



**CIRCULAR
ECONOMY
GUIDEBOOK FOR
MEDIA
PROFESSIONALS**

2024

Introduction

The circular economy is increasingly recognized as a vital strategy to combat sustainability challenges and climate change, build resilient and inclusive economic growth, and foster liveable and enjoyable societies. However, as a new and emerging idea, many of the key principles and terms associated with circular economic thought remain somewhat vague, confusing or undefined. As the research and potential of circular economic initiatives, grows, so too does the use of empty buzzwords, misleading hype, and attempts at greenwashing. This poses a threat of misunderstanding and miscommunication on the circular economy which could weaken effective steps towards circular transition, and hamper citizen understanding and buy-in. This challenge is especially present in the Western Balkans, where general knowledge and awareness of the circular economy remains low, which makes the risk of misinformation high.

Journalists and other media professionals can play a key role in supporting the spread of information on the circular economy in an evidence-based, factual manner. Indeed, journalists are a key source of information and help shape the opinions and understanding of citizens when it comes to environmental issues. Yet, especially in the Western Balkans, there remains very little resources for journalists to learn about the circular economy and find reliable data on circular economic initiatives. This **Circular Economy Guidebook for Media Professionals** seeks to address this gap in resources. The guidebook is structured around 2 main sections. The first provides links to key resources on the circular economy in the Western Balkans, with a specific focus on Bosnia and Herzegovina. The second provides a glossary of key terms related to the circular economy.

1. Key resources on the Circular Economy

As the circular economy gains popularity and becomes an increasing important policy imperative, a range of hubs, repositories, networks and organizations have begun to organize data on circular economic topics. The following resources should not be taken as a comprehensive list, but a starting point for finding high quality information regarding the circular economy in the Western Balkans, and Bosnia and Herzegovina specifically.

1.1. Databases and knowledge hubs related to the circular economy in the Western Balkans (with a focus on Bosnia and Herzegovina)

[Euro-Mediterranean Policy Hub](#)

A tool prepared by the Interreg-MED Green Growth community, this hub gathers policy instruments related to green growth existing or under development in the Euro-Mediterranean region.

[European Circular Economy Stakeholder Platform](#)

An initiative of the European Commission and European Economic and Social Committee, the platform brings together stakeholders across Europe active in the field of circular

economy. The website holds a wealth of information on Circular Economic initiatives in Europe, including a knowledge hub and circular economic toolbox, upcoming events, and more.

[European Commission - Circular economy web-page](#)

Webpage by the European Union with links to the plans, policies, tools and instruments planned and implemented by the EU to foster circular economies

[The Ellen MacArthur Foundation](#)

A leading circular economy network with a wealth of educational resources on the circular economy, including free online courses, articles, podcasts, films, case studies and more.

[European Environment Agency](#)

Agency of the European Union that provides knowledge and data on European environmental and climate change related goals. The website holds a range of resources, including: a searchable [online glossary](#) of the environmental terms used by the European Environment Agency and their definitions; a [data hub](#); country specific [waste prevention profiles](#); and [circular economy specific resources](#), amount other resources.

[Foreign Trade Chamber Bosnia and Herzegovina – Green economy webpage](#)

Web portal that gathers relevant publications, news, and reporting on the green economy in Bosnia and Herzegovina.

[Mediterranean Blue Economy Stakeholder Platform](#)

Mediterranean networking platform to share knowledge on and support the development of a blue economy in the Mediterranean. The platform seeks to be an online portal to consolidate general, technical, and sectoral information related to the blue economic in the region.

[OECD RE-CIRCLE project website](#)

The ‘Resource Efficiency and Circular Economy’ (RE-CIRCLE) project of the OECD aims to provide policy guidance on resource efficiency and circular transition. The project website provides information on the OECD’s papers, publications, events and latest work related to the circular economy.

[Regional Cooperation Council website](#)

Regional cooperation framework for the South East Europe Region, aimed at European and Euro-Atlantic integration and sustainable development of South East Europe. The website provides valuable resources including information on the [Green Agenda](#), South East Europe specific databases, publications, and more.

[The Uncomfortable Knowledge Hub](#)

Initiative that seeks to problematize oversimplified narratives and raise ignored considerations regarding Europe's green transition, while providing resources and guidance for overcoming these challenges. Specific topics of focus include: EU's Farm to Fork Strategy, decarbonization of electricity and liquid fuels, the circular economy, and energy efficiency.

UNDP – Green Transition Platform/Platforma Zelena tranzicija

Prepared by the United Nation's Development Programme in Bosnia and Herzegovina, a platform created with the aim of collecting key information and resources in the area of green transition for the private and public sector, as well as other relevant stakeholders. In addition, the platform encourages dialogue through forums and other interactive tools that will facilitate exchange.

1.2. Reports and other valuable resources

International Standards Organization (2024). ISO 59004:2024 Circular economy – Vocabulary, principles and guidance for implementation

The official terminology and definitions regarding the circular economy developed by the International Standards Organization. The document is aimed at defining the circular economy and providing a vision, guidance, and general principles on its implementation.

International Standards Organization (2024). ISO 59010:2024 Circular economy – Guidance on the transition of business models and value networks

A business-oriented guide to circular business models and business-oriented action towards circular transition, prepared by the International Standards Organization.

International Standards Organization (2024). ISO 59020:2024 Circular economy – Measuring and assessing circularity performance

Document providing a structured approach to the measurement and assessment of circularity performance and sustainability impacts, based on standardized indicators and methods.

International Standards Organization (2024). ISO 59004:2024 Circular economy – Review of existing value networks

Document prepared by the International Standards Organization providing a review of the existing structures and characteristics of value networks supporting the circular transition process.

OSCE (2024). Green Paper on Social Economy in the Western Balkans

A green paper outlining current trends in the development of social economies in the Western Balkans and provides recommendations for future directions.

[Regional Cooperation Center \(2023\). Green Agenda for the Western Balkans Action Plan – implementation report 2022](#)

First implementation report on the Green Agenda for the Western Balkans Action Plan, examining progress made from the implementation of the Plan until 2022.

[European Environment Agency \(2023\). Waste prevention country profile: Bosnia and Herzegovina](#)

Report on the current state of play regarding waste generation, prevention, and management in Bosnia and Herzegovina.

[Centre for Policy and Governance \(2022\). Bosnia and Herzegovina Circular Economy White Paper](#)

Valuable white paper overviewing the state of circular economy initiatives in Bosnia and Herzegovina, and potential barriers and incentives to its development.

