

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, global warming and a growing global population are causing us to re-evaluate traditional business practices.

The life cycle of the linear business model is coming to an end and is being usurped by the development of a sustainable circular based model that reverses long held practices.

We are all aware of the negative impacts of the “take, make, waste” culture that society embraces and the challenge of reversing this requires change at all levels to enable us to create a sustainable future. At a product level we

must create sustainable, circular designed floors that enhance quality, performance, aesthetic, re-use and recyclability.

This whitepaper aims to provide context to the circular economy, focussed on the interior design and building sectors, 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 product’s 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>

Journey toward circularity

We are all familiar with the Chinese proverb “Every journey of 1000 miles begins with a single step” and when any journey commences it is reasonable to assume that you will know where your destination is, the route you will take and have a method of measuring progress.

In terms of CE (Circular Economy) we have already established there is no single definition and this, by default, creates other issues in terms of the how we measure progress. To date there are no universally accepted metrics by which you can measure circularity, the topic is still evolving and there are attempts to develop metrics, for example, the Ellen MacArthur foundation has launched its “Circulytics” framework which supports transition from linear to circular economy.

Whilst recognising change is inevitable it is also noted that existing common metrics will continue and in the case of, for example, EPD’s, will grow in importance and take up. Measuring environmental impacts of products designed in the “CE Age” will still be relevant and as the transition from linear to CE develops, improved performance will be delivered by harnessing the outputs from the 4R framework - reduce, re-use, recycle, renew - which are applicable to all stages of a products life cycle.

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

Design

Design is central in the transition from linear to CE products and processes. Design scope is extended, in the linear model this was often limited to simply delivering a product, circularity requires BIG Design - where end of life, materials, energy, processes, cleaning and maintenance, installation and intended use are included. Design must be inclusive of all stages of the life cycle if CE is to be achieved.

Forbo is beginning to realise benefits of this approach. For example, recycling used material is made more challenging because of the need to use adhesives to adhere. Embracing Circular design principles led to development of Marmoleum Click - an adhesive free product, reducing environmental impacts and material use and making recycling easier.

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

Circularity presents opportunities in respect of raw materials used to make products. It is preferable to use natural and renewable materials but we should recognise that the closed loop nature of CE, where materials are retained, potentially reduce impacts in subsequent iterations. Responsible, ethical sourcing practices should attract equal weighting to those environmental factors recognising the people pillar of sustainability.

Forbo's Marmoleum range of products is made mainly from natural raw materials. On average 62% of these are renewable with approximately one third of these being rapidly renewable. The harvest cycle being under 10 years, with materials like jute and flax being harvested annually.

In addition to its use of natural raw materials, Marmoleum maximises value of waste from another industry, for example, wood flour - a by-product of the timber industry - is a key recycled ingredient of our products.

Manufacture

The use of fossil based fuels to power manufacturing processes are being supplanted by renewable energy sources like solar, wind, hydro and biogas alternatives. The reduced impact magnified by improved processes, more energy efficient equipment and internal waste reduction programs. It is this outlook coupled with a high percentage of natural raw materials that has enabled Marmoleum to be declared as a cradle-to-gate CO₂ neutral product range without the need for carbon offsetting (weighted average across product range).

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 without increasing global warming.

Renewable energy + efficient manufacturing methods + renewable/recycled/reused materials = Carbon Neutral

The focus, moving forward, is to accelerate the introduction of more renewable energy sources, further enhance manufacturing process and continue to develop our waste elimination programs. These measures will advance us along the CE journey.



