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Circular economy: Necessary change creates economic opportunities

An analysis of investment opportunities based on the theme of the circular economy

Customer version | Swiss edition

Summary

Current linear business practices following the model of "take, make, use, waste" are leading to a major imbalance in natural resources around the world. By 2030, the demand for resources is expected to exceed annual supply by eight billion tonnes.¹ The circular economy can correct this imbalance by aligning environmental, economic and social goals. The main goal is to decouple economic growth from the consumption of raw materials and to overcome the constraints associated with the availability of natural resources.

There are numerous arguments in favour of the circular economy:

- **Resources are conserved:** The Circularity Gap Report² shows that the needs of people in a global circular economy could be met with only 70% of the raw materials extracted today.
- **CO₂ emissions are reduced:** Several studies have shown the link between an increasingly circular model and a reduction in CO₂ emissions.³
- **Increase in economic growth:** Studies indicate that moving from a linear approach to a circular system could unlock 4.5 trillion US dollars in growth potential.⁴
- **Competitiveness is strengthened:** According to the European Parliament, the transition to a circular economy could increase competitiveness, stimulate innovation and boost economic growth. The EU aims to create 700,000 jobs in this way by 2030.⁵
- **Supply risks decrease:** Pandemics and smouldering geopolitical tensions are increasing the pressure on economies to reduce their dependence on resources. Efficient and effective recycling is a key element in mitigating supply risks.

Based on the arguments in favour of the circular economy, several regulatory initiatives have been launched at both national and international levels, which create a framework for more circularity in the respective economic model. Governments and consumers around the world are thus starting to adopt circular concepts – including recycling, extended producer responsibility and deposit return schemes. We believe this will lead to significant investment opportunities for companies that strategically align their products, services and/or operations with the circular economy early on. New solutions and business models that offer opportunities for sustainable growth – from recycling and production efficiency to product reuse and repair – are likely to emerge. It could also make companies more resilient: research from the Italian University

of Bocconi shows that investments in companies that adopt circular economy practices can generate higher returns with less risk.⁶

The path to a circular economy is not free from challenges, especially in terms of costs and feasibility. However, we expect new technologies, changing consumer behaviour and legislative measures taken by governments to support the paradigm shift.

We believe that investors will increasingly focus on funds that invest in companies that integrate circular economy principles. On the one hand, these companies offer social and environmental benefits under SDG 2 (Zero Hunger), 6 (Clean Water and Sanitation), 12 (Responsible Consumption and Production) or 13 (Climate Action). On the other hand, the investments may also represent compelling financial opportunities. Nevertheless, the issue is complex and dynamic, and is constantly being reshaped by regulation, geopolitics, the general state of the economy and consumer behaviour (greater awareness of the problem). This calls for specific expertise and an intense examination of the development of the circular economy. Accordingly, actively managed funds in this area can be a proven investment instrument for investors.

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Regions analysed: Global

Sectors: Industry, utilities, technology

Sustainable Development Goals (SDGs):  Zero Hunger | Good Health and Well-being | Clean Water and Sanitation | Affordable and Clean Energy | Decent Work and Economic Growth | Industry, Innovation and Infrastructure | Sustainable Cities and Communities | Responsible Consumption and Production | Climate Action | Life below Water | Life on Land.

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¹ <https://newsroom.accenture.com/news/2015/the-circular-economy-could-unlock-4-5-trillion-of-economic-growth-finds-new-book-by-accenture>
² <https://www2.deloitte.com/ch/en/pages/press-releases/articles/launch-circular-gap-report-switzerland.html>
³ Aguilar-Hernandez a, João F. Dias Rodrigues a, Arnold Tukker
⁴ The Circular Economy Handbook: Realizing the Circular Advantage, by Peter Lacy, Jessica Long and Wesley Spindler
⁵ <https://www.europarl.europa.eu/topics/en/article/20151201STO05603/circular-economy-definition-importance-and-benefits>
⁶ Bocconi University, Ellen MacArthur Foundation, Intesa Sanpaolo (2021), The circular economy as a de-risking strategy and driver of superior risk-adjusted returns.

1. From take-make-use-waste to a circular economy

A growing concern for the environment and resource scarcity is challenging the traditional, linear economic model. The progressive loss of biodiversity, soil degradation and global warming are highlighting the need for a paradigm shift towards a more sustainable alternative that is economically, environmentally and socially compatible.

In a linear economy, raw materials are processed into products, consumed and then disposed of as waste (take-make-use-waste). Advances in material extraction and research have so far mitigated the challenges posed by population growth and the increasing demand for new materials. However, forecasts warn that material extraction and use will double by 2050 compared to 2015, thereby exceeding the limits of our planet.⁷ Sticking with a linear economy will have consequences. Consulting firm Accenture estimates the global imbalance between supply and demand for natural resources to be eight billion tonnes by 2030.⁸ This is equivalent to North America's total consumption of resources in 2014.

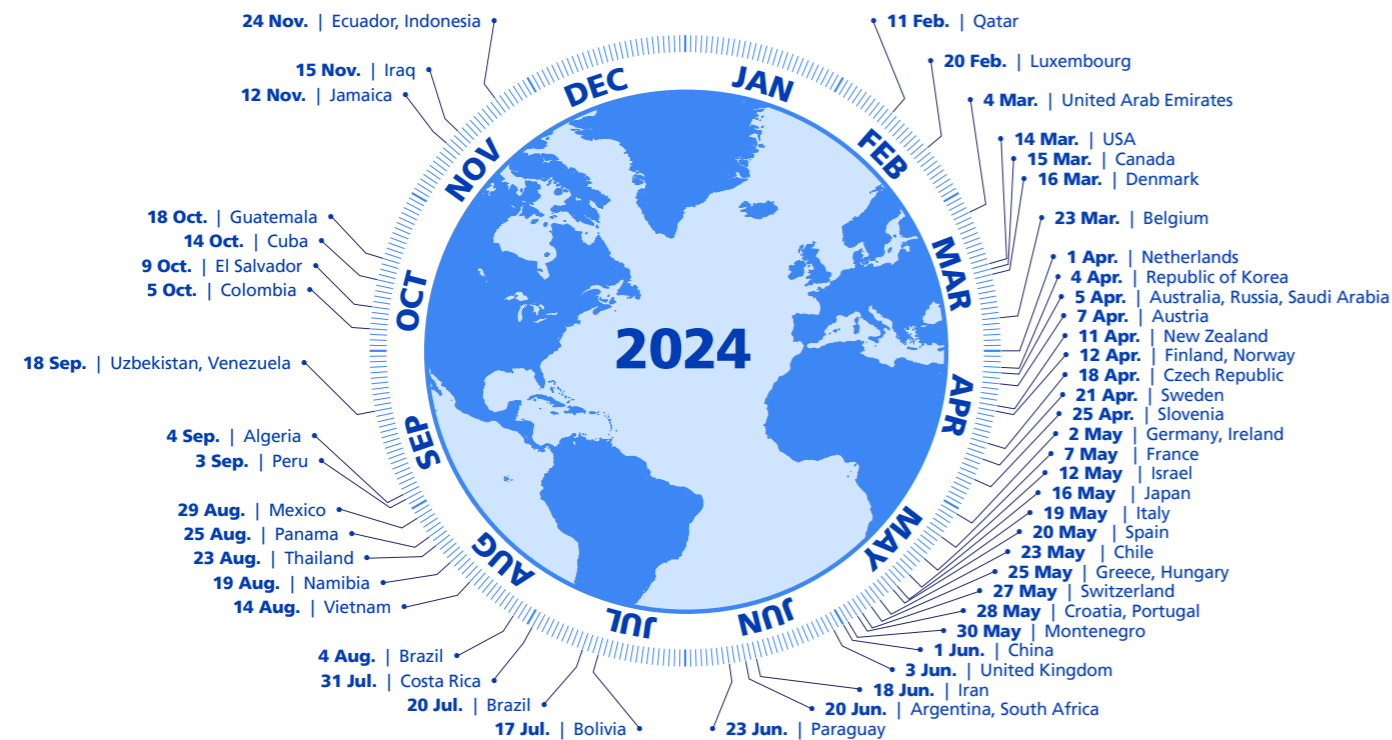
Earth Overshoot Day: the first countries already exceed the planet's limits in February

Earth Overshoot Day (see Figure 1) shows clearly on which day of the year the Earth's regenerative capacity would be exceeded if the world's population adopted the consumption habits of individual countries. For instance, if global consumption was equal to that of Germany or Switzerland, the world's resources for the year would be exhausted on 2 or 27 May respectively.

