

Implementing the circular economy in business practice



RECOMMENDATIONS
FOR COMPANIES
TO OPERATE MORE
SUSTAINABLY



REDESIGNING THE LINEAR ECONOMY IS IMPERATIVE

The linear “take–use–dispose” model that has driven growth for decades is now revealing its downsides. Resource depletion, climate change and mounting waste threaten not only nature and human health, but also the stability and competitiveness of the economy. Companies around the world are increasingly facing the same challenge: how to build long-term success in an era of constrained natural resources and increasingly apparent environmental pressures?

Dependence on primary raw materials brings price volatility and geopolitical disruptions in supply chains, making reliable operations difficult for companies to maintain. The costs of waste disposal, emission allowances and environmental levies are rising, while the regulatory framework is becoming increasingly stringent. At the same time, society’s calls for a clean and healthy environment are growing louder. Therefore, business models that continue to rely on the linear approach are losing resilience to energy, climate and biodiversity crises as well as the trust of customers and investors.

Yet where challenges arise, so do opportunities for improvement and innovation. The European Commission states that up to 80% of a product’s environmental impact is determined at the design stage. This means design is one of the most powerful levers for change. But design in this sense extends far beyond

product design – it also encompasses the planning of policies, business models, value chains and services. Good design enables waste prevention, more efficient resource use, the extension of product and service lifespans and the creation of solutions that are usable, accessible and meaningful for both people and nature.

The circular economy offers many of the answers, as it represents a more sustainable and long-term stable economic model than the linear one, taking inspiration from nature – where nothing goes to waste, everything circulates, transforms and returns to the system. Circularity is increasingly becoming the foundation of new business thinking. Every discarded product in fact represents lost energy, knowledge, labor and raw materials that, in a circular system, could generate new value. Through its Green Deal and Circular Economy Action Plan, the European Union has established a clear strategic framework that will increasingly shape the business environment in the coming years.

However, circularity is not merely a response to regulation. Companies already embracing circular economy report greater cost efficiency, increased innovation and new market opportunities. Circularity also helps companies manage risks more effectively and build resilience at a time when the economy is continually exposed shocks – ranging from geopolitical to environmental.

At CER – Sustainable Business Network, we believe that circularity is not just an environmental choice, but a strategic opportunity for the future. That is why we have prepared recommendations designed to bring the

concept of the circular economy closer to companies and provide concrete tools for its implementation. In this document, you will find an overview of circular business models, definitions of key internal functions and external partners needed for successful implementation, as well as excerpts from legislation and examples of good practice. As support, we have also developed a circularity navigator that offers companies practical guidance and inspiration on how to identify and unlock the potential of circular business models.

Our goal is simple yet ambitious: to help companies adopt circularity as a long-term strategic direction. We are convinced that the companies that boldly embark on this path will be more successful, more resilient and more relevant in the future– for their customers, for investors and for society as a whole.



Ana Struna Bregar

CEO,
CER Sustainable Business Network

NATURAL RESOURCES AS A STRATEGIC ISSUE – WHY COMPANIES CAN NO LONGER LOOK THE OTHER WAY

We underestimate the importance of access to and use of natural resources. History teaches us – and it remains a key lesson today – how crucial it is who owns land, water, oil, gas and rare and precious metals. This is a key determinant of nations' prosperity, intertwined with social issues, security and stability. It also drives the developed countries' efforts to assert influence over resource-rich states. The history of the colonization of natural resources has shaped the world we know today – a world marked by inequality, stratification, and global instability, conditions that have now become embedded in our abnormal normality.

According to the International Resource Panel, excessive use of natural resources is the main driver of nature-related crises, as well as those linked to poverty and inequality. The extraction and processing of materials (everything we take from the earth) accounts for 90% of land-related biodiversity loss, 90% of water stress, 60% of climate change and 40% of global pollution. Over the past 50 years, the use of materials has tripled.

The key course of action we advocate is therefore the decoupling of economic growth from natural resource use and environmental impacts. The circular economy is an effective instrument to put this principle into practice. It is the oldest concept on our planet. Nature

operates according to the principles of circularity, where everything has its purpose and function. As part of nature, humans should adhere to the same principles. Unfortunately, what seems logical in theory is far from dominant in practice.

At the level of market stakeholders, both producers and consumers, the core of the problem lies in market signals. These signals encourage producers to wasteful use of natural resources and lead them to irresponsible behavior that is rewarded with higher profits. Nor do the market signals guide consumers in the right direction. As long as environmentally friendly products and services are typically more expensive, it is difficult to expect consumers to act responsibly. In essence, by appealing to responsibility, we are asking consumers to act against economic logic.

The circular economy therefore still is not economically attractive, which remains one of its greatest challenges. Much can be addressed through legislation, but when market signals point one way while regulations demand the opposite, the result is market confusion and lobbying by producers whose interests are not aligned with the legislation.

Business leaders are aware of environmental risks to business performance. The World Economic Forum regularly surveys key risks; this year, over a ten-year horizon, entrepreneurs ranked risks related to extreme weather events first, biodiversity loss and ecosystem collapse second, critical changes to Earth systems third, and natural resource shortages fourth. In their view, the environment and environmental factors are the primary drivers of long-term risk and business performance.

Yet if corporate leaders acted on what they know, many would probably lose their jobs.

The current economic model is wasteful and unfair. It is not sustainable, and the key question is how to meet people's needs efficiently and equitably using less energy and fewer raw materials, by making the circular economy the norm. This path requires a clear understanding of the problems, deeper systemic change, vision and courage. Sustainability is not at odds with competitiveness; it is a critical precondition for competitiveness, security, fairness and for the very viability and coherence of the European project.



Janez Potočnik

Co-Chair of the International Resource Panel at the United Nations Environment Programme and former EU Commissioner for Environment / Enlargement / Science and Research

LET'S ESTABLISH A CULTURE OF CHANGE IN SLOVENIA

My core motivation for this work stems from the realization that we are living through the greatest transformation of the global economy in history. I see in this an opportunity for Slovenia's small, agile, outward-looking economy to become a technological leader in advanced and sustainable technologies. Now is the time for this transformation.

The existing development model is largely exhausted. Slovenia's progress so far has relied on our ability to respond just-in-time to customer demands, delivering high-quality results at lower costs than our clients could achieve in their home markets. That equation, however, no longer holds. Cost-wise, Slovenia can no longer deliver a sufficiently distinctive advantage. Conditions in most industries are changing radically, value chains are being significantly reshaped and shortened and traditional markets and sectors offer ever fewer opportunities, competed for by significant excess capacity across Europe.

In Europe, the new political reality may claim that the green transition has remained little more than words on paper. The EU is retreating from an apparently overly progressive legislative agenda that triggered a backlash and became the convenient scapegoat for Europe's economic stagnation (and technological lag). This political assessment is wrong. We are falling behind because we did not move faster, because Europe has invested too little in developing new technologies and because competing regions have outpaced us in both

scale and investment efficiency. Instead of motivating and enabling the acceleration of change, we are stalling the very investment cycle that is essential for the economic renewal of both Slovenia and Europe.

I believe in Slovenian ingenuity. I believe innovation is part of our DNA. Across a wide range of fields – from product to process innovation – Slovenia has proven that we can create products in an energy- and material-efficient way. In many areas, we rank among the best in the world.

I therefore believe that the key opportunity for advanced Slovenian companies lies in creating a new generation of products and solutions characterised by sustainable social and environmental responsibility, new circular-designed materials, a low carbon and energy footprint, a high degree of innovation and value created for the customer. However, for this to become the dominant business and development model, our society will have to embrace a culture of change – the ability, as both companies and the society as a whole, to agree on the direction of necessary changes and to implement them effectively and inclusively.

Despite the Slovenian economy's high liquidity, record-low debt levels, and record-level availability of state incentives and although it is clear that now is the time for an innovative investment push, the investment volumes are declining. Soon a comprehensive package of incentives under the Strategic Technologies for Europe Platform (STEP) projects will be available, largely focused on clean and circular technologies, as well as grants for research, development and innovation projects. In addition to grants we are creating

two new loan funds to accelerate investment and stabilise the effects of crises (a total of one billion in resources will be available). Beyond SID Bank's venture capital activities, the Slovene Enterprise Fund has launched the Slovenian Technology Fund with a significant share of private capital interested in investing in Slovenia's breakthrough projects.

Now is the time. Let's see change as opportunity. Let's reduce uncertainty through smart public-private risk sharing. Let's establish a culture of change in Slovenia. Let's make the decision.

P.S. Thank you to CER, the Sustainable Business Network, for being a bold protagonist of the new development model, directly helping companies adopt new approaches and turn them into a winning formula.



Matevž Frangež

State Secretary,
Ministry of the Economy, Tourism
and Sport

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Understanding the circular economy

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“In a degenerative industrial economy, value is monetary and it is created by searching for ever-lower costs and ever-greater product sales: the typical result has been intense material throughflow. In a regenerative economy, that material through flow is transformed into round-flow. But the real transformation comes from a new understanding of value.”

Kate Raworth, Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist (2017)

The diversity of circular economy definitions

The circular economy has no single definition or unified terminology. Its meaning varies across countries, the scientific literature and policy. How it is understood often depends on the objectives pursued, national priorities and approaches to sustainable development.

Most definitions share the common foundation: **the principle of circularity and the goal of shifting from linear business models (take-make-dispose) to circular business models, meaning a transition from a traditional, wasteful model of resource management to a more efficient, sustainable and long-term viable system that operates on the principle of closing material loops (take-make-use-recycle/reuse).**

Supported by the transition to renewable energy and materials, the circular economy represents a resilient system that delivers benefits for business, people and the environment alike.

Circular economy is a system in which materials never become waste, but remain in circulation through:

✦ maintenance,

✦ reuse,

✦ refurbishment,

✦ recycling,

✦ composting.

According to the Ellen MacArthur Foundation, the circular economy tackles challenges by decoupling of economic activity from the consumption of finite resources, taking into account the following key principles:

eliminating waste and pollution,

circulating products and materials (at their highest value),

regenerating nature.

The circular economy **addresses the three biggest environmental challenges of our time:**

climate change,

waste generation and pollution,

biodiversity loss.

WHAT DOES THIS MEAN FOR COMPANIES?

The shift from **a linear to a circular business model** means:

1

a different approach to design of products and services (circular/eco-design),

2

new business models (renting, repair, take-back, remanufacturing),

3

greater efficiency in resource and energy use,

4

better preparedness for regulatory and market requirements,

5

opportunities for **greater cost efficiency**, innovation, and long-term competitiveness.



From linear to circular business for greater efficiency and resilience

WHAT IS A LINEAR ECONOMY MODEL?

The linear economic model follows the sequence: “**take** – **make** – **use** – **dispose**”. In this model, resources are extracted, manufactured, used and then disposed of as waste. It relies on large quantities of cheap and seemingly unlimited raw materials and energy.

The linear economic model results in:

- ⚠ rapid depletion of natural resources,
- ⚠ growing amounts of waste and emissions,
- ⚠ high dependence on raw materials and energy,
- ⚠ planned obsolescence.

WHAT IS A CIRCULAR BUSINESS MODEL?