[Centre for Policy and Governance \(2022\). Case Study Implementation of Circular Economy Business Models in BiH](#)

A study of approaches taken by different Bosnia and Herzegovinian companies regarding implementation of circular activities.

[The Balkan Forum \(2022\). Underpinning Circular Economy Progress in the Western Balkan Countries](#)

An analysis of the current progress towards a in circular economy in the Western Balkans, with a particular focus on policy goals and business innovation.

[European Environmental Bureau \(2021\). Guidelines on Circular Economy for the Countries of the Western Balkans and Turkey](#)

A report aimed at improving the capacity of civil society and other interested actors in engaging with the circular economy in the Western Balkans. The report outlines past, present and future EU policies and provides country briefs for each of the Western Balkan nations, as well as shares EU best practice examples and offers proposals of activities to accelerate circular transition.

[OECD \(2021\). A Multi-dimensional Review of the Western Balkans: From Analysis to Action – Chapter 14: A Green Recovery in the Western Balkans](#)

As part of an extensively researched report by the OECD, this chapter highlights the state of affairs for achieving a green post-COVID recovery in the Western Balkans. Each of the Western Balkan economies - their challenges, opportunities, and paths forward – is analyzed and suggestions provided regarding ways to ensure future joint economic, social, and environmental development.

[The Balkan Forum \(2021\). Circular Economy in the Western Balkans region: Waste Management as a Challenge](#)

Report that provides a broad overview of circular economic topics, progress, and considerations in the Western Balkans.

[Regional Cooperation Center \(2021\). Green Agenda for the Western Balkans Action Plan](#)

Action Plan for the Implementation of the Sofia Declaration on the Green Agenda for the Western Balkans for the period of 2021-2030.

[ESAP BiH 2030+](#)

The Bosnia and Herzegovina Environmental Strategy and Action Plan 2030+ (ESAP BiH 2030+) establishes policy goals and activities for Bosnia and Herzegovina up to 2032. The document was designed to support Bosnia's alignment with the 7 key EU environmental policy areas: water; waste; biodiversity and nature protection; air quality, climate and energy; chemical safety and noise; resource management; and environmental management.

[European Commission \(2020\). A new Circular Economy Action Plan: For a cleaner and more competitive Europe](#)

The key action plan of the European Union for the circular economy.

[Regional Cooperation Center \(2020\). Green Agenda for the Western Balkans](#)

Central plan for achieving a green economy in the Western Balkans.

[European Commission \(2020\). Guidelines for the Implementation of the Green Agenda for the Western Balkans](#)

A working document of the European Commission which articulates in more detail the key actions needed for the achieved of the Green Agenda for the Western Balkans. This includes communication the economic and investment plan adopted by the commission, and the 5 key pillars of the Green Agenda in relation to the Western Balkans.

1.3 Key networks and associations for the circular economy in the Western Balkans

[LogEx Community](#)

Established in 2021, the LogEx Community is a partnership between universities and academics, civil society organizations and business actors from the Western Balkan region, and the region's diaspora. As a diverse community, LogEx works to address the gap between higher education and the employment marketplace in the WB region. LogEx facilitates shared learning and collaboration and works to build human capital, strengthen a circular economy, reduce unemployment and out-migration. The community brings together organizations in the region committed to supporting the circular economy.

These members are:

- [Association for Democratic Prosperity](#) - ADP-Zid (Montenegro)
- [Build Green Group](#) (Albania)

- [Center for Energy, Environment and Resources](#) - CENER 21 (BiH)
- [Civil](#) (Macedonia)
- [Centar za obrazovanje i druženje](#) - COD (BiH)
- [The Balkan Forum](#)
- [Youth initiative for Human Rights](#) - YIHR
- [Universum College](#) (Kosovo)

RECPnet: The Global Network for Resource Efficient and Cleaner Production

Global networking initiative to bring together organizations committed to the implementation of RECP concepts (resource efficiency and cleaner production) in developing and transitioning countries.

Members in the Western Balkans are:

- [Center for Energy, Environment and Resources - CENER 21 \(BiH\)](#)
- [Cleaner Production Center of Serbia - CČPS \(Serbia\)](#)
- Croatian Cleaner Production Centre (Croatia)
- [Environmental Center for Administration and Technology - ECAT \(Albania\)](#)
- Montenegro National Cleaner Production Programme (Montenegro)
- National Cleaner Production Centre (Macedonia)

Alijansa za cirkularna pakovanja (Alliance for circular packaging)

An alliance that brings together key experts in the field of environmental projecting, seeking to present new systems and solutions for the responsible collection and recycling of packaging waste in the Western Balkans.

Interreg Mediterranean Green Growth Community

Community facilitated by the European Union Interregional Programme (Interreg Europe), that brings together projects and initiatives in the European mediterranean that tackle topics relevant to the EU Green deal and EU Circular Economy Action Plan.

Innovative Sustainable Economy Community Hub

Currently under development, with plans to launch in the summer of 2024. A community to connect a range of stakeholders in the Mediterranean region, with the mission of boosting a fair transition to a sustainable economy through transformative innovation in the Mediterranean region. The hub hopes to act as a dynamic space to unite the various actors involved in sustainable transition in the Mediterranean region for connection, collaboration, and innovation.

2. Glossary of Circular Economic Terms

Jump to: [D-F](#) [G-P](#) [P-S](#) [S-Z](#)

Biobased: Any resource derived from biomass (organic material).¹ Being biobased does not related to the biodegradability or recyclability of a material.²

See also: [Biomass](#)

Biobased plastics: Plastics made either entirely or partially from organic sources, such as plants, microorganisms, rather than from the conventional fossil-fuel sources.³ Biobased plastics are not necessarily biodegradable.⁴

Biodegradable material: A general term for all materials that can be decomposed by bacteria or other living organisms.⁵ However, the time this process will take to fully break down the material is undetermined, and it may take significant time.^{6 7}

See also: [Compostable](#)

Bioeconomy: Economic systems and sectors that are reliant on biological materials or natural system services.⁸ Economic sectors included in the bioeconomy span both marine and terrestrial activities, such as agriculture, aquaculture and forestry. Ensuring a circular bioeconomy is vital to ensuring a sustainable society.⁹

Biological cycle: The processes through which organic materials and products in the economy, such as food or organic textiles, are cycled within the economy and safely broken down and returned to the earth.^{10 11} This especially involves processes of composting and other biodegradation that break down organic materials into more base forms. The biological cycle is what allows for the natural cycling of materials through the ecosystem, as once organic products are broken down into their basic components in the form of compost or other substances, they can support the cultivation of new useable organic materials and products.¹² The biological cycle

¹ ISO. (2024). ISO 59002:2024: Circular economy - Vocabulary, principles and guidance for implementation. Retrieved from: <https://www.iso.org/obp/ui/en/#iso:std:iso:59004:ed-1:v1:en>

² Ibid.

