



## Theme: Greater circular material flows will create opportunities

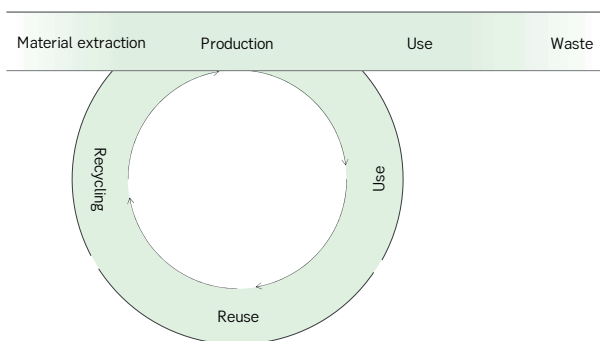
In today's linear economy, where overconsumption of resources risks leading to serious consequences, the transition to a circular economy is increasingly necessary. With only 7.2 per cent of materials reused or recycled, the Circularity Gap Report highlights the urgent need for change. The aim of a circular economy is to maximise the use of materials and products and minimise the use of raw materials.

In today's linear economy, 75 per cent more resources than the earth produces are consumed each year. If this overuse of global resources continues, we would need as many as three earths by 2050. Meanwhile more than 90 per cent of the materials we consume are discarded or unavailable for reuse after being used in only a single product. In 2023, only 7.2 per cent of all input materials came from reused or recycled materials, according to the Circularity Gap Report, which was launched at the 2018 World Economic Forum in Davos. These figures, together with the most recent changes in the geopolitical landscape and volatile commodity prices, demonstrate the need for the transition to a circular economy.

In a circular economy, the goal is to use all materials and products as many times as possible and minimise the share of raw materials used in new products. At the end of a product's service life, the material is then recycled to the greatest extent possible. This is in contrast to the linear economy, which essentially involves extracting natural resources to make products that are used and then thrown away.

Making the transition to a circular economy requires major changes in our view of how value is created and maintained in the economy, the kind of business models that companies use and the way materials are managed. The traditional linear economy is built on product sales and value creation by generating revenue in the short term. Successful companies have historically focused on increasing their revenue from manufacturing new products with a short lifespan. A circular economy is instead characterised by a greater focus on services and long-term value creation through reuse and recycling aimed at extending a product's service life. Companies that are adept at exploiting the value of their products and materials and use new service-focused business models will therefore probably be the most successful in the transition to a circular economy.

### The linear and the circular economy

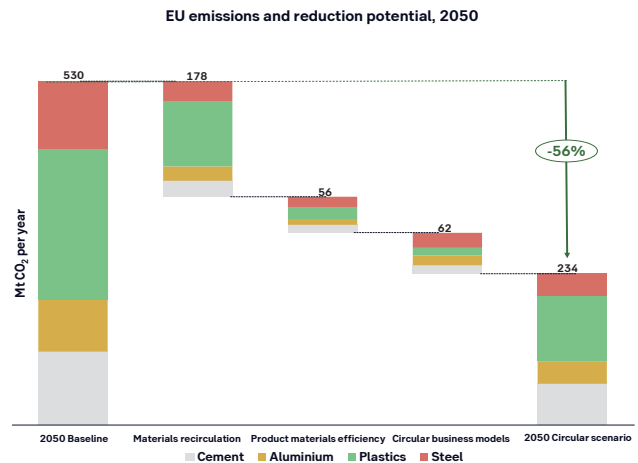


Source: SEB Climate & Sustainable Finance

In a circular economy, the focus is on the reuse and recycling of products and materials in order to avoid throwing them away.

Today the extraction of new materials accounts for roughly 70 per cent of global greenhouse gas emissions. Emissions are generated from energy use, among other activities, so one obvious measure that is often highlighted is to increase the use of renewable energy. Such a transition to renewable energy has the potential to cut greenhouse gas emissions about 55 per cent by 2050. Nonetheless, that is not enough to avoid the serious consequences of climate change. The circular economy will thus play a key role in reducing emissions and achieving global climate targets, but this will also require a major shift in today's material flows. According to the UNDP Climate Promise, circular material flows in four key sectors (cement, steel, plastics and aluminium) can lead to a decrease in global greenhouse gas emissions by a full 40 per cent by 2050. In the European Union, circular material flows have the potential to cut emissions from these sectors by more than half during the same period.

