

Universal circular economy policy goals

Enabling the
transition to scale



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The Ellen MacArthur Foundation is a UK-based charity, committed to developing and promoting the idea of the circular economy in order to tackle some of the biggest challenges of our time, such as climate change, biodiversity loss, waste, and pollution. We work with, and inspire, business, academia, policymakers, and institutions to mobilise system solutions at scale, globally. In the circular economy, business models, products, and materials are designed to increase use and reuse, creating an economy in which nothing becomes waste and everything has value. Increasingly based on renewable energy and materials, the circular economy is a resilient, distributed, diverse, and inclusive economic model.

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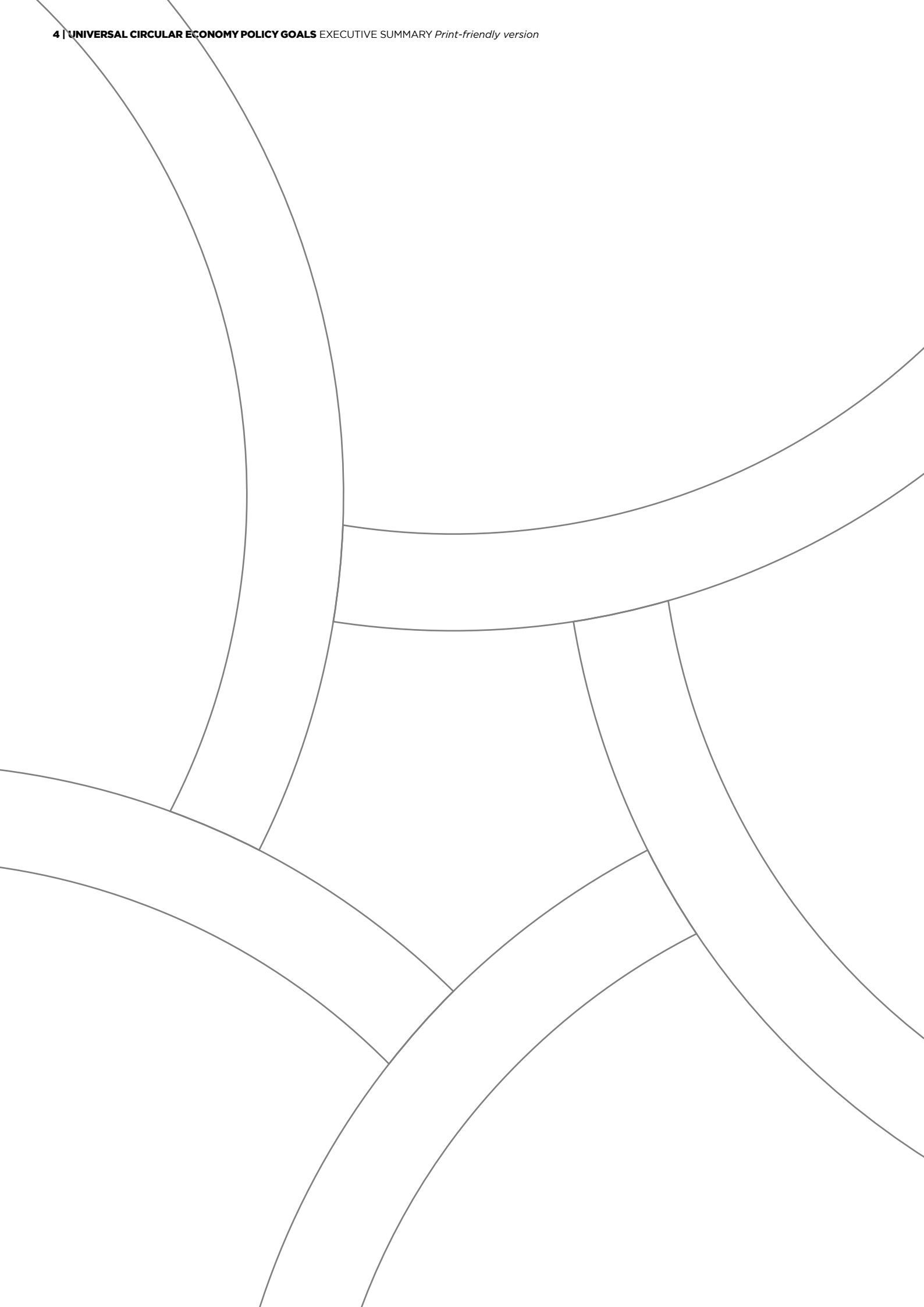
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To quote this paper, please use the following reference: Ellen MacArthur Foundation, Universal Circular Economy Policy Goals (2021)



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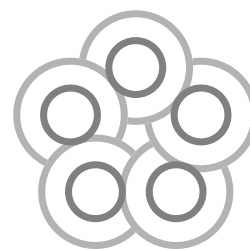
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Executive summary

The circular economy offers opportunities for better growth, through an economic model that is resilient, distributed, diverse, and inclusive. It tackles the root causes of global challenges such as climate change, biodiversity loss, and pollution, creating an economy in which nothing becomes waste and which is regenerative by design.

As industries begin their transition towards the circular economy, governments are developing circular economy roadmaps and strategies, both economy-wide and sector-based. This activity is vital to scale the transition, and as momentum builds, it is critical to agree on a clear direction of travel that reduces fragmentation and complexity, and takes into account the global nature of supply chains and production and consumption systems.

This paper sets out five universal circular economy policy goals around which governments and businesses can align to achieve their common objectives. Applicable across sectors and local contexts, these policy goals can – working in conjunction – help governments build healthier economic recoveries and lower the cost of transition for business.



As countries look to reboot their economies following the impact of the Covid-19 pandemic, the transition to a circular economy is more relevant than ever.¹ It is

a bigger idea than simply improving waste management and better recycling. It reaches far beyond incremental or end-of-pipe actions, and can lead to the improved wellbeing of citizens and the environment. The systemic nature of the circular economy transition can unlock a series of economic, environmental, and societal benefits. It is a better growth opportunity that can contribute to tackling multiple global challenges, including the climate crisis. Relying solely on energy-efficiency and switching to renewable energy will only address 55% of global GHG emissions.² The remaining 45% are a direct result of the way we make and use products and food, and can be significantly reduced through circular strategies. Integrating circular economy solutions into climate action workstreams and Nationally Determined Contributions (NDCs) as part of the Paris Agreement would complement and support the renewable energy transition through a transition in production and consumption systems. At the same time, the circular economy can play a critical role in addressing waste and pollution, and the impacts of resource extraction and processing which currently causes significant stress on our water resources and is responsible for 90% of biodiversity loss.³

The circular economy is a systems solution framework that contributes to the delivery of the United Nations' Sustainable Development Goals (SDGs).

The circular economy is underpinned by three principles, all driven by upstream design and innovation: eliminate waste and pollution, keep products and materials in use, and regenerate natural systems. Increasingly based on renewable energy and materials, and harnessing the power of digital technologies, the circular economy offers a resilient, distributed, diverse, and inclusive economic model. The circular economy is core to the delivery of SDG12 (to ensure sustainable consumption and production patterns) and delivers benefits across a further eleven SDGs including SDG9 (to build resilient, inclusive and sustainable industrialisation, together with infrastructure and innovation).⁴

Policymakers have a unique opportunity to enable and accelerate the industrial transformations needed to scale the circular economy.

The principles are being applied by an increasing number of the world's largest businesses from across different sectors and value chains.⁵ Private sector investment in circular economy opportunities is also rising sharply with, for example, the assets under management in public equity funds dedicated to the circular economy having grown fourteen fold in 2020 alone.⁶ To further advance this trend, creating the conditions for circular solutions to emerge at scale is therefore crucial and policy can play a key role in this.

Recognising this convergence of favourable trends and identifying the need for alignment, the Ellen MacArthur Foundation aims to provide a set of circular economy policy goals that can create a common direction of travel.

Aligning actions around these goals can accelerate the transition while avoiding fragmentation as a multitude of corporate efforts and government roadmaps are drawn up.

Embedding the circular economy model across industries will require comprehensive policy frameworks, as voluntary commitments by industry leaders alone will not achieve the scale required.

To take the example of plastic packaging, signatories of the New Plastics Economy Global Commitment – a voluntary commitment for achieving a circular economy for plastics – represent around 20% of the global market.⁷ To scale and extend the transition across the rest of the industry, policymakers have a key role to play, for example by: eliminating unnecessary and problematic plastic items across the economy, stimulating innovation, facilitating collection-for-recycling systems and the necessary stable and recurring funding for them, and incentivising increased use of recycled materials. Such policy initiatives and leadership are vital to help scale the transition across all sectors. At a time when a resilient economic recovery is needed on a global scale, policymakers can seize the moment to help usher in new value creation mechanisms to meet the need for post Covid-19 pandemic growth and demand a system reset.

In order to help create alignment and foster collaboration so that the full potential of the circular economy can be captured, this paper suggests the following five complementary policy goals:



GOAL 1

Stimulate design for the circular economy

Enable all products – from fast-moving consumer goods to long-term assets – to be designed, accessed, and used in ways that eliminate waste and pollution, and lead to the effective and economically attractive circulation of products and materials on the market. Stimulate the design and production of food and renewable materials in ways that contribute to increasing the return on invested energies, reducing climate impact and fostering regeneration of natural systems:

- Developing product policies that focus on high-quality design for durable goods and packaging (including emphasis on durability; reusability; design for repairability and remanufacturing; recyclability; compostability, where relevant; penalties on planned or premature obsolescence; and the sharing of information and tracking through product labels, tags, and digital product material passports)
- Stimulating circular building designs through construction and planning policies (including building codes and regulations, planning guidance, incentives for refurbishment and renovation, and supporting deconstruction and component or materials reuse over demolition and land filling of construction waste)
- Encouraging regenerative production through product and formulation design, sourcing practices and agricultural and land-use policies
- Adapting chemical legislation to enable circular economy outcomes
- Developing standards to support trade in circular economy goods, services, and systems

- Developing and harmonising collection and sorting policies (such as separate collection and management of materials), leading to the value retention of high-quality materials and products and enabling higher value organic loops as well as regenerative practices through nutrient cycling
- Developing secondary material and by-product markets
- Implementing spatial planning policies to enhance material flow and use, and creating business opportunities such as industrial symbiosis
- Strengthening resource loops through Extended Producer Responsibility (EPR) policies and Deposit Return Schemes (DRS) to support circular opportunities from reuse to recycling
- Reviewing and harmonising resource classifications and definitions in waste legislation
- Disincentivising landfilling and incineration



GOAL 3

Make the economics work

Create economic incentives and set regulatory requirements that enable circular economy solutions to become the norm rather than the exception, thereby unlocking benefits at scale:

- Aligning taxation and fee incentives, such as EPR, with circular economy outcomes
- Reforming and, where relevant, deploying subsidies
- Attaching conditions to state aid and government funds
- Reviewing competition policy
- Adapting intellectual property rights
- Implementing labour market policies to support the transition
- Incorporating circular economy principles into trade policies
- Using public procurement to grow new markets
- Ensuring transparency through taxonomy and disclosure requirements
- Adapting accounting rules
- Reviewing digital and data regulation



GOAL 2

Manage resources to preserve value

Promote the development of business models and resource management systems that keep products and materials in the economy at their highest possible value, enabled by the design principles and approaches laid out in Goal 1:

- Creating tax and procurement policies that foster repair, sharing, resale, and remanufacturing to maximise asset use and return on invested energy



GOAL 4

Invest in innovation, infrastructure, and skills

Invest public money, and stimulate private sector investment, in developing the skills required to create circular economy opportunities and ensure an inclusive transition, supporting innovation, and developing the infrastructure necessary to scale the transition:

- Providing interdisciplinary research funds
- Offering early-stage venture funding
- Supporting blended finance solutions for physical and digital infrastructure, and innovation
- Incorporating the circular economy in school and higher education curricula
- Developing training programmes and apprenticeships
- Building capacity through international aid



GOAL 5

Collaborate for system change

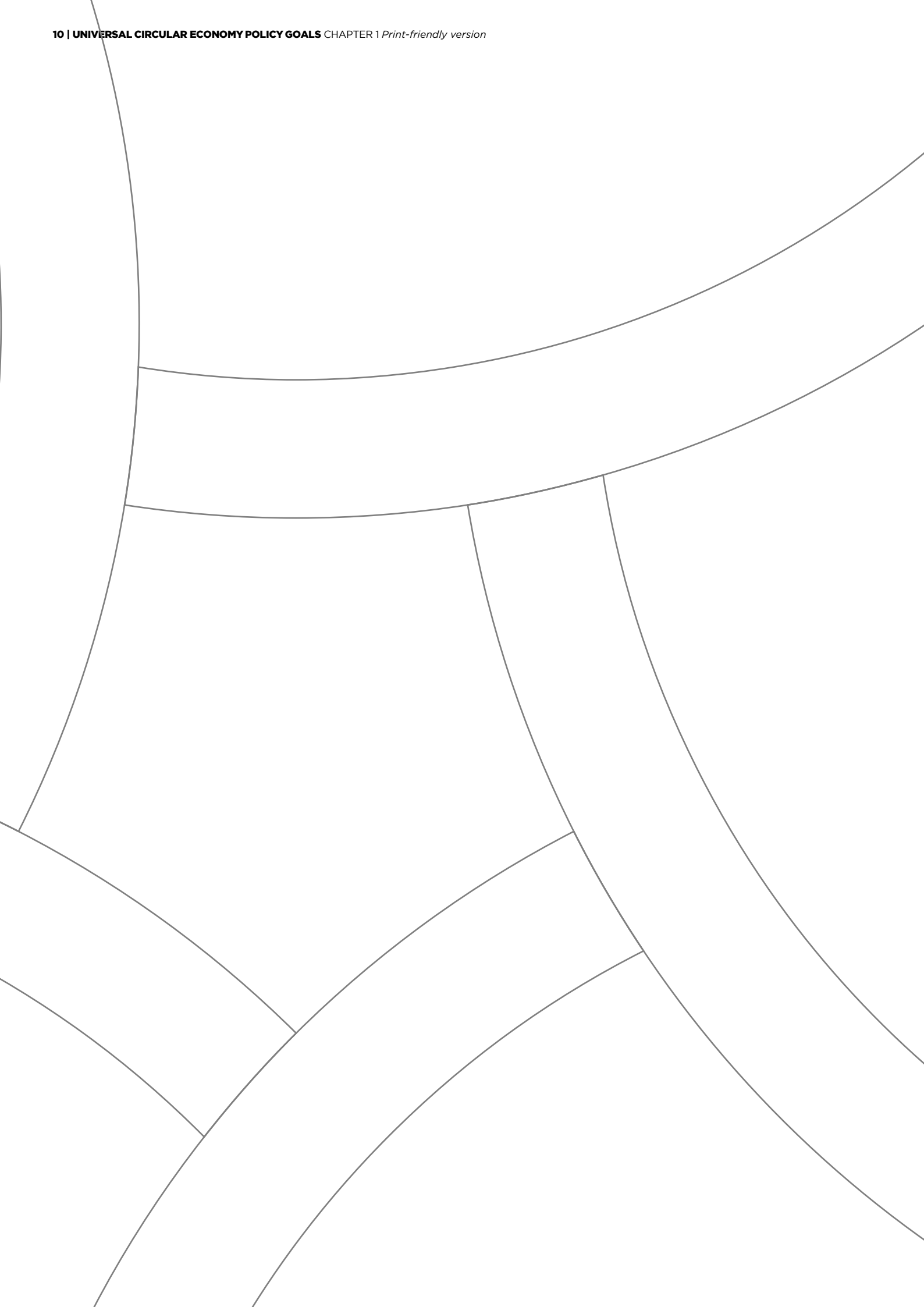
Foster responsive public-private collaboration across value chains to remove barriers, develop new policies, and align existing ones; work across government departments, nationally and internationally to build policy alignment and durable change; and measure progress towards embedding a circular economy approach across sectors:

- Promoting the establishment and adoption of multi-stakeholder, cross-value-chain, inclusive and responsive working mechanisms to develop system solutions and to build public-private capacity
- Mainstreaming circular economy principles into national and international policies, and building cross-border policy alignment
- Developing and implementing awareness-raising campaigns
- Accelerating progress through measurement and use of data

Pursuing the goals as an interconnected set is key to unlocking a systemic shift in production and consumption. This integrated approach avoids individual policies for a circular economy being stranded in a wider policy landscape that supports a linear, extractive model. By spanning the economy, the goals open up opportunities to embed circular economy principles in crucial cross-cutting policy agendas such as economic and industrial development, climate change, biodiversity, and resource security. The starting points for each country and each sector will be different, and trade-offs will need to be considered, but the essence of the five goals and the need to build alignment between policy efforts is universally relevant.

