

## DELIVERABLE 1.3.1

# GREENING LAST MILE, CIRCULAR ECONOMY POLICIES AND STRATEGIES AT THE EU LEVEL

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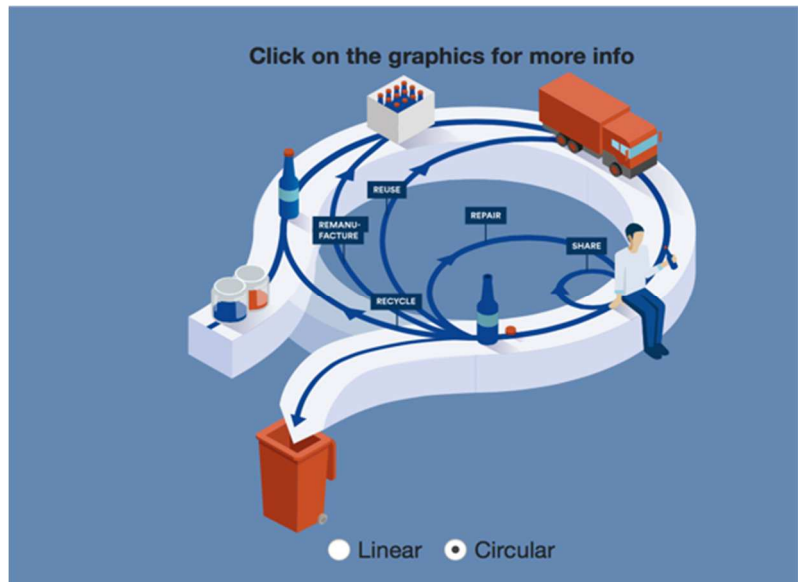
## 1. Introduction

The aim of this deliverable is to introduce to the concept of the Circular Economy - as a new framework for production, consumption and use of resources that couples economic and environmental goals, to describe the policies adopted at the European level and the consequences in terms of logistics and transportation processes.

Representing a radical shift of the current economic paradigm, the Circular Economy has been included into specific policies at the European level aiming at sustaining and pushing such transition. By redesigning how resources are produced, distributed and used the Circular Economy generates impacts and opportunities on the logistics processes in general and in relation to the management of last mile solutions specifically.

## 2. Circular economy policies and strategies at the EU level

The circular economy (CE) paradigm has emerged over the last decade as a way to overcome the limits of the classical linear model by making the production and consumption system more sustainable. Indeed, in contrast to the linear economy model - dominant in the last century and characterized by the extraction



of resources, production and simple use and disposal of products at the end of their useful life - the CE aims to reuse resources and minimize waste. Through the valorization of consumer waste, the extension of the life cycle of products, the use of recycled raw materials, the use of energy from renewable sources, the CE allows a rethinking of products and processes in order to create a system that is able to regenerate itself closing the circle between extraction and consumption. To address major environmental challenges of our time the EU has adopted the CE as the paradigm on which to build the transition of the European economic system to a more sustainable one. The European plans and policies which define the roadmap to circularity are the “European Green Deal” and the “New Circular Economy Action Plan For a cleaner and more competitive Europe”. The Green Deal is the overarching framework, which the European Commission has developed, to coordinate all actions - by governments and the private sector - that will lead to the transformation of the EU economy into a modern, resource-efficient and competitive economy. The goal of this plan is to transform the EU's energy, transportation, production and taxation systems to make them more sustainable and resilient. Specifically, the EU aims to have no net greenhouse gas emissions by 2050, to decouple economic growth from resource use, and to not leave people and places behind in this process of change.



The cornerstone of this plan is the CE. In fact, the European Green Deal aims to extend the circular economy from the forerunners to the traditional economic actors, thus contributing significantly to the achievement of climate neutrality. Therefore, the “[New Circular Economy Action Plan](#)”, following what was set in the Green Deal, defined the directions for the implementations of a CE policies in Europe, in industry and consumption. It constitutes a key building block for the Green Deal strategy. The plan proposes a framework of related initiatives across the entire product lifecycle—from product design, to circularity in manufacturing processes, to waste management—that aim at creating less waste, making circularity work for people, regions, and cities, and leading global efforts on the circular economy. The objectives are to reduce the consumption footprint and double the rate of circular material use over the next decade.

Achieving the EU's climate and environmental goals requires a new **industrial policy based on the circular economy.**



➤ From 1970 to 2017, the annual global extraction of materials **tripled** and it continues to grow.

Source: The International Resource Panel, [Global Resources Outlook, 2019](#)



➤ More than **90%** of biodiversity loss and water stress come from resource extraction and processing.

