

End of the Line?

AS LINEAR CONSUMPTION STARTS TO REACH ITS LIMITS, CALLS FOR A MORE REGENERATIVE AND RESTORATIVE ECONOMIC MODEL ARE GETTING LOUDER, WRITES STACEY SHEPPARD

In 1684, Thomas Savery invented the steam engine and it transformed our ability to make things – and the Industrial Revolution that followed laid the foundations of our current economic system. However, over 300 years later, this system is starting to reach breaking point. Many would argue it is no longer working for business, for consumers and it is certainly no longer working for the environment.

The current economic model is what we call linear. It is a take-make-waste model that relies on cheap, widely available resources to create favourable conditions for economic growth and stability. And this is where the problems start. Unfortunately, our planet does not have infinite resources. It is estimated that three billion consumers will enter the global market by 2030, accompanied by an increased demand for goods and services. This demand is no longer tenable within the limitations of the planet and therefore calls our linear economic system into question.

It has become undeniably evident that we need to change the system to one where we give much more thought to how we manage resources, how we make and use products, and what we do with the materials afterwards. This new economic model will need to go beyond the boundaries of sustainability. Instead, we need a system that can decouple economic growth and revenues from consumption of resources.

In boardrooms around the globe, a new economic concept is starting to capture attention in a way that sustainability was never able to. It is reaching into the consciousness of business leaders, politicians, engineers and designers. The Circular Economy is being heralded as a way to reconcile our need for economic growth with the

urgent necessity of environmental equity. The Ellen MacArthur Foundation was launched in 2010 to accelerate the transition to a circular economy. Since its creation, the charity has emerged as a global thought leader working to quantify the economic potential of the circular model and develop approaches for capturing this value.

A 2013 report by the Foundation entitled Towards the Circular Economy, said that adoption of circular setups in relevant manufacturing sectors could yield net material cost savings of US\$340-630bn per year in EU alone. The economic incentives are there, it's just a matter of implementing this new system.

Anna Tari is the founder of The Circular Economy Club, an international network of over 3,500 circular economy professionals and organisations from over 100 countries. Tari says that the main obstacle to implementing a circular economy is the lack of markets for waste

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or used products and materials. “Until we have a profitable market for trading waste of any kind, we will be unable to incentivise people and organisations to recover it. Both governments and companies play a crucial role.”

She puts this partly down to the lack of speed with which regulation progresses. “When a product falls into the category ‘waste’, you cannot do much with it, apart from trying to recycle it. The waste concept must evolve so we can more easily recover it and value it.”

Other ways of enabling the transition to the circular economy, according to Tari, include channelling more funding towards businesses which are advancing technologies that facilitate material recovery and biodegradability and putting reverse logistics in place.

Lucy Chamberlin was Head of Programme for the RSA’s Great Recovery Programme, which was a project that ran between 2012 and 2016 and looked at the challenges of waste and the opportunities of a circular economy through the lens of design. She says: “Return logistics are way behind. Dispatching items out to consumers is a finely tuned, high-tech process now. But the systems in place for getting stuff back for return or remanufacture are

nowhere near sophisticated enough. The logistics and labour costs of return, repair and remanufacture is not cheap. Unless there is a very positive economic business case for companies getting involved, they just won’t do it.”

One new, potentially successful business model that Chamberlin sees emerging involves flipping the system from a product-based one to a service-based approach. This system is based largely on the performance economy as outlined by Walter Stahl, Founder-director of The Product-Life Institute, Geneva.

In the performance economy, selling goods as services enables economic actors to retain the ownership of their goods and the embodied resources throughout their life cycles,

making them responsible for their maintenance and recovery, rather than saddling customers with that burden.

Tari points out Philips Lighting as a pioneer in this area due to its innovative, end-to-end circular lighting service model. Philips Lighting installs, maintains and manages the lighting throughout its lifecycle, making it possible for commercial customers to purchase light as a service rather than invest in new hardware upfront. This allows Philips to build traceability, serviceability, recycling,

upgrade options as well as parts harvesting into their business model.

This model is nothing new though; the sharing economy already enables us to access accommodation, movies, music and cars in this way. In fact, today’s users are clearly displaying a preference for access over ownership. Moving away from a system of outright product ownership to one in which consumers lease their furniture, household appliances and even kitchens, may be what the future holds.

“Ultimately we need a totally different economic system,” says Chamberlin, “and that won’t be possible until the underlying narrative of perpetual growth is challenged.” The circular economy has the potential to generate benefits for stakeholders on every level – customers, businesses, and society as a whole. But it cannot be achieved by individual players alone. It requires collaborative global action and large-scale, business-led collaboration in order to catalyse change on the scale necessary.