A circular business model is a way of organizing production and consumption based on sharing, reusing, repairing, refurbishing and recycling existing materials and products for as long as possible.

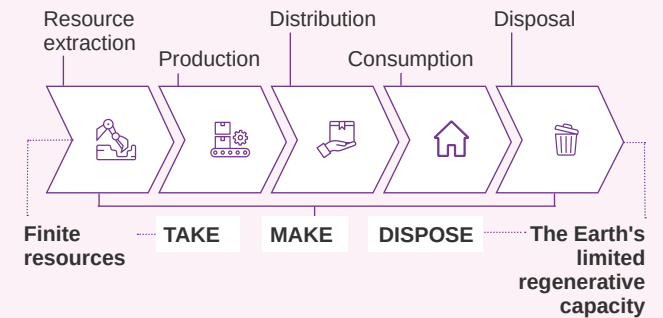
In this model, materials remain in circulation for the maximum possible duration; products are durable, repairable, renewable or recyclable.

The objectives of the circular model are:

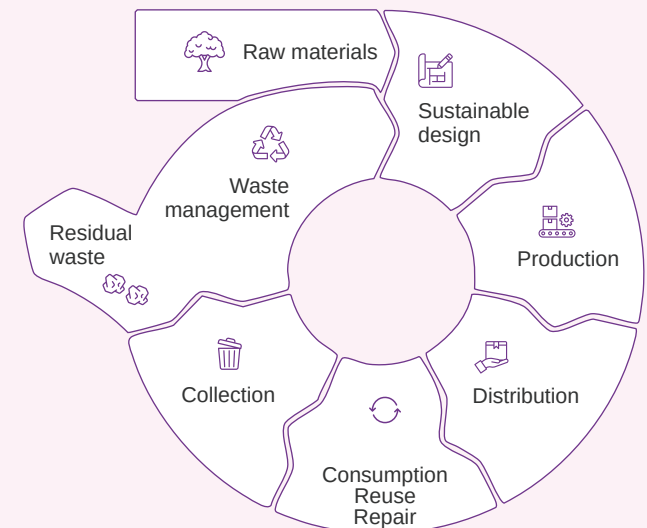
- ✦ reduce resource use (materials and energy),
- ✦ prevent waste generation,
- ✦ extend product lifespans,
- ✦ create economic value with lower input costs,
- ✦ reduce environmental impact and increase business resilience.



The linear business model take – make – use – dispose



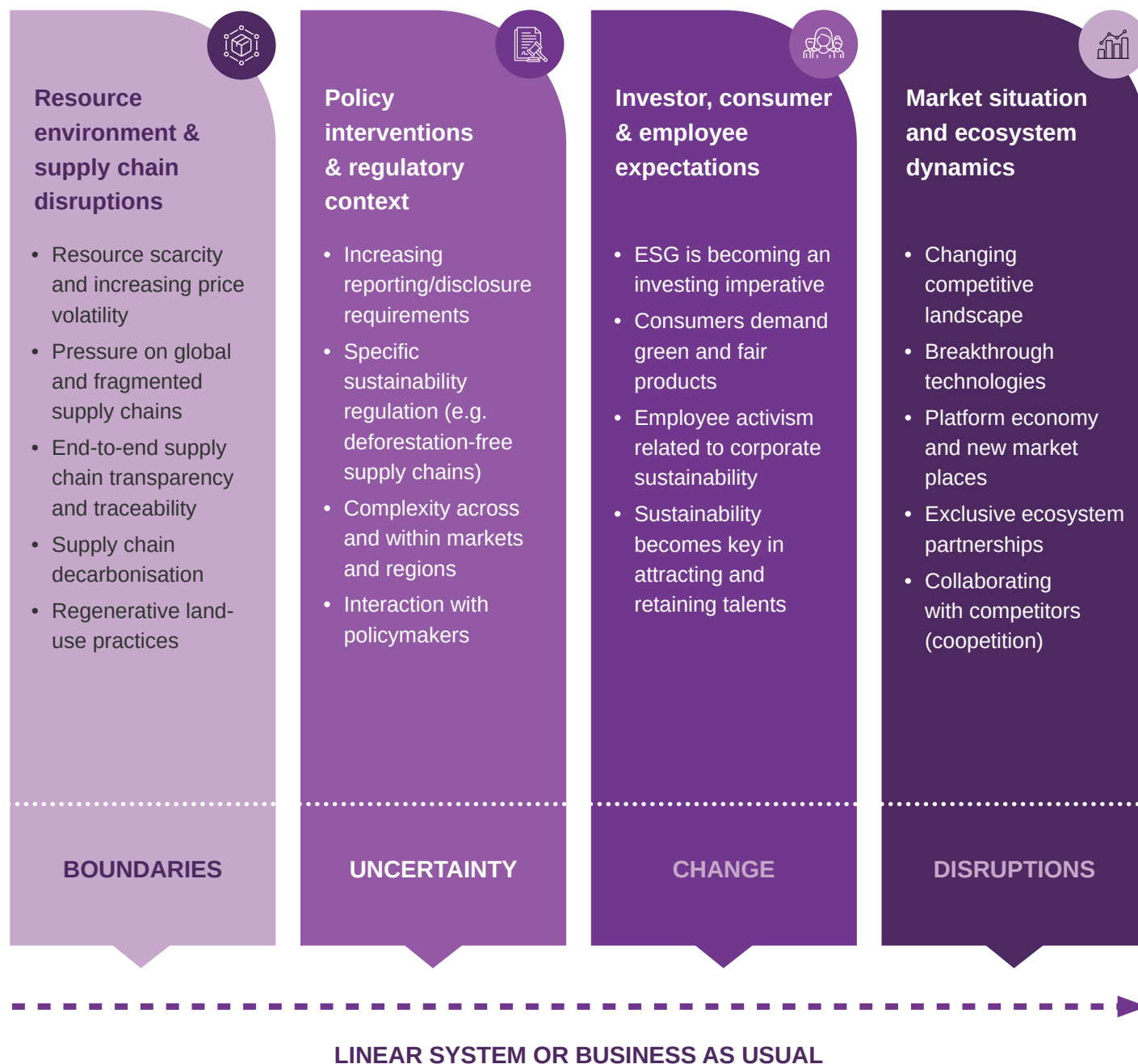
Circular economy model less raw material input, fewer emissions



Source: European Parliament

Signals indicating the need for business model change

In a rapidly changing business environment, companies can no longer merely follow trends – the successful ones are those that anticipate them. Understanding signals indicating the need for change enables timely identification of both risks and opportunities. This encompasses the company's strategic ability to detect and interpret external shifts, whether regulatory, environmental, market, technological or behavioral, and to respond in a timely and well-considered manner.



Source: *The Circular Business Revolution*; Julia Binder & Manuel Braun (2024)

Understanding and implementing the circular economy in business

The circular economy must become the norm. To achieve this, we need:

- ✓ a solid understanding of systemic challenges,
- ✓ the courage to change,
- ✓ a long-term vision.

For companies, the circular economy is a journey from a broader understanding of circularity, through clear principles that guide business decision-making, to tangible measures that can be implemented in practice. **It is important for companies to understand that there is no single correct approach – what matters is to start from where they are and progress step by step.**

CIRCULAR ECONOMY CONCEPTS

The circular economy draws on several complementary concepts that provide guidance for the transition from a linear to a sustainable model.

Among the pioneering concepts of circularity is **Cradle to Cradle** by Michael Braungart and William McDonough, which advocates designing products that, after use, are not discarded but become inputs for new products within technical or biological cycles. **Doughnut Economics**, developed by Kate Raworth, provides a framework for development that meets everyone's basic needs within the planet's boundaries. According to the **Ellen MacArthur Foundation**, the circular economy is based on a shift from the linear "take–make–dispose" model to one that is **regenerative by design**.

There are also various **futuristic as well as innovative perspectives on the circular economy**. An important complementary perspective is provided by the concept of **degrowth**, which emphasises that wellbeing and environmental stability are not necessarily dependent on continuous economic growth. It encourages the reduction of unnecessary production and consumption and the development of fairer and more sustainable business models. The concept of **Natural Capitalism** underscores that natural resources should be regarded as long-term capital, not as consumable inputs. **Biomimicry** encourages drawing ideas from nature and promotes solutions that emulate natural, efficient and regenerative systems. The **Blue Economy** represents an innovative and visionary approach that encourages companies to seek local, regenerative and cost-efficient solutions.

CIRCULAR ECONOMY APPROACHES

- **The design approach** integrates circular design, modularity and design for reuse from the very beginning of the product development phase.
- **The technological approach** leverages digital tools such as IoT, digital twins, artificial intelligence and digital product passports to increase transparency of material flows.
- **The operational approach** improves processes by reducing resource consumption and circulating materials internally.
- **The value-chain approach** is based on collaboration with partners, e.g. in reverse logistics.
- **The business approach** promotes new models such as renting and services instead of sales.
- The transition is also supported by **systemic policy measures**, such as incentives, regulation and tenders.
- **The data-driven approach** enables the measurement of circularity and the tracking of impacts.

Benefits of the circular economy

The **benefits of the circular economy** are numerous and extend across the **environmental, economic and social dimensions**.

Below, we present the benefits of the circular economy with a focus on how companies across sectors, policymakers and the general public can understand them.

ENVIRONMENTAL

Reduction of waste volumes: materials remain in circulation, landfilling and incineration are reduced.

Lower consumption of natural resources: reduced need for mining, logging, extraction, etc.

Reduced emissions: fewer emissions due to lower dependence on primary production.

Biodiversity protection: reduced intrusion into habitats, less pollution.

Regeneration of natural systems: returning value to nature by restoring biological cycles, improving soil and strengthening biodiversity and natural processes.



ECONOMIC

New business models and market segments: repair, reuse, rental, sharing economy.

Increased material efficiency: lower raw material costs and fewer losses.

Competitive advantage and innovation: circularity as a source of product and service innovation.

New jobs: especially in services, logistics and recycling.

Greater supply chain resilience: less dependence on imports, more local added value.



SOCIAL

Higher quality of life: longer-lasting products, easier repairs, more affordable services, cleaner living environment, air, soil, and water.

New knowledge and jobs: development of new skills and future-proof professions.

More accessible products and services: rental, sharing and refurbishment lower costs for users.

Greater social equity: appropriately designed models can also include vulnerable groups.



SYSTEMIC

Contribution to the Sustainable Development Goals (SDGs): especially Goals 12 (Responsible consumption and production), 13 (Climate action), 9 (Industry, innovation and infrastructure), and 11 (Sustainable cities and communities).

Support for climate objectives and the EU Green Deal: reduced emissions, lower resource use.

Fostering a just and sustainable economy: supporting a long-term inclusive and equitable system.



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The circular economy is not only a system of resource circulation, it is the outward manifestation of an inner transformation. It marks a shift from depletion to regeneration, from competition to collaboration, to connection. It is rooted in leadership that begins with the individual and the question not only of what we create, but who we are becoming. Circularity is a way of living where value no longer lies in ownership, but in creating benefits for people, nature and future generations. It is not merely the responsible creation of material prosperity—it is the careful, conscious and enduring co-creation of life.



