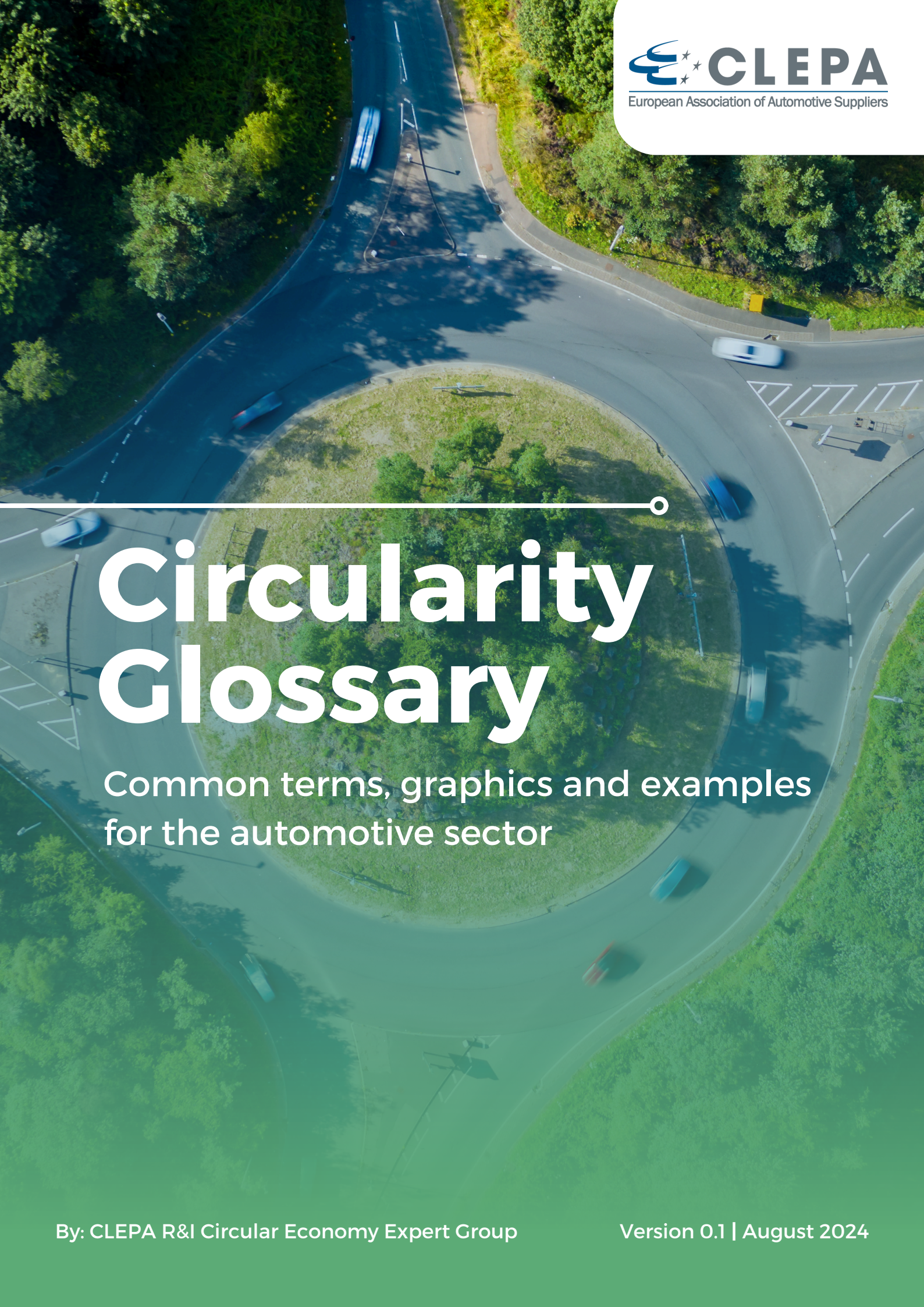


CLEPA
European Association of Automotive Suppliers

Circularity Glossary

Common terms, graphics and examples for the automotive sector

By: CLEPA R&I Circular Economy Expert Group

Version 0.1 | August 2024

1. Introduction

This glossary compiles the most commonly used Circular Economy terms in the automotive industry, aiming to establish a shared language among industry professionals. Its purpose is to lay the groundwork and provide a foundational understanding of the complex and evolving concept of the circular economy for automotive suppliers. During its creation, a comprehensive review of available sources, including legal documents, reputable standards, and recognized associations, was conducted.

Approximately 150 terms were analyzed, and more than 50 were selected for the final version. Terms were chosen based on their relevance to the automotive industry and the reliability of the sources, with legally defined terms given the highest priority, followed by standards and reputable associations. Each term was thoroughly discussed, and additional comments were added to clarify their meanings in the automotive context when necessary.

It is important to note that some relevant terms (e.g., closed-loop and open-loop) are still under development, or lack commonly aligned legal standards. Therefore, ongoing discussions with policymakers and other stakeholders are essential to further enhance the quality of existing terms, synchronize definitions, avoid duplications, and address the need for new terms. Consequently, this glossary is a living document that will be updated accordingly.