We call on businesses and policymakers at all levels – international, national, and local – to work together and align with these goals as the basis for a society-wide transition to a circular economy. The goals apply across sectors and value chains and can provide a springboard for context-specific policy development around the world. Global adoption of these goals could catalyse private sector innovation and the development of solutions that can be deployed and scaled rapidly around the world. Public-private dialogue and ambition will drive action and will be critical to the implementation of the goals. Nurturing an informed and balanced co-creation process will be a prerequisite for success.

Now is the time to channel the energy behind the post Covid-19 recovery into creating an economy that is by design resilient, inclusive, and regenerative.



CHAPTER 1

Establishing a set of universal circular economy policy goals to achieve the transition at scale

The circular economy transition is more important than ever

The circular economy helps address the root causes of global challenges. The Covid-19 pandemic has starkly highlighted the deep interplay between the economy, human health, and the environment.

The global challenges at the heart of that relationship – climate change, biodiversity loss, and pollution – are results of the linear ‘take-make-waste’ economy. By eliminating waste and pollution, keeping products and materials in use, and regenerating natural systems, the circular economy is being increasingly recognised as a design-led approach to unlocking systemic solutions that address these challenges.

“ The circular economy offers a solutions framework for economic renewal, innovation, and industrial transformation.”

Studies show that the circular economy can contribute towards tackling the remaining 45% of greenhouse gas emissions that cannot be resolved by transitioning to renewable energy alone (see Figure 2).⁸ Meanwhile, the circular economy can also offer solutions to the 90% of biodiversity loss and water stress that is brought about by resource extraction and processing.⁹ Pursuing the current linear system is projected to lead to resource use nearly doubling from 2011 to 2060, which will further exacerbate the global challenges, and will not address issues of supply chain brittleness and uneven distribution of benefits.¹⁰ In contrast, the centrality of a circular economy to the delivery of SDG12 (Sustainable Consumption and Production), and through this at least eleven additional SDGs (such as SDG9 for inclusive, sustainable industrialisation, together with innovation and infrastructure) has been recognised by the UN International Resource Panel (see Figure 1).¹¹

The circular economy offers a solutions framework for economic renewal, innovation, and industrial transformation. Through new forms of value creation that emerge from redesigning production and consumption systems, the circular economy is an innovation agenda that can lead to better growth (see Figure 3). Multinationals, small and medium-sized enterprises (SMEs), and start-ups have all begun to embrace circular opportunities, which have proven resilient during the pandemic.¹² Modelling the benefits of a circular economy for plastic packaging has shown that alongside reducing the annual volume of plastics entering our oceans by 80%, and reducing GHG emissions by 25%, a circular economy can, by 2040, generate savings of USD 200 billion per year and create 700,000 additional jobs.¹³

Country analyses have also indicated the economic benefits and savings of the circular economy, when compared to continued development on a linear trajectory. In Europe, analysis of the construction, food, and mobility sectors indicated that the circular economy could yield annual benefits of up to EUR 1.8 trillion (USD 2.1 trillion) by 2030, double that of the linear development path, and representing additional GDP growth of 7 percentage points.¹⁴ In India, a circular development path in the same sectors could bring economic benefits equivalent to 30% of India’s 2015 GDP by 2050, alongside decreasing emissions and pollution.¹⁵ In China, circular economy opportunities in the built environment, mobility, nutrition, textiles, and electronics sectors could lower the cost of access to goods and services – leading to business and household savings of around CNY 70 trillion (USD 10 trillion, or 16% of China’s projected GDP) by 2040.¹⁶

Meanwhile OECD analysis of multiple studies indicates that the adoption of circular economy policies will achieve an average net-positive employment gain.¹⁷

Transitioning to the circular economy can also improve wellbeing in a number of other areas. The indirect and direct health benefits of the circular economy spring from reduced pollution and environmental impacts, improved natural system resilience, advances in food safety and security, as well as cost savings through the adoption of circular business models in healthcare.¹⁸ To take the example of the food system, a circular economy for food can lower the health costs associated with pesticide use by USD 550 billion, as well as significantly reduce antimicrobial resistance, air pollution, water contamination, and foodborne diseases, and improvements in soil health can help support livelihoods.¹⁹ In the case of mobility, compared to the current development path, a circular economy approach could reduce traffic congestion in China's cities by 47%, and lower emissions, including of harmful fine particulate matter (PM2.5) by 28%, by 2040 – leading to improvements in air quality among other benefits.²⁰ A circular economy in the built environment can stimulate more productive use of buildings, infrastructure, and land – unlocking positive environmental and societal impacts, including further reductions in particulate emissions. For example, in China's cities emissions of PM10 from the built environment could fall by 72%, by 2040, in a circular economy scenario compared to the current development path.²¹ Other benefits include enhanced liveability, improved health, and a greater sense of community.²²

FIGURE 1

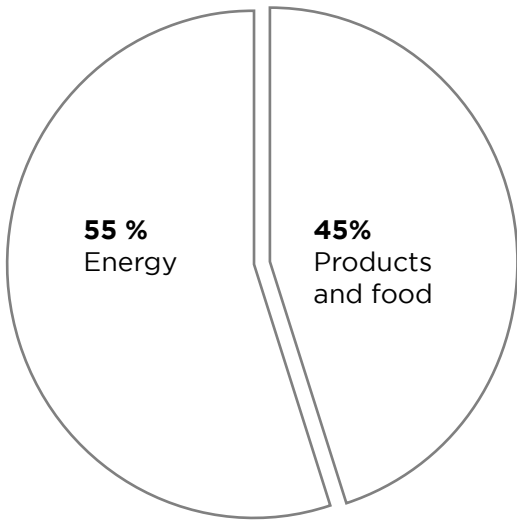
THE CIRCULAR ECONOMY CONTRIBUTES TO THE DELIVERY OF AT LEAST 12 SDGS



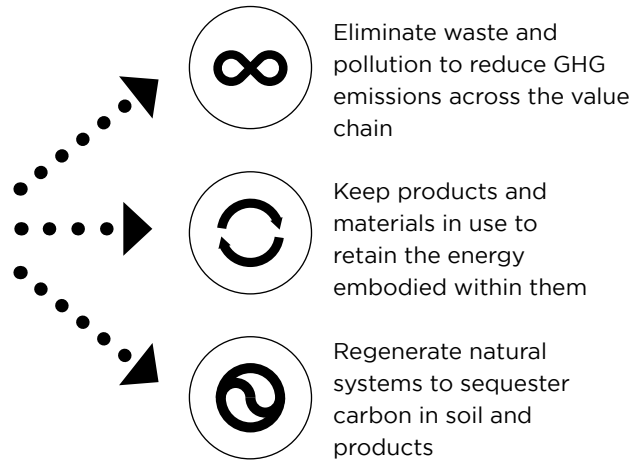
As economies look to rebuild from the impact of the Covid-19 pandemic, the circular economy offers an attractive path forward. Implementing the three principles of a circular economy goes far beyond incremental actions, 'end-of-pipe' clean-up approaches or solutions such as recycling. The opportunities to redesign how we produce and consume are broad and cross-sectoral. With governments unveiling trillions of dollars in stimulus funding in response to the economic and health impacts of the pandemic, we have reached a crucial moment to harness forward-looking public investments and incentivise private investments towards a healthier, more resilient, low-carbon circular economy approach.²³

FIGURE 2
HOW THE CIRCULAR ECONOMY CONTRIBUTES TO TACKLING CLIMATE CHANGE

BREAKDOWN OF CURRENT GLOBAL GREENHOUSE GAS EMISSIONS (GHG), BY ORIGIN



CIRCULAR ECONOMY PRINCIPLES AND THEIR ACTION ON GHG EMISSIONS



SOURCE: Ellen MacArthur Foundation, Material Economics, Completing the picture: How the circular economy tackles climate change (2019)

FIGURE 3 **EXAMPLES OF CIRCULAR ECONOMY OPPORTUNITIES AND BENEFITS IN THREE SECTORS**



Plastic packaging²⁴

In a circular economy for plastics, reusable packaging alone represents a USD 10+ billion innovation opportunity that can deliver significant user and business benefits including brand loyalty, improved user experience and insights, cost savings, and optimised operations.



Fashion²⁵

A circular economy for fashion can address the USD 500+ billion of value lost annually due to clothing underutilisation and a lack of effective collection and recycling infrastructure. Circular designs and business models that keep products at their highest value (such as repairs, re-commerce, rental, remake) can drive innovation and lead to improved human and ecosystem health.



Food²⁶

A circular economy approach to food would generate annual benefits worth USD 2.7 trillion by 2050 globally, based on GHG reductions, water savings, avoided land degradation, reduced health costs, and new economic opportunities.

For examples of circular economy goods and services in these three sectors, visit: <https://www.ellenmacarthurfoundation.org/our-work/approach/systemic-initiatives>

“ Studies show that the circular economy can contribute towards tackling the remaining 45% of greenhouse gas emissions that cannot be resolved by transitioning to renewable energy alone.”

FIGURE 4 **THE CIRCULAR ECONOMY**

The circular economy is a systems solution framework that tackles global challenges such as climate change, biodiversity loss, waste, and pollution.

IT HAS THREE PRINCIPLES, DRIVEN BY DESIGN:



Eliminate waste and pollution



Keep products and materials in use



Regenerate natural systems

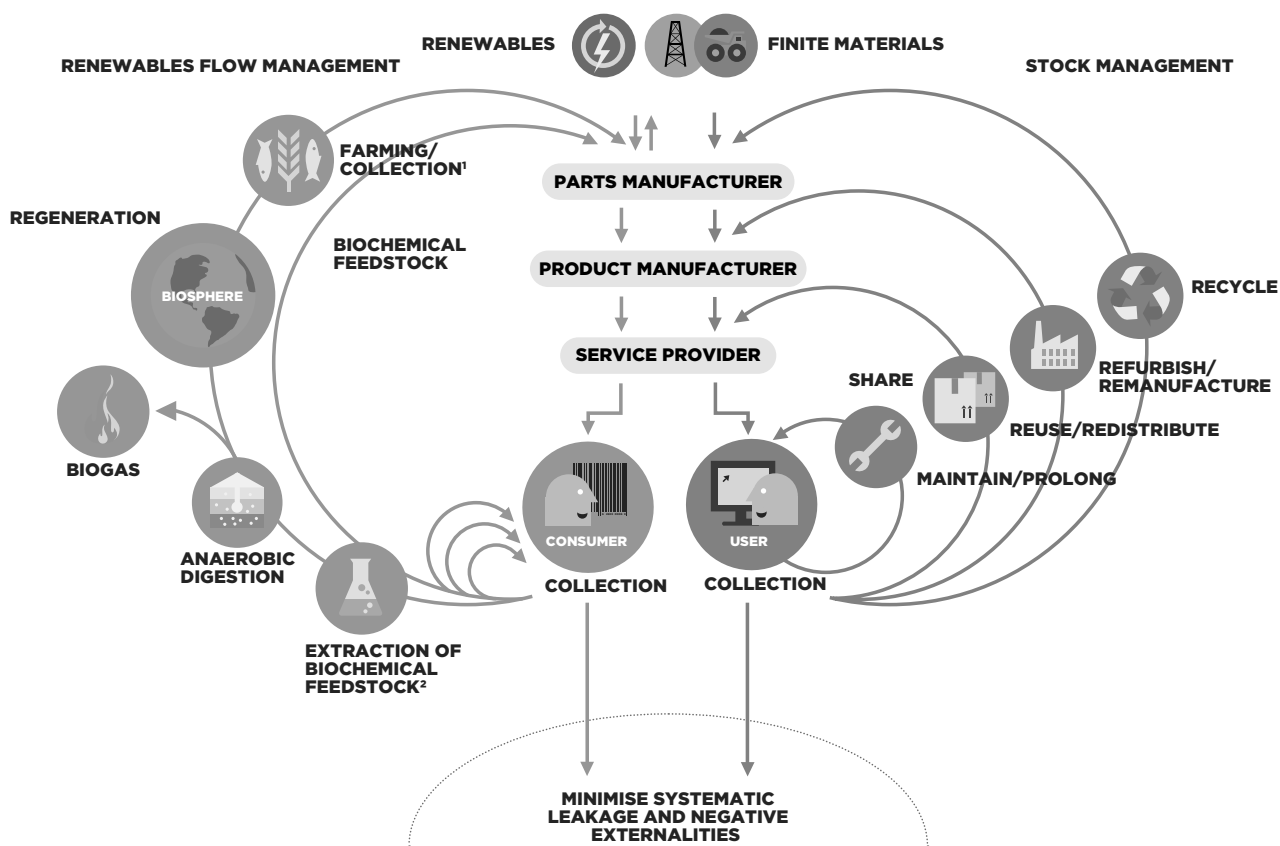
It is based increasingly on renewable energy and materials, and is a resilient, distributed, diverse, and inclusive economic model.

The circular economy is a system change agenda that presents opportunities to create better growth. Going well beyond addressing the symptoms of today's wasteful and polluting economy, the circular economy represents an opportunity to create value in ways that benefit society, business, and the environment. These solutions, which can scale-up quickly and are applicable anywhere in the world, can reduce the likelihood of future shocks and create greater resilience.

The circular economy is underpinned by design, spurring innovation that harnesses digital technologies across a range of opportunities as illustrated in Figure 3. It has four building blocks:

- The design of products and services informs which materials are used, how an item, asset or system is put together (or grown), and whether these material and design choices support subsequent valuable uses. In a circular economy this can involve designing for disassembly, repairability, modularity and adaptability, durability, and compostability.
- The design of business models determines how an item is made available on the market which can impact how many times it is used, and who has responsibility for its onward use. Circular business models can inform and be informed by design choices, as well as wider system conditions, and be key to enabling material and product cycles. Circular business models can vary by sector and include: access-over-ownership and product-as-a-service; digitally-enabled resale, rental, and sharing platforms; life-extension through repair, reuse, and remanufacture; and regenerative agriculture.
- The design of reverse cycles enables materials and products fit for the circular economy to be kept in productive use. It can be inherently part of a business model, as in the cases of product-as-a-service models and industrial symbiosis; it can be provided by networks of users and businesses; and it can be supported by household and commercial collection, sorting, and treatment systems.
- A wider set of enabling conditions inform choices on production and use, including through policies, finance, digital technologies, education, information sharing, and awareness-raising activity.

**THE CIRCULAR ECONOMY:
A SYSTEMS SOLUTION FRAMEWORK**



- 1 Hunting and fishing
- 2 Can take both post-harvest and post-consumer waste as an input

SOURCE:
Ellen MacArthur Foundation *Circular economy systems diagram* (February 2019) | www.ellenmacarthurfoundation.org | Drawing based on Braungart & McDonough, Cradle to Cradle (C2C)

The transition is underway in both public and private sectors, but it needs to accelerate

In the last five years, growing numbers of businesses across sectors are turning to circular economy approaches.

