

The Report

The circular economy

Eliminate, circulate, regenerate

Our future cities Tackling climate change and building resilience

Redesigning food How the industry becomes nature-positive

The plastics problem
Why recycling isn't enough

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Introduction

We must shift away from “take, make, waste”

The circular economy offers us a transformative opportunity to tackle pollution, reuse valuable materials and regenerate nature

By Jocelyn Blériot

The call for a more resilient, circular and low-carbon economic model has garnered support from a growing number of businesses and governments over the past decade. Far from having dropped off the agenda in post-Covid recovery plans, the circular economy is increasingly seen as a solutions framework capable of ushering in a new era of future-proof prosperity.

Having lifted billions out of poverty and made access to goods and services a legitimate aspiration for all, the industrial engine is seeing obstacles on its horizon. The combination of resource scarcity and severe negative impacts makes it unreasonable to think we can carry on

extracting, consuming and throwing away.

And while we might have come to realise that there actually is no “away”, we still have a lot of work to do to understand the interconnectedness of the system. Consider for instance that, [according to the Global Resources Outlook report by the UN Environment Programme’s International Resource Panel](#), 50 per cent of the world’s greenhouse gas emissions are due to natural resources extraction – both industrial and agricultural. That is before we even start to take into account the use phase of our products, buildings and infrastructure.

Addressing the root cause of the global challenges facing our societies amounts to profoundly rethinking the way value is created, moving away from the extractive and polluting “take, make, waste” linear economy. As leading scientific organisations such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) now recognise, transformative change – which entails a [“system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values”](#) – is required.

This is another way of saying that incremental tweaks that do not challenge “business as usual” will not get us on a positive path. The circular economy framework, which relies on eliminating waste and pollution, circulating valuable materials and regenerating nature, does offer such a transformative journey. It is therefore crucial to make it a central pillar of discussions pertaining to economic rejuvenation, climate crisis mitigation and biodiversity loss reversal, to name but a few of the most salient issues. It goes to the heart of the consumption and production nexus and represents a multi-trillion-dollar opportunity for businesses in terms of new revenue streams, new materials, energy savings and avoided compliance costs.

Having mostly been championed by China and the European Union in the 2010s, the circular economy is today being adopted by a wide variety of countries, as can be witnessed by the recent emergence of several multi-government regional coalitions. It features prominently in high-level multilateral processes, notably with regards to the contribution it can make to advancing the UN’s Sustainable Development Goals, and is also a key topic of the G20 environment ministers’ agenda – bearing in mind this group represents more than 80 per cent of global gross domestic product (GDP).

We still need to ramp up efforts across a variety of fields such as materials science, education, design and infrastructure investment. But the early signs of a transition are firmly in place, on the back of strong private and public sector involvement. ●

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Cities



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Reimagining our future cities

Around the world, urban leaders are using the circular economy to meet the needs of their communities and tackle climate change and biodiversity loss

Ellen MacArthur Foundation

People, politics, industry and culture: the concentration of human endeavour makes cities vital centres of innovation and learning, and powerful engines of growth. But with great power comes great responsibility.

As cities continue to grow – [two-thirds of us will be living in urban areas by 2050](#) – they embody the damaging effects of the “take, make, waste” linear economy. Despite taking up just [2 per cent of global landmass](#), our urban centres consume more than [75 per cent of natural resources](#), are responsible for [over 50 per cent of solid waste](#) and emit up to [60 per cent of greenhouse gases](#), contributing to pollution, climate change and biodiversity loss. However, by embarking on a circular economy transformation, cities can unlock not only new and better growth, but also societal benefits, such as reduced emissions, improved air and water quality, and lower access costs for goods and services.

So [what would a circular city look like?](#) In short, it is a place where waste and pollution are eliminated, products and materials are circulated and nature regenerated. Residents live, work and play in greater proximity, reducing reliance on transport and freeing up valuable land once occupied by roads and car parks. Enabled by cutting-edge digital technologies, resources are leased and shared rather than owned, reverse material flows gather food by-products and materials to create new products, and food is produced regeneratively. People develop skills to repair and refurbish products, opening new possibilities and jobs. Pollution levels go down, air quality improves and citizens are healthier and more socially connected.