³ European Commission. (n.d.). “Biobased, biodegradable and compostable plastics” [webpage]. https://environment.ec.europa.eu/topics/plastics/biobased-biodegradable-and-compostable-plastics_en

⁴ Ibid.

⁵ European Environment Agency. (n.d.) “Term: Biodegradable” [webpage]. <https://www.eea.europa.eu/help/glossary/eea-glossary/biodegradable>

⁶ Zerowaste. (2022). “Biodegradable vs Compostable – What’s the Difference?” [webpage]. <https://www.zerowaste.com/blog/biodegradable-vs-compostable-whats-the-difference/>

⁷ Ellen MacArthur Foundation. (n.d.) “Compostable, biodegradable and bio-based plastic – what’s the difference?” [webpage]. <https://www.ellenmacarthurfoundation.org/compostable-biodegradable-and-bio-based-plastic-whats-the-difference>

⁸ European Commission. (2022). Bioeconomy Strategy [webpage]. https://knowledge4policy.ec.europa.eu/bioeconomy/bioeconomy-strategy_en

⁹ Ibid.

¹⁰ Ellen MacArthur Foundation. (2021). Circular Economy Glossary. <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹¹ Ellen MacArthur Foundation. (2022). “The biological cycle of the butterfly diagram.” [webpage]. <https://www.ellenmacarthurfoundation.org/articles/the-biological-cycle-of-the-butterfly-diagram>

¹² Ibid.

makes up one half of the key cycles found in the circular economy, along with the technical cycle which deals with non-organic products and processes.¹³

See also: [Biodegradable material](#), [Composting](#), [Technical cycle](#)

Biomass: The organic material from plants and animals, in any form.¹⁴ As a renewable resource, utilizing biomass effectively and sustainably is vital to circular economic systems. While biomass is studied and understood within a variety of disciplines, circular economy discussions usually refer to biomass in relation to its use as an energy source, converting organic materials into fuel or other forms of energy.¹⁵

Biomimicry: Drawing on nature and natural systems for sustainable innovative design and problem solving.¹⁶

Blue economy: Term to describe economic systems and activities related to the exploitation and conservation of the marine environments, that seeks to build economic systems that facilitate sustainable and healthy marine environments.^{17,18} Central focal points of the blue economy include developing sustainable utilization of oceans and their resources and recognizing the importance of cross-sector collaboration and partnership in building sustainable societies and marine ecosystems.¹⁹ Discussions of the blue economy include diverse economic sectors including but not limited to fisheries and aquaculture, marine-based renewable energy, shipping, and sustainable tourism.²⁰

See also: [Green economy](#)

By-product: A product produced during the production process that is not considered the principal product or material.²¹ Circular design seeks to limit undesirable or unusable by-products through more efficient production methods, and diversion of by-products into new uses.²²

Carbon neutrality: When the amount of carbon released into the atmosphere (carbon emissions) and the amount removed from the atmosphere (carbon sequestration) by humans are

¹³ Ibid.

¹⁴ European Commission. (2024). "Glossary Item: Biomass" [webpage]. https://knowledge4policy.ec.europa.eu/glossary-item/biomass_en

¹⁵ Ibid.

¹⁶ Biomimicry institute. (n.d.). "What is biomimicry?" [webpage]. <https://biomimicry.org/what-is-biomimicry/>

¹⁷ UNRIC. (2022). "Blue Economy: Oceans as the next great economic frontier" [webpage]. <https://unric.org/en/blue-economy-oceans-as-the-next-great-economic-frontier/>

¹⁸ UN. (2019). "Diving into the blue economy" [webpage]. <https://www.un.org/development/desa/en/news/sustainable/blue-economy.html>

¹⁹ Ibid.

²⁰ UNRIC. (2022). "Blue Economy: Oceans as the next great economic frontier" [webpage]. <https://unric.org/en/blue-economy-oceans-as-the-next-great-economic-frontier/>

²¹ European Environment Agency. (n.d.) "Term: By-product" [webpage]. <https://www.eea.europa.eu/help/glossary/gemet-environmental-thesaurus/by-product>

²² Ellen MacArthur Foundation. (n.d.) "The circular economy in detail" [webpage]. <https://www.ellenmacarthurfoundation.org/the-circular-economy-in-detail-deep-dive>

balanced.²³ Therefore, the ultimate goal of carbon neutrality is to reach net zero carbon emissions by humans.²⁴

See also: [Decarbonisation](#), [Net Zero](#)

Compostable: Materials that can be broken down by bacteria and other living organisms into compost, meaning it has disintegrated into non-toxic, natural elements.²⁵ To be not just biodegradable, but compostable, products must be known to decompose within a set time frame when under the correct conditions.²⁶ Some compostable materials will decompose under relatively loosely defined conditions (such as a banana peel) whereas others may require tightly regulated conditions, such as those found in an industrial composting facility (such as compostable paper cups or packaging). Moreover, compostable materials can specifically be broken down into carbon dioxide, water and biomass.²⁷

Compostable plastics: Subset of biodegradable plastics, that typically describes plastics that can decompose in industrial composting facilities.²⁸

Composting: The breakdown of organic matter by microbes.²⁹ Composting in the circular economy is especially utilized for the conversion of food by-products into compost which can then be returned to the agricultural system as a regenerative additive in the soil.³⁰

Climate neutrality: When the amount of total greenhouse gases released into the atmosphere (emissions) and the amount removed from the atmosphere (sequestration) by humans are balanced.³¹ Therefore, the ultimate goal of climate neutrality is to reach net zero greenhouse gas emissions.³² The concept of climate neutrality can apply at various scales, from global all the way to company or building level neutrality.³³

²³ European Parliament. (2019). "What is carbon neutrality and how can it be achieved by 2050?" [webpage]. <https://www.europarl.europa.eu/topics/en/article/20190926STO62270/what-is-carbon-neutrality-and-how-can-it-be-achieved-by-2050>

²⁴ Ibid.