Companies are transitioning to circular economy designs and business models to identify product innovations, capture new and diversified opportunities, and meet changing customer preferences. Adopting circular economy business models can also mitigate exposure to market risks such as commodity price fluctuations and extended linear supply-chain risks.²⁷ Notably, circular economy solutions accounted for 13% of Philips' revenues in 2019; Caterpillar offers more than 7,600 remanufactured products; and Solvay has set a goal to more than double the sales of products based on renewable or recycled resources to 15% of its turnover.²⁸ Projections by sector also indicate the transformation opportunities. In fashion, for example, clothing resale is expected to be bigger than fast fashion by 2029.²⁹

Meanwhile over 1,000 organisations, including businesses from across the plastic packaging value chain, representing more than 20% of all plastic packaging used globally, have united behind a common vision for a circular economy for plastic and are reporting annually on progress towards their agreed 2025 Global Commitment targets.³⁰ As companies of all sizes move from testing and piloting circular economy opportunities towards implementing circular economy approaches across their core business, there is an ever-increasing interest in ways to track their progress and impact. In the first year following the launch of Circulytics in January 2020 – a measurement tool for assessing progress towards the circular economy across a company's operations – over 800 companies signed up from across sectors and value chains, a fifth of whom have annual revenues over USD 1 billion.³¹

Over the same timeframe, there has been a noticeable increase in the development of circular economy policy strategies and initiatives across all tiers of government.

This activity is sending a positive signal to entrepreneurs and innovators, and is laying the foundation from which to develop appropriate, coordinated, enabling conditions. In cities and municipalities, states and national governments, and international institutions, the circular economy is gaining attention for the role it can play in meeting public policy objectives. For example:

- City governments are becoming increasingly aware of how the circular economy can offer solutions to multiple urban challenges and, as a result, multiple demonstration projects are emerging.³² In the current linear economy model, cities have become centres of resource consumption, emissions, and waste production. A wide range of products and assets, from clothing and electronics to vehicles and buildings, are underused. A circular economy model offers cities a chance to create more flexibility in the design, development, use, and maintenance of the built environment; reduce transport emissions and support active transport plans; and attract talent by creating healthier living and working environments. The circular economy also offers the potential to develop resilient, local supply chains and the jobs that go with them.³³
- At the national level, there is growing recognition that the circular economy is a cross-government agenda for better growth with multiple benefits. In several instances, the need to address fundamental waste

management issues has been the initial driver, often making environment ministries the champions of the circular economy agenda. However, other ministries in charge of economic and industrial development, innovation, transport and infrastructure, and sectors such as food or tourism are now acknowledging the relevance of the circular economy and acting accordingly.³⁴ This raises the importance of establishing greater inter-ministerial coordination and coherence between policy measures, reflective of the interconnected and systemic nature of the circular economy transition which requires the bridging of traditional silos.

- In international settings, the increased recognition that the circular economy can provide substantial help in tackling climate change and biodiversity loss, and in meeting other SDGs, makes policy alignment and commitment ever more important. The fourth UN Environment Assembly (UNEA4) in 2019 adopted a resolution on innovative pathways to achieve sustainable consumption and production in line with SDG12, referencing the critical contribution that a circular economy approach can play in achieving this.³⁵ The role of trade in promoting and enabling the circular economy has also started to be explored in World Trade Organisation (WTO) settings, following discussions at the 2018 WTO Public Forum and 2019 Environment Week.³⁶ These activities have been running in parallel with the Group of Twenty (G20) Environment Ministers increasing their focus on the circular economy and resource-efficiency approaches since 2017.³⁷ Regional initiatives are also increasing, following the early leadership by the European Commission's first Circular Economy Action Plan of 2015. In 2020, UNIDO started a process of consultations on the circular economy on the path to inclusive and sustainable industrialisation with its 170 Member States.³⁸

Support for circular economy initiatives is also emerging in the financial sector.

The number of public equity funds dedicated to the circular economy have grown steeply from two in 2018 to 13 funds at the end of 2020, totalling USD 4.6 billion in assets under management (a fourteen fold increase in 2020 alone) and including funds by leading providers BlackRock, BNP Paribas, Credit Suisse, and Goldman Sachs.³⁹ Venture capital, private equity, and private debt also saw a rapid acceleration of circular economy activity, with the number of private market funds increasing tenfold since 2016.⁴⁰ A similar trend of steep growth is visible in the bond market, bank lending, project finance, and insurance. This rapid uptake marks a significant shift that can enable circular economy opportunities to scale, catalyse the efforts of businesses and governments, and help reverse the historic underfunding of SDG12 (Sustainable Consumption and Production).⁴¹

“ In fashion, clothing resale is expected to be bigger than fast fashion by 2029.”

FIGURE 5

Examples of circular economy policy initiatives around the world



In North America, the Canadian government has commissioned the Council of Canadian Academies to assess opportunities for a national circular economy, and the United States' House Select Committee on the Climate Crisis has recommended the development of a circular economy roadmap.

In Latin America and the Caribbean, following UNEA4, a regional coalition of national governments, international institutions, and strategic partners is being developed to share best practice and accelerate the transition across the continent.

The European Commission's second Circular Economy Action Plan 2020–24 forms a central pillar of the European Green Deal – a vision for growth that puts the EU on course to become the first climate-neutral continent. In parallel, an increasing number of European countries have been developing complementary national strategies, spanning from Finland in the north in 2016 to Spain in the south in 2020. The Netherlands has set out targets for the country's economy to become fully circular by 2050.



The African Alliance on Circular Economy is developing a secretariat hosted by the African Development Bank to unlock development funding in line with circular economy principles.

Across Asia and Oceania, several national government initiatives are integrating a circular economy approach with policy objectives on sustainable production and consumption, as well as economic development and improved wellbeing. The circular economy is also garnering attention in this region as a response to global waste management challenges, including marine plastic litter.

FIGURE 6

All actors have a role to play in bringing the circular economy transition to life

Policymakers, businesses, and the finance sector have a particularly strong leadership role to play in the transition to a circular economy.

These groups can directly determine which materials and products are put on the market, and how long they stay in use. These decisions, often referred to as 'upstream', are critical. Policymakers inform these upstream decisions in their capacity to set the regulatory incentives and disincentives, and the associated enabling conditions. Businesses make upstream choices through their production, design, and manufacture decisions, as well as through their offering and marketing of goods and services. The finance sector influences upstream decisions through their assessment of risks and business models.

These leadership roles sit within a wider context where every actor has a role to play. Universities and research centres play a critical part in offering valuable insights that can provide new solutions and help drive economies forward. Citizens and civil society play a key role in indicating the changes they want to see, for example through their uptake of affordable circular business models and products, their participation in collection systems, and their exercise of the right to repair. They also play the role of holding other parties to account.

The economy is and will remain complex, hence the value of working together to understand the opportunities that exist in and across value chains and the interaction between different systems.

Now is the time to harness this momentum by aligning around policy goals that will allow circular economy innovations to emerge at scale

The importance of building sub-national, national, and international policy alignment is rising up the agenda.

The early stages of transitioning to a circular economy have helped to highlight the need for policy alignment across borders and between systems. This can support value chains that stretch across boundaries and borders, and support citizens who interact with multiple systems. By working internationally and across government tiers to achieve common definitions or interoperable schemes, policymakers can reduce transaction costs and facilitate the adoption of circular economy practices by both businesses and citizens. For example, current regulatory definitions of waste can obstruct the trade in, and transportation of, products intended for reuse, repair, refurbishment or remanufacturing. As a result, goods and services that are developed in line with circular economy principles can still end up in a linear 'take-make-waste' system. In another example, variances in transparency and disclosure requirements can inhibit the growth of consistent and comparable data sets, particularly where supply chains are global, which reduces their ability to inform business and policy decisions.

Through a wide range of measures, policymakers can create a new level playing field in which circular economy decisions are the norm. Such measures include the development of new policies and the amendment of existing policies to be in line with circular economy principles. The current linear economy generates significant

negative externalities at all stages, for example the costs to society, which accumulate over time, related to pollution, climate change, biodiversity loss, and water stress. 'Internalising' such costs (bringing them into the market mechanism), for example by putting a price on pollution, can be a powerful incentive to move towards the circular economy. Through institutional structures and legislation, policymakers can define which costs relating to economic activities must be accounted for. This means defining who bears the costs of negative externalities, be they societal (e.g. inequalities and ill health) or environmental (e.g. air, soil and water pollution).⁴² By transitioning to the circular economy, there is an opportunity to structure the system so that such costs are internalised and in the end eliminated. Providing clarity about this direction of travel can help de-risk private sector investments that support the transition.

To harness the potential of policy to scale the circular economy transition, a shared understanding of the systemic nature of the opportunity and a common direction of travel are needed. This will help avoid the creation of a patchwork of solutions that risks being fragmented, causing friction across boundaries and borders if national and international alignment is not considered, and increasing transaction costs if organisations need to comply with a wide variety of similar but

different schemes. Creating alignment around the systemic nature of the change can help to mitigate the risk of individual policy measures remaining situated in a wider, unchanged economic system that is based on a linear approach. For example, the 2019 Sustainable Development Goals Progress report confirmed the economic benefits of meeting SDG12 and noted that the societal benefits were too often overlooked.⁴³ The 2020 report stated that only 10% of policies reported as contributing to SDG12 were economic or financial in nature, with a focus on waste management policies, while the underlying economic model remains linear.⁴⁴

The challenge of effecting a systemic transition that cuts across multiple domestic and international policy areas and ministerial or departmental remits should not be underestimated. Aligning around a set of universal circular economy policy goals will be crucial for supporting this next phase.

“ Through a wide range of measures, policymakers can create a new level playing field in which circular economy decisions are the norm.”

Creating a common direction of travel: A set of universal circular economy policy goals

The goals recognise the interconnectedness of the policy measures involved in transitioning to a circular economy. No single goal can create a systemic fix, not least as the incentives to operate in a linear economy are deeply, and not always obviously, embedded.

With this in mind, the goals intentionally focus on addressing the root causes, rather than the symptoms, of the current linear economy. Together they provide a framework for a common direction of travel.

Each of these goals can be delivered through a range of policy measures, applied at the most suitable governance tier. The example policy measures indicated in Chapter 2 are primarily relevant for national governments, but they can also inform international policy development as well as municipal policies and by-laws. The noted policy measures are neither exhaustive nor ranked, rather they are illustrative of the breadth of areas for consideration. The policy measures are linked to a lead goal. However, as systems are interconnected, they may contribute to the delivery of more than one goal. For further detail on examples of policy measures in practice, see the endnotes for this paper.

The goals are relevant across sectors and value chains, and provide a springboard for context-specific policy developments, including where these cross borders. Each goal considers opportunities from across sectors – such as fast-moving consumer goods (FMCGs) and food, and long-lived assets, such as machinery and buildings. Taking this cross-sectoral approach, highlights the commonalities of what is needed to accelerate the transition and aids the adoption of a circular economy mindset, opening the door to detailed material- or sector-specific policy developments.

**GOAL 1****Stimulate design for the circular economy**

Goal 1 focuses on stimulating the emergence of circular design for goods and services, and circular business models that keep inorganic and organic materials and goods in use and at the highest value possible. Product policies, building regulations, and agricultural, land-use, and food policies – together with chemical guidance, international standards, and trade opportunities – can all support this transition to ensuring that what is placed on the market is designed with circular economy principles in mind from the start. Waste prevention, through design and production methods, as well as business models for the circular economy, is at the core of this upstream-focused goal.

**GOAL 2****Manage resources to preserve value**

Goal 2 creates the systems for resource management that deliver multiple circular economy loops in such a way that the value of the goods and materials are preserved. It supports and completes the open and closed loops that are initiated in Goal 1. The focus shifts from waste management to the management of resources. The emphasis is on extending the use and the value of products and materials. For the food system, Goal 2 also supports the redistribution of surplus edible food and the valuable use of by-products. This goal includes policies that incentivise collection, separation, and sorting systems that can support the reuse, sharing, repair, and remanufacture of products, in addition to high-quality recycling and treatment systems, such as composting and anaerobic digestion. This goal supports the creation of secondary material and by-product markets, and disincentivises a default to linear waste management practices.

**GOAL 3****Make the economics work**

Goal 3 ensures that the policies and systems adopted in the first two goals are fully supported. Shifting from a focus on creating the goods and material loops in Goals 1 and 2, Goal 3 focuses on the broader economic, legislative, and

regulatory frameworks that are just as important to make the economics of the circular economy transition work. By aligning taxation, subsidies, state aid and government funds, competition, labour and trade policies, as well as procurement, disclosure, and accounting requirements with circular economy principles, this goal can enable circular economy business decisions to become the norm rather than the exception. Without a focus on Goal 3, there is a risk that the incentives and systems set up in Goals 1 and 2 can never truly scale and, at worst, may be unintentionally undermined.

**GOAL 4****Invest in innovation, infrastructure, and skills**

Goal 4 focuses on public finance capabilities that further help to scale the circular economy. Public investment can fund the development of infrastructure, innovations, and skills directly, and can unlock private sector capital for harder-to-finance opportunities. Targeted investments in transformative business models, product, and material innovation, as well as physical and digital infrastructure, can be key to the implementation of Goals 1 and 2. Investments in skills will create economies fit to capitalise on new opportunities and support an inclusive transition to a circular economy.

**GOAL 5****Collaborate for system change**

Goal 5 focuses on the mechanisms that can support the mainstreaming of circular economy principles into existing and new policies in line with Goals 1, 2, 3, and 4. Establishing alignment and harmonisation nationally and internationally is key, as is the development of processes that are inclusive and cross-value chain, and which provide policymakers with the feedback they need from implementers and users. Goal 5 also explores the need to measure and track progress, and to identify data sets that can inform policymaking. Importantly, since the transition to a circular economy requires innovation and systems thinking, innovation in policymaking and governance will also be needed as part of the transition.

Policymakers will need to ensure the transition is adapted to different contexts

While the policy goals for the circular economy are universal, the transition will need to respond to local opportunities, strengths, and challenges.

The nature of the transition and its implementation will differ across countries and continents. Variances in production and consumption patterns, sectoral composition, trade flows, infrastructure development, scale of informal employment, and institutional implementation and enforcement capacity all contribute to determining a country's starting point in the transition from a linear to a circular economy. With this in mind, universal circular economy policy goals provide an overarching framework for context-specific policy developments.