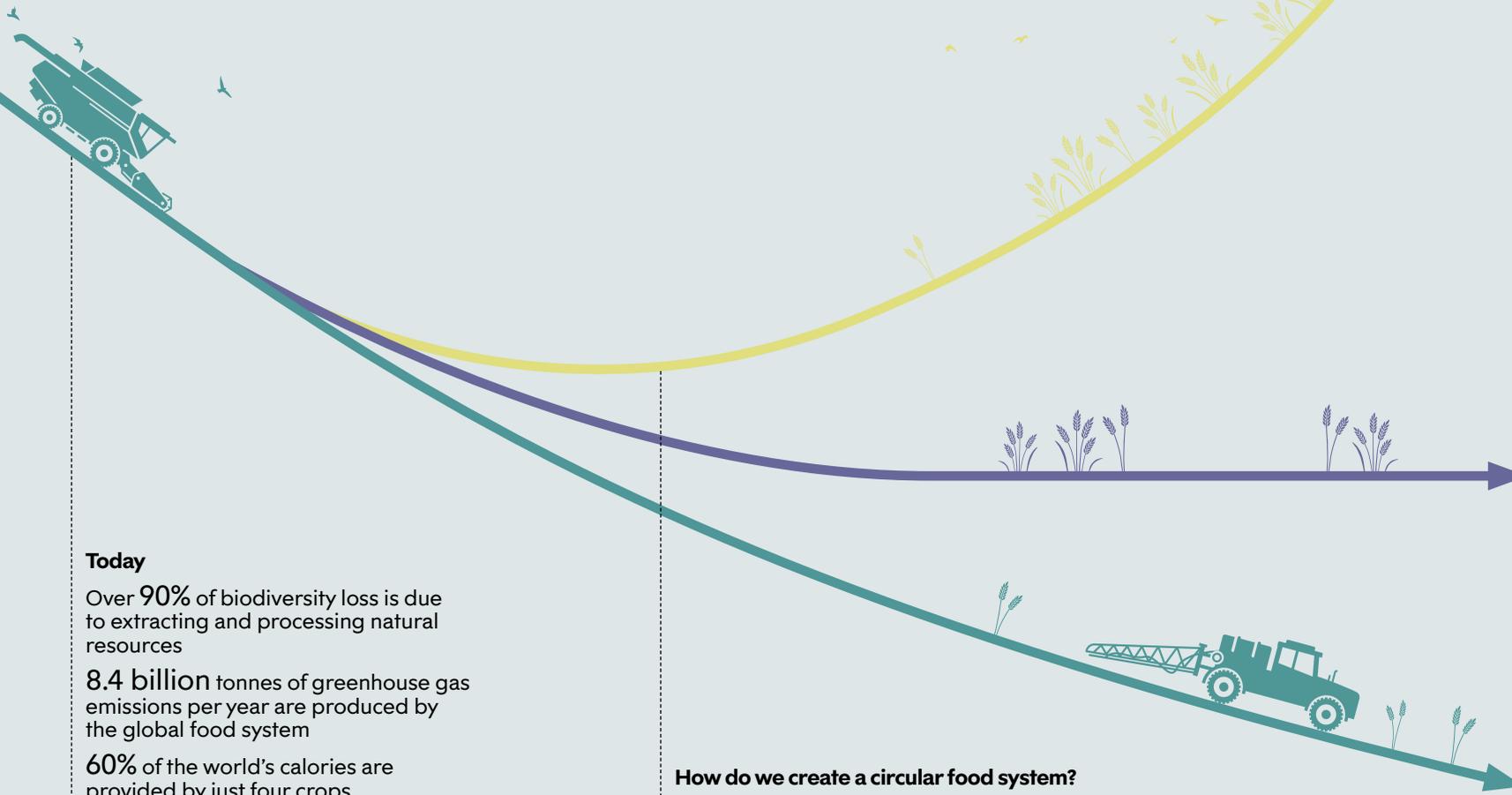
More than ever, local authorities are recognising the key role they can play in shaping this future and are utilising policy levers at their disposal. The governments of London, São Paulo and New York, the Ellen MacArthur Foundation’s three strategic partner cities, have formally adopted the circular economy into urban strategy, and initiatives to roll out practical implementation are well under way.

In London, for example, decision-makers established a [Circular Economy Route Map](#) in June 2017 after [analysis suggested](#) that a city running on circular principles could benefit from £7bn annually by 2036 and create 12,000 new jobs. Since then, the city has supported more than 250 SMEs to advance circular economy business models through [ReLondon’s Business Transformation programme](#). Under Mayor Sadiq Khan’s [Green New Deal](#), of a new tranche of more than 50 SMEs to receive support funding, 33 are piloting circular business models.