²⁵ Ellen MacArthur Foundation. (n.d.) "Compostable, biodegradable and bio-based plastic – what's the difference?" [webpage]. <https://www.ellenmacarthurfoundation.org/compostable-biodegradable-and-bio-based-plastic-whats-the-difference>

²⁶ Ibid.

²⁷ Ibid.

²⁸ European Commission. (n.d.). "Biobased, biodegradable and compostable plastics" [webpage]. https://environment.ec.europa.eu/topics/plastics/biobased-biodegradable-and-compostable-plastics_en

²⁹ Ellen MacArthur Foundation. (2021). Circular Economy Glossary. <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

³⁰ Ibid.

³¹ UNFCCC. (2021). "A Beginner's Guide to Climate Neutrality" [webpage]. <https://unfccc.int/news/a-beginner-s-guide-to-climate-neutrality>

³² Ibid.

³³ Ibid.

Closed loop system: A system wherein a limited stock of materials continually cycle through the system, not requiring additional inputs, and not producing waste outputs.³⁴ A central tenet of the circular economy is seeking to move our current economic systems towards closed loops.³⁵

Circular economy: As per the ISO 59004 definition: The circular economy is economic system that uses a systematic approach to maintain a circular flow of resources, by recovering, retaining or adding to their value, while contributing to sustainable development.³⁶

Circular business model: The logic and methods of operation utilized by a business to incorporate elements of circular design.³⁷

Circular cities: A growing topic of interest, circular cities incorporate and promote circular economy principles into urban planning and management, such as into waste, water, energy and transport systems.³⁸

Circular design: Design philosophy that aims to create products, systems and processes optimized to the circular economy, with a particular emphasis on waste minimization and maximizing the efficient use of resources.³⁹

Circular supply chains: The introduction of circularity across a product's entire of the value chain, meaning from its initial design to its eventual disposal or recycling.⁴⁰

Cradle-to-Cradle (C2C): Design approach that aims to design products and production systems which can continuously reuse the same materials, without generating waste or pollution.⁴¹ This approach is inspired by nature, where nothing is truly waste, but simply repurposed and transformed within natural systems.⁴² In this way, C2C is a lifecycle model for products, with the vision to create fully circular products with no end-of life – the materials used can be repurposed or recycled indefinitely. Essential to C2C design practice is seeking out processes that can recycle or re-purpose materials in a way where the quality of the raw materials used is maintained

³⁴ Kara et al. (2022). "Closed loop systems to circular economy: A pathway to environmental sustainability?" *CIRP Annals - Manufacturing Technology* 71(2022):505-528. <https://doi.org/10.1016/j.cirp.2022.05.008>

³⁵ Ibid.

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³⁷ Sustainability Guide. (n.d.). "Circular Business Models" [webpage].

<https://sustainabilityguide.eu/methods/circular-business-models/>

³⁸ Circular Cities Declaration. (n.d.). "Cities and the Circular Economy" [webpage].

<https://circularcitiesdeclaration.eu/cities-and-the-circular-economy/what-is-a-circular-city>

³⁹ Circular Design Institute. (n.d.). "What is Circular Design?" [webpage]. <https://circulardesigninstitute.ie/what-is-circular-design/>

⁴⁰ Ellen MacArthur Foundation. (n.d.). "Circular supply chains: the role of supply chain professionals in creating a circular economy" [webpage]. <https://www.ellenmacarthurfoundation.org/circular-supply-chains>

⁴¹ Ellen MacArthur Foundation. "The circular economy in detail" [webpage].

<https://www.ellenmacarthurfoundation.org/the-circular-economy-in-detail-deep-dive>

⁴² Ibid.

throughout the process, rather than decreasing in quality.⁴³ C2C design is where the conceptualization of biological and technical cycles within the economy arises from.⁴⁴

See also: [Biological cycle](#), [End-of-life](#), [Technical cycle](#)

Critical raw materials: Raw materials that are vital for the economy, including forming a strong industrial base, and producing goods and services used in everyday life and modern technologies.⁴⁵ Access to these materials is seen as crucial given their economic importance. A list of the list of critical raw materials for the European Union can be found [here](#).

Decarbonisation: Reducing or removing human-caused CO₂ emissions from the atmosphere.⁴⁶ The broad term covers both actions to reduce the amount of carbon being emitted, and to remove already emitted carbon.⁴⁷

See also: [Carbon neutrality](#)

Decoupling: A term often used as shorthand for the circular economic goal of decoupling economic activity from the extraction and consumption of finite resources.⁴⁸

Design for Disassembly (DfD): Designing a product with the aim facilitating its easy dismantling in order to maximize the potential for reuse, remanufacturing, or recycling at the end of its lifetime.⁴⁹

Downcycle: Also known as *cascading*, downcycling is the process of recycling a product in a manner that produces a new product of lesser value.⁵⁰

See also: [Recycle](#), [Upcycle](#)

Downstream (innovation): Placing focus on a product or material after its first use.⁵¹ For example, the downstream management of a plastic bottle may include its collection, sorting, and recycling. Downstream innovation therefore looks for ways to rethink and innovate at this stage of a product's life.⁵²

⁴³ Ibid.

⁴⁴ Thinking Circular. (2022). Glossary: Circular Economy. <https://thinking-circular.com/wp-content/uploads/2022/05/Glossary-Circular-Economy.pdf>

⁴⁵ European Commission. (n.d.). "Critical raw materials" [webpage]. https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials_en

⁴⁶ Deloitte. (n.d.). "What is decarbonisation? The importance of decarbonisation explained" [webpage]. <https://www2.deloitte.com/nl/nl/pages/energy-resources-industrials/articles/what-is-decarbonisation.html>

⁴⁷ Ibid.

⁴⁸ European Commission. (n.d.). Circular economy introduction [webpages]. <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>

⁴⁹ Bogue. (2007). Design for disassembly: a critical twenty-first century discipline. *Assembly Automation*, 27(4): 285-289. DOI 10.1108/01445150710827069

⁵⁰ Kara et al. (2022). "Closed loop systems to circular economy: A pathway to environmental sustainability?" *CIRP Annals - Manufacturing Technology* 71(2022):505-528 <https://doi.org/10.1016/j.cirp.2022.05.008>

⁵¹ Ellen MacArthur Foundation. (n.d.). "Upstream Innovation: a guide to packaging solutions" [webpage]. <https://www.ellenmacarthurfoundation.org/upstream-innovation/overview>

⁵² Ibid.

