



FROM WASTE TO WORTH

How upcycling is
transforming materials across industries

creating better environments

Forbo
FLOORING SYSTEMS

EXECUTIVE SUMMARY

Across industries, a fundamental shift is taking place in how materials are sourced, valued, and used. What was once considered waste is increasingly being recognized as a valuable resource. Agricultural by-products, industrial residues, construction waste, and discarded consumer materials are finding new applications in products that combine environmental benefits with commercial value.

This transition is driven by multiple factors: the need to reduce pressure on natural resources, growing demand for circular products, and advances in material science that enable manufacturers to incorporate recovered materials without compromising quality or performance.

The result is a new generation of products that not only reduce waste but also tell meaningful stories about origin, craftsmanship, and responsible production. From building materials and furniture to fashion and consumer goods, upcycling is becoming an important strategy in the transition towards a circular economy.



THE END OF THE LINEAR MATERIAL MODEL

For much of the industrial era, production followed a linear path: TAKE-MAKE-USE-WASTE. Materials were selected primarily for performance, availability, and cost, while waste was considered an unavoidable by-product of economic activity.

Today, this model is increasingly under scrutiny. Global resource consumption continues to rise while governments, businesses, and consumers seek solutions that reduce environmental impact.

At the same time, companies are discovering that many waste streams contain untapped value. Agricultural residues, manufacturing

offcuts, recycled textiles, and post-consumer materials can often be recaptured and transformed into new products with distinctive characteristics and compelling narratives.

This shift represents more than an environmental improvement. It reflects a broader change in mindset: from managing waste to designing value.





UPCYCLING IN THE BUILDING INDUSTRY

The building sector has become one of the most active areas for material innovation. Faced with the challenge of reducing its carbon footprint and resource consumption, manufacturers are exploring ways to integrate recovered and renewable materials into construction products.

Around the world, examples are rapidly emerging:

Building panels from agricultural residues

Agricultural by-products such as straw, hemp fibres, rice husks, sunflower shells, and wheat chaff are increasingly being used in insulation materials, acoustic panels, and composite boards. Materials that once had little economic value are now contributing to high-performance building products.

Recycled mineral and construction waste

Glass waste, concrete rubble, and industrial mineral residues are finding their way into new construction materials. Recycled aggregates, terrazzo surfaces, and architectural finishes demonstrate how waste streams can replace virgin raw materials while maintaining durability and aesthetic quality.





Wood-based circular materials

The timber industry has embraced the use of sawdust, wood chips, and reclaimed timber. Engineered wood products make use of material streams that would previously have been discarded, creating products with lower environmental impact and efficient resource utilization.



These developments illustrate a growing recognition that sustainability and material innovation can reinforce one another.

Recycled glass in architectural surfaces

Millions of tonnes of glass are discarded annually. Increasingly, recycled glass is being transformed into terrazzo, wall tiles, countertops, and façade elements. Rather than being downcycled, the glass often becomes a premium architectural finish with unique colours and textures.



Textile waste and denim insulation

Old jeans and post-consumer textiles are increasingly being converted into thermal and acoustic insulation products. The fibres that once formed clothing become part of the building envelope.



Reclaimed timber and urban mining

An increasingly important trend is “urban mining”: recovering wood, bricks, steel, and other materials from existing buildings and incorporating them into new projects. Rather than demolishing and discarding, materials are harvested and given a second life.



FURNITURE DESIGN: GIVING RESIDUES A SECOND LIFE

The furniture sector has become a testing ground for creative approaches to material circularity.

Designers and manufacturers are transforming coffee grounds, cork waste, textile offcuts, agricultural fibres, and reclaimed wood into tables, seating, panels, and decorative surfaces. Rather than hiding the origin of these materials, many brands actively celebrate it.

The resulting products often possess unique visual textures and natural variations that cannot be replicated using conventional materials. What was once considered a limitation becomes a design feature. This approach reflects a growing appreciation for authenticity. Consumers increasingly value products that have a traceable story and a visible connection to their origins.

FASHION AND CONSUMER PRODUCTS

The fashion industry has also demonstrated how waste materials can be elevated into products with both environmental and commercial value.

Recycled cotton fibres, textile remnants, ocean-bound plastics, and agricultural residues are increasingly incorporated into clothing, footwear, and accessories. In many cases, these materials help reduce reliance on virgin resources while creating new economic opportunities within local supply chains.

Importantly, the most successful initiatives often connect environmental benefits with social impact. Material innovation becomes part of a wider story about livelihoods, communities, and responsible sourcing.

This combination of environmental and social value resonates strongly with consumers seeking products that align with their values.



THE IMPORTANCE OF PLACE AND PROVENANCE

One of the most powerful aspects of upcycled materials is their ability to create a connection between product and place. Unlike anonymous raw materials traded globally, many upcycled materials retain a visible link to their origin. Agricultural residues reflect local landscapes and traditions. Recovered materials tell stories about industries, communities, and production processes.

As a result, products made from upcycled materials often communicate more than functionality. They carry a narrative that connects people to the resources and communities behind them.

In a world increasingly focused on transparency, provenance has become an important component of product value.





CREATING VALUE BEYOND WASTE REDUCTION

The benefits of upcycling extend beyond diverting waste from landfill.

Successful upcycling initiatives can:

- Reduce dependence on virgin raw materials.
- Lower environmental impact across the value chain.
- Create additional revenue streams from existing resources.
- Support local economies and supply chains.

- Differentiate products through unique material stories.
- Increase awareness of circular economy principles among consumers.

The most effective examples demonstrate that environmental responsibility and commercial value are not opposing objectives. Instead, they can reinforce one another.



MARMOLEUM COCOA: A CIRCULAR STORY IN PRACTICE

The principles described throughout this paper are increasingly visible across the flooring industry. One notable and impactful success story is Marmoleum Cocoa, which incorporates cocoa bean shells, a by-product of cocoa processing, into the material composition of the bio-based floor. This is an example of the so called “industrial symbiosis”, when one company’s waste become another company’s resource, keeping material at their highest value.

The cocoa shells introduce a distinctive natural appearance while repurposing a resource that would otherwise become waste into an upcycled material that serves a new purpose, to create a beautiful design. More importantly, they connect the product

to a broader story of agriculture, resource efficiency, and responsible material use. The connection becomes even more meaningful when viewed through the lens of origin.

By transforming a residual material from this value chain into a design element within a high-quality flooring product, Marmoleum Cocoa demonstrates how circular thinking can create value across industries, geographies, and communities.

In doing so, it reflects a wider movement taking place across the building sector and beyond: a transition from viewing waste as a problem to recognizing it as the starting point for innovation.

Find us on



Forbo Flooring Systems

P.O. Box 13

1560 AA Krommenie

The Netherlands

Tel.: +31 75 647 74 77

E-mail: question@forbo.com

creating better environments



FLOORING SYSTEMS