The glossary will be available as a downloadable PDF document and as a page on the CLEPA website.

For questions or feedback, please contact the CLEPA R&I Circular Economy Expert Group.

2. Glossary

Term	Definition	Source	Type of source
Biobased resource	resource derived from biomass. Note 1 to entry: Biobased resources exclude any material embedded in geological formations or transformed to fossilized material. Note 2 to entry: Biobased resources include, for example, trees, crops, grasses, tree litter, algae, microorganisms, animals and wastes of biological origin, e.g., manure. Note 3 to entry: Biobased resource focuses on the source of the material and not the ability of the resource to cycle through the technical or biological cycles." **CLEPA Comments:** **Comment 1:** further categorizations of biobased materials based on the origin of materials are available as follows: "First-generation" were the crops and plants are used to produce bio-based chemicals and materials. "Second generation" biomass / feedstock refers to lignocellulosic crops, such as forest wood or fibre crops, or the non-edible part of food and feed crop. "Third generation" biomass / feedstock is biomass derived from algae[1].	ISO 59004:2024	Standards
Biodegradation	the breakdown of an organic compound by microorganisms in the presence of oxygen (aerobic)into carbon dioxide, water, and mineral salts of any other elements present (mineralization) plus new biomass or in absence of oxygen (anaerobic) into carbon dioxide, methane, mineral salts, and new biomass.	DIN EN 14995:2007-03 (E)	Standards
Biomass	material of biological origin, excluding material embedded in geological formations or transformed to fossilized material **Note 1 to entry:** This includes organic material (both living and dead) from above and below ground, e.g., trees, crops, grasses, tree litter, algae, animals, and waste of biological origin, e.g., manure.	ISO 59004:2024	Standards

[1] Source: Dammer, L., Carus, M., Porc, O. 2023: The Use of Food and Feed Crops for Bio-based Materials and the Related Effects on Food Security. Renewable Carbon Initiative (ed.), Hürth 2023

Term	Definition	Source	Type of source
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 is considered not to be waste, but to be a by-product if [all] the following conditions are met: -further use of the substance or object is certain, -the substance or object can be used directly without any further processing other than normal industrial practice, - the substance or object is produced as an integral part of a production process; and further use is lawful, i.e., -the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts. (See Annex A – Figure 1) **CLEPA Comments:** **Comment 1:** reutilization of By-Product materials such as rework, regrind or production scrap materials generated within the process and capable of being reused within the same process that generated it shall not be considered as Pre-Consumer materials. Following sketch depicts simplified material streams in a production process. **Comment 2:** term "by-product" is not included in the ELV revision.	2008/98/EC, Waste Framework Directive (version 18/02/2024)	Legal
Cascading	repeated use of a resource usually starting at a level of high value with decreasing quantity and quality at each subsequent stage or cycle, depending on the processes used. **CLEPA Comments:** **Comment 1:** cascading can include up-and/or downcycling	ISO 59004:2024	Standards
Circular economy	economic system that uses a systemic approach to maintain a circular flow of resources by recovering, retaining, or adding to their value, while contributing to sustainable development. **Note 1 to entry:** Resources can be considered concerning both stocks and flows. **Note 2 to entry:** From a sustainable development perspective, the inflow of virgin resources is kept as low as possible, and the circular flow of resources is kept as closed as possible to minimize emissions and losses (waste) (of resources) from the economic system. **CLEPA Comments:** **Comment 1:** among all the existing definition, CLEPA members decided on the definition from ISO59004, 2024 due to the fact that was developed by ISO after reviewing more than hundred existing definitions. Additionally, this definition will be also adopted by Corporate Sustainability Reporting Directive (CSRD). There are several circular economy strategies available such as R-Framework	ISO 59004:2024	Standards

Term	Definition	Source	Type of source
Circular economy principles	are fundamental basis for decision making or behaviour. The implementation of a circular economy is facilitated by incorporating circular economy principles into organizational policies, actions, and procedures. Examples of circular economy principles are given under CLEPA comment. **CLEPA Comments:** **Comment 1:** ESRS E5 includes the following circular economy principles (but not limited to): - minimizing waste - maintaining the value of products, materials and other resources at their highest value - enhancing the efficient use of products, materials and other resources in production and consumption[2]. **Comment 2:** the European circular economy principles are: i. usability; ii. reusability; iii. repairability; iv. disassembly; v. remanufacturing or refurbishment; vi. recycling; vii. recirculation by the biological cycle; viii. other potential optimization of product and material use[3]. **Comment 3:** ISO59004:2024 defines 6 circular economy principles: - systems thinking; - value creation; - value sharing; - resource stewardship; - resource traceability; - ecosystem resilience. [4] **Comment 4:** According to the Ellen MacArthur Foundation, the circular economy is based on three principles, driven by design: 1. eliminate waste and pollution. 2.circulate products and materials at their highest value 3. regenerate nature.[5]	Modified from sources	Associations
Core product or part	a previously sold, worn or non-functional (used) product or part, intended for the remanufacturing process. During reverse logistics, a core is protected, handled and identified for remanufacturing to avoid damage and to preserve its value. A core is not waste or scrap and is not intended to be reused before remanufacturing.	ISO 472:2013	Standards