⁷ United Nations Environment Programme & International Resource Panel (2017). With Resource Use Expected to Double by 2050, Better Natural Resource Use Essential for a Pollution-Free Planet. <https://wedocs.unep.org/20.500.11822/31591>.
⁸ <https://newsroom.accenture.com/news/2015/the-circular-economy-could-unlock-4-5-trillion-of-economic-growth-finds-new-book-by-accenture>

Figure 1: Earth Overshoot Days in 2024

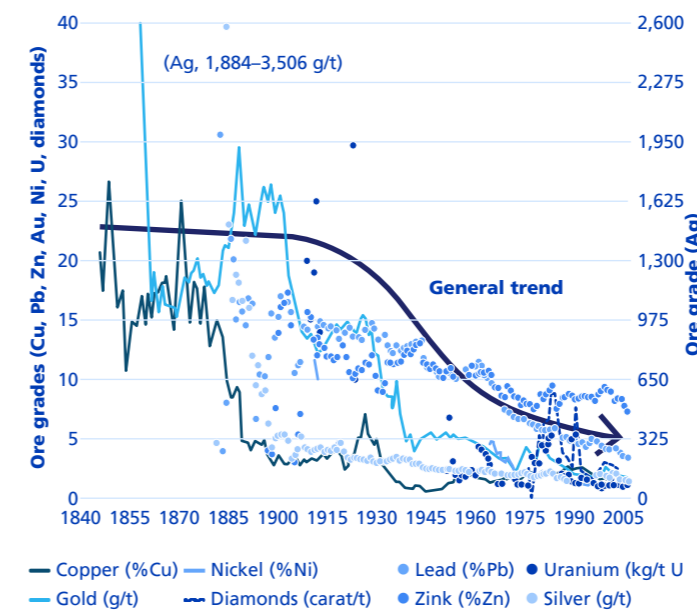
When would Earth Overshoot Day be if the world's population lived like...



Source: <https://overshoot.footprintnetwork.org/>

Besides the insufficient regeneration time, the quality of some important resources – such as copper or nickel ores, which are also of key importance for the energy turnaround – is deteriorating noticeably. This is driving up the costs of mining and using the resources.

Figure 2: Mining leads to depletion of resources in the long term, and inferior-quality ores are extracted to meet new demand



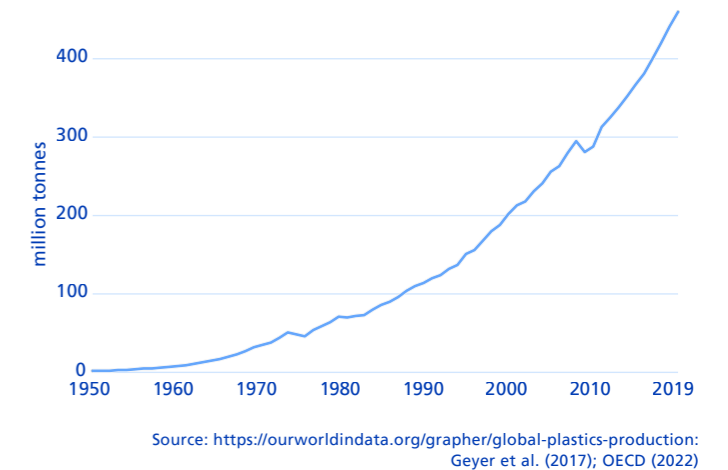
Source: <https://users.monash.edu.au/~gmudd/sustymining.html> – Monash University and the Mineral Policy Institute: Sustainability of mining in Australia

Plastic production as a negative example

The linear model causes a considerable amount of pollution and waste. An example of this is the increasing production of plastics. In recent decades, plastic production has risen sharply, leading to a flood of plastic waste. This waste is now overwhelming the waste disposal systems. Tragically, about half of the waste ends up in landfills. Worse still, more than 20% of this waste is disposed of incorrectly, adding to the burden and contamination of sensitive ecosystems such as oceans, drinking water sources and food (see chart).

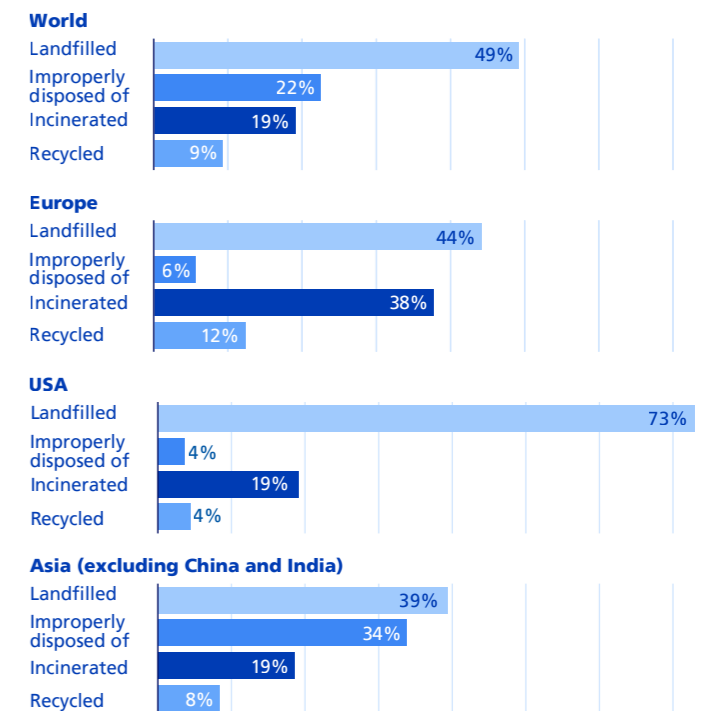
Plastic production has more than doubled in the last 20 years, but only a small proportion of the plastic is recycled.