### Potential to cut emissions in four key EU sectors by more than half by 2050



Source: Material Economics, *The Circular Economy* (2018)

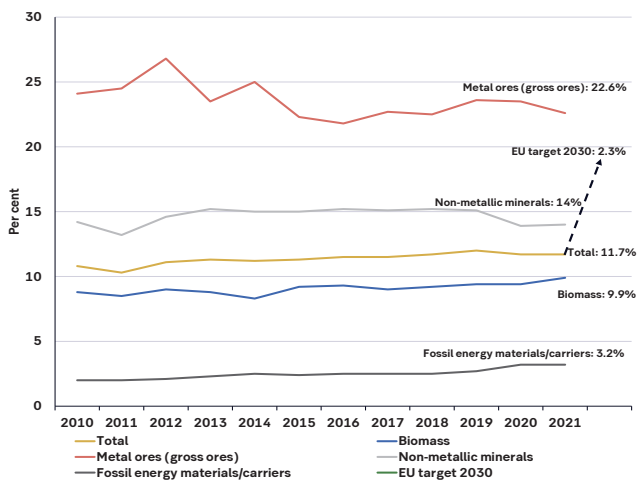
The chart shows potential EU emission reductions through circular material flows and circular business models in the steel, plastics, aluminium and cement sectors to 2050. The biggest decrease in emissions will come from increased materials circulation.

From an economic perspective, it is also logical to design a system that avoids disposal of waste and keeps materials in use for longer. In today's linear economy, we use large quantities of natural resources that are quickly discarded, which in the long term means a loss of economic value. For example, in the EU steel, plastics and aluminium sectors, EUR 78 billion is lost each year after just one material use cycle. Circular material flows can help to maintain the value of products and materials for longer and thus contribute more economic value to businesses and society in general.

In recent years, a focus on the circular economy has also moved higher up the political agenda for strategic reasons. Circulating materials can reduce dependency on imports from other regions, which is an increasingly important issue in today's geopolitical climate. For example, between 75 and 100 per cent of all metals used in the EU are currently imported. This entails a great risk since access to these commodities will be essential for a successful energy transition. A discussion is thus under way in the EU on how the region can become more self-reliant. This dependency can probably not be eliminated solely through increased metal extraction within the EU. Companies that enable the reuse or recycling of these materials in a circular flow will therefore probably play a key role.

The circular economy's role in mitigating climate change and reducing import dependency is reflected in a wave of new and upcoming regulations in this field. They may serve as a catalyst in the transition to a circular economy. One example is the EU's Circular Economy Action Plan, which comprises a total of 35 regulations and initiatives to support the transition. The action plan also includes an ambitious target of doubling the share of recycled materials used in the EU economy between 2020 and 2030.

### The EU's target is to more than double the use of recycled materials by 2030



Source: European Environment Agency, The Circularity Gap Report, SEB Climate & Sustainable Finance

The chart shows the share of recycled materials in production (circular material use rate, CMUR) in the EU between 2010 and 2021 by material category and the target for 2030.

The transition to a circular economy offers exciting new business opportunities to companies that can take advantage of upcoming regulatory changes and increased demand for their circular products and services. The management consultancy Material Economics estimates that EUR 515 billion in new EU revenue can be generated each year before 2030 in waste management, battery production, plastics and circular building materials. We thus believe that there are good growth opportunities even today for companies that promote or work innovatively with the circular economy in various ways.

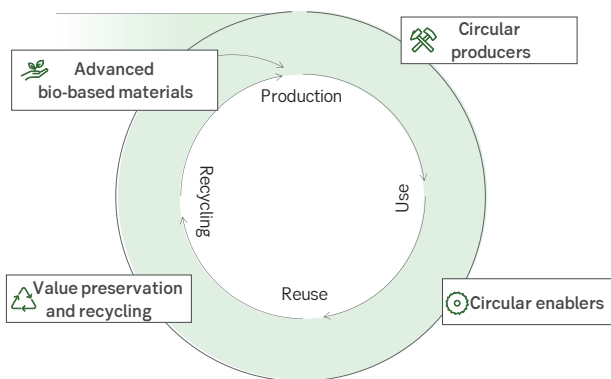
### Focus: Circular material flows as an investment opportunity

We are still only at the beginning of the transition to a circular economy, which requires both an adjustment in material flows and implementation of new, often service-focused circular business models. This may include product-as-a-service business models, which in their purest form involve the manufacturer continuing to own and maintain a product while the customer leases it for use. These kinds of circular business models are still very rare in many sectors. We predict that increased use of circular material flows will be one of the first steps in the transition to a circular economy. Investing today in companies that specialise in circular material flows will not only help to accelerate the transition to a circular society, but will also provide an excellent opportunity to take advantage of growth potential in companies with new business concepts and innovative technologies, since these companies may be the first to benefit from the circular economy as an investment theme.

