficiencies of the recycling processes of waste batteries and accumulators	• Detailing rules supplementing Annex III, Part B to Directive 2006/66/EC for calculating **recycling** efficiencies.	N/A

Policy		Objectives	Targets
Regulation (2019)	Regulation (EU) 2019/631 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles	• Establishing CO2 emissions performance requirements for new passenger cars and for new light commercial vehicles in order to contribute to achieving the Union's target of reducing its greenhouse gas emissions.	• By 2020, the EU fleet-wide CO2 emission of cars equals to 95g CO2/km; the EU fleet-wide CO2 emission of vans equals to 147g CO2/km; • By 2025, the EU fleet-wide CO2 emissions of cars are reduced by 15%; the EU fleet-wide CO2 emissions of vans are reduced by 15%. • By 2030, the EU fleet-wide CO2 emissions of cars are reduced by 37.5%; the EU fleet-wide CO2 emissions of vans are reduced by 31%.
Proposal for a Regulation (2020)	Proposal for a Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020	• Strengthening the functioning of the internal market (including products, processes, waste batteries and **recyclates**), by ensuring a level playing field through a common set of rules; • Promoting a **circular economy**; • Reducing environmental and social impacts throughout all stages of the **battery life cycle.**	• In addition to the restrictions set out in Annex XVII of Regulation (EC) No 1907/2006, batteries shall not contain hazardous substances for which Annex I contains a restriction unless they comply with the conditions of that restriction; • By 2030, industrial batteries, electric vehicle batteries and automotive batteries with internal storage and a capacity above 2 kWh contain the following minimum share of cobalt, lead, lithium or nickel **recovered** from waste present in active materials in each battery model and batch per manufacturing plant: (a) 12% cobalt; (b) 85% lead; (c) 4% lithium; (d) 4% nickel; • By 2035, industrial batteries, electric vehicle batteries and automotive batteries with internal storage and a capacity above 2 kWh contain the following minimum share of cobalt, lead, lithium or nickel recovered from waste present in active materials in each battery model and batch per manufacturing plant: (a) 20% cobalt; (b) 85 % lead; (c) 10% lithium; (d) 12% nickel; • Member States shall achieve the following **minimum collection targets for waste** portable batteries, excluding waste batteries from light means of transport: (a) 45 % by 31 December 2023; (b) 65 % by 31 December 2025; (c) 70 % by 31 December 2030.

Policy		Objectives	Targets
Proposal for a Regulation (2023)	Proposal for a Regulation establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020	• Strengthening the different stages of the strategic raw materials value chain with a view to ensure that, by 2030, Union capacities for each strategic raw material[24] have significantly increased. • Improving the Union's ability to monitor and mitigate the supply risk related to critical raw materials[25]; • Ensuring the free movement of critical raw materials and products containing critical raw materials placed on the Union market while ensuring a high level of environmental protection, by improving their **circularity** and sustainability.	• Union extraction capacity is able to extract the ores, minerals or concentrates needed to produce at least 10% of the Union's annual consumption of strategic raw materials, to the extent that the Union's reserves allow for this; • Union processing capacity, including for all intermediate processing steps, is able to produce at least 40% of the Union's annual consumption of strategic raw materials; • Union **recycling** capacity, including for all intermediate recycling steps, is able to produce at least 15% of the Union's annual consumption of strategic raw materials; • Diversify the Union's imports of strategic raw materials with a view to ensure that, by 2030, the Union's annual consumption of each strategic raw material at any relevant stage of processing can rely on imports from several third countries, none of which provide more than 65% of the Union's annual consumption.

[24] Annex I, Section 1 presents a list of raw materials that should be considered strategic raw materials, such as: cobalt, copper and lithium.

[25] Annex II, Section 1 presents a list of raw materials that should be considered critical raw materials, such as: bauxite, magnesium, and phosphorus.

3.1.1.3 Packaging

This subsection presents an overview of the policy framework regarding the packaging value chain. The Box below provides key definitions of the policy area that are included in European Legislation.

Box 5 EU definitions for Packaging

The following are EU definitions for packaging:

- **Packaging:** is defined as 'all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer. 'Non-returnable` items used for the same purposes shall also be considered to constitute packaging.' **(Directive (EU) 94/62/EC on packaging and packaging waste, 1994).**[26]

The policy framework for the **Packaging** value chain as detailed in the CEAP is shaped by:

- the **Chemicals Strategy for Sustainability - Towards a Toxic-Free Environment**[27] which aims to '*minimise the presence of substances of concern in products such as packaging and food packaging'*;
- the **Waste Framework Directive**[28] adopted in 2008 OBJ'*encourage the re-use of products and the setting up of systems promoting repair and re-use activities, including in particular packaging';* ;
- the **Directive (EU) 2018/852 amending Directive 94/62/EC on packaging and packaging waste**[29] adopted in 2018. This Directive aims to '*prevent the production of packaging waste first and as an additional principle, to promote the reuse, recycling and more largely the recovering of packaging waste to reduce the disposal of waste*'.

The Directive (EU) 2018/852 could be strengthened with the **Proposal for a Regulation on packaging and packaging waste**[30] put forward by the European Commission in 2022, which aims to '*establish requirements for the entire life cycle of packaging as regards environmental sustainability and labelling to allow its placing on the market, as well as for the extended producer responsibility, collection, treatment and recycling of packaging waste*'.

These policies are complemented with a set of legislation targeting plastic packaging more specifically. These notably include:

- The European Strategy for Plastics in a Circular Economy[31] ;
- The Directive 2019/904 on the reduction of the impact of certain plastic products on the environment[32].

Other relevant policies specifically targeted at (single use) plastic packaging and packaging waste are respectively detailed in Section 3.1.1.4 and Sections 3.1.4 and 3.1.5.

The **targets** set by the different legislations notably focus on increasing the recycling of packaging waste and plastic packaging and increase reusable packaging in the hospitality industry and transport sector. They also aim to increase the re-use and recycling of municipal waste, ensure the separate collection for paper, metal, plastic and glass and could introduce new requirements notably on household appliances and beverage packaging through the proposal for a Regulation.

The detailed objectives and targets per policy are detailed in Table 5

[26] Directive 94/62/EC on packaging and packaging waste
[27] COM(2020) 667 final, Chemicals Strategy for Sustainability
[28] DIRECTIVE 2008/98/EC on waste
[29] DIRECTIVE (EU) 2018/852 amending Directive 94/62/EC on packaging and packaging waste
[30] COM(2022) 677 final, Proposal for a regulation on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC
[31] COM(2018) 28 final, A European Strategy for Plastics in a Circular Economy
[32] DIRECTIVE (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment

Table 5 Overview of objectives and targets – CEAP 2020 Packaging value chain

Policy		Objectives	Targets
Strategy (2020)	Chemicals Strategy for Sustainability - Towards a Toxic-Free Environment	• Minimise the presence of substances of concern in products by introducing requirements, also as part of the Sustainable Product Policy Initiative, giving priority to those product categories that affect vulnerable populations as well as those with the highest potential for **circularity**, such as textiles, packaging including food packaging, furniture, electronics and ICT, construction and buildings; • Ensure availability of information on chemical content and safe use; • Develop methodologies for chemical risk assessment that take into account the **whole life cycle** of substances, materials and products.	• N/A

Policy		Objectives	Targets
Directive (2018)	Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste	• This amendment to the Directive aims specifically to prevent the production of packaging waste first and as an additional principle, to promote the **reuse**, **recycling** and more largely the **recovering** of packaging waste to **reduce** the disposal of waste and therefore contribute to the transition towards a circular economy – Article 1.	• No later than 31 December 2025 a minimum of 65 % by weight of all packaging waste will be **recycled** – Article 6 • No later than 31 December 2025 the following minimum targets by weight for **recycling** will be met regarding the following specific materials contained in packaging waste: ○ 50 % of plastic; ○ 25 % of wood; ○ 70 % of ferrous metals; ○ 50 % of aluminium; ○ 70 % of glass; ○ 75 % of paper and cardboard; – Article 6. • No later than 31 December 2030 a minimum of 70 % by weight of all packaging waste will be **recycled**; – Article 6. • No later than 31 December 2030 the following minimum targets by weight for **recycling** will be met regarding the following specific materials contained in packaging waste: ○ 55 % of plastic; ○ 30 % of wood; ○ 80 % of ferrous metals; ○ 60 % of aluminium; ○ 75 % of glass; • 85 % of paper and cardboard – Article 6.

Policy		Objectives	Targets
Directive (2008, amended in 2018)	Waste Framework Directive	• Encourage the **re-use** of products and the setting up of systems promoting **repair and re-use** activities, including in particular packaging.	• In order to comply with the objectives of this Directive, and move towards a European **recycling** society with a high level of resource efficiency, Member States shall take the necessary measures designed to achieve the following targets: o by 2020, the preparing for re-use and the **recycling** of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50 % by weight – Article 11. • By 2025, the preparing for **re-use** and the **recycling** of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively – Article 11. • Subject to Article 10(2) and (3), Member States shall set up separate collection at least for paper, metal, plastic and glass,– Article 11.
Proposal for Regulation (2022)	Proposal for a Regulation on packaging and packaging waste amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC	• Establish requirements for the **entire life cycle** of packaging as regards environmental sustainability and labelling, to allow its placing on the market, as well as for the extended producer responsibility, collection, treatment and recycling of packaging waste – Article 1.	• Economic operators who supply products to a final distributor or an end user in grouped packaging, transport packaging or e-commerce packaging, **shall ensure that the empty space ratio is maximum 40 % - Article 21.** • From 1 January 2030, economic operators making large household appliances listed in point 2 of Annex II to Directive 2012/19/EU available on the market for the first time within the territory of a Member State shall ensure that 90 % of those products are made available in **reusable** transport packaging within a system for re-use – Article 26. • The manufacturer and the final distributor making available on the market within the territory of a Member State in sales packaging alcoholic beverages [except wine] shall ensure that: o (a) from 1 January 2030, 10 % of those products are made available in **reusable** packaging within a system for re-use or by enabling **refill;**

Policy		Objectives	Targets
			○ (b) from 1 January 2040, 25 % of those products are made available in reusable packaging within a system for re-use or by enabling **refill** – Article 26. • The manufacturer and the final distributor making available on the market within the territory of a Member State in sales packaging alcoholic beverages in the form of wine, with the exception of sparkling wine, shall ensure that: ○ (a) from 1 January 2030, 5 % of those products are made available in **reusable** packaging within a system for re-use or by enabling **refill;** ○ (b) from 1 January 2040, 15 % of those products are made available in reusable packaging within a system for **re-use** or by enabling refill – Article 26. • The manufacturer and the final distributor making available on the market within the territory of a Member State in sales packaging non-alcoholic beverages shall ensure that: ○ (a) from 1 January 2030, 10 % of those products are made available in reusable packaging within a system for re-use or by enabling refill; ○ (b) from 1 January 2040, 25 % of those products are made available in reusable packaging within a system for re-use or by enabling refill – Article 26. • The final distributor making available on the market within the territory of a Member State in sales packaging cold or hot beverages filled into a container at the point of sale for take-away shall ensure that: (a) from 1 January 2030, 20 % of those beverages are made available in reusable packaging within a system for re-use or by enabling refill;

Policy		Objectives	Targets
			○ (b) from 1 January 2040, 80 % of those beverages are made available in reusable packaging within a system for re-use or by enabling refill – Article 26; • A final distributor that is conducting its business activity in the HORECA sector and that is making available on the market within the territory of a Member State in sales packaging take-away ready-prepared food, intended for immediate consumption shall ensure that: ○ from 1 January 2030, 10 % of those products are made available in reusable packaging within a system for re-use or by enabling refill; ○ from 1 January 2040, 40 % of those products are made available in reusable packaging within a system for re-use or by enabling refill – Article 26. • Economic operators using transport packaging in the form of pallets, plastic crates, foldable plastic boxes, pails and drums for the conveyance shall ensure that: ○ from 1 January 2030, 30 % of such packaging used is reusable packaging within a system for re-use; ○ from 1 January 2040, 90 % of such packaging used is reusable packaging within a system for re-use – Article 26. • Economic operators using transport packaging for the transport and delivery of non-food items made available on the market for the first time via e-commerce shall ensure that: ○ from 1 January 2030, 10 % of such packaging used is reusable packaging within a system for re-use; ○ from 1 January 2040, 50 % of such packaging used is reusable packaging within a system for re-use – Article 26. • Economic operators using transport packaging in the form of pallet wrappings and straps for stabilization and protection of products: ○ from 1 January 2030, 10 % of such packaging used is reusable packaging within a system for re-use;

Policy		Objectives	Targets
			○ from 1 January 2040, 30 % of such packaging used for transport is reusable packaging within a system for re-use – Article 26. • Economic operators using grouped packaging in the form of boxes shall ensure that: ○ (a) from 1 January 2030, 10 % of such packaging used is reusable packaging within a system for re-use; ○ (b) from 1 January 2040, 25 % of such packaging they used is reusable packaging within a system for re-use – Article 26. • Each Member State shall **reduce** the packaging waste generated per capita, as compared to the packaging waste generated per capita in 2018 as reported to the Commission in accordance with Decision 2005/270/EC, by: ○ (a) 5 % by 2030; ○ (b) 10 % by 2035; ○ (c) 15 % by 2040 – Article 38. • By 1 January 2029, Member States shall take the necessary measures to ensure that deposit and return systems are set up for: ○ (a) single use plastic beverage bottles with the capacity of up to three litres; and ○ (b) single use metal beverage containers with a capacity of up to three litres – Article 44. • The proposed regulation also refers to the recycling targets set by Article 6 of Directive (EU) 2018/852 as detailed above in this table – Article 46.

Policy		Objectives	Targets
Strategy (COM in 2018, adoption in 2020)	The European Strategy for Plastics in a Circular Economy	• The design and production of plastics and plastic products fully respect **reuse, repair and recycling** needs and more sustainable materials are developed and promoted.	• By 2030, all plastics packaging placed on the EU market is either **reusable** or can be **recycled** in a cost-effective manner.
Directive (2019)	Directive 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment	• Prevent and **reduce** the impact of certain plastic products on the environment, in particular the aquatic environment, and on human health – Article 1 • Promote the transition to a circular economy with innovative and sustainable business models, products and materials – Article 1.	• With regard to beverage bottles listed in Part F of the Annex, each Member State shall ensure that: ○ from 2025, beverage bottles listed in Part F of the Annex which are manufactured from polyethylene terephthalate as the major component ('PET bottles') contain at least 25 % **recycled** plastic, calculated as an average for all PET bottles placed on the market on the territory of that Member State; and ○ from 2030, beverage bottles listed in Part F of the Annex contain at least 30 % **recycled** plastic, calculated as an average for all such beverage bottles placed on the market on the territory of that Member State. – Article 6.

3.1.1.4 Plastics

This subsection presents an overview of the policy framework regarding the plastics value chain. The Box below provides key definitions of the policy area that are included in European Legislation.

Box 6 EU definitions for plastics

The following are EU definitions for plastics:

- **Plastic** is defined as "a material consisting of a polymer to which additives or other substances may have been added, and which can function as a main structural component of final products, with the exception of natural polymers that have not been chemically modified". **(Directive on the reduction of the impact of certain plastic products on the environment, 2019).**
- **Single-use plastic product** is defined as "a product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to a producer for refill or re-used for the same purpose for which it was conceived". **(Directive on the reduction of the impact of certain plastic products on the environment, 2019).**

The policy framework for the **Plastics** value chain as detailed in the CEAP has been reinforced with the **European Strategy for Plastics in a Circular Economy adopted in 2020** which aims to '*accelerate the reduction of plastic waste and improve the circularity across the value chain'*.[33] While the consumption of lightweight plastic carrier bags was already considered since 2015 with clear objectives and targets[34], the strategy for plastics is complemented by four main relevant policies that are aiming to make the plastics value chain more circular:

- The Chemicals Strategy for Sustainability - Towards a Toxic-Free Environment;[35]
- The Zero Pollution Action Plan;[36]
- The Directive 2019/904 on the reduction of the impact of certain plastic products on the environment;[37]
- The Regulation 2022/1616 on recycled plastic materials and articles intended to come into contact with foods;[38]
- The Delegated Regulation (EU) 2020/2174 on the shipments of waste;[39]
- The proposal for a Regulation on packaging and packaging.[40]

Another relevant initiative is the **Circular Plastics Alliance[41],** which has committed to boosting the EU market for recycled plastics to 10 million tonnes by 2025. While not legislation, the alliance is a voluntary initiative that covers the full plastics value chains and includes over 300 organisations representing industry, academia and public authorities. Other relevant policies specifically targeted at bio-based plastics are detailed further below in the respective section of this report.

[33] COM(2018) 28 final, A European Strategy for Plastics in a Circular Economy
[34] DIRECTIVE (EU) 2015/720 as regards reducing the consumption of lightweight plastic carrier bags
[35] COM(2020) 667 final, Chemicals Strategy for Sustainability
[36] COM(2021) 400 final, EU Action Plan : 'Towards Zero Pollution for Air, Water and Soil'
[37] DIRECTIVE (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment
[38] REGULATION (EU) 2022/1616 on recycled plastic materials and articles intended to come into contact with foods
[39] COMMISSION DELEGATED REGULATION (EU) 2020/2174 on shipment of waste
[40] COM(2022) 677 final, Proposal for a Regulation on packaging and packaging waste
[41] Commitments and deliverables of the Circular Plastics Alliance (europa.eu)

The current EU policy framework clearly establishes several **objectives** to make the plastics value chain more circular. Some of these objectives aim for example to:

- *'Prevent and curb plastic pollution and its adverse impacts on our health and the environment';*
- *'Better design and increase circularity in the production, use and disposal of plastics';*
- *'Promote the transition to a circular economy with innovative and sustainable business models, products and materials';*
- *'Control more strictly imports and exports plastic waste from/to third countries'.*

Additionally, the **Waste Framework Directive**[42] adopted in 2008`(last amended in 2018) '*encourages the re-use of products and the setting up of systems promoting repair and re-use activities'*;

The **targets** set by the different legislation focus on reducing plastic packaging, single use plastics, lightweight plastic carrier bags, plastic waste and the release of microplastics as well as increasing plastics' recycling properties and capacities across Europe. These targets are complemented with specific ones related to municipal plastic waste which aim to increase the recyclability of plastics waste generated, extend and modernise the recycling capacity of plastics. Targets to phase-out exports of poorly sorted plastics have also been identified.

The detailed objectives and targets per policy are detailed in Table 6.