[2] source: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32023R2772
[3] source: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32023R2772
[4] source: ISO59004:2024
[5] source: https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview, last access 17.06.2024

Term	Definition	Source	Type of source
Critical Raw Materials	critical raw materials as defined in Article 2, point (2), of Regulation (EU) [Critical Raw Materials Act]; **CLEPA Comments:** **Comment 1:** link to the list of materials: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0160	ELV Regulation Draft	Legal - Draft
Design for circularity (DFC)	design and development based on the circular economy principles.	ISO 59004:2024	Standards
Designed for disassembly	a characteristic of a product's design that enables the product to be taken apart at the end of its useful life in such a way that allows components and parts to be reused, recycled, recovered for energy or, in some other way, diverted from the waste stream.	ISO 14021:2016	Standards
Digital Product Passport (DPP)	a set of data specific to a product that includes the information specified in the applicable delegated act adopted pursuant to Article 4 and that is accessible via electronic means through a data carrier in accordance with Chapter III.	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
Dismantling	process whereby a product is taken apart in such a way that some parts can be reused, although the product (and the parts not intended to be reused) can no longer be reassembled and made operational. **CLEPA Comments:** **Comment 1:** term "dismantling" is not included in the ELV draft and should be defined.	ISO 14009:2020	Standards
Downcycling	production of recycled material that is of lower economic value or quality than the original product.	ISO 5157:2023	Standards
Durability	ability of a product or material to function as required, under specified conditions of use, maintenance, repair and update until a limiting state prevents its functioning Note 1 to entry: Durability can be expressed in units appropriate to the part or product concerned (e.g., operating cycles, distance run). The units should always be clearly stated. Note 2 to entry: Durability is influenced by reliability, maintenance, repair, and updates (e.g., in software). **CLEPA Comments:** **Comment 1:** Ecodesign for Sustainable Products Regulation (ESPR)[6] defines durability as the "ability of a product to maintain over time its function and performance under specified conditions of use, maintenance and repair". The ISO definition is the same with additional notes.	ISO 59020:2024	Standards

[6] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32024R1781

Term	Definition	Source	Type of source
Ecodesign	design and development based on life cycle thinking aimed at supporting sustainable development. **Note 1 to entry:** Other terminology used “environmentally conscious design (ECD)”, “design for environment (DfE)”, “green design” and “environmentally sustainable design”. **CLEPA Comments:** **Comment 1:** Ecodesign for Sustainable Products Regulation (ESPR) defines ecodesign as the "integration of environmental sustainability considerations into the characteristics of a product and the processes taking place throughout the product’s value chain". The ESPR definition is more process-oriented and specific to the value chain, while the ISO definition is broader, linking ecodesign to life cycle thinking and sustainable development.	ISO 59004:2024	Standards
End-of-life	the life cycle stage that begins when a product is discarded and ends when the waste material of the product is returned to nature or enters another product’s life cycle.	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
End-of-life vehicle	a vehicle is waste when it is irreparable fulfilling criteria of point 1 and point 2: **Point 1:** A vehicle is technically irreparable if it meets one or more of the following criteria: **a)** it has been cut into pieces or stripped. **b)** it has been welded up or closed by insulating foam. **c)** it has been completely burnt to the point where the engine compartment or passenger compartment is destroyed. **d)** it has been submerged in water to a level above the dashboard. **e)** one or several of the following components of the vehicle cannot be repaired or replaced: **f)** ground coupling components (such as tires and wheels), suspension, steering, braking, and their control components. **g)** seat fixings and joints. **h)** airbags, pre-tensioners, safety belts, and their peripheral operating components. **i)** the vehicle's hull and chassis. **Point 2:** The vehicle is economically irreparable if its market value is lower than the cost of the necessary repairs needed to restore it in the Union to a technical condition that would be sufficient to obtain a roadworthiness certificate in the Member State where the vehicle was registered before repair. **CLEPA Comments:** **Comment 1:** ELV regulation is a draft under revision at the time of preparation of this glossary and the definition is not finalized yet. **Comment 2:** Current version of EU ELV: Directive 2000/53/EC defines ‘end-of life vehicle’ in Art. 2(2) as : " a vehicle which is waste within the meaning of Article 1(a) of Directive 75/442/EEC".	ELV Regulation Draft	Legal - Draft