As politicians gather in Glasgow for Cop26, city leaders are facing mounting pressure to play a more ambitious role in addressing climate change. The circular economy framework can help them achieve this ambition, and the time to act is now. ●

The big food redesign

How we can tackle climate change and biodiversity loss through circular design for food



Today

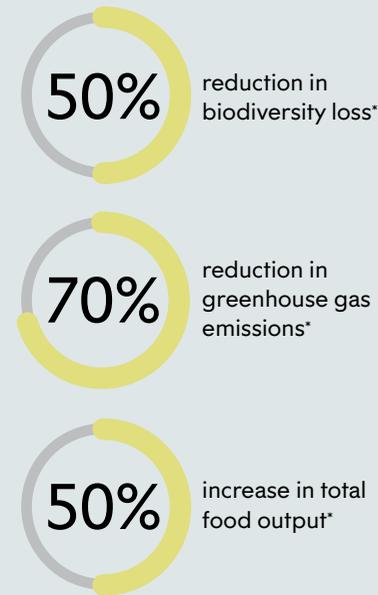
Over 90% of biodiversity loss is due to extracting and processing natural resources
 8.4 billion tonnes of greenhouse gas emissions per year are produced by the global food system
 60% of the world's calories are provided by just four crops
 40% of agricultural land in the EU and UK is influenced by the top 10 fast-moving consumer goods companies and retailers

How do we create a circular food system?

1. Choose diverse ingredients
2. Use ingredients with fewer negative impacts
3. Upcycle food by-products
4. Produce ingredients regeneratively

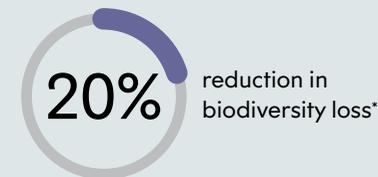
A circular food industry

Transforming food production and consumption provides numerous benefits, including:



Better food sourcing

Offers minor benefits in comparison to the circular model, such as only a



Business as usual

By 2050, greenhouse gas emissions from the food system will have risen to



In our race to a net-zero and nature-positive future, the food system is a major driver of change. Rather than deplete soil and ecosystems, food can be produced in ways that help nature to thrive, tackling climate change and biodiversity loss while benefiting farmers and consumers.

Conventional food production degrades ecosystems, creates air and water pollution, and by some estimates generates over a third of global greenhouse gas (GHG) emissions. In the hunt for transformational solutions, the focus naturally turns to farmers and consumers. Food companies – which connect the two – are often overlooked.

Globally, the sourcing power of food brands and retailers is considerable. In the EU and UK, the top ten players influence 40 per cent of agricultural land. These businesses are uniquely positioned to create a circular food system that supports farmers' livelihoods and provides us with nutritious food.

Just like the clothes we wear and the cars we drive, much food is designed. Food designers decide from the outset the flavour, texture, nutritional content and appearance. By rethinking the ingredients they use and how they make products, designers can make choices that benefit people and the planet.

The Ellen MacArthur Foundation's latest study, *The Big Food Redesign: Regenerating Nature with the Circular Economy*, identifies four opportunities to make this happen: select ingredients from a broad range of plant and animal species to increase biodiversity and food security; choose ingredients with fewer negative climate impacts; upcycle food by-products and use them instead of conventionally-produced ingredients; and produce ingredients that build biodiversity.

The foundation modelled the benefits of these opportunities. For example, designing pasta to be made from pea flour instead of wheat flour could reduce related GHG emissions by 40 per cent, while increasing food output per hectare by 5 per cent. Replacing the common Maris Piper variety of potato with higher-yielding varieties resistant to pests and diseases could reduce related GHG emissions by 20 per cent, while increasing food output per hectare by 60 per cent.

Using these circular economy opportunities in combination will realise their full potential. The study demonstrates that, when applied together, they provide greater benefits than simply improving the sourcing of current ingredients.

Major brands and retailers have the power to drive change by grasping these opportunities. To translate ambition into action they need to cultivate closer links with farmers. Policymakers have a pivotal role to play by redirecting subsidies and incentives to help farmers transition to regenerative production, and by providing them with technical assistance and training.

There is tremendous potential, only a fraction of which is modelled in the study, for businesses to take the lead in making the food system truly nature-positive rather than simply lessening negative impacts – and they can start today.

*ON AVERAGE FOR THREE MODELLED INGREDIENTS IN THE UK AND EU
 SOURCE: THE ELLEN MACARTHUR FOUNDATION

Financing the transition to a circular economy

What role does the global financial industry play in seizing the opportunity?

In January 2020, Larry Fink, CEO and chairman at the world's largest investment company BlackRock, wrote that climate risk is investment risk. More recently, [a survey by the Institute of International Finance and "Big Four" accounting firm EY](#) revealed that climate change is viewed by banks' chief risk officers as the top emerging risk in the coming years. Government policy and social change also demand that climate action and broader environmental, social and governance (ESG) considerations be integrated into investment processes and practices. The circular economy, [increasingly recognised as a framework](#) that delivers on these issues while driving better economic growth, is gaining traction.

With growing recognition of the climate crisis, finance is becoming increasingly aware of its crucial role in risk management and investment solutions. As the circular model's importance in [tackling climate change](#), [biodiversity loss](#) and other global challenges becomes more evident, this has translated to targeted funding for circular activities.