[42] Directive 2008/98/EC on waste

Table 6 Overview of objectives and targets – CEAP 2020 Plastics value chain

Policy		Objectives	Targets
Strategy (COM in 2018, adoption in 2020)	The European Strategy for Plastics in a Circular Economy	• The design and production of plastics and plastic products fully respect **reuse, repair and recycling** needs and more sustainable materials are developed and promoted. • Curb plastic pollution and its adverse impact on our lives and the environment. • Help achieve the priority set by the Commission for an Energy Union with a modern, low-carbon, resource and energy-efficient economy.	• By 2030, all plastics packaging placed on the EU market is either reusable or can be **recycled** in a cost-effective manner. • By 2030, more than half of plastics waste generated in Europe is **recycled.** • Separate collection of plastics waste reaches very high levels. **Recycling** of plastics packaging waste achieves levels comparable with those of other packaging materials. • By 2030, **sorting and recycling** capacity has increased fourfold since 2015, leading to the creation of 200 000 new jobs, spread all across Europe. • Substances hampering **recycling** processes have been replaced or phased out. • Demand for **recycled** plastics in Europe has grown four-fold.
Strategy (2020)	Chemicals Strategy for Sustainability - Towards a Toxic-Free Environment	• Ensure availability of information on chemical content and safe use, by introducing information requirements in the context of the Sustainable Product Policy Initiative and tracking the presence of substances of concern through the life cycle of materials and products; • Develop methodologies for chemical risk assessment that consider the **whole life cycle of substances,** materials and products; • Support investments in sustainable innovations that can decontaminate waste streams, increase safe **recycling and**	N/A

Policy		Objectives	Targets
		reduce the export of waste, in particular plastics and textiles.	
Action Plan (2021)	The Zero Pollution Action Plan	• Air, water and soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems and that respect the boundaries our planet can cope with, thus creating a toxic-free environment. • At the multilateral level, the EU will promote a global agreement on plastics.	• **Reduce** by 50% plastic litter at sea and by 30% microplastics released into the environment.
Directive (2019)	Directive 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment	• Prevent and reduce the impact of certain plastic products on the environment, in particular the aquatic environment, and on human health – Article 1. • Promote the transition to a **circular economy** with innovative and sustainable business models, products and materials – Article 1.	• Member States shall take the necessary measures to achieve an ambitious and sustained reduction in the consumption of the **single-use plastic** products listed in Part A of the Annex (i.e., cups for beverages including their covers and lids, food containers) – Article 4. • Member States shall prohibit the placing on the market of the **single-use plastic** products listed in Part B of the Annex (i.e., cotton bud sticks, cutlery, plates, straws, beverage stirrer, sticks to be attached to balloons, food and beverage containers and cups for beverages made of expanded polystyrene) and of products made from oxo-degradable plastic – Article 5. • Member States shall take the necessary measures to ensure the separate **collection** for **recycling:** ○ by 2025, of an amount of waste single-use plastic products listed in Part F of the Annex (i.e., beverage bottles, including caps and lids) equal to 77 % of such single-use plastic products placed on the market in a given year by weight. ○ by 2029, of an amount of waste single-use plastic products listed in Part F of the Annex equal to 90 % of

Policy		Objectives	Targets
			such single-use plastic products placed on the market in a given year by weight. – Article 9.
Directive (2015)	Directive 2015/720/EU amending Directive 94/62/EC as regards the consumption of lightweight plastic carrier bags	• **Reduce the consumption** of lightweight plastic carrier bags, including imposing charges or setting national maximum consumption targets.	The measures taken by Member States shall include either or both of the following: • the adoption of measures ensuring that the annual **consumption** level does not exceed 90 lightweight plastic carrier bags per person by 31 December 2019 and 40 lightweight plastic carrier bags per person by 31 December 2025, or equivalent targets set in weight. Very lightweight plastic carrier bags may be excluded from national consumption objectives; • the adoption of instruments ensuring that, by 31 December 2018, lightweight plastic carrier bags are not provided free of charge at the point of sale of goods or products, unless equally effective instruments are implemented. Very lightweight plastic carrier bags may be excluded from those measures. – Article 4.
Regulation (2022)	Regulation (EU) 2022/1616 of 15 September 2022 on recycled plastic materials and articles intended to come into contact with foods	Lay down rules for: • The sale of plastics materials and articles containing plastic originating from waste; • The development and operation of recycling technologies, processes and installations to produce recycled plastic for use – Article 1	N/A
Delegated Regulation (2020)	Delegated Regulation (EU) 2020/2174 of 19 October 2020 on shipments of waste	• Exporting plastic waste from the EU to OECD countries and imports in the EU will be more strictly controlled- Annex III.	• Ban on the export of plastic waste from the EU to non-OECD countries, except for clean plastic waste sent for **recycling** - Annex III.

Policy		Objectives	Targets
Directive (2008, amended in 2018)	Waste Framework Directive	• Encourage the **re-use** of products and the setting up of systems promoting **repair** and **re-use** activities, including.	Member States shall take the necessary measures designed to achieve the following targets: • by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50 % by weight – Article 11. • By 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively – Article 11. • Subject to Article 10(2) and (3), Member States shall set up separate collection at least for paper, metal, plastic and glass,– Article 11.
Proposal for Regulation (2022)	Proposal for a Regulation on packaging and packaging waste amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC	• Establish requirements for the entire **life cycle of packaging** as regards environmental sustainability and labelling, to allow its placing on the market, as well as for the extended producer responsibility, collection, treatment and recycling of packaging waste – Article 1. • Member States shall take measures to achieve a sustained reduction in the consumption of lightweight plastic carrier bags on their territory – Article 29.	• From 1 January 2030, the plastic part in packaging shall contain the following minimum percentage of recycled content recovered from post-consumer plastic waste, per unit of packaging: ○ (a) 30 % for contact sensitive packaging made from polyethylene terephthalate (PET) as the major component; ○ (b) 10 % for contact sensitive packaging made from plastic materials other than PET, except single use plastic beverage bottles; ○ (c) 30 % for single use plastic beverage bottles; ○ (d) 35 % for packaging other than those referred to in points (a), (b) and (c) – Article 7. • From 1 January 2040, the plastic part in packaging shall contain the following minimum percentage of recycled content recovered from post-consumer plastic waste, per unit of packaging: ○ (a) 50 % for contact sensitive plastic packaging, except single use plastic beverage bottles; ○ (b) 65 % for single use plastic beverage bottles;

Policy		Objectives	Targets
			○ (c) 65 % for plastic packaging other than those referred to in points a) and (b); (b) 65 % for single use plastic beverage bottles; ○ (c) 65 % for plastic packaging other than those referred to in points (a) and (b) – Article 7. • A sustained reduction [in the consumption of lightweight plastic carrier bags] is achieved if the annual consumption does not exceed 40 lightweight plastic carrier bags per person, or the equivalent target in weight, by 31 December 2025, and subsequently by 31 December in each year thereafter – Article 29. • By 1 January 2029, Member States shall take the necessary measures to ensure that deposit and return systems are set up for: ○ (a) single use plastic beverage bottles with the capacity of up to three litres.

3.1.1.5 Textiles

This subsection presents an overview of the policy framework regarding the textiles value chain. There is no formal definition of textiles presented in European legislation. The policy framework for the **Textiles** value chain as detailed in the CEAP is shaped by the **Chemicals Strategy for Sustainability – Towards a Toxic-Free Environment**[43] adopted in 2020 and the **EU Strategy for Sustainable and Circular Textiles**[44] adopted in 2022. These strategies follow several objectives such as to:

- 'Minimise the presence of substances of concern in products […] such as textiles'
- 'Support investments in sustainable innovations that can decontaminate waste streams, increase safe recycling and reduce the export of waste, in particular plastics and textiles'
- 'Ensure that all textiles placed on the EU market are durable, repairable and recyclable, to a great extent made of recycled fibres, free of hazardous substances, produced in respect of social rights and the environment';
- Ensure that 'profitable re-use and repair services are widely available' and that 'The textiles sector is competitive, resilient and innovative with producers taking responsibility for their products along the value chain with sufficient capacities for recycling and minimal incineration and landfilling';
- Require 'separately collected textile waste from households to boost preparing for reuse, reuse and repair activities and reduce the volumes for types of waste treatment'.

To achieve these objectives, the strategy unveils several actions yet to materialise into concrete legislation.

The European Commission published in 2022 a **Proposal for a Regulation establishing a framework for setting eco-design requirements for sustainable products**[45] which is expected to:

- *'Set out one or more horizontal eco-design requirements for textiles'* to increase their durability reusability and reparability and tackle microplastics pollution;
- Stop the destruction of unsold or returned textiles through the establishment of a '*transparency obligation requiring large companies to publicly disclose the number of products they discard and destroy including textiles'*.

Additionally, the **Waste Framework Directive**[46] adopted in 2008 (last amended in 2018) requires Member States to:

- 'Take measures preventing waste generation and to encourage the re-use of products and the setting up of systems promoting repair and re-use of textiles';
- 'Take measures preventing waste generation'.

Finally**,** the **update of the EU Industrial Strategy (May 2021)**[47] highlights the need to accelerate the green transition and recognised Textiles as one of the key ecosystems for the strategy. As part of this strategy, a **Transition Pathway for the Textiles Ecosystem** is being developed to co-create actions and commitments with all stakeholders in this area.

Targets set by the Waste Directive aim to increase the re-use and recycling of municipal waste as well as to ensure the separate collection for textiles.

The detailed objectives per policy are detailed in the Table 7.

[43] COM(2020) 667 final, Chemicals Strategy for Sustainability Towards a Toxic-Free Environment
[44] COM(2022) 141 final, EU Strategy for Sustainable and Circular Textiles
[45] Proposal for a regulation establishing a framework for setting eco-design requirements for sustainable products and repealing Directive 2009/125/EC
[46] Directive 2008/98/EC on waste and repealing certain Directives
[47] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

Table 7 Overview of objectives and targets – CEAP 2020 Textile value chain

Policy		Objectives	Targets
Strategy (2022)	EU Strategy for Sustainable and Circular Textiles	• All textile products placed on the EU market are **durable, repairable and recyclable**, to a great extent made of recycled fibres, free of hazardous substances, produced in respect of social rights and the environment. • Fast fashion is out of fashion" and consumers benefit longer from high quality affordable textiles. • Profitable **re-use and repair** services widely available. • The textiles sector is competitive, resilient and innovative with producers taking responsibility for their products along the value chain with sufficient capacities for **recycling** and minimal incineration and landfilling. • Create an economy for **collection, sorting, reuse**, preparation for **reuse and recycling,** as well as incentives for producers and brands to ensure that their products are designed in respect of circularity principles, notably through harmonised **EU extended producer responsibilities** rules for textiles. • The Commission will also consider requiring that separately collected textile waste from households and similar waste is prepared for reuse as a necessary first step, which will boost preparing for **reuse, reuse and repair** activities and **reduce** the volumes for types of waste treatment that are lower in the waste hierarchy.	N/A
Strategy (2020)	Chemicals Strategy for Sustainability - Towards a Toxic-Free Environment	• Minimise the presence of substances of concern in products by introducing requirements, also as part of the Sustainable Product Policy Initiative, giving priority to those product categories that affect vulnerable populations as well as those with the highest potential for **circularity**, such as textiles, packaging including food packaging, furniture, electronics and ICT, construction and buildings; • Ensure availability of information on chemical content and safe use, by introducing information requirements in the context of	N/A

Policy		Objectives	Targets
		the Sustainable Product Policy Initiative and tracking the presence of substances of concern through the life cycle of materials and products; • Support investments in sustainable innovations that can decontaminate waste streams, increase safe **recycling and reduce** the export of waste, in particular plastics and textiles; • Develop methodologies for chemical risk assessment that take into account the **whole life cycle** of substances, materials and products.	
Directive (2008, amended in 2018)	Waste Framework Directive	• Member States shall take measures to prevent waste generation. Those measures shall, at least: encourage the **re-use** of products and the setting up of systems promoting **repair and re-use** activities, including in particular for electrical and electronic equipment, textiles.	Member States shall set up separate collection at least for paper, metal, plastic and glass, and, by 1 January 2025, for textiles – Article 11
Proposal for a Regulation (2022)	Proposal for a Regulation establishing a framework for setting eco-design requirements for sustainable products and repealing Directive 2009/125/EC	• Set out one or more horizontal eco-design requirements for a wider range of products groups, such as electronic appliances or textiles. • New design requirements for textiles under the Eco-design for Sustainable Products Regulation, setting mandatory minimums for the inclusion of **recycled** fibres in textiles, making them longer lasting, and easier to **repair and recycle**. Under the proposed regulation, sustainable textiles products would become the norm in the EU.[48] • The proposal would ban the destruction of unsold products under certain conditions, including unsold or returned textiles.[49]	N/A

[48] From European Commission Press corner (30 March 2022), Green Deal: New proposals to make sustainable products the norm and boost Europe's resource independence, available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_2013

[49] Ibid.

3.1.1.6 Construction and buildings

This subsection presents an overview of the policy framework regarding the construction and buildings value chain. The Box below provides key definitions of the policy area that are included in European legislation.

Box 7 EU definitions for Construction and Buildings

The following are EU definitions for the policy area:

- **Construction and demolition waste:** *'means waste generated by construction and demolition activities'.* 'While the definition of construction and demolition waste refers to waste that results from construction and demolition activities in a general way, it also includes waste arising from minor do-it-yourself construction and demolition activities within private households.' '"Waste Framework Directive (2008, amended in 2018).[50];
- **Construction works: '***means buildings and civil engineering works'* (Construction Products Regulation, 2011).[51];
- **Construction**: As defined in the 'Scenarios for the transition pathway for a resilient, greener and more digital construction ecosystem' (December 2021), the activities included in the construction ecosystem are:
  - On site construction, renovation, refurbishment and demolition, including:
    - Development of building projects (e.g., buying land, project initiation, obtaining permits).
    - On-site construction of building and infrastructure projects: residential buildings, non-residential buildings (e.g., offices, warehouses.) and civil engineering projects (e.g., roads, railways, airports, utility networks, sewage, pipelines).
    - Specialised activities: site preparation, electrical, plumbing and other installation, roofs, and other forms of building completion and finishing.
  - Other services:
    - Engineering and architectural services.
    - Activities supporting the operation of buildings, including facility management and landscaping activities.
  - In addition to the above, the definition of the ecosystems in the updated Industrial Strategy (May, 2021) includes a share of manufacturing activities or services. These are labelled as 'horizontal sectors' and contribute to all ecosystems with varying shares, including to the construction ecosystem.

The **new Circular Economy Action Plan (March 2020)**[52] anticipated a '**Strategy for a Sustainable Built Environment'** to '*promote circularity principles*' and to *'ensure coherence across the relevant policy areas such as climate, energy and resource efficiency, management of construction and demolition waste, accessibility, digitalisation and skills*'.

[50] DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives

[51] REGULATION (EU) No 305/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC (Text with EEA relevance). Found at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R0305&from=EN

[52] COM(2020) 98 final: 'A new Circular Economy Action Plan For a cleaner and more competitive Europe'

This strategy (proposed for 2021) has yet to materialise and in its absence, most policy initiatives relevant for circular economy that it had foreseen to harmonise have moved ahead[53]:

- "*addressing the sustainability performance of construction products in the context of the **revision of the Construction Product Regulation**, including the possible introduction of recycled content requirements for certain construction products, considering their safety and functionality;*
- *promoting measures to improve the durability and adaptability of built assets in line with the circular economy principles for buildings design and **developing digital logbooks for buildings**;*
- *using Level(s) to integrate life cycle assessment in **public procurement** and **the EU sustainable finance framework** and exploring the appropriateness of setting of carbon reduction targets and the potential of carbon storage;*
- *considering a **revision of material recovery targets** set in EU legislation for **construction and demolition waste and its material-specific fractions**."*

Meanwhile, the **Renovation Wave Strategy (October 2020)[54]** remains a central strategy in the policy framework for the value chain of buildings. The Strategy contains initiatives to accelerate the rate of building renovation, which is itself a circular strategy (extending the lifetime of existing works). It aims to implement significant improvements in energy efficiency in the EU '*in line with circular economy principles, notably optimised lifecycle performance, and longer life expectancy of built assets'*[55]. While the topic of 'renovation' typically focuses on the operational (use) phase of a building, the strategy references several initiatives relevant for circularity across the lifecycle of construction and buildings in the EU, as follows:

- The **Waste Framework Directive (2008, amended in 2018)**[56] lays down some basic waste management principles and sets specific targets for the re-use, recycling and recovery of construction and demolition waste[57]. The Commission is currently working on a targeted revision of the Waste Framework Directive.[58]
- *"The **Ecodesign Framework** will be further developed to provide efficient products for use in buildings and promote their use."*[59] The **proposal for a Regulation 'establishing a framework for setting ecodesign requirements for sustainable products' (March 2022)[60]** is part of a package of initiatives and includes a targeted initiative construction products: the **proposed revision of the Construction Products Regulation (March 2022)[61]** has the ambition to facilitate the harmonisation of technical rules and trade of safe and sustainable construction products across the EU including the possible introduction of recycled content requirements for certain construction products, considering their safety and functionality.[62]
- The **New European Bauhaus initiative** is a creative, participatory and transdisciplinary movement, providing a space of encounters to accelerate the transformation of various economic sectors in order to provide access to all citizens to circular and less carbon intensive goods.[63]
- "***A 2050 roadmap for reducing whole life-cycle carbon emissions in buildings**, including through the use of biobased products".* [64]

[53] A fifth initiative was on "promoting initiatives to reduce soil sealing, rehabilitate abandoned or contaminated brownfields and increase the safe, sustainable and circular use of excavated soils" however no further developments were identified in the literature review (other than a reference in the EU biodiversity strategy for 2030 released in May 2020.

[54] COM(2020) 662 final: 'A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives'

[55] COM(2020) 98 final: 'A new Circular Economy Action Plan For a cleaner and more competitive Europe'

[56] DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives

[57] https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

[58] https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

[59] https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1835

[60] COM(2022) 142 final: 'Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC'

[61] COM(2022) 144 final: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL laying down harmonised conditions for the marketing of construction products

[62] https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/739243/EPRS_BRI(2022)739243_EN.pdf

[63] https://new-european-bauhaus.europa.eu/about/about-initiative_en

[64] COM(2020) 662 final: 'A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives'

- The **Level(s) framework**[65], which covers energy, material and water use, quality and value of buildings, health, comfort, resilience to climate change and life-cycle cost.
- **Circular economy principles for buildings design (2018)**[66], to inform and support actors along the construction value chain.
- **EU Construction and Demolition Waste Management protocol (September 2016)**[67] introduces non-binding guidelines as a proposal to the industry. Its overall aim is to increase confidence in the Construction and Demolition waste management process and the trust in the quality of Construction and Demolition recycled materials. The Commission is planning to revise the CDW Management Protocol starting later this year (2023)[68]. Additional **Guidelines for the waste audits before demolition and renovation works of buildings (2018)**[69] provides a methodology for preliminary assessments to support national authorities in achieving the EU 2020 target for construction and demolition waste recycling.[70]
- To meet the EU 2030 climate target[71], proposals to revise the **Energy Efficiency Directive (July 2021)**[72] and the **Energy Performance of Buildings Directive (December 2021)**[73] include measures to minimise the whole life-cycle greenhouse gas emissions of buildings – which requires resource efficiency and circularity.

The **update of the EU Industrial Strategy (May 2021)**[74] highlights the need to accelerate the green and digital transition. Construction has been recognised as a critical ecosystem and the **Transition Pathway for Construction (March 2023)**[75] has been developed with recommended actions to be taken by the EU, Member States and Industry in the short-, medium- and long-term - but no targets are specified.

The **Waste Framework Directive** (2008/98/EC amended by 2018/851) is the main legislative act that sets out legal provisions on waste from construction and demolition activities and the prevention of waste. Today, it includes the only EU (qualitative) targets directly[76] related to circularity for the construction and buildings value chain.

The detailed objectives and targets per policy are detailed in Table 8.

[65] https://ec.europa.eu/environment/eussd/buildings.htm

[66] https://ec.europa.eu/docsroom/documents/39984

[67] https://ec.europa.eu/docsroom/documents/20509/

[68] Input provided by DG GROW on 03/04/2023.

[69] https://ec.europa.eu/docsroom/documents/31521/

[70] https://single-market-economy.ec.europa.eu/news/eu-construction-and-demolition-waste-protocol-2018-09-18_en

[71] https://climate.ec.europa.eu/eu-action/european-green-deal/2030-climate-target-plan_en#:~:text=With%20the%202030%20Climate%20Target,40%25EN%E2%80%A2%E2%80%A2%E2%80%A2 https://climate.ec.europa.eu/eu-action/european-green-deal/2030-climate-target-plan_en#:~:text=With%20the%202030%20Climate%20Target,40%25EN%E2%80%A2%E2%80%A2%E2%80%A2

[72] COM(2021) 558 final Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on energy efficiency (recast). Found at: https://eur-lex.europa.eu/resource.html?uri=cellar:a214c850-e574-11eb-a1a5-01aa75ed71a1.0001.02/DOC_1&format=PDF

[73] COM(2021) 802 final. Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the energy performance of buildings (recast) Found at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021PC0802

[74] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en

[75] https://ec.europa.eu/docsroom/documents/53854

[76] However indirect targets (such as those related whole life carbon) are being put forward in some legislative proposals.

Table 8 Overview of objectives and targets – CEAP 2020 Construction and buildings value chain

Policy		Objectives	Targets
Strategy (October 2020)	The Renovation Strategy	• To improve the energy performance of buildings. • Applying **circularity principles** to building renovation will **reduce** materials-related greenhouse gas emissions for buildings. • Expanding the market for sustainable construction products and services, including the integration of new materials and nature-based solutions, and revised legislation on marketing of construction products and material **reuse and recovery** targets. • Key principles for building renovation towards 2030 and 2050: ○ **Life-cycle thinking** and circularity. Minimising the footprint of buildings requires resource efficiency and circularity combined with turning parts of the construction sector into a carbon sink, for example through the promotion of green infrastructure and the use of organic building materials that can store carbon, such as sustainably sourced wood;	N/A

Directive (2008)	Waste Framework Directive (2008/98/EC amended by 2018/851)	• Member States shall take measures to prevent waste generation. Those measures shall, at least:
		  ○ encourage the **re-use** of products and the setting up of systems promoting **repair** and **re-use** activities, including in particular for electrical and electronic equipment, textiles and furniture, as well as packaging and construction materials and products;
		  ○ **reduce** waste generation in processes related to industrial production, extraction of minerals, manufacturing, construction and
			• By 2020, the preparing for **re-use, recycling and other material recovery**, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste shall be increased to a minimum of 70 % by weight.