Dr. Saša Bavec

President, CER – Sustainable
Business Network

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After eight years of co-chairing the European Circular Economy Stakeholder Platform (ECESP) in Brussels, I can say with confidence that it has evolved into the key European community for accelerating the circular transition. The platform, established by the European Commission and the European Economic and Social Committee, brings together 24 organizations in a coordination group and engages thousands of stakeholders from across Europe. Today, ECESP is an established hub for knowledge, practices and policy dialogue – and a bridge between European institutions, businesses and citizens. Through concrete activities, we accelerate the systemic circular transformation both within the EU and on the global stage.



Ladeja Godina Košir

Founder and CEO,
Circular Change

Core tools for circular economy



According to estimates by the Ellen MacArthur Foundation, transitioning to a circular economy could reduce greenhouse gas emissions by 39% by 2030 and create millions of new jobs.

Core tools for circular thinking

Companies seeking to transition to a circular economy have numerous practical tools at their disposal.

CHOOSING THE RIGHT CIRCULAR BUSINESS TOOL

The right choice of tool for implementing the circular economy depends on the company's goal:



for developing new business models, **strategic frameworks** are available (Butterfly Diagram, Value Hill, 9R strategies),



for compliance and reporting, there are **standards and indicators** (ESRS, ISO, Circulytics),



to reduce waste and costs, **analytical tools** are available (LCA, CTI).

There is no one-size-fits-all tool. The most successful companies typically combine analytical tools for measurement, strategic tools for vision-setting, and operational tools for implementation, introducing them gradually through pilot projects.

To start, we recommend that companies first map **where materials, waste and losses occur within their processes**.

They can use the “**Butterfly Diagram**”, which systemically visualises material flows across the biological and technical cycles.

With the **Value Hill** tool, companies can evaluate where value is created or lost throughout the product life cycle. The **9R strategies** provide a set of concrete measures to reduce resource consumption and create closed loops.

In the final stage of developing specific solutions, products or business models, it is essential to consider their environmental impact alongside functionality and market value. The **Life Cycle Assessment** – LCA (Cradle to Gate, Grave or Cradle to Cradle) is an indispensable tool, as it provides deep insight into a product's environmental footprint across all stages of its life cycle. LCA enables companies to identify the stages with the largest environmental footprint, compare sustainable alternatives and make more responsible and efficient decisions.

In addition to many others, these tools form a comprehensive framework that enables companies to make a systematic yet practical transition to the circular economy.

“In our current economy, we take materials from the Earth, make products from them, and eventually throw them away as waste – the process is linear. In a circular economy, by contrast, we stop waste being produced in the first place.”

– Ellen MacArthur Foundation



Circular economy in practice: what to measure and how to act?

To implement the circular economy effectively, companies need **clear metrics and indicators** to track progress. With well-designed indicators, the circular economy can become a source of business value, not just an environmental obligation¹.

AREA	WHAT TO MEASURE	HOW TO ACT
Inputs 	- Quantity of materials used. - Share of recycled and renewable inputs.	- Reduce material and packaging use. - Use recycled or secondary raw materials. - Choose materials from regenerative sources. - Avoid sourcing from sensitive ecosystems. - Reduce water use, especially in water-stressed areas. - Support the regeneration of natural systems.
Outputs 	- Amount of waste. - Share of recycled material streams. - Releases into the environment.	- Reduce all types of waste, including hazardous waste. - Increase the recycling rate. - Reduce the volume of waste sent to landfills. - Reduce air emissions (e.g., SO₂, NO_x). - Optimise the use of output materials and enable their closed-loop reuse. - Encourage product take-back and reuse.
Emissions and energy 	- Total CO₂ emissions. - Share of energy from renewable sources. - Emission intensity.	- Reduce CO₂ emissions in line with international standards (SBTi, GHG Protocol). - Increase the use of renewable energy sources. - Apply circular models to reduce the carbon footprint. - Measure CO₂ emissions per unit of revenue for greater transparency and comparability. - Monitor energy efficiency.
Circular products and business models 	- Share of products suitable for recycling/repair. - Revenue from circular sources.	- Design products in line with circular principles. - Extend product lifespans (through repair, refurbishment, reuse). - Monitor material efficiency (e.g., revenue per tonne of material used). - Enable traceability of components and materials. - Introduce or scale circular business models.

Circular economy Butterfly Diagram – a systems view of material flows

The **Butterfly Diagram**, developed by the **Ellen MacArthur Foundation**, is a tool for schematically depicting material flows in the circular economy.

The diagram provides companies a systems overview of **biological and technical materials**. It is used to map raw material flows and identify opportunities for circularity across the biological and technical cycles.

Shorter loops – such as repair, reuse or refurbishment – are more efficient, as they require less energy and resources.

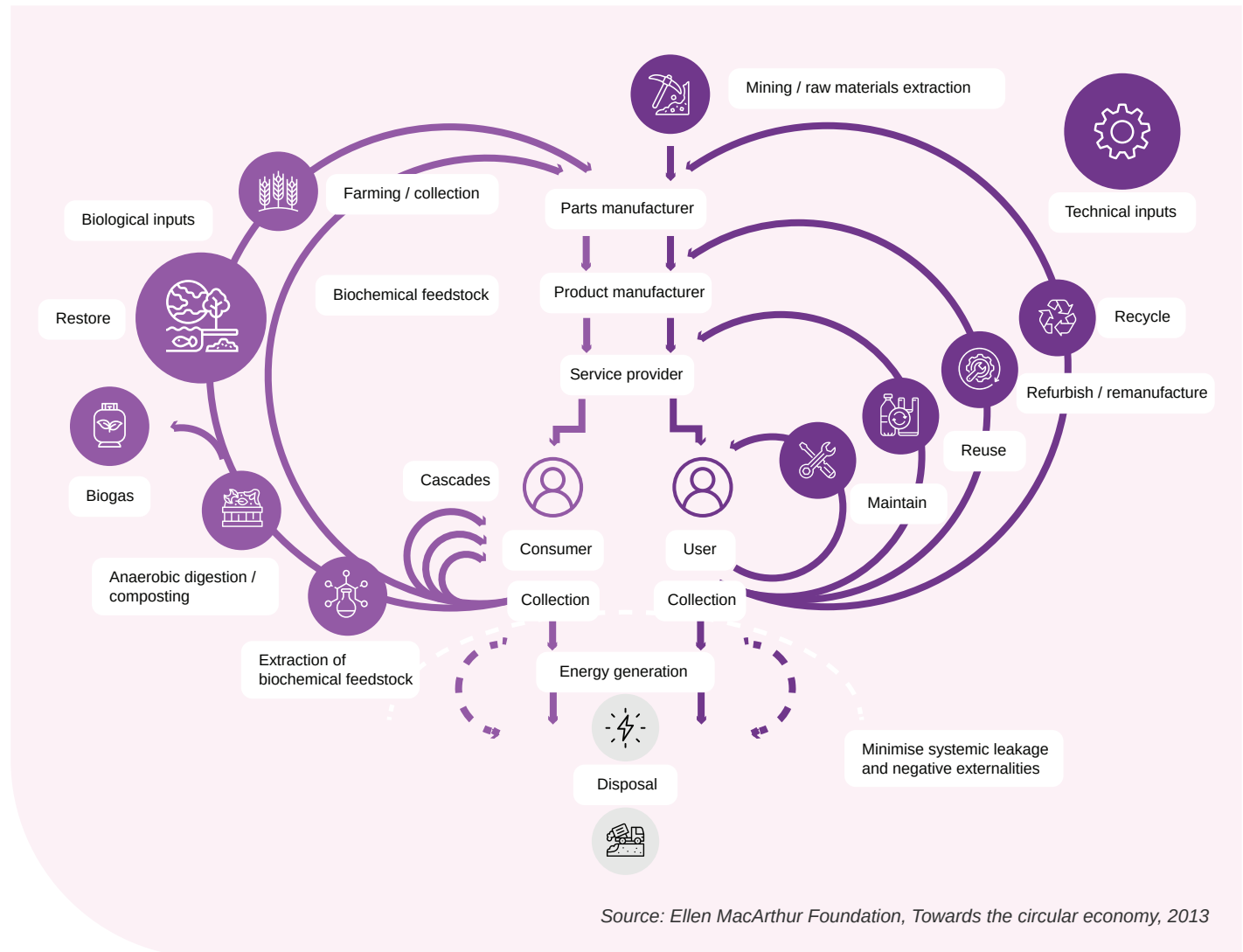
From the outset, companies should design products to fit at least one of two cycles (butterfly wings):

Biological cycle (left wing)

Organic materials (e.g., food, cotton, wood) return to nature through composting, biodegradation, etc.

Technical cycle (right wing)

Non-biodegradable materials (e.g., metals, plastics, electronics) are restored in industrial cycles through repair, reuse, refurbishment, recycling, etc., to preserve their value, reduce the need for virgin raw materials and cut waste.



KEY STEPS FOR USING THE BUTTERFLY DIAGRAM IN YOUR COMPANY

1



Review the materials and products in your company

Use the Butterfly Diagram to classify materials and products into two streams:

- biological cycle (organic, biodegradable materials) and
- technical cycle (inorganic, recyclable materials).

This is the basis for understanding how different materials should be handled at end of use.

2



Assess the current state of post-use material management

Analyze what currently happens to your products and materials after use – are they discarded, recycled, reused or remanufactured? This review reveals opportunities for improvements and circular interventions. A key step is conducting a Material Flow Analysis (MFA), which provides a comprehensive view of material flows across the entire product life cycle and helps identify opportunities to increase efficiency and close material loops.

3



Identify concrete opportunities for circularity

The Butterfly Diagram helps you ask the right questions, such as:

- Can the product be designed for a longer lifespan?
- Is it possible to enable repair, upgrades or reuse?
- Can by-products be used in other processes (e.g., as feedstock for another company)?

These questions steer innovation and circular improvements.

4



Develop products and services that close material loops

Design products that are durable, easy to repair and recyclable. Set up processes for product take-back, maintenance services, and separating materials by cycle. Consider new business models, such as:

- renting instead of selling,
- product refurbishment and return,
- industrial symbiosis with other companies.

5



Use the Butterfly Diagram to communicate your strategy

The Butterfly Diagram is an effective visual tool for explaining your circular strategy to employees, partners, customers and investors. It helps demonstrate how material flows are kept in circulation.

6



Track progress with measurable indicators

Use the diagram as a framework to track key indicators:

- how much material is reused,
- how much waste is reduced,
- what are the savings in purchasing raw materials.

This data forms the basis for reporting, improvement and demonstrating the benefits of the circular approach.

9R strategies – hierarchy of circular actions

The 9R strategies form a hierarchy of **nine strategies designed to reduce resource consumption and foster circularity**. The strategies were developed through scientific research on sustainable development and the circular economy.

The numbers in the **9R strategies define the hierarchy of circular actions** – from the most preferred (the highest level of circularity and value preservation) to the least effective from a resource and environmental perspective. They are a proven tool for generating both environmental and business value and provide a basis for operational and tactical decision-making at the product, process and service levels.