Figure 3: Global plastic production



Source: <https://ourworldindata.org/grapher/global-plastics-production>: Geyer et al. (2017); OECD (2022)

Proportion of plastic waste that is recycled, landfilled, incinerated or improperly disposed of

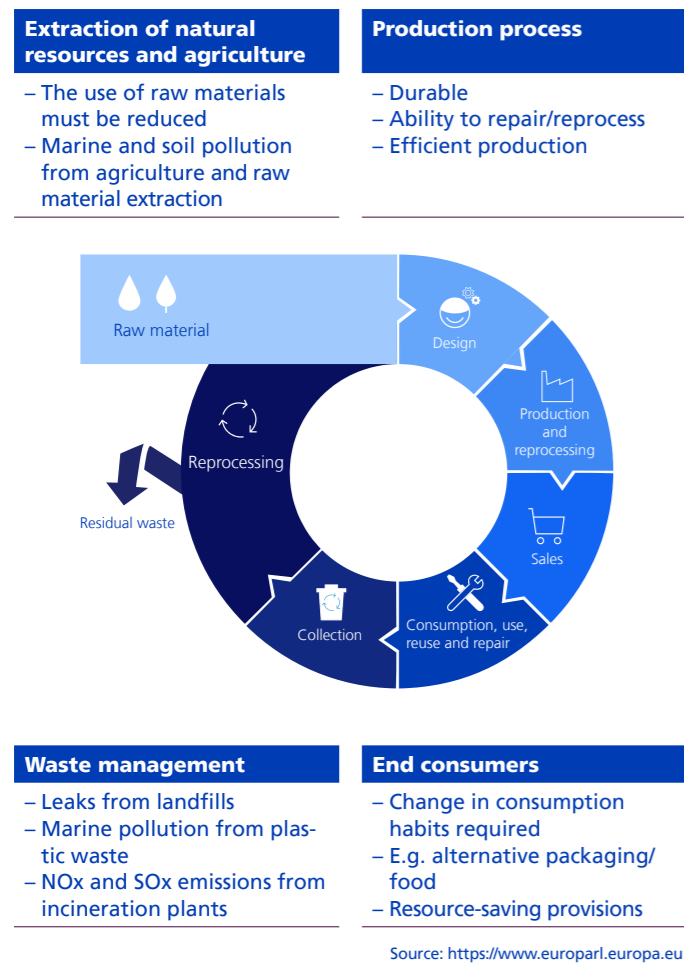


Source: <https://ourworldindata.org/plastic-pollution?insight=only-a-small-share-of-plastic-gets-recycled#key-insights>: OECD (2023)

1.1 A fundamental paradigm shift

The circular economy concept aims to optimise resource efficiency, minimise waste and promote sustainable development. This approach represents a fundamental paradigm shift in production and consumption. The focus is on systems that enable the continuous and long-term use of resources. The circular economy revolves around product design principles that prioritise durability, reparability and recyclability. The overall goal is to maintain value within the system, minimise resource depletion and improve overall sustainability.

Figure 4: The circular economy model



While discourse on the circular economy focuses on tangible goods and products, it also offers solutions related to biological resources. In agriculture, for example, it is about supplying the soil with nutrients and supporting natural regeneration processes, thereby contributing to sustainable land management.

Challenges and opportunities based on the example of Switzerland and the "shift countries"⁹

Switzerland is an example of what the Circularity Gap Report calls "shift countries". With the USA, the European Union, the UK, Japan, Canada and Australia, Switzerland consumes 25% of the available resources, although these countries only account for 17% of the world's population.

However, Switzerland has also been implementing circular economy strategies since the mid-1980s and was able to close some cycles to a certain degree. But the development of the circular economy is still in its infancy, and opportunities to change consumption habits and patterns abound. Despite the high standard of living and the high level of education, only around 7% of raw materials come from secondary sources such as recycling, resulting in a gap in the circular economy of just over 93%. For comparison: the global average circulation rate is 7.2%. Closing this gap is a major challenge for developed countries. Consumer demand is high, with new materials being used as raw materials in most cases. This leads to significant environmental impacts such as emissions and waste.

Nevertheless, there would be significant benefits for Switzerland if it could close this gap in the circular economy. According to the Circularity Gap Report Switzerland, the country could achieve an improvement of up to 5 percentage points to 12%. This would reduce material consumption by one third and halve the CO₂ footprint.

The circular economy is already being successfully implemented in Switzerland, for example in PET recycling.

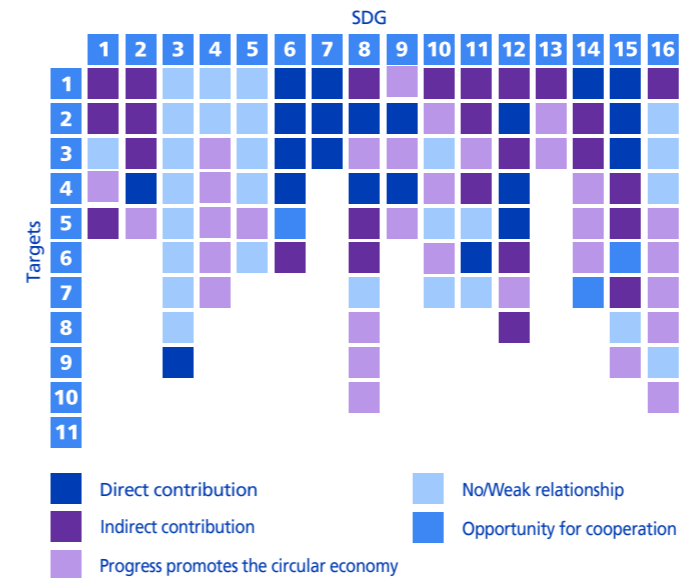
⁹ <https://www.circularity-gap.world/2024#download>, last accessed in May 2024

Since 1991, drink bottles made from polyethylene terephthalate, or PET for short, have been collected in the world's densest network of collection points, and then recycled and turned into new R-PET bottles or other materials. PET recycling prevents 126,000 tonnes of greenhouse gases in Switzerland every year. This corresponds to around 9,500 round-the-world car trips.

Close alignment with the UN Sustainable Development Goals

The circular economy can play an important role in achieving the UN Sustainable Development Goals by addressing major global challenges such as resource scarcity, waste, climate change and environmental destruction. At the same time, it can promote economic growth, job creation and social well-being. Consequently, it contributes directly to the achievement of several UN Sustainable Development Goals, in particular SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production) and SDG 15 (Life on Land).

Figure 5: The impact of the circular economy on the UN Sustainable Development Goals



It can also create synergies between the SDGs by boosting economic growth and employment (SDG 8), contributing to the eradication of poverty (SDG 1), ensuring sustainable food production (SDG 12), eliminating hunger (SDG 2) and promoting the protection of biodiversity in the oceans (SDG 14) and on land (SDG 15). The analysis by Schroeder et al. (2018) provides an informative overview of the impact of the circular economy on the SDGs.

Some of the key benefits of the circular economy are evident in the SDGs. These include wastewater safety (6.3.1), water quality (6.3.2), renewable energies (7.2.1), energy efficiency (7.3.1) and, above all, material footprint (12.2.1) and domestic material consumption (12.2.2).

1.2 Circular economy: growth sector with investment potential – the most important drivers

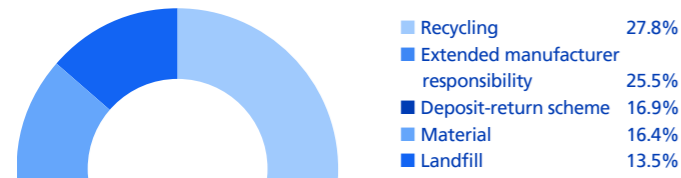
1.2.1 Regulation as a key to the circular economic model
The circular economy is proving to be an intuitive response to the challenges that affect environmental, political and economic stability alike. As both natural resources and sovereignty are under threat, many governments have initiated regulatory initiatives to adjust the current status quo. These are crucial for scaling the circular economy and are intended to stimulate investment, promote positive behaviours and ultimately generate additional revenue.

The scope of the initiatives varies: it ranges from a comprehensive framework covering a large proportion of the economic model (e.g. European Union Circular Economy Action Plan) to smaller efforts targeting specific issues (South Korea's target to reduce plastic waste by 50% and increase recycling to 70% by 2030). The complexity of the rules and the deadlines should reflect the risks associated with the country or region in which they are developed.