Policy		Objectives	Targets
		demolition, taking into account best available techniques. • Member States shall take measures to promote selective demolition in order to enable removal and safe handling of hazardous substances and facilitate re-use and high-quality recycling by selective removal of materials, and to ensure the establishment of sorting systems for construction and demolition waste at least for wood, mineral fractions (concrete, bricks, tiles and ceramics, stones), metal, glass, plastic and plaster. • By 31 December 2024, the Commission shall consider the setting of preparing for **re-use and recycling** targets for construction and demolition waste and its material-specific fractions, textile waste, commercial waste, non-hazardous industrial waste and other waste streams, as well as preparing for re-use targets for municipal waste and recycling targets for municipal bio-waste. To that end, the Commission shall submit a report to the European Parliament and to the Council, accompanied, if appropriate, by a legislative proposal.	
Strategy (March 2020) (May 2021)	A New Industrial Strategy for Europe Update of the Industrial Strategy	• To revolutionise the way we design, make, use and get rid of things by incentivising our industry.	N/A.

Policy		Objectives	Targets
Proposal for a Regulation (2022)	Proposal for a REGULATION OF THE EUROPEAN ARLIAMENT AND OF THE COUNCIL laying down harmonised conditions for the marketing of construction products, amending Regulation (EU) 2019/1020 and repealing Regulation (EU) 305/2011	• This proposal addresses the climate and environmental performance and circularity of construction products, which can only be tackled at the EU level, where the common technical language is being developed. • In view of enhancing the circularity of construction products, in line with the goals of the Circular Economy Action Plan, manufacturers should favour **re-use, remanufacturing and recycling** of their products. The (preparation for) re-use, remanufacturing and recycling require certain design, namely by facilitating the separation of components and materials at the later stage of recycling and avoiding mixed, blended or intricate materials. As the usual instructions for use will not necessarily reach the economic operators in charge of (preparation for) re-use, remanufacturing and recycling, the necessary information in this regard should be made available in product databases or systems and on the manufacturer's websites, in addition to the instructions for use.	N/A
Directive (2006)	Directive on the management of waste from extractive industries and amending Directive 2004/35/EC	to encourage the recovery of extractive waste by means of **recycling, reusing or reclaiming** such waste, where this is environmentally sound in accordance with existing environmental standards at Community level and with the requirements of this Directive where relevant.	N/A

Policy		Objectives	Targets
Directive (2022)	Proposal for the Energy Performance of Buildings Directive	While the focus of the proposal is the reduction of operational greenhouse gas emissions, first steps are taken to address carbon emissions over the **whole life-cycle** of a building.	Article 7 brings together all provisions on new buildings: • It specifies that as of 2030, new buildings must be zero-emission buildings; new public buildings must be zero-emission as of 2027. The specific requirements for zero-emission buildings are laid down in Annex III; • (b) The life-cycle Global Warming Potential (GWP) of new buildings will have to be calculated as of 2030 in accordance with the Level(s) framework, thus informing on the **whole-life cycle** emissions of new construction. **Whole-life cycle** emissions are particularly relevant for large buildings, which is why the obligation to calculate them already applies to large buildings (with a useful floor area larger than 2000 square meters) as of 2027.
Proposal for a Directive (2021)	Proposal for a Directive on Energy Efficiency	The amendments will include a provision that Member States may require that public bodies consider where appropriate circular economy aspects and green public procurement criteria in public procurement practices. • As part of the exemplary role of the public sector Article 7 also includes a provision that contracting authorities may require that tenders disclose a Global Warming Potential of new buildings (numeric indicator in kgCO2e/m² (of useful internal floor area) for each life cycle stage averaged for one year of a reference study period of 50 years), in particular for new buildings above 2000 square meters. It is linked to a provision aimed at increasing awareness to **circular economy** and whole life-cycle of carbon emissions in public procurement practices. • Article 6 broadens the scope of the renovation obligation. The obligation will now be applied to all	N/A

Policy		Objectives	Targets
		public bodies at all administration levels and in all sectors of public bodies' activities, including healthcare, education and public housing, where the buildings are owned by public bodies.	
Proposal for a Regulation (2022)	Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC	• [The revised Construction Products Regulation] will, in relation to energy-related products that are also construction products, give prevalence to sustainability requirements set under this Regulation. This should be the case for instance for heaters, boilers, heat pumps, water and space heating appliances, fans, cooling and ventilating systems and photovoltaic products (excluding building-integrated photovoltaic panels). For these products, [the revised Construction Products Regulation] may intervene in a complementary manner where needed, mainly in relation to safety aspects, also taking account of other Union legislation on products such as on gas appliances, low voltage, and machinery. • It sets new requirements to make products more durable, reliable, reusable, upgradable, reparable, easier to **maintain, refurbish and recycle**, and energy and resource efficient. In addition, product-specific information requirements will ensure consumers know the environmental impacts of their purchases. All regulated products will have Digital Product Passports. This will make it easier to **repair or recycle** products and facilitate tracking substances of concern along the supply chain. Labelling can be introduced as well. The proposal also contains measures to end the destruction of unsold consumer goods, as well as expand green	N/A

Policy		Objectives	Targets
		public procurement and provide incentives for sustainable products.	
Proposal for a Regulation (2023)	Proposal for a Regulation establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020	• Ensuring the free movement of critical raw materials and products containing critical raw materials placed on the Union market while ensuring a high level of environmental protection, by improving their **circularity** and sustainability.	• Union recycling capacity, including for all intermediate recycling steps, is able to produce at least 15% of the Union's annual consumption of strategic raw materials. Diversify the Union's imports of strategic raw materials with a view to ensure that, by 2030, the Union's annual consumption of each strategic raw material at any relevant stage of processing can rely on imports from several third countries, none of which provide more than 65% of the Union's annual consumption.

3.1.1.7 Food, water and nutrients

This subsection presents an overview of the policy framework regarding the food, water and nutrients value chain. In accordance with DG RTD, initiatives from the Common Agricultural Policy (CAP) are excluded from the analysis. The Box below provides key definitions of the policy area that are included in European Legislation.

Box 8 EU definitions for food, water and nutrients

The following are EU definitions for the policy area food, water and nutrients:

- **Food** (or **foodstuff**): '*means any substance or product, whether processed, partially processed or unprocessed, intended to be, or reasonably expected to be ingested by humans. 'Food' includes drink, chewing gum and any substance, including water, intentionally incorporated into the food during its manufacture, preparation or treatment*.' (General Food Law, 2002)[77];
- **Surface water:** '*means inland waters, except groundwater; transitional waters and coastal waters, except in respect of chemical status for which it shall also include territorial waters'* (Water Framework Directive, 2000)[78];
- **Groundwater:** '*means all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil'* (Water Framework Directive, 2000);
- **Inland water:** '*means all standing or flowing water on the surface of the land, and all groundwater on the landward side of the baseline from which the breadth of territorial waters is measured'* (Water Framework Directive, 2000);
- **Transitional waters:** '*are bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters, but which are substantially influenced by freshwater flows*' (Water Framework Directive, 2000);
- **Coastal water:** '*means surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters'* (Water Framework Directive, 2000);
- **Urban wastewater:** '*means domestic waste water or the mixture of domestic waste water with industrial waste water and/or run-off rain water*' (Urban Wastewater Directive, 1999).[79]

The policy framework for the value chain regarding **Food, water and nutrients** has recently been reinforced with the European Farm to Fork Strategy and European Biodiversity Strategy. These strategies aim to '*accelerate our transition to a sustainable food system'*[80] while '*protecting European nature and reversing the degradation of ecosystems*'[81]. To emphasise the importance of both elements, these strategies lay out similar targets for organic farming and a reduction in the use of chemical and more hazardous pesticides. The policy framework furthermore is shaped by:

- Action Plan for the development of organic production;
- Action Plan Food 2030 pathways for action;
- Directive 86/278/EEC (amended in 2018 and 2019) on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture;
- Directive 2000/60/EC establishing a framework for Community action in the field of water policy;
- Proposal for a Directive concerning urban wastewater treatment (recast);
- Regulation 2019/1009 laying down rules on the making available on the market of EU fertilising products;
- Regulation (EU) 2019/1021 on persistent organic pollutants
- Regulation 2020/741 on minimum requirements for water reuse.

[77] Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

[78] Directive 2000/60/EC establishing a framework for Community action in the field of water policy.

[79] Directive, 91/271/EEC concerning urban waste water treatment.

[80] COM(2020) 381 final, A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system.

[81] COM(2020) 380 final, EU Biodiversity Strategy for 2030 Bringing nature back into our lives.

The current EU policy framework clearly establishes several **objectives** to make the food, water and nutrients value chain more circular. Some of these objectives aim for example to:

- *'Encouraging conversion, investment and exchange of best practices in organic farming;*
- *'Ensuring that EU fertilising products on the market fulfil the requirements providing for a high level of protection of human, animal, and plant health, of safety and of the environment';*
- '*Harmonising minimum water quality requirements for the safe reuse of treated urban wastewaters in agricultural irrigation'*.

The **targets** set by the different legislation focus on reducing food waste, increase organic farming methods, reuse of nutrients through wastewater and other waste streams and protection of nature on land and in waters.

The detailed objectives and targets per policy are detailed in Table 9.

Table 9 Overview of objectives and targets – CEAP 2020 Food, water and nutrients value chain

Policy		Objectives	Targets
Strategy (2020)	Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system	The Farm to Fork Strategy aims to accelerate our transition to a sustainable food system that should: • have a neutral or positive environmental impact; • help to mitigate climate change and adapt to its impacts; • reverse the loss of biodiversity; • ensure food security, nutrition and public health, making sure that everyone has access to sufficient, safe, nutritious, sustainable food; • preserve affordability of food while generating fairer economic returns, fostering competitiveness of the EU supply sector and promoting fair trade.	• By 2030, halving per capita food waste in all retail and consumer levels. • By 2030, **reducing** the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50%. • By 2030, reducing nutrient losses by at least 50%, while ensuring there is no deterioration in soil fertility. This will **reduce** the use of fertilisers by at least 20%. • By 2030, reducing overall EU sales of antimicrobials for farmed animals and in aquaculture by 50%. • By 2030, at least 25% of the EU's agricultural land is cultivated under organic farming.
Strategy (2020)	EU Biodiversity Strategy for 2030. Bringing nature back into our lives	• Establishing a larger EU-wide network of protected areas on land and at sea by enlarging existing Natura 2000 areas. • Launching an EU nature restoration plan to restore degraded ecosystems, in particular those with the most potential to capture and store carbon and to prevent and reduce the impact of natural disasters. • Introducing measures to enable the necessary transformative change.	• By 2030, a minimum of 30% of the EU's land area and 30% of the EU's sea area is legally protected and ecological corridors, as part of a true Trans-European Nature Network are integrated • By 2030, at least one third of the EU's protected areas is strictly protected, including all remaining EU primary and old-growth forests. • By 2030, significant areas of degraded and carbon-rich ecosystems are restored; habitats and species show no deterioration in conservation trends and status; and at least 30% reach favourable conservation status or at least show a positive trend. • The risk and use of chemical pesticides is reduced by 50% and the use of more hazardous pesticides is reduced by 50%.

Policy		Objectives	Targets
		• Introducing measures to tackle the global biodiversity challenge.	• At least 10% of agricultural area is under high-diversity landscape features. • At least 25% of agricultural land is under organic farming management, and the uptake of agro-ecological practices is significantly increased. • By 2030, three billion new trees are planted in the EU, in full respect of ecological principles. • By 2030, at least 25,000 km of free-flowing rivers are restored.
Strategy (2021)	EU Soil Strategy for 2030. Reaping the benefits of healthy soils for people, food, nature and climate	• The Strategy aims to bring all EU soil ecosystems in healthy conditions by 2050. In doing so it strives to combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.	• By 2030, achieve an EU net greenhouse gas removal of 310 million tonnes CO2 equivalent per year for the land use, land use change and forestry (LULUCF) sector. • By 2030, reduce nutrient losses by at least 50%, the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50%. • By 2050, reach no net land take.
Action Plan (2020)	Food 2030 Pathways for action. Research and innovation policy as a driver for sustainable, healthy and inclusive food systems	The policy aims to contribute to the UN's SDG targets on nutrition, climate, **circularity**, and innovation and empowerment of communities.	N/A

Policy		Objectives	Targets
Action Plan (2021)	Action Plan for the development of organic production	• Stimulating the demand for organic products by increasing the awareness of its benefits and consumer trust in the organic logo. • Setting minimum mandatory criteria for sustainable food procurement to promote healthy and sustainable diets, including organic products, in schools and public institutions. • Strengthen the fight against fraudulent behaviour and intentional violations of organic rules that can harm consumer confidence in organic products. • Improve traceability and transparency of products from the fork back to the farm. • Encourage conversion, investment and exchange of best practices of the entire value chain to organic farming.	N/A
Directive (1986, amended in 2018 and 2019)	Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture	• Protecting humans, animals, plants and the environment by ensuring that heavy metals in soil and sludge do not exceed set limits. • Increasing the amount of sewage sludge used in agriculture.	• It bans the use of sewage sludge that results in concentrations of these heavy metals in soil exceeding these limit values. • Concentrations of heavy metals in soil (mg/kg of dry matter in a representative sample) are not allowed to exceed limits as defined in Annex IA, IB and IC.

Policy		Objectives	Targets
Directive (1999)	Urban Wastewater Treatment Directive	• Whereas the **recycling** of sludge arising from waste water treatment should be encouraged; whereas the disposal of sludge to surface waters should be phased out.	• Member States shall ensure that all agglomerations are provided with collecting systems for urban wastewater, ○ at the latest by 31 December 2000 for those with a population equivalent (p.e.) of more than 1 5 000, and ○ at the latest by 31 December 2005 for those with a p.e. of between 2 000 and 15 000. • Member States shall ensure that urban waste water entering collecting systems shall before discharge be subject to secondary treatment or an equivalent treatment as follows: ○ at the latest by 31 December 2000 for all discharges from agglomerations of more than 1 5 000 p.e., ○ at the latest by 31 December 2005 for all discharges from agglomerations of between 10 000 and 15 000 p.e. ., — at the latest by 31 December 2005 for discharges to fresh-water and estuaries from agglomerations of between 2 000 and 1 0 000 p.e.
Directive (2000)	Directive 2000/60/EC establishing a framework for Community action in the field of water policy.	• The Water Framework Directive requires Member States to use their River Basin Management Plans (RBMPs) and Programmes of Measures (PoMs) to protect and, where necessary, restore water bodies in order to reach good status, and to prevent deterioration. Good status means both good chemical and good ecological status.	• 'For surface waters, Member States shall protect, enhance and restore all bodies of surface water for artificial and heavily modified bodies of water, with the aim of achieving good surface water status at the latest 15 years after the date of entry into force of this Directive in accordance with the provisions laid down in Annex V.' • 'For surface waters, Member States shall protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status at the latest 15 years from the date of entry into force of this Directive, in accordance with the provisions laid down in Annex V.' • 'For groundwater, Member States shall protect, enhance and restore all bodies of groundwater, ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater status at the latest 15 years after the date of entry into force of this Directive, in accordance with the provisions laid down in Annex V.'

Policy		Objectives	Targets
			• 'For protected areas, Member States shall achieve compliance with any standards and objectives at the latest 15 years after the date of entry into force of this Directive.'
Directive (2009)	Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products	The Directive provides methods for setting specific ecodesign requirements, such as a limit on water consumption in the use phase (for a reduction of the use).	N/A
Directive (2018)	Directive (EU) 2018/851 amending Directive 2008/98/EC on waste	**Improving the efficiency of resource use** and ensuring that waste is valued as a resource can contribute to reducing the Union's dependence on the import of raw materials and facilitate the transition to more sustainable material management and to a circular economy model	• By 2030, **reducing** the generation of food waste in primary production, in processing and manufacturing, in retail and other distribution of food, in restaurants and food services as well as in households by 50% Union-wide;
Proposal for a Directive (2022)	Proposal for a Directive amending Directive 2000/60/EC establishing a framework for Community action in the field of water policy, Directive 2006/118/EC on the protection of groundwater against pollution and deterioration and Directive 2008/105/EC on environmental quality standards in the field of water policy	The aim of the Directive is to set new standards for a series of chemical substances of concern to address chemical pollution in water, to facilitate enforcement based on a simplified and more coherent legal framework, to ensure dynamic and up-to-date information on water status, facilitated by the European Environment Agency ('EEA'), and create a more flexible framework for addressing pollutants of emerging concern.	N/A

Policy		Objectives	Targets
Proposal for a Directive (2022)	Proposal for a Directive concerning urban wastewater treatment (recast)	• Including remaining pollution from urban sources in the Urban Wastewater Treatment Directive. • Reducing GHG emissions and energy consumption, and improving circularity through sludge management of the wastewater sector. • Improving monitoring and reporting methods.	• 'Member States shall ensure that the total annual energy from renewable sources, as defined in Article 2(1) of Directive (EU) 2018/2001, produced at national level by urban wastewater treatment plants treating a load of 10,000 p.e. and above is equivalent to at least: (a) 50 % of the total annual energy used by such plants by 31 December 2030; (b) 75 % of the total annual energy used by such plants by 31 December 2035; (c) 100 % of the total annual energy used by such plants by 31 December 2040.' • 'By 2040, in terms of water pollution, compared to the baseline, the total pollution would be reduced by 4,8 million p.e. (or 105.014 tonnes) for BOD, 56,4 million p.e. for N (or 229.999 tonnes), 49,6 million p.e. (or 29.678 tonnes) for P, 77,4 million p.e. for the toxic load of micro-pollutants and 24,8 million p.e. for E. Coli. Micro-plastics emissions would be reduced by 9%, mainly though actions on improved management of rain waters.' • 'By 2040, GHG emissions would be reduced by 4,86 million tonnes (37,32 % of the avoidable emissions from the sector).'
Regulation (2009)	Regulation (EC) No 1069/2009 laying down health rules as regards animal by-products and derived products not intended for human consumption	• Laying down public and animal health rules for animal by-products and derived products in order to prevent and minimise risks to public and animal health arising from those products and, in particular, to protect the safety of the food and feed chain.	N/A

Policy		Objectives	Targets
Regulation (2019)	Regulation 2019/1009 laying down rules on the making available on the market of EU fertilising products.	• Opening the EU single market for fertilising products which previously had not been covered by harmonisation rules such as organic and organo-mineral fertilisers, soil improvers, inhibitors, plant bio-stimulants or growing media. • Laying down common rules on safety, quality and labelling requirements for fertilising products. • Introducing limits for toxic contaminants. • Ensuring that EU fertilising products on the market fulfil the requirements providing for a high level of protection of human, animal, and plant health, of safety and of the environment	EU fertilising products have to comply with: • meet the requirements set out in Annex I for the relevant product function category; • meet the requirements set out in Annex II for the relevant component material category or categories; and • (c) be labelled in accordance with the labelling requirements set out in Annex III.
Regulation (2019)	**Regulation (EU) 2019/1021 on persistent organic pollutants**	• lay down stricter rules concerning the management of persistent organic pollutants stockpiles contaminating groundwater • Member States are obligated to draw up inventories for the substances listed in Annex III released into air, water and land.	N/A

Policy		Objectives	Targets
Regulation (2020)	Regulation 2020/741 on minimum requirements for water reuse.	• Harmonising minimum water quality requirements for the safe **reuse** of treated urban wastewaters in agricultural irrigation; • Harmonising minimum monitoring requirements, notably the frequency of monitoring for each quality parameter, and validation monitoring requirements.	In Annex I, Section 2, the **reclaimed** water quality classes and the permitted uses and irrigation methods for each class are set out in Table 1. The minimum requirements for water quality are set out in Table 2 of point (a). The minimum frequencies and performance targets for monitoring reclaimed water are set out in Table 3 (routine monitoring) and Table 4 (validation monitoring) of point (b).
Proposal for a Regulation (2022)	Proposal for a Regulation on nature restoration	The proposal combines an overarching restoration objective for the long-term recovery of nature in the EU's land and sea areas with binding restoration targets for specific habitats and species.	Measures should cover at least 20% of the EU's land and sea areas by 2030, and ultimately all ecosystems in need of restoration by 2050. • banning the use of chemical pesticides in sensitive areas, not only in the protected sites such as Natura 2000 sites, but in all urban green spaces[82]. • banning the use of chemical pesticides in parks and public paths, our playgrounds and our sports facilities, the places where we meet and where our children play[83].

