

CLOSING THE LOOP: A FRAMEWORK FOR TRANSITIONING TO A CIRCULAR ECONOMY

Circular economy

What a Circular Economy means
for floorcovering





INTRODUCTION

CIRCULAR ECONOMY

FACT

Diminishing resources and a growing global population are causing us to reconsider our modus operandi.

Industry at large is being compelled to shift from the traditional, linear paradigm to a more sustainable, circular one: a model that relies less heavily on there being 'more where that came from'. Because there won't be...

By now, we are all too aware of the dangers of our throwaway consumerist society. Indeed, much good work has already been and is currently being done to, at best, minimise the impact. But what specifically can be done to make

the leap over from the 'dark side' to a more environmentally conscious model? How can the worlds close the loop and become intrinsically more circular, without sacrificing quality, performance and aesthetic?

This whitepaper aims to provide context to the circular economy, focussed on interior design and building sector, drawing on industry best practices to offer some solutions and highlight potential opportunities.



DEFINING CIRCULAR ECONOMY

FACT

There is no single definition for a circular economy.

Depending on whom you ask, perspectives and interpretations will vary. Reaching far beyond just recycling, the notion is rooted in alternative value creation: where in a linear economy, value is created, in a circular economy, value is retained. Compare it to the very biosphere we live in: it is a closed system that is largely self-regulating. The circular economy is, effectively, the man-made circle of life.

At its core:

‘A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.’¹

Some definitions of a circular economy emphasise raw materials usage, whilst others revolve around sustainable business and manufacturing models. However, if, according to the above definition, waste and pollution are to be designed out, the lifespan of products and materials extended and natural systems regenerated, we really cannot afford to focus on either one or the other – we need to look at all stages of the products life. From raw material extraction to production, business models and use phases to re-purposing after use.

That is to say, it is our duty to examine our current consumption and practices, explore alternative options and remain accountable for the choices we make, every step of the way.

¹ Ellen MacArthur Foundation, *What is the circular economy?*,

<https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>

Where to begin

In order to know the route we need to take to get to our desired destination – i.e. a circular model – we first need to map out where we are right now.

The lack of a clear-cut definition of circular economy poses the problem of how to quantify it. Life cycle analysis, or LCA, offers 'a systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product or service system throughout its life cycle.'² The LCA methodology offers organisations a standard for measuring their environmental performance and takes into account the following aspects: environmental impact of raw material acquisition, energy use and efficiency, content of materials and chemical substances, emissions to air, soil and water and waste generation. Once the current environmental performance has been established, the 'four R' principle offers a framework for improvement: ***reduce, reuse, recycle & renew***.

The Rs can be applied to any stage of a product's life cycle, and provide a tangible means of tracking sustainable performance.

Circular linoleum

To illustrate how the 4Rs can be applied at various levels within an organisation en route to designing a more circular product, we will examine the circular life cycle of Marmoleum: Forbo's sustainable linoleum product.

For the sake of clarity, we break down the various stages of a product's evolution, iden-

tifying potential opportunities for circular-economy wins. In reality, however, there is crossover and interconnectedness: a decision made at one stage can and will have an effect on later stages, and vice versa.

Design

Sustainable choices begin at concept and design. Besides the more obvious need for innovative product engineering and careful material choices, etc., this phase also includes bigger picture thinking – thinking around the product as well as about the sustainability of the product itself. This might mean considering where and how a product is used, and by whom. Are there any ancillary or interim processes or parties involved? Tradespeople are one example.

Before any type of flooring can be used, it needs to be fitted. The adhesive used to install flooring contributes to the environmental footprint per m². As well as developing new adhesives with less environmental impact, Forbo Flooring also offers products with a different installation method that does not use glue like Marmoleum Click. Not only does this reduce the use of chemical products, it also makes for clean post-consumer recycling further down the line.

² ISO 14040.2 Draft: Life Cycle Assessment - Principles and Guidelines, cited by The Global Development Research Center, *Defining lifecycle assessment*, <http://www.gdrc.org/uem/lca/lca-define.html>



Sourcing

The sourcing of raw materials for manufacturing products deserves important consideration. Where raw materials (as opposed to reused/recycled ones) must be used, the policy should be to source responsibly, from sources that are naturally (rapid) renewable and available in abundance, wherever possible.

Design, of course, also has a role to play. In Marmoleum, almost all of the materials used are natural raw materials. On average 62% of these natural materials are renewable and approximately one third of this is rapidly renewable on average, meaning that they have a harvest cycle of under 10 years, such as jute and flax.