According to Bloomberg New Energy Finance (BNEF), most circular economy policy is focused on recycling, followed by extended producer responsibility, deposit return schemes as well as material and landfill initiatives. BNEF covers a total of 27 markets, accounting for around 90% of global GDP.

This is divided into five areas: recycling, extended producer responsibility, deposit return schemes, material and landfill initiatives.

Figure 6: Global circular economy policies



Source: Bloomberg New Energy Finance (BNEF), 2021

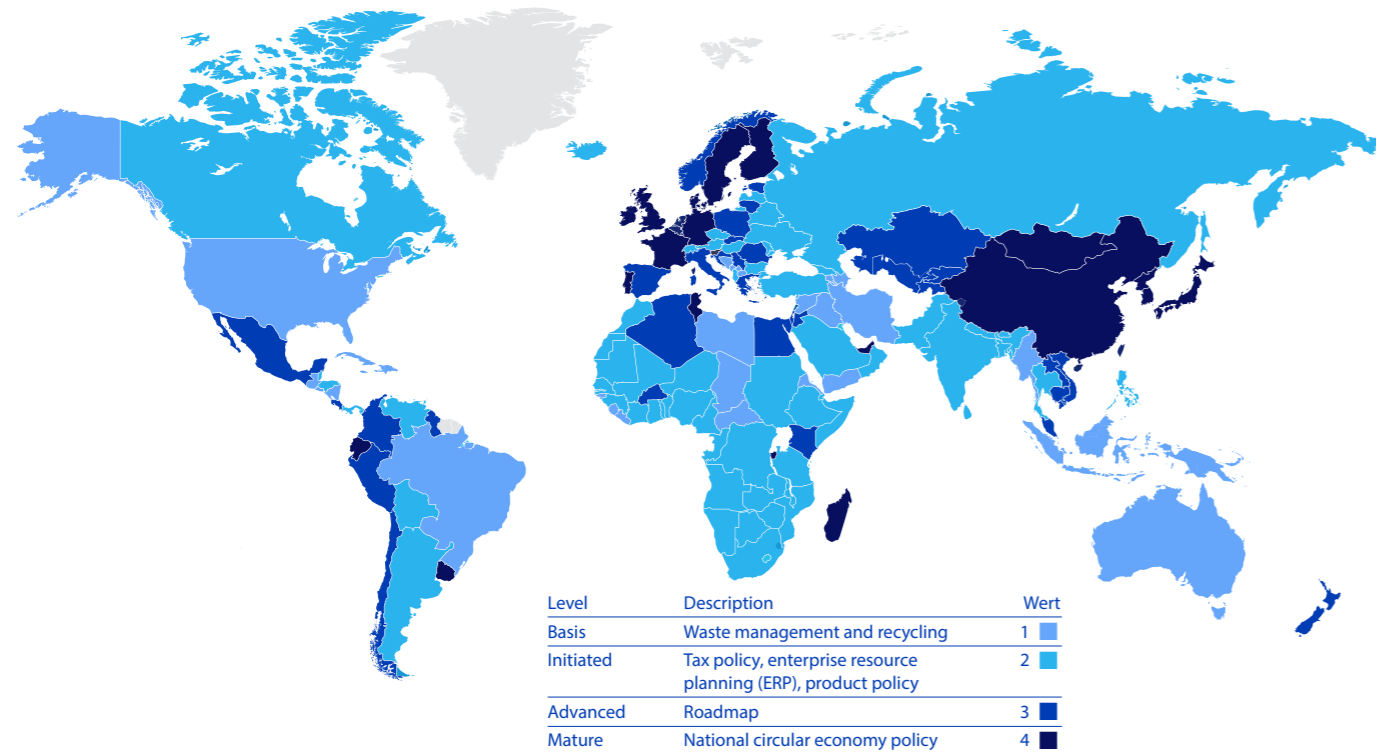
In the report "Circular economy: Navigating the evolving global policy landscape", Ernst & Young assesses the

maturity level of circular economy policy. Most developed countries already have a roadmap or a national policy framework for the circular economy – with the exception of the USA. This highlights the challenges that regulators face, especially in regions rich in natural resources. Ultimately, we are convinced that more and more countries will introduce supportive measures as raw materials increasingly become a matter of strategic importance and climate change becomes more visible to voters.

The current state of legislation for the circular economy

An example of recent legislative efforts comes from the European Union. With its "Circular Economy" action plan from March 2020, the EU Commission is aiming to launch an ambitious agenda for promoting a climate-neutral circular economy. The plan proposes several measures that will affect the design of products, the flow of production processes and the design of value-added chains. These rules now need to be implemented at national level. France, for example, established the "right to repair" as law in 2021. The aim is to oblige companies to remove barriers when consumers want to have products they buy repaired. In

Figure 7: Assessing the level of maturity (on a scale of 1 to 4) of circular economy legislation



Source: Harvard, i.e. E&Y (2022)

France, the products are now marked with a repair index (see "Repair index" box).

Repair index: Policy example from France

France promotes the repair of products by law. Since 2021, electrical devices must be marked with a repair index (l'indice de réparabilité). The products are categorised with a value on a scale from one to ten (ten represents the highest degree of repairability). A sticker shows consumers how easy it is to repair a product. The associated colour scale ranges from red for difficult to green for products that are easy to repair. This rating is based on a number of criteria. For example, the availability of spare parts, the price of spare parts and the difficulty of dismantling the product are taken into account. The aim is to encourage consumers to buy products with good ratings so they can use their products for longer. It also saves money if a replacement is not needed every time a device breaks. At the same time, the index aims to encourage companies to manufacture more repairable products.

In order to create even more incentives, financial support is available for repairs in France in the form of a repair bonus. The state pays between 10 and 45 euros depending on which defect needs to be remedied.

Figure 8: Smartphone repair index



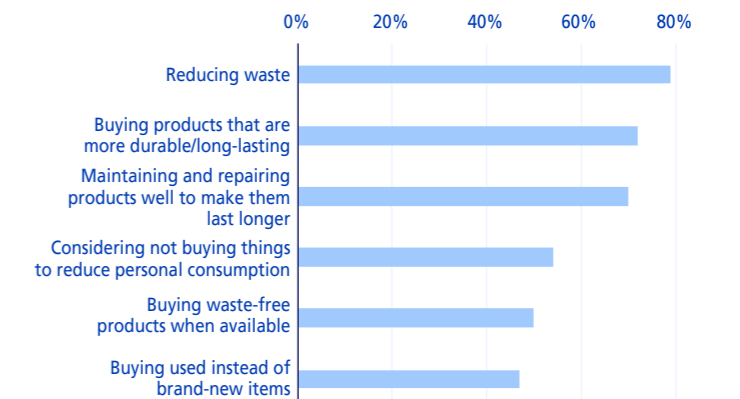
Key: The Nokia G42 smartphone has a repair index of 8.1 because it is relatively easy to disassemble and spare parts are more readily available over a given period.¹⁰

1.2.2 Consumer awareness: our behaviour needs to change

Consumers can make a significant contribution in their daily lives to implementing sustainable practices and advancing the circular economy. This is primarily about minimising the consumption of goods, reusing items where possible and recycling materials correctly. Other individual strategies include buying used goods, participating in repair initiatives, investing in high-quality and durable products, and investing directly in the circular economy through funds or direct investments.

According to the Capgemini report "Circular Economy for a Sustainable Future: How Organizations Can Empower Consumers and Transition to a Circular Economy"¹¹ from 2021, 45% of 7,819 consumers surveyed globally said they would like to buy exclusively from brands that focused on the circular economy. The chart below shows the percentage of respondents who are willing to take measures to reduce waste, service and repair products to extend their lifespan, and buy more durable products.