Term	Definition	Source	Type of source
End-of-waste	waste which has undergone a recycling or other recovery operation is considered to have ceased to be waste if it complies with [all of] the following conditions: **a)** the substance or object is to be used for specific purposes. **b)** a market or demand exists for such a substance or object. **c)** the substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products. **d)** the use of the substance or object will not lead to overall adverse environmental or human health impacts **CLEPA Comments:** **Comment 1:** the term "end-of-waste" is not included in the ELV draft and needs to be aligned with existing legal documents such as 2008/98/EC, Waste Framework Directive (version 18/02/2024).	2008/98/EC, Waste Framework Directive (version 18/02/2024)	Legal
Environmental Impact	any change to the environment, whether adverse or beneficial, wholly or partially resulting from a product during its life cycle;	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
Extended producer responsibility (EPR)	environmental policy approach in which a producer's responsibility for a product is extended to the postconsumer stage of a product. **Note 1 to entry:** An EPR policy is characterized by: a) the shifting of responsibility (physically or economically; fully or partially) upstream towards the producer and away from government or municipalities; b) the provision of incentives to producers to take into account environmental considerations when designing their products. **Note 2 to entry:** An EPR can be only financial or can be financial and operational depending on local laws. **CLEPA Comments:** **Comment 1:** The principle: whoever manufactures, distributes a product or imports a product (putting it on the market) must take responsibility for its end of life.	ISO 24161:2022 ISO 59010:2024	Standards
Hazardous substance	a substance or a mixture fulfilling the criteria relating to physical hazards, health hazards or environmental hazards, laid down in Parts 2 to 5 of Annex I is hazardous and shall be classified in relation to the respective hazard classes provided for in that Annex. Where, in Annex I, hazard classes are differentiated on the basis of the route of exposure or the nature of the effects, the substance or mixture shall be classified in accordance with such differentiation **CLEPA Comments:** **Comment 1:** hazardous substances are legally defined by CLP Regulation (EC) 1272/2008 Article 3. They are related to the hazard classes provided in Annex I.	Regulation (EC) No 1272/2008 [7]	Legal

[7] Link: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02008R1272-20231201

Term	Definition	Source	Type of source
Inert waste	waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater.	COUNCIL DIRECTIVE 1999/31/EC[8]	Legal
Life cycle	consecutive and interlinked stages of a product's life, consisting of raw material acquisition or generation from natural resources, pre-processing, manufacturing, storage, distribution, installation, use, maintenance, repair, upgrading, refurbishment and reuse, and end-of-life;	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
Life Cycle Assessment (LCA)	compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle	ISO 14040:2006	Standards
Linear Economy	economic system where resources typically follow the pattern of extraction, production, use and disposal.	ISO 59004:2024	Standards
Maintenance	one or more actions carried out to keep a product in a condition where it is able to fulfil its intended purpose.	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
Mass balance model	a chain of custody model in which materials or products with a set of specified characteristics are mixed according to defined criteria with materials or products without that set of characteristics. **Note 1 to entry:** The proportion of the input with specified characteristics might only match the initial proportions on average and will typically vary across different outputs. **CLEPA Comments:** **Comment 1: an** important chain of custody models for allocation and verification of secondary and biobased materials.	ISO 22095:2020	Standards
Material footprint	refers to the total amount of raw materials extracted to meet final consumption demands.	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
Materiality assessment	method to identify and prioritize the issues most important to an organization and its interested parties, and relevant to its circular economy strategy.	ISO 59010:2024	Standards

[8] Link: CL1999L0031EN0040010.0001.3bi_cp 1..1 (europa.eu)

Term	Definition	Source	Type of source
Natural resource	raw material occurring in nature. **Note 1 to entry:** Natural resources usually have not been subjected to any human-related processing or modification. **Note 2 to entry:** Natural resources are acquired or extracted from the environment or nature (the geosphere or biosphere into the Technosphere and emissions to air, water or land are released from the Technosphere into the environment.	ISO 59004:2024	Standards
Post-consumer material	material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. **Note 1 to entry:** This includes returns of material from the distribution chain. **CLEPA Comments:** **Comment 1:** only Pre- and post-consumer materials shall be considered in Recycled content calculations. Following sketch depicts simplified material streams in a production process. (See Annex A – Figure 1)	ISO 14021:2016	Standards
Pre-consumer material	material diverted from the waste stream during a manufacturing process. **Note1:** Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. **Note2:** also known as Pre-Consumer Waste and Post-Industrial Material. **CLEPA Comments:** **Comment 1:** only Pre and post-consumer materials shall be considered in Recycled content calculations. Following sketch depicts simplified material streams in a production process. (See Annex A – Figure 1)	ISO 14021:2016	Standards
Primary raw materials	material which has never been processed into any form of end-use product. **Note 1:** same as “Virgin raw material”	ISO 2067:2016 ISO 59004:2024	Standards
Recoverability	possibility for recovery of parts, components or materials diverted from an end-of-life vehicle. **CLEPA Comments:** **Comment 1:** Current version of EEU RRR: Directive 2005/64/EC defines "Recoverability" in Art. 4(15) as :" the potential for recovery of component parts or materials diverted from an end-of-life vehicle".	ELV Regulation	Legal - Draft
Recovered [reclaimed] material	material that would have otherwise been disposed of as waste or used for energy recovery but has instead been collected and recovered [reclaimed] as a secondary material input.	ISO 14021:2016	Standards