[82] https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_22_3968
[83] https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_22_3968

Policy		Objectives	Targets
Proposal for a Regulation (2023)	Proposal for a Regulation establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020	• Strengthening the different stages of the strategic raw materials value chain with a view to ensure that, by 2030, Union capacities for each strategic raw material[84] have significantly increased. • Improving the Union's ability to monitor and mitigate the supply risk related to critical raw materials[85]; • Ensuring the free movement of critical raw materials and products containing critical raw materials placed on the Union market while ensuring a high level of environmental protection, by improving their circularity and sustainability.	• Union extraction capacity is able to extract the ores, minerals or concentrates needed to produce at least 10% of the Union's annual consumption of strategic raw materials, to the extent that the Union's reserves allow for this; • Union processing capacity, including for all intermediate processing steps, is able to produce at least 40% of the Union's annual consumption of strategic raw materials; • Union **recycling** capacity, including for all intermediate recycling steps, is able to produce at least 15% of the Union's annual consumption of strategic raw materials. • Diversify the Union's imports of strategic raw materials with a view to ensure that, by 2030, the Union's annual consumption of each strategic raw material at any relevant stage of processing can rely on imports from several third countries, none of which provide more than 65% of the Union's annual consumption.

[84] Annex I, Section 1 presents a list of raw materials that should be considered strategic raw materials, such as: cobalt, copper and lithium.

[85] Annex II, Section 1 presents a list of raw materials that should be considered critical raw materials, such as: bauxite, magnesium, and phosphorus.

3.1.2 Product service systems

This subsection presents an overview of the policy framework regarding product service systems. The Box below provides key definitions of the policy area that are included in European Legislation.

Box 9 EU definitions for Product service systems

The following is the EU definition relevant for product -service-systems:

- **Product-as-a-service:** a model where producers keep the ownership of the product or the responsibility for its performance throughout its lifecycle **(Circular Economy Action Plan, 2020).**[86]

A wider definition of product service systems (PSS) is presented by Tischner et al. (2002)[87]: '*products and services designed and combined to be jointly capable of fulfilling specific customer needs*'. Based on this definition, three main sub-categories of PSS can be identified[88]:

- **Product-oriented services** where '*the business model is based on the sale of products, complemented by additional services*';
- **Use-oriented services** where '*the product is made available in different forms, can be shared by several users but remains the property of the provider'*;
- **Result-oriented services** where '*there is no pre-determined product involved and the focus is geared towards a result*'.

Most EU policies addressing or referring to PSS are focusing on the specific sub-category of 'use-oriented services', mostly referred as 'product-as-a-service' systems in the different policy documents identified. The definition in academic literature thus comprises two more components.

The new **Circular Economy Action Plan (2020)**[89] specifies the overall objective to '*incentivise product-as-a-service (use-oriented PSS models) and other models with embedded producer-ownership of products provided and to provide incentives to support product as-a-service models*'. This objective is complemented by two others detailed in:

- The **Chemical Strategy for Sustainability Towards a Toxic-Free Environment**[90] adopted in 2020, which aims to explore and promote chemicals-as-a-service to shift from traditional chemical production and use.
- The **EU Strategy for Sustainable and Circular Textiles**[91] adopted in 2022, which seeks to reshape consumption habits through circular business models such as product-as-a-service models.

Separately, the **Waste Framework Directive (2008, amended 2018)** also highlights examples of incentives to apply the waste hierarchy, such as landfill and incineration charges and pay-as-you-throw schemes[92].

Other EU policies such as the **European Strategy for Plastics in Circular Economy**[93] and the **Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment**[94] indirectly refer to objectives linked to PSS through the aim to develop new business models.

The detailed objectives and targets per policy are detailed in Table 10.

[86] COM(2020) 98 final
[87] Tischner U, Verkuijl M, with Tukker A. 2002. First Draft PSS Review. SusProNet Report, draft 15 December.
[88] Tukker (2004). Eight types of product-service system: Eight ways to sustainability? Experiences from SusProNet. Bus. Strat. Env. 13, 246–260
[89] COM(2020) 98 final
[90] COM(2020) 98 final
[91] COM(2022) 141 final
[92] https://eur-lex.europa.eu/legal-content/EN/LSU/?uri=CELEX:32008L0098
[93] COM(2018) 28 final
[94] DIRECTIVE (EU) 2019/904

Table 10 Overview of objectives and targets – Product service systems

Policy		Objectives	Targets
Action Plan (2020)	A new Circular Economy Action Plan – For a cleaner and more competitive Europe	• To incentivise product-as-a-service (use-oriented PSS models) and other models with embedded producer-ownership of products provided, whereby business providers are responsible for product performance throughout the product lifecycle. • Improving the business and regulatory environment for sustainable and circular textiles, hereunder providing incentives and support to products-as-a-service models. • **Reduced** virgin material consumption through application of product-as-a-service.	N/A
Strategy (2022)	EU Strategy for Sustainable and Circular Textiles	• **Reshaping the consumption habits** of EU citizens through circular business models such as product-as-a-service models.	N/A
Strategy (2020)	Chemical Strategy for Sustainability Towards a Toxic-Free Environment	• Exploration and promotion of chemicals-as-a-service to shift from traditional chemical production and use (including chemical leasing, services such as logistical, development of specific chemical processes and applications, and waste management).	N/A

3.1.3 Bioeconomy

This subsection presents an overview of the policy framework regarding the bioeconomy. The Box below provides key definitions of the policy area that are included in European Legislation.

Box 10 EU definitions for Bioeconomy

The following are EU definitions for the policy area:

- **Bioeconomy: '***the bioeconomy means using renewable biological resources from land and sea, like crops, forests, fish, animals and micro-organisms to produce food, materials and energy.'*[95]
- **Bio-waste: '***means biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, wholesale, canteens, caterers and retail premises and comparable waste from food processing plants'* Waste Framework Directive (2008, amended in 2018).[96]
- **Fertilising product: '***means a substance, mixture, micro- organism or any other material, applied or intended to be applied on plants or their rhizosphere or on mushrooms or their mycosphere, or intended to constitute the rhizosphere or mycosphere, either on its own or mixed with another material, for the purpose of providing the plants or mushrooms with nutrient or improving their nutrition efficiency*' (Fertilising Products Regulation, 2019).[97]

For the purpose of this report and in accordance with DG RTD, the focus is dedicated to the bio-based economy (i.e., the production of products and materials from bio-based feedstock). In particular three value chains are presented: bio-based fertilisers, proteins and plastics. These value chains have been selected as relevant for the EU economy: bio-based fertilisers can provide alternative nutrients to those extracted from mineral resources (including phosphorus, an EU critical raw material[98]); bio-based proteins can be used for animal feed and bio-based plastics could integrate the current production and use of fossil-based plastics. These value chains are also present in several Horizon 2020 and Europe projects (e.g., the SUSTRACK project)[99] aimed at boosting a sustainable bio-based economy at the EU level, including those managed by the Bio-based Industries Joint Undertaking and the Circular Bio-based Europe Joint Undertaking (CBE JU)[100].

[95] European Commission, Bioeconomy: https://research-and-innovation.ec.europa.eu/research-area/environment/bioeconomy_en#:~:text=The%20bioeconomy%20means%20using%20renewable,circular%20and%20low%2Dcarbon%20economy. European Commission, Bioeconomy: https://research-and-innovation.ec.europa.eu/research-area/environment/bioeconomy_en#:~:text=The%20bioeconomy%20means%20using%20renewable,circular%20and%20low%2Dcarbon%20economy.

[96] DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives

[97] Regulation (EU) 2019/1009 laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003

[98] https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials_en

[99] The SUSTRACK project aims to support the development of solutions to replace fossil-fuels and carbon-intensive systems with circular biobased ones. It notably supports the identification of policy priorities and recommendations to enhance and increase circular bio-based systems.

[100] https://www.cbe.europa.eu/projects

3.1.3.1 Bio-based fertilisers

The policy framework aiming to support **bio-based fertilisers** has a long history, with the reuse of nutrients from sewage sludge being supported since 1986 in the Sewage Sludge Directive[101].

In 2018, the **Updated Bioeconomy Strategy**[102] sets as one of its objectives to *'Stimulating the market uptake and industrial exploitation of bio-based innovations'.*

In 2019, the **Fertilising Products Regulation**[103] sets as one of its objectives to '*Opening the EU single market for fertilising products which previously had not been covered by harmonisation rules such as organic and organo-mineral fertilisers, soil improvers, inhibitors, plant biostimulants or growing media.*'

Targets set by the different legislations are currently limited and consist in regulating the use of bio-based fertilisers like animal by-products as soil improvement.

The detailed objectives and targets per policy are detailed in Table 11.

[101] Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture

[102] COM(2018) 673 final, A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment

[103] Regulation 2019/1009 laying down rules on the making available on the market of EU fertilising products

Table 11 Overview of objectives and targets – Bio-based fertilisers

Policy		Objectives	Targets
Strategy (2018)	Updated Bioeconomy Strategy	• Stimulating the market uptake and industrial exploitation of bio-based innovations of e.g. circular economy, waste, fertilisers etc.	N/A
Action Plan (2021)	EU Organic Action Plan	• Support research and innovation on alternative sources of nutrients.	N/A
Action Plan (2021)	Action Plan for the development of organic production	• Supporting research and innovation on alternative sources of nutrients, breeding and animal welfare in aquaculture; the promotion of investments in adapted polyculture and multi-trophic aquaculture systems; and the promotion of hatcheries and nurseries activities for organic juveniles.	N/A
Regulation (2019)	Regulation 2019/1009 laying down rules on the making available on the market of EU fertilising products	• Opening the EU single market for fertilising products which previously had not been covered by harmonisation rules such as organic and organo-mineral fertilisers, soil improvers, inhibitors, plant biostimulants or growing media.	• EU biobased fertilising products have to comply with ○ meeting the requirements set out in Annex I for the relevant product function category; ○ meeting the requirements set out in Annex II for the relevant component material category or categories; and ○ be labelled in accordance with the labelling requirements set out in Annex III.

Policy		Objectives	Targets
Proposal for a Regulation (2023)	Proposal for a Regulation establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/1020	• Strengthening the different stages of the strategic raw materials value chain with a view to ensure that, by 2030, Union capacities for each strategic raw material[104] have significantly increased. • Improving the Union's ability to monitor and mitigate the supply risk related to critical raw materials[105]. • Ensuring the free movement of critical raw materials and products containing critical raw materials placed on the Union market while ensuring a high level of environmental protection, by improving their circularity and sustainability.	• Union extraction capacity is able to extract the ores, minerals or concentrates needed to produce at least 10% of the Union's annual consumption of strategic raw materials, to the extent that the Union's reserves allow for this. • Union processing capacity, including for all intermediate processing steps, is able to produce at least 40% of the Union's annual consumption of strategic raw materials. • Union **recycling** capacity, including for all intermediate recycling steps, is able to produce at least 15% of the Union's annual consumption of strategic raw materials. • Diversify the Union's imports of strategic raw materials with a view to ensure that, by 2030, the Union's annual consumption of each strategic raw material at any relevant stage of processing can rely on imports from several third countries, none of which provide more than 65% of the Union's annual consumption;

[104] Annex I, Section 1 presents a list of raw materials that should be considered strategic raw materials, such as: cobalt, copper and lithium.
[105] Annex II, Section 1 presents a list of raw materials that should be considered critical raw materials, such as: bauxite, magnesium, and phosphorus.

3.1.3.2 Bio-based proteins

The policy to support **bio-based protein** is currently under development[106].

In 2018, the **Updated Bioeconomy Strategy**[107] sets as one of its objectives to '*Stimulate the European biomass production potential, especially for protein generation*'.

In 2019, the **Organic Action Plan**[108] sets as one of its objectives to '*Exploring means to support the application for feed additives produced without GMM, feed based on insects as well as marine feed stocks'*

Targets set by the different legislations are currently limited.

The detailed objectives per policy are detailed in Table 12. There are no targets specific to the area of bio-based proteins.

[106] As announced in the Updated Bioeconomy Strategy. The Strategy identifies three policy priorities where policy will be further developed, for example it is announced that "*an EU Bioeconomy policy support facility and a European Bioeconomy Forum for Member States will be set up*". More details on the initiative are to come.

[107] COM(2018) 673 final, A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment

[108] Action Plan for the development of organic production

Table 12 Overview of objectives and targets – Bio-based protein

Policy		Objectives	Targets
Strategy (2018)	Updated Bioeconomy Strategy	• Stimulating the European biomass production potential, especially for protein generation.	N/A
Action Plan (2021)	EU Organic Action Plan	• Support research and innovation under Horizon Europe on alternative sources of organic vitamins and other substances that might turn out to be necessary, and on alternative sources of protein keeping in mind their technical and economic feasibility.	N/A
Action Plan (2021)	Action Plan for the development of organic production	• Supporting research and innovation under Horizon Europe on alternative sources of organic vitamins and other substances that might turn out to be necessary, and on alternative sources of protein keeping in mind their technical and economic feasibility. • Exploring means to support the application for feed additives produced without GMM, feed based on insects as well as marine feed stocks. • Adopting an algae initiative in 2022 to support EU algae production and support the EU algae industry to ensure the supply of algae as alternative feed material for organic animal farming.	N/A

3.1.3.3 Bio-based plastics

Box 11 EU definitions for Bioeconomy

- **Bio-based plastics:** refers to 'plastics made from biomass which originates mainly from plant grown such as sugarcane, cereal crops, oil crops or non-food sources like food. Other sources are organic waste and by-products. Bio-based plastics can be both biodegradable and non-biodegradable.' **(EU policy framework on biobased, biodegradable and compostable plastics, 2022)**[109]

The policy framework for **bio-based plastics** was first shaped through legislation related to lightweight plastic carrier bags. In 2015, the **Directive 2015/720/EU amending Directive 94/62/EC as regards the consumption of lightweight plastic carrier bags**[110] requires the European Commission to *'adopt an implementing act laying down the specifications of labels to ensure Union-wide recognition of biodegradable and compostable plastic carrier bags and to provide consumers with the correct information about the composting properties of such bags'.*

In 2018, the **Updated Bioeconomy Strategy**[111] sets as one of its objectives to *'Mobilise key actors in the plastics value chain to support the development of bio-based, recyclable and marine biodegradable substitutes for plastic'.*

In 2019, the Regulation (EU) 2019/1009 laying down rules on the making available on the market of EU fertilising products[112] is adopted and introduces the objectives '*to prevent impurities in EU fertilising products derived from bio-waste, in particular polymers'.*

One year later, the **European Strategy for Plastics in a Circular Economy**[113] adopted in 2020 and the **EU Organic Action Plan**[114] in 2021 both introduce the necessity to *'Establish a clear regulatory framework for plastics with biodegradable properties'.*

This objective materialises in 2022 when the European Commission releases its communication on an **EU policy framework on biobased, biodegradable and compostable plastics**[115]. This framework *'aims to fill policy gaps, guide future EU policy or legislation on such matters and provide orientation for the market with a view to avoiding any unsustainable developments'.*

Targets set by the different legislations are currently limited and consist in setting biodegradability criteria for polymers.

The detailed objectives and targets per policy are detailed in the Table 13.

[109] COM(2022) 682 final

[110] DIRECTIVE (EU) 2015/720 amending Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags

[111] COM(2018) 673 final, A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment

[112] REGULATION (EU) 2019/1009 laying down rules on the making available on the market of EU fertilising products and amending Regulations

[113] COM(2018) 28 final, A European Strategy for Plastics in a Circular Economy

[114] COM(2021) 141 final/2, An action plan for the development of organic production

[115] COM(2022) 682 final, EU policy framework on biobased, biodegradable and compostable plastics

Table 13 Overview of objectives and targets – Bio-based plastics

Policy		Objectives	Targets
Strategy (COM in 2018, adoption in 2020)	The European Strategy for Plastics in a Circular Economy	• Establish a clear regulatory framework for plastics with biodegradable properties.	N/A
Communication (2022)	EU policy framework on biobased, biodegradable and compostable plastics	• Provide better understanding of the challenges and benefits that stem from their use. It also sets out the conditions to ensure that overall, the environmental impact of their production and consumption is positive. It aims to fill policy gaps, guide future EU policy or legislation on such matters and provide orientation for the market with a view to avoiding any unsustainable developments.	N/A
Strategy (2018)	Updated Bioeconomy Strategy	• Mobilise the key actors in the plastics value chain to support the development of substitutes to fossil resources, in particular bio-based, **recyclable** and marine biodegradable substitutes for plastic.	N/A
Action Plan (2021)	EU Organic Action Plan	• Adopt a Framework on bio-based, compostable and biodegradable plastic, which will include principles and criteria under which the use of sustainable bio-based materials that are easily bio-degradable in natural conditions is beneficial to the environment. The Framework will cover all plastics, including for uses in all types of agriculture, and will therefore also be highly relevant for organic farming leading the way in terms of sustainability.	N/A

Policy		Objectives	Targets
Directive (2015)	Directive 2015/720/EU amending Directive 94/62/EC as regards the consumption of lightweight plastic carrier bags	• By 27 May 2017, the Commission shall adopt an implementing act laying down the specifications of labels or marks to ensure Union-wide recognition of biodegradable and compostable plastic carrier bags and to provide consumers with the correct information about the composting properties of such bags. That implementing act shall be adopted in accordance with the regulatory procedure referred to in Article 21(2).18 months after the adoption of that implementing act, at the latest, Member States shall ensure that biodegradable and compostable plastic carrier bags are labelled in accordance with the specifications provided for in that implementing act. – Article 8a.	N/A
Regulation (2019)	Regulation (EU) 2019/1009 laying down rules on the making available on the market of EU fertilising products and amending Regulations (EC) No 1069/2009 and (EC) No 1107/2009 and repealing Regulation (EC) No 2003/2003	• Prevent impurities in EU fertilising products derived from bio-waste, in particular polymers.	• By 16 July 2024, the Commission shall assess biodegradability criteria for polymers referred to in point 2 of component material category 9 in Part II of Annex II. Where appropriate, shall adopt delegated acts pursuant to paragraph 1 which lay down those criteria. Such criteria shall ensure that: ○ the polymer is capable of undergoing physical and biological decomposition in natural soil conditions and aquatic environments across the Union, so that it ultimately decomposes only into carbon dioxide, biomass and water; ○ the polymer has at least 90 % of the organic carbon converted into carbon dioxide in a maximum period of 48 months after the end of the claimed functionality period of the EU fertilising product indicated on the label, and as compared to an appropriate standard in the biodegradation test; and the use of polymers does not lead to

Policy		Objectives	Targets
			accumulation of plastics in the environment – Article 42.

3.1.4 Cities and regions

This subsection presents an overview of the policy framework regarding **cities and regions**. The Box below provides key definitions of the policy area that are included in European Legislation.

Box 12 EU definitions for Cities and regions

The following are EU definitions for the policy area:

- **Municipal waste** (Waste Framework Directive amended in 2018)[116]:
  - '*Means:*
    - *(a) mixed waste and separately collected waste from households, including paper and cardboard, glass, metals, plastics, bio- waste, wood, textiles, packaging, waste electrical and electronic equipment, waste batteries and accumulators, and bulky waste, including mattresses and furniture;*
    - *(b) mixed waste and separately collected waste from other sources, where such waste is similar in nature and composition to waste from households;*
  - *Municipal waste does not include waste from production, agriculture, forestry, fishing, septic tanks and sewage network and treatment, including sewage sludge, end-of-life vehicles or construction and demolition waste.*
  - *This definition is without prejudice to the allocation of responsibilities for waste management between public and private actors*'
- **Construction and demolition waste:** *'means waste generated by construction and demolition activities'. '*While the definition of construction and demolition waste refers to waste that results from construction and demolition activities in a general way, it also includes waste arising from minor do-it-yourself construction and demolition activities within private households.' *'"*Waste Framework Directive (2008, amended in 2018).[117;]
- **Urban wastewater:** 'means domestic waste water or the mixture of domestic waste water with industrial waste water and/or run-off rain water' (Urban Wastewater Treatment Directive[118], 1991) . Urban wastewater contains organic matter, nitrogen and phosphorous[119].
- **Extended producer-responsibility schemes:** A set of measures taken by Member States to ensure that producers of products bear financial responsibility or financial and organisational responsibility for the management of the waste stage of a product's life cycle[120].
- **By-product:** A substance or object resulting from a production process the primary aim of which is not the production of that substance or object. The Waste Framework Directive sets conditions under which such a substance or object is not to be considered waste[121].