One industry's waste can be a valuable resource to another. For example, wood flour – a by-product of the timber industry – is a key recycled ingredient in Marmoleum. And sourced from PEFC, responsible forestry only.

Manufacture

Manufacturing requires energy. And lots of it. Significant reductions in fossil fuel consumption and emissions can be achieved through putting policies in place that prioritise green and renewable energy sources, such as solar, wind and biogas alternatives.

Marmoleum is a cradle-to-gate CO₂ neutral product range without offsetting. This means that from the point of raw material extraction (cradle) to the point of the product leaving the factory gates (gate) and everything in between – raw material transportation, refining, processing and fabrication – it all takes place with zero carbon footprint. Achieving this status involves reaching out to and partnering with suppliers to reduce their footprint, too.

Ultimately, limiting environmental impact at source is far better than having to offset it later.

So reducing energy needed to fabricate should be the focus. Continually re-visiting and re-evaluating each stage in the process to identify opportunities for energy saving is one part of the puzzle when looking to move towards a fully circular cradle-to-cradle model.



Distribution

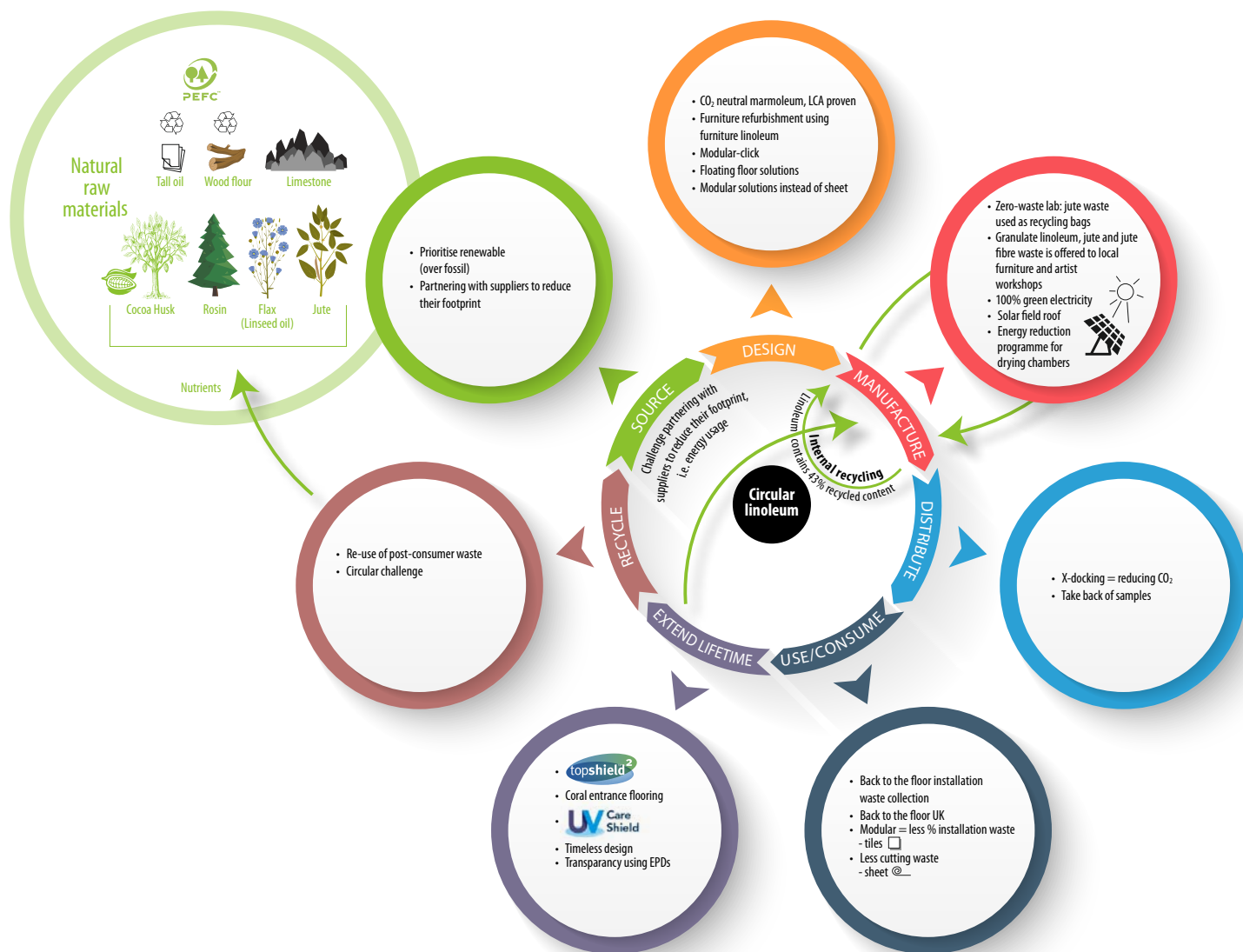
When people think that sustainable responsibility finishes once a product has been packed and purchased is not only faulty, but also short-sighted. A circular economy is the epitome of joined-up thinking. And that's exactly what's called for.