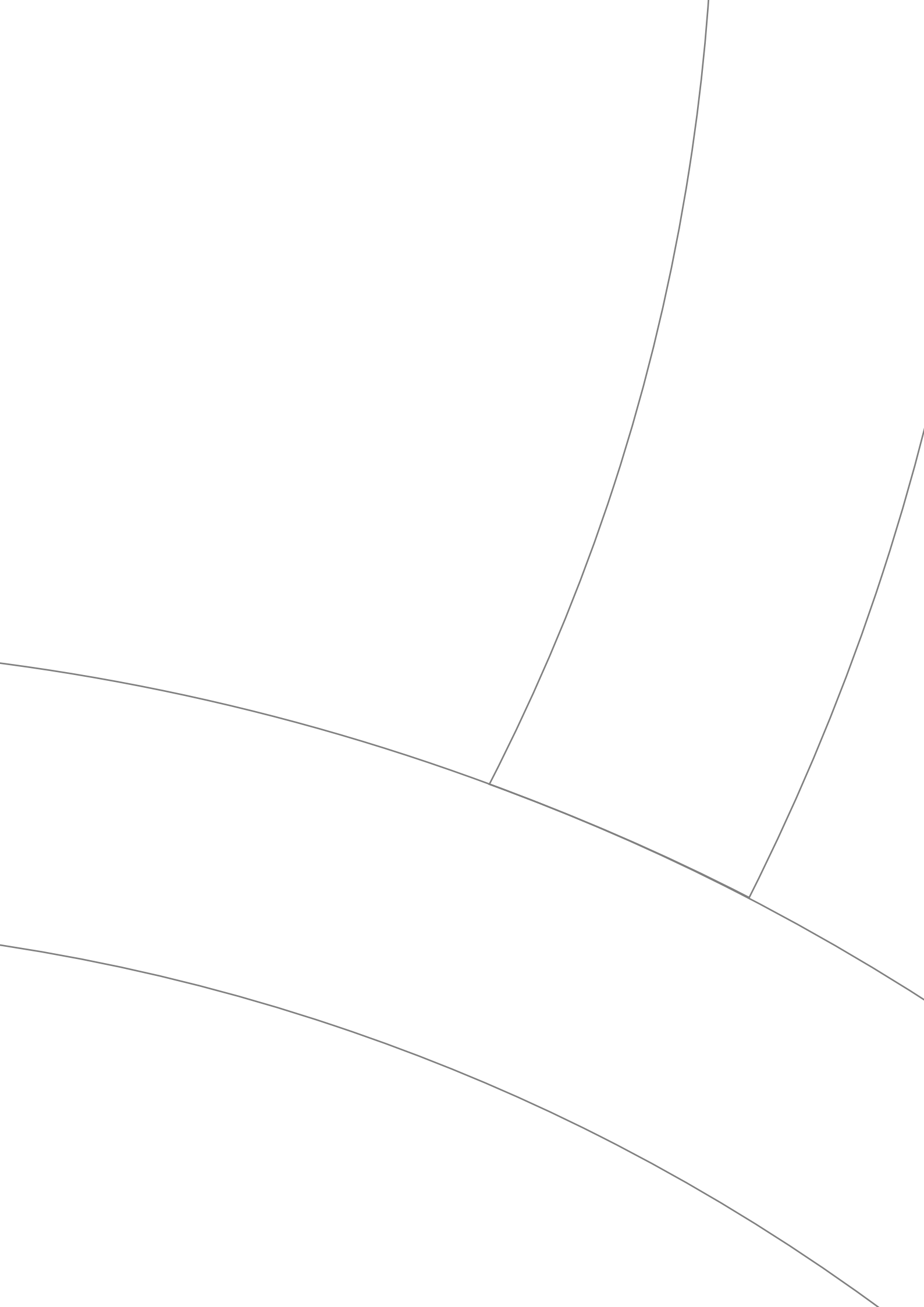
“ In transitioning to the circular economy, policymakers will need to be mindful of trade-offs brought about by industrial restructuring”

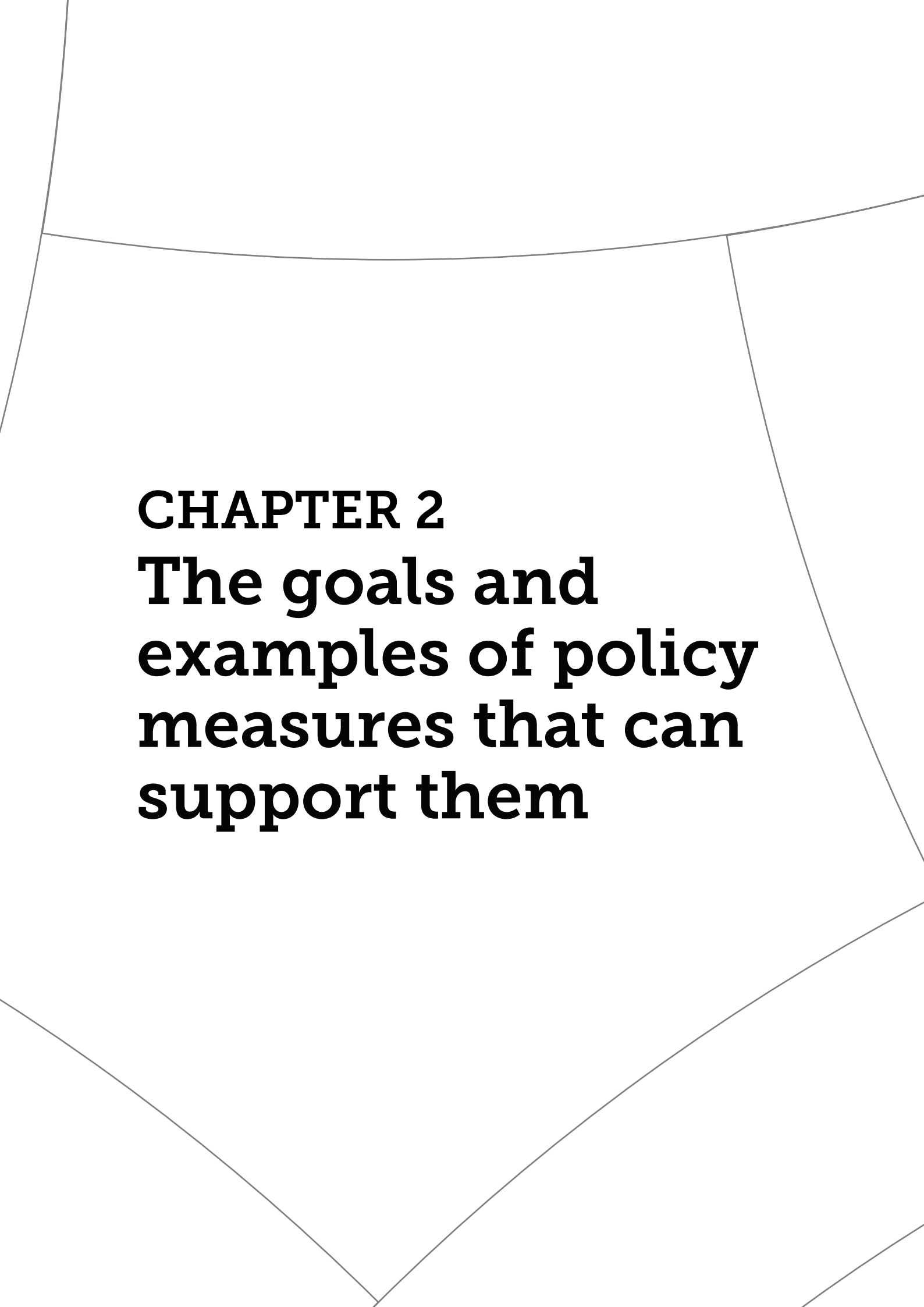
In transitioning to the circular economy, policymakers will need to be mindful of trade-offs brought about by industrial restructuring. For example, in many countries (low-, middle-, and high-income), extractive industries, such as oil and gas, and minerals and metals, can play a key role in the national economy, providing income and employment. In sectors where the transition to a zero-carbon circular economy can present significant structural changes, the transition needs to be planned to ensure it occurs alongside

the emergence of high-quality employment, social inclusion, and poverty alleviation.⁴⁵ This also applies to the informal sector which plays, and will continue to play, an important role in many national economies. There are opportunities for informal workers to benefit from an increase in circular economy activities, and policymakers can support the integration of these workers and their organisations into circular economy value chains.

There are a number of policy interventions that governments can put in place to help sectors and industries adapt to new opportunities and growth markets. This includes, among others, reviews of economic, trade, and labour policies as outlined in Goal 3; training, re-skilling, and innovation investments as outlined in Goal 4; as well as transparent and inclusive roadmap developments and policy dialogues as outlined in Goal 5. Analysis of job opportunities resulting from a circular economy approach indicate that when policies that tackle material consumption are combined with tax reform, there is a net-positive employment effect.⁴⁶ Development and implementation of coordinated policy measures will require policymakers to work collaboratively with other key stakeholders (such as unions, cooperatives, and the private sector) to deliver a just transition. Despite the transition challenges, the benefits of a circular economy outweigh the costs of remaining on a linear economy trajectory.⁴⁷



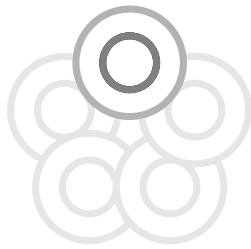




CHAPTER 2
**The goals and
examples of policy
measures that can
support them**

CIRCULAR ECONOMY

POLICY GOAL 1



Stimulate design for the circular economy

This goal looks at how policy can incentivise the switch to circular design practices and circular business models at scale and across sectors.

The way products are made, used, and consumed is key and integral to SDG12 (Sustainable Consumption and Production) considerations, whilst offering benefits to eleven additional SDGs. Goal 1 directly supports waste prevention objectives and sets the system up for supporting circular business models and high-value resource loops such as sharing, reuse, repair, refurbishment, and remanufacture for non-organic products. These high-value resource loops can also increase the return on embedded or invested energy. For organic materials, this goal enables the sourcing of regeneratively grown inputs, and compostability and the safe return of nutrients to the biosphere where appropriate. By virtue of its applicability to goods that are made from both organic and non-organic materials, the goal leads to increasing natural capital regeneration and resilience, benefiting the environment and communities.

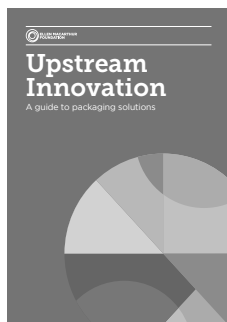
Given that all goods and services have a design stage and are brought to market through business model choices, enabling

circular decisions to be made right at the start is key. During the design stage, decisions are made that influence how we make, use, and consume things, and how we live and travel. Importantly, decisions at this stage can also inform whether an item is able to provide value in multiple iterations or is quickly lost as waste after a single use. Once these decisions are made, they are difficult to reverse. Circular designs focus on eliminating waste and pollution across the production and use stages, and ensuring that goods and by-products can safely remain in use in the system, because the right material and nutrient input, design, and business model choices have been made from the outset. Circular design practices can also inform whether goods and by-products can return to natural systems, based on their ability to regenerate. These approaches also consider safe material choices, assembly methods, and ways to enable multiple-use cycles and circular business models. For example, creating durable, repairable, and reusable products, or products that can be remanufactured, can work hand-

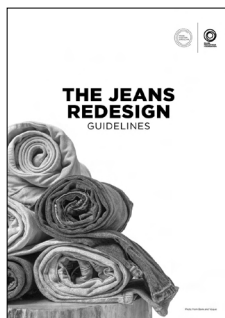
in-hand with choosing a product-as-a-service business model or operating a take-back scheme. Such thinking can be applied to packaging and consumer goods such as fashion garments, electronics, and furniture as well as vehicles, buildings, and infrastructure. At the same time, although the qualities of the food sector make it distinct from product or construction design, considerations regarding the inputs and ingredients, production techniques, and business models are as relevant for achieving a regenerative food system based on the principles of the circular economy as they are for any other sector.

Policies that focus on enabling circular designs and business models can also influence customer choices. For example, policies that are focused on enabling repair, digital material passport developments, or information and labelling requirements for organic and non-organic goods can inform decisions made by businesses and by customers. The development of circular economy standards can equally serve to build business and customer trust and trade.

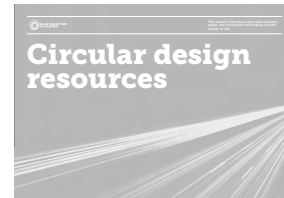
FIGURE 7
SOURCES FOR CIRCULAR ECONOMY DESIGN INSPIRATION ACROSS A RANGE OF SECTORS



Upstream innovation: a guide to packaging solutions is a publication and suite of resources that demonstrate, through more than 150 examples, how businesses can leverage the power of upstream innovation as a root solution to plastic waste.⁴⁸



The Jeans Redesign Guidelines are just one example of the huge potential in the fashion industry to shift towards a circular economy through circular design and business models.⁴⁹ The Guidelines establish minimum criteria for the durability, material health, recyclability, and traceability of denim jeans. More than 60 leading brands, manufacturers, and fabric mills are using the guidelines to produce jeans for the market by May 2021.



The circular design toolkit offers a collection of curated resources to support bringing circular design to life across a range of sectors, including links to online learning courses, conversations with experts, online spaces to connect with other circular designers, and workshops and methods from the circular design guide, produced in collaboration with IDEO.⁵⁰

DELIVERING GOAL 1: EXAMPLE POLICY MEASURES

Circular design approaches can be enabled by policy decisions and can be applied across sectors, the first three examples of these focus on policies that can inform design and business model choices in the case of products, buildings, and food. These are looked at in turn due to their distinct characteristics, terminology, and significance in resource use. Thereafter, example policy measures are discussed with a cross-sectoral perspective.

Stimulating circular product designs and business models through comprehensive product policies

Product policies focus on extending the use of materials and/or products, and improving product footprints. Product policies can work together with existing ecodesign policies, where these focus specifically on either the energy or resource efficiency of a product. Extending use cycles can include a range of design approaches such as design for durability, increased reusability and reparability, remanufacturing potential, and/or a recyclability requirement. Such policies are of relevance to multiple product categories, from energy-consuming products, such as electrical and electronic equipment, white goods, machinery and vehicles, to other products such as textiles and furniture.

Product policies tend to include a range of measures, taking account of product specificities. Two such measures are legislation that strengthens a user's right to repair, and penalties on planned or premature obsolescence.⁵¹ The former can support greater availability of parts to enable repair, the provision of repair manuals, as well as guarantee and warranty provision; the latter can incentivise designs for upgradeability and adaptability. Both can explore the standardisation of products and parts where appropriate. This can be strengthened further by adapting intellectual property rights to support remanufacturing practices and the right to repair (see Goal 3).⁵²

Product labels, tags, and digital passports can also play a key role in product policies.⁵³ These identifiers can be designed to inform product users of material content, durability, upgradeability, reuse, repair, and recycling options, and can be used to provide information

on a product's carbon and environmental footprint. Policies can also be developed with a view to informing other actors across the value chain who need similar information to perform their role, for example at the disassembling or recycling stage. Ensuring international alignment, harmonisation, and a high standard of product information and product passports is key to avoiding confusion and supporting competitiveness. In turn, this can be encouraged by clear marketing and advertising standards.⁵⁴ Product policies can be developed through multi-stakeholder dialogues – as noted in Goal 5 – and can be rolled out progressively to drive product and process innovation and improvements.

Stimulating circular building designs through construction and planning policies

In addition to policies that inform product design, another set of measures can provide the enabling conditions for circular design decisions in the built environment. Building codes, regulations, and planning guidance that inform new construction can be adapted to create design requirements that enable the adaptability of assets and flexibility of spaces, the reusability of building components, ease of maintenance, and the elimination of waste.⁵⁵ Given that the lifespan of buildings and infrastructure can last decades, requiring assessments that lead sponsors of assets to understand the economic, environmental, and societal impacts of designs and business models in the built environment over the long term is key, and can serve to support better use at the same time as maintaining value.

As with products, information flow is another key aspect. Public investments – as noted in Goal 4 – can support the development of smart-building technologies, such as material passports that capture the type and quality of material inputs

in buildings,⁵⁶ and real-time digital twins that provide data on buildings and infrastructure – alerting owners/users to the need for repair and maintenance in a timely, cost-effective manner. [57] Through such investment, these technologies can become more mainstream requirements in building regulations.

