

# Designing Products for Circularity

## GHG emissions category

Scope 3, Category 1: Purchased goods and services

Scope 3, Category 11: Use of sold products

Scope 3, Category 12: End-of-life treatment of sold products

## Introduction

In the face of climate change and environmental degradation, businesses must transition to sustainable practices. A circular economy offers a promising solution, focusing on reducing emissions and minimizing negative impacts on nature by rethinking material use throughout the value chain. This guide, based on the principles outlined in the [Circular Action Guide](#), aims to provide material-intense small and medium-sized enterprises (SMEs) with practical steps to embrace circularity, contributing to global sustainability goals and enhancing long-term profitability.

## Measure and Understand

Looking at the following aspects of your product, you can begin to identify key “hotspots” that contribute most to your environmental impact and develop targeted strategies to reduce emissions and resource use.

- **Raw Materials:** Identify the types and sources of materials used in your products. Are there opportunities to use recycled or more sustainable alternatives?
- **Energy Use:** Track the energy consumed during production, in your supply chain and the use phase of your production, if applicable.
- **Waste:** Examine your production process for waste generation. Are there opportunities for materials to be reused or repurposed to minimize waste?
- **Product Longevity:** Consider how you can extend the lifespan of your products. This could involve designing products that are more durable or easier to repair.

If you have the capacity and budget, conducting a [Life Cycle Assessment](#) (LCA) can provide more detailed insights, helping you identify and prioritize the most impactful areas for improvement. However, these are simpler steps that can still provide valuable insights into the environmental impact of your products without the need for a full LCA.

## Key Actions

**Utilize a circular design checklist to assess both existing and new products**, ensuring they adhere to circular economy principles. This will help identify necessary steps for improvement.

### Examples of circular design checklist:

#### 1. Material utilization & footprint:

- Are materials utilization minimized? Is it possible to switch to more sustainable materials, e.g. recycled, recyclable, renewable, not hazardous, and not scarce?
- Are mixed materials easily separable for disassembly and recycling?

- Is it possible to reduce the number of packages and the amount of packaging material?
- Is the product's physical footprint (size, weight, delivery) minimized?

#### 2. Durability & adaptability to circular business models:

- Are materials and construction designed for maximum lifespan and multiple use cycles?
- Will the product age with beauty (aesthetic and cultural durability)?
- Can components be easily replaced, repaired and upgraded to extend product life?
- Is it possible to remanufacture the product or its components?

#### 3. End-of-product-life & material re-use:

- Is the product designed for disassembly and material recovery?
- Can materials be recirculated to be used in other products? If so, does the process require custom solutions and/or manual labor or are there market solutions in place to do so at scale?

#### 4. System-level impacts:

- Will the product help the customer to reduce their material footprint?
- How can the product minimize energy consumption throughout its life?
- Will the product drive the shift to sustainable usage and lifestyles?

Once areas for improvement are identified, you can refine your product designs and processes. Multiple sources offer expanded checklists, and you may also explore sector-specific guidelines to suit your business needs.<sup>1</sup>

### Engage your value chain

To fulfill the circular requirement, it would also require collaboration with the stakeholders along the value chain. Collaboration fosters knowledge sharing, fuels innovation, mitigates risk and promotes a shared responsibility for sustainability.

Make sure to:

- Partner with your suppliers to set clear expectations for responsible sourcing and collaboration in achieving circular goals.
- Collaborate with customers and clients to encourage improvement in product and service design, responsible product use, recycling, return, and the shift to circular business models.
- Engage with industry associations, NGOs and governmental agencies to share best practices and advocate for regulatory support.

### Conclusion

Transitioning to a circular economy is not just about compliance or risk management—it's an opportunity for SMEs to lead in innovation, improve resilience, and achieve long-term profitability. By following these action steps, companies can significantly reduce their environmental impact and contribute to a more sustainable future. The path to circularity involves continuous improvement and commitment from all levels of the organization, but the benefits for both business and the planet are immense.

<sup>1</sup> Examples of design checklists: [The circular design guide](#), [Nußholz, Julia L.K.](#), [World Green Building Council](#), [Ecochain](#), [European Union](#) (page 47), and [AFVALorisatie](#).

## More resources

- [Future adaptive design for a circular economy](#) offers design guidelines for extended product life, through robustness, flexibility and upgradeability
- [Product-as-a-Service](#) is a digital toolkit that offers a tangible opportunity for companies to reduce dependence on new resources and achieve their sustainability goals.
- [Circle Economy, The Value Hill](#) is a categorisation of circular strategies based on the life cycle phases of a product: pre-, in- and post-use. This allows businesses to position themselves on the Value Hill and understand possible circular strategies they can implement as well as identify missing partners in their circular network.
- [The Business Model Design Guide](#) offers useful workshop templates to help business teams jointly identify circular opportunities and find ways to explore circular business models.

For further detailed information, practical steps and more circular resources, please refer to the original [Circular Action Guide](#).