Figure 9: Percentage of respondents interested in the following measures:



Source: Capgemini

¹⁰ <https://www.indicereparabilite.fr/produit/smartphone-hmd-global-oy-nokia-g42-5g/>

¹¹ <https://www.capgemini.com/insights/research-library/circular-economy-for-a-sustainable-future/>

Another study by DNV, an independent classification and risk management provider, surveyed 2,900 consumers in Europe and the USA. The results¹² showed that 53% of Generation Z¹³ actively participate in the circular economy. The data is supported by research by YPulse, a company that engages in market research among young people. The research shows that Generation Z is increasingly using second-hand goods and, in terms of fashion, choosing to recycle old clothes.

However, customers complain that organisations and companies do not provide them with sufficient access, information or opportunities to implement circular economy practices.

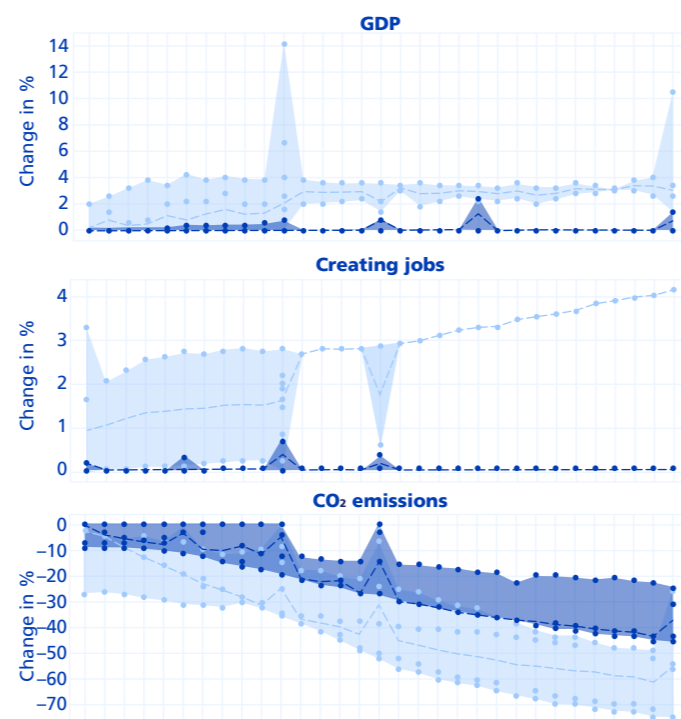
1.2.3 EU Taxonomy promotes circular economy initiatives
The EU regulation establishing a framework to facilitate sustainable investments, known as the Taxonomy Regulation, is also expected to play an important role in promoting circular economy initiatives by providing a standardised framework for assessing the sustainability of economic activities. Specifically, it categorises them based on their contribution to environmental objectives such as climate protection and climate action, sustainable use and protection of water and marine resources, transition to a circular economy, prevention and reduction of pollution, and protection and restoration of biodiversity and ecosystems. This classification creates a common standard and enables investors, companies and policymakers to identify and prioritise circular economy initiatives, thereby promoting investment and innovation in circular business models, products and services.

1.3 Financial, strategic and environmental benefits
Discourse regarding the circular economy often goes around in circles. The elements interact in a continuous feedback loop, where changes in regulations and consumer behaviour are mutually amplified by their positive outcomes. Similarly, improved regulations and increased consumer awareness of the circular economy increase its benefits.

The benefits of the circular economy can be divided into ecological, economic and political/strategic advantages. In a meta-analysis conducted by Aguilar-Hernandez et al. (2021), reports on more than 300 circular economy

scenarios from 2020 to 2050 were examined. The study found that implementing ambitious circular economy scenarios by 2030 could increase median gross domestic product by 2.0%, raise median employment by 1.6% and reduce median CO₂ emissions by -24.6%.

Figure 10: Macroeconomic, social and environmental impacts of a circular economy by 2050: A meta-analysis of prospective studies



● Moderate scenario - - Median (moderate) ■ Range (moderate)
● Ambitious scenario - - Median (ambitious) ■ Range (ambitious)

Source: Aguilar-Hernandez a, João F. Dias Rodrigues a, Arnold Tukker

The environmental benefits of a circular model are resounding: by maximising the use of materials and products throughout their life cycle, the model minimises waste, conserves natural resources and leads to lower emissions. Europe could, for example, halve its carbon dioxide emissions by 2030 if it were to develop a circular economy.

Moreover, by reducing the consumption of raw materials, the circular economy can improve soil productivity and health, curb deforestation and contribute to the protection and restoration of natural habitats and the preservation of ecosystems. The circular economy aims not only to stop biodiversity loss, but also to bring biodiversity back to 2000 levels by 2035.

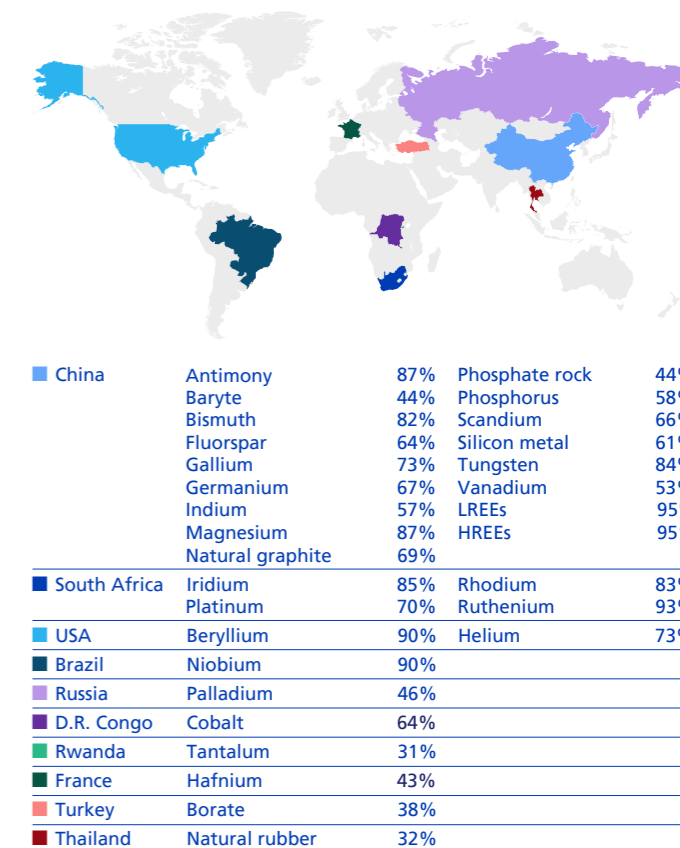
- 4.5-trillion-dollar potential

The main goal of the circular economy is to decouple economic growth from raw material consumption and thus overcome the constraints associated with the availability of natural resources. According to calculations by the consulting firm Accenture, the transition from a linear approach to a circular system has the potential to generate **4.5 trillion US dollars in economic growth by 2030**.¹⁴ The transition requires innovation in product design, materials and business models. Such innovations not only stimulate economic growth, but also create opportunities for entrepreneurship, research and development, which in turn creates new jobs and industries. While demand for jobs in resource extraction and processing could decline, the value of labour as a whole is expected to increase. **The European Union expects this change to create some 700,000 new jobs in the region by 2030.**¹⁵

