Note: Below are extracts from a series of articles as referenced, examining how the 'circular economy' can make a significant contribution to global growth in sustainability and to corporate profitability.

The circular economy: A €4.1 trillion opportunity?

Shone, G & Fourneris, C **(**2023) define the essence of a circular economy, what it could mean for employment and profitability and how key industrial players globally are putting the circular economy at the centre of business strategy and sustainable growth:

> The 'circular economy' has become one of the most used phrases in business. It refers to all the work involved in recycling, reducing waste, and creating new sustainable jobs. The World Economic Forum cites figures from the consultancy firm Accenture, which says the job of introducing such changes could represent **a market worth €4.1 trillion** between now and 2030. The International Labour Office estimates that transitioning to a circular economy could create six million jobs worldwide as companies get to grips with replacing traditional ways of making money by "extracting, making, using and disposing".
>
> Circularity also brings with it the promise of efficiency. Accenture predicts that car makers taking a circular approach to manufacturing could enjoy a 150% boost in profits. So, does the reality justify the buzz? Here, we talk to the people and players who believe the circular economy is a way to create sustainable growth and also generate profit.
>
> (Shone, G & Fourneris, C **2023**)

Shone, G & Fourneris, C **(**2023) continue to demonstrate how Nestle, the world's biggest food and beverage company, French auto manufacturer Renault and charity organisation The Ellen MacArthur Foundation, are leading a worldwide transformation in recycling, sustainable job creation and waste reduction:

Nestlé: The quest for harmless packaging.

One famous company wrapped up in this quest for sustainability is Nestlé.

Global Lead for Packaging and Sustainability Jodie Roussell says headway is already being made.

"Our vision is that none of our packaging ends up in landfills or as litter," she tells us from Lausanne. "In terms of reduction, we're looking to reduce our use of virgin plastic, and we're on track to reduce it by one-third by 2025. We have some really good examples today in the European Union where there's a harmonisation exercise that's starting today on labelling and bins as well as setting shared targets. And these types of examples of legislation give us hope that we can simplify participation for consumers as well as compliance for businesses, and focus on what's most important, which is getting the right result and ensuring that no packaging ends up as litter or in landfills."

Renault: Putting recycling at the heart of strategy.

Another firm at the forefront of making circularity its main business strategy is French auto giant, Renault.

Eleven million cars end their life every year in Europe and the auto industry dumps massive amounts of waste, toxic chemicals, and metals into landfills. Yet 85% of the materials used to make cars can be recycled.

At its Refactory plant just outside of Paris, Renault wants to turn the tide. Renault is presenting Refactory as the first European circular economy site dedicated to mobility**.** It launched the project two years ago and hopes it will generate 200 million euros in turnover by 2025. Part of the project is a new workshop able to refurbish 150 old cars a day. From the mechanical elements to the paintwork, in less than a week, the cars look like new. They're photographed and sold again. In another building, 200 workers remanufacture over 1 600 different car pieces.

"Not only do we produce engines and gearboxes with the same quality requirements as the new ones by using refurbished materials coming from old engines," says François Evrard, head of the Refactory Project at the Renault Group. "At the same time, it allows us by the cost reduction in the value chain to provide our customers with an alternative 30% cheaper than a new one."

To federate an ecosystem around its brand, the group has just launched a start-up hub dedicated to the circular economy.

The Ellen MacArthur Foundation: Circularity by design.

One of the main ways circularity can be efficiently applied is through design. The Ellen MacArthur Foundation is a London-based charity committed to promoting and developing the circular economy.

Joe Iles is the Design Programme Lead at the foundation. He argues circularity needs to be in the first line of every design brief.

"Everything around us is designed from the food that we eat to the clothes that we wear, the buildings that we live and work in, and the systems which provide those things that provide food or energy or mobility or medicine," he explains. "And when we design, whether we know it or not, we're really making decisions about how those things work. It's not just about treating the symptoms of an economy that's broken or systems that are broken, but about designing by intention so that products and services and systems are circular, regenerative. And what that means is when we engage in design, what's the first line on the design brief? I believe it should be: 'Does this creation, does this service fit within a circular economy?'"