See also: [Upstream \(innovation\)](#)

Durability: A product's ability to remain functional and relevant, and to maintain its usefulness over time.⁵³ Most often durability is used to refer to the physical resiliency of a product, but it can be used beyond this scope as well.⁵⁴ For example in the technology sector, durability could refer to a software's ability to continue to stay relevant and useable in relation to other current technology.

Eco-design: Design that integrates environmental considerations into all stages of the product development and design process in order to balance ecological and economic realities and seek to minimize negative environmental impacts through the product's life-cycle.⁵⁵

Ecological footprint: A metric that measures the intensity of human's resource consumption and waste generation, through measuring the amount of land (using a global average of natural areas) in hectares that is needed to sustain a person or society's consumption and waste habits.⁵⁶ You can calculate your own ecological footprint [here](#).

Eco-friendly: Products, services or actions that are not harmful to the environment. There is no precise definition or regulation over the use of this term.⁵⁷

End of life: Last phase of a product's life cycle within a linear economy; the period in which a product is no longer used and is disposed of as waste.⁵⁸

See also: [Lifetime](#)

End of use: The alternative life cycle phase to 'end of life' sought after in circular economies, denoting the period in which a product is no longer used for its current use, but is refurbished, recycled, remanufactured or otherwise transformed so that it continues to cycle within the system.^{59 60}

See also: [Lifetime](#)

⁵³ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

⁵⁴ Ibid.

⁵⁵ European Environment Agency. (n.d.) "Term: Eco-design. [webpage].

<https://www.eea.europa.eu/help/glossary/eea-glossary/eco-design>

⁵⁶ Global Footprint Network. (n.d.). "Ecological Footprint" [webpage]. <https://www.footprintnetwork.org/our-work/ecological-footprint/>

⁵⁷ UN. (n.d.) "Greenwashing – the deceptive tactics behind environmental claims" [webpage].

<https://www.un.org/en/climatechange/science/climate-issues/greenwashing>

⁵⁸ Thinking Circular. (2022). Glossary: Circular Economy. <https://thinking-circular.com/wp-content/uploads/2022/05/Glossary-Circular-Economy.pdf>

⁵⁹ Thinking Circular. (2022). Glossary: Circular Economy. <https://thinking-circular.com/wp-content/uploads/2022/05/Glossary-Circular-Economy.pdf>

⁶⁰ Kara et al. (2022). "Closed loop systems to circular economy: A pathway to environmental sustainability?" *CIRP Annals - Manufacturing Technology* 71(2022):505-528. <https://doi.org/10.1016/j.cirp.2022.05.008>

Embedded/Embodied Carbon: The CO₂ emissions that are associated with the entire production process of a product, from the start of its creation to its purchase by a consumer.⁶¹ Calculating embedded carbon can help recognize and regulate the ‘hidden costs’ of production processes, and the concept is gaining popularity especially within the construction industry.⁶²

Extended producer responsibility (EPR): A policy mechanism that seeks to ensure companies are responsible for managing the end of life of the products they produce and any related materials, such as product packaging.⁶³ This could include ensuring the responsible disposal, repair, or recycling of products and materials. Common EPR methods include requiring companies to pay fees for the handling or disposal of products and their packaging when they reach the end of their lifespan as well as requiring companies to be responsible for establishing and covering the costs of waste management for their products.⁶⁴

See also: [Lifetime/lifespan](#)

Finite materials: Non-renewable materials, referring to them not being renewed in a time-period relevant for human's economic activity (for example, fossil fuels like oil do naturally regenerate, but not at a speed relevant to their use as a resource, making them a finite material).⁶⁵

Green business: Businesses that incorporate sustainability principles into decision making and seek to reduce the negative environmental impacts of their business practices.⁶⁶

See also: [Circular business model](#)

Green economy: A low carbon, socially inclusive and equitable, resource efficient economy.⁶⁷ Achieving a green economy requires both environmental performance improvements such as decarbonisation and resource efficiency alongside improvements to human wellbeing and social equity.⁶⁸

See also: [Blue economy](#)

⁶¹ US EPA. (n.d.). "What is embodied carbon?" [webpage]. <https://www.epa.gov/greenerproducts/what-embodied-carbon>

⁶² Ibid.

⁶³ OECD. (n.d.) "Extended Producer Responsibility" [webpage]. <https://www.oecd.org/environment/extended-producer-responsibility.htm>

⁶⁴ OECD. (2024). Extended Producer Responsibility: Basic facts and key principles. Retrieved from: https://www.oecd-ilibrary.org/environment/extended-producer-responsibility_67587b0b-en

⁶⁵ Ellen MacArthur Foundation. (2021). Circular Economy Glossary. <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

⁶⁶ International Labour Organization. (2023). Green Business Guide. <https://www.ilo.org/publications/green-business-guide>

⁶⁷ UNECE. (n.d.). "Green economy" [webpage]. <https://unece.org/green-economy-3>

⁶⁸ Ibid.

Green engineering: Design of products in a way that reduces pollution and the production of harmful substances, promotes sustainable practices, and minimizes health and environmental harm, while maintaining economic viability.⁶⁹

Green public procurement (GPP): Commitments by public institutions to procure goods, services, and works with a reduced or positive environmental impact.⁷⁰ GPP initiatives involve updating public procurement legislation or other documentation to include environmentally based procurement selection criteria, such as for example incorporation considerations of embodied carbon, comparable environmental impacts of products, or eco-label certifications into decision making.⁷¹

Greenwashing: The act of falsely advertising or implying a product, service or company is engaged in environmentally friendly actions.⁷²

Green financing: Financial actions, instruments and mechanisms with the aim of providing the necessary investments and funding for environmental initiatives.⁷³ This includes an array of actions by private, public, and non-profit institutions, including debt financing, loans, bonds, grants and more.⁷⁴

Industrial ecology: A field of research based on the assumption that industrial systems and natural systems operate in similar ways, and therefore more sustainable industrial processes can be developed through consideration of ecological principles and systems.⁷⁵ Using a systems approach, industrial ecology examines the flows of material, energy and information through industrial systems, especially seeking to improve the efficiency and limit waste produced.⁷⁶

See also: Industrial symbiosis, [Systems thinking](#)

Industrial symbiosis: The application of principles of industrial ecology at the level of a company or specific production process.⁷⁷

⁶⁹ US EPA. (n.d.). "About Green Engineering" [webpage]. <https://www.epa.gov/green-engineering/about-green-engineering>

⁷⁰ European Commission. (n.d.). "Green public procurement" [webpage]. https://green-business.ec.europa.eu/green-public-procurement_en

⁷¹ Ibid.