		STRATEGY	NAME	PURPOSE	DEGREE OF CIRCULARITY
CIRCULAR ECONOMY ↑	Smarter product use and manufacturing	R0	Refuse	Replacing the product with a more sustainable alternative.	    
		R1	Rethink	Introducing multifunctional products or sharing models.	    
		R2	Reduce	Increasing efficiency and reducing resource use.	    
	Extending the lifespan of the product and its components	R3	Reuse	Reusing products in good condition.	    
		R4	Repair	Repairing products to extend their lifespan.	    
		R5	Refurbish	Refurbishing and upgrading old products.	    
		R6	Remanufacture	Manufacturing new products from used components.	    
		R7	Repurpose	Changing the function of existing products to serve a new use.	    
	Beneficial use of materials	R8	Recycle	Processing materials for reuse.	    
LINEAR ECONOMY		R9	Recover	Harnessing waste to generate energy.	    

KEY STEPS FOR APPLYING THE 9R STRATEGIES

1



Review the entire life cycle of your product

Analyze **where waste is generated in the process**, which materials are used and how long products remain in use. This review helps you understand where improvements can be introduced using the 9R strategies.

2



Assess existing practices against the 9R hierarchy

Categorise your current activities according to the individual R-strategies (R0–R9):

- Where are you already implementing measures such as **reuse, repairs, recycling**?
- Where are the biggest **gaps and weaknesses**?

This is the basis for setting priorities and determining targets.

3



Set priority objectives based on retained value

Start with measures that **retain the highest value of products and materials**, such as:

- **R0 – Refuse** (e.g., avoid unnecessary products),
- **R1 – Reuse**,
- **R2 – Repair**.

Inner loops are often the **most effective and profitable**.

4



Develop products and services according to the principles of the 9R strategies

When developing new products or services, consider the following:

- potential for **repair, remanufacture, reuse or recycling**,
- choice of materials that enable a long service life and multiple use cycles,
- design that supports **circular flows** from the outset.

5



Engage partners, customers and users in a circular approach

Foster partnerships through:

- **shared use**,
- **take-back systems**,
- **servicing and**
- **partner value chains for closing loops**.

The more the others are involved, the more material flows can be kept in circulation.

6



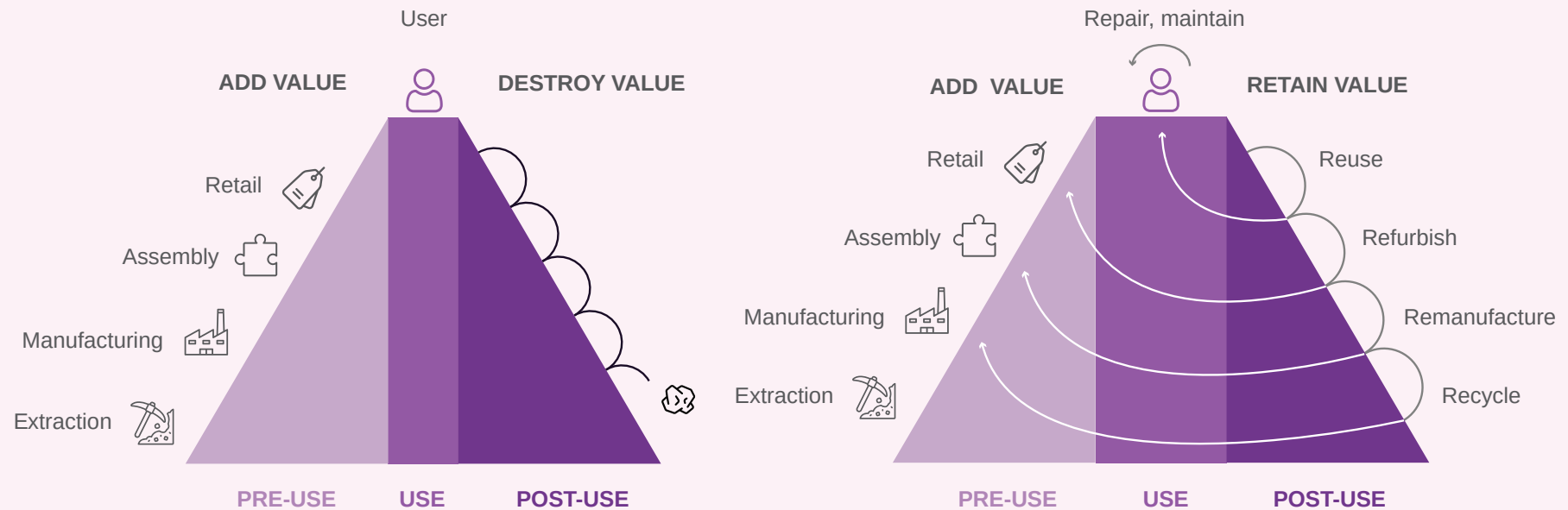
Monitor and measure the progress of your circular strategies

Introduce measurable indicators such as:

- amount of **reduced waste**,
- **average product lifespan**,
- share of **reused or recycled components**.

Regular monitoring enables **better decision-making and impact reporting**.

The product Value Hill



Value Hill is a visual model that shows a product's value across its life cycle – **from design to end of use**. The Value Hill strategy was developed by a research team at TU Delft (Netherlands), led by Prof. Dr. Nancy Bocken.

The model enables companies to understand where value is lost across the product life cycle, identify points where interventions can preserve or restore value, connect their strategy to design, sales, and recapture of products or materials and plan new business models (e.g., resale, product-as-a-service, product refurbishment).

KEY BENEFITS FOR BUSINESSES

For companies, the Value Hill model serves as a **tool for strategic decision-making and innovation**, as it enables the comparison of different scenarios for managing products and materials. It clearly demonstrates how shifting from a linear to a circular approach can extend product lifespans, reduce raw material procurement and waste management costs and develop new revenue streams. It also facilitates communication with customers and stakeholders by illustrating how circular practices create added value not only for the environment but also for the market and the company's competitiveness.

THE THREE PARTS OF THE HILL

Ascent (creation phase)

The product's value is created through the phases of design, manufacturing and distribution.

Peak (use phase)

The product reaches its highest value during use (e.g. a functioning computer).

Descent (post-use phase)

When a product is no longer functional, its value quickly declines – unless appropriate circular strategies are applied.

New standards for the circular economy

The circular economy requires a systemic change in how companies manufacture products, use resources and manage waste. Its key objectives are more efficient use of resources, extending product lifespans, promoting reuse and introducing regenerative processes within environmental limits. To enable companies to make this transition successfully and systematically, new circular economy standards are essential.

The **ISO 59000** standards provide a unified, internationally aligned framework that includes requirements, guidelines and tools to support organizations in implementing circular practices. Their aim is to increase the efficiency of the transition and strengthen companies' contribution to sustainable development.

ISO 59000 STANDARDS

ISO 59004

The first standard outlines six core principles of the circular economy, establishes common terminology and provides a step-by-step approach to implementing circular practices.

ISO 59010

The second standard provides guidelines for organizations transitioning to circular business models, with an emphasis on transforming value chains.

ISO 59020

The third standard enables measuring circularity through methods for assessing impacts and achieving measurable results.

Together, the **ISO 59000** series of standards provides a comprehensive framework for **assessing, implementing and reporting on circular economy** at various levels, enabling companies to deliver **reliable, measurable, and transparent circular initiatives**.

ISO 59020

The ISO 59020 standard is a key tool for the transition to a circular economy, as it enables organizations to measure performance in resource efficiency and circular material flows. It also supports the Sustainable Development Goals, increases transparency and builds stakeholder trust with verifiable results of sustainability practices.

Benefits for companies

- ✦ Provides a clear framework for **measuring circular economy performance**.
- ✦ Helps organizations align with **global sustainability goals**.
- ✦ Enhances **transparency and accountability** in environmental reporting.
- ✦ Supports **strategic decision-making** for sustainable resource management.

Circularity assessment framework



The guidelines outline an assessment process that begins with defining objectives, determining the scope (system in focus) and the time period. Target groups and stakeholders are considered at all stages.

Key terms and concepts of the standard

Measuring circularity is based on **data collection and the use of indicators**, for which the standard defines methods and calculation formulas. Indicators may be mandatory or optional and define specific aspects of circularity quantitatively or qualitatively.

Resource flows cover both internal and external processes –including those not under the company's direct control but affecting the product.

Resource inflows are classified into four groups that together sum to 100%:

- reused materials,
- recycled materials,
- virgin, renewable materials,
- virgin, non-renewable materials.

Life cycle assessment – LCA

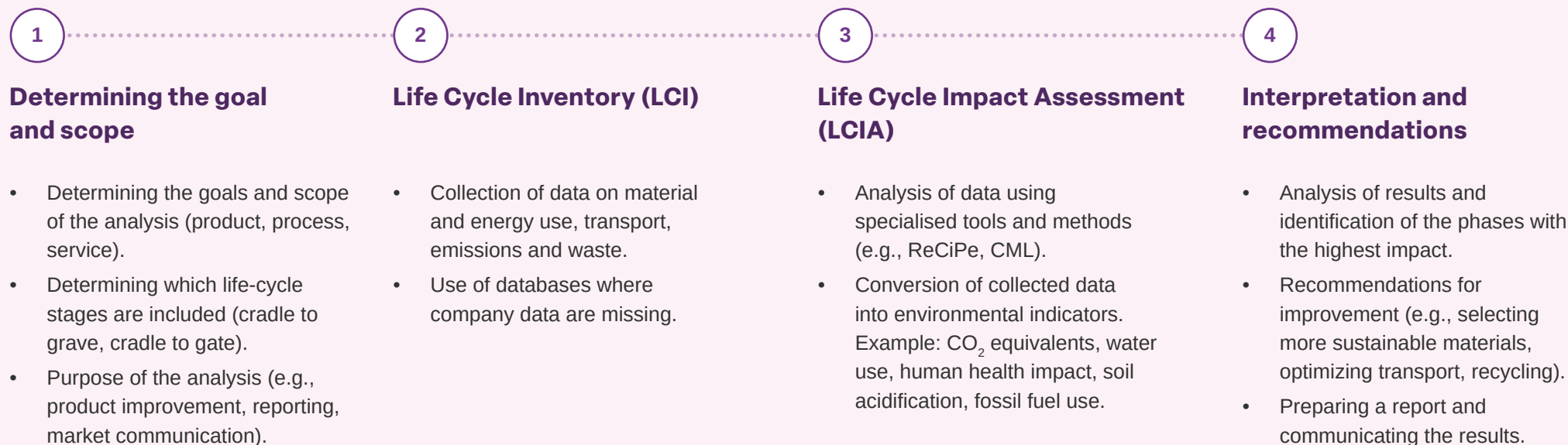
Life Cycle Assessment (LCA) is an internationally recognised method for assessing the environmental impacts of a product, process or service across all stages of its life cycle – from raw materials and manufacturing to use, disposal or recycling.

Why is LCA more important than ever?