The shift to circular designs and business models can be further supported through tax incentives and public procurement, as outlined in Goal 3. For existing building stock, policy measures can also incentivise refurbishment and renovation in line with circular economy principles, as well as supporting a practice of deconstruction over demolition.⁵⁸

Encouraging regenerative production through agriculture, land-use and food policies

Land-use and agricultural policies can be designed to incentivise food to be grown using regenerative practices that build long-term soil health, support biodiversity, retain water, and produce nutritious food.⁵⁹ Regenerative production practices can include for example agroforestry, permaculture, and managed grazing. In addition, the development of nutrient management action plans can work hand-in-hand with pesticide and fertiliser legislation to enhance nutrient cycling and the use of upstream inputs.⁶⁰

Information capture and sharing also has a key role to play in food, just as in buildings and products. Use of credible food labelling, such as origin and ingredient labelling requirements, can raise producer standards, and inform sourcing and consumer choices. International alignment and harmonisation of information provisions can support both the impact of labels and competitiveness.⁶¹ At the same time, policies that support the development of food and agricultural data sets can inform the processes of land use, sourcing and food production, and improve the mapping of food and by-product flows to minimise waste, and generate additional profit for farmers.⁶²

Aligning chemical legislation, restrictions, and bans for circular outcomes

Eliminating substances of concern to health and the environment is another important angle to ensuring that product and asset designs, and food production methods are compatible with circular economy principles.⁶³ Due consideration also needs to be given to whether materials can be recycled and reused safely, as well as understanding the combined effect of multiple substances within a product.⁶⁴ A range of policy measures can be considered: the application of

the precautionary principle, as per the example of the ozone layer and mercury issues,⁶⁵ and bans on the use of harmful substances that cannot be safely managed. Governments can also restrict or eliminate the use of materials that are incompatible with current collection, sorting, and recycling technologies – reviewing these in line with circular economy principles as technologies advance.⁶⁶ Governments can also provide guidance on how to safely dispose of products and materials that contain legacy substances in them.

Establishing collaboration and international harmonisation between the public and private sectors to ensure that the synergies and trade-offs between upstream design policies, chemical legislation, and waste classification legislation is key, especially as material innovations occur and legacy materials are dealt with (for waste legislation see Goal 2).⁶⁷ As noted earlier, it is also important that information about chemical ingredients is passed along the local and global value chains to ensure products and materials are safely managed. This will require joint efforts with business as well as investments in technology.

Developing standards to support confidence and trade

Policymakers, working alongside industry, can support the development and use of voluntary and mandatory standards and certificates to create confidence and trust in circular economy products, services, and systems. The creation of standards is inherently collaborative, bringing together technical committees of experts from industry, academia and civil society organisations, as well as policymakers.⁶⁸ International standards and the establishment of equivalency among regulatory agencies and private sector standard-setting bodies are both important means by which to help create common understanding and international compatibility, while avoiding fragmentation which can leave organisations caught between standards.

Standards can provide guidance on a wide range of areas including: organisational management for a circular economy; material and nutrient inputs; secondary raw materials; refurbished or remanufactured goods; and the design of goods and services. When such standards are developed and agreed, they can be referred to in national legislation, used in public procurement requirements or programmatic policy schemes, and incorporated in free trade agreements – all of which are key policy measures for ensuring that the broader economic conditions for a circular economy transition exist (see Goal 3).⁶⁹

CIRCULAR ECONOMY POLICY GOAL 2



Manage resources to preserve value

Where Goal 1 supports the transition to circular designs, production, and business models, Goal 2 focuses on developing a rich system of resource management that keeps these goods and materials in productive use and at high value.

Rather than default to landfill and incineration, this system supports the reuse, repair, remanufacturing, and recycling of goods, facilitated by Goal 1 policy measures. For the food system, it supports the redistribution of surplus edible food and the valuable use of by-products. This system of resource management, as opposed to linear waste management, includes take-back schemes, transfer of usage, and household and commercial collection and sorting systems that can deliver quality recycling, as well as treatment systems such as composting and anaerobic digestion. It is a resource management system that can offer a greater return on the energies embedded and invested in the goods created in Goal 1. Goal 2 also includes policy measures for creating well-functioning secondary raw material markets that are further supported by aligning the broader economic

conditions noted in Goal 3.

The role of government in creating and delivering this system of resource management varies, as does the infrastructure involved. Some elements can be run privately, some publicly, and variances exist within countries. The infrastructure involved in delivering circular resource loops ranges from local to national scales, and can involve a mix of transport, digital, and technological infrastructure as well as reverse logistics solutions, such as postal services, and built environment planning and development decisions. An understanding of circular designs and business models is key to the policy development for Goal 2, while the infrastructure development can be supported by Goals 3 and 4. In addition, the creation of resource loop systems can have multiple SDG benefits in particular with regard to health and sanitation.⁷⁰

DELIVERING GOAL 2: EXAMPLE POLICY MEASURES

Stimulating high-value resource loops and secondary organic and non-organic material markets through tax and public procurement

A number of policy measures, in particular fiscal incentives and public procurement, can be used to incentivise and support the growth of high-value circular business models such as the repair and remanufacture of goods; sharing models; and the use of high-volume, high-quality secondary raw materials, including recyclate and organic by-products.⁷¹ For example, reduced sales taxes or tax rebates and breaks can create a positive stimulus to incentivise the repair or remanufacture of goods, the renovation or refurbishment of buildings, the separation of organic waste, and the redistribution of food.⁷² Taxation (direct and indirect) can also be used as a targeted disincentive, for example by adding a tax to products that do not include recycled content or conversely offering tax rebates for products that do.⁷³ Public procurement can also create market demand and showcase solutions.⁷⁴ Creating the broader economic market conditions for the circular economy through tax reforms, and public procurement for supporting circular designs and business models, is further explored in Goal 3.

Strengthening circular economy outcomes through Extended Producer Responsibility and Deposit Return Schemes

Fee-based Extended Producer Responsibility (EPR) schemes place financial liability on producers with regard to the collection and sorting of the goods they put on the market. Such initiatives are widely considered to be an effective tool to secure financing for collection, and can be applied worldwide. While the effectiveness of EPR schemes is connected with multiple factors that influence the collection rate of a country, including resource classification regulations, they are linked to the achievement of higher collection rates for recycling.⁷⁵ Most are mandatory and driven by legislation, with packaging, electronics, tyres, and auto batteries being among the key focus items.⁷⁶ EPR schemes, particularly when working in concert with other policy measures, and effective household and commercial collection and sorting schemes, can help to decrease the volume of waste destined for final disposal and relieve pressures on public budgets.⁷⁷ Through their design, EPR schemes have the potential to not only increase producers'

financial responsibilities and create funding for collection schemes, but also create incentives for producers to adopt circular designs and business models, for example through eco-modulation of fees, data and transparency insights into material flows, and coordination and harmonisation between schemes.⁷⁸

Deposit Return Schemes (DRS) can also play an important role in supporting collection and sorting policies, and resource management objectives. DRS are a specific form of market-based instrument that creates a financial incentive to ensure the proper collection of goods. In this instance, the incentive is given to the customer through a deposit that is paid upfront.⁷⁹ These schemes can support reuse models and record strong collection rates, for example countries with DRS for PET bottles have higher collection rates reaching up to 98%.⁸⁰ The level at which the deposit is set often influences the collection rate and supports the installation and operating costs, alongside informative labelling and making the schemes easy to use.⁸¹ As part of the move from waste management to resource management in a circular economy transition, DRS can contribute to public cost savings.⁸² Both EPR and DRS can play a key role in scaling up collections for reuse and recycling alongside other policy measures in Goals 1, 2, and 3 that support the performance of secondary material markets and shifts away from single-use applications. Advances in technology and digital solutions have the potential to further support the effectiveness of these schemes.

Reviewing and harmonising resource classification in waste legislation

Today, waste legislation is a key determinant of the pathway of goods and materials at their end-of-use. Resource classifications can enable or hinder activities related to recycling, reuse, repair, and remanufacture.⁸³ Unblocking this issue in current waste legislation can bring economic and environmental benefits, by keeping materials that are compatible with a circular economy in use. It could also lead to societal benefits through the creation of design and resource management jobs. Agreeing on international material and secondary material definitions can also smooth cross-border resource flows and further support a coordinated, scaled transition to the circular economy – creating more opportunities for reuse, repair, refurbishment, and remanufacturing of

products and built environment materials. In a circular economy, the interrelationship and complementarity between upstream policies (such as those related to products, buildings and infrastructure, and food and organic matter as noted in Goal 1), chemical legislation (also noted in Goal 1), and waste legislation are key to supporting the development of a rich system of resource management loops.

Advancing collection and sorting policies to enable onward flows of organic and non-organic goods and materials

While Goal 1 policy measures can lead to the growth of circular economy solutions for reuse, repair, and take-back loops, there remains an ongoing need for the separation of resource streams in household and commercial collection schemes to enable various subsequent resource loops. For example, collection and sorting schemes can support the production of recyclates and the creation of goods such as biofertilisers, feeds, and compost, as well as the sorting and preparation of products that are fit for repair and reuse, and the identification of materials fit for material exchange platforms. Separating bio and food waste from dry material streams is particularly important to avoid contaminating non-organic materials, and ensuring that organic nutrients and humus can be captured as valuable by-products for subsequent use.⁸⁴ Separated collection and sorting schemes for dry materials (such as paper, board and cardboard, glass, plastics, metals, wood, textiles) also contributes to the development of quality secondary materials.⁸⁵

Globally, an estimated 70% of traditional solid-waste management services are overseen by local public entities, with the remainder administered by other levels of government, intermunicipal arrangements, mixed public-private entities or private companies.⁸⁶ Where the structure permits, coordination and alignment across services can reduce operational costs, strengthen technical skills, and improve compliance, alongside measures such as information labels that support users as well as other value chain actors.⁸⁷ Cooperation between municipalities and private stakeholders can also result in regional and/or context-specific policy changes such as removing or expanding catchment boundaries on waste treatment facilities, or

readjusting the mileage limits on the haulage of waste to and from recycling facilities within local plan policies.⁸⁸ A range of factors such as local climates, urban or rural environments, the development of built and data infrastructure, as well as appropriate transport availability contribute to the design and implementation of these schemes.

Enabling organic and non-organic goods and material flows and transport infrastructure through spatial planning policies

Spatial planning policies can shape the design and development of the built environment, which in turn informs the movement of goods and materials. Such policies also inform the development of industrial symbiosis opportunities between enterprises, as well as the location of resource management facilities such as anaerobic digestion plants and composting centres.⁸⁹ These decisions contribute to the operating and cost effectiveness of these processes and the associated transport logistics, for example of valuable by-product for subsequent agricultural use. Planning guidelines can also contribute to the development of circular material hubs serviced by dedicated logistical chains or storage facilities, for example for food surplus redistribution and alternative uses or material exchange storage requirements.⁹⁰ Spatial planning can also facilitate the development of reuse and repair centres, and whether these are co-located with resource management facilities or in town centres. Through such planning initiatives, policymakers can also revise certification systems, for example by including requirements for deconstruction plans and reporting of embodied carbon. Although, national governments often set the national framework, planning is an area in which sub-national governments can have significant responsibilities, including for implementation.⁹¹

Aligning export and import flows with resource management capabilities

In addition to supporting the development of mandatory or voluntary standards that support the circular economy (as mentioned in Goal 1), policymakers can impose restrictions on the export and import of contaminated and hard-to-recycle materials. Conversely, policymakers

can also create positive incentives to achieve trade in material flows that support high-quality circular economy resource management. Such measures can enable countries to improve circular economy practices so that export and import flows better fit the circular economy, and to increase their domestic and international circular resource management capabilities. The transition to circular designs and business models in Goal 1 supports this shift, enabling resource management loops to create more valuable subsequent use options. Decisions to act can be taken by policymakers nationally with recent examples of import restrictions in Asia. International coordination can also play an important role, and can be achieved through treaties such as the Basel Convention and WTO agreements.⁹² These types of policy measures can be taken a step further by incorporating circularity requirements into trade policies and trade agreements as illustrated in Goal 3.

Disincentivising landfilling and incineration

In a circular economy, products and materials are at a minimum recycled, and organic waste is composted, anaerobically digested, and/or the by-products used to create biomaterials and other products for use in the bioeconomy. Landfilling and incineration are designed out of the system. In the transition phase, caps on landfilling and incineration capacity can help create incentives to develop upstream solutions if they are well integrated within a wider transition to circular economy resource management. In addition to caps, other policy measures – such as incineration and landfill taxes, tipping fees, pay-as-you-throw schemes, bans on certain items from landfilling (e.g. organic waste), and bans on the destruction of unsold or returned goods – can also support this transition. It is essential that these measures come hand in hand with the transition to circular economy designs and business models, and circular resource management loops ranging from reuse and repair opportunities, secondary material markets, and collection and sorting systems.⁹³ Together such measures can also help to avoid the creation of future lock-ins to landfilling and incineration infrastructure, and ultimately enable the transition away from these.

See Figure 8 for examples of the complementary benefits that can spring from Goal 1 and 2; and see pages 54-55 for how all the Goals interconnect.

FIGURE 8



A symbiotic relationship: how Goal 1 and Goal 2 interconnect bringing economic, environmental, and societal benefits

SAMPLE BENEFITS FROM GOAL 1

- Circular business models can unlock new value for both durable and perishable goods:** Circular business models for durable goods can create economic value, as well as environmental benefits, by increasing resource productivity (such as in product-as-a-service or sharing models), generate cost savings (e.g. through refurbishment and remanufacturing) and lead to a closer relationship with customers.⁹⁴ The circular economy transition can also benefit businesses already suffering from the impact of linear externalities such as plastic pollution which is costing coastal industries USD 13 billion a year.⁹⁵ Strengthening local food supply chains can also reduce excess packaging and shorten distribution chains leading to cost savings for the producers and the consumers, at the same time as increasing resilience to supply chain disruptions.⁹⁶ A 2017 survey found that 20% of companies cited linear risk reduction (such as the risks from resource shortages, price impacts, supply continuity, and changing preferences) as a primary driver for shifting to the circular economy.⁹⁷

SAMPLE BENEFITS FROM GOAL 2

- Reverse cycles can support public finances:** Increasing the responsibility of the private sector in resource management through a mix of incentives and disincentives can support public resource management funding, and has the potential to create upstream circular economy design and business model incentives. The adoption of EPR schemes presents an opportunity for shared management of resources between the private and public sectors.⁹⁸ Eco-modulated fees can help to incentivise a transition to circular designs and business models as supported by Goal 1. A study on stemming the tide of plastic pollution found that the increased adoption of policies that account for externalities, such as the option of virgin plastic taxes or EPR schemes, can create a powerful incentive to innovate. This can also be set against the backdrop of the cost of inaction being estimated as an USD 100 billion annual financial risk for businesses.⁹⁹

- **Circular design can unlock future value with regard to by-products and the secondary materials market, at the same time as meeting first-user needs and delivering environmental benefits:**

Designing products for the circular economy can improve recycling quality as items that enter resource management systems are designed to be recycled and/or processed, thus creating by-product and secondary material markets. A study found that redesigning plastic packaging (through choices on formats, materials, additives, and pigments) could have a positive impact on recycling economics amounting to USD 90–140 per tonne collected (USD 1.1–1.6 billion in OECD). [100] A circular economy approach incentivises regenerative food production that increases soil health and water retention as well as biodiversity and health, and also creates new revenue opportunities through by-product developments in the bioeconomy.¹⁰¹

- **Job and skill creation opportunities spring from circular economy design and business model developments:**

Incentivising the design of circular goods and services can be conducive to job and skill creation across a range of areas, from material sciences to digital technologies and professional services. Transitioning to circular approaches can also create jobs and skills in reuse, repair, remanufacturing, recycling activity, with upstream design playing a key part in improving these processes. A focus on the ongoing development of safe formal and informal working environments is also needed as part of the transition.¹⁰⁶ Upstream changes can also help to avert waste and pollution leaking into the environment which can threaten livelihoods in a wide range of sectors such as tourism or fishing. A study in the Netherlands identified 810,000 circular economy jobs in 2015 and determined that 53% came from activities such as repair, remanufacture and recycling, and the remaining 47% were linked to design, the development of circular business models and partnerships, and the incorporation of digital technologies and data analysis.¹⁰⁷

- **Separated material collection streams and secondary material markets bring economic and environmental value:**

A study conducted in Southeast Asia demonstrated that the cost of unsorted household waste was five times the cost of an integrated waste management system.[102] In addition, where a system can collect and sort resources, it can be key to creating economies of scale for processing technologies and secondary raw material markets.¹⁰³ A further study estimated that GBP 1.4 billion (USD 1.89 billion) in revenues could be added to the UK economy if resource management processes were improved and all recyclable materials were captured.[104] Furthermore, the per-kg environmental impacts of secondary materials are estimated to be lower than those of primary materials.¹⁰⁵

- **Job and skill creation opportunities emerge through circular economy resource management:**

A study in the UK found that by ensuring that a diverse system for reverse cycles is in place, not just through recycling but also repair and remanufacture, can contribute to net new job creation, and help tackle structural unemployment.¹⁰⁸ Similar to these findings for reuse, a study in California found that recycling can create more jobs at higher income levels compared to landfilling or waste incineration, because it is a more labour-intensive process. Another study in Europe found that 322,000 direct recycling jobs could be created through raising the target for recycled materials, with additional positive indirect job effects.[109] For every 10,000 tonnes of resources that is recycled instead of being incinerated, 36 additional jobs are created.¹¹⁰ Assessing the overall net effect is in its infancy but OECD research suggests an overall net improvement in employment and with supportive tax changes (see Goal 3) the net effect could be around 2 percentage points.¹¹¹

CIRCULAR ECONOMY POLICY GOAL 3



Make the economics work

To support the development of the resource flows that are the focus of Goals 1 and 2, this goal focuses on creating the economic conditions needed to scale circular outcomes.

