



The Circular Construction Guide

Why and how your company should embrace circularity

Introduction

Construction is the world's largest industry, consuming around one-third of all raw materials and generating a similar proportion of waste. It also accounts for up to 35-40% of all global greenhouse gas emissions. Looking at the entire global economy, less than 10% of all resources are being reused, and in 2022, the share of circular inputs – materials that are reused, recycled, or regenerated to minimize waste and environmental impact – dropped from 9.1% to 7.2%.¹

What can the construction industry do to help?

By adopting business strategies that integrate sustainability factors alongside economic ones, you can not only minimize environmental impact, but also help ensure the long-term success of your company. A good place to start is by embracing circular economy principles.

1/3

of all raw materials are used by the construction industry

35-40%

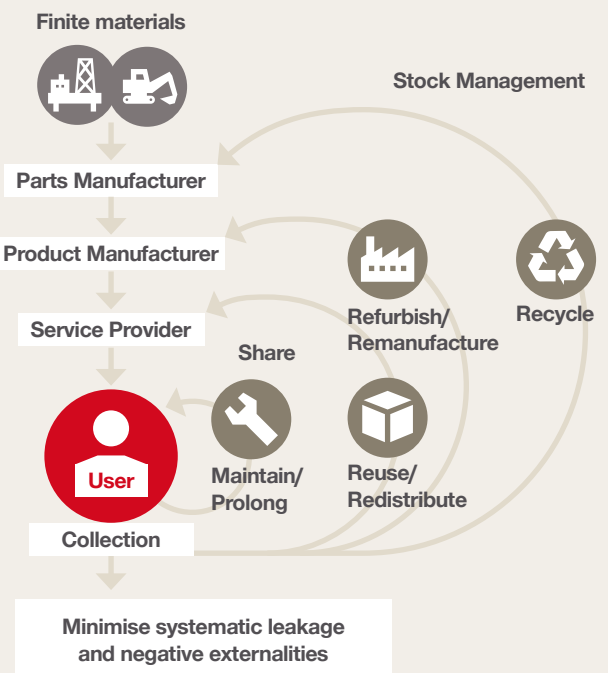
of all global greenhouse gases can be attributed to the construction industry

1/3

of all global waste is produced by the construction industry

Circular vs. Linear Economy

The traditional linear economy model involves extracting raw materials, manufacturing products, and disposing of them at the end of their life cycle, often into landfills and after very little use. A circular economy, on the other hand, is all about designing out waste and pollution to keep resources in use for as long as possible. This means reducing our reliance on raw materials, reusing and recycling spent products – and even reimagining waste as a valuable resource.





Five Ways to Embrace Circularity

1/ Use Resources More Efficiently

Adopting resource-efficient construction strategies helps reduce waste and optimize building performance. For example, BIM (Building Information Modeling) allows architects, engineers, and construction professionals to identify opportunities during the design process to reduce material waste during construction.

Another approach is Equipment as a Service (EaaS), a service model that lets companies access equipment, tools, or other resources on a usage basis. This can minimize waste by reducing the need for new purchases and disposals. EaaS providers are typically responsible for maintaining and repairing equipment, helping to ensure it's always in good working order while maximizing its value over its lifetime.

2/ Extend Product Life

Though a closed-loop system of reuse and recycling is the ultimate goal of the circular economy, extending product lifetimes can help minimize waste. The concept of lifetime extension involves designing durable, repairable, and recy-

clable products. This helps keep products in use for as long as possible, reducing the need for new production and minimizing the environmental impact.

The benefits of a circular economy extend beyond the ecological – they can bring economic gains too. For example, a construction company could recycle concrete from demolition sites and use it to make new concrete, which would not only reduce waste but also save money on disposal costs.

3/ Design for Disassembly

One key principle of the circular economy is designing products and materials with their end of life in mind. In construction, this could mean designing buildings, products and tools that can be easily dismantled and the materials reused or recycled. This is known as “designing for disassembly.”

One example is designing a building using modular components – such as mechanical, electrical and pipe support systems – that can be disassembled and reused in other buildings. This would help reduce the amount of waste generated during the construction process, save money on disposal costs, and potentially generate additional revenue from the sale of the reused or recycled materials.

However, there are challenges to implementing circular design in construction. Construction projects often have long timelines, which means that the ownership of a building or tool may change multiple times over the course of its life. This can make it difficult to ensure that the disassembled building materials are reused or recycled. In addition, a building designed for disassembly may not be economically viable for a new owner who may not have the same focus on sustain-

ability or may not be willing to invest in the necessary disassembly and recycling infrastructure.

4/ Reuse Materials

Salvaging materials from demolition sites, using reclaimed wood or other materials in new construction, and refurbishing existing buildings and tools can help save money on purchasing new materials, reduce waste, and minimize environmental impact.

5/ Recycle Materials

Recycling is an important component of the circular economy. By recycling materials at the end of their life cycle, construction companies can reduce waste and conserve natural resources. Recycling can include everything from concrete, asphalt, scrap metal, and plastic to tools, consumables, and packaging. Purchasers can also contribute by seeking out suppliers who prioritize recycled materials in their products.