In today's business environment, it is no longer enough for products to perform well and be price-competitive. Customers, regulators and partners demand evidence of environmental responsibility. LCA is a tool that:

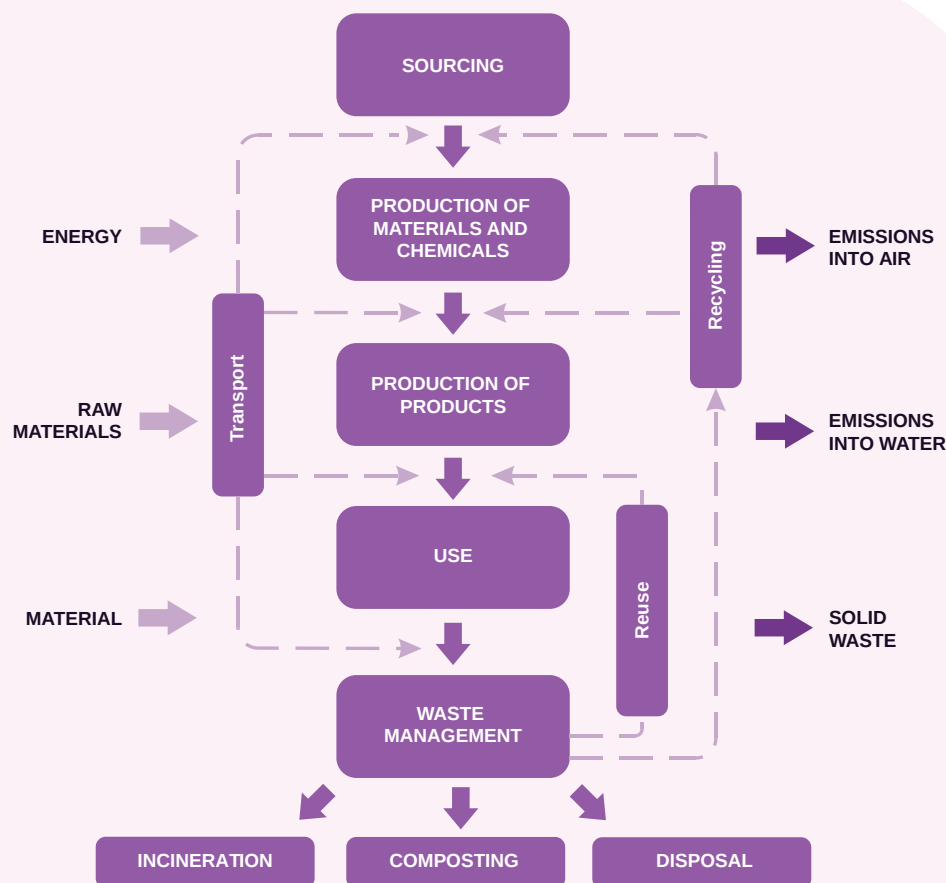
- quantifies impacts instead of relying on intuition,
- links sustainability to actual data,
- helps companies improve efficiency and readiness for new regulations (e.g., CSRD, European Green Deal, ESPR).

LCA STEPS



Companies can approach the analysis in two ways

- ✓ **in-house** – if they have internal experts and access to tools (e.g., SimaPro, GaBi, OpenLCA, Ecoinvent databases),
- ✓ **with experts** – most often with external consultants or research institutes, who contribute methodological expertise, access to databases and experience in interpreting results.



LCA provides a comprehensive overview of the environmental impacts of a product, process or service across all stages of its life cycle. Source: Life Cycle Assessment

BENEFITS OF LCA FOR COMPANIES

- ◆ **Identification of the largest sources of environmental impacts and costs** across the entire value chain.
- ◆ **Improvement of product design (ecodesign) and processes**, which leads to lower energy and raw material use and costs.
- ◆ **Easier compliance with regulatory requirements** (e.g., environmental legislation, Corporate Sustainability Reporting Directive (CSRD), European Sustainability Reporting Standards (ESRS), EU taxonomy, European Green Deal).
- ◆ **Obtaining credible data for sustainability reports, certifications and environmental declarations** (Environmental Product Declaration (EPD), Product Environmental Footprint (PEF), Product Carbon Footprint (PCF), Green Public Procurement (GPP).
- ◆ **Market differentiation with robust, evidence-based sustainability data**, which strengthens the trust of customers, investors and partners.
- ◆ **Support for green marketing and reduced risk of greenwashing.**
- ◆ **Competitive advantage** in public procurement, international collaboration and industries where carbon footprints are standard.
- ◆ **Alignment with market and partner expectations**, which demand transparency and proof of sustainability.

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Embracing the circular economy is a strategic imperative for businesses to stay competitive and meet climate goals. By reducing resource dependency, extending material lifecycles, and lowering emissions, circular economy principles are crucial to help secure access to critical materials, reduce costs and protect against external shocks. In addition, investing in the circular economy can help drive new product and service innovations, attract new customers and consumers and open up new opportunities in emerging sectors critical to the green transition.

Ursula Woodburn

Director – Cambridge Institute for
Sustainability Leadership (CISL)
Europe, CLG Europe



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More and more companies are realizing that the circular economy isn't just about sustainability, it's a driver for innovation, efficiency and growth. It's not only about closing loops, but about rethinking how value is created. Future-oriented companies are already moving in this direction, thereby building more resilient and competitive business models.

Julia Binder

Professor of Sustainable
Innovation at IMD Business
School Lausanne and Director,
Center for Sustainable and
Inclusive Business



Business models and collaboration

”

According to the Circularity Gap Report 2025, the global economy is only 6.9% circular, a further decline compared to 7.2% in 2023. Every year we consume more than 106 billion tonnes of resources, yet most ends up as waste or emissions – without being reused.

Five types of circular business models offering business opportunities

Circular business enables companies to reduce environmental impacts and increase efficiency. The key is optimizing resources across the **entire product life cycle, from design to reuse**.

Circular business model patterns provide concrete pathways for companies to cut costs, increase efficiency and develop new revenue streams.

Circular models strengthen market resilience, enable innovation and create added value. They help companies do more with less – with fewer raw materials, less waste and lower costs. They span the entire product life cycle and include proven practices for identifying and capturing key business opportunities.

Circular models are not only environmentally responsible – they make business sense. They help manage risks, increase competitiveness and meet market and regulatory expectations. By adopting these patterns, companies build a more resilient, adaptable and profitable system that is future-proof.

The 15 circular business model patterns presented here span areas from resource optimization, product reuse and repair to new service models such as rental or pay-per-use. These approaches enable companies to extend product lifespans, reduce dependence on primary raw materials and increase customer loyalty.



Optimise resource use

Green operations

Secondary & decarbonised materials

Bio-based materials



Capitalise regeneration and restoration

Regenerative premium

Ecosystem service solutions

Regenerative infrastructure



Valorise waste

Waste-to-value

By-product utilisation

Secondary material market platforms



Monetise extended product life

Repair, upgrade, modularise

Recommerce

Reuse and reverse logistics ecosystem



Servitise products

Pay-per-use

Pay-per-outcome

Sharing / pooling

OPTIMISE RESOURCE USE

Introduce green manufacturing processes or use recycled or bio-based materials. This reduces emissions and consequently costs, increases resilience to supply chain disruptions and improves competitive advantage.



AREA	WHAT A COMPANY SHOULD DO	IMPACTS FOR THE COMPANY	9R PRINCIPLES FOR ACTION
Green operations	Optimise the use of resources – energy, water, materials – and implement automation in production and support processes. This enhances existing internal processes to reduce environmental impact and lower operating costs.	• Cost savings: reduced resource consumption delivers long-term financial savings. • Greater supply chain resilience: more efficient processes reduce exposure to price volatility and minimise vulnerability to supply disruptions. • Stronger reputation and differentiation: adopting sustainable practices boosts competitiveness, especially among environmentally conscious business and end customers.	• Refuse: eliminate hazardous and unsustainable materials from use. • Reduce: optimise packaging and logistics routes for greater efficiency. • Rethink: consider biodiversity protection and soil health when selecting raw materials and planning land use.
Secondary and decarbonised materials	Integrate recycled (secondary) and decarbonised materials into production and establish long-term partnerships for their supply. This will lower costs, reduce your carbon footprint and increase independence from primary raw materials.	• Cost savings: use of lower-cost materials, especially with strategic sourcing. • Supply chain resilience: greater supply stability and better opportunities for long-term planning. • Reputation and differentiation: entry new markets with innovative, sustainable products.	• Reduce: substitute primary raw materials with recycled or decarbonised materials to lower environmental impact. • Reuse: incorporate secondary materials into production. • Recycle: design for recycling and extended product lifespans.
Bio-based materials	Integrate renewable, biodegradable or compostable materials into production. This reduces dependence on fossil resources and improves product environmental profiles and compliance with increasingly stringent sustainability requirements.	• Efficiency and savings: potentially lower energy and water use in material processing. • Supply chain resilience: greater stability and predictability when using alternative sources. • Reputation and differentiation: strengthening the sustainability brand and appeal to sustainability-oriented customers.	• Reuse: use materials that enable composting or multiple use. • Rethink: support sustainable agriculture and regenerative approaches to raw material sourcing. • Reduce: use bio-based materials as a renewable alternative to fossil resources and to reduce carbon emissions.

CAPITALISE REGENERATION AND RESTORATION

With regenerative practices such as sustainable land use and leveraging ecosystem services, create additional environmental and business value.



AREA	WHAT A COMPANY SHOULD DO	IMPACTS FOR THE COMPANY	9R PRINCIPLES FOR ACTION
Regenerative premium	Develop products or services with a regenerative effect, for example those that contribute to restoring soil, ecosystems or natural resources. Such offerings enable higher sales prices and market differentiation.	• Premium pricing: higher added value enables greater revenues. • Reputation and differentiation: commitment to sustainability builds trust among customers and partners. • Increased resilience: Lower exposure to regulatory risks and more stable long-term operations.	• Rethink: design products and services with the purpose of regenerating natural systems. • Reduce: reduce land and resource use through more efficient practices. • Refuse: phase out the use of pesticides and hazardous chemicals.
Ecosystem service solutions	Invest in the conservation and restoration of natural ecosystems, such as wetlands, forests, water retention areas, etc. Such measures reduce costs over the long term and increase corporate resilience.	• Efficiency and savings: lower operating costs through nature-based solutions. • Reputation and differentiation: enhanced recognition as a sustainability-driven company. • Increased resilience: better protection against environmental risks such as droughts and floods.	• Rethink: support habitat restoration and carbon sequestration. • Refuse: eliminate harmful substances such as pesticides and hazardous chemicals. • Reduce: reduce negative impacts across the supply chain.
Regenerative infrastructure	Plan and build infrastructure (business premises, facilities) with regenerative principles in mind, such as natural materials, energy efficiency and preservation of areas with high ecological value.	• Cost savings: efficient use of space and resources lowers costs. • Reputation and differentiation: a genuine sustainability commitment improves competitive position. • Increased resilience: greater robustness to climate risks and regulatory changes.	• Rethink: incorporate regenerative elements and nature-based solutions into buildings. • Reuse / Recycle: use recycled construction materials. • Reduce: optimise energy use and reduce construction waste.

NEW VALUE FROM WASTE

Turn waste and by-products into new revenue streams through recycling or high-value reuse.