The prevailing economic policies are hardwired for and by the linear economy. Resetting the playing field so that circular economy decisions, rather than linear economic decisions, become the norm is crucial to securing the long-term economic success of the transition. Economic policy measures affect how every organisation operates. They can provide private actors with the incentives to change investment, business, and consumer behaviour. Without a focus on this goal, there is a risk that the incentives and systems set up in Goals 1 and 2 can never truly scale and, at worst, could be unintentionally undermined.

Policymakers and other public institutions can create these conditions through aligning economic policy measures with circular economy principles. This can include the formulation of new policies, adaptation of existing policies, and removal of existing policy barriers, for example in fiscal and trade policies.¹¹² By attaching conditions to public finance, aligning subsidies, and using public procurement, governments and other public institutions can also help to increase resilience to future systemic shocks. By working with actors in other key enabling sectors, such as the financial and the digital sectors, policymakers can create and align regulations that inform

investment decisions and digital developments with a view to supporting the transition of the economy to a circular model.

The benefits of shifting underlying economic incentives can be great. Currently the costs of climate change, biodiversity loss, pollution, and other mounting negative externalities are not priced in. Virgin material extraction, and the degradation and pollution of soil, as well as the use and disposal of products, do not reflect their full environmental and societal costs. The current fiscal system does not promote circularity. Within public and private procurement, a focus on upfront purchase cost can dominate over an evaluation of longer-term operational costs.¹¹³ Similarly, a focus on short-term price competition has also led competition policy, with less regard for longer-term non-price factors which are currently externalised but costly for the environment and human health.¹¹⁴ Although the transition is underway within the financial sector, many financial institutions still appraise circular economy innovations and business propositions as expensive and risky, while underplaying the risk of linear investments.¹¹⁵ Therefore, aligning the economic framework with circular economy principles to create the optimal market conditions for scale is key.

DELIVERING GOAL 3: EXAMPLE POLICY MEASURES

Aligning taxation with circular economy outcomes

A coordinated set of fiscal measures is needed to support the circular economy transition. In addition to the fiscal measures noted in Goal 2 that support circular resource management loops, such as reduced rates for repair or reuse activities, and eco-modulated EPR fees, fiscal measures could also include: research and development (R&D) tax credits and support for investments into circular opportunities; tax incentives for reduced waste production or inclusion of recycled content; as well as property tax abatements for buildings constructed in line with circular economy principles.

In addition, shifting taxes from labour to non-renewable resources will play an important role in supporting a transition to practices that are not as resource-intensive.¹¹⁶ Taxing resources rather than labour can also support innovation and growth in circular economy practices and bring the tax system more in line with the SDGs.¹¹⁷ The Ex'tax project found that switching taxes from labour to pollution and resource use could have increased GDP by 2%, created 6.6 million more jobs, and cut carbon emissions by 8.2% in the period between 2016 and 2020. This can be achieved by, for example, putting a price on natural resource use and pollution, or incorporating the value of resources, ecosystem services, and externalities into prices through virgin material taxation and carbon prices on emissions caused by extraction and material production.¹¹⁸ In this way, societal and environmental impacts are taken into account in the economy to help level the playing field for the circular economy to thrive.¹¹⁹ The process will involve a transition phase in which some services and items may become more expensive, while new business models and services grow and expand. As such, this type of tax reform will require safeguards to avoid regressive effects on vulnerable groups.¹²⁰ Coordination between countries, with the support of international institutions, will have an important role to play in making this shift.

Reforming subsidies to shape the transition

The current climate change and biodiversity crises require public intervention for the economy to develop in a way that is compatible with addressing these global challenges.¹²¹

A study of past green stimulus packages has highlighted the key role various measures have to play in achieving the transition, including subsidy reform measures.¹²² It is estimated that the elimination of fossil fuel subsidies would have led to a reduction in air pollution deaths by 42% in 2015, at the same time as creating global net economic welfare gains of more than USD 1.3 trillion.¹²³ In accordance with competition rules, policymakers can use subsidies to promote future areas of growth and employment in sectors that are essential for the transition to the circular economy. Aligning new subsidies and qualification criteria with circular economy principles can be done, for example by subsidising farmers who seek to accelerate the adoption of regenerative food production methods;¹²⁴ subsidising digital infrastructure in rural areas;¹²⁵ or creating subsidies to encourage the use of secondary raw materials in production processes.¹²⁶ Where subsidies for commodities already exist (such as for sugar and dairy), regenerative criteria could be phased in as a qualification or subsidies could be repurposed to compensate farmers for ecosystem services. Although the most well-known subsidies are distributed through direct funding and tax cuts, public institutions, such as state-owned companies and banks, can also use other avenues to subsidise economic activities and sectors. For example, loans and guarantees at favourable rates, price controls, and providing resources such as land and water at below-market rates. Removing subsidies that go against the principles of the circular economy and rethinking the subsidy structure is essential for making the economics of the transition work at scale.

Attaching conditions to state aid and government funds

Governments can also attach conditions to state aid and state funds to guide the transition to a circular economy and to deliver public goods. State aid and state funds encompass interventions by the state or through state resources which can take a variety of forms, including grants, interest and tax reliefs, guarantees, and providing goods and services on preferential terms. These approaches overlap with the above-mentioned policy measures but are distinct as short-term interventions. The Covid-19 pandemic has highlighted the power that governments can have to shape the transition to a more resource-efficient

economy by attaching conditions to public funds.¹²⁷ Although hundreds of policies have been announced worldwide, much of the stimulus funding is set to flow into existing sectors with only limited attempts to support their medium- and long-term sustainability and resilience.¹²⁸

Reviewing competition policy to foster collaboration

Operating in the circular economy requires new forms of collaboration and cooperation within value chains and across sectors. Competition authorities have traditionally focused on the economic factors, giving limited consideration to the environmental and wider societal implications of a commercial collaboration. There are, however, signs of a new trend among competition regulators – one that indicates a growing recognition of the need to ascribe value to other factors, notably including environmental benefits.¹²⁹ The traditional economic-centric interpretation of consumer welfare is increasingly seen as too narrow and short-termist.

Reviewing existing competition laws to fit within the circular economy has the potential to identify where environmentally beneficial coordination and communication between companies, particularly competitors, may be justified.¹³⁰ Without reviewing the existing laws or their applicability criteria, collaboration and cooperation on innovation in the value chain may risk being blocked for fear of violating the law.¹³¹

Adapting intellectual property rights

Transnational regimes for intellectual property rights need to be fit for the digital age and the circular economy transition. On the one hand, intellectual property rights (IPR) can delay the circular economy transition by blocking new technologies and opportunities, such as those relating to remanufacture, repair or fertiliser innovations. On the other hand, if used effectively and proactively, IPRs can encourage innovation, private investments, knowledge sharing, and collaborative learning.¹³² While acknowledging the trade-offs between IPRs and increased transparency, policymakers can enhance the competitiveness of businesses by ensuring that intellectual property remains a key enabling factor for the circular economy and the emergence of new business models.¹³³ This includes, for example, adapting intellectual property rights that can support remanufacturing practices and the right to repair.¹³⁴

Implementing labour policies to support transition

A circular economy has the potential to create good quality jobs that are localised and adaptable to technological change.¹³⁵ However, the

transition to a circular economy will also create a structural change in employment opportunities (see also Goal 4 on investment in skills). For sectors that might face a significant pivot, such as extractive sectors and primary material producers, recognition of the prerequisites of a just transition and the formulation of accompanying active and passive labour policies will be needed.¹³⁶ This can include offering skills training and upgrading, workforce redeployment, unemployment insurance and benefits, and other appropriate measures to support enterprises and workers in sectors negatively impacted by the transition.¹³⁷ The transition to the circular economy can also impact informal workers engaged in sectors from agriculture to sorting, repairing, recycling, and others. The informal economy plays an important role in many national economies and there are opportunities for informal workers to benefit from an increase in circular activities. Labour policies can look to support the health and safety standards for informal workers, support the administrative capacity of informal-sector organisations and cooperatives, and provide technological and skills' support so that informal workers can be fully incorporated in circular value chains and benefit from an increase in circular activities.

Incorporating circular economy into trade policies

Shifting to a circular economy means both keeping the value of products in the economy for longer and increasing the use of secondary raw materials, which consequently influences trade flows. Shaping trade policies and trade agreements to enable a circular economy at scale is a key area of policy development.¹³⁸ The alignment of trade policies with the circular economy extends beyond national considerations and will require transnational coordination.¹³⁹ As discussed in Goals 1 and 2, international standards and policies on imports and exports of materials for recycling and resource management are an important element. Trade agreements can also ensure open trade for materials that are recyclable, so that scalable investments can be made which are economically viable. Other potential policy interventions in trade include: offering zero tariff for circular products; integrating circularity aspects to sector-specific policies and regulatory actions; promoting trade in certain goods and services within a sector (e.g. environmental goods and services – EGS); and strengthening the regulatory frameworks linked to sector-specific trade.¹⁴⁰

Using public procurement to grow new markets

Procurement practices of both public procurers as well as corporate buyers can help scale the market for circular products and services.

As for corporates, governments can use their large purchasing powers to embed requirements that are compatible with the circular economy into tenders to create demand for circular economy-based solutions and thereby accelerate the transition.¹⁴¹ There are various approaches through which circular economy opportunities can be furthered by procurement at state, federal, and local levels. These can include creating standards and defining circular requirements for goods purchased by public bodies (ranging from office items and clothing, to buildings and infrastructure), as well as purchasing locally where appropriate (such as in the instance of food which can in turn shorten supply chains, reduce packaging needs, and improve resilience).¹⁴² By embedding circular requirements in public procurement and creating portals which list public tenders to enable the transition, governments can raise awareness of the opportunities among the private sector and showcase innovative resource-efficient business models.¹⁴³ Such an approach can create opportunities for outcomes-based purchases, which integrate the cost of externalities and prioritise long-term societal and environmental value.¹⁴⁴ However, it is important to note that the transition to circular procurement practices can require the amendment of a wider array of policy regulations to support circular economy business models.¹⁴⁵

Using taxonomy and disclosure requirements to ensure transparency

A clear and detailed classification for circular economy practices creates a common language for all actors in the financial system, such as that pursued by the EU Taxonomy.¹⁴⁶ The resulting transparency and trust supports investors in identifying and seizing circular economy opportunities. Transparency also leads to an increased awareness among customers, allowing them to make better choices or to put pressure on corporations. Governments and financial regulators can enhance transparency by providing standardised definitions and metrics for circular activities. In parallel, mandatory disclosure requirements can better inform investor decisions about both the risks linked to the current linear system (raw material price volatility and scarcity, stranded assets, changing customer demand, reputational damage) and circular economy value-creation opportunities.¹⁴⁷ On an international level, significant activity is already underway, mostly focusing on climate-related risks and other Environmental, Social, and Governance (ESG) issues, but much of this is happening in a fragmented way without recognising circular economy as a vital part of the solution.¹⁴⁸ As previously noted, integrating linear risks into financial modelling can strengthen financial decision-making and further stimulate the transition to a circular economy.¹⁴⁹

Adapting accounting rules

Standard-setting bodies can also review and adapt international accounting rules to enable a more representative valuation of a circular business.¹⁵⁰ This can include: adapting depreciation and residual value approaches for circular assets which maintain their value over multiple lifetimes (e.g. building materials); matching recognition of repair and refurbishment costs of an asset to recurring revenue streams in circular business models (including, for example, product-as-a-service models); and ensuring tax treatment reflects the characteristics of circular business models.¹⁵¹ Efforts regarding disclosure requirements in accounting are already underway, but they often fail to integrate the circular economy.¹⁵² Many countries and their accounting boards are also developing natural capital approaches with the objective of incorporating environmental externalities into national accounting and decision-making.¹⁵³ They also offer recommendations that could help companies make judgements on the materiality of climate-related financial risks.¹⁵⁴

Reviewing digital and data regulation

Technologies, such as blockchain or digital twins, can also greatly enable a circular economy. Such tools can, for example, enable material efficiency, facilitate the measurement of soil health, contribute to a lower carbon footprint, connect farmers and buyers through ecommerce platforms, improve the manufacturing life cycle (including in the supply chain), contribute to the extension of product life cycles, and play a role in mainstreaming new business models. As these technologies are often new, their regulation is in its infancy. There is therefore an opportunity for the regulations to be developed and, where required, amended with the circular economy in mind.¹⁵⁵ This should start with examining which public data is pertinent for the transition to the circular economy and should be provided free of charge without compromising data privacy interests. Policymakers can also work directly with the private sector to identify and address barriers that hinder the development and deployment of digitally enabled services and new circular business models (e.g. standards, service fees, geo-blocking, procurement and taxation rules). Harnessing the digital revolution and guiding its rollout with circular economy principles has been shown to increase its predicted benefits.¹⁵⁶

CIRCULAR ECONOMY POLICY GOAL 4



Invest in innovations, infrastructure, and skills

This goal focuses on using public finance capabilities to invest in circular economy opportunities and skills, and mobilise private investment.

It explores how public finance capabilities can be used to invest in, and mobilise private investment for, areas such as research and innovation (R&I) as well as physical and digital infrastructure. Profitable circular business models will often manage to attract private sector investments. There are, however, aspects of the circular economy transition that currently require public funding or blended finance. Several of the policy measures noted in Goal 3 (such as taxonomy, disclosure, and financial regulation) can further strengthen this investment drive. Goal 4 also looks at investment in education, reskilling, and job creation. Investments in reskilling programmes and new employment opportunities are essential as they are a critical part of ensuring that the circular economy transition is effective and inclusive. Following the economic impact of the Covid-19 pandemic, it will be critical to invest public recovery funds in line with circular economy principles – creating better growth, new public revenue streams, and additional public benefits.¹⁵⁷

Publicly funded research and innovation programmes are essential for the transition to unlock new circular economy insights and drive

long-term innovation. Several of today's well-known technological breakthroughs including the internet, GPS, touchscreen displays, electric car batteries, and solar panels were funded by the state. In the transition to a circular economy, targeted investments will be needed in infrastructure, product and material innovation, regenerative food production innovations, and new business models and technology (e.g. digital-enabled sharing and resale platforms, decentralised production using 3D printing or AI-enabled sorting technology). Investing in research on material choices and innovation is essential for ensuring that what is designed for and put on the market (Goal 1) goes hand in hand with creating resource management systems that circulate value (Goal 2). Investing in long-term innovation also presents an opportunity to address a significant bottleneck in the shift towards a circular economy, for example by providing solutions that can support secondary materials competing with virgin materials on quality and cost. Such initiatives work in concert with the policy measures outlined in Goals 1 and 2, and can be further supported by the market conditions created in Goal 3.