- Reliance on finite resources diminishes

Moreover, the circular economy increases resilience to disruptions caused by factors such as resource scarcity, geopolitical conflicts and natural disasters thanks to the diversification of supply chains and the reduced dependency on finite resources. The effects of external shocks on economies and businesses can be mitigated by promoting economic autonomy and stability. This is particularly important in view of the ongoing trend

Figure 11: EU: raw material shortages lead to geopolitical tensions and dependencies



Source: <https://www.europarl.europa.eu/thinktank/infographics/circulareconomy/public/index.html>, 2020

towards deglobalisation. This results in geopolitical tensions, price fluctuations and availability problems, especially in regions that are heavily dependent on imports of important raw materials. The European Union currently imports more than half of its raw materials. This example shows the urgent need to eliminate vulnerabilities in supply chains, particularly for critical materials such as high-tech products or in healthcare. Longer life cycles and

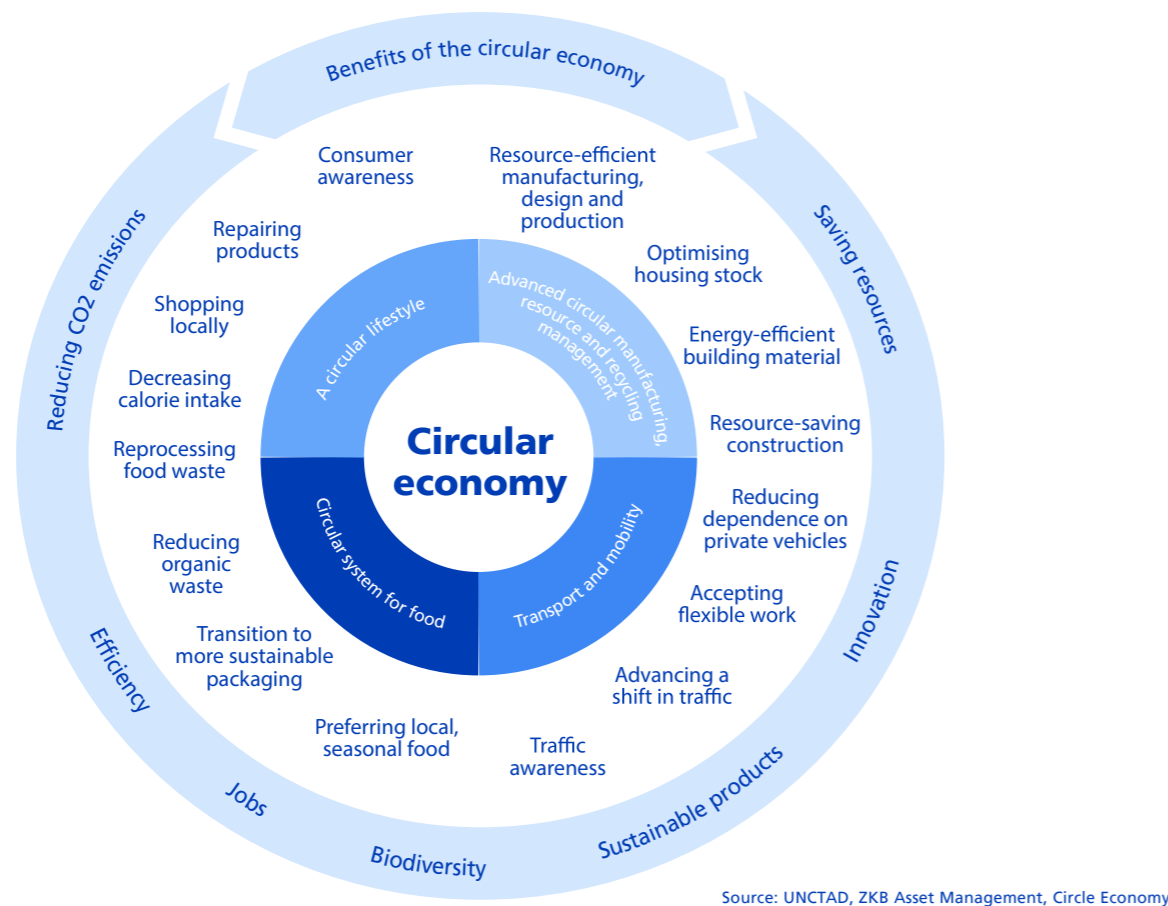
¹² <https://circularphiladelphia.org/will-gen-z-drive-the-shift-to-a-circular-economy/>

¹³ Those born between 1997 and 2010 are commonly referred to as Gen Z.

¹⁴ The Circular Economy Handbook: Realizing the Circular Advantage, by Peter Lacy, Jessica Long and Wesley Spindler

¹⁵ <https://www.europarl.europa.eu/topics/en/article/20151201STO05603/circular-economy-definition-importance-and-benefits#:~:text=Moving%20towards%20a%20more%20circular,different%20sectors%20of%20the%20economy>

Figure 12: The focus areas of the circular economy



Source: UNCTAD, ZKB Asset Management, Circle Economy

the improved extraction of key resources could attenuate this vulnerability.

The general principles of the circular economy provide a way to eliminate inefficiencies and promote a more resilient and prosperous economic system that maximises the value of resources, protects natural capital and prioritises self-sufficiency and independence.

1.4 Initiatives towards a circular economy

The following figure shows the range of circular economy solutions available. The outer circle illustrates the advantages of transitioning towards a circular economy, which can be achieved by consistently implementing the measures mentioned. Two examples:

- If more damaged products are repaired instead of discarded, valuable raw materials can be saved.
- Improved building construction can lead to lower CO₂ emissions.

The possible measures to move closer towards a circular economy can be summarised in four areas, referred to as initiatives. "Circular Lifestyle", "Advanced Circular Manufacturing and Resource and Recycling Manufacturing", "Transport and Mobility" and "Circular Food System" summarise the most important points for an improved circular economy.¹⁶

In Switzerland, they could reduce the carbon footprint by 43% and the material footprint by 33%. In addition, the loss of biodiversity could be stopped and brought back to 2000 levels by 2035. This is also the case at the global level: according to the Ellen MacArthur Foundation, applying the three principles of the circular economy – developing products, services and systems – could address the remaining 45% of emissions from industry, agriculture and land use that cannot be eliminated by the energy turnaround.¹⁷

¹⁶ ZKB Asset Management, Circle Economy – Circularity Gap Report Switzerland 2023

¹⁷ Circle Economy – Circularity Gap Report Switzerland 2023

2 The circular economy could pay off environmentally and financially

Given the economic, environmental and strategic benefits of a circular economy, governments are likely to increase their support and consumers will gradually adopt new consumption habits. Investments in companies that are committed to the circular economy and thereby have a positive impact on the environment can generate financial return opportunities that exceed market growth in the long term.

2.1 A complex ecosystem with high growth potential

The combination of new regulations and changing consumer behaviour is likely to encourage more and more companies to invest in the circular economy. This allows them to adapt to customer demand, lower costs where possible, and reduce risks in the supply chain. The market research firm Gartner predicts that 60% of global companies will achieve profitable growth through circular supply chains by 2026.¹⁸

According to a working paper by Just Economics and Chatham House, global circular economy spending totalled 1,482 billion US dollars in 2019/2020, divided between sovereign initiatives (636 million US dollars) and spending by private enterprises (800 million US dollars). Although these investments are significant, they account for only 3% of investments in the linear economy and leave plenty of room for growth.¹⁹

2.2 Sub-segments with different growth rates

The idea of the circular economy encompasses many sub-segments with different growth rates. For example, Statista expects the global recycling sector²⁰ – a key category of the circular economy – to achieve an average compound annual growth rate (CAGR) of 4.7% between 2022 and 2032. However, if we look at new areas such as the market for recycled PET, it will grow seven times by 2050 compared to 2025, according to plastics recycler Carbios.