The **CEAP 2020**[122] includes an entire chapter ('*Making circularity work for people, regions and cities'*) on the territorial circular economy and on the specific EU initiatives to support it: '*the proposed **European Urban Initiative**, the **Intelligent Cities Challenge Initiative**, and **the Circular Cities and Regions Initiative**[123] will provide key assistance to cities. Circular economy will be among the priority areas of the **Green City Accord'***.

[116] DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives

[117] DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives

[118] Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31991L0271&from=EN

[119] https://environment.ec.europa.eu/topics/water/urban-wastewater_en#overview https://environment.ec.europa.eu/topics/water/urban-wastewater_en#overview

[120] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0400&qid=1623311742827

[121] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0400&qid=1623311742827

[122] https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en

[123] The CCRI notably developed a methodology for the implementation of a circularity at local and regional scales which provides policymakers guidance to develop circular systemic solutions. See: https://op.europa.eu/en/publication-detail/-/publication/3a0adf97-599a-11ed-92ed-01aa75ed71a1/language-en/format-PDF/source-273892821

Legal obligations on the management of municipal waste (waste from households and similar waste)[124] are laid down in the **Waste Framework Directive (2008, amended in 2018)**[125]. Municipal waste streams, in general, are also recognised in the **Zero Pollution Action Plan (May 2021)**[126] the as well as t**he Landfill Directive (April 1999)**[127].

The descriptions of these are further detailed in the Table 14 below – along with an overview of the municipal waste streams of specific sub-policy areas are considered (also in other pieces of legislation).

[124] https://eur-lex.europa.eu/resource.html?uri=cellar:1dfc5184-c003-11e8-9893-01aa75ed71a1.0006.02/DOC_1&format=PDF

[125] Successive amendments to the original Directive 2008/98/EC have been incorporated into the original text. The consolidated version can be found here: DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives

[126] COM(2021) 400 final, COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS EMPTY, Pathway to a Healthy Planet for All, EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'

[127] Directive 1999/31/EC of 26 April 1999 on the landfill of waste

Table 14 Overview of objectives and targets – Cities and regions

Policy		Objectives	Targets
Public procurement			
Proposal for a regulation (2022)	Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC	• To contribute to the objective of reaching climate neutrality, improving energy and **resource efficiency** and transitioning to a circular economy that protects public health and biodiversity, the power to adopt acts in accordance with Article 290 TFEU should be delegated to the Commission to require , where appropriate, contracting authorities and entities as defined in Directive 2014/24/EU78 and 2014/25/EU79 of the European Parliament and of the Council, to align their procurement with specific green public procurement criteria or targets, to be set out in the delegated acts adopted pursuant to this Regulation.	N/A

Policy		Objectives	Targets
Directive (2011)	Directive of the assessment of the effects of certain public and private projects on the environment	• The effects of a project on the environment should be assessed in order to take account of concerns to protect human health, to contribute by means of a better environment to the quality of life, to ensure maintenance of the diversity of species and to maintain the reproductive capacity of the ecosystem as a basic resource for life. • It is desirable to lay down strengthened provisions concerning environmental impact assessment in a transboundary context to take account of developments at international level. The European Community signed the Convention on Environmental Impact Assessment in a Transboundary Context on 25 February 1991, and ratified it on 24 June 1997.	N/A
Municipal waste			
Directive (2008, amended in 2018)	Waste Framework Directive	• The Waste Framework Directive sets the basic concepts and definitions related to **waste management,** including definitions of waste, **recycling and recovery**.	• 'By 2025, the preparing for re-use and the **recycling** of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively'. • Member States must: o establish, by 1 January 2025, separate collection of textiles and hazardous waste generated by households; o ensure that, by 31 December 2023, bio-waste is collected separately or recycled at source (for example, by composting).

Policy		Objectives	Targets
Directive (1999, amended in 2018)	Directive on the landfill of waste	• The Landfill Directive sets out strict operational requirements for landfill sites with the objective to protect both human health and the environment. • Sets specific operational requirements such as permitting, waste acceptance, technical requirements in the operational and after-care phases and reporting.	• 'Limits the share of municipal waste landfilled to 10% by 2035'.
Action Plan (2021)	The Zero Pollution Action Plan	• Air, water and soil pollution is **reduced** to levels no longer considered harmful to health and natural ecosystems and that respect the boundaries our planet can cope with, thus creating a toxic-free environment.	• This is translated into key 2030 targets to speed up reducing pollution at source. These targets include significantly reducing waste generation and, by 50%, residual municipal waste. • Aspirational target on the generation of total waste and residual municipal waste per capita within the EU which have been steadily increasing since 2014. The Commission intends to reinforce the waste hierarchy set out in Article 4 of Directive 2008/98/EC, which mandates the prioritization of waste prevention, by proposing waste reduction targets and other waste prevention measures in the context of the review of Directive 2008/98/EC, planned for 2023.

Policy		Objectives	Targets
Directive (2006)	Directive on the management of waste from extractive industries and amending Directive 2004/35/EC	• placing extractive waste back into the excavation void after extraction of the mineral, as far as is technically and economically feasible and environmentally sound in accordance with existing environmental standards at Community level and with the requirements of this Directive where relevant; • to encourage the recovery of extractive waste by means of **recycling, reusing or reclaiming** such waste, where this is environmentally sound in accordance with existing environmental standards at Community level and with the requirements of this Directive where relevant.	• N/A
Wastewater			
Directive (1991)	Urban Wastewater Treatment Directive	• Whereas the **recycling** of sludge arising from waste water treatment should be encouraged; whereas the disposal of sludge to surface waters should be phased out.	• Member States shall ensure that all agglomerations are provided with collecting systems for urban wastewater, ○ at the latest by 31 December 2000 for those with a population equivalent (p.e.) of more than 1 5 000, and ○ at the latest by 31 December 2005 for those with a p.e. of between 2 000 and 15 000. • Member States shall ensure that urban waste water entering collecting systems shall before discharge be subject to secondary treatment or an equivalent treatment as follows : ○ at the latest by 31 December 2000 for all discharges from agglomerations of more than 1 5 000 p.e.,

Policy		Objectives	Targets
			○ at the latest by 31 December 2005 for all discharges from agglomerations of between 10 000 and 15 000 p.e. ., ○ at the latest by 31 December 2005 for discharges to fresh-water and estuaries from agglomerations of between 2 000 and 1 0 000 p.e.
Proposal for a Directive (2022)	Proposal for a Directive concerning urban wastewater treatment (recast)	• Reducing GHG emissions and energy consumption, and improving circularity through sludge **management of the wastewater sector**.	• Member States shall ensure that the total annual energy from renewable sources, as defined in Article 2(1) of Directive (EU) 2018/2001, produced at national level by urban wastewater treatment plants treating a load of 10,000 p.e. and above is equivalent to at least: (a) 50 % of the total annual energy used by such plants by 31 December 2030; (b) 75 % of the total annual energy used by such plants by 31 December 2035; (c) 100 % of the total annual energy used by such plants by 31 December 2040. • By 2040, in terms of water pollution, compared to the baseline, the total pollution would be **reduced** by 4,8 million p.e. (or 105.014 tonnes) for BOD, 56,4 million p.e. for N (or 229.999 tonnes), 49,6 million p.e. (or 29.678 tonnes) for P, 77,4 million p.e. for the toxic load of micro-pollutants and 24,8 million p.e. for E. Coli. Micro-plastics emissions would be reduced by 9%, mainly though actions on improved management of rain waters. • By 2040, GHG emissions would be reduced by 4,86 million tonnes (37,32 % of the avoidable emissions from the sector).

Policy		Objectives	Targets
Directive (1986, amended in 2018 and 2019)	Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture	• Protecting humans, animals, plants and the environment by ensuring that heavy metals in soil and sludge do not exceed set limits. • Increasing the amount of sewage sludge used in agriculture.	• It bans the use of sewage sludge that results in concentrations of these heavy metals in soil exceeding these limit values. • Concentrations of heavy metals in soil (mg/kg of dry matter in a representative sample) are not allowed to exceed limits as defined in Annex IA, IB and IC.
Biowaste			
Directive (1999)	Directive 1999/31/EC on the landfill of waste	• Providing measures, procedures, and guidance to prevent or **reduce** as far as possible negative facets on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health, from landfilling of waste, during the whole life-cycle of the landfill. • Encourage Member States to set up a national strategy for the implementation of the reduction of biodegradable waste going to landfills, by means of in particular, **recycling**, **composting,** biogas production or materials/energy recovery.	• By 2006, biodegradable municipal waste going to landfills must be reduced to 75% of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available. • By 2009, biodegradable municipal waste going to landfills must be reduced to 50% of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available. • By 2016, biodegradable municipal waste going to landfills must be reduced to 35% of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available.

Policy		Objectives	Targets
Directive (2018)	Directive (EU) 2018/851 amending Directive 2008/98/EC on waste	• Improving the efficiency of resource use and ensuring that waste is valued as a resource can contribute to reducing the Union's dependence on the import of raw materials and facilitate the transition to more sustainable material management and to a circular economy model.	• By 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 % by weight. • By 2030, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 60 % by weight. • By 2035, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 65 % by weight.'.
Food waste			
Directive (2018)	Directive (EU) 2018/851 amending Directive 2008/98/EC on waste	• In 2018, the **Directive (EU) 2018/851 amending Directive 2008/98/EC on waste** sets a reduction target of 30% by 2025 and 50% by 2030 for food waste from households in order to '*prevent waste generation, promote and support sustainable production and consumption models and encourage food donation and other redistribution for human consumption*'. • Improving the efficiency of resource use and ensuring that waste is valued as a resource can contribute to reducing the Union's dependence on the import of raw materials and facilitate the transition to more sustainable material management and to a circular economy model.	• By 2025, reducing the generation of food waste in primary production, in processing and manufacturing, in retail and other distribution of food, in restaurants and food services as well as in households by 30% Union-wide; • By 2030, reducing the generation of food waste in primary production, in processing and manufacturing, in retail and other distribution of food, in restaurants and food services as well as in households by 50% Union-wide.

Policy		Objectives	Targets
Construction and demolition waste			
Directive (2008)	Waste Framework Directive (2008/98/EC amended by 2018/851)	• Member States shall take measures to prevent waste generation. Those measures shall, at least: ○ encourage the re-use of products and the setting up of systems promoting **repair and re-use** activities, including in particular for electrical and electronic equipment, textiles and furniture, as well as packaging and construction materials and products; ○ **reduce** waste generation in processes related to industrial production, extraction of minerals, manufacturing, construction and demolition, considering best available techniques. • Member States shall take measures to promote selective demolition in order to enable removal and safe handling of hazardous substances and facilitate re-use and high-quality recycling by selective removal of materials, and to ensure the establishment of sorting systems for construction and demolition waste at least for wood, mineral fractions (concrete, bricks, tiles and ceramics, stones), metal, glass, plastic and plaster. • By 31 December 2024, the Commission shall consider the	By 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste shall be increased to a minimum of 70 % by weight.

Policy		Objectives	Targets
		setting of preparing for re-use and recycling targets for construction and demolition waste and its material-specific fractions, textile waste, commercial waste, non-hazardous industrial waste and other waste streams, as well as preparing for re-use targets for municipal waste and recycling targets for municipal bio-waste. To that end, the Commission shall submit a report to the European Parliament and to the Council, accompanied, if appropriate, by a legislative proposal.	
Waste from batteries and vehicles			
Directive (2006)	Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators	• Improving the environmental performance of batteries and accumulators and of the activities of all economic operators involved in the life cycle of batteries and accumulators, e.g. producers, distributors and end-users and, in particular, those operators directly involved in the treatment and recycling of waste batteries and accumulators.	• Member States shall achieve the following minimum collection rates: (a) 25 % by 26 September 2012; (b) 45 % by 26 September 2016.

Policy		Objectives	Targets
Packaging waste			
Directive (2008, amended in 2018)	Waste Framework Directive	• Encourage the re-use of products and the setting up of systems promoting **repair and re-use** activities, including in particular packaging.	• By 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively – Article 11. • Subject to Article 10(2) and (3), Member States shall set up separate collection at least for paper, metal, plastic and glass,– Article 11.
Plastic waste			
Strategy (COM in 2018, adoption in 2020)	The European Strategy for Plastics in a Circular Economy	• The design and production of plastics and plastic products fully respect **reuse**, **repair and recycling** needs and more sustainable materials are developed and promoted.	• By 2030, more than half of plastics waste generated in Europe is recycled. • Separate collection of plastics waste reaches very high levels. • EU plastics recycling capacity is significantly extended and modernised. By 2030, sorting and recycling capacity has increased fourfold since 2015, leading to the creation of 200 000 new jobs, spread all across Europe. • Thanks to improved separate collection and investment in innovation, skills and capacity upscaling, export of poorly sorted plastics waste has been phased out.
Strategy (2020)	Chemicals Strategy for Sustainability - Towards a Toxic-Free Environment	• Support investments in sustainable innovations that can decontaminate waste streams, increase safe recycling and **reduce** the export of waste, in particular plastics and textiles;	N/A
Directive (2008, amended in 2018)	Waste Framework Directive	• Encourage the re-use of products and the setting up of systems promoting **repair and re-use** activities	• By 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively – Article 11. • Subject to Article 10(2) and (3), Member States shall set up separate collection at least for paper, metal, plastic and glass – Article 11.

Policy		Objectives	Targets
Regulation (2022)	Regulation (EU) 2022/1616 of 15 September 2022 on recycled plastic materials and articles intended to come into contact with foods	Lay down rules for: • The sale of plastics materials and articles containing plastic originating from waste; • The development and operation of recycling technologies, processes and installations to produce recycled plastic for use – Article 1	• N/A
Textile waste			
Strategy (2022)	EU Strategy for Sustainable and Circular Textiles	• Create an economy for collection, sorting, reuse, preparation for reuse and recycling. • The Commission will also consider requiring that separately collected textile waste from households and similar waste is prepared for reuse as a necessary first step, which will boost preparing for reuse, reuse and **repair** activities and **reduce** the volumes for types of waste treatment that are lower in the waste hierarchy.	N/A
Strategy (2020)	Chemicals Strategy for Sustainability – Towards a Toxic-Free Environment	• Support investments in sustainable innovations that can decontaminate waste streams, increase safe recycling and **reduce** the export of waste, in particular plastics and textiles;	N/A

Policy		Objectives	Targets
Directive (2008, amended in 2018)	Waste Framework Directive[128]	• Encourage the **re-use** of products and the setting up of systems promoting **repair and re-use** activities	• By 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively – Article 11. • Subject to Article 10(2) and (3), Member States shall set up separate collection for textiles by 1 January 2025 – Article 11.
Waste Electrical and Electronic Equipment			
Directive	Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) (2012)	• Contributing to sustainable production and consumption by, as a first priority, the prevention of WEEE and, in addition, by the re-use, **recycling** and other forms of **recovery** of such wastes so as to **reduce** the disposal of waste and to contribute to the efficient use of resources and the **retrieval of valuable secondary raw materials**.	• Each Member State shall ensure the implementation of the 'producer responsibility' principle and, on that basis, that a minimum collection rate is achieved annually. • From 2016, the minimum collection rate shall be 45 % calculated on the basis of the total weight of WEEE collected in a given year in the Member State concerned, expressed as a percentage of the average weight of WEEE placed on the market in the three preceding years in that Member State. • From 2019, the minimum collection rate to be achieved annually shall be 65 % of the average weight of WEEE placed on the market in the three preceding years in the Member State concerned, or alternatively 85 % of WEEE generated on the territory of that Member State. • Regarding all WEEE separately collected and sent for treatment Member States shall ensure that producers meet the following minimum targets set out in Annex V[129].

[128] The Commission is preparing an amendment of the Waste Framework Directive (planned for summer 2023) to mandate harmonised EU extended producer responsibility rules for textiles with eco-modulation of fees. The objective will notably be to incentivise producers to ensure that their products are designed in line with circularity principles.

[129] Annex V of Directive 2012/19/EU gives minimum recovery and recycling targets for specific product categories. This means that for example, for large household appliances such as refrigerators, at least 80% shall be recovered and 75% shall be recycled from 13 August 2012. From 15 August 2015, for large household appliances such as refrigerators, at least 85% shall be recovered and 80% shall be prepared for re-use and recycled. From 15 August 2018 onwards, for large household appliances such as refrigerators, at least 85% shall be recovered and 80% shall be prepared for re-use and recycled.

Policy		Objectives	Targets
Directive (2008)	Directive 2008/98/EC on waste and repealing certain Directives	• The introduction of extended producer responsibility to support the design and production of goods which take into full account and facilitate the efficient use of resources during their **whole life-cycle** including their **repair, re-use, disassembly** and **recycling** (cradle to grave approach). The Directive also bans the mixing of hazardous waste with other categories of waste. • Account for **recycled** and **recovered** waste the amounts of waste which have ceased to be waste when the **recycling or recovery** requirements of legislations, such as WEEE, are satisfied. • Adopt guidelines to **promote certainty and consistency and to specify in certain cases when substances or objects become waste**, especially for electrical and electronic equipment and vehicles.	• N/A
Directive (2011)	Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment	• Laying down rules on the restriction of the use of hazardous substances in electrical and electronic equipment (EEE) with a view to contributing to the protection of human health and the environment, including the environmentally sound **recovery** and disposal of waste EEE.	• For the purposes of this Directive, no more than the maximum concentration value by weight in homogeneous materials as specified in Annex II shall be tolerated.

3.1.5 Households as consumers

This subsection presents an overview of the policy framework regarding **households and consumers**. The Box below provides the definitions of households.

Box 13 EU definitions for households

The following is an EU definition for the policy area:

- **Households:** '*A household includes either one person living alone or a group of people, not necessarily related, living at the same address with common housekeeping, i.e. sharing at least one meal per day or sharing a living or sitting room.*'[130]

Households are 'one of the smallest social units through which humans affect the use of natural resources for heating, eating, and clothing, and through which we produce a large amount of waste. Focusing on households centres the attention on the private sphere—the actions of households, and their consumption behaviours and decisions. Yet, such an approach goes beyond individual behaviour, thus drawing attention to collective choices regarding everyday practices.'[131] In this Section, we focus on consumer role of households (as the household waste is already covered in Section 3.1.4).

Some EU initiatives and legislation already address to a certain extent sustainability aspects of products, either on a mandatory or voluntary basis. Notably, the **Ecodesign Directive**[132] successfully regulates energy efficiency and some circularity features of energy-related products. However, there is currently no comprehensive set of requirements to ensure that all products placed on the EU market become increasingly sustainable and stand the test of circularity. The **proposal for a regulation on Ecodesign Requirements for Sustainable Products (March 2022)** aims to address this revising the Ecodesign Directive to make products fit for a climate neutral, resource efficient and circular economy, reducing waste and ensuring that the (durable, reusable, repairable, recyclable, and energy-efficient) performance of frontrunners in sustainability progressively becomes the norm.

'As part of this legislative initiative, and, where appropriate, through complementary legislative proposals, the Commission will consider establishing sustainability principles and other appropriate ways to regulate the following aspects:

- *Improving product durability, reusability, upgradability and reparability, addressing the presence of hazardous chemicals in products, and increasing their energy and resource efficiency;*
- *Increasing recycled content in products, while ensuring their performance and safety;*
- *Enabling remanufacturing and high-quality recycling;*
- *Reducing carbon and environmental footprints;*
- *Restricting single-use and countering premature obsolescence;*
- *Introducing a ban on the destruction of unsold durable goods;*
- *Incentivising product-as-a-service or other models where producers keep the ownership of the product or the responsibility for its performance throughout its lifecycle;*
- *Mobilising the potential of digitalisation of product information, including solutions such as digital passports, tagging and watermarks;*
- *Rewarding products based on their different sustainability performance, including by linking high performance levels to incentives.*

[130] Eurostat. Statistics explained. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Household_-_social_statistics#:~:text=A%20household%20includes%20either%20one,a%20living%20or%20sitting%20room.