FIGURE 9
**PUBLIC INVESTMENT
 CAN HELP UNLOCK
 THREE KEY
 CHALLENGE AREAS**

1. Riskier, longer-term business models and material innovations, especially those that are asset-heavy:

Although a wide range of circular economy goods and services can be developed, and are in train already, there remains a significant need and opportunity for further innovation in material, production, and delivery models. For example, there are many types of items – such as multi-material packaging, blended fabrics, and other composite materials not designed for disassembly – that currently cannot be composted, recycled or remanufactured in an economically viable way. Despite this being a fundamental part of the transition to a circular economy, it can often be difficult to find private sector funding for this type of long-term material innovation.

2. Infrastructure and related costs:

Upfront investments in infrastructure, as well as ongoing operational and maintenance costs, are often high and the opportunities for private finance can be unclear. Public finance can directly, or through blended finance solutions, unlock infrastructure funding, and attract private finance by making projects investable.¹⁵⁸

Investment areas range from plastics and textiles collection to the built environment infrastructure, farming equipment to support regenerative food production, and digital connectivity.

3. Investment in skills and employment:

The public sector has a key role to play in investments in people and skills, which can ensure that the benefits of a circular economy transition are inclusive.¹⁵⁹ There is a need to build skills and knowledge for workers in existing jobs across sectors from agriculture to construction and durable goods, and in SMEs. In parallel, the emergence of new jobs in sectors such as design and production, and maintenance and repair, can be supported by public investments in a range of technological, digital, and manual skills training. Such investments can help close the potential skills gap and can create a platform on which private finance initiatives can build. Such investments in skilling and reskilling have taken on a particular significance, following the economic impact of the Covid-19 pandemic and subsequent recovery efforts.

DELIVERING GOAL 4: EXAMPLE POLICY MEASURES

Adapting the curriculum

Circular economy skills and knowledge are needed in all sectors of the economy. By introducing and incorporating circular economy concepts and thinking in school and lifelong learning curricula, policymakers can equip upcoming generations with the knowledge and skills that industry will require and that jobs of the future will demand, in areas such as chemistry, legislation, business activities, behavioural sciences, construction, and food production.¹⁶⁰ Governments, such as Finland's, have already embedded the circular economy into mainstream education and national curricula, France is also intending to integrate the circular economy into its existing mainstream education, and Malaysia has committed to integrating SDG12 (Sustainable Consumption and Production) into the formal education syllabus, creating opportunities for circular economy learning.¹⁶¹ In the run-up to COP26, EarthDay.Org has launched a Climate and Environmental Literacy campaign, which advocates for making climate education compulsory in primary and secondary education.¹⁶²

Apprenticeship and training

Governments can also develop circular economy training programmes and apprenticeship schemes, which can often work in partnership with other public and private entities looking to build circular economy capabilities.¹⁶³ Training programmes that address the needs of both rural and urban areas, and include the development of peer networks are invaluable. They can also include funding opportunities, for example for farmers who want to accelerate the transition to regenerative food production.¹⁶⁴ Context-specific training and education programmes can also simultaneously deliver on multiple policy goals – such as e-waste remanufacturing, job creation, and digital inclusion as exemplified by initiatives launched by the city of Belo Horizonte, Brazil, such as the Computer Reconditioning Centre (CRC).¹⁶⁵ These various types of programmes reflect the ambition of ensuring that new circular economy-related jobs qualify as “decent work” (in line with SDG8) across the world, directly linking to Goal 3 and the need to review active and passive labour policies for the circular economy. As outlined in Goal 5, governments are already using the existing engagement mechanisms to involve workers and labour unions in identifying the future needs of the labour market and planning capacity-building accordingly.

Research funding for system change solutions

To accelerate the circular economy transition, public and private research funding is key to unlocking insights and solutions. Public funds can support a wide range of research areas – such as insights into organic and non-organic materials, production processes that can support circular assembly techniques, the development of demonstration farms that showcase regenerative food production, as well as organisational and business models innovation, and research into localised infrastructure solutions.¹⁶⁶ Challenge-driven or mission-oriented public innovation funds that tackle specific challenges can be an additional route for policymakers to fund research and pilots, as well as early-stage business ventures.¹⁶⁷ To deepen insights into the systemic drivers for the linear economy and how to overcome these, funding can also be invested to support multi- and interdisciplinary research.¹⁶⁸ The role of universities in driving the transition is crucial, from research breakthroughs, to future workforce training, to campus management, as well as the development of incubators with a circular economy focus attached to educational institutions.¹⁶⁹

Early-stage venture funding to catalyse innovation

The innovative nature of certain circular economy goods and services, and the technologies that can help realise them, means they can often be appraised as high-risk investments in the current market. Early-stage public funding to establish proof-of-concept is important for spurring further private investments.¹⁷⁰ Publicly backed circular innovation investments can also create public revenue streams where returns are realised and reinvested, and lead to additional public benefits that spring from the innovation.¹⁷¹ Alongside large companies, SMEs are well placed to develop new approaches and work with innovation. Several public funds, such as Scotland's Circular Economy Investment Fund, have been developed to support innovative circular economy SMEs, and further investment is needed.¹⁷² For example, the independent Finnish innovation fund Sitra has committed nearly EUR 100 million (USD 121 million) in venture capital funds investing in Finnish SMEs and also heavily investing in education across all age groups.¹⁷³ Some SMEs have already benefited from the fund, including: Sulapac, a developer of alternative packaging for plastic; Swappie, which specialises in the

maintenance and sale of used mobile phones; and RePack, which provides reusable packaging for B2C markets. By shaping and guiding public investments, policymakers can support the transition to the circular economy.

Blended finance solutions for infrastructure and innovation

Blended finance solutions can close the investment gap for harder-to-finance infrastructure and riskier, long-term innovation. Blended finance solutions use development capital to mitigate investor risks. This can include blended instruments (such as insurance or guarantees) and blended vehicle structures (such as layered funds with first loss or technical assistance sidecar facilities), which can be especially catalytic for harnessing investments for infrastructure and innovation across a wide range of sectors with a view to delivering the circular economy, and are equally applicable to food and land-use systems.¹⁷⁴ The main three approaches to blended finance include technical assistance, risk underwriting, and market incentives such as match-funding.¹⁷⁵

Multilateral development banks (MDBs) and development finance institutions can advise on project structuring and mitigate risk, crowding in additional private capital. This can enable challenging projects to become investable, such as funding waste collection, and can also enable the funding of early-stage fundamental innovation, as shown by the European Investment Bank's (EIB) InnovFin financing tools.¹⁷⁶ EIB has a range of financing products and instruments, and has provided almost EUR 2.5 billion (USD 3 billion) in lending for circular projects over the last five years, including collection and recycling capacity for waste electrical and electronic equipment (WEEE), and urban infrastructure integrating circular principles.¹⁷⁷ Other upcoming initiatives from the European Commission include InvestEU,¹⁷⁸ which aims to mobilise private investment thanks to an EU budget guarantee, and the European Innovation Council pilot, which aims to support innovators, entrepreneurs, small companies, and researchers. InvestEU will be partially dedicated to a sustainable transition and will be fundamental to reach the environmental objectives of the EU, especially the objective of a just transition given that it is also embedded in the Just Transition Mechanism.

Physical infrastructure

Governments can match-fund or (co-)invest directly in infrastructure for the circular economy such as reverse logistics, recycling capacity, decentralised and modular infrastructure, or secondary material platforms. This includes investments in much-needed resource

management systems – such as organic and inorganic material and nutrient collection, food redistribution, and secondary materials and by-product valorisation, in addition to the development of schemes such as EPR and DRS that are often reliant on a core level of resource management systems being in place.¹⁷⁹ An example of blended finance for infrastructure is Generate Capital, which builds, owns, operates, and finances infrastructure that is decentralised, modular, and resilient across renewable energy, mobility, water, waste, and agriculture (e.g. anaerobic digesters, charging depots, microgrids).¹⁸⁰ The circular economy requires infrastructure investments that will work both for the economies of scale as well as dispersed and local solutions.

Digital and data infrastructure

Digital infrastructure is another priority investment area, given the benefits that connectivity and data can bring to several circular economy designs and business models as noted in Goal 1 and circular resource systems as in Goal 2. In cities, 3D city models and collaborative data platforms can enable users from different sectors to test concepts and services, improve planning and decision-making, and coordinate research on technologies to solve emerging and complex challenges, and to create more liveable cities.^[181] In rural areas, connectivity and the use of digital infrastructure can help farmers access training, and enable rural farmers to access online marketplaces, where they can sell their products directly to consumers in cities and increase profits.¹⁸² Digital infrastructure can also support material flow logistics, for example when farmers have a surplus of produce and want to connect to potential buyers.¹⁸³

International aid funding to build capacity across borders

International aid funding can be oriented towards supporting high-value circular economy opportunities and capacity development which can benefit local economies as well as support the emergence of trade in circular economy goods and services. Examples range from developments in manufacturing capacity,¹⁸⁴ food production and storage facilities,¹⁸⁵ infrastructure investments¹⁸⁶ as well as technical assistance, research funding, and capacity development for circular economy strategies and policy dialogues.¹⁸⁷ Much of the waste material that leaks into the environment occurs in less developed countries, where appropriate waste infrastructure is not in place due to lack of funding and institutional capacity. Structuring aid flow to deliver on circular economy objectives can enable the materials to be collected and recycled, reducing impacts on the environment.¹⁸⁸

CIRCULAR ECONOMY POLICY GOAL 5



Collaborate for system change

This goal focuses on the ‘how’ of policymaking for system change - the mechanisms for developing new policies and aligning existing ones in order to unlock a systemic, economy-wide transition to a circular economy.

The move requires innovations in engagement and the involvement of all actors from across the public, private and civic sectors. Engaging a diverse mix of private and civil society organisations, including stakeholders from across the value chain, will be key. This is not only because of the nature of the mission – a profound economic model shift – but also because policy design, implementation, and enforcement require multiple actors and skills.

The importance of strong partnerships and cooperation locally, nationally, and globally cannot be understated. Collaboration can harness expertise and break down traditionally siloed areas within and outside of government. Crucially, a lack of integration and dialogue will inevitably only lead to incremental changes, at best. An assessment of policies that were pursued during the 2007–09 financial crisis showed that many of them failed to achieve the integrated objectives that were set, due to policymakers addressing priorities, like employment and growth, in isolation.¹⁸⁹ Collaboration, cooperation, and integration can therefore build the necessary policy coherence and alignment at the most effective level, from sub-national to international. It can also build institutional capacity for system

change, the need for which should not be underestimated.

A system change exercise such as the circular economy transition is inherently dynamic and innovation and measurement will have key roles to play. The transition to the circular economy requires a systems thinking approach to innovation and development. As innovations and technical breakthroughs occur, and insights accumulate, an ability to respond and adapt will be important. Innovation in policymaking and governance will also have a role to play. Combining an interdisciplinary and collaborative approach within policy and value chain developments together with a commitment to measure and track progress is not only needed to tackle global systemic challenges but is also beneficial.¹⁹⁰ Measurement, and innovations in what is measured, will be key as value will be generated in ways that current instruments may not be able to capture fully: an approach focused on flows and feedback loops needs to be developed. The transition itself will deepen our understanding of these feedback loops - reinforcing the need to design processes that support collaboration and iteration.

DELIVERING GOAL 5: EXAMPLE POLICY MEASURES

Mainstreaming circular economy principles across policy portfolios

Most, if not all, ministries across government are responsible for policies that can facilitate the delivery of the transition to a circular economic model and as such, will have a role to play in driving the transition. In addition to ministries for the environment and natural resources – which are often the default leads on the circular economy – ministries for industrial policy, economy and finance, planning, transport, agriculture, education, and beyond each have key roles to play. Sub-national governments at state and city level can also have substantial contributions to make.¹⁹¹ As a result, collaboration across government is key and needs support. In a 2019 survey of 32 European countries, the institutional challenge of developing policy for a complex cross-sector issue was identified as the lead barrier to the circular economy transition. [192] Studies in Latin America and Asia have also noted the importance of developing cross-government mechanisms.¹⁹³

A cross-government, inter-ministerial process can help mainstream circular economy principles into different policy portfolios, helping to deliver a transition in which the policy signals from different areas align.¹⁹⁴ Through such coordination, policy strategies with a sectoral focus (such as plastics, textiles, electronics, the built environment, food and agriculture, and broader industrial policy) can align with cross-departmental policy measures (such as public procurement), or cross-governance tier policy measures (such as spatial planning policies). This integration extends to international policies as much as national and sub-national policies. As mentioned in Goal 3, integrating circular economy principles into international economic policies, such as trade agreements, can support the cross-border movement of goods. Similarly, as mentioned in Goal 4, embedding circular economy concepts across international development projects can contribute to capacity and infrastructure development in aid receiving countries. Given the coordination and alignment required, central government leadership can provide the overarching direction that is essential to achieving the transition to a circular economy model.

Adopting a mission-driven, outcome-oriented approach

To aid an inter-ministerial process, thematic mission-driven approaches can break down barriers and work across areas of expertise to look at an issue systemically.¹⁹⁵ For example, circular economy principles can be mainstreamed into thematic public-private missions focused on delivering outcomes such as industrial renewal and better growth, creating climate-neutral cities, building healthy soil, and the use of digital for public good outcomes.¹⁹⁶ Integrating circular economy solutions into climate change workstreams and Nationally Determined Contributions (NDCs) and climate action pathways as part of the Paris Agreement is also key to delivering on climate targets and complementing the renewable energy transition with a transition in production and consumption systems.¹⁹⁷

Building international policy alignment

With material flows and value chains stretching across borders, the transition to the circular economy will require international alignment where appropriate.¹⁹⁸ For example, harmonisation of resource classification definitions can support safe and valuable resources staying in use.¹⁹⁹ Such alignment can also involve creating commonality in relevant policies and schemes to the most appropriate level, such as in the product policies, information labels, and standards discussed in Goal 1, and the various collection and EPR schemes discussed in Goal 2. This commonality can help to reduce transaction costs and improve the effectiveness of policies.

Forums and exchanges within or outside of institutional settings can contribute to identifying alignment opportunities and policy barriers that policymakers can address at the national, regional, and international level. The UN Environment Assembly is testament to this. So too is the emergent idea to develop a Global Alliance for a Circular Economy and Resource Efficiency to develop shared understandings and exchange on best practice.²⁰⁰ Regional-level examples include the European Circular Economy Stakeholder Platform, the African Alliance on Circular Economy, the Latin American and Caribbean Circular Economy Coalition, and the Association of Southeast Asian Nations. Bilateral exchanges and agreements further support the development of cross-border

opportunities and alignment such as those between the EU and China, and the EU and India.²⁰¹ The development and rotating host of the World Circular Economy Forum also creates exchange opportunities such as a session in 2020 on North American opportunities.²⁰²

Developing collaborative, inclusive circular economy roadmaps

The development of circular economy roadmaps can play a key role in creating a vision for circular economy transition. Several national circular economy policy strategy teams have made use of external advisory boards, public consultations, and inclusive, deliberative processes to strengthen their understanding of the opportunities and barriers on all sides, and to create a greater sense of shared ownership and participation in the transition.²⁰³ Facilitating multiple stakeholders (e.g. the public sector, the private sector, NGOs, academia, citizens, and labour unions) through the process can ensure that context-specific opportunities, challenges, and needs are taken into account, including in relation to how they affect different regions, sectors, communities, and workforces.²⁰⁴ From such insights, specific policies and programmes can be developed, including financial and capacity-building support schemes, amendments to regulation, investments in projects in priority sectors, and demonstration projects in selected regions or cities. The early identification of real-life case studies and the development of demonstration projects can play a key part in roadmap development – helping to make a future concept immediate and tangible, and highlighting key considerations that require action.