How Can You Participate in a Circular Economy?

To implement circular economy principles in your company, you can follow the seven steps of the Circular Navigator, as outlined by the University of St. Gallen's Institute of Management and Strategy.³

Impulse: Explore why your company should adopt circular economy principles, such as to attract customers and talent or gain a competitive advantage.

Identify: Analyze your current situation to identify areas where circular principles can be implemented.

Ideate: Look beyond existing solutions

to find new ways to reduce resource consumption and waste production.

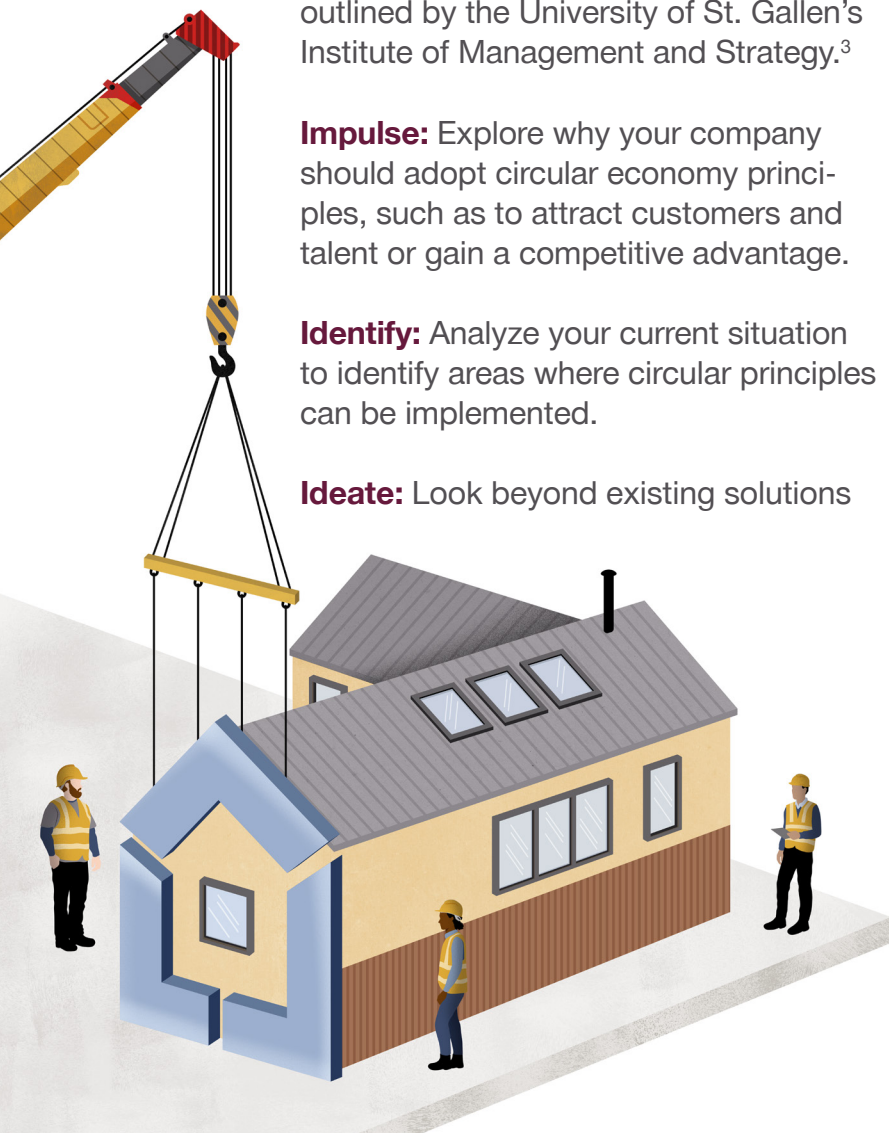
Integrate: Design your own consistent ecosystem to ensure that circular principles are integrated into every aspect of your company.

Imagine: Express your vision for a circular future while also identifying potential risks and challenges.

Incorporate: Incorporate the circular business model into your company's culture, policies, procedures, and operations.

Implement: Execute the steps outlined in the previous stages, such as recycling materials and optimizing resource consumption.


By following the seven steps outlined in the circular navigator, you can identify areas where circular principles can be implemented and realize the benefits of a closed-loop system. Once you take action, you could save money on disposal costs, reduce your carbon footprint, and create new business opportunities by attracting environmentally conscious customers and talent.




Need Help Reaching Your Circularity Goals?


Partnering with companies like Hilti can help you reduce your environmental footprint.


Hilti offers:


 **Fleet Management, a form of Equipment as a Service (EaaS)**, that allows you to choose from a wide selection of tools, access tools on demand for short-term use, and get help tracking, repairing and replacing tools, all at a fixed cost.