[131] 'What Does the Circular Household of the Future Look Like? An Expert-Based Exploration' (2022). Found at: https://www.mdpi.com/2073-445X/11/7/1062

[132] Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, OJ L 285, 31.10.2009

Priority will be given to addressing product groups identified in the context of the value chains featuring in this Action Plan, such as electronics, ICT and textiles but also furniture and high impact intermediary products such as steel, cement and chemicals'. **(Circular Economy Action Plan, 2020)**.[133]

Informed consumer choices can potentially shape decisions made by producers upstream and downstream in product supply chains. EU policy is also active in implementing voluntary measures to make circular economy-consistent choices more attractive for consumers, mainly focusing on providing information through labelling (e.g. the **EU Ecolabel**[134]**).**

The descriptions of the relevant pieces of legislation are detailed in the Table 15 .

[133] COM(2020) 98 final

[134] Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel, OJ L 27, 30.1.2010, p. 1.

Table 15 Overview of objectives and targets – Households

Policy		Objectives	Targets
Directive (2009)	DIRECTIVE 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products (2009)	Main focus is on energy efficiency. Annex I • *Part 1: Ecodesign parameters for products* ○ *1.2 For each phase, the following environmental aspects must be assessed where relevant:* ▪ *possibilities for reuse, recycling and recovery of materials and/or of energy, taking into account Directive 2002/96/EC.* ○ *In particular, the following parameters must be used, as appropriate, and supplemented by others, where necessary, for evaluating the potential for improving the environmental aspects referred to in point 1.2:* ▪ *use of materials issued from recycling activities;* ▪ *ease for reuse and recycling as expressed through: number of materials and components used, use of standard components, time necessary for disassembly, complexity of tools necessary for disassembly, use of component and material coding standards for the identification of components and materials suitable for reuse and recycling (including marking of plastic parts in accordance with ISO standards), use of easily recyclable materials, easy access to valuable and other recyclable components and materials; easy access to components*	N/A

Policy		Objectives	Targets
		and materials containing hazardous substances; ▪ *avoidance of technical solutions detrimental to reuse and recycling of components and whole appliances;* • *Part 2: Requirements relating to the supply of information* ○ *Implementing measures may require information to be supplied by the manufacturer that may influence the way the product is handled, used or recycled by parties other than the manufacturer. This information may include, as applicable:* ▪ *(d) information for treatment facilities concerning disassembly, recycling, or disposal at end-of-life.* Annex II • Specific ecodesign requirements aim at improving a selected environmental aspect of the product. They may take the form of requirements for **reduced** consumption of a given resource, such as a limit on the use of a resource in the various stages of a product's life cycle, as appropriate (such as a limit on water consumption in the use phase or on the quantities of a given material incorporated in the product or a requirement for minimum quantities of recycled material).	

Policy		Objectives	Targets
Proposal for a Regulation (2022)	Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC (2022)	• Addresses product design, which determines up to 80% of a product's lifecycle environmental impact. • It sets new requirements to make products more **durable, reliable, reusable, upgradable, reparable, easier to maintain, refurbish and recycle**, and energy and resource efficient. In addition, product-specific information requirements will ensure consumers know the environmental impacts of their purchases. All regulated products will have Digital Product Passports. This will make it easier to **repair** or r**ecycle** products and facilitate tracking substances of concern along the supply chain. Labelling can be introduced as well. The proposal also contains measures to end the destruction of unsold consumer goods, as well as expand green public procurement and provide incentives for sustainable products.	N/A
Proposal for a Directive (2022)	The proposal for a DIRECTIVE regards empowering consumers for the green transition through better protection against unfair practices and better information (2022)	• This proposal amends the Unfair Commercial Practices Directive and the Consumer Rights Directive to empower consumers for the green transition through better protection against unfair commercial practices and better information. • This proposal aims at enhancing consumer rights by amending two directives that protect the interest of consumers at Union level: the Unfair Commercial Practices Directive 2005/29/EC1 and the Consumer Rights Directive 2011/83/EU2. • More specifically, the proposal aims to contribute to a circular, clean and green EU economy by enabling consumers to take informed purchasing decisions and therefore contribute to more sustainable consumption. It also targets unfair commercial practices that mislead consumers away from sustainable consumption choices. Furthermore, it ensures a better and more consistent application of EU consumer rules.	N/A

Policy		Objectives	Targets
Proposal for a Directive (2023)	Proposal for a Directive on common rules promoting the repair of goods and amending Regulation (EU) 2017/2394, Directives (EU) 2019/771 and (EU) 2020/1828	• This proposal aims to empower consumers through enabling the **repair** of goods purchased by consumers in the event of a defect of the goods that occurs or becomes apparent outside the liability of the seller pursuant to Article 10 of Directive (EU) 2019/771. • Upon the consumer's request, the producer shall **repair**, for free or against a price or another kind of consideration, goods for which and to the extent that reparability requirements are provided for by Union legal acts as listed in Annex II. The producer shall not be obliged to **repair** such goods where **repair** is impossible.	N/A
Food consumption			
Directive (2018)	Directive (EU) 2018/851 amending Directive 2008/98/EC on waste	• Improving the efficiency of resource use and ensuring that waste is valued as a resource can contribute to reducing the Union's dependence on the import of raw materials and facilitate the transition to more sustainable material management and to a circular economy model.	• By 2030, **reduce** the generation of food waste in primary production, in processing and manufacturing, in retail and other distribution of food, in restaurants and food services as well as in households as a contribution to the United Nations Sustainable Development Goal by 50 % the per capita global food waste at the retail and consumer levels and to **reduce** food losses along production and supply chains.
Plastic consumption			
Strategy (COM in 2018, adoption in 2020)	The European Strategy for Plastics in a Circular Economy (COM in 2018, adoption in 2020)	• Citizens are aware of the need to avoid waste, and make choices accordingly. Consumers, as key players, are incentivised, made aware of key benefits and thus enabled to contribute actively to the transition. • Better design, new business models and innovative products emerge that offer more sustainable consumption patterns.	N/A

Policy		Objectives	Targets
Directive (2015)	Directive 2015/720/EU amending Directive 94/62/EC as regards the consumption of lightweight plastic carrier bags (2015)	• **Reduce** the consumption of lightweight plastic carrier bags, including imposing charges or setting national maximum consumption targets.	• The measures taken by Member States shall include either or both of the following: ○ (a) the adoption of measures ensuring that the annual consumption level does not exceed 90 lightweight plastic carrier bags per person by 31 December 2019 and 40 lightweight plastic carrier bags per person by 31 December 2025, or equivalent targets set in weight. Very lightweight plastic carrier bags may be excluded from national consumption objectives;
Proposal for a Regulation (2022)	Proposal for a Regulation on packaging and packaging waste amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC (2022)	• Member States shall take measures to achieve a sustained reduction in the consumption of lightweight plastic carrier bags on their territory – Article 29.	• A sustained reduction is achieved if the annual consumption does not exceed 40 lightweight plastic carrier bags per person, or the equivalent target in weight, by 31 December 2025, and subsequently by 31 December in each year thereafter – Article 29.

3.2 POLICY FRAMEWORK: EXAMPLES OF OBJECTIVES AND TARGETS IN NATIONAL STRATEGIES

This section provides examples of objectives and targets in European Member States that have policies targeting circularity. Table 16 shows the findings of the national-level desk research and interviews for the pre-determined Member States (the Member States with leading economies in the EU which were selected in agreement with DG-RTD). The following boxes present examples of other Member States which were picked in the EU level interviews. In bold are underlined the national 'deviations', i.e. targets applied at the national level in addition to those fixed at the EU level.

Table 16 Objectives and targets found in national strategies

Policy		Objectives	Targets
Germany			

Strategy (2020)	Deutsches Ressourceneffizienzprogramm III – 2020 bis 2023	• The overarching objective of the German *Ressourceneffizienzprogramm* is to deal with the finite resources in an efficient and economically sensible way to reduce impacts on the environment and to secure the natural foundations of the economy and society for future generations. The strategy also aims to strengthen Germany's competitiveness as a business location and to improve people's living and working conditions. The third programme specifically aims to strengthen approaches to the sustainable use of resources along the entire value chain.
		• The strategy also aims to close material cycles and emphasizes the special the importance of product design.
		• More precisely, the strategy aims:
		  ○ To decouple economic growth from the use of raw materials,
		  ○ To rely on secondary raw materials and resources to reduce the use of primary raw materials.
			The strategy defines the following indicators and targets:
			• **Total resource productivity.** The target is a continued annual growth of total resource productivity of at least 1.5% until 2030.
			• **Raw material consumption.** No target is defined.
			• **Use of secondary raw materials.** The use of secondary raw materials is split into two sub indicators: Direct Effect of Recovery (DERec) and Direct and Indirect Effects of Recover (DIERec). No clear targets appear to be defined.
			• **Anthropogenic material stockpile.** It entails the materials that are bound in the physical environment of structures people live in and which are not released into the environment again. No clear target is defined.

Policy		Objectives	Targets
France			
Strategy (2018)	Roadmap for the Circular Economy: 50 measures for a 100% circular economy	The strategy aims: • To give individuals the means to act through a more sustainable consumption and to make progress in waste sorting. • Set new ambitions for existing industrial channels, in order to contribute to the circular economy dynamic and the development of new industrial channels. • Activate levers such as waste taxation on the one hand, and pricing and collection arrangements on the other to form a fairer system that encourages communities committed to the circular economy.	• Reduce natural resource use related to French consumption: 30% reduction in resource consumption in relation to GDP between 2010 and 2030. • A 50% reduction in the amount of non-hazardous waste landfilled by 2025, compared to 2010. • Aim towards 100% of plastics recycled by 2025. • Reduce greenhouse gas emissions: avoid the emission of 8 million additional tonnes of CO2 each year thanks to plastic recycling. • Create up to 300,000 additional jobs, including in new professions. **Aim to collect 100% of recyclable waste**.
Italy			
Strategy (2022)	Strategia nazionale per l'economia circolareStrategia nazionale per l'economia circolare	Macro objectives – (particular focus of the strategy): • Support the creation of a secondary raw materials. • Extended producer responsibility. • Improve fiscal system to support circular economy. • Support upstream activities in value chains. • Product life cycle. • Improve traceability of waste flows. • Improve education on circular economy. Specific actions addressing the following areas relevant where circular economy potential is considered high in Italy: • Reuse and repair.	Targets included in the strategy are strongly focus on waste sector and translate at the national level the EU targets included in EU Waste Framework Directive and EU Landfilling Directive.

Policy		Objectives	Targets
		• Industrial symbiosis. • Producer extended responsibility. • Minimum Environmental Criteria on strategic sectors for the transition towards the circular economy. • Ecodesign. • End of waste. • Digitalisation. • Soil. • Water resources. • Financial and fiscal policy. • Territories and urban areas. • Environmental education.	
Strategy (2017)	Towards a Model of Circular Economy for Italy - Overview and Strategic Framework	Supporting a more efficient use of resources and of more circular and sustainable patterns of production also thanks to more aware and conscious consumption habits.	N/A
Spain			
Strategy (2022)	ESPAÑA CIRCULAR 2030 - Circular Economy Spanish Strategy	The Strategy aims to provide the bases to promote a new production and consumption model, maintaining the value of products, materials and resources in the economy for as long as possible, minimising waste, contributing to the achievement of a sustainable, decarbonized, resource-efficient and competitive economy.	The Strategy establishes the following goals for 2030: • Reduce by 30% domestic material consumption in relation to national GDP (compared with 2010) • Reduce waste by 15% (compared with 2010). • Reduce food waste throughout the entire food chain: 50% reduction per person in retail and households and 20% in production chains and supplies from 2020. • Promote reuse and reuse-enabling activities for 10% of municipal waste. • **Reduce greenhouse gas emissions to under 10 million tonnes of CO_2e.** • **Improve water use efficiency by 10%.**

Policy		Objectives	Targets
Netherlands			
Strategy (2016)	A circular economy in the Netherlands by 2050	Strategic goals (by 2050): 1. Utilise raw materials in existing supply chains in a high-quality manner, with increased efficiency leading to a decrease in demand for raw materials. 2. Replace fossil-based, critical and non-sustainably produced raw materials with sustainably produced, renewable, and generally available raw materials (including biomass, iron, silicon, carbon, magnesium, sodium, potassium, calcium, nitrogen, oxygen, phosphorus, sulphur, hydrogen), preserving natural capital and reducing dependency on (imported) fossil sources. 3. Develop new production methods, design new products and promote new ways of consumption, leading to different supply chains that encourage reduction, replacement and reuse.	The Strategy includes the following quantified targets: • Reduce the use of primary raw materials (minerals, fossil and metals) by 50% by 2030. • **Become a 100% circular economy by 2050**. • Raise the proportion of circular procurement to 10% by 2020 (memorandum on Socially Responsible Purchasing). • **Recycle 52% of discarded plastic packaging by 2017**. • By 2020, 50% of manufacturing businesses must be aware of the risks and opportunities involved in metals, and have taken steps towards circularity. • Reduce annual household residual waste generation to max. 100kg per capita by 2020 and 30kg by 2025. • Reduce residual waste from companies, organisations, and governments by 50% by 2022 (compared with 2012).
Strategy (2016)	Strategic Vision for the use of Biomass on the road to 2030	The Biomass Vision 2030 aims to ensure that biomass is (as far as possible) sustainably produced, and that it can best contribute to policy objectives for 2030 related to food, energy, climate, mobility and a bio-based and circular economy.	The Vision mentions the following aspirational targets: • **Reduce the share of fossil resources in the Dutch economy to 70% by 2030**. • **Base 20% of chemicals production in the Netherlands on renewable raw materials by 2030**.
Poland			
Strategy (2019)	Poland Road Map towards the Transition to Circular Economy	• The Road Map aims to identify actions to maximise the value of resources, materials and products, reduce waste, and maintain efficient production and consumption. In particular it focuses on sustainable industrial production, sustainable consumption, the bioeconomy (renewable raw materials), new business models, and the implementation, monitoring and financing of circular economy.	N/A

Box 14 presents examples of policies in Member States that identify objectives for circularity in the construction and buildings area

Box 14 Examples of circular objectives in Member States for construction and buildings

The below represent examples of national objectives in Strategies, Actions Plans and Legislation which have been put forward by a variety of stakeholders:

- **The Netherlands:** The Circular Construction Economy Transition Agenda (2018) describes the Netherlands strategy for achieving a circular construction economy by 2050, but preferably much sooner. The Agenda draws up the strategy and makes concrete recommendations. One of these recommendations is that the government will require 100% circular execution for all contracts from 2023 onwards.
- **Denmark:** The Danish Strategy for Sustainable Construction (2021) has a clear timeline. In addition, the Danish Action Plan for Circular Economy (2021), has a specific section on buildings. From 1st January 2023, the Danish building regulation now includes climate requirements for all new buildings in order to decrease the country's CO2 emissions from the construction sector[135]. This regulation integrates a lifecycle approach and considers the emissions embodied in materials, encouraging circular practices.
- **Estonia:** The 'Long Term View on Construction 2035' (2021) provides a strategic roadmap for the construction industry in Estonia covering circular economy topics. The document outlines the key problems, vision, objectives, and actions (with responsible organisations) to achieve the objectives.
- **Finland:** Finland have passed a new law (starting from 2024) which will strengthen a circular economy in building[136]. According to the new essential technical requirements, buildings must be designed so that they are adaptable and can be used for a long time. With respect to new buildings and buildings to be demolished, an account must be provided on materials that have been used or will be released, on soil and rock material to be removed from the building site, and on the amount of hazardous waste.
- **France:** Mandatory reporting of pre-demolition information in Article 51 of the anti-waste for circular economy (AGEC) law:
    - *"A polluter-pays sector has been created: it will apply to construction products or materials in the building sector, intended for households or professionals.*
    - *New places are dedicated to the collection of this waste. There are now 600 in France, the eco-organizations in the sector must therefore establish a territorial network of facilities taking up building waste.*
    - *Construction or demolition waste is taken back free of charge when collected separately. This measure also allows traceability of this waste"*[137]

There are many developments on the topic of whole life carbon. Finland, Sweden, Denmark, the Netherlands and France have policies on whole life carbon, which is directly linked to circularity. Additionally, the World Green Building Council have supported development of national whole life carbon roadmaps (Croatia, Finland, France, Germany, Ireland, the Netherlands, Poland, Spain).

[135] https://nordicsustainableconstruction.com/news/2023/january/denmark-introduces-co2-limit-for-new-constructions#:~:text=The%20new%20Danish%20requirements%20entail,per%20square%20meters%20per%20year.

[136] https://valtioneuvosto.fi/-/1410903/eduskunta-hyvaksyi-rakentamisen-paastoja-pienentavat-ja-digitalisaatiota-edistavat-lait?languageId=en_US

[137] https://www.ecologie.gouv.fr/loi-anti-gaspillage-economie-circulaire

3.3 FUNDING FRAMEWORK: SUPPORTING THE CIRCULAR TRANSITION AT THE EU LEVEL

This Section provides an overview of European funding schemes relevant to the transition to a circular economy. The EU has various funding schemes to support the transition to a circular economy. This Section lists the various funding schemes that have been identified. The funding schemes have been categorised into:

- EU funding programmes, which are funded through the EU's long-term budget (MFF) 2021-2027 and the instrument NextGenerationEU.
- Other funds.
- Other initiatives.

Each of these three categories are covered in the following four subsections.

Before going into the listings of each funding scheme, summarises the funding schemes and indicates the funding types of each funding scheme. The following funding types are identified[138]:

- Grants: funding categories where money is directly transferred to the beneficiary to support a project.
- Loans: funding category where beneficiaries are given loans to support a project.
- Equity and quasi-equity: funding category where private capital is catalysed through investments in equity and funds.
- Guarantee: funding category where risk is partially covered through loan portfolios to make projects more attractive to other investors.
- Advisory services and technical assistance: additional technical and financial expertise available to beneficiaries to implement projects and build capacity.

The European Investment Bank (EIB) is one of the main investment facilitators in Europe. It provides and supports funding opportunities for both public as private institutions. With various cofounding activities through loans, equity and guarantees it sets investments in climate action and the environment as its main target. Though the EIB does not offer programmes that target circular activities of projects specifically, it has seen an increasing trend in supporting activities related to a circular economy. From 2018 to 2022, the EIB has provided loans worth in total EUR 3.4 billion to more than 118 circular projects and activities in seven different sectors[139].

[138] European Union funding, grants and subsidies (link)

[139] As identified during an interview with Jonas Byström, senior engineer at the EIB

Table 17 Overview of the European funding framework supporting the transition to a circular economy

Category	Funding Scheme	Duration	Budget	Funding type					Relevance		CEAP key policy areas explicitly targeted
				Grants	Debt	Equity/ quasi equity	Guarantee	Advisory services/ TA*	Circular topics targeted explicitly	Comment	
EU funding programmes	Horizon Europe - cluster 6	2021-30	€0.96bn	✓					✓		Food, water and nutrients
	InvestEU	2021-27	€26.2bn		✓	✓	✓		✓	At least 30% of the budget to climate objectives	
	Connecting Europe Facility	2021-27	€33.3bn	✓			✓				
	European Regional Development Fund	2021-27	€226.1bn	✓	✓	✓	✓	✓	✓	At least 30% of the budget to climate objectives	
	European Agricultural Fund for Regional Development	2021-27	€95.5bn		✓	✓	✓			At least 26% (2021-22) and 40% (2023-27) of the budget to climate objectives	
	Cohesion Fund	2021-27	€48.0bn	✓	✓	✓	✓	✓	✓	At least 37% of the budget to climate objectives	
	European Maritime, Fisheries and Aquaculture Fund	2021-27	€6.1bn	✓	✓		✓	✓			

	Programme for Environment and Climate Action	2021-27	€5.5bn	✓						✓	
	Just Transition Fund	2021-27	€19.3bn	✓	✓	✓	✓	✓	✓	Member States can target circular areas	
	Recovery and Resilience Facility	2020-26	€723.8bn	✓	✓				✓	At least 37% of the budget to climate objectives	
Other Funds	Innovation Fund	2020-30	€38bn	✓						Sustainable areas are targeted in general	Construction and buildings; waste
	European Urban Initiative	2021-27	€0.5bn	✓				✓		Sustainable areas are targeted in general	
	URBACT	2021-27	€0.08bn					✓		Sustainable urban development are targeted in general	
	Interreg	2021-27	€10bn	✓						Sustainable areas are targeted in general	
	Circular Economy Regional Initiative	N/A	$0.13bn		✓	✓			✓		Biowaste
	European Circular Bioeconomy Fund	Since 2019	€0.3bn			✓			✓		Bioeconomy
	European Investment Bank loans (various)	N/A	N/A		✓					Sustainable areas are targeted in general	
	European Investment Bank investments in infrastructure and environmental funds	N/A	N/A		✓	✓					
Other Initiatives	InnovFin Thematic Investment Platforms	2014-2022	N/A		✓	✓		✓	✓		Bioeconomy
	C3 Circular City Advisory programmes	Since 2021	N/A						✓		
	The Joint Initiative on Circular Economy	2019-23	€10bn		✓	✓	✓	✓	✓		

3.3.1 EU funding programmes (MMF 2021-2027)

The list below provides an overview of the relevant funding opportunities financed by the 2021-2027 Multiannual Financial Framework (MMF)[140].