The extent of the necessary changes means that different companies will react and perform differently. The costs associated with introducing circular economy principles may be considerable, ranging from increased operating costs to significant capital expenditure over multiple years. In addition, organisational and procedural changes are likely to be necessary in order to better align companies with the new business models.

However, early adoption, differentiation and strategic

positioning could bring significant benefits and offset the investment costs. After all, the circular economy may offer benefits that go beyond environmental and social aspects. The extent to which these benefits have an actual impact on companies depends on the industry in which they operate. In certain cases, a proactive approach could therefore improve companies' market position and reduce operational and regulatory risks. Identifying winners and losers of this important trend is thus crucial.

Example from academic research: investing in the circular economy can reduce risks and increase investment returns

Research from the University of Bocconi focused on the probability of default of debts and whether the introduction of circular economy practices can reduce the associated risks. The study also examined whether the introduction of circular economy strategies leads to better risk-adjusted returns, which are assessed using Sharpe and Treynor ratios.

The study included 222 companies from resource-intensive industries such as manufacturing, utilities and construction. A circular economy score was calculated based on the implementation of recognised circular economy practices. The companies were then divided into quartiles.

¹⁸ <https://www.gartner.com/en/newsroom/press-releases/2023-06-06-from-confusion-to-profits-understanding-the-circular-economy-growth-opportunity>

¹⁹ Circular investment: A review of global spending and barriers to increasing it, Working Paper, May 2021, Just Economics and Royal Institute of International Affairs

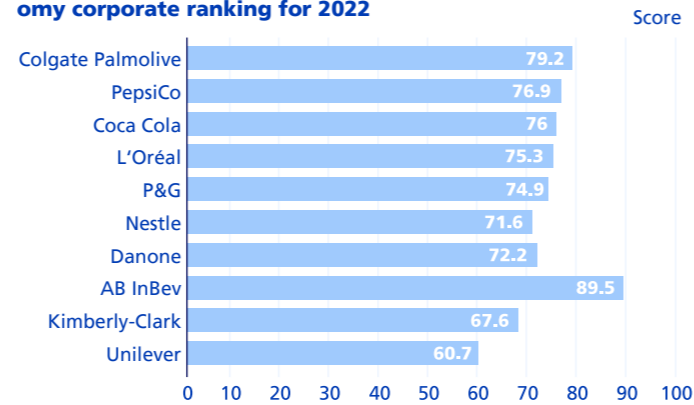
²⁰ <https://www.statista.com/statistics/239662/size-of-the-global-recycling-market/>

The study showed that companies that apply circular practices reduced the risk of payment default over a period of one and five years. The more circular a company is, the lower its default risk. Furthermore, this relationship is causal, i.e. a higher degree of circular economy is associated with a lower probability of default.

According to Chatham House and Just Economics, circular economy practices in manufacturing often result in optimised resource use, less waste and less dependence on non-renewable resources.²¹ This can lead to savings in raw material, disposal and energy costs under certain conditions. Moreover, diversifying supply chains and reducing dependence on finite resources can increase resilience to disruptions. **An example of a circular economy strategy is the use of recycled resins by the US pipe manufacturer Advanced Drainage Systems. The company has made significant investments in state-of-the-art recycling systems. These have enabled better access to recycled materials at lower prices.**

Consumer goods companies may also be increasingly forced to align their strategies with new customer behaviours. More sustainable packaging, recycled content or the reparability of products should become increasingly important in the purchase process. In its annual circular economy policy ranking, BNEF shows which companies are leading and which are lagging behind in sustainable packaging. Consumer staples manufacturers with a high circularity rating include Colgate Palmolive, Pepsi, Coca Cola and L'Oréal.

Figure 13: BNEF's circular economy corporate ranking for 2022



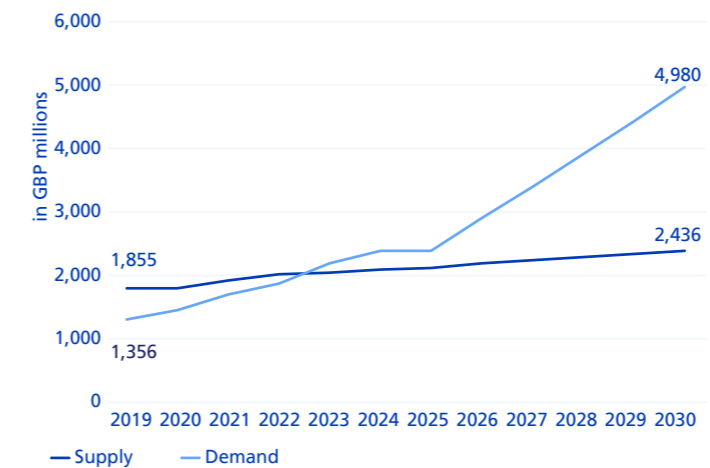
Source: <https://about.bnef.com/blog/the-leaders-and-laggards-in-the-quest-to-reach-a-circular-economy>

Many companies have set high targets for the use of recycled materials. However, capacity constraints, initial investment costs and technological problems are likely to have prevented them from favouring recycled materials over new ones. This problem is explained in more detail using the example of plastic bottles:

The "R-PET" market – an example of the challenges of the circular economy

Consumer goods companies have set ambitious targets to offer R-PET (recycled PET). However, the demand for recycled PET flakes will exceed supply in the USA in the coming years (see chart). Without additional capacity, demand will be approximately twice the supply in 2030.

Figure 14: Equilibrium between supply and demand in the USA for recycled PET flakes



Source: Plastic News (including imports; assuming PET growth remains at the same level and at least 50% of PET commitments are met)

Currently, mechanical processes are predominantly used in the recycling of plastic waste. The collected plastics are sorted by type, quality and colour and then washed, crushed and melted into flakes. These flakes are then pelletised into resins, which are then further processed and finally turned into end products. Contamination from food, additives, other plastics and dyes means that a significant portion of the PET is not recycled or goes into textile or film production. Currently, only 25% of the world's PET demand is covered by recycled material. The low recycling rates are due to outdated technologies that cannot cope with the complicated plastic products.

The chemical recycling of PET (CR-PET) offers hope. This improves the recyclability of plastics, which could close the supply and demand gap. The technology is still in the start-up or project phase and is associated with high investment costs, barriers to entry and technological uncertainties. With a forecast global total PET demand of approximately 42 million tonnes, CR-PET has the potential to capture approximately 12.9% of the total PET market by 2030.

The examples of R-PET and CR-PET show that while companies are willing to make the transition to more sustainable production, implementation often fails due to technological barriers or insufficient supply.

²¹ Circular investment: A review of global spending and barriers to increasing it, Working Paper, May 2021, Just Economics and Royal Institute of International Affairs

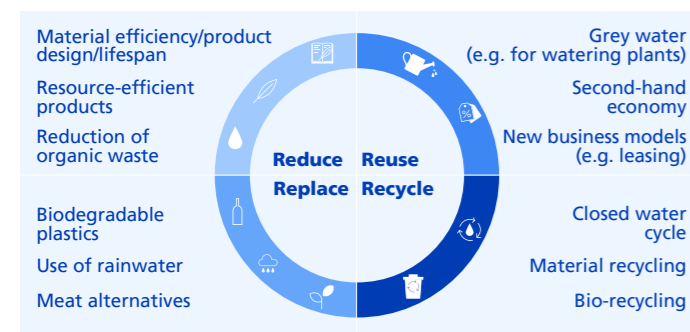
3 Attractive investment opportunities

3.1 Definition and sub-topics

There are many ways to categorise the measures and solutions that are in line with the circular economy concept. For the sake of simplicity, we have defined what is called the 4-R principle (Reduce, Reuse, Recycle, Replace (see chart below)).²² This includes many sub-topics from the areas of plastic or bio-recycling, product design and lifespan, higher efficiency in the production process and leasing business models.