AREA	WHAT A COMPANY SHOULD DO	IMPACTS FOR THE COMPANY	9R PRINCIPLES FOR ACTION
Waste-to-value	Embed waste processing and reuse processes to retain material value within your company. This lowers costs, reduces dependence on primary resources and contributes to the circular economy.	• Cost savings: using recovered materials reduces production costs. • Untapped opportunities: develop new products from recovered materials. • Enhanced supply chain resilience: closing material loops reduces exposure to price volatility.	• Reuse / remanufacture: reduce the need for virgin raw materials by reusing materials. • Recycle / recover: convert waste into energy or new materials. • Repurpose: create new products to preserve resource value and support circularity.
By-product utilisation	Treat by-products as a potential resource – for internal reuse or as a basis for new products and services. This increases efficiency and generates additional revenue.	• Revenue diversification: new market segments or partnerships through the use of by-products. • Cost savings: substituting more expensive input materials with existing by-products. • Greater innovation: developing sustainable solutions using materials that would otherwise become waste.	• Repurpose: extend the material life cycle by reprocessing it. • Recycle / recover: establish recycling or energy recovery processes for residues. • Rethink: treat waste as an opportunity for innovation, new uses and partnerships
Platforms for secondary materials markets	Build or join digital platforms that connect suppliers and users of secondary materials. This enables more efficient circulation of resources and the development of new partnerships and markets.	• Cost savings: lower procurement costs and additional revenues from the sale of secondary raw materials. • Greater innovation: a shift to circular business models supported by new digital connections. • Untapped opportunities: enter new markets and strengthen stakeholder collaboration.	• Reuse: increase the value and utility of secondary materials. • Reduce: lower the need for primary resources. • Recycle: support closing material loops with a structured market

EXTENDING PRODUCT LIFESPANS

Offer services such as repair, refurbishment or resale. This extends product life cycles and strengthens customer loyalty.



AREA	WHAT A COMPANY SHOULD DO	IMPACTS FOR THE COMPANY	9R PRINCIPLES FOR ACTION
Repair, upgrade, modularization	Provide repair and upgrade services or design products modularly to enable easy adaptation, reduce waste and extend product lifespans.	• Untapped opportunities: after-sales services and upgrades generate additional revenue. • Customer loyalty: a better user experience fosters long-term relationships. • Greater innovation: modular products enable faster adaptation to market changes.	• Reuse: extend the lifespan of components. • Reduce: reduce the need for virgin raw materials. • Repair: prioritise repair to extend product lifespans and reduce resource use.
Recommerce	Establish a system for selling used or refurbished products. This makes the offering more affordable for a broader customer base and contributes to extending product life cycles.	• Revenue diversification: reach price-sensitive, sustainability-conscious customers. • Cost savings: refurbished products are cheaper to produce and sell. • Secondary market management: maintain quality control and prevent the proliferation of counterfeits.	• Reuse: extend product lifespans. • Reduce: reduce consumption of primary resources. • Repair / refurbish / recycle: enable a comprehensive circular flow.
Reuse and reverse logistics ecosystem	Establish systems for returning products and materials (e.g., collection, refurbishment, upgrading) that enable circular management of raw materials and products across the entire life cycle.	• Untapped opportunities: provide affordable and environmentally accessible solutions for customers. • Regulatory compliance: meet legal requirements for reuse. • Reputation and differentiation: demonstrate commitment to the circular economy.	• Reuse: return components and products to circulation. • Reduce: reduce resource use and waste volumes. • Reuse: develop systems that foster long-term customer relationships.

SERVITISE PRODUCTS

Instead of selling, offer renting, sharing or bundled solutions. Tailor your offering to actual customer needs and generate recurring revenue.



AREA	WHAT A COMPANY SHOULD DO	IMPACTS FOR THE COMPANY	9R PRINCIPLES FOR ACTION
Pay-per-use	Instead of selling the product, enable use based on actual usage – for example, charging by hours of use, volume or number of services. This model encourages more efficient product use and creates steady revenue.	• Revenue diversification: the subscription model ensures stable, recurring revenue. • Savings and efficiency: enables customers to lower their total cost of ownership while increasing your resource utilization. • Reputation and differentiation: flexibility and a sustainable approach enhance competitiveness.	• Rethink: encourage more intense use of products and reduce the need for new ones. • Reuse / repair / refurbish: integrate products into refurbishment and service processes. • Recycle: plan for end-of-life recycling.
Pay-per-outcome	Offer functionality instead of a product – customers pay for the outcome achieved (e.g., lighting, cooling, printing), regardless of equipment ownership. The responsibility for performance is thus assumed by the company.	• Customer satisfaction: solutions are tailored to actual needs and enable control over quality. • Revenue diversification: long-term contracts ensure a stable revenue stream. • Cost savings: optimizing product efficiency benefits both provider and user.	• Rethink: focus on value of use, not ownership. • Reuse / repair / refurbish / recycle: ensure a comprehensive circular approach across the entire product life cycle. • Refuse: choose sustainable solutions, reduce packaging or switch to digital services.
Sharing / pooling	Set up a system for sharing products or resources, for example vehicles, tools, or other equipment. Users share access to products, enabling better utilization and lower costs.	• Untapped opportunities: access without ownership opens new market segments. • Ecosystem innovation: partnerships and network effects increase added value. • Resource utilization: greater efficiency and utilization of equipment or infrastructure.	• Rethink: encourage the shift from ownership to access. • Reuse: reduce single-use by enabling long-term and shared use. • Refuse: shift from ownership to access and encourage sharing to reduce consumption.

The role of departments in implementing the circular economy

Implementing a circular economy requires a **systems approach and collaboration across all company departments**. It entails a holistic transformation of **processes, culture and business models**. There is no one-size-fits-all solution – for manufacturing, the priorities are design, procurement and development; for retail, logistics and marketing.

HOW TO ORGANISE DEPARTMENTS FOR THE TRANSITION TO A CIRCULAR ECONOMY

1

Establish collaboration between departments

The circular economy requires close collaboration across departments, from R&D to sales. Set up interdisciplinary teams to co-develop circular solutions.

2

Set measurable targets and KPIs

Each department should have clear circularity targets (e.g., share of recycled materials). Finance should assess the economic benefits of these measures.

3

Leverage digital tools

Use technology to enable material traceability and product take-back, as digitalization is critical for an effective transition to a circular economy.

4

Engage all employees by clarifying the “why”

Change is not just about instruction; it's a comprehensive mindset and operational shift. Leadership, the environment department and R&D should foster employees' understanding of circularity.

5

Marketing and sales should communicate the circular narrative

Customer communication is critical. Highlight the benefits of circular products and services. Clearly communicate how to return and reuse products.

KEY DEPARTMENTS THAT MUST COLLABORATE TO ACHIEVE CIRCULAR ECONOMY OBJECTIVES



Leadership / Management

Provides strategic leadership and defines the circular strategy. Promotes cross-functional collaboration and directs investments toward sustainability.



Product Design / Development

Designs new products for repair, reuse and the use of sustainable materials.



Procurement

Selects sustainable suppliers and establishes circular material flows in the supply chain.



Production / Operations

Reduces waste, uses raw materials efficiently and returns residuals to the process.



Logistics

Optimises transport and establishes product and packaging take-back systems.



Marketing / Sales

Raises customer awareness and develops reuse and recycling models (renting, recycling), thereby encouraging sustainable consumption.



Human Resources (HR)

Fosters a sustainability culture, encourages employees to engage in training.



Finance

Analyzes the financial benefits of circular business models and supports sustainable investments.



Legal / Compliance

Ensures compliance with environmental regulations and implements environmental standards.



IT / Digitalization

Develops digital tools for material traceability and management of circular flows.



Environment, sustainability and compliance

Monitors environmental impacts, prepares sustainability reports and drives carbon footprint reduction.

Key external partners for the circular economy

To successfully implement the circular economy, companies must collaborate with numerous external partners, as circularity requires a systemic approach and action across the entire value chain.

The circular economy cannot operate in isolation. It requires cross-sector collaboration, data sharing, new business arrangements and partnerships that enable closing material loops.

Sourcing platforms

Enable access to secondary, recycled and renewable resources.

Innovation hubs and universities

Develop and test new technologies, materials and business models.

Financial institutions

Support the transition by financing circular investments, ESG funds and green banking.

Designers and engineers

Develop products designed for repair, disassembly, reuse or recycling.

Digital service providers

Develop tools to track, analyze and optimise circular flows (e.g., blockchain, IoT).

Collectors, sorting facilities, and recycling organizations

Provide key functions in reverse logistics and material reprocessing.

Public authorities and municipalities

Shape enabling legislation, regulations, public procurement and infrastructure investments.

Logistics companies

Allow products/materials to circulate back to the producer or user (reverse logistics).

NGOs and civil society

Track transparency and drive responsible resource use and behavior change.

Customers and users

Contribute through returns, choosing circular product and subscribing to services instead of ownership.

Local communities

Support infrastructure, access to premises, reuse centers, etc.

Certification bodies

Validate circular approaches and enable market recognition (e.g., C2C, ISO 59010).



Industrial symbiosis

Industrial symbiosis is a circular economy business model in which companies connect and exchange materials, energy, water, by-products or services.

Instead of ending up as waste, they become a resource for another company. This creates collaboration networks that deliver economic benefits, reduce environmental burdens and spur innovation.

WHERE DO INDUSTRIAL SYMBIOSES EMERGE?

Industrial symbioses most often develop in environments with a high concentration of diverse economic activities, such as industrial zones, business hubs, logistics nodes and urban areas where multiple companies with different production processes are located in close proximity. Collaboration also succeeds in regions with strong cooperation between companies, municipalities and supporting infrastructure.

WHEN ARE INDUSTRIAL SYMBIOSES SUCCESSFUL?

The most successful industrial symbioses are those with:

- ✓ **short distances between partners**
(lower transport costs and faster flows),
- ✓ **diversity of activities**
(greater potential to connect different flows of materials and energy sources),
- ✓ **clear shared interests**
(cost reduction, reduced environmental impacts, compliance with regulatory requirements, innovation),
- ✓ **trust and transparency among businesses**

WHAT DO COMPANIES EXCHANGE?

The most common streams that companies convert into useful resources are:



energy

excess heat, steam, electricity from renewable sources,



water

treated process water, rainwater, technical water,



materials

secondary raw materials, production by-products, construction materials, metals, plastics,



logistics and infrastructure

shared use of warehouses, transport routes, wastewater treatment plants or waste processing facilities.

WHY DO THEY MATTER?

Industrial symbioses enable companies to turn cost into opportunity, waste into a resource and competition into collaboration. At the same time, they are one of the most tangible ways the circular economy is implemented in practice – directly connecting companies and delivering measurable economic, environmental and social benefits.

The circular economy is no longer a choice – it is a requirement and an opportunity

A growing number of legislative requirements and standards at both the EU and Slovenian levels send a clear signal to companies: they must manage resources more responsibly, reduce waste and design sustainable products. At the same time, this creates new opportunities for innovation, greater resilience and access to sustainable finance.