(Shone, G & Fourneris, C **2023**)

From an investment perspective, Neufeld, D (2022) reports that the circular economy can deliver significant opportunities for growth with the development of dedicated Circular Economy funds, supported by a variety of policy agendas globally:

> **Circular Economy Growth**
>
> In 2019, BlackRock launched an inaugural Circular Economy fund. Since then, it has attracted **$2.1 billion** in investment. A number of the world's largest asset managers have followed suit.
>
> Policy-driven agendas are also focused on the circular economy shift:
>
> - Paris Climate Agreement
> - UN Sustainable Development Goals
> - European Green Deal Circular Economy Action Plan
> - 2019 African Durban Declaration
> - China's 5-Year Circular Economy Plan
> - Circular economy strategies across Latin American countries
>
> Given the steep cost of linear economic models, governments are beginning to pay attention to the merits of a circular economy.
>
> (Neufeld, D 2022)

To further substantiate the case for a circular economy, now and into the future, Goldman Sachs (2022) provides us with more data from the World Economic Forum, who estimate that by 2025 recycling, reuse, and remanufacturing could help the global economy unlock $1 trillion a year in untapped resource savings and introduce new business models, partnerships and circular solutions:

> A Circular Economy could help add $4.5 trillion in additional economic output by 2030, and $25 trillion by 2050.[1]
>
> The World Economic Forum estimates that by 2025 recycling, reuse, and remanufacturing could help the economy unlock $1 trillion a year in untapped resource savings. We see rising commodity prices leading to increased deployment of energy/waste/food efficiency solutions from both individuals and corporates and the extension of the EU Taxonomy to include Circular Economy categories will provide a boost in recognition from corporates and investors. (For context, EU Taxonomy provides a minimum standard across sustainability disclosure requirements, effectively creating a green investment rule book specifying which investments can be considered sustainable).
>
> Transitioning towards a Circular Economy will be pivotal to solving decarbonisation and will become an increasing focus for investors, corporates, and regulators to achieve net zero carbon goals and decouple economic growth from resource consumption, in our view. Zero waste pledges are few and far between compared to the proliferation of net zero carbon pledges from companies, governments, and investors, yet both are necessary for a sustainable low carbon economy due to the intrinsic link between resource usage, energy, and emissions (resource-energy nexus). Decarbonisation efforts have traditionally focused heavily on scaling up renewable energy and increasing energy efficiency, while focusing little on the benefits that can be gained via circular economy solutions. We believe the decarbonisation synergies gained through transitioning towards a circular economy will become an increasing focus and priority among governments, corporates, and investors in the years ahead.
>
> We have identified 7 circular economy solutions that can help corporates reduce their dependence on increasingly scarce resources and create new service offerings, including:1) Efficiency; 2) Substitution; 3) Durability; 4) Ecodesign; 5) Asset Utilisation; 6) Recyclability and Recycling; and 7) New business models and circular partnerships. The next phase of the EU Taxonomy will catalyze

investor and corporate focus on the circular economy. We see corporate and investor adoption of the EU Taxonomy as inevitable, serving as a tool for both investment and eventual corporate strategic decision-making. New sectors covered under the circular economy include some of the most underweight sectors in ESG funds currently, presenting opportunities for re-weighting.

1 Lacy, P. & Rutqvist, J. (2016). Waste to wealth: The circular economy advantage. 10.1057/9781137530707.

(Goldman Sachs 2022)

Despite the efforts of corporations around the globe, Goldman Sachs (2022) suggests there are still serious challenges to achieving zero and net zero carbon targets, from legislation to regulation and relatively poor rates of recycling, for example. There are many initiatives which could help deliver the ideal of the circular economy. These are some of the key considerations:

A note on plastics: At least 42 plastics facilities have opened in the US since 2019 and the US plastics industry is responsible for over 230mn tonnes of CO2e emissions per year. Plastics make up over 12% of municipal waste generation in the US but 18% of waste sent to landfill. The UK has a much higher

recovery rate for plastics, at 44% recovered/recycled, but globally 11 million metric tonnes of plastic were still leaked into the ocean in 2016, according to the Pew Charitable Trusts. Decarbonisation and plastic waste is not simply solved by substituting away from plastics, as alternative materials typically carry a higher emission profile per use case; rather improved recycling and technological advancements in pyrolysis (chemical recycling) are needed, in our view.

Food waste is still a massive problem. Up to 40% of global food produced ends up as waste, and the average family throws away approximately £720 worth of food per year, according to the Dept. for Environment Food & Rural Affairs, where homes make up 43% of total food waste by weight.

Composting still makes up a very small portion of waste disposal methods, as food waste makes up 24% of landfilled material and 22% of combusted municipal solid waste in the US and results in $160 billion in food wasted every year (EPA & USDA). Uneaten and wasted food contains enough calories to support 150 million people each year, significantly more than the 35 million Americans facing food insecurity (EPA).

(Goldman Sachs 2022)

Goldman Sachs (2022) puts electronic waste and its associated emissions in particular, into context, relative to a nation the size of Ireland:

Electronics Waste: The potential value of raw materials in e-waste was valued at US $57bn in 2019 by the UN, and recycling rates across electronics are only 17%. Recycling electronics in order to salvage raw metals and materials can have other unexpected benefits, as recycled lithium-ion batteries were found in a study to perform better than new ones. Other efforts to tackle e-waste involve extending the useful life of products: Replacing a smartphone after 4 years instead of the typical 3 could prevent annual carbon emissions equal to the annual emissions generated by the entire country of Ireland.