3.3.1.1 Horizon Europe – Cluster 6

- **Description:** This cluster aims at reducing environmental degradation, halting and reversing the decline of biodiversity on land, inland waters and sea and **better managing natural resources through transformative changes of the economy and society** in both urban and rural areas. It will ensure food and nutrition security for all within planetary boundaries through knowledge, innovation and digitalisation in agriculture, fisheries, aquaculture and food systems and steer and accelerate the transition to a low carbon, resource efficient circular economy and sustainable bioeconomy, including forestry.
- **Duration:** 2021-2030.
- **Type:** Grants.
- **Relevance**: Circular economy topics are explicitly targeted.
- **Total budget:** EUR 959 million.
- **Link to CEAP 2020 key policy areas:** The fund highlights food, water and nutrients.

3.3.1.2 InvestEU

- **Description:** The InvestEU Fund is one of the three components of the InvestEU Investment Programme to boost the European economy. The Fund aims to mobilise public and private investments using guarantees from the EU budget. It supports four policy areas:
  - Sustainable infrastructure (e.g. **circular economy**, water, waste, environmental infrastructure, sustainable transport, rail and road infrastructure, renewable energy, energy efficiency renovation projects, environmental and climate resilience research).
  - Research, innovation and digitisation (e.g. research and innovation, scaling up of larger innovative companies).
  - SME window for innovative SMEs and small mid-cap companies.
  - Social investment and skills window (e.g. education, schools, healthcare, refugees).
- **Duration:** 2021-2027.
- **Type:** Debt, Equity and quasi-equity and Guarantees.
- **Relevance:** Circular economy topics are explicitly targeted.
- **Total budget:** An EU budget guarantee of €26.2 billion backs the investment of the European Investment Bank Group and other financial partners. InvestEU fund as a whole will target at least 30% of investment contributing to climate objectives. Investments in circular economy projects are explicitly foreseen in the policy areas “Sustainable infrastructure” and “Research, innovation and digitalisation”:
  - Sustainable infrastructure: €9.9 billion.
  - Research, innovation and digitisation: €6.6 billion.
- **Link to CEAP 2020 key policy areas:** Several areas are explicitly targeted in the fund.

3.3.1.3 Connecting Europe Facility

- **Description:** The Connecting Europe Facility (CEF) is a key EU funding instrument that promotes growth, jobs, and competitiveness through targeted investments in infrastructure. Through funding, it supports the development of high performing, sustainable, and efficiently interconnected trans-European networks in the fields of transport, energy, and digital services. CEF also seeks to better integrate the transport, energy and digital sectors, and to help achieve EU climate objectives.

[140] Taken from: https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes_en

- **Duration:** 2021-2027.
- **Type:** Grants and Guarantees.
- **Relevance:** Circular economy topics are not explicitly targeted, but the fund targets sustainable areas.
- **Total budget:** EUR 33.25 billion.
- **Link to CEAP 2020 key policy areas:** No specific reference made.

3.3.1.4 European Regional Development Fund

- **Description:** The European Regional Development Fund (ERDF) provides funding to public and private bodies in all EU regions to reduce economic, social and territorial disparities.
- **Duration:** 2021-2027.
- **Type:** Grants, debt, equity and quasi-equity, guarantees, and advisory services & technical assistance.
- **Relevance:** Member States can target areas relevant to a circular economy in the programmes.
- **Total budget:** EUR 226.05 billion. All Member States will concentrate at least 30% of their allocation to PO2: "*a greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe by promoting clean and fair energy transition, green and blue investment, the circular economy, climate change mitigation and adaptation, risk prevention and management, and sustainable urban mobility*".
- **Link to CEAP 2020 key policy areas:** No specific reference made. Member States define the scope of the funds in operational programmes.

3.3.1.5 European Agricultural Fund for Regional Development

- **Description:** The European Agricultural Fund for Regional Development (EAFRD) instruments can be used by cities and regions that have a **Circular Systemic Solution** in agriculture, forestry and rural areas and are undertaking financially viable projects that support the priorities of the EAFRD, such as the agriculture and agri-food sector.
- **Duration:** 2021-2027.
- **Type:** Debts, Equity and quasi-equity and Guarantees.
- **Relevance:** Circular economy topics are explicitly targeted.
- **Total budget:** EUR 95.5 billion of which 26% (2021-2022) and 40% (2023-2027) are targeted to contribute to climate objectives.
- **Link to CEAP 2020 key policy areas:** The area of 'Food, water and nutrients' and 'Biowaste' is explicitly targeted in the fund.

3.3.1.6 Cohesion Fund

- **Description:** The Cohesion Fund provides support to EU Member States with a gross national income per capita below 90% (EU-27 average) to strengthen the economic, social and territorial cohesion of the EU. It supports investments through dedicated national or regional programmes. The fund mainly contributes to investments in the field of environment and trans-European networks in the area of transport infrastructure made by public and regional authorities in the following EU Member States: Bulgaria, Czechia, Estonia, Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovenia and Slovakia. The fund is delivered under shared management and is governed by the Common Provisions Regulation.
- **Duration:** 2021-2027.
- **Type:** Grants, debt, equity and quasi-equity, guarantees, and advisory services & technical assistance.
- **Relevance:** Member States can target areas relevant to a circular economy in the programmes.
- **Total budget:** 2021-2027: EUR 48.03 billion, of which EUR 11.29 billion transferred to the Connecting Europe Facility. 37% of the overall financial allocation of the Cohesion Fund are expected to contribute to climate objectives.
- **Link to CEAP 2020 key policy areas:** No specific reference made. Member States define the scope of the funds in operational programmes.

3.3.1.7 European Maritime, Fisheries and Aquaculture Fund

- **Description:** The European Maritime, Fisheries and Aquaculture Fund (EMFAF) supports innovative projects that contribute to the sustainable exploitation and management of aquatic and maritime resources. In particular, it facilitates the transition to sustainable and low-carbon fishing, the protection of marine biodiversity and ecosystems, the supply of quality and healthy seafood to European consumers, the socio-economic attractiveness and the generational renewal of the fishing sector, in particular as regards small-scale coastal fisheries, the development of a sustainable and competitive aquaculture contributing to food security, the improvement of skills and working conditions in the fishing and aquaculture sectors, the economic and social vitality of coastal communities, innovation in the sustainable blue economy, maritime security towards a safe maritime space, international cooperation towards healthy, safe and sustainably managed oceans.
- **Duration:** 2021-2027.
- **Type:** Grants, debt, guarantees, and advisory services & technical assistance.
- **Relevance:** Circular economy topics are not explicitly targeted, but the fund targets sustainable areas.
- **Total budget:** EUR 6.108 billion.
- **Link to CEAP 2020 key policy areas:** The fund highlights **‘**Food, water and nutrients’.

3.3.1.8 Programme for Environment and Climate Action (LIFE)

- **Description:** Programme for Environment and Climate Action (LIFE) is the European Programme for co-financing projects that demonstrate or pilot solutions that tackle environmental (including **circular economy**, nature and biodiversity) or climate issues. The general objective of the programme is to contribute to the implementation, update, and development of effective policies and legislation in these areas. In particular, the circular economy and quality of life sub-programme co-finance circular economy, waste recovery, water, air, noise, soil, and chemical management through action grants and strategic integrated projects.
- **Duration:** 2021-2017.
- **Type:** Grants such as Standard Action Projects (SAP), Strategic Nature Projects (SNAP), Strategic Integrated Projects (SIP), Technical Assistance Projects (TA), Operating Grants (OG), and other grants.
- **Relevance:** Circular economy topics are explicitly targeted, projects can directly be financed through calls
- **Total budget:** EUR 5.450 billion.
- **Link to CEAP 2020 key policy areas:** The main themes are the environment, energy and mobility, multiple key policy areas covered by the programme. The areas of circular economy, waste and recycling, and chemicals are explicitly targeted by the sub-programme of circular economy and quality of life.

3.3.1.9 Just Transition Fund

- **Description:** The fund is one pillar of the Just Transition Mechanism. The Commission provides support to Member States having identified the territories expected to be the most negatively impacted by the transition towards climate-neutrality. The Just Transition Fund supports the economic diversification and reconversion of the territories concerned. This means up- and reskilling of workers, investments in SMEs, creation of new firms, research and innovation, environmental, rehabilitation, clean energy, job-search assistance, transformation of existing carbon-intensive installations.
- **Duration:** 2021-2027.
- **Type:** Grants and Advisory Services & Technical Assistance (through the InvestEU Advisory Hub).
- **Relevance:** Member States can target areas relevant to a circular economy in the programmes.
- **Total budget:** EUR 19.32 billion.
- **Link to CEAP 2020 key policy areas:** No specific reference made. Member States define the scope of the funds in operational programmes.

3.3.1.10 Recovery and Resilience Facility

- **Description:** The aim of the Recovery and Resilience Facility is to mitigate the economic and social impact of the coronavirus pandemic and make European economies and societies more sustainable, resilient and better prepared for the challenges and opportunities of the green and digital transitions.
- **Duration:** 2020-2026.
- **Type:** Grants and Loans.
- **Relevance:** Circular economy topics are explicitly targeted.
- **Total budget:** EUR 723.8 billion.
- **Link to CEAP 2020 key policy areas:** No specific reference made. Member States define the scope of the funds in Recovery and Resilience Plans.

3.3.2 Other funds

3.3.2.1 Innovation Fund

- **Description:** The Innovation Fund is one of the world's largest funding programmes for the commercial demonstration of innovative low-carbon technologies, aiming to bring to the market industrial solutions to decarbonise Europe and support its transition to climate neutrality. The goal is to help businesses invest in clean energy and industry to boost economic growth, create local future-proof jobs and reinforce European technological leadership on a global scale.
- **Duration:** 2020-2030.
- **Type:** Grants.
- **Relevance:** Circular economy topics are not explicitly targeted, but the fund targets sustainable areas.
- **Total budget:** EUR 38 billion.
- **Link to CEAP 2020 key policy areas:** Carbon capture and renewable energy are at the centre of the fund, it can be linked to the key policy areas of construction and the waste.

3.3.2.2 European Urban Initiative

- **Description: The European Urban Initiative (EUI)** supports urban areas of all sizes with innovative actions, capacity and knowledge building, as well as policy development and communication on sustainable urban development.
- **Duration:** 2021-2027.
- **Type:** Grants and Advisory Services & Technical Assistance.
- **Relevance:** Circular economy topics are not explicitly targeted, but the fund targets sustainable areas.
- **Total budget:** EUR 450 million (ERDF).
- **Link to CEAP 2020 key policy areas:** No specific reference made.

3.3.2.3 URBACT

- **Description:** URBACT promotes integrated development to support cities implement horizontal and vertical policy integration. Positive change can best be made when local authorities collaborate with different levels of governance (regional, national, EU) –vertical integration – and when they tackle challenges and problems in a holistic way that considers environmental, economic, and social dimensions at the same time – horizontal integration. For the period 2021-2027, URBACT IV builds on the legacy of past Programmes and includes even more opportunities for cities to make positive change. The current Programme integrates the crosscutting EU priorities of digital, green and gender-equal policy-making into its activities.
- **Duration:** 2021-2027.
- **Type:** Advisory Services & Technical Assistance.
- **Relevance:** Circular economy topics are not explicitly targeted, but the fund targets sustainable areas.
- **Total budget:** EUR 84.8 million.
- **Link to CEAP 2020 key policy areas:** No specific reference made. URBACT IV addresses the capacity needs of urban authorities in designing and implementing sustainable urban development strategies.

3.3.2.4 Interreg

- **Description:** This European Territorial Cooperation (Interreg) is organised under multiple strands: cross-border (Interreg A), trans-national (Interreg B), interregional (Interreg C) and outermost regions' cooperation (Interreg D). The programme strives to reduce disparities in the levels of development, growth and quality of life in and across Europe's regions.
- **Duration:** 2021-2027.
- **Type:** Grants.
- **Relevance:** Circular economy topics are not explicitly targeted, but the fund targets sustainable areas.
- **Total budget:** EUR 10 billion.
- **Link to CEAP 2020 key policy areas:** No specific reference made.

3.3.2.5 Circular Economy Regional Initiative

- **Description:** The Circular Economy Regional Initiative (CERI) aims to support investments in private, public and municipal sectors which implement innovative **resource efficient technologies**, **circular processes** and adopt **circular business models** in Turkey and Albania, Bosnia-Herzegovina, Montenegro, North Macedonia, Serbia. The CERI consists of three components:
  - Component 1: Implementation of **circular** performance-based financing (concessional co-financing);
  - Component 2: Technical Assistance for adopting **circular technologies and processes, and strategies;**
  - Component 3: Monitoring and evaluation.
- **Duration:** N/A.
- **Type:** Debts and Equity & quasi-equity.
- **Relevance:** Circular economy topics are explicitly targeted.
- **Total budget:** The Global Environmental Facility (GEF) is funding the programme with US$ 13.76 million, which will be blended with EBRD finance of approximately US$ 140 million. The programme will be complemented by technical cooperation funding of US$ 1 million by the Austrian Federal Ministry of Finance.
- **Link to CEAP 2020 key policy areas:** The area of biowaste is explicitly targeted in the fund.

3.3.2.6 European Circular Bioeconomy Fund

- **Description:** The European Circular Bioeconomy Fund (ECBF) catalyses the transition towards a sustainable future by investing in innovative **bio-based and circular ventures**. The Fund is contributing to speeding up the shift from a fossil-based to a circular bio-based economy and achieving the European Green Deal goals to make Europe climate neutral by 2050.
- **Duration:** Since 2019.
- **Type:** Equity & quasi-equity.
- **Relevance:** Circular economy topics are explicitly targeted.
- **Total budget:** EUR 300 million.
- **Link to CEAP 2020 key policy areas:** The area of 'Bioeconomy' is explicitly targeted in the fund.

3.3.2.7 European Investment Bank loans

- **Description:** Flexible loans to finance an investment programme which usually start from €100 million and consists of smaller projects. The loan will have pre-defined objectives, aligned with one or more priorities of the EIB.
- **Duration:** N/A.
- **Type:** Debt.
- **Relevance:** Circular economy topics are not explicitly targeted, but the fund targets sustainable areas.
- **Total budget:** N/A.
- **Link to CEAP 2020 key policy areas:** N.A.

3.3.2.8 European Investment Bank investments in infrastructure and environmental funds

- **Description:** The EIB provides investments in equity and debt funds and/or equity and hybrid debt co-investments focused on projects dealing with climate action and/or infrastructure.
- **Duration:** N/A.
- **Type:** Debt and Equity & quasi-equity.
- **Relevance:** Circular economy topics are not explicitly targeted, but the fund targets sustainable areas.
- **Total budget:** N/A.
- **Link to CEAP 2020 key policy areas:** N/A.

Other initiatives

3.3.2.9 InnovFin Thematic Investment Platforms

- **Description:** InnovFin Thematic Investment Platforms will catalyse third-party financing for thematic areas, such as the circular bioeconomy. The platforms will provide access to finance via debt or equity-type products to innovative projects in specific thematic areas and will be managed by financial intermediaries and fund managers selected through open call for expression of interest.
- **Duration:** 2014-2020 with funding available until December 2022.
- **Type:** Debt, Equity & quasi-equity and Advisory Services & Technical Assistance.
- **Relevance:** Circular economy topics are explicitly targeted.
- **Total budget:** N/A.
- **Link to CEAP 2020 key policy areas:** The area of 'Bioeconomy' is explicitly targeted in the fund.

3.3.2.10 C3 Circular City Advisory programmes

- **Description:** The Circular City Centre (C3) is a competence and resource centre within the EIB, which aims to support EU cities in their **circular economy transition**. This is managed by:
  - Sharing resources and practical information to support **city-level circular action;**
  - Providing **circular city advisory** to support cities in their circular transition;
  - Raising awareness about relevant advisory and funding opportunities for **circular projects.**
- **Duration:** Since 2021.
- **Type:** Advisory Services & Technical Assistance.
- **Relevance:** Circular economy topics are explicitly targeted.
- **Total budget:** N/A.
- **Link to CEAP 2020 key policy areas:** Several areas are explicitly targeted in the fund.

3.3.2.11 The Joint Initiative on Circular Economy

- **Description:** The Joint Initiative on Circular Economy (JICE) aims to **reduce the waste production** and stimulate the **circular economy**. JICE provides loans, equity investment, guarantees, innovative financing structures and advisory services to projects that prevent or eliminate waste, increase resource efficiency or have a circular business model.
- **Duration:** 2019-2023.
- **Type:** Debt, Equity & quasi-equity, Guarantees and Advisory Services & Technical Assistance.
- **Relevance:** Circular economy topics are explicitly targeted.
- **Total budget:** At least € 10 billion by 2023.
- **Link to CEAP 2020 key policy areas:** Several areas are explicitly targeted in the fund.

3.4 FUNDING FRAMEWORK: EXAMPLES OF ADVANCED MEMBER STATES

This Section presents examples of funding schemes that are implemented by advanced Member States. Furthermore, it provides an overview of the implementation of the Recovery and Resilience Facility (RRF) relevant to the circular economy in advanced Member States.

National funding schemes that target the circular economy are relatively uncommon. For example, the Netherlands, which does have a 100 million Euro Green Fund[141], only invests a small proportion in the CE. In 2021, the fund invested only 4 million Euros into the circular economy and green innovation.

Another trend observed is that national funds are largely backed by EU funding. In Poland, the National Fund for Environmental Protection and Water Management manages the LIFE programme and distributed other EEA funds. Up to half of the fund's investments are paid for by EU-funded programmes[142].

Finally, several Member States provide research grants to support green and circular innovation. These grants may be targeted to businesses, universities or broad consortia of the private and public sectors. The Spanish National Plan for Research, Science, Technology and Innovation has targeted programmes for circular economy research[143].

3.4.1 NextGenerationEU in Member States

The RRF is Europe's response to mitigate the economic and social impact of the coronavirus pandemic. It aims to make European economies and societies more resilient and strengthening them in support to the green and digital transition. Member States have submitted their plans to identify investments to be implemented by 2026.

While not all Member States specify the exact activities and investments in the green components of the plans, some have specified actions directed to activities relevant to the circular economy. The Box below presents an overview of the activities directed to fund circular activities in France, Germany, Italy, Spain, and Poland.

[141] Nationaal Groeifonds (link)

[142] https://www.gov.pl/web/nfosigw-en/financing-environmental-protection

[143] https://www.ciencia.gob.es/dam/jcr:e1f1deb1-7321-4dd9-b8ca-f97ece358d1c/PEICTI%202021-2023.pdf

Box 15 Use of National and Recovery Plans to support the transition to a circular economy

RRF France[144]

Total Budget: €100 billion (of which €39.4 billion financed in grants through the RRF)[145]

Actions directed at circular economy: in total €585 million

- €274 million – Investments to modernise sorting recycling and waste recovery centres (modernisation, source separation, collection and recovery of bio-waste);
- €226 million – Investments in recycling and reuse (recycled plastics, reuse, reduce and replace packaging and single-use packaging);
- €50 million – Support research and development for the chemical recycling of plastics;
- €35 million – Encourage SMEs to integrate the environment in the design of a product or service.

Other indirect measures are included to support investments in less polluting industrial processes, more sustainable means of transportation, and energy efficiency in buildings. The recovery plan will contribute to strengthening the fourth Forward-looking Investment Programme and should foster new technological innovations through increased financial support for R&D activities.