EU legislation

- EU Circular Economy Action Plan (CEAP)
- Waste Framework Directive (2008/98/ES, amended 2018/851)
- Packaging and Packaging Waste Directive (94/62/ES)
- Ecodesign Directive (2009/125/ES) / ESPR (proposal)
- Critical Raw Materials Act (CRMA) – proposal 2023
- EU Taxonomy Regulation (2020/852)
- Net Zero Industries Act /
- Directive on Single-Use Plastics (2019/904)
- Directive on Batteries (new regulation 2023)
- REACH Regulation (EC) No 1907/2006
- CSRD – Corporate Sustainability Reporting Directive

According to the International Resource Panel, the overuse of natural resources is a key driver of crises, both those linked to nature and to social inequality.

The extraction and processing of raw materials are responsible for:

90% loss of biodiversity linked to land use,

90% water stress,

60% climate change,

40% global pollution.

Over the past 50 years, the amount of raw materials consumed has tripled, indicating a profound imbalance between economic growth and environmental preservation.

Standards for implementing circular economy

- **ISO 59004:2024** ISO – terminology and principles
- **ISO 59010:2024** ISO – business models and value chains
- **ISO 59020:2024** ISO – measuring circularity
- **ISO 14009 (in development)** ISO – ecodesign
- **ESPR – Ecodesign for Sustainable Products Regulation** EU regulation (in development)
- **EU Taxonomy (Regulation 2020/852)** EU regulation
- **Level(s)** EU framework for construction
- **CEN / CENELEC standards** (in development) European standards
- **Cradle to Cradle Certified® (C2C)** Certification scheme
- **EMAS** Environmental management system
- **Ecovadis / B Corp / GRI / ZNU** Sustainability performance assessment
- **LCA (ISO 14040/44)** LCA methodology
- **Material Circularity Indicator (MCI)**

Slovenian legislation and strategic documents related to the circular economy

- Environmental Protection Act (ZVO-2)
- Waste Management Regulation
- Packaging and Packaging Waste Regulation
- Framework Programme for the Transition to a Circular Economy (MGRT, 2018)
- Slovenia's Development Strategy 2030
- Waste Management Programme and Waste Prevention Programme
- NEPN – National Energy and Climate Plan
- Slovenian Sustainable Smart Specialisation Strategy - S5
- Roadmap for Slovenia's Transition to a Circular Economy

If we want to establish the circular economy as the prevailing model, we must create market conditions that incentivise efficient and responsible resource use. It is essential that market signals – prices, incentives and tax burdens – begin to reflect the true environmental and social value of resources and the consequences of their use.

A fair allocation of costs currently borne by society (healthcare, pollution, biodiversity loss) must be internalised into the price of products and services. Only then will environmentally friendly behavior also make economic sense for both businesses and consumers.





From experience across industries, I can confirm that design is one of the most powerful levers for the transition to a sustainable and circular economy. For many products, most environmental impacts are determined at the design stage – how long the product will last, how it can be maintained, disassembled and reused.

If we want sustainability and circularity not to be mere add-ons but the foundation of the business model, we must understand design more broadly: as a process that connects user experience, technology, materials, aesthetics and business strategy. Only then can we create solutions that are simultaneously attractive to users, economically viable and environmentally responsible.

I am convinced that truly holistic design will be the key competitive advantage of sustainable and circular business models of the future.

Matjaž Grm

CEO, Jelovica Hiše,
member of the CER Board



For years, Aquafil has stayed the course on which sustainability and the circular economy form the core of our values and the driver of our growth. A key milestone on this journey was the development of the ECONYL® Regeneration System, an innovative technology that enables the production of regenerated nylon exclusively from waste. With ECONYL® nylon, we reduce our negative environmental impact and reliance on fossil fuels, as well as open up new market opportunities.

At the same time, we compete in the global market with companies guided by different values. A systematically regulated business environment that encourages and rewards innovative circular production models would strengthen competitiveness and accelerate the transition of the circular economy to standard business practice.

Denis Jahić

General manager, AquafilSLO



Business transformation through circularity

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“While up to 80% of products’ environmental impacts are determined at the design phase, the linear pattern of “take-make-use-dispose” does not provide producers with sufficient incentives to make their products more circular. Many products break down too quickly, cannot be easily reused, repaired or recycled, and many are made for single use only. At the same time, the single market provides a critical mass enabling the EU to set global standards in product sustainability and to influence product design and value chain management worldwide.”

European Commission

Navigator for assessing circularity in your company

Self-assessment checklist for companies, structured around the core steps for the transition to the circular economy. Each step contains reflection questions and space to assess the company's status (✓ Yes, ? Partly/unclear, ✗ No)¹.

✓ MOSTLY

You're on the right track – the next step is to consolidate and scale the measures.

? FREQUENT ANSWER

You require further analysis and strategic planning.

✗ PREVAILS

It's time to launch concrete circular projects and train the team.

		YES	PARTLY	NO
Business model and strategy	Have you systematically assessed the most relevant opportunities for circular business models and calculated business cases for them (e.g., revenues, profitability)?			
	Do you have a clearly defined implementation plan for circular business models, including a strategy for mitigating financial risks?			
	Have you mapped all material and energy flows in your company to identify opportunities for optimization and the implementation of circular solutions?			
Direction and vision	Does your strategy for circular business models contribute to delivering the company's sustainability goals?			
	Do your internal and external communications consistently support and express the ambition to transition to a circular economy?			
Customer-centricity	When developing new circular products or services, do you start from your customers' fundamental needs?			
	Does your value proposition successfully combine benefits for the customer (e.g., convenience, cost-effectiveness) with environmental considerations?			
Design	In product design, do you consider the full life cycle – from material sourcing to end of life?			
	Are your design principles geared to support the goals of circular business models and to inform environmental, cost and technical decisions?			
Ecosystems	Do you involve suppliers or customers in creating and delivering circular products and services?			
	Does your organization engage in relevant ecosystems or coalitions that promote circularity in our industry and beyond?			
Data and technology	Do you use technology to support data transparency across your supply chain?			
	Do you regularly assess new, green technological solutions to advance sustainability and circularity?			
Organizational structures and processes	Do you have clearly defined roles, responsibilities and allocated funding to deliver the circularity agenda?			
	Do you systematically improve company processes in line with the requirements of a circular business model?			
Tools, systems and KPIs	Do you have defined targets, measurable indicators and control systems to track progress on the circular strategy?			
	Does your performance rewards and incentive system include objectives related to circular business?			
Skills and knowledge	Do your employees have access to knowledge, learning programmes and time to actively support the circularity agenda?			
	Is there a functioning internal community that enables sharing of best practices and, where needed, engagement of external circular business experts?			
Leadership mindset and culture	Does your company's leadership actively communicate a shared vision of sustainability and circularity and foster transformation through an agile mindset?			
	Does senior leadership actively support and sponsor initiatives related to circular business models?			

The transition to the circular economy is a holistic business transformation

The transition to a circular economy is not a one-off action, but a holistic business transformation. To plan and implement this transition successfully, a company should use the **readiness framework**, which includes four key levels: **strategy, execution, people, communication**. This framework will help you assess where you are today and what you still need to do to become a company that is not only ready for the circular economy but leads it¹.

1

Start with strategy

- **Check the company's direction:** determine whether the company has a clear vision for the transition to the circular economy. Do the strategic documents already include circularity as the foundation of the business model?
- **Set long-term objectives:** focus on reshaping existing models into sustainable and regenerative solutions that create added value for the environment, society and the business.

2

Strengthen implementation in practice

- **Engage customers:** understand their needs and develop solutions that enable product take-back, reuse or extended product lifespans.
- **Redesign products and processes:** design products according to circular principles (e.g., repairability, recyclability) and adapt internal processes to support them effectively.
- **Build partnerships:** collaborate on joint solutions with suppliers, service providers, recyclers and other stakeholders in the circular ecosystem.
- **Leverage data and technology:** implement digital tools for materials tracking and monitoring the performance of circular measures.
- **Measure progress:** set clear indicators (KPIs) and establish systems for monitoring, reporting and improving circular practices.

3

Engage people and build capabilities

- **Educate and train teams:** the transition to a circular economy requires new knowledge and skills – enable continuous learning and upskilling.
- **Cultivate a circular mindset:** leadership should set the example and corporate culture should promote sustainability thinking, collaboration and innovation.

4

Communicate and raise awareness

- **Simplify the explanation for stakeholders** and clearly communicate the benefits of circular practices.
- **Build a stronger brand**, based on responsible resource management.
- **Educate customers and partners** about the benefits and opportunities of circular practices.

Best practices of circular business models



Perutnina Ptuj



Hotel Plesnik



Pivovarna Laško Union



Telprom



Aquafil slo



GoOpti



Perutnina Ptuj

PERUTNINA PTUJ

Business activity: Livestock farming and meat processing

Perutnina Ptuj builds its business model on the principles of the circular economy through efficient management of resources and by-products. The key elements of this approach are in-house capacities for processing organic residues, such as **the biogas plant, the protein concentrate plant (rendering plant), and existing solar PV plants** as well as ambitious **planned investments in additional solar capacity**. The biogas plant, in operation since 2012, enables energy recovery from organic residues. The protein concentrate plant processes animal by-products into **protein base for pet food**, further closing material loops and creating new value.

Circular economy approaches

- **Biogas plant:** enables energy recovery from organic production residues, reducing the carbon footprint and the amount of waste.
- **Protein concentrate plant (rendering plant):** processes animal by-products into **protein base for the pet food industry**, enabling the sustainable use of raw materials that would otherwise become waste.
- **Existing solar PV plants:** company-owned solar PV plants are already operating at multiple sites, contributing to energy self-sufficiency.
- **Planned investments in solar PV:** the company aims to install additional capacity over the next three years totaling **at least 10 MWp**, which will significantly increase the share of renewables in consumption.
- **Recycling or energy recovery:** more than 95% of production residues are recycled or used for energy recovery.
- **On-site wastewater treatment plant:** reduces local environmental impacts and enables efficient treatment of industrial wastewater.

Results and benefits

- ◆ **Reducing the carbon footprint:** in-house renewable energy generation and efficient use of animal residues reduce greenhouse gas emissions.
- ◆ **Closing material and energy loops:** processing by-products in the rendering plant and energy recovery in the biogas plant, supported by solar PV, enable a closed and efficient system.
- ◆ **Energy self-sufficiency:** a combination of biogas, solar energy and industrial processing increases the company's resilience to energy crises and market volatility.
- ◆ **Enhanced alignment with ESG standards:** the sustainability model contributes to achieving environmental and regulatory objectives.
- ◆ **Value creation:** by-products are turned into marketable products with a high added value – particularly for the pet food sector.



HOTEL PLESNIK

Business activity: Hospitality and tourism

Hotel Plesnik in the Logar valley develops **sustainable boutique tourism** with deep integration of **nature, the local environment and innovative eco-friendly solutions**. Their **sustainable approach** is based on **energy efficiency, prudent use of natural resources, in-house production and close collaboration with local suppliers**.

Approaches to the circular economy

- **Certified sustainable management system:** guided by **Green Globe and Slovenia Green**, including annual indicator monitoring and involvement of all hotel departments.

