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CIRCULAR DEMOLITION

A PROMISING START
FOR SUSTAINABLE
CONSTRUCTION



CIRCULAR DEMOLITION AS A STARTING POINT FOR SUSTAINABLE CONSTRUCTION

Circular construction begins at the end of a building's life. Whereas traditional demolition focuses on speed, circular demolition prioritises value. This approach aims to preserve and reuse materials, reduce waste streams and make environmental gains transparent.

This knowledge document explains what circular demolition entails, why it is essential for a sustainable construction sector, and what the step-by-step process looks like.





WHAT IS CIRCULAR DEMOLITION?

Circular demolition is a systematic method of dismantling in which components, materials and raw resources are recovered for reuse or high-quality recycling.

This is the opposite of conventional demolition, where many materials end up as waste. The construction sector is responsible for a large share of the waste volume in the Netherlands, with concrete, brick, wood and metal as dominant residual streams. Reusing these materials contributes to CO₂ reduction, lower environmental impact and often financial benefits as well.



THE 10-R MODEL

The 10-R model is the most commonly used classification for circular strategies, ranked from highest to lowest circularity.

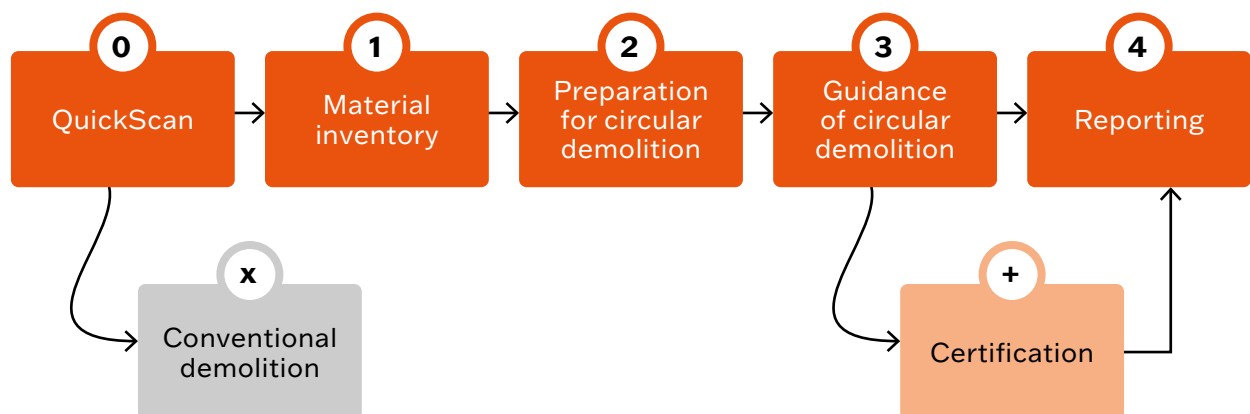
- **Refuse** – avoiding the use of raw materials
- **Rethink** – reconsidering functions or designs
- **Reduce** – reducing material use
- **Reuse** – direct reuse of products or components
- **Repair** – repairing defective parts
- **Refurbish** – refurbishing and modernising
- **Remanufacture** – remanufacturing components
- **Repurpose** – assigning a new function
- **Recycle** – returning material to raw form
- **Recover** – recovering energy from residual streams

The higher a material or measure scores on this ladder, the greater the circular impact.

FROM INVENTORY TO REPORTING

A circular demolition trajectory begins with an exploration of the potential. A QuickScan provides insight into which materials may be suitable for reuse. This scan forms the starting point for a broader process.

If sufficient opportunities are identified, a comprehensive material inventory follows. This involves identifying material types, quantities, fastening techniques, the condition of the materials and potential applications. Based on this, a report is produced which also includes a CO₂ impact analysis if desired.





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CO₂ SAVINGS THROUGH REUSE

Research shows that reuse of concrete elements can yield up to 80 percent CO₂ savings compared to new production. For brick this is approximately 95 percent, and for wood an average of 60 percent.

With this insight, the project is prepared. This includes establishing clear requirements regarding circularity, safety, environmental management and technical considerations. This information helps demolition contractors create realistic, feasible and circular plans. During execution, the demolition process is actively supervised and monitored. Because demolition is never entirely predictable, this guidance is crucial to maximise opportunities and properly document deviations. Finally, the trajectory concludes with a report presenting the results – such as CO₂ reduction, reuse, waste reduction and lessons learned.

Those seeking verifiability can have the trajectory certified by an independent party. This meets the requirements for the SVMS quality mark “Circular Demolition Project”.

WHAT IS CONCRETE TRANSPLANTATION?

Concrete transplantation is the reuse of complete concrete building elements – such as stairs, floors or façade panels – without crushing them first. This saves energy, CO₂ and costs. The condition is that the elements are carefully harvested, documented and reapplied in a suitable design.

OPPORTUNITIES IN MATERIAL STREAMS

Circular demolition offers a wide range of opportunities for material reuse. Brick is the second largest material stream in the Netherlands after concrete. In collaboration with specialised partners, these bricks can be recovered, tested and – if suitable – reused. Bricks that are not suitable for direct reuse are processed into brick slips or used as substrate for green roofs.

Wood is also a valuable stream. Depending on quality and fastening, it can be turned into new beams, frames or sheet materials. In some projects, direct reuse is applied, such as transforming window frames. Part of this work is carried out by social workplaces, adding a social dimension to circularity.

Concrete is the largest material stream in construction and a major source of CO₂ emissions. By transplanting concrete elements such as hollow-core slabs, stairs or façade elements, significant environmental gains can be achieved. This requires precision in dismantling and collaboration with specialised partners.

Metal elements such as handrails or fencing are relatively easy to reuse. For structural steel this is more complex, but steps are being taken in certification and application.

Even roof tiles can return to the construction process. By testing and recertifying them individually, they can be given a second life – in the same project or elsewhere. Non-reusable tiles are processed into applications that contribute to biodiversity, such as eco-cassettes or as substrate for sedum roofs.

FACT: WHY CIRCULAR DEMOLITION PAYS OFF

In an average demolition project of an apartment complex (approx. 3,000 m² GFA), circular demolition results in an average of 60 tonnes less CO₂ emissions and allows up to 40 percent of materials to be reused.

CONCLUSION

Circular demolition is not only a sustainable choice but also a strategic one. It makes material flows transparent, reveals opportunities for reuse and helps organisations comply with regulations and sustainability goals. By dismantling carefully instead of destroying, value is created: in material, in data and in impact.

WANT TO KNOW WHICH CIRCULAR OPPORTUNITIES EXIST IN YOUR PROJECT?

Visit our information centre or download the complete step-by-step plan.



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