⁷² UN. (n.d.). "Greenwashing – the deceptive tactics behind environmental claims" [webpage]. <https://www.un.org/en/climatechange/science/climate-issues/greenwashing>

⁷³ World Economic Forum. (2020). "What is green finance and why is it important?" [webpage]. <https://www.weforum.org/agenda/2020/11/what-is-green-finance/>

⁷⁴ Krushelnytska. (n.d.) Introduction to green finance. Global Environmental Facility. <https://www.thegef.org/sites/default/files/events/Intro%20to%20Green%20Finance.pdf>

⁷⁵ Kara et al. (2022). "Closed loop systems to circular economy: A pathway to environmental sustainability?" *CIRP Annals - Manufacturing Technology* 71(2022):505-528. <https://doi.org/10.1016/j.cirp.2022.05.008>

⁷⁶ Ibid.

⁷⁷ Kara et al. (2022). "Closed loop systems to circular economy: A pathway to environmental sustainability?" *CIRP Annals - Manufacturing Technology* 71(2022):505-528. <https://doi.org/10.1016/j.cirp.2022.05.008>

Integrated waste management: A strategic approach to solid waste management that seeks to comprehensively manage all solid waste types and activities, such as waste sorting, treatment, recovery, and disposal, to ensure an efficient management of waste.⁷⁸ For example, an integrated waste management approach may include waste reduction, recycling, and disposal programmes.⁷⁹

See also: [Waste hierarchy](#), [Zero Waste](#)

Just transition: Recognition of and efforts to ensure that current circular, green, digital transition actions are inclusive and just for all members of society.⁸⁰ This includes striving for inclusive, equitable approaches to environmental actions, and recognizing and seeking to mitigate potential negative impacts on certain groups that green and circular transition could cause.⁸¹

Life cycle assessment/analysis (LCA): Method of analysing the environmental impact of a product over its entire lifetime.⁸²

Lifespan/Lifetime: The amount of time in a product's 'life'; the time from when it is produced, to when it becomes obsolete or unusable.⁸³ Central to circular design is seeking to extend the lifespans of products.⁸⁴

Life cycle: The connected stages of a product or resource through time.⁸⁵

Life cycle perspective/thinking: Perspective to design and management that considers the entire life cycle of a product or resource, with the aims of improving circularity and gaining a better understanding of the entire social, economic, and environmental impacts through its entire lifespan.⁸⁶

Linear economy: An economy wherein products are created via the extraction finite resources and are discarded when the product's lifespan ends – a 'take-make-waste' system.⁸⁷

⁷⁸ UN Climate Technology Centre & Network. "Integrated solid waste management" [webpage]. UNEP. <https://www.ctc-n.org/technologies/integrated-solid-waste-management>

⁷⁹ Ibid.

⁸⁰ UN Global Compact. (n.d.) "Just Transition" [webpage]. <https://unglobalcompact.org/take-action/think-labs/just-transition>

⁸¹ Ibid.

⁸² Ellen MacArthur Foundation. (n.d.). "Life Cycle Assessment for the circular economy" [webpage]. <https://www.ellenmacarthurfoundation.org/life-cycle-assessment-for-the-circular-economy>

⁸³ Ellen MacArthur Foundation. (2021). Circular Economy Glossary. <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

⁸⁴ Ellen MacArthur Foundation. "The circular economy in detail" [webpage]. <https://www.ellenmacarthurfoundation.org/the-circular-economy-in-detail-deep-dive>

⁸⁵ ISO. (2024). ISO 59002:2024: Circular economy - Vocabulary, principles and guidance for implementation. Retrieved from: <https://www.iso.org/obp/ui/en/#iso:std:iso:59004:ed-1:v1:en>

⁸⁶ ISO. (2024). ISO 59002:2024: Circular economy - Vocabulary, principles and guidance for implementation. Retrieved from: <https://www.iso.org/obp/ui/en/#iso:std:iso:59004:ed-1:v1:en>

⁸⁷ Ellen MacArthur Foundation. (2021). Circular Economy Glossary. <https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

Natural resource: Resources that have been extracted or otherwise acquired from the natural environment.⁸⁸

Net Zero: Achieved when the amount of greenhouse gases being removed from the atmosphere is equal to those emitted by human activity.⁸⁹ While similar to carbon neutrality, net zero calculates not just carbon, but all greenhouse gas emissions. This requires approaches to greenhouse gas removal from the atmosphere beyond the removal of carbon.

See also: [Carbon neutrality](#)

Non-renewable resource: Material or energy source that when extracted leads to the depletion of its reserves, which cannot be renewed in a timespan relevant to human society.⁹⁰

See also: [Renewable resources](#)

Non-virgin materials: Materials that have been previously used, such as recycled, composted, or remanufactured materials.⁹¹

See also: [Virgin materials](#)

Organic farming: Agricultural production and farm management that incorporates best environmental practices, biodiversity, preservation of natural resources, and high animal welfare standards.⁹² The term organic farming, as well as organic food, are used to describe an array of different specific practices and standards, and there is no one precise definition. Certifications exist, and also vary in standards and definitions.

Organic food: Food produced using organic farming methods. As with the term organic farming, the definition and standards vary, and numerous certification schemes exist with different standards and definitions.⁹³

EU Organic label: Certification that a food product was produced in line with EU rules on organic production, or in the case of processed foods, that at least 95% of the ingredients of agricultural origin are organic.⁹⁴ This label specifically guarantees production did not

⁸⁸ ISO. (2024). ISO 59002:2024: Circular economy - Vocabulary, principles and guidance for implementation.

Retrieved from: <https://www.iso.org/obp/ui/en/#iso:std:iso:59004:ed-1:v1:en>

⁸⁹ National Grid. (n.d.). "Carbon neutral vs net zero – understanding the difference" [webpage].

<https://www.nationalgrid.com/stories/energy-explained/carbon-neutral-vs-net-zero-understanding-difference>

⁹⁰ European Environment Agency. (n.d.) "Term: Non-renewable" [webpage].

<https://www.eea.europa.eu/help/glossary/eea-glossary/non-renewable-resource>

⁹¹ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

⁹² European Parliament. (2018). "The EU's organic food market: facts and rules (infographic)" [webpage].