Distribution

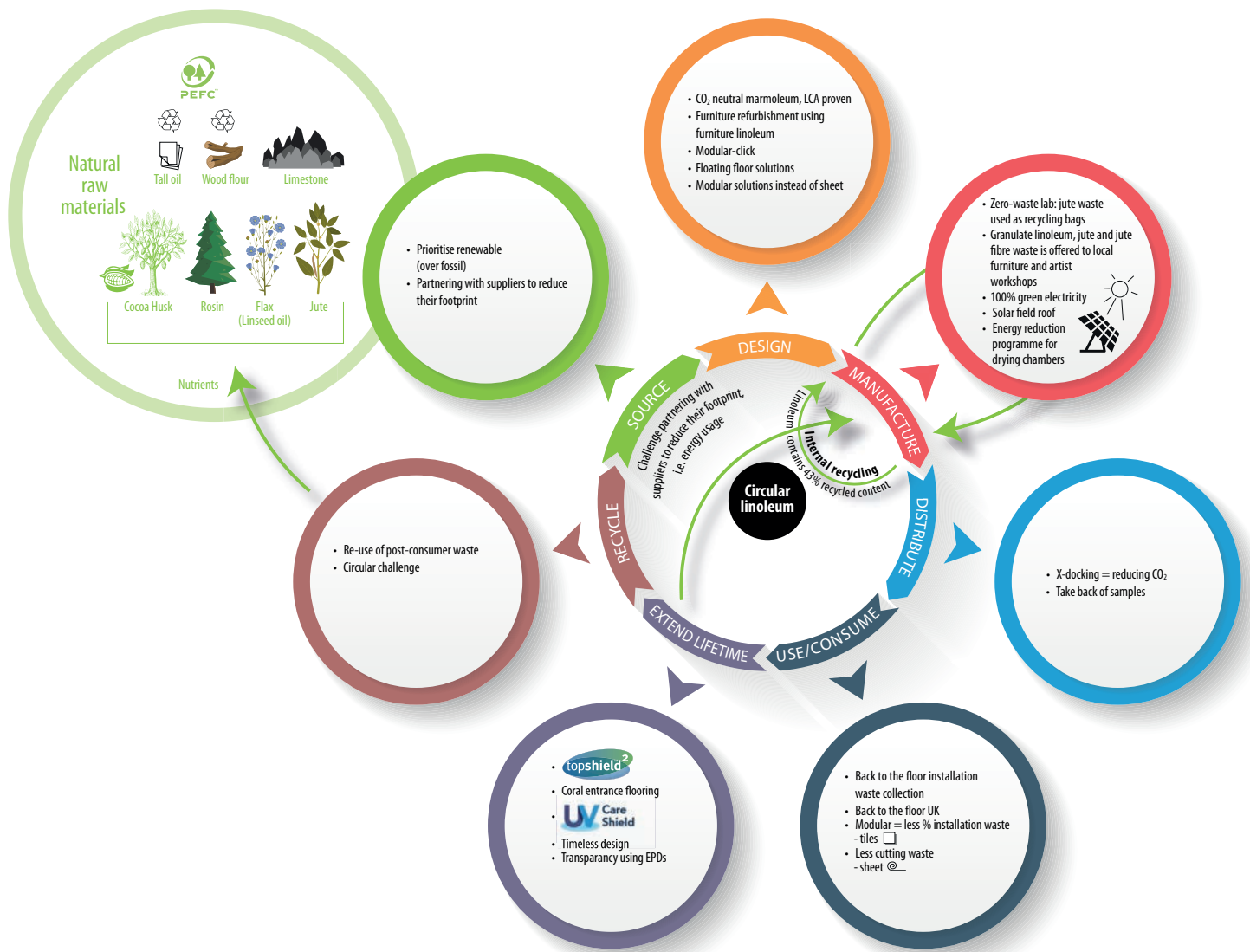
Traditional linear thinking could lend manufacturers to think that their sustainability responsibilities end once their product leaves the factory and is safely installed. Circularity takes this further by requiring you to think about distribution.

With a multi-product offer this provides Forbo with more opportunities to consider. From a customer perspective, reducing the number of individual deliveries is beneficial from both operational and administrative perspectives. This we are achieving by turning to cross docking solutions - allowing us to bundle different products together, reducing the number of deliveries, maximising vehicle load capacities and thereby reducing our transport environmental footprint.

Our efforts don't stop here - internally we have invested in a mono rail system in Assendelft to transport finished goods from manufacturing to the warehouse (run on renewable electricity) and some raw materials are delivered to site by barge, reducing road traffic.

Use, maintenance & repair

As society transitions away from the take, make, waste model the spotlight will turn on the use, maintenance and repair attributes of products. In part due to CE but impacted, at this time, by the economic uncertainty caused by the global coronavirus pandemic. Good maintenance and repair programs will have a positive impact on health by helping to create healthier environments.



Marmoleum is engineered to last 20 years or more. The top layer of the flooring is repairable and 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 Coral entrance flooring system can prevent up to 95% 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 equation - functional longevity will only be achieved if combined with timeless design.

'A sustainable product is developed respecting both people and the environment.'

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 stage of the production phase of a life cycle.

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'. A 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 compostable.

A recycle and reuse approach changes how we view materials that we consider as waste. Stakeholders must work collectively to create solutions to maximise value through creation of closed loop solutions.

**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

As we transition toward CE, businesses need to re-evaluate all aspects of their offer - including but not limited to sourcing of materials, whole life design, transportation to metrics. Innovation is key and will drive the transition forward. Greater awareness, knowledge and increasing expectations of consumers will require manufacturers to deliver more sustainable and circular products and solutions.

Messaging will also have to reflect these changes - it will become more transparent, not just focussing on product but on the type of business behind the product. We will close the loop - the first step on the journey has been taken.





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