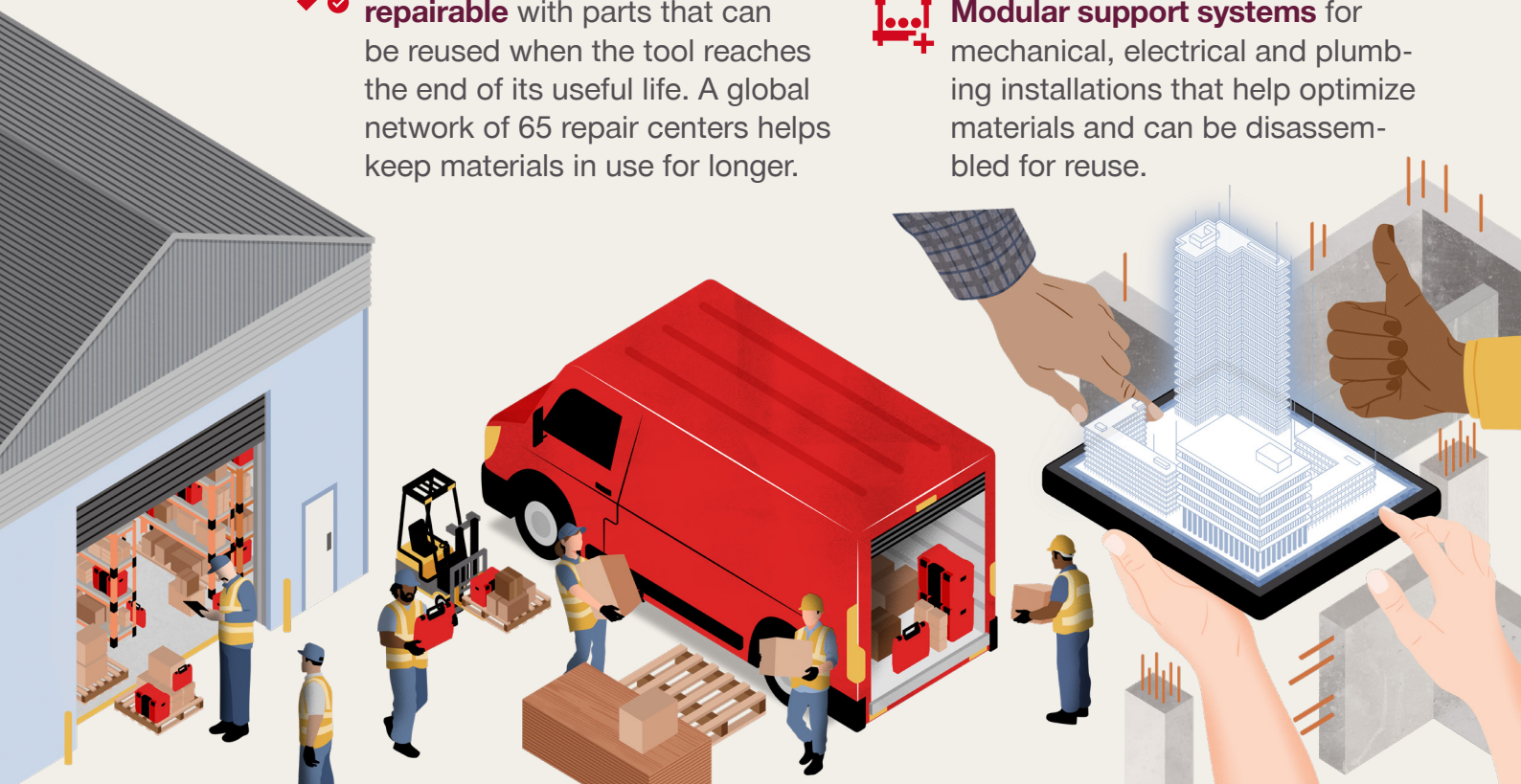
 **Tools designed to be repairable** with parts that can be reused when the tool reaches the end of its useful life. A global network of 65 repair centers helps keep materials in use for longer.

 **Optimized packaging that uses more sustainable materials** such as paper and cardboard and tool-boxes made of up to 50% recycled content.

 **Sustainability reports** that provide transparency on your circularity performance to help you identify areas where you can improve.

 **BIM solutions that help designers optimize resources** and generate maximum value from a minimum use of raw materials.

 **Modular support systems** for mechanical, electrical and plumbing installations that help optimize materials and can be disassembled for reuse.



Find out how Hilti can help you reach your sustainability goals by visiting www.hilti.ca/circularity

Sources

1. **Deloitte Circularity Gap Report**: <https://www.circularity-gap.world/>
2. **Circular Economy Diagram**: <https://ellenmacarthurfoundation.org/circular-economy-diagram>
3. **"Circular Ecosystems: Business Model Innovation for the Circular Economy"**: <https://www.alexandria.unisg.ch/259076/>
4. **"It's Time for Construction to Embrace the Circular Economy"**: <https://www.rolandberger.com/en/Insights/Publications/lt%E2%80%99s-time-for-construction-to-embrace-the-circular-economy.html>
5. **"Closing the Loop on the Circular Economy"**: <https://www.rolandberger.com/en/Insights/Publications/Closing-the-loop-on-the-circular-economy.html>
6. **"Sustainability and the Emerging Circular Economy"**: <https://www.rolandberger.com/en/Insights/Publications/Sustainability-and-the-emerging-circular-economy.html>