<https://www.europarl.europa.eu/topics/en/article/20180404STO00909/the-eu-s-organic-food-market-facts-and-rules-infographic>

⁹³ Ibid.

⁹⁴ Ibid.

use GMOs, ionising radiation, hormones and mineral nitrogen fertilisers, as well as limited the use of artificial fertilizer, pesticides and herbicides and antibiotics.⁹⁵

Planned obsolescence: Designing products so that they become obsolete or break down prematurely, in order to increase revenues through consumers needing to buy new products more often.⁹⁶

Product-as-a-service (PaaS): Business model where customers pay for the use, rather than ownership, of a product.⁹⁷ The product-as-a-service model can facilitate sustainable sharing economies by facilitating the use of products by multiple consumers over their lifetime, as well as incentivizing the manufacture of more durable and repairable products.⁹⁸

See also: [Sharing economy](#)

Recycle: To repurpose a product via transforming it into its basic substances and materials and re-processing them into new materials or products.⁹⁹ For example, transforming plastic water bottles into plastic pellets that can be used in the production of future plastic-based products. Recycling is an essential method of transforming waste into a resource within the circular economy. However, almost always energy or other forms of value are lost in the process of recycling, making it useful but imperfect tool.¹⁰⁰

See also: [Downcycle](#), [Upcycle](#)

Recyclability: The ease and extent to which a material can be recycled.¹⁰¹ This considers both the technical ability for materials to be recycled, and the practical feasibility and capacity for their recycling.¹⁰²

Redistribute: To divert a product from the originally intended market or consumer to another, in order to avoid the product's loss as waste.¹⁰³ For example, redistributing food products from supermarkets or restaurants unable to sell them to a public kitchen.

⁹⁵ European Commission. (n.d.). "Organic production and products" [webpage].

https://agriculture.ec.europa.eu/farming/organic-farming/organic-production-and-products_en

⁹⁶ European Economic and Social Committee. (2016). Factsheet: EESC Study on Planned Obsolescence.

<https://www.eesc.europa.eu/sites/default/files/resources/docs/factsheet-en.pdf>

⁹⁷ Circularity. (n.d.) "Circular guide: Product-as-a-Service (PaaS)" [webpage].

<https://circularity.com/en/circularguide/paas-product-as-a-service/>

⁹⁸ Ibid.

⁹⁹ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹⁰⁰ Ibid.

¹⁰¹ Thinking Circular. (2022). Glossary: Circular Economy. <https://thinking-circular.com/wp-content/uploads/2022/05/Glossary-Circular-Economy.pdf>

¹⁰² Ibid.

¹⁰³ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

Refurbish: To return a product to good functioning, such as via repair, replacement of necessary components, updating of software, or cosmetic improvements.¹⁰⁴

Regenerative: Processes that restore, renew, or improve their own qualities, sources of energy, and materials.¹⁰⁵

Regenerative production: Production processes that produce food and other products while positively impacting nature.¹⁰⁶ For example, agroforestry and agroecology can be regenerative agricultural production models as through production soil quality, biodiversity, and other natural resources are improved upon.¹⁰⁷

Remanufacture: Re-using products via re-engineering them or their components to create a new product.¹⁰⁸

Renewable resources: Materials that naturally replenish their stocks, such cotton, hemp, or wool.¹⁰⁹ These materials can be sustainably maintained as long as their rate of extraction does not exceed the rate at which they can naturally replenish.¹¹⁰

See also: [Non-renewable resources](#)

Renewable energy: Energy sources from resources that will not deplete in a timescale relevant to the economy.¹¹¹

Repurpose: To adapt and use a product or component of a product for a different use than what it was originally intended, without any making any major modifications.¹¹²

¹⁰⁴ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹⁰⁵ Kara et al. (2022). "Closed loop systems to circular economy: A pathway to environmental sustainability?" CIRP Annals - Manufacturing Technology 71(2022):505-528. <https://doi.org/10.1016/j.cirp.2022.05.008>

¹⁰⁶ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹⁰⁷ Ibid.

¹⁰⁸ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹⁰⁹ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹¹⁰ Ibid.

¹¹¹ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹¹² ISO. (2024). ISO 59002:2024: Circular economy - Vocabulary, principles and guidance for implementation.

Retrieved from: <https://www.iso.org/obp/ui/en/#iso:std:iso:59004:ed-1:v1:en>

Resilience: To be able to resist, adapt, or recover from disruptions or adverse conditions.¹¹³ Resilience can be in reference to both natural and human-caused events.¹¹⁴

Reuse: The repeated use of a product or product component as it was intended to be used, with only minor modifications (such as cleaning).¹¹⁵ While not as eye-catching as some circular innovations, increasing reuse is a vital 1st pillar of the circular economy.¹¹⁶

Reverse logistics: Supply chains that flow ‘back’ from consumers to manufacturers, repairers, recyclers, and other ‘upstream’ actors, when a product reaches the end of its usefulness and requires transformation into a new product, or safe disposal as waste.^{117,118} These chains are important to ‘close the loop’ within the circular economy, and ensure once a product is no longer usable, the resources and materials embedded within it can be responsibly repurposed, recycled or disposed of.

See also: [Upstream innovation](#), [Closed-loop systems](#)

Secondary raw materials: Materials obtained and repurposed from waste, transforming the waste into a new useable material in the production process.¹¹⁹

Sharing economy: Economic models based on sharing rather than owning products, often facilitated through new digital technologies that connect consumers and service providers.¹²⁰ While there is no precise definition of the sharing economy, the term is used to describe a range of service models that are loosely united by their utilization of technology to facilitate connections between consumers and/or service providers, and their business model that taps into facilitating better utilization of underutilized goods and services.¹²¹ Successful examples include BlaBlaCar that connects people seeking transportation with those with extra room in their vehicle,¹²² AirBnB that connects people seeking accommodations with people willing to rent out an extra room,¹²³

¹¹³ ISO. (2024). ISO 59002:2024: Circular economy - Vocabulary, principles and guidance for implementation. Retrieved from: <https://www.iso.org/obp/ui/en/#iso:std:iso:59004:ed-1:v1:en>

¹¹⁴ Ibid.

¹¹⁵ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹¹⁶ Ellen MacArthur Foundation. "The circular economy in detail" [webpage].