- **Heating using sustainable wood biomass:** cooling and ventilation are natural.
- **Rainwater collection and use:** for watering the garden and herbs, the outdoor **natural swimming pool** operates without chlorine, purified by plants, UV light and natural organisms.
- **Engaging local suppliers:** key input streams (meat, cheese, vegetables, flour, fish, oil) come from nature-friendly and boutique farms.
- **Circular waste management:** on-site composting, Zero Waste breakfasts, smaller portions, pre-ordering meals and guest education.
- **In-house production of goods:** *savinjski želodec*, salamis, blueberry liqueur, herbal liqueurs, syrups and the local dish *grušavi žlinkrofi*.
- **Local ingredients for cocktails and drinks:** gin from the Logar valley, house-made syrups, non-alcoholic cocktails from foraged herbs.
- **Educating staff and guests:** involvement in sustainability topics, workshops on traditional dishes, development of the Pastirska pot programme connecting natural, culinary and cultural heritage.

Results and benefits

- ◆ **Sustainability commitment: Green Globe certificate** and inclusion in **Top 100 sustainable destinations**.
- ◆ **Efficient resource management:** waste reduction and optimization of water use through technical solutions (flow restrictors, monitoring system).
- ◆ **Energy efficiency with advanced technology: LED lighting**, which enables savings of up to 40%; reduced energy consumption through automation (sensors, master switch in rooms).
- ◆ **Market differentiation and brand reputation: high guest satisfaction**, strengthening brand recognition, awards for sustainability performance and **Green Michelin Star for the restaurant**.
- ◆ **Local impact and development responsibility: strong embeddedness in the local community**, striving to set an example for the entire region and leading major sustainable development projects (e.g., traffic restrictions in the Logar valley).



PIVOVARNA LAŠKO UNION

Business activity: Food-processing industry (brewing industry)

As part of HEINEKEN, Laško Union Brewery strives to operate successfully while contributing to the well-being of society. Heineken's sustainability strategy 'Brew a Better World – Raise the Bar 2030' focuses on three key areas: **environmental stewardship, social sustainability and responsible consumption.**

Circular economy approaches

- **Decarbonising production:** introduction of numerous good practices and improvements across the supply chain that reduce CO₂ emissions.
- **Increasing packaging circularity:** by 2030 the aim is to shift 43% of packaging to returnable formats, reducing raw material consumption and promoting reuse.
- **Use of biogas:** the biogas generated during industrial wastewater treatment at Pivovarna Laško is used as an energy source in the brewery's energy processes.
- **Increasing the share of renewable energy:** in 2024, 33% of all energy consumed was sourced from renewables, confirming the company's commitment to sustainable energy sources.

Results and benefits

- ◆ **Reducing the carbon footprint:** by using biogas and renewable energy sources, greenhouse gas emissions are being significantly reduced.
- ◆ **Closing material and energy loops:** by reusing wastewater for energy generation and recycling packaging, the brewery contributes to closed-loop systems.
- ◆ **Resilience to supply chain disruptions:** circular models reduce the company's vulnerability to market shocks or resource scarcity.
- ◆ **Achieving sustainability targets:** circular economy supports delivering environmental and social objectives, in line with ESG and corporate guidelines.
- ◆ **Long-term stability and competitiveness:** sustainability-oriented models enable more efficient operations and higher added value with a lower environmental footprint.



TELPROM

Business activity: Electrical engineering and power industry

Telprom is the IT partner of numerous companies that are increasingly shifting towards sustainable and digital practices. Aware of the environmental impact of their own operations, Telprom opted for self-reflection and concrete measures toward sustainable development. The Green Star certification enabled a thorough review of the company's environmental footprint, leading to a pilot implementation of a circular economy approach to electronic equipment.

Circular economy approaches

- **Obtaining the Green Star certificate:** the certificate enabled a precise assessment of the company's impacts, focusing on areas with the greatest potential for improvement.
- **Participation in the Silicon Eurogarden call:** access to financing and advisory support, through which the company identified potential circular approaches in its operations.
- **Establishing a system for collecting used computer equipment:** together with the Duh časa association, the company collects and repairs still-usable equipment, which is then donated free of charge to socially vulnerable people.
- **Recycling unusable equipment:** in cooperation with Aurenis, unusable computer equipment is disassembled into individual components suitable for reuse.
- **Collaboration with customers:** customers can return used electronics for lifespan extension or proper recycling.

Results and benefits

- ♦ **Reducing electronic waste:** through organised collection and processing of used equipment, the company makes a significant contribution to reducing e-waste.
- ♦ **Extending the lifespan of technology:** equipment that is still functional is repaired and donated, promoting more responsible resource use.
- ♦ **Social impact:** donating equipment to socially vulnerable individuals and retirees helps bridge the digital divide.
- ♦ **Increased customer awareness and trust:** sustainability orientation and corporate reputation are strengthened by proactively engaging customers in the circular model.
- ♦ **Inspiration for future initiatives:** the success of the pilot project paves the way for further circular initiatives developed at workshops.



AQUAFILSLO

Business activity: Chemical industry / textile industry

AquafilSLO in Ljubljana is the central hub for the production of regenerated nylon ECONYL®, obtained from end-of-life fishing nets, textile flooring and industrial waste. ECONYL® has the same properties as virgin nylon, but has a significantly smaller environmental footprint and enables infinite recycling without loss of quality. In addition, the company harnesses surplus thermal energy to heat nearby buildings, further closing energy loops.

Circular economy approaches

- **Advanced technological solutions:** depolymerization technology for regenerating nylon from waste.
- **Sustainable design strategies:** development of products based on the principle of design for disassembly.
- **Innovations in material production:** production of high-quality ECONYL® regenerated nylon fibers.
- **Strengthening strategic partnerships:** collaboration with global brands pursuing sustainability goals.
- **Optimization of energy resources:** use of surplus thermal energy for heating (e.g., Atlantis, Millenium, Hella Saturnus).
- **Industrial symbiosis:** in Ljubljana, Aquafil supplies excess heat from production for heating pool water at Atlantis in BTC City Ljubljana.

Results and benefits

- ◆ **Maximizing resource utilization:** the possibility of multiple reuse of raw materials without loss of quality,
- ◆ **Reducing environmental impact:** a significantly lower carbon footprint compared to virgin nylon,
- ◆ **Establishing sustainable value chains:** a sustainable supply chain for the textile and fashion industry,
- ◆ **Reduced operating costs:** energy efficiency and lower costs for local partners,
- ◆ **Increased brand value:** increased market value and recognition of the ECONYL® brand as a symbol of circular innovation.



GoOpti

Activity: organizing passenger transport

GoOpti is an innovative transport company that, through digital technology and a sharing model, is transforming the traditional transport sector toward sustainable and circular mobility. The company's smart platform optimises passenger transport by aggregating individual needs, enabling efficient use of vehicles and a significantly reduced environmental impact.

Circular economy approaches

- **Smart digital platform:** enables connecting passengers with the same routes and travel times, leading to shared use of transport modes.
- **On-demand model:** using real-time algorithms, the rides are adapted to actual needs, reducing empty miles and increasing efficiency.
- **Route optimization:** by pooling different routes, vehicle utilization is maximised and fuel consumption is reduced.
- **Ride sharing:** one optimised ride can replace up to seven private cars, reducing traffic congestion and the need for parking spaces.
- **Digital resource management:** the system enables dynamic vehicle dispatching based on demand, reducing costs and increasing flexibility.

Results and benefits

- ◆ **Reduction of CO₂ emissions:** efficient vehicle use and fewer empty miles contribute to a significant reduction in greenhouse gas emissions.
- ◆ **Fewer vehicles on the roads:** the sharing model reduces the number of cars needed, leading to less traffic congestion and lower noise levels.
- ◆ **Greater spatial efficiency:** fewer individual trips ease the burden on parking areas and transport infrastructure.
- ◆ **Access to sustainable mobility:** rides become more affordable and accessible to a broader range of users.
- ◆ **Good practice example of sustainable digitalization:** GoOpti combines artificial intelligence, data analytics and a platform model to create sustainable value in mobility.

Mini glossary

Closing material loops

A process in which materials do not become waste after use but are returned to use as feedstock, components or products. The goal is to reduce the need for virgin resources.

Ecodesign

Designing products to minimise environmental impacts across the entire life cycle – with recycling, repair and reuse in mind.

Industrial symbiosis

Collaboration between companies where one company's by-products become another's inputs, thus lowering costs and reducing waste.

Secondary materials

Materials derived from recycling or reprocessing that substitute for primary raw materials in production.

Product-as-a-service

A business model in which the user accesses the product as a service while the manufacturer retains ownership and responsibility for maintenance, repair and take-back.

Digital product passport

A digital record containing information on a product's composition, provenance, and options for reuse or recycling – critical for traceability in the circular economy.

Regenerative design

Designing systems and solutions that not only reduce environmental impact but actively help restore natural and social capital (e.g., soils, biodiversity, communities).

Useful links

- [Ellen MacArthur Foundation](#)
- [Circle Economy](#)
- [Circular Economy Stakeholder Platform \(ECESP\)](#)
- [OECD Circular Economy Programme](#)
- [Circular Transition Indicators \(CTI\)](#)
- [EU Circular Economy Action Plan \(CEAP\)](#)
- [Dansk Design Center | The Circular Behavior Toolkit](#)

Partners



REPUBLIKA SLOVENIJA
MINISTRSTVO ZA NARAVNE VIRE IN PROSTOR



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RRA LUR
regionalna razvojna agencija
ljubljanske urbane regije



A School with a View

CER Sustainable Business Network

CER is Slovenia's leading association for sustainable business, bringing together more than 100 companies and numerous experts from various sectors.

Since 2012, it has acted as an advocate of the sustainable economy, bringing together stakeholders and accelerating the sustainability transition. It is founded on expertise, collaboration, open dialogue and trust.

Through a range of activities, CER encourages companies to adopt sustainable business practices and supports their sustainability transformation. It develops own projects, participates in EU programmes and awareness campaigns and has received multiple awards.

It advocates for an ambitious and responsible approach to sustainable business and addressing the climate crisis. CER operates as an information hub, an advocate for business in strategic debates, and a coordinator within national and international networks. CER's activities are based on four pillars: sustainable business, cross-sector collaboration, innovation and stewardship.

By joining CER, companies gain access to a community that fosters a mindset shift and responsible, long-term oriented business based on collaboration, knowledge sharing and strategic partnering.

➤ www.cer-slo.si



Green Star



Green Star is a tool and certification developed by CER for a comprehensive assessment of companies' sustainability performance. It is based on the analysis of more than 150 indicators across environmental, social and governance (ESG) dimensions. It provides insight into a company's sustainability maturity, highlights strengths and opportunities for improvement and enables comparisons between companies. Based on the results, companies receive a report and recommendations for further action, while the certificate serves as evidence of commitment to sustainable development. It encourages companies to underpin their sustainability decisions with facts and data.

For Green Star, CER received the 2023 Energy Award from the Finance newspaper for the best promotional project and became the national winner of the European Commission's European Enterprise Promotion Award in the "Supporting the sustainable transition" category.

➤ www.green-star.si

Recommendations for companies to operate more sustainably



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