Term	Definition	Source	Type of source
Recovery	any operation the principal result of which is waste, serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function. Thus, recovery includes recycling (material recovery) and energy recovery.	2008/98/EC, Waste Framework Directive (version 18/02/2024)	Legal
Recyclability	possibility for recycling of parts, components or materials diverted from an end-of-life vehicle. **CLEPA Comments:** **Comment 1:** Current version of EEU RRR: Directive 2005/64/EC defines "Recyclability" in Art. 4(14) as :" the potential for recycling of component parts or materials diverted from an end-of-life vehicle".	ELV Regulation Draft	Legal - Draft
Recycled content	proportion, by mass, of recycled material in a product. **CLEPA Comments:** **Comment 1:** only pre-consumer and post-consumer materials shall be considered as recycled content. **Comment 2:** within ISO 59020 Annex A the resource inflows are measured to quantify four types of content: 1) reused content; 2) recycled content (as defined here); 3) virgin, renewable content; 4) virgin, non-renewable content. These four types of content add up to represent 100 % of the resource inflow. The first three types (recycled, reused and virgin, renewable content) are considered as circular; whereas the fourth type (virgin, non-renewable content) is the remaining portion that is from a non-circular source.	ISO 14021:2016 ISO 59020:2024	Standards
Recycling	any recovery operation by which waste materials are reprocessed into products, materials, or substances whether for the original or other purposes. Recycling can be split into the subcategories: - Material recycling - Organic recycling - composting and digestion is only possible for separately collected organic waste. **Note1:** Recycling does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. **CLEPA Comments:** **Comment 1:** please note that depends on components and materials variety of recycling methods could be used (e.g., mechanical, chemical recycling etc.) **Comment 2:** terms "open loop recycling" and "closed loop recycling" to be defined.	2008/98/EC, Waste Framework Directive (version 18/02/2024)	Legal

Term	Definition	Source	Type of source
Refurbishment	actions carried out to prepare, clean, test and, where necessary, repair a part or component that is removed from vehicles or end-of-life vehicles in order to restore the performance or functionality of that part or component within the intended use and range of performance originally conceived at the design stage applicable at the time of its placing on the market. **CLEPA Comments:** **Comment 1:** CLEPA prioritised ELV regulations' definition, note that another available definition is from Ecodesign for Sustainable Products Regulation (ESPR). **Comment2:** Not to be confused with "Remanufacturing".	ELV Regulation Draft	Legal - Draft
Remanufacturing	a standardized industrial process of remanufacturers by which parts and components are returned to same-as-new, or better, condition and performance. The process, which is fully documented, is in line with specific technical specifications, including engineering, quality and testing standards. The process yields fully warranted products. **CLEPA Comments:** **Comment 1:** not to be confused with " refurbishment" and "recycling ". **Comment 2:** Ecodesign for Sustainable Products Regulation (ESPR) defines remanufacturing as "actions through which a new product is produced from objects that are waste, products or components and through which at least one change is made that substantially affects the safety, performance, purpose, or type of the product". Industry proposing definition of "Remanufacturing" as defined by CLEPA.	"Modified ELV Regulation Draft (Industry agreed definition	Legal - Draft
Renewable resource	resource that can be naturally or artificially grown or replenished within a foreseeable time frame by processes found in nature. Note1 to entry: Some renewable resources are inexhaustible (e.g., the sun) while others are capable of being exhausted but can be regrown or replenished indefinitely with proper stewardship in line with sustainable development.	ISO 59020:2024	Standards
Repair	one or more actions carried out to return a defective product or waste to a condition where it fulfils its intended purpose.	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
Repurposing	process by which a product or its component parts are adapted for use in a different function than it was originally intended for without making major modifications to its physical or chemical structure.	ISO 59020:2024	Standards
Reusability	the possibility for reuse of parts or components diverted from end-of-life vehicle; **CLEPA Comments:** **Comment 1:** reuse of parts and component for the same purpose for which they were originally designed.	ELV Regulation Draft	Legal - Draft