We use this approach as the basis for composing our investment universe.

Figure 15: Overview of environmental solutions related to the circular economy principle



Source: <https://about.bnef.com/blog/the-leaders-and-laggards-in-the-quest-to-reach-a-circular-economy>

For our investment approach, we have defined three categories with solution providers, enablers and circular economy adopters. These provide an indication of how a company is performing in the context of the circular economy.

Solution providers are companies that offer products and services that address the challenges of the circular economy. They are providers who develop or implement innovative solutions to promote the circular economy in various industries. This includes companies involved in recycling, renewable energy, sustainable product design and waste reduction.

Enablers are organisations that support the transition to a circular economy by providing resources, expertise or technologies. For example, simulation software can help to use fewer materials within a production process.

Circular economy adopters are organisations that take a leading role in the circular economy through their products, initiatives and best practices. These are organisations that actively promote and invest in circular economy initiatives.

3.2 Our circular economy concept

Figure 16: Concept of the circular economy

The concept of the circular economy includes solution providers, enablers and adopters

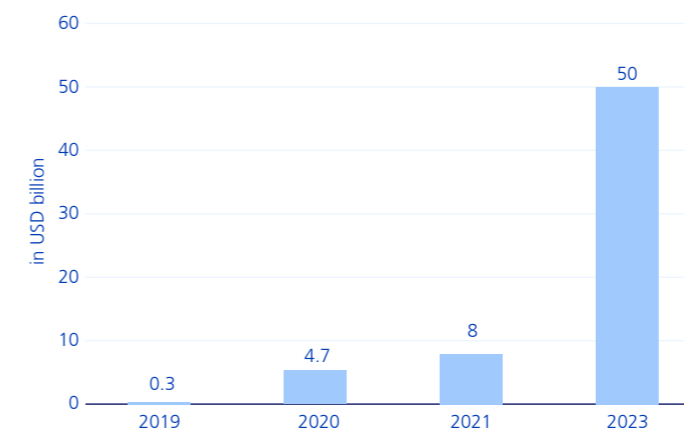


Source: Company information

Relevance of the investment theme in relation to listed equities

The circular economy is a relatively new topic for investors and the financial sector. Since 2019, there has been a clear growth trend in the managed assets of circular economy funds. According to the Ellen MacArthur Foundation, the assets under management in funds in listed equities with a focus on the circular economy increased from 0.3 billion US dollars in 2019 to 8.0 billion US dollars in 2021. While investment opportunities have experienced robust growth over the past four years, there is still plenty of room for further growth for this asset class.

Figure 17: Assets under management in circular economy investment funds



Source: Ellen MacArthur Foundation, Bocconi University, Patrick Schröder et al.

From a broader economic perspective, the value of the corporate sector's annual spending on the circular economy is estimated at around 850 billion US dollars, compared to 35 trillion US dollars for linear spending.²³ This suggests that the circular economy accounts for only about 3% of total global investments annually. Consequently, there still seem to be considerable opportunities for investment funds in this area.

²² Potting et al. (2017, p.5)

²³ Circular investment: A review of global spending and barriers to increasing it, Working Paper, May 2021, Just Economics and Royal Institute of International Affairs

4 Conclusion – the circular economy: an attractive topic with potential

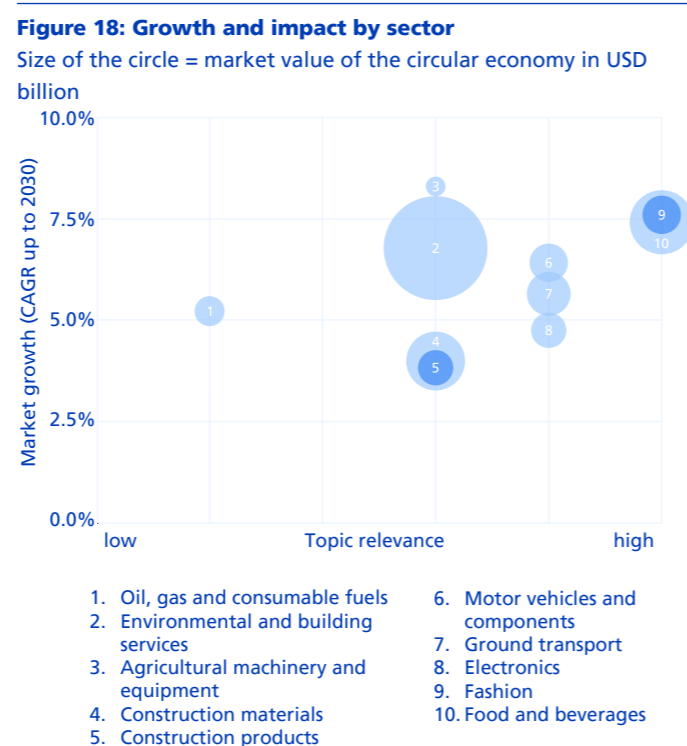
The transition to a circular economy is a key driver for tackling the complex problems arising from environmental deterioration, resource constraints and climate change. The urgent need is highlighted by Earth Overshoot Day and the harsh reality that our existing linear economic model is not sustainable. New geopolitical considerations reinforce the arguments for the circular economy.

The circular economy, driven by regulatory initiatives, business practices and changing consumer behaviour, is not only a necessity, but also a considerable economic opportunity. As governments around the world turn to policies to promote the circular economy and businesses increasingly adopt circular economy practices, the trend is gaining momentum. Sectors such as food and beverages, fashion, ground transport and environmental and facility services all contribute significantly to this.

At the corporate level, we see many long-term benefits for companies investing in the circular economy, from lower operational risks and costs to new business opportunities. However, there are challenges in adopting new practices. The appeal of each sub-sector of the circular economy must therefore be thoroughly analysed. In our view, this complexity means that actively managed investment strategies are likely to be the most appropriate investment instruments to engage with this topic.

The circular economy thus offers the perfect mix of sustainable and collective commitment and economic viability. It embodies a fundamental change that, if carried out conscientiously, has the power to reform entire industries, conserve resources and create a fairer and more sustainable future for the coming generations.

The success of the circular economy depends on how large a sector is and how significant its impact on the circular economy is. The diagram below illustrates this along the axes of global market growth by 2030 and the impact on the circular economy. Global market growth in 2030 was calculated using the average annual growth rate (CAGR) up to 2030 for each sector.



Source: Chatham House, Just Economics, Goldman Sachs, ZKB Asset Management

For the impact on the circular economy, a report by the Ellen MacArthur Foundation was used, which describes the factors for the growth of the circular economy. The report assessed the potential impact of each sector on the circular economy, ranging from low to high. To ensure a universal definition of the sectors, they were selected according to the GICS classification. To show how large a sector is, the additional market value of the circular economy per sector is represented by the circle size. The data comes from a report by Chatham House and Just Economics as well as Bloomberg, among others.

The investment opportunities within a sector are presented in the potential investment universe. Companies and countries must meet strict criteria to be included and are regularly reviewed. According to this diagram and analysis, the most investment opportunities are found in the capital goods sector with 26.7 percent overall. Commodities followed at 20.5 percent and foodstuffs, beverages and tobacco products at 10.1 percent.

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