<https://www.ellenmacarthurfoundation.org/the-circular-economy-in-detail-deep-dive>

¹¹⁷ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹¹⁸ ISO. (2024). ISO 59002:2024: Circular economy - Vocabulary, principles and guidance for implementation.

Retrieved from: <https://www.iso.org/obp/ui/en/#iso:std:iso:59004:ed-1:v1:en>

¹¹⁹ European Parliament. (2024). Strategy for Secondary Raw Materials.

<https://www.europarl.europa.eu/legislative-train/theme-new-boost-for-jobs-growth-and-investment/file-strategy-for-secondary-raw-materials>

¹²⁰ Skjelvik, Erlandsen and Haavardsholm. (2017). Environmental impacts and potential of the sharing economy.

Nordic Council of Ministers. <http://norden.diva-portal.org/smash/get/diva2:1145502/FULLTEXT01.pdf>

¹²¹ Ibid.

¹²² See BlaBlaCar at: <https://www.blablacar.com/>

¹²³ See Airbnb at: <https://www.airbnb.com/>

and ToolShareApp that connects people looking for tools like power drills with those willing to lend them out.¹²⁴

See also: [Product-as-a-service](#)

Social economy: An economic model that prioritizes people, generating positive impacts for local communities, and forwarding social causes.¹²⁵ This incorporates a range of entity types and business models including civil society and non-governmental actors, socially conscious businesses, community-based SMEs, and cooperatives, that are all united by their business model that directly prioritizes goals beyond strictly profit generation.

Sustainability: As defined by the UN Brundtland Commission in 1987: meeting the needs of the present without compromising the ability of future generations to meet their own needs.¹²⁶

Systems thinking: The philosophy of adopting a system-wide perspective to design, development, and problem solving, rather than narrowly focusing on specific elements or outcomes.¹²⁷ Systems thinking underpins the circular economy, as circular innovations and actions require an understanding of how different production processes, flows, and elements interact and relate to one another.¹²⁸

Technical cycle: One of the 2 main cycles within circular economies (alongside the biological cycle), which refers to how non-organic products (those that are ‘used’ rather than ‘consumed’) cycle in the economy.¹²⁹ ¹³⁰ Circular economies seek to maximize the lifespan of these products through the flows of the technical cycle which include processes like maintenance, reuse, refurbishment, and recycling.¹³¹

See also: [Biological cycle](#)

Upcycle: Recycling a material in a manner that leads to a product or material of higher value.¹³² For example, new innovations in waste management are showing promising abilities to upcycle organic waste into useable fuels.

See also: [Downcycle](#), [Recycle](#)

¹²⁴ ToolShareApp at: <https://toolshareapp.co.uk/>

¹²⁵ OSCE. (2024). *Green Paper on Social Economy in the Western Balkans*. <https://www.osce.org/oceea/563409>

¹²⁶ UN. (n.d.). "Sustainability" [webpage]. <https://www.un.org/en/academic-impact/sustainability>

¹²⁷ Ellen MacArthur Foundation. (n.d.). "The circular economy in detail" [webpage].

<https://www.ellenmacarthurfoundation.org/the-circular-economy-in-detail-deep-dive>

¹²⁸ Ibid.

¹²⁹ Vrzel. (2022). "The Circular Economy Basics Series – The Technical Cycle" [webpage]. Circular Innovation Lab.

<https://www.circularinnovationlab.com/post/the-circular-economy-basics-series-the-technical-cycle>

¹³⁰ Ellen MacArthur Foundation. (2022). "The technical cycle of the butterfly diagram" [webpage].

<https://www.ellenmacarthurfoundation.org/articles/the-technical-cycle-of-the-butterfly-diagram>

¹³¹ Ibid.

¹³² Cobo, Dominguez-Ramos and Irabien. (2018). From linear to circular integrated waste management systems: A review of methodological approaches. *Resources, Conservation & Recycling*, 135: 279-295.

<http://dx.doi.org/10.1016/j.resconrec.2017.08.003>

Upstream (innovation): Placing focus on products and services in the design and production phase.¹³³ For example, the upstream processes of a plastic bottle include its design, manufacture, and distribution. Upstream innovations therefore focus on rethinking or innovating products at this stage of their lifecycle.¹³⁴

See also: [Downstream \(innovation\)](#)

Virgin materials: Materials that have not been used in the economy.¹³⁵ Both finite/non-renewable materials and renewable resources that are yet to be utilized in the economy fit this description.¹³⁶

See also: [Non-virgin materials](#)

Waste to energy: Conversion of waste materials to electricity or heat. This can occur through a variety of methods, the most common currently being incineration.¹³⁷

Waste hierarchy: A model used to support decision making regarding waste management that ranks types of waste management by level of importance.¹³⁸ From most to least important, this hierarchy is: 1. Prevention of waste, 2. Reuse of materials, 3. Recycling, 4. Recovery, 5. Landfilling.¹³⁹

See also: [Integrated waste management](#)

Waste recovery: Activities or operations that result in redirecting waste into a useful role, service, or repurposed material/product.¹⁴⁰

Zero waste: A goal and guiding vision to move towards a society that produces no waste.¹⁴¹ This is accomplished through production, design and management of resources in a manner that prioritizes conservation, responsible production, consumption, reuse and recovery of materials, and eliminates harmful waste discharges into the land, water and air.¹⁴²

¹³³ Ellen MacArthur Foundation. (n.d.). "Upstream Innovation: a guide to packaging solutions" [webpage]. <https://www.ellenmacarthurfoundation.org/upstream-innovation/overview>

¹³⁴ Ibid.

¹³⁵ Ellen MacArthur Foundation. (2021). Circular Economy Glossary.

<https://www.ellenmacarthurfoundation.org/topics/circular-economy-introduction/glossary>

¹³⁶ Ibid.

¹³⁷ European Commission. (2017). Communication: The role of waste-to-energy in the circular economy.

<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX%3A52017DC0034>

¹³⁸ Thinking Circular. (2022). Glossary: Circular Economy. <https://thinking-circular.com/wp-content/uploads/2022/05/Glossary-Circular-Economy.pdf>

¹³⁹ Ibid.

¹⁴⁰ Eurostat. (n.d.). "Glossary: Recovery of waste" [webpage]. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Recovery_of_waste

¹⁴¹ Zero Waste International Alliance. (n.d.). "Zero Waste Definition" [webpage]. <https://zwia.org/zero-waste-definition/>

¹⁴² Ibid.

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- European Environment Agency. (n.d.) "Term: By-product" [webpage].
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