Relevance to CEAP 2020 areas: plastics, packaging, household/consumer waste, bio-based economy

RRF Germany[146]

Total Budget: €27.9 billion (of which €25.6 billion financed in grants through the RRF)[147]

Actions directed at circular economy: The German Recovery and Resilience Plan does not address circular economy through a specific measure or component of the plan. Therefore, no information on the budget can be extracted specifically for circular economy actions.

- The "CO_2 building renovation'' measure requires economic operators carrying out building renovation to ensure that at least 70% (by weight) of the non-hazardous construction and demolition waste generated on the construction site is prepared for re-use, recycling, and other material recovery;
- Another measure ''Further development of climate-friendly construction with wood'' aims to increase the timber construction quota in the various building categories and to use wood as a renewable and recyclable raw material.

Relevance to CEAP 2020 areas: construction and buildings.

RRF Italy[148]

Total Budget: €191.5 billion (of which €122.6 billion financed in loans and grants through the RRF) [149]

Actions directed at circular economy: in total €2.1 billion.

- €1.5 billion – Investments to develop and renew waste management facilities (waste collection, processing);
- €600 million – Support flagship projects of circular economy such as waste from electric equipment, paper and cardboard industry, textile, mechanical recycle and chemistry of plastics.

Other indirect measures are included to support investments in smart and sustainable agri-food supply chain as well as the preservation of water resources.

[144] France Relance (2020). Available at : https://www.economie.gouv.fr/files/files/directions_services/plan-de-relance/annexe-fiche-mesures.pdf

[145] European Parliamentary Research Service (2022). France's National Recovery and Resilience Plan: Latest state of play. Available at: https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)698929

[146] Deutscher Aufbau- und Resilienzplan (2020). Available at : https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Europa/DARP/deutscher-aufbau-und-resilienzplan.html

[147] European Parliamentary Research Service (2021). Germany's National Recovery and Resilience Plan: Latest state of play. Available at: https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2021)698849

[148] Piano Nazionale di Ripresa e Resilienza (2020). Available at: https://www.italiadomani.gov.it/content/sogei-ng/it/en/il-piano/missioni-pnrr/rivoluzione-verde-transizione-ecologica.html

[149] European Parliamentary Research Service (2022). Italy's National Recovery and Resilience Plan: Latest state of play. Available at: https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/698847/EPRS_BRI(2021)698847_EN.pdf

Relevance to CEAP 2020 areas: plastics, packaging, textiles, electronics, household/consumer waste, bio-based economy.

RRF Spain[150]

Total Budget: €104.2 billion (of which €77.2 billion financed in grants through the RRF)[151]

Actions directed at circular economy: in total €492 million.

- €300 million – Investments to support:
  - Textiles: raw materials with low impact, recycled and/or of renewable origin, R&D initiatives on waste management.
  - Plastics: eco-design of new plastics/packaging, promotion of reusable plastic packaging;
  - Batteries: second life and treatment facilities of batteries.
- €192 – Grants to promote circular economy in the business sector.

Other indirect measures are included to support investments in renewable energy, renewable hydrogen and storage, the agri-food sector, and the development of electric and connected vehicles.

Relevance to CEAP 2020 areas: textiles, plastics, packaging, household/consumer waste, bio-based economy, batteries & vehicles.

RRF Poland[152]

Recovery plan: €191.5 billion (of which €35.36 billion financed in grants and loans through the RRF)[153]

Actions directed at circular economy: At least €162 million.

- €162 million – Investments to support businesses in the implementation of environmental technologies and innovations complying with the circular economy, investments to support R&D technologies for the use of waste as secondary raw materials.

Other indirect measures are included to support investments in green energy, smart mobility as well as for industrial waste.

Relevance to CEAP 2020 areas: Transversal.

RRF Austria[154]

Recovery plan: €3.46 billion in grants[155]

Actions directed at circular economy: in total €300 million.

- €300 million - Recycling of beverage containers.

Other indirect measures are included to support investments in renewable energy, investments in low-emission vehicles and buildings for companies and zero-emission transport.

Relevance to CEAP 2020 areas: Packaging, household/consumer waste, batteries and vehicles, construction and buildings.

[150] Plan de Recuperación, Transformación y Resiliencia (2020). Available at: https://planderecuperacion.gob.es/

[151] European Parliamentary Research Service (2023). Spain's National Recovery and Resilience Plan: Latest state of play. Available at: https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)698878

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4. CONCLUSIONS

Overall, **objectives** at the EU level to enhance the circular economy transition **have been identified across all policy areas** investigated as part of this exercise. However, **not all policy areas have yet developed specific targets to achieve such objectives and the circular economy transition**. Targets identified mainly focus on the end of value chains and the lifecycle of products rather than the conception phase. Targets on the recovery and recycling of resources and materials are therefore the most common across policy areas and sub-areas, while those related to increase circular conception and design of products are limited to some specific value chains such as packaging and plastics which for example include specific targets on minimum recycled materials rates in new products.

Policy areas can be classified across two groups:

- **Policy areas with multiple EU targets** which include packaging, plastics, electronics and ICT, batteries and vehicles, food, water and nutrients, cities and regions' waste. Targets for these areas usually stem from one specific Regulation or Directive targeting particularly the area. Some areas (e.g. plastic and food, water, and nutrients areas) have targets set across multiple Strategies, Regulations and/or Directives. Construction and buildings, bioeconomy (biobased plastics) and households as consumers are also areas with multiple targets but these are either limited to specific sub-areas (e.g., polymer properties for biobased plastics for the bioeconomy area, plastic and food consumption for households as consumers) or in the process to be established (e.g., on whole-life carbon for construction and buildings).
- **Policy areas with no established EU targets** which include bioeconomy (biobased fertilisers and proteins), textiles and product service systems. For these areas, no specific and quantitative targets are identified and there is currently limited prospect to see targets included through EU legislation in the near future. This assessment is based on the finding that no existing legislation with specific targets relevant for the area has been identified and that no other existing relevant proposal for legislation has been put forward at this stage (see overview legislative proposals in Appendix 4).

While the EU Policy Framework establishes targets and objectives for strategic growth, the EU Funding Framework provides actors within the EU with the means to achieve these targets. Meeting the circular objectives of the EU requires significant investment, and this report provides a mapping of EU funding programmes and schemes that are relevant to support the transition to a CE. The results present an overview of the funds that are relevant for the policy areas considered in this report. While there is no single funding scheme at the EU level which exclusively targets circular economy, some EU funding programmes target specific areas relevant for circular economy (e.g. for example through dedicated calls for proposals) and others have overarching objectives or aim to provide support for green and sustainable initiatives, indirectly facilitating circular transition.

The objectives and targets identified, mainly at the EU level, constitute crucial information for the other Tasks of this study working on identification and application of circular economy indicators. This report represents a crucial mapping of the 'arrival point' against which indicators will be addressed by the other Tasks.

Based on the desk research and interviews conducted for the policy (sub-)areas considered for this report, the observations below have been offered to support the work of subsequent Tasks in the overall study.

- The tables in Section 3.1. include certain topics from the text of the policy documents which may not imply circularity *per se*, but are directly related to circularity and important for framing the political context of circular transition in the EU. Such topics include 'climate mitigation', biodiversity', 'pollution'. **Transition to a circular economy should be interpreted in accordance with relevant EU law in these areas.** It is important to note that the policy text recorded in the tables of this report serve as a sample, and it is advised that the policy documents are re-visited when indicators are being designed and tested (Task 3 and Task 4) in order for the interlinkages to be fully grasped.

- The concept of the '**whole-lifecycle'** was identified in the policy framework for most of the CEAP value chains (all but for the value chain of 'food, water and nutrients'). Whole lifecycle thinking does not necessarily determine circularity, whole life-cycling thinking provides the necessary perspective to apply circular approaches.

- The 9 R-strategies offer a framework to classify circular approaches (see Appendix 5 for an overview). Table 18 below offers an overview of whether the R-strategies have been directly referenced across the policy (sub-)areas considered for this report - in the objectives (O), targets (T) or both (B). The table also lists references to some additional terms which could be associated with the R-strategies in the context of a particular (sub-)policy area.
    - The R-strategy 'reduce' was commonly associated with the reduction of waste, but rarely associated with upstream activities such as '*Reduce the consumption of lightweight plastic carrier bags'* (Plastics). The 'reduce' R-strategy was as times implied through concepts such as ''*Improving the efficiency of resource use'* (Food, water and nutrients) and '*ensure that the empty space ratio is maximum 40%*' (Packaging).
    - The R-strategies associated with the **pre-use phase** (i.e. 'refuse', 'rethink'), are not directly referenced in the text extracted for this report. However, related concepts for radical change in social behaviour are demonstrated in, for example, the policy area of Textiles ('*Fast fashion is out of fashion').*
    - For the R-strategies associated with the **use phase** (i.e. 'reuse', 'refurbish', 'remanufacture', 'repurpose' and 'repair'): 'reuse' was identified in both objectives and targets for certain policy (sub-)areas, and 'repair' was identified in the objectives, but not the targets of certain policy (sub-)areas.

  However, **consideration of the R-strategies should take into account the different nature of the policy (sub-)areas. Comparisons should be made with caution as one R-strategy will have different value when applied in the context of the different policy (sub-)areas.** For example, there is increased attention on R-strategies which focus on the 'inner circles' or 'upstream activities'. Even though 'recycling' is an R-strategy which applies relatively downstream on a value chain, it is highly innovative application in the case of biobased products.

Table 18 Reference to R-strategies for the policy (sub-)areas

Policy (sub-)area	Refuse	Rethink	Reduce	Reuse	Refurbish	Remanufacture	Repurpose	Repair	Recycle	Examples of additional terms which could be associated with the R-strategies
Electronics and ICT			O *	O				O	B	'Disassembly' 'Promote certainty and consistency and to specify in certain cases when substances or objects become waste'; 'producer responsibility' (related to a) 'minimum collection rate'; 'obligation to take the waste back'; 'Durable'; 'sustainable-by-design substances, materials and products'; 'retrieval of valuable secondary raw materials'; 'efficient use of resources during their whole life-cycle'.
Batteries			O *	B				O	B	'Limiting waste'; 'disassembly'; 'minimum collection targets for waste'; 'promote certainty and consistency and to specify in certain cases when substances or objects become waste'; 'recyclates; 'efficient use of resources during their whole life-cycle'.
Packaging			B *	B				O	B	'refill'; 'ensure that the empty space ratio is maximum 40 %'; 'chemical risk assessment that take into account the whole life cycle'.
Plastics			B *	B				O	B	'Sorting'; 'Single-use plastic'; 'Collection'; 'chemical risk assessment that take into account the whole life cycle'.
Textiles			O *	O				O	O	'Durable'; 'Collecting'; 'Sorting'; 'chemical risk assessment that take into account the whole life cycle'.
Construction and buildings			O *	B	O			O	B	'Life-cycle thinking'; 'address carbon emissions over the whole life-cycle of a building'.; 'reclaiming'.
Food, water and nutrients			B *	O					B	'Improve traceability and transparency of products from the fork back to the farm'; 'Increasing the amount of sewage sludge used in agriculture'; 'Collecting'; 'Re-claimed'; 'Improving the efficiency of resource use'; 'banning the use'.
Product service systems			O							'Reshaping the consumption habits'

Policy (sub-)area	Refuse	Rethink	Reduce	Reuse	Refurbish	Remanufacture	Repurpose	Repair	Recycle	Examples of additional terms which could be associated with the R-strategies
Bioeconomy									B	'composting'
Cities and regions			B *	O				O		'resource efficiency'; 'collecting systems'; 'composting'; 'collection'; 'retrieval of valuable secondary raw materials'; 'reclaiming'.
Households (as consumers)			B *	O				O	O	'durable, reliable, reusable, upgradable, reparable, easier to maintain, refurbish and recycle';

Key: O = identified in objectives; T = identified in targets; B = identified in both targets and objectives.

(*) = identification of instances where the term 'reduce' is not associated with the reduction of *consumption*, but instead with the reduction of waste, pollution, emissions or the impact on the environmental in general. Please refer to the tables in Section 3.1 for the full overviews.

The mapping displayed in Table 18 provides a useful steer for the remaining tasks in this study, by highlighting where the gaps are in specific circularity policy and its related monitoring. The shortlisting of indicators to proceed to the testing and development phase of the study will pay particular attention to selecting potential new indicators which may work towards filling these gaps, and hence developing a much fuller understanding of current level of circularity, transition progress over time, and related impacts. The output of the testing phase will be a series of case studies across the priority policy themes and sub-themes, detailing successes, challenges and lessons learned. These will then feed into the development of a toolkit for policy makers, incorporating recommendations on direction for future strategy, policy, targets and support mechanisms.

5. APPENDICES

5.1 APPENDIX 1: MAPPING OF EU LEGISLATION

Please see accompanying document.

5.2 APPENDIX 2: QUESTIONAIRE TEMPLATE FOR INTERVIEWS

Please see accompanying document.

5.3 APPENDIX 3: OVERVIEW OF INPUTS TO QUESTIONAIRES

The below provides an overview of the responses to the questionaries on objectives and targets in EU legislation.

Policy Area 1: Product value chains highlighted in the CEAP 2020

Electronics and ICT

- 14 April 2023: Hendrik Engelkamp (DG ENV B.1) shared written answers in the questionnaire form, along with Cristina De Avila. His answers pointed to additional EU legislation which were checked by the project team and, where deemed relevant, added to the policy overview.

Batteries and vehicles

- 11 April 2023: Gaël de Rotalier (DG ENV B.3) shared answers in an email. His suggestions pointed to additional EU legislation which were checked by the project team and, where deemed relevant, added to the policy overview. Furthermore, he mentioned revisions of two directives are expected to be published by summer 2023. Finally, he suggested reaching out to William Neale (DG ENV B.3) for specific questions on product-service-systems.

Textiles

- 14 April 2023: Sarianne Tikkanen (DG ENV B.1) shared written answers in the questionnaire form. Her answers pointed to additional objectives of the EU Chemicals Strategy for Sustainability for textiles but also plastics, packaging and waste. These were included to the policy overview.

Construction and buildings

- 28 March 2023: Josefina Lindblom (DG ENV B.1) shared written answers in the questionnaire form. Her answers pointed to the importance of EU legislation surrounding the sustainable finance taxonomy. She also suggested reaching out to Florian Flachenecker (DG ENV B.3) for specific questions on the definition of waste.
- 3 April 2023: Philippe Moseley (DG GROW H.1) shared written answers in the questionnaire form. His answers provided an EU definition of ‘construction works’. He also included an argument for EU legislation related to the sustainable finance taxonomy and EU legislation concerning emissions of building stock (EED and EPBD) to be included in the analysis of this study.

Food, water and nutrients

- 28 April 2023: An interview was conducted with Michal Nekvasil (DG CLIMA E.1). He pointed at different EU regulations, after cross-checking with the ones already identified we added the Sustainable production and consumption strategy in our findings.

Policy Area 3: Bioeconomy

- 21 April 2023: Written answers were provided by Silvia Maltagliat (DG RTD B.1.).

Policy Area 4: Cities and regions

- 31 March 2023: An interview was conducted with Leonor Baptista (DG ENV A.3) and Cristian Marti Hedstrom (DG ENV). They suggested to:

  - Consider including the following in the scope of cities and regions (not just municipal waste): Earlier in 2022, the Commission also published the eco-design for sustainable products regulation with provisions to make GPP criteria mandatory.
  - To cross-check the list of identified EU funding schemes with those listed in the 'Supporting the environment under the 2021-2027 multiannual financial framework and NextGenerationEU' (2022).
  - Reach out to those acting as Permanent Representations of MS in order to address the questions on national objectives and targets.
  - Forward the questionnaire to colleagues in DG ENV B.3 (Caterina Savelli and Florian Flachenecker) to address the specific questions on the definitions on waste.
- 14 April 2023: An interview was conducted with Florian Flachenecker (DG ENV B.3) on specific questions on municipal waste. He pointed to the importance of the sustainable finance policy and technical classification of sustainable activities.

Dedicated interview for the EU funding framework

- 31 March 2023: An interview was conducted with Jonas Byström (EIB). He shared some key statistics of the total loans the EIB has provided to circular economy activities from 2018 to 2022. Furthermore, he suggested to:
  - Describe all EIB funding options as potentially being relevant to CE. Though non target circular economy directly, the bank ensures contribution to climate action and sustainability in all its products. Its overall target is to invest at least 50% of its portfolio to these causes.
  - Make two changes to the schematic overview, labelling JICE as an initiative and removing the 'debt' option from the Bioeconomy Fund.

5.4 APPENDIX 4: OVERVIEW OF PROSPECTIVE EU OBJECTIVES AND TARGETS

Table 19 below depicts a list of legislative proposals which have yet to be formally adopted, but have been included in this report.

Table 19 Overview of prospective EU objectives and targets

Proposals for new/update of legislation	Relevant policy areas (and sub-areas)	Implications for targets and objectives
Proposal for a Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020.	Batteries	Updated/new objectives and targets.
Proposal for a Directive concerning urban wastewater treatment (recast).	Water	Updated/new objectives and targets.
Proposal for a Directive amending Directive 2000/60/EC establishing a framework for Community action in the field of water policy, Directive 2006/118/EC on the protection of groundwater against pollution and deterioration and Directive 2008/105/EC on environmental quality standards in the field of water policy.	Water	Updated/new objectives.
Proposal for a Regulation on nature restoration.	Food	Updated/new objectives and targets.
Proposal for a Regulation on packaging and packaging waste amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC.	- Packaging - Plastics - Households as consumers (plastic waste)	Updated/new objectives and targets.
Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products.	- Electronics and ICT. - Textiles. - Construction and buildings. - Cities and regions. - Households as consumers.	Updated/new objectives.
Proposal for a Regulation of the European Parliament and of the Council laying down harmonised conditions for the marketing of construction products, amending regulation (EU).	Construction and buildings.	Updated/new objectives.
Proposal for a Directive of the European Parliament and of the Council on the energy performance of buildings (recast).	Construction and buildings	Updated/new objectives.
Proposal for a Directive of the European Parliament and of the Council on energy efficiency (recast).		

Proposals for new/update of legislation	Relevant policy areas (and sub-areas)	Implications for targets and objectives
The proposal for a Directive regards empowering consumers for the green transition through better protection against unfair practices and better information.	Households as consumers.	Updated/new objectives.
Proposal for a Directive on common rules promoting the repair of goods and amending Regulation (EU) 2017/2394, Directives (EU) 2019/771 and (EU) 2020/1828.		

5.5 APPENDIX 5: R-STRATEGIES

Table 20 below presents an overview of the nine R-strategies and the definitions offered by the EIB.

Table 20 R-strategies

Strategy	Description
Refuse	Make product redundant by abandoning its function or by offering the same function by a radically different (e.g. digital) product or service.
Rethink	Make product use more intensive (e.g. through product-as-a-service, reuse and sharing models or by putting multi-functional products on the market).
Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials. It includes the prevention of food waste along food value chains including in agricultural production, processing, manufacturing, distribution and consumption.
Reuse	Reuse of a product which is still in good condition and fulfils its original function (and is not waste) for the same purpose for which it was conceived.
Repair	Repair and maintenance of defective product so it can be used with its original function.
Refurbish	Restore an old product and bring it up to date (to specified quality level).
Remanufacture	Use parts of a discarded product in a new product with the same function (and as-new-condition)
Repurpose	Use a redundant product or its parts in a new product with different function.
Recycle	Recover materials from waste to be reprocessed into new products, materials or substances whether for the original or other purposes. This includes the reprocessing of organic material but does not include energy recovery and reprocessing into materials that are to be used as fuels or for backfilling operations.

A further R strategy often mentioned in combination with the above 9Rs, sometimes even as part of a circular economy definition, is the recovery of (embodied) energy from waste and residues[156].

Source: European Investment Bank (2020), 'The EIB Circular Economy Guide – Supporting the circular transition, found at: https://www.eib.org/attachments/thematic/circular_economy_guide_en.pdf

[156] The EIB acknowledges that from a waste management angle, energy recovery is an environmentally preferable option to landfill disposal in accordance with the waste hierarchy principle. However, the resource efficiency gains from waste-to-energy and waste-to-fuel strategies are limited compared to other 9Rs, particularly when considering the loss of value of potentially recyclable materials through combustion. Hence, the EIB does not consider activities primarily aimed at energy recovery from wastes and residues as substantially contributing to the circular economy.

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