Many different companies are involved in a circular material flow. We have identified an ecosystem consisting of four types of market participants that can contribute to increased circulation of materials:

- 1. Advanced bio-based materials.** Companies in this category produce materials from renewable or biodegradable resources that replace non-renewable raw materials. The materials produced are easy to recycle or reintroduce into the ecosystem after use. This group may include companies that use new technologies to transform biomass or other biodegradable materials into products not normally considered renewable, such as plastics.
- 2. Circular producers.** A circular producer focuses on circular material flows in both its design and production process. Products are designed so that they can easily be reused or recycled, something that may otherwise be very difficult. Companies in this category are leaders in circular thinking, for example, with their advanced buy-back and recycling schemes. This means that manufacturers take greater responsibility throughout a product's life cycle to ensure that the product or its materials are recirculated.
- 3. Circular enablers.** This category consists of companies that make circular material flows possible, for example by offering resale platforms. A circular enabler may produce equipment or technologies needed to recycle materials.
- 4. Value preservation and recycling.** Companies in this category are active in recycling or refining materials or products at the end of their life cycle. The goal of these companies is to close the circle and enable the reuse of materials in new products. As a result, the value of materials is maintained. This may involve companies that work with traditional recycling through collecting and managing waste. However, in most cases these companies work with new methods to recycle materials that could not previously be recycled, for example, chemical recycling of plastics.

## SEB's ecosystem for circular material flows



Source: SEB Climate & Sustainable Finance

An ecosystem for circular material flows with four types of market participants.

This definition of ecosystem has been developed by SEB and is based on the Ellen MacArthur Foundation's definition of a circular economy. The concept can be used to identify investment opportunities in these four categories of companies. Naturally, there are more than four types of market participants in a circular ecosystem, but we have chosen to focus on these investment opportunities.

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Many companies that work with circular material flows are still relatively small firms that develop new products and technologies. A large number are startups that launched during the past five years and have seen strong growth during this time but in many cases are not yet listed. Investing in listed shares that fall under this investment theme is thus challenging. Our ecosystem concept may thus help investors to identify liquid stocks whose future performance may be positively affected by a circular economy transition. A selection of European and North American listed companies that have a clear exposure to circular material flows is presented below.

### Advanced bio-based materials – Borregaard ASA

The Danish company Borregaard produces advanced bio-based chemicals that can replace fossil-based products. Borregaard's biorefinery converts wood into cellulose and a number of other valuable products. By-products from the making of cellulose are first used for the production of bioethanol before residual materials are converted into lignin-based biopolymers. By-products that cannot be used in new products are converted into biogas or biomass and used for energy in the production process. With this production method, 94 per cent of the wood is used – 82 per cent is converted into commercial products and 12 per cent into energy.

Borregaard has a diversified product portfolio and a global customer base. The company states that it is well positioned to capitalise on the growing trend towards bio-based products. Borregaard contributes to circular material flows by both creating bio-based products and minimising the share of materials that are discarded.

### Circular producers – SKF

The Swedish engineering company SKF is a sector leader in reusing and recycling materials. It has developed a number of initiatives to extend the service life of components and systems and to close the circle at the end of a component's life through recycling. SKF's expertise in rebuilding industrial bearings gives them new life or enables their reuse. Bearings not suitable for rebuilding are recycled to produce new bearings, which in effect closes the circle. The remanufacturing of bearings also entails lower costs over the bearing's life cycle.

Today SKF has more than 15 bearing remanufacturing centres across the world. The company has provided such services to heavy industry for 25 years and has seen a steady rise in demand for remanufactured products. As a result, in 2020 SKF also set up its first circular economy centre in Gothenburg, a local unit that provides circular solutions close to its customers. Demand for the centre's services has quadrupled in just two years.

### Circular enablers – Tomra Systems

Norwegian-based Tomra's vision is to lead the resource revolution. Its reverse vending machines (RVMs) collect glass bottles, PET bottles and aluminium cans, enabling the recycling and reuse of materials. Tomra has installed more than 80,000 such machines globally so it is playing an important role in the transition to circular material flows. Along with its machines for recycling beverage containers, Tomra has expanded into the market for waste sorting and sensor-based food sorting.

Tomra is the world leader in manufacturing RVMs, with a market share of 75 per cent globally. Going forward, the company may benefit from the introduction of new beverage container return systems in the EU, which is governed by regulations such as the EU Packaging and Packaging Waste Directive. This may increase growth