Source: The International Resource Panel, [Global Resources Outlook, 2019](#)



➤ EU's industry accounts for **20%** of the EU's emissions.

Source: European Commission, [EU Climate Action Progress Report 2019](#)



➤ Only **12%** of the materials used by EU industry come from recycling.

Source: [Eurostat](#), 2016 figures

The measures that will be introduced with the new action plan aim to make products sustainable in the EU. The focus will essentially be on sectors that use the 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. The focus will be on these 7 value chains. The European European Commission, in this new policy framework for sustainable production, has defined 35 actions to pursue the goal of transforming the European economy into a circular system. The purpose of these actions are, for example, strengthening the role of consumers and PA - through green procurement - to incentivize EC transformation, creating policies for circularity and prevention in waste management, creating an efficient EU market for secondary raw materials - through the use of digital technologies, managing EU waste exports. Below are all the actions that insist on product level, value chains, waste and people level.



**Table 1. EU documents & Reports on CE and sustainability in logistics**

Key actions	Date
<b>A SUSTAINABLE PRODUCT POLICY FRAMEWORK</b>	
Legislative proposal for a sustainable product policy initiative	2021
Legislative proposal empowering consumers in the green transition	2020
Legislative and non-legislative measures establishing a new “right to repair”	2021
Legislative proposal on substantiating green claims	2020
Mandatory Green Public Procurement (GPP) criteria and targets in sectoral legislation and phasing-in mandatory reporting on GPP	as of 2021
Review of the Industrial Emissions Directive, including the integration of circular economy practices in upcoming Best Available Techniques reference documents	as of 2021
Launch of an industry-led industrial symbiosis reporting and certification system	2022
<b>KEY PRODUCT VALUE CHAINS</b>	
Circular Electronics Initiative, common charger solution, and reward systems to return old devices	2020/2021
Review of the Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment and guidance to clarify its links with REACH and Ecodesign requirements	2021
Proposal for a new regulatory framework for batteries	2020
Review of the rules on end-of-life vehicles	2021
Review of the rules on proper treatment of waste oils	2022
Review to reinforce the essential requirements for packaging and reduce (over)packaging and packaging waste	2021
Mandatory requirements on recycled plastic content and plastic waste reduction measures for key products such as packaging, construction materials and vehicles	2021/2022
Restriction of intentionally added microplastics and measures on unintentional release of microplastics	2021
Policy framework for bio-based plastics and biodegradable or compostable plastics	2021
EU Strategy for Textiles	2021
Strategy for a Sustainable Built Environment	2021
Initiative to substitute single-use packaging, tableware and cutlery by reusable products in food services	2021
<b>LESS WASTE, MORE VALUE</b>	
Waste reduction targets for specific streams and other measures on waste prevention	2022
EU-wide harmonised model for separate collection of waste and labelling to facilitate separate collection	2022
Methodologies to track and minimise the presence of substances of concern in recycled materials and articles made thereof	2021
Harmonised information systems for the presence of substances of concern	2021
Scoping the development of further EU-wide end-of-waste and by-product criteria	2021
Revision of the rules on waste shipments	2021
<b>Making the circular economy work for people, regions and cities</b>	
Supporting the circular economy transition through the Skills Agenda, the forthcoming Action Plan for Social Economy, the Pact for Skills and the European Social Fund Plus.	as of 2020
Supporting the circular economy transition through Cohesion policy funds, the Just Transition Mechanism and urban initiatives	as of 2020
<b>CROSSCUTTING ACTIONS</b>	
Improving measurement, modelling and policy tools to capture synergies between the circular economy and climate change mitigation and adaptation at EU and national level	as of 2020
Regulatory framework for the certification of carbon removals	2023
Reflecting circular economy objectives in the revision of the guidelines on state aid in the field of environment and energy	2021



### 3. Greening last mile and circular economy scenario

Table 1 presents the documents collected in order to analyze the actions and policies implemented by the EU institutions to reduce the impact of logistics in an CE framework. Indeed, as shown in the previous section, CE has been assumed by the EU as a paradigm for the transition of the European economic system towards a more sustainable system. However, logistics can play a crucial role in supporting this transition towards circularity - while acting to reduce its impact. Therefore, it is crucial for actors involved in this sector to understand whether European institutions have already defined some paths for a sustainable logistics and CE scenario, and what potential directions EU policies are defining for the link between logistics and CE. The present deliverable analyzes the following documents in order to discern such a link.