“I always say no company is circular unless all companies are circular,” says Chamberlin. “It’s all about material streams and no one company has complete control of its material stream.” But for Tari, the transition to a circular economy is a challenge that is open to all. “This is a transition to an entirely new economic model and a shift that everyone is invited to join. Those missing out on this opportunity will likely face economic hardships, and will probably not be as competitive.”

The Circular Economy model takes a 5 R approach – repair, reuse, refurbish, remanufacture, and recycle. It requires businesses to radically rethink the way that they design and manufacture, based on three key principles:

- Designing out waste and pollution;
- Keeping products and materials in use;
- Regenerating natural systems.

BECOMING PLANET POSITIVE

In June last year, IKEA announced new commitments to becoming a fully circular business. "Our ambition is to become people and planet positive by 2030 while growing the IKEA business," said Inter IKEA Group CEO, Torbjörn Lööf. "Through our size and reach we have the opportunity to inspire and enable more than one billion people to live better lives, within the limits of the planet."

There are a number of firm commitments that IKEA has made in order to reach this goal. For example, all IKEA products will be designed according to new circular principles, with the goal to only use renewable and recycled materials. The intention is to become climate positive and reduce the total IKEA climate footprint by an average of 70% per product as well as achieving zero emissions home deliveries by 2025. "Transforming IKEA into a

'circular' business is one of our biggest ambitions and challenges for the future. It's about smarter use of resources and from the very beginning, designing products so they can be repurposed, repaired, reused, resold or recycled in any other way. It requires an innovative mind-set, working together with many stakeholders", says Peter van der Poel, Managing Director, Range & Supply, Inter IKEA Group.

There are a number of examples of what IKEA is already doing to reach its goal. There are recovery teams in every store repairing and re-packaging products that have been damaged in transit, so that they can be sold and not go to waste. In 2018, IKEA handled over one million orders of spare parts to help repair products for a longer life. There are also second life return options where customers can return a wide

variety of products, including furniture, to many IKEA stores for resale or donation to charity. Last year, in the UK, 12,240 sofas, beds and appliances were recovered for reuse and recycling through this service.

The company is also re-evaluating its value chain, using materials that are renewable, recycled and from more sustainable sources, in order to make more from less. "We need to find alternatives for a circular system," says Anna Granath, Product Developer at IKEA. "What we do has a big impact on the environment because IKEA works with large quantities. With the new material, we can avoid using an oil-based plastic and produce more sustainably, without having to compromise quality, form or price."



Above: Anna Granath, Product Developer at IKEA. Below: Torbjörn Lööf, CEO Inter IKEA Group

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IKEA's Kungsbacka kitchen fronts are made entirely from recycled FSC-certified wood and PET bottles



Simon Cornelius, Head of Marketing, Methven

THE DESIGN PHASE IS VITALLY IMPORTANT HERE BECAUSE IT IS WHERE 80% OF THE ENVIRONMENTAL IMPACT COMES INTO CONSIDERATION

ADOPTING NEW STANDARDS

Not all industry sectors have been proactive in pursuing the circular economy model and Simon Cornelius, Head of Marketing at Methven says that in the absence of legislation, the bathroom industry is one that has been slow to adopt. However, the introduction of BS 8001 – the first national standard on implementing Circular Economy (CE) principles – has provided the impetus for many in the industry to take practical action to realise the business benefits of a circular economy, as well as safeguarding the environment.

"One of the biggest challenges for the bathroom industry is product circularity," says Cornelius. Products such as showers, hoses and taps are the most regularly replaced components in the bathroom and when they come to the end of their life they are largely disposed of. "What the bathroom industry needs to tackle are the business opportunities around repair, refurbishment and materials recycling. And, in the most part, this goes

back to the original design, manufacturing and reverse logistics processes, as well as straightforward protocols and services that allow for repair, and recycling to take place without placing extra burden on the industry."

Cornelius highlights that one of the main opportunities for the bathroom industry going forward is the move from selling to leasing models through take-back of products to enable refurbishment and remanufacturing, and also looking to create products that are more circular as they have been designed to be upgradable through modular design.

"The design phase is vitally important here because it is where 80% of the environmental impact comes into consideration. Therefore, the industry needs to be looking to design with repair, maintenance, remanufacture and upgrading in mind, as well as looking at how individual parts could potentially be harvested," he explains.