Between January 2020 and August 2021, total assets managed through public equity funds dedicated solely or partly to the circular economy have [grown 30-fold, from \\$0.3bn to more than \\$9bn](#). This June, BlackRock's circular economy fund hit [\\$2bn in assets under management](#), reflecting steep

growth in the area. Elsewhere in finance, dedicated banking products aimed specifically at developing the circular economy are emerging – for example, Italian bank [Intesa Sanpaolo has a €6bn credit facility](#) to support circular activities.

The world's largest corporations and emerging innovators are already adopting circular principles to mitigate risks, generate new sources of revenue, reduce costs and spur innovation. A recent [paper](#) by Bocconi University in Milan, the Ellen MacArthur Foundation and Intesa Sanpaolo sets out new evidence that circular economy strategies can de-risk investments and offer better risk-adjusted returns.

Momentum behind the circular economy is building, but to reorient capital at scale – the [Intergovernmental Panel on Climate Change \(IPCC\)](#) estimates that \$50trn to \$100trn of capital investment is needed to build a net-zero global economy – more transparent and consistent data on performance is crucial. Integrating the circular economy into measurement and disclosure initiatives – such as the [EU taxonomy for sustainable activities](#) – will help investors distinguish the highest-performing players in this area.

With Cop26 in motion, the finance industry can contribute to achieving climate targets while tapping into new economic opportunities by financing the transition to a circular economy. ●



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How to tackle the plastics problem

The circular economy has a vital role to play in eliminating the plastic we don't need while ensuring what we do use is reusable, recyclable or compostable

In recent years, the world has woken up to the full extent of the plastic pollution problem. We discovered that if we did not take action, the [annual volume of plastics finding its way to the ocean would triple by 2040](#) and [ocean plastic would outweigh fish by 2050](#). Out of the 300 million tonnes of plastic waste currently produced each year, up to 11 million tonnes still washes into our oceans. But can this wave of plastic pollution be stopped in its tracks?

Voluntary initiatives have begun to shape change. In October 2018, the Ellen MacArthur Foundation and the UN Environment Programme (UNEP) launched the [New Plastics Economy Global Commitment](#), which unites businesses, governments, non-governmental organisations (NGOs), industry associations, investors and other stakeholders behind a common vision to address plastic pollution.

Already more than 500 organisations, representing more than 20 per cent of all plastic packaging produced globally, have started making tangible progress on ambitious targets, such as reducing their use of virgin plastic.

Similarly, [Plastics Pacts](#) – public-private initiatives that bring together key stakeholders within a specific geographic area to back a concrete set of local targets – have proven useful mechanisms. Twelve pacts are now in place across 28 countries and five continents, which [represent more than 30 per cent of global gross domestic product \(GDP\)](#).

The common vision of a circular economy for plastics is the foundation of these voluntary initiatives. Solving plastic waste and pollution in a way that also addresses climate change and biodiversity loss calls for measures that go far beyond clean-ups and recycling. The circular economy approach addresses the [full life-cycle of plastic](#). It is supported by three reinforcing strategies: eliminate the plastics we do not need; innovate to ensure that the plastics we do need are reusable, recyclable or compostable; and circulate all plastic items we use to keep them in the economy and out of the environment.

In addition to voluntary commitments, more needs to be done to bring this circular economy vision to life. The transformation of the sector at scale requires targeted



policy developments.

An essential step towards transitioning to a circular economy for plastics is the widespread adoption of extended producer responsibility (EPR) policy. Through EPR schemes, producers are responsible for the entire life-cycle of the products they put on the market, being required to pay for their collection, sorting and recycling after use. [More than 150 international businesses and organisations have called for the introduction of EPR policy](#) for packaging, recognising it as the only proven way to provide the sufficient funding required to collect, sort and recycle packaging. This is a powerful and constructive signal we hope many policymakers will pick up on.

Globally, a coordinated response in the form of an international treaty for a plastics circular economy is also urgently needed to harmonise policy efforts, enhance investment planning and stimulate innovation and infrastructure development. [Leading companies](#), alongside [national governments](#) and [millions of people](#), have called on [UN member states](#) to kick-start negotiations towards a new global [treaty on plastic pollution](#). The UN Environment Assembly (UNEA-5.2) taking place in February 2022 in Nairobi, Kenya, will be the next critical step towards this global agreement. ●

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**Renewable
energy is only
half the story**

**Complete the
picture with
the circular
economy**



ELIMINATE • CIRCULATE • REGENERATE

To fix the climate we must fix the economy.

While absolutely vital, the transition to renewable energy is only half the story. Nearly half of greenhouse gas emissions come from the way we make and use products and food. We need a circular economy transformation to eliminate waste and pollution, circulate products and materials, and regenerate nature. Only then will we reduce emissions enough to meet Paris Agreement targets, and truly complete the picture.

ellenmacarthurfoundation.org