European documents were retrieved from EU-Lex, the database of European law. Then, other reports from research centers and actors were consulted to better investigate the possible development of the role of sustainable logistics to support the transition to CE. The first analysis of the potential role logistics can have for circularity can be found in *FP7 Start Project (2012)*, an European project implemented to improve the recycling of agricultural plastics film waste. Indeed, European agriculture annually generates around 90.000 tons of plastics film waste, which is difficult and costly to recycle commercially. The project aimed to develop two technologies to reduce costs and make agricultural plastic film recycling economically and environmentally sustainable. The two technologies include, a portable unit (which uses airflow for cleaning instead of water) to clean, separate and compress waste prior to collection, but also a logistics software model to optimize collection. Focusing on the role of logistics, a logistics software, in fact, helps coordinate reverse logistics by matching collection demand, time and drivers, improving the environmental and economic impact of collection.

Then, considering the more recent policies regarding the circularity, we can find in 2018 the *European Strategy for Plastics in a Circular Economy*. The European European Commission emphasizes the key role of plastics in the circular transition, as plastics, due to their wide use and





increasing demand, must be put at the center of circularity actions. However, in this document logistics is only mentioned as reverse logistics, but without clear specifications. In order to clarify what reverse logistics means, the definition proposed in the *Categorization System for the Circular Economy (2020)* - the document of the European Commission , which provides a CE categorization system consists of 14 circular categories - defined reverse logistics as supply chains dedicated to the reverse flow of redundant or discarded products and materials. Moreover, the role of digital tools to facilitate reverse logistics is emphasized.

Following the work on plastic in the EU circular scenario, in 2019, the European Commission presented the document *A circular economy for plastics - Insights from research and innovation to inform policy and funding decisions*, where we can find a greater connection with the logistics issue. In fact, here the European Commission emphasizes that innovation has to be thought within the whole plastics system, not just focusing on the single material. So, logistics must also be considered while working in plastics innovation. In fact, business model innovation for CE should be developed together with supply logistics. System collaboration for innovation is crucial, as are product-service systems: examples of product-service systems in packaging include tertiary packaging and logistics in supply chains. In addition, even in this report we can find reference to reverse logistics, in fact the recyclability of products and components depends on the logistics and infrastructure for recycling, not on the quality of the material used. Therefore, the report highlights the need to develop web-based logistics software to provide a means to manage all aspects of the collection and recycling process (e.g., FP7 START project 2012).

In 2019 the with the European Green Deal the EU adopted the CE as a cornerstone, and thus a framework for a circular transition had been defined by the European Commission in the *UE Circular Economy Action Plan (2020)*. Here the link to logistics is clearly expressed, so the future comprehensive European strategy for sustainable and intelligent transport will aim to strengthen synergies with the transition to a circular economy, in particular by applying product-as-a-service solutions to reduce raw material consumption, using sustainable alternative fuels for transport,



optimizing the use of infrastructure and vehicles, increasing employment rates and load factors, and eliminating waste and pollution. In this document, the European Commission emphasizes the idea of the product as a service, where procedures maintain ownership, and therefore tracking, tracing, and mapping technologies must be developed and offered alongside products. In addition, we have other general references to transportation and CE in two other documents published in 2020: the European Climate Act and the Just Transition Fund.

Looking at the EU documents available on the issue of sustainability and logistics, we cannot find direct reference to CE. Here, the main document is the European *Sustainable and Smart Mobility Strategy* (2020), in which the European Commission presents its plan for a green, smart and accessible mobility: 82 initiatives to lead Europe's work towards sustainable mobility. Indeed, greenhouse gas emissions from the transport sector account for a quarter of the EU's total emissions and the and therefore, this strategy lays the groundwork for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises. Digitization will become an indispensable driver for the modernization of the entire European transport system. To achieve a green mobility, the European Commission aims by 2050 to have almost all cars, vans, and buses at zero-emission, to double freight traffic on rail, to triple rail traffic, to equip the Trans-European Multimodal Transport Network (TEN-T) with high-speed connectivity and sustainable, intelligent transport, and to move 75% of today's domestic freight transport by road to rail and inland waterways. To achieve these goals, multimodal logistics must be part of this transformation, and the European Commission proposes to support research and innovation on competitive, sustainable, and circular products and services, ensure that the right vehicles and fuels are provided by industry (renewable fuels), put in place the necessary infrastructure, and stimulate demand from end users.