Textiles and Apparel waste is an increasingly important challenge with the proliferation of fast-fashion and synthetic and mixed materials that reduce recyclability. Between 2000 and 2015, clothing production doubled while utilization (the number of times an item is worn before being thrown away) decreased by 36%, while only c.1% of clothing is recycled back into new clothing (Ellen MacArthur Foundation). And in 2018, the EPA found that the average amount of clothing and textile waste added up to 80 lbs (36 kg) per person. Also in 2018, the global fashion industry accounted for 4% of total global GHG emissions (2.1 bn tonnes). Circular themes are picking up in the industry: resale, rental, repair and remaking, and resale and rental platforms like Depop, Rent the Runway, The RealReal, Vinted, Poshmark, ThredUp and Vestiaire Collective have reached billion-dollar valuations. The Ellen MacArthur Foundation estimates that circular business models will make up 23% of the global fashion market by 2030, providing significant environmental savings from increased product lifespans and reduced production of virgin materials and items. Additionally, the secondhand market is projected to grow to twice the size of the fast fashion industry by 2029 according to Global Data.

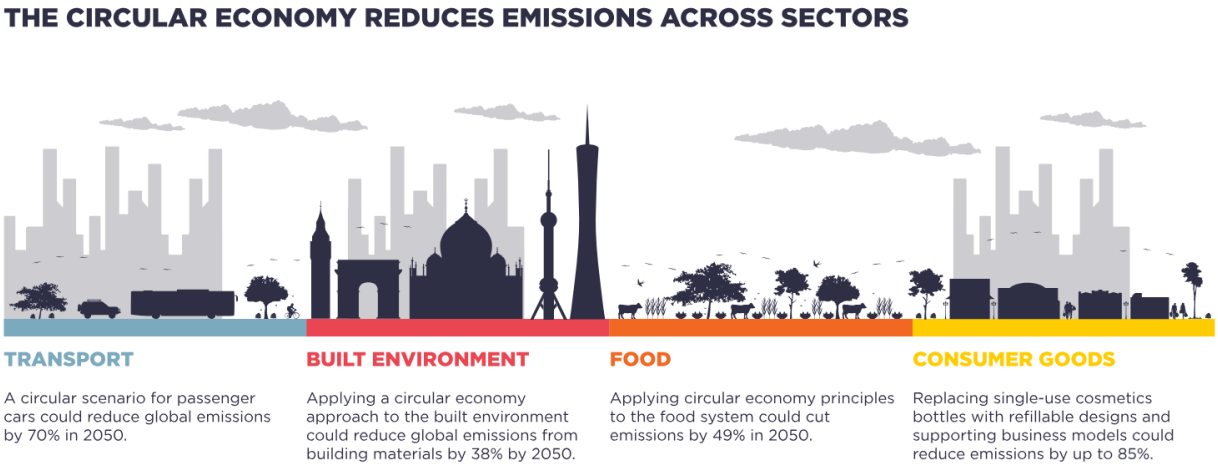
(Goldman Sachs 2022)

On the issue of emissions specifically, The Ellen MacArthur Foundation (2023) stresses that industry needs to adopt the key principles of a circular economy, and adapt business practices to eliminate, circulate and regenerate throughout the production and supply chain. Again, The Ellen MacArthur Foundation (2023) emphasizes the potential for business advantage- sustainability growth, increased profitability, and a boost to employment as a result:

As climate impacts escalate around the world, tackling emissions from fossil fuels by urgently transitioning to renewable energy and implementing energy efficiency measures is essential. But alone, these energy-related actions can only address 55% of emissions globally. To complete the picture, we need to address the remaining 45% of global GHG emissions that are directly related to the way in which products, materials, and food are designed, produced, and used in our current extractive economy. The bulk of these emissions are caused by industrial production processes, land use practices such as deforestation, and landfill and incineration, which are in turn driven by consumer demand.

The circular economy can also tackle the root causes of biodiversity loss, create jobs, build resilience that contributes to climate adaptation, and grow prosperity. For example, circular business models in the textiles industry could be worth USD 700 billion by 2030 – making up 23% of the global fashion market. At the local level, the circular economy can provide access to nutritious food, improve air quality and urban health, and create local jobs. By design, circular economy solutions should ensure an inclusive and 'just transition' that reduces inequalities within and between

countries, and enhances the livelihoods and wellbeing of all involved. The circular economy model also aligns with many actions for cities recommended by the Intergovernmental Panel on Climate Change (IPCC) in its latest summary report.



Source: The Ellen MacArthur Foundation (The Ellen MacArthur Foundation 2023)

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