Methven's Kaha cool-to-touch bar shower with diverter



MISSION ZERO

In 1994, Ray Anderson, founder of global commercial flooring company Interface, realised the necessity to move from a linear economic model to a circular one. From that point on, he made it his mission to turn a petroleum-intensive carpet manufacturer into the world's first environmentally sustainable, and ultimately restorative, company.

This vision, which he called 'Mission Zero' was to "be the first company that, by its deeds, shows the entire world what sustainability is in all its dimensions: people, process, product, place and profits, and in doing so, become restorative through the power of influence". He pledged to eliminate any negative impact that Interface has on the environment by 2020. To do this he had to radically redesign the company, the products and the way that Interface does business.

Anderson and his team have made huge progress since they embarked on this mission. In 2017, the company announced:

- The average carbon footprint of Interface carpet is down 66% since 1996;
- Energy efficiency at manufacturing sites has

- improved by 43% since 1996;
- 88% of energy used at manufacturing sites is from renewable sources;
- 58% of raw materials in the products Interface sells are from recycled or bio-based sources;
- Total water intake intensity at manufacturing sites is down 88% since 1996;
- Diverted 5.9m kgs of post-consumer carpet from landfills;
- Waste sent to landfill is down 91% and total waste disposal is down 49%;
- Collected and shipped 74,000 kgs of fishing nets to yarn supplier Aquafil for recycling.

Regional Sustainability Manager, Jon Khoo, says: "Mission Zero was just the beginning and it provides a key lesson for any business wanting to imbed sustainability into its operations. Reassessing and resetting goals is just as important as creating them in the first place. So in 2016, Interface launched 'Climate Take Back'. The aim was to take the company beyond eliminating its negative environmental impact, to helping to reverse climate change and inspiring other organisations to do the same."



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Above: All Interface carpet tile and LVT products are now carbon neutral across the entire product lifecycle
Left: Jon Khoo, Regional Sustainability Manager at Interface



The end-of-life textiles used by Really are milled into small fibres to ensure homogeneity

REVITALISING END-OF-LIFE TEXTILES

Danish brand Kvadrat produces and supplies textiles and textile-related products to architects, designers and private consumers. In 2017, it launched Really, an initiative arising from the pressing issue of textile waste. Today, 95% of textile waste can be recycled, but sadly, only 25% actually is.

Founded by Wickie Meier Engström, Klaus Samsøe and Ole Smedegaard, Really upcycles end-of-life textiles to create viable new materials that can be recycled again and again. It challenges the design and architecture industries to rethink their use of resources and to design with a circular economy in mind.

Really creates two main products. The solid textile board is a high-quality engineered board made from end-of-life cotton and wool sourced from fashion and textiles industries and households. The manufacturing process does not involve the use of dyes, water or toxic chemicals and generates only recyclable

waste. The material used can eventually be re-granulated and formed into new boards. The acoustic felt textile is made using the same process, has the same aesthetics as the board, but is a softer material.

Really has worked with a number of high-profile designers over the past two years, in order to demonstrate the potential of these new materials for use in furniture and interiors. Anders Byriel, CEO Kvadrat, says: "The reception has been way beyond our expectations, and we have been heartened by the design industry's enthusiasm for a material that is made from end-of-life textiles and designed for a circular future. In our second series of commissions, it is exciting to see how notable designers are applying Really's first materials to furniture and interiors and also engaging with the narrative and challenges of a circular economy, and the urgent need to design-out waste."



Shift, designed by Benjamin Hubert, is a modular, flexible display and storage system for retail use

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UP-CYCLED KITCHEN

Reform is a Danish design brand that designs kitchens using standard units as the basis, but adding architect-designed fronts and counter tops. This enables them to keep the cost down, whilst still offering a more bespoke solution.

At the end of last year, Reform launched its UP kitchen in collaboration with Lendager Group, one of the most renowned architecture firms when it comes to sustainability and the circular economy. Lendager Group also happens to have the exclusive rights to use the surplus wood from Danish flooring manufacturer Dinesen.

The high-end flooring planks are typically used in projects for galleries, restaurants, mansions and other customer specific projects and there tends to be a lot of residual wood, which would ordinarily be wasted. However, it is now being used by Reform to create their new kitchen design where waste is turned into a valuable resource.



Reform founders Jeppe Christensen and Michael Andersen had long since wanted to create a sustainable kitchen design. Christensen says: "We are very proud to be a part of the wave offering sustainable solutions in the design and architect business, which support the environment with a timeless, thoughtful and long-lasting, high-quality choice for the kitchen. We teamed up with Danish Lendager Group as they offer an innovative approach to sustainable architecture and explore new business models where there is an increased focus on creating a regenerative design." **d**



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Lendager Sustainable Kitchen Collection by Reform