Term	Definition	Source	Type of source
Reuse	any operation by which products or components that are not waste are used again for the same purpose for which they were conceived (Directive 2008/98/EC) **CLEPA Comments:** **Comment 1:** Current version of EU ELV: Directive 2000/53/EC defines 'Reuse' in Art. 2(6) as : " any operation by which components of end-of life vehicles are used for the same purpose for which they were conceived" .	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
Reused content	component or part that has reached the end of one use and is used again with minimal or no physical alterations **Note 1 to entry:** Minimal alterations include cleaning or minor adjustments or repairs. **Note 2 to entry:** non-minimal alteration of materials and parts can contribute to *recycled content*. In this document, recycled content and reused content are treated as distinct and separate shares of total content. **CLEPA Comments:** **Comment 1:** within ISO 59020 Annex A the resource inflows are measured to quantify four types of content: 1) reused content (as defined here); 2) recycled content; 3) virgin, renewable content; 4) virgin, non-renewable content. These four types of content add up to represent 100 % of the resource inflow. The first three types (recycled, reused and virgin, renewable content) are considered as circular; whereas the fourth type (virgin, non-renewable content) is the remaining portion that is from a non-circular source.	ISO 59020:2024	Standards
R-Strategy Framework	the R-Strategies cover the entire life of a material or product - starting with the extraction of resources, through the life of the product to the end of life. All R-strategies aim to reduce the consumption of primary resources and promote the use of secondary raw materials. **CLEPA Comments:** **Comment 1:** also known as " R-Ladder "or "R-hierarchy " **Comment 2:** variety of different R concepts has been developed from 3R, 4R, 6R, 9R and 10R. (See Annex A – Figure 2 , Figure 3) **Comment 3:** R-strategies are defined for different stages of the product life cycle, ranging from the design and production phase (R0-R2) to the use phase (R4-R8), and finally to the end-of-life phase (R8-R9). (See Annex A – Figure 3) An important point to highlight is that the lower the R in the ladder, the higher the level of circularity that can be achieved. thus, implementing circular strategies in design and production stage of a product (R0-R2) saves more value compared to strategies in end-of-life phase (R8-R9)	DIN Webpage[9]	Associations

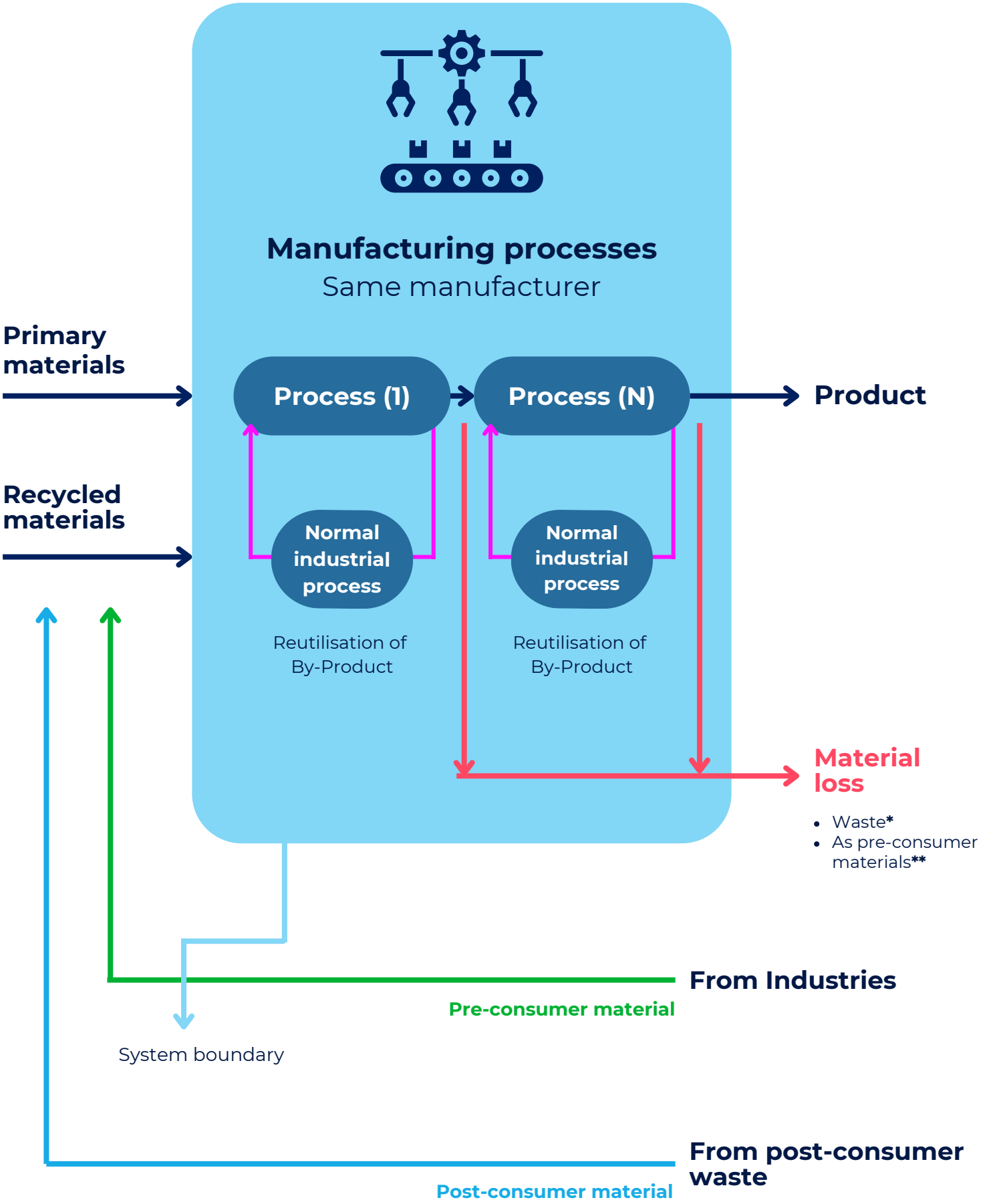
[9] https://www.din.de/en/innovation-and-research/circular-economy/standards-research-on-the-circular-economy/r-strategy-framework

