

Cost-effective reuse of doors: from circular ambition to viable business case

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Circularity is high on the construction sector's agenda. Materials that used to be regarded as waste are increasingly being given a new lease of life. In practice, however, reuse often comes up against economic barriers. A clear example is the reuse of interior doors. Technically, many doors are still perfectly serviceable, but from an economic point of view, reusing them is not always worthwhile. The key question, therefore, is: when does reusing doors become cost-effective, and what decisions do you need to make to achieve this?

To answer these questions, **Sirris**, **Buildwise** and the joinery firm **Kulapro** got together as part of the **Digital Door Twin project**.

Want to understand the environmental impact of door reuse first? **Read the first article**, where we explore the data and ecological impact in detail.

What is the Digital Door Twin project?

The Digital Door Twin project's starting-point was an observation that many construction professionals will recognise: during renovation or demolition, doors that are technically capable of being reused often end up being thrown away. What is lacking is **reliable information available at the right time** to the right people to decide whether reuse makes sense.

The project was aimed at taking steps to change this through a **digital** approach in which doors:

- Are systematically **inventoried and recorded**
- Can be **sold or reused** more easily through a digital marketplace

Why the cost-effective reuse of doors is more complex than it seems

At first glance, wooden doors seem ideal for reuse. They are robust, often of high quality and designed to last. However, the reality is complex due to differences in dimensions and finishes, as well as varying and **changing standards** (acoustic, fire and safety) and uncertainty regarding **residual value** and **market demand**.

Without clear information, it is difficult to decide in advance which doors are worth considering. As a result, reuse often happens too late, or doors are taken away without being sorted.

Significant costs include:

- **Selective dismantling and transport**, which are more meticulous and therefore more expensive than conventional demolition
- **Inspection and sorting** to accurately assess reusability and value
- **Modification or refurbishment** to ensure the door meets new requirements
- **Logistics and storage**, which can quickly become costly without careful planning

The Digital Door Twin project identifies these challenges in concrete terms based on real-world data from the pilot phase, with the aim of supporting businesses in their decision-making.

Which doors are suitable for reuse?

Not every door has the same reuse value. The analysis carried out as part of the project reveals a clear distinction between door types.

Standard interior doors

Standard interior doors without any specific performance characteristics generally have a low market value. Due to the limited functional properties, reuse is often not cost-effective in this context, even if only basic processing is required for reuse.

Soundproof and fire-resistant doors

The greatest potential lies in doors with enhanced functional performance, such as:

- Soundproof doors
- Fire-resistant doors

These doors are more expensive when new; they must meet strict standards and therefore retain their value better. Reuse could become economically viable more quickly in this context, provided that performance levels remain demonstrably high. The greater the functionality, the greater the potential for reuse. In some scenarios, changes to regulations can have a negative impact.

When does reusing doors become cost-effective?

A key insight from the Digital Door Twin project is the **determination of a break-even point**. The analysis shows that reusing doors **worth less than €300** is difficult to make profitable in most cases. In this context, the costs of inspection, processing and logistics generally outweigh the potential returns.

Once you cross that threshold, the picture changes. The door's higher intrinsic value makes it possible to:

- Make a targeted investment in **refurbishment**
- Spread logistics costs better
- Organise reuse professionally through a **digital platform**

Relamination appears to be worthwhile only in **exceptional cases**, and only when the functional value remains sufficiently high.

The resale value of **acoustic and fire-resistant doors** increases more rapidly, making these types more economically viable.

Organisation and digital support as a lever

Cost-effective reuse is **never a solo endeavour**. It requires a well-coordinated supply chain, with a clear flow of goods from end of use to reinstallation.

The project distinguishes between the following roles, among others:

- The building owner, who decides in good time which doors have reached the end of their service life
- The dismantling partner, who determines which doors are eligible
- The refurbisher, who carries out technical and cosmetic modifications to doors and reinstalls them
- The digital platform, which centralises data and matches supply and demand
- The customer, who makes decisions based on reliable information

Without this structure, reuse remains fragmented and difficult to scale up.

Digital tools make reuse manageable

An important finding from the project is that **digitalisation** is a key prerequisite for making reuse cost-effective. By digitally recording doors including information on their condition, dimensions and technical specifications companies can make quicker decisions about reuse, assess risks more

accurately and set appropriate prices.

In this way, reuse shifts from a retrospective assessment to a **well-founded decision made in advance**. This is necessary to move reuse beyond a niche and embed it systematically in construction projects, and to evolve from a circular intention to an **economically viable business case**.

This approach enables sellers and fitters of interior doors to offer a mix of reused and new doors within a single customer order. This may also further normalise the demand for reusable doors.

What does this mean in concrete terms for your organisation?

For contractors, joiners and building owners looking to embrace circular construction, the Digital Door Twin project offers clear lessons:

- The **cost of reusing a door lies not just in the door itself**, but in everything that goes with it
- **Inspection and quality control** early in the process are essential for ensuring that reuse is organised responsibly
- **Logistics and storage** play a major role in determining whether reuse remains cost-effective
- **Administration and sales** require time and follow-up, especially without standardisation
- **Digital support** is needed to keep these costs under control and achieve economies of scale
- **Combining reused doors and new doors** in a single order optimises cost-effectiveness

Next step: the environmental impact of reuse

Cost-effectiveness is only one side of the coin. The other is the **environmental benefit**. How much CO? and raw materials does reuse actually save? And what does the data tell us about the environmental impact of recycled doors?

Also read: the environmental impact of reusing doors: where are the real benefits and how significant Is the impact?

What about the loose ends in this story?

There are signs of viable revenue models, but not all challenges have been fully resolved yet. There are certainly some possible solutions. So where exactly is the problem?

The logistics involved in post-first-use collection, decentralised storage and transport to the local joiner for preparation for reuse still need to be optimised. These are challenges that no single party can resolve on its own. A collective approach is the way forward here.

That is precisely the aim of the “Renting, Sharing and Repairing Living Lab” (in Dutch: Living Lab Huren, Delen en Herstellen), in which we are working together to tackle the logistical challenges inherent in these activities. The organisation of outbound and return logistics can be improved by combining shipments and getting multiple parties to collaborate. This gives the coordination a collective character.

For more information, see: link to the Wijdelen page

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