
Certified Specialist Programme in Circular Economy Best Practices

Designing for Circularity

Designing for Circularity is a crucial aspect of the Circular Economy, which aims to create a closed-loop system where resources are kept in use for as long as possible, and the maximum value is extracted from them while minimizing waste and negative environmental impacts. The following terms and vocabulary are essential to understanding the concepts and practices of Designing for Circularity in the Certified Specialist Programme in Circular Economy Best Practices:

1. **Circular Economy:** A systemic approach to economic development that is regenerative and restorative by design, aiming to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles.
2. **Linear Economy:** A traditional economic model that is based on a "take, make, use, dispose" approach, which leads to waste, pollution, and resource depletion.
3. **Circular Design:** A design approach that considers the entire lifecycle of a product or service, including its production, use, and end-of-life, with the aim of minimizing waste, maximizing resource efficiency, and creating positive social and environmental impacts.
4. **Product-as-a-Service (PaaS):** A business model where a company retains ownership of a product and provides it as a service to customers, who pay for its use over time, incentivizing the company to design for durability, reusability, and recyclability.
5. **Cradle-to-Cradle Design:** A design approach that considers the entire lifecycle of a product, from its raw materials to its end-of-life, with the aim of creating products that can be fully recycled or upcycled into new products.
6. **Biological Cycle:** A circular system where organic materials are designed to safely return to the biosphere, providing nutrients for living systems.
7. **Technical Cycle:** A circular system where non-organic materials are designed to be reused, remanufactured, or recycled into new products, without losing their quality or value.
8. **Design for Disassembly:** A design approach that considers how a product can be easily disassembled, sorted, and processed for recycling or reuse, reducing waste and minimizing the use of virgin materials.
9. **Design for Longevity:** A design approach that considers how to extend the useful life of a product, through modularity, upgradability, and repairability, reducing waste and minimizing the need for new products.
10. **Design for Reuse:** A design approach that considers how a product can be reused, either in its original form or as a component of another product, reducing waste and minimizing the use of virgin materials.
11. **Design for Recycling:** A design approach that considers how a product can be easily recycled, either mechanically or chemically, reducing waste and minimizing the use of virgin materials.
12. **Design for Remanufacturing:** A design approach that considers how a product can be remanufactured, restoring it to its original performance and specifications, reducing waste and minimizing the use of virgin materials.
13. **Design for Upcycling:** A design approach that considers how a product can be upcycled, creating a

product of higher value than the original, reducing waste and minimizing the use of virgin materials.

14. Circular Feedstock: Raw materials that have been recovered from waste streams, such as recycled plastics, metals, or textiles, and can be used to manufacture new products.

15. Circular Procurement: A procurement approach that considers the entire lifecycle of a product or service, with the aim of supporting circular economy principles and practices.

16. Circular Supply Chain: A supply chain approach that considers the entire lifecycle of a product or service, with the aim of creating closed-loop systems, reducing waste, and maximizing resource efficiency.

17. Circular Business Model: A business model that creates value by designing for circularity, using product-as-a-service, sharing platforms, or other circular strategies, and capturing the value of resources over their entire lifecycle.

18. Circular City: A city that designs for circularity, using circular economy principles and practices to create sustainable, resilient, and livable urban environments.

19. Circular Regional Development: A regional development approach that considers the entire lifecycle of resources, products, and services, with the aim of creating circular systems, reducing waste, and maximizing resource efficiency.

20. Circular Innovation: The development of new products, services, or processes that support circular economy principles and practices, creating positive social, environmental, and economic impacts.

Challenges and Opportunities:

Designing for Circularity presents both challenges and opportunities for businesses, governments, and society as a whole. Some of the challenges include:

- * Changing established practices and mindsets, requiring significant cultural and behavioral shifts.
- * Developing new partnerships and collaborations, both within and across sectors, to create circular systems.
- * Investing in new technologies and infrastructure, such as recycling facilities or circular supply chains.
- * Designing for circularity can also present opportunities, such as:
 - * Creating new business models and revenue streams, such as product-as-a-service or sharing platforms.
 - * Improving resource efficiency and reducing costs, such as energy, water, or materials.
 - * Enhancing brand reputation and customer loyalty, by demonstrating a commitment to sustainability and circular economy principles.
 - * Creating new jobs and skills, such as circular economy consultants, designers, or procurement specialists.

Examples:

Some examples of companies that have successfully designed for circularity include:

- * Patagonia: A clothing company that has designed its products for durability, repairability, and recyclability, and offers a repair service for its customers.
- * Philips: A technology company that has developed a circular lighting system, where customers pay for the use of light, rather than the purchase of lighting fixtures, and Philips retains ownership and responsibility for maintenance, recycling, and upgrading.
- * Renault: A car manufacturer that has developed a remanufacturing program, where customers can return

their old cars, which are then disassembled, and the components are remanufactured and sold as spare parts.

Conclusion:

Designing for Circularity is a critical aspect of the Circular Economy, which aims to create a closed-loop system where resources are kept in use for as long as possible, and the maximum value is extracted from them while minimizing waste and negative environmental impacts. By understanding the key terms and vocabulary of Designing for Circularity, businesses, governments, and society can create circular systems, reduce waste, and maximize resource efficiency, creating positive social, environmental, and economic impacts. While there are challenges to designing for circularity, there are also opportunities to create new business models, revenue streams, and jobs, while improving resource efficiency and reducing costs.