**Table 2. EU documents & Reports on CE and sustainability in logistics**

Name	Year	Link
<b>EU Documents on Circular Economy</b>		
FP7 Start Project	2012	<a href="https://cordis.europa.eu/project/id/218335">https://cordis.europa.eu/project/id/218335</a>
EU Strategy for Plastic in a CE	2018	<a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&amp;uri=COM:2018:28:FIN">https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&amp;uri=COM:2018:28:FIN</a>
Circular Economy for Plastic	2019	<a href="https://op.europa.eu/en/publication-detail/-/publication/33251cf9-3b0b-11e9-8d04-01aa75ed71a1/language-en/format-PDF/source-87705298">https://op.europa.eu/en/publication-detail/-/publication/33251cf9-3b0b-11e9-8d04-01aa75ed71a1/language-en/format-PDF/source-87705298</a>
European Green Deal	2019	<a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&amp;uri=COM%3A2019%3A640%3AFIN">https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&amp;uri=COM%3A2019%3A640%3AFIN</a>
Categorization System for the Circular Economy	2020	<a href="https://ec.europa.eu/info/publications/categorisation-system-circular-economy_en">https://ec.europa.eu/info/publications/categorisation-system-circular-economy_en</a>
Circular Economy Action Plan	2020	<a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&amp;uri=COM:2020:98:FIN">https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&amp;uri=COM:2020:98:FIN</a>
EU Climate Law	2020	<a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0080">https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020PC0080</a>
Just Transition Fund	2020	<a href="https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=CELEX:52020PC0022">https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=CELEX:52020PC0022</a>
<b>EU Documents on Logistics and Sustainability</b>		
Regulation CEF	2018	<a href="https://eur-lex.europa.eu/legal-content/it/TXT/?uri=celex:32017R2396">https://eur-lex.europa.eu/legal-content/it/TXT/?uri=celex:32017R2396</a>
European Year of Rail	2020	<a href="https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=CELEX%3A52020PC0078">https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=CELEX%3A52020PC0078</a>
CEF support to Mediterranean Corridor	2020	<a href="https://ec.europa.eu/inea/sites/inea/files/cefpub/cef_transport_2020-corridor-c_mediterranean_metadata.pdf">https://ec.europa.eu/inea/sites/inea/files/cefpub/cef_transport_2020-corridor-c_mediterranean_metadata.pdf</a>
CEF support to Scandinavian - Mediterranean Corridor	2020	<a href="https://ec.europa.eu/inea/sites/inea/files/cefpub/cef_transport_2020-corridor-e_scandi-medite_metadata.pdf">https://ec.europa.eu/inea/sites/inea/files/cefpub/cef_transport_2020-corridor-e_scandi-medite_metadata.pdf</a>
Sustainable and Smart Mobility Strategy	2020	<a href="https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=COM%3A2020%3A789%3AFIN">https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=COM%3A2020%3A789%3AFIN</a>
Scandinavian-Mediterranean Fourth Work Plan of the European Coordinator	2020	<a href="https://ec.europa.eu/transport/sites/transport/files/work_plan_scanmed_iv.pdf">https://ec.europa.eu/transport/sites/transport/files/work_plan_scanmed_iv.pdf</a>

Considering all the collected documents - in the light of the link between logistics and CE in European policies - the topic of how logistics can change to support the transition to circularity, while reducing its impacts, does not seem to have come into focus yet. Current EU plans and strategies for CE seem to not yet consider the issue of logistics to support this transition to circularity. In fact, no direct policies regarding logistics are outlined in the EU documents, there are only few proposals and mentions of reverse logistics for waste collection and recycling. The role of logistics is recognized in the Green Deal and in the CE action plan, but we still do not have clear and precise policies and actions regarding logistics for CE. Moreover, there are no references to CE in the documents and plans to make the EU transport system more sustainable. The focus is



only on transport sustainability, such as the development of new fuels, investments and support to the railway system, the need to improve European multimodal connection systems.

Another crucial missing aspect concerns strategies on the role of logistics to support the use of reused raw materials, on how to link demands for circular raw materials and waste or recycled materials. The current focus seems to be only on reverse logistics - and even with a specific emphasis on plastics and its CE chain - in terms of waste collection and recycling and on how to improve reverse logistics systems, including adopting digital technologies.

However, building on these findings, the present document suggests some possible points regarding the role of logistics in supporting a transition to CE.

First, in defining a circular business model, companies need to take a complex view, in which they consider all aspects involved, including logistics. A circular business model is not complete without considering the logistics aspects.

Second and expanding on the first point, logistics and transportation are a key element for an CE business model, in fact, without reverse logistics, a system of collection of waste and by products and distribution these regenerated materials, no circularity is possible. Therefore, a widespread system needs to be developed and digital technologies adopted to make logistics processes more efficient and economically viable.

Third, starting from this last point, digital technologies can be the key link to connect CE and logistics. In fact, new digital technologies can provide sources and data to track products, to collect waste more efficiently, and to meet demands for circular resources and waste or by products that can become raw materials for other companies or industries.