Term	Definition	Source	Type of source
Secondary Raw Materials	materials that have been obtained through recycling processes and can substitute primary raw materials. **CLEPA Comments:** **Comment 1:** all non- primary materials are secondary materials including: Pre -, post-consumer and reutilization of by-product materials.	ELV Regulation Draft	Legal - Draft
Upcycling	process of converting waste products to new materials that are of higher economic value or quality than in the original product.	ISO 5157:2023	Standards
Upgrading	actions carried out to enhance the functionality, performance, capacity, safety or aesthetics of a product;	Ecodesign for Sustainable Products Regulation (ESPR)	Legal
Value	gain(s) or benefit(s) from satisfying needs and expectations, in relation to the use and conservation of resources. **Note 1 to entry:** Value is relative to, and determined by the perception of, those interested party(ies) able to capture it. **Note 2 to entry:** Value can be financial or non-financial, e.g., social, environmental, other gains or benefits. **Note 3 to entry:** Value is dynamic over time. **CLEPA Comments:** **Comment 1:** examples are Revenue, savings, productivity, sustainability, satisfaction, empowerment, engagement, experience, public health, trust.	ISO 59004:2024 ISO 56000:2020, modified	Standards
Virgin resource	natural resource or energy that is used as a resource for the first time as input in a process or for creating a product. **Note 1 to entry:** Virgin resources can be either a renewable resource or non-renewable resource. **Note 2 to entry:** Other terminology used, depending on the context, includes “virgin material” or “primary material”.	ISO 59020:2024	Standards
Waste	any substance or object which the holder discards or intends or is required to discard. (Or is released to the environment.) **Note1:** is considered to no longer be an asset as it, at the time, provides no value to the holder.	2008/98/EC, Waste Framework Directive (version 18/02/2024)	Legal

Term	Definition	Source	Type of source
Waste hierarchy	priority order in waste prevention and management legislation and policy: a) prevention b) preparing for re-use c) recycling d) other recovery, e.g., energy recovery. e) disposal **CLEPA Comments:** **Comment 1:** note that "part b) preparing for re-use" incudes all circular strategies for lifetime expansion of a product such as repair, remanufacturing, refurbishment, repurpose.	2008/98/EC, Waste Framework Directive (version 18/02/2024)	Legal

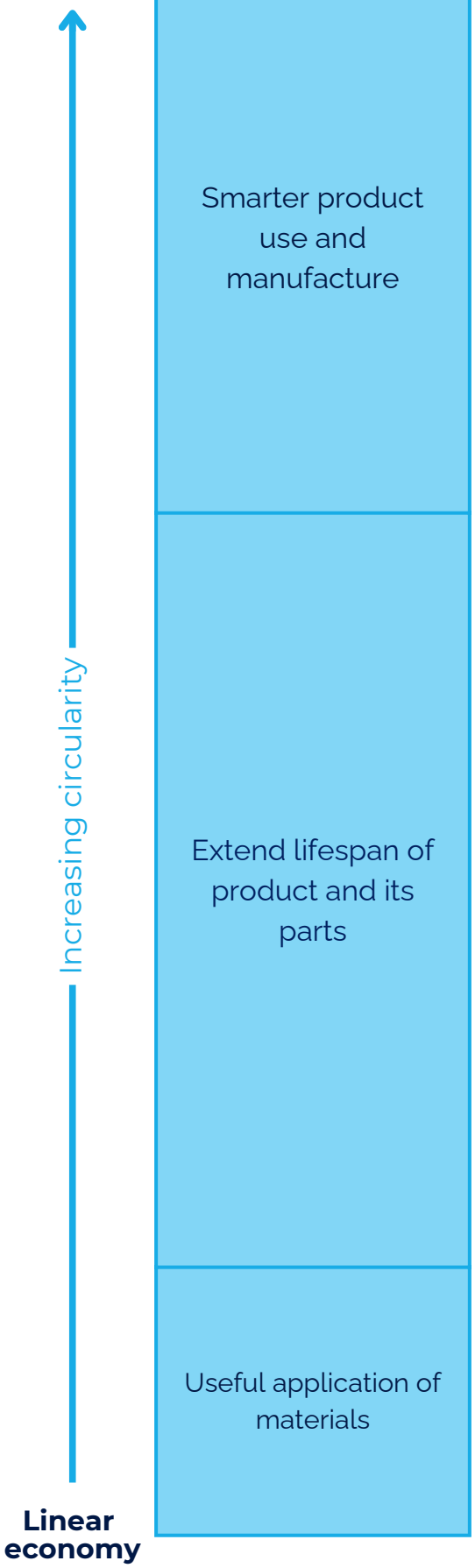
3. Annex

Figure 1: Material streams in production (Recycled, pre-consumer, post-consumer, primary and Reutilisation of By-Products)