Cross-docking is a logical answer to reducing total traffic volumes and therefore, emissions and energy usage; not to mention dramatically increasing operational efficiency. Efficiencies can be achieved on transportation flows between plants, from plants to distribution centres and from there to the end customer, by combining volumes of various products to fill trucks and containers to capacity. A further benefit of this is that the customer has fewer deliveries to process.

Modes of transportation should also be called into question: is there a more efficient, environmentally friendly mode for getting the product from A to B?

Use, maintenance & repair

Transitioning away from a linear economy requires long-term thinking: leaving behind the take-make-dispose culture and moving towards greater appreciation and respectful treatment of items. In a time of climate crisis and depleting natural resources, phrases such as 'waste not want not' and 'mend and make do' are more pertinent than ever. Fortunately, thanks to today's technological achievements, environmentally-conscious needn't be synonymous with poor quality.



Marmoleum is engineered to last 20 years or more. Because the top layer of the flooring is repairable, strategic, periodical maintenance can maximise its lifespan. Maintenance products such as UV Care Shield represent a simple intervention for bringing less-than-new floors back to life. Likewise, the installation of a complementary purpose-made flooring system at the entrance to a building can prevent up to 94% of dirt and moisture from reaching the rest of the building, keeping the flooring better for longer and reducing the need for cleaning.

But functionality is only one side of the coin: when it comes to form, if we are to keep things for longer, timeless design must be the answer.

The most sustainable product is, by definition, the one that lasts the longest.

A business model that lends itself to the return & renew concept within the circular economy – and one that is being increasingly adopted – is the model known as product-as-a-service (PaaS). This model rewrites the notion of ownership: manufactures ‘servitize’ their products, ‘selling solutions and outcomes to the customers, rather than tangible products.’³

³ Aubertin, C, *From product to product-as-a-service*, Medium, 2 July 2019
<https://medium.com/swlh/from-product-to-product-as-a-service-37baed471cd6>

Recycling & reuse

The overarching vision for a circular economy is to create multiple lifecycles for products and components. Recycling and reuse are not practices that only happen right at the end of the process. There are opportunities for either at almost every previous stage.

Forbo defines recycling as 'material diverted from the waste stream during a manufacturing process that is sent to a third party for them to use as a raw material'. Such third party may be another Forbo site, or external recycler. Whilst reuse is understood by Forbo to be 'waste that, after reprocessing, can be fed back as a raw material into the same manufacturing processes'. Marmoleum features up to 43%* recycled and reused content.

Jute waste from Marmoleum manufacturing, for instance, is offered to a local recycling initiative that transforms the jute into carrier bags.

Take-back schemes that collect off-cuts from installations, along with waste and rejected rolls from the factory, account for 11%* of Marmoleum content. In addition, the high proportion of natural raw materials in the product make it essence highly compostable.

A recycle and reuse approach changes how we view the word 'waste'. And leading organisations, businesses and communities must work together, creating synergies that give waste value.

**typical value*



Accountability & transparency

Sustainable change takes time. And like all change, it will inevitably be met with some initial resistance. When transitioning from a linear to a circular operational model, it is therefore worth bearing in mind the notion of cumulative effects, defined by America's Council on Environmental Quality as 'impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time'.⁴

⁴ IAIA, Cumulative effects assessment and management

<https://www.iaia.org/wiki-details.php?ID=9>

In order to shape as circular a sector as possible, every decision (to include, or indeed, to exclude) matters. Environmental Product Declarations (EPDs) are a helpful tool for comparing the environmental credentials of one product over another. These declarations are voluntary and independently verified. Eco-friendly labels and certifications may also offer further sustainability assurance. Individual companies may also produce sustainability reports of their own, which can form another a point of reference. Forbo publishes a fully transparent annual sustainability report outlining its environmental performance. Read it [here](#).

Conclusion

In order to be legitimate players in a circular economy, manufacturers need to be seen to be investing in research and state of the art technologies that will make their products and processes cleaner and more sustainable. Equally, they have a duty to make clear and transparent information readily available; not just about the products themselves, but about the entire chain, so that prospective buyers and users of their products can make informed decisions that will, over time, help close the loop.



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