Although deliberative processes that rely on the participation of various stakeholders can be time intensive, such approaches can avoid issues caused by the rapid implementation of ideas or policies which haven't been universally accepted and which can be disruptive, costly, and generate unexpected delays.²⁰⁵ The convening of stakeholders can also play a role in connecting the very partners that are needed to develop concept-testing demonstration projects. Overall, the convening and engagement of multiple stakeholders from across sectors is a key step highlighted in several toolkits for the development of circular economy roadmaps and to enable the identification of key sectors and opportunities to focus on.²⁰⁶

Supporting policy design through responsive feedback and sandbox mechanisms

Policymakers can create mechanisms in which a two-way facilitative feedback loop with business and research communities can take place,

strengthening business commitment as well as supporting policy design and implementation.²⁰⁷ In this space, design thinking approaches can provide a powerful way to better understand the dynamics of the systems, uncover blind spots and new solutions, identify investment opportunities, and experiment with pilot projects in a way that manages risks and subsequently increases the chances for successful policy implementation.²⁰⁸ Some governments, such as those of Finland and Denmark, have acknowledged the value of acting as facilitators of the transition process, opening up more collaborative engagement opportunities.²⁰⁹

Designing responsive feedback mechanisms can be an important part of this facilitation. The Green Deal approach in the Netherlands brought policymakers, companies, and NGOs together to provide an open feedback loop on how policies were affecting circular economy opportunities that were being developed in practice. Companies reported that the feedback process increased the commitment of the parties involved to the targets, and accelerated implementation.²¹⁰ The development of SME clusters working on circular economy opportunities can also create an avenue for the two-way flow of information between policymakers and SMEs.²¹¹

A regulatory 'sandbox' – a safe space where companies can experiment and innovate without breaching the law – offers an alternative feedback mechanism. Sandboxes, which have been used by the UK financial markets regulator, can be a way for regulators to provide defined space and flexibility in which to develop new approaches, at the same time as providing access to policy, business, and investor expertise.^[212] A competition law sustainability 'sandbox' has been advocated for in Greece to create a safe space in which to explore business models and collaboration needs that could deliver on SDG outcomes and support the EU's plan to reach carbon neutrality by 2050. The sandbox approach could also inform adjustments to competition rules.²¹³

Transitioning a value chain through multi-stakeholder alliances

Increasing numbers of public-private initiatives are being developed to support system change. Policymakers can benefit from such initiatives and be key stakeholders, without always needing to be the ones initiating the process. Two such examples include the network of multi-stakeholder Plastic Pacts and the creation of Global Plastic Action Partnerships, set up by the Ellen MacArthur Foundation and the World Economic Forum respectively. These networks have led to national and regional public-private initiatives that can inform policy development

and implementation, and deliver on shared targets.²¹⁴

Multi-stakeholder industrial alliances are a further mechanism that can help remove barriers to innovation and improve policy coherence. They can draw on the knowledge of SMEs, big companies, researchers, and cross-tier policymakers. Such alliances can also help steer innovation work and finance large-scale projects with positive spill-over effects. One such example is the European Battery Alliance, which brings together more than 120 European and non-European stakeholders representing the entire battery value chain and policymakers.²¹⁵ These alliances can be combined with other policy mechanisms such as the above-mentioned regulatory sandboxes to, for example, create safe spaces in which the testing of new approaches could take place.

Raising awareness to increase participation

Information and awareness-raising campaigns can be key for building public trust and encouraging the uptake of goods, services, and systems based on circular economy principles.²¹⁶ These campaigns can also be important tools for influencing behaviour change and stimulating public participation – for example from sharing information about the location of collection points, to showing how to separate materials to ensure collections are unspoilt, and increasing the uptake of EPR and DRS schemes.²¹⁷ Various policies mentioned across the goals also act as awareness-raising tools, such as enabling the right to repair through product policies and establishing a harmonised labelling system in Goal 1. In addition to standard awareness-raising approaches, behavioural insights in policymaking can also support the engagement of citizens.²¹⁸ Meanwhile the increase in digital tools that provide data on local environments and the impact of actions taken, can also increase public awareness and enable citizens to co-create knowledge with policymakers.²¹⁹ Given their relevance in a number of areas, awareness-raising mechanisms are important considerations for all tiers of government.²²⁰

Setting indicators and targets to track progress

Setting targets, identifying indicators, and evaluating progress is a live and critical feature of the circular economy transition, as it strengthens the level of ambition and the delivery of identified policies. There are increasing efforts to identify metrics that can inform companies and governments in their transformation. In parallel, the need to harmonise metrics and to develop a common language for both public and private actors is recognised. Ultimately, ensuring these

measurement tools are in place is key to each of the five goals presented in this framework.

Today, most of the existing circular economy targets relate to waste management, resource conservation, or are combined with different environmental objectives (e.g. emissions reduction).²²¹ Many countries, however, are exploring more ambitious circular economy targets for resource efficiency, remanufacture, repair, industrial symbiosis, reuse and redesign opportunities, soil health, environmental performance as well as innovation and investment targets associated with the transition.²²² Developing clear indicators and targets can also deepen the understanding of how a circular economy approach can deliver on multiple policy goals such as improving health outcomes, ensuring food security, and reducing inequality. Given the breadth of the circular economy transition and its reach across sectors, developing indicators can be challenging but it is essential to progress.

Data development to enable solutions and inform policymaking

Data sources for the indicators of these targets are key, as is their international comparability. Data on recycling and waste volumes tends to be available in national statistics but in the circular economy, the intent is not to solely have quality recycling rates but to ensure higher value resource loops such as reuse, remanufacturing, and repair, and currently the data sources on these are rarer but are important to assess progress.

Governments can become data clearing houses on circular economy initiatives and prioritise data gathering within their own circular economy activities. Disclosure, transparency, and common definition requirements, as noted in Goal 3, can also be further sources for data insights. Governments can help to standardise traceability and monitoring systems on secondary materials, reuse, and recycling across sectors, while government statistical agencies can mandate and deliver data measurement systems.²²³ The reliability and transparency of metrics and data on the circular economy has been identified as crucial for fact-based public-private action and the development of public-private roadmaps. Collected data and subsequent analytics can support the iteration of policy as more insights come to light and can support commitments to ensuring a just and inclusive transition, creating more diverse and distributed solutions.

Building a systems solution framework: how the universal circular economy policy goals are interconnected

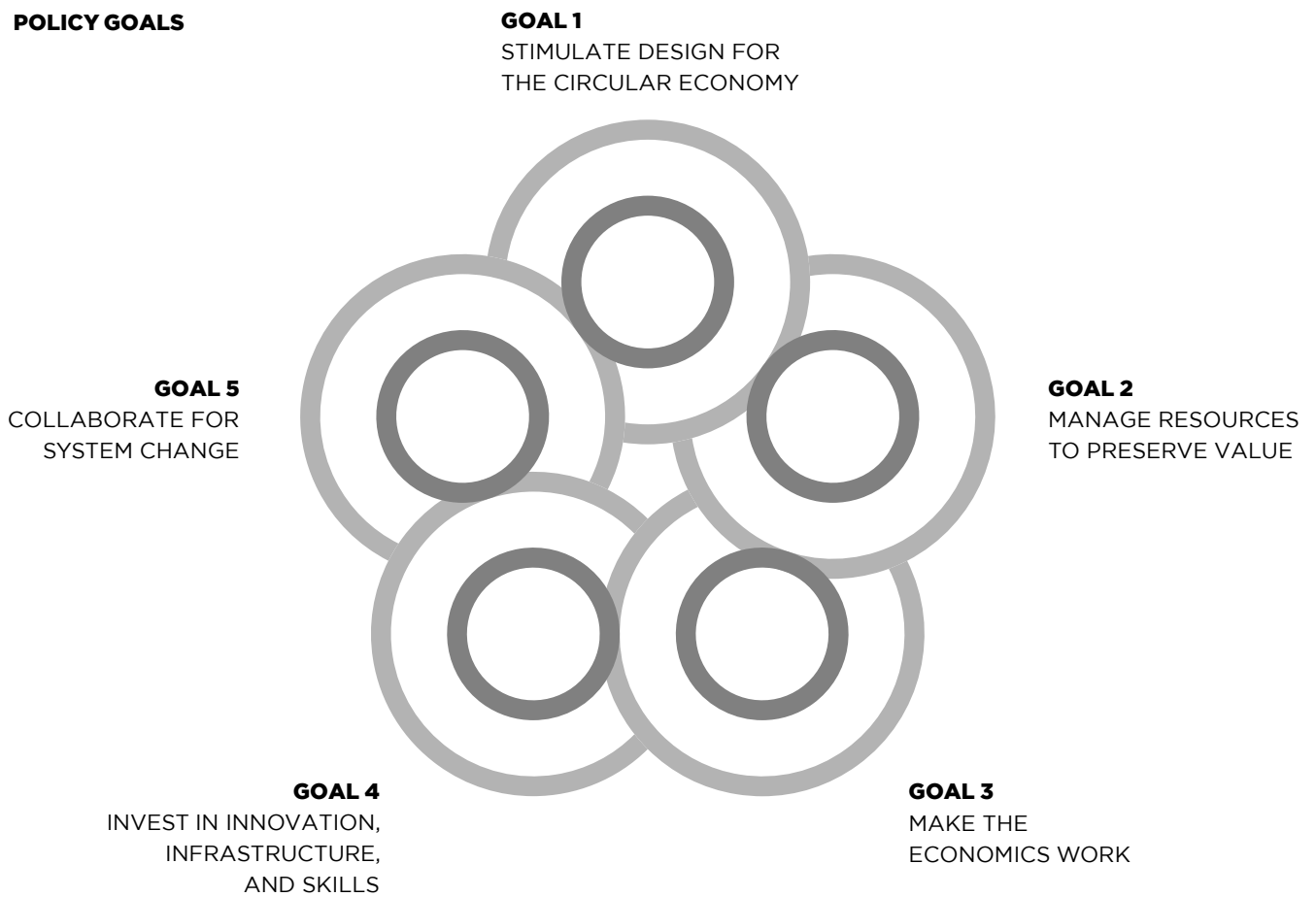
The relationship between Goals 1 and 2 is symbiotic. The former ensures goods, services, and systems are designed and produced for the circular economy from the outset, and the latter transitions the system to one which manages resources, rather than waste, to ultimately circulate value. The creation of this system of flows lies at the core of the circular economy. By design, this system eliminates waste and pollution, keeps products and materials in use, and regenerates natural systems. For example, through Goal 1, goods are designed with subsequent use cycles in mind (potentially enabled by designs for durability, reusability, repairability and remanufacturing, recyclability, and compostability). In turn, Goal 2 ensures that a rich system of resource management exists to effectively cycle these well-designed products and materials. Acting on either goal alone does not lead to the desired outcome: both goals need to be advanced at the same time.

Goals 3 and 4 work to align the wider economic policy framework, and public and private investment decisions with Goals 1 and 2 to unlock a circular economy transformation. For example, even if policies advancing Goals 1 and 2 are implemented, delivering them alone will not lead to change at the scale required. Rather, an element of a circular economy will exist within a broader linear economy landscape. Making the economics work will enable true scaling and acceleration of the transition alongside

investment in innovation, infrastructure and skills (Goals 3 and 4). For example, aligning economic policy measures, such as subsidies and tax incentives, with the circular economy can enable the secondary material markets (that Goal 2 starts to create) to compete with virgin materials on cost. At the same time, investment in innovation, infrastructure and skills can support the competition on quality. Investment in research on materials, product design, business models and technologies will be key to realising Goal 1 and Goal 2.

Finally, Goal 5 plays a crucial role in strengthening understanding and collaboration across government, industry and other actors, bridging traditional skill silos. Taking a systems perspective is essential for a society-wide shift like the transition to the circular economy and applies across all actors. For example, through value chain collaboration and feedback, designers and producers can develop their understanding of design-for-subsequent uses, recycling or composting, and material selection, and adapt their practices accordingly. Meanwhile, refurbishers or recyclers can strengthen their understanding of material and design specifications so as to create valuable secondary material streams. Fostering multi-stakeholder collaboration for system change within the development of policy can support not only policy but also wider skill development and transition efforts.

FIGURE 10
**FIVE UNIVERSAL
CIRCULAR ECONOMY
POLICY GOALS**



Endnotes

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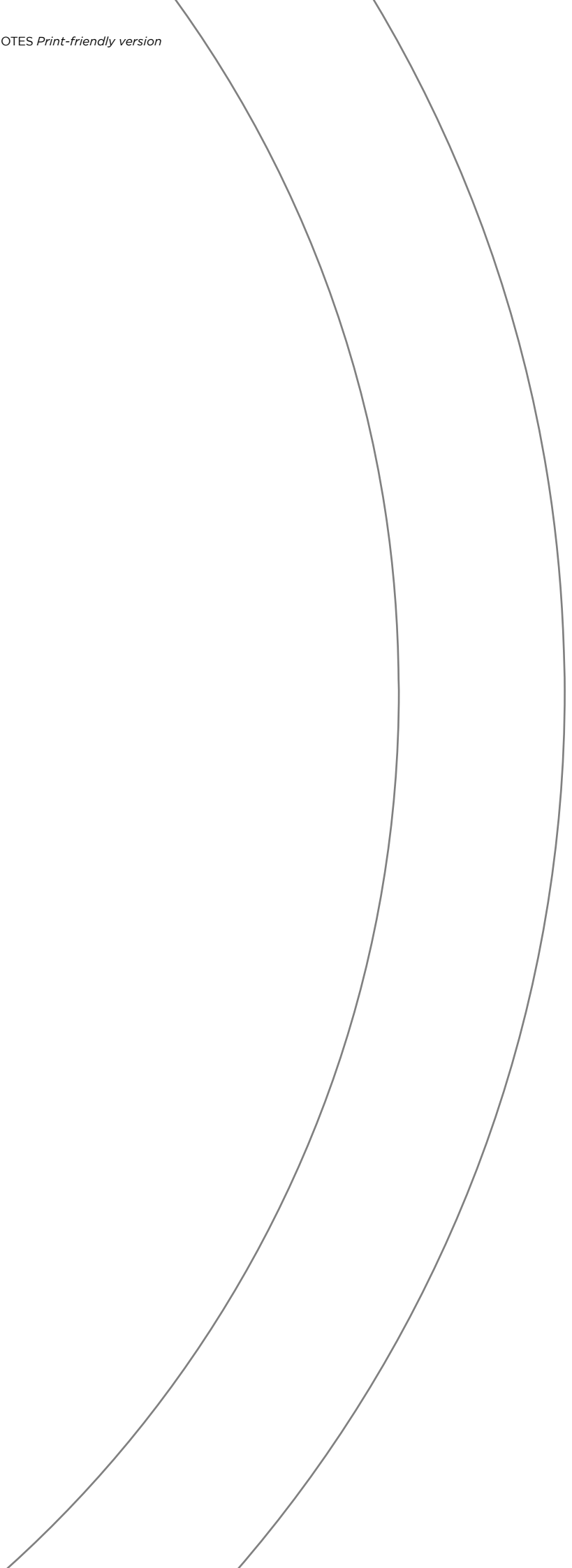
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Acknowledgements

We are very grateful for the support we have received in producing this report.

Special thanks go to the many leading policy, industry, and academic experts from across cities, national governments, institutions, businesses, and think tanks who provided invaluable perspectives in interviews and online workshops.

We would also like to thank the individuals and organisations listed below who contributed to the paper. Their contribution to the paper, or any part of it, should not necessarily be deemed to indicate any kind of partnership or agency between the contributors and the Ellen MacArthur Foundation, nor an endorsement of its conclusions or recommendations.

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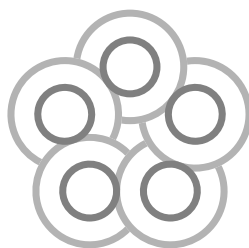
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Charity Registration No.: 1130306
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