*With no commercial value, sent to be landfilled or for energy recovery via incineration.
** With commercial value, sold to/used by another manufacturer to be used as pre-consumer materials

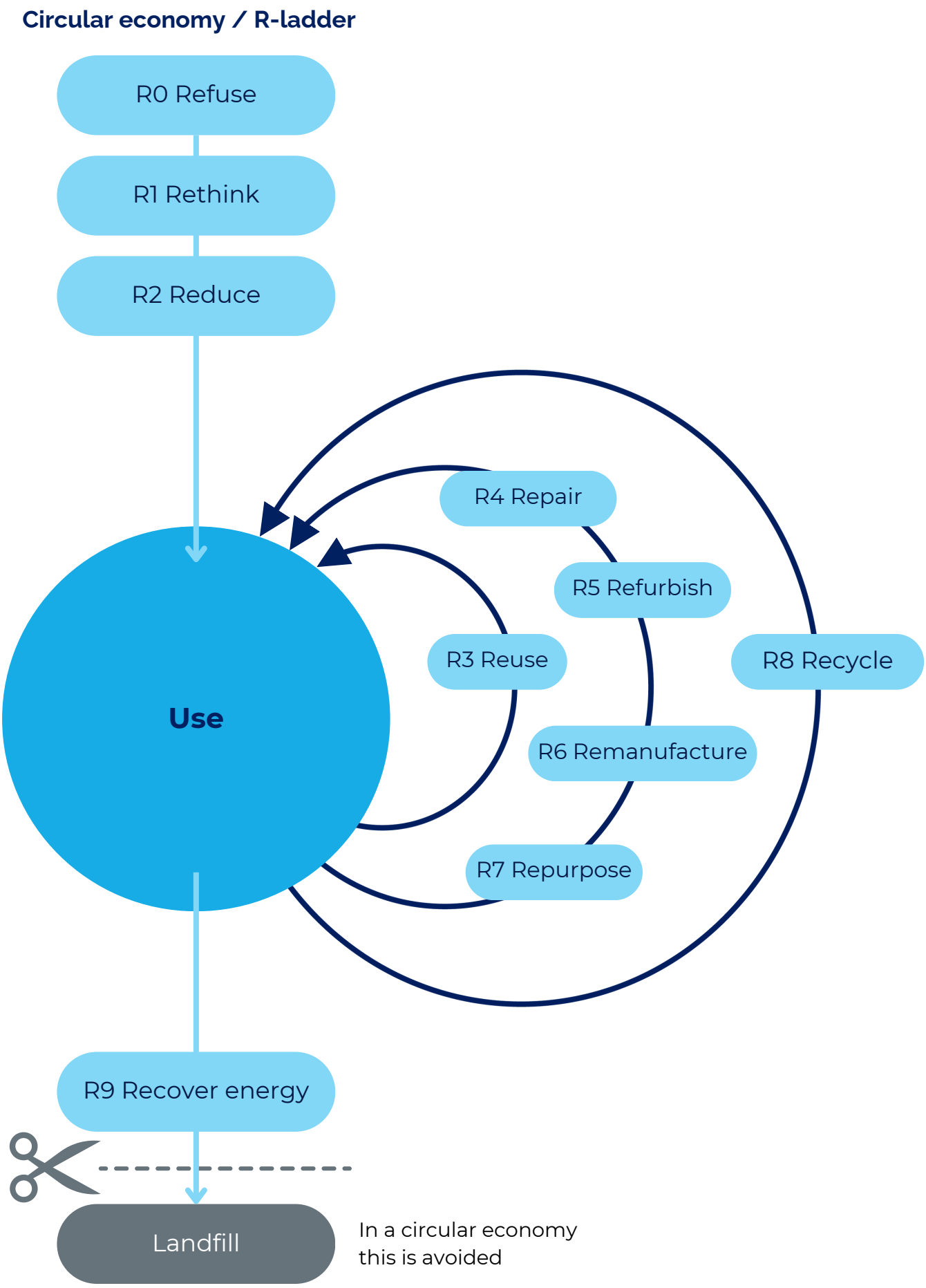
Figure 2: 9R Strategy Framework definitions



Strategies	
R0 Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product
R1 Rethink	Make product use more intensive (e.g. by sharing product)
R2 Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
R3 Reuse	Reuse by another consumer of discarded product which is still in good condition and fulfils its original function
R4 Repair	Repair and maintenance of defective product so it can be used with its original function
R5 Refurbish	Restore an old product and bring it up to date
R6 Remanufacture	Use parts of discarded product in a new product with the same function
R7 Repurpose	Use discarded product or its parts in a new product with a different function
R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade quality
R9 Recover	Incineration of material with energy recovery

Source: Conceptualizing the Circular Economy: An Analysis of 114 Definitions, September 2017SSRN Electronic Journal 127 September 2017127 DOI:10.2139/ssrn.3037579

Figure 3: R-Ladder in product lifecycle



Source: Fostering Education for Circular Economy through Life Cycle Thinking, June 2021, DOI:10.5772/intechopen.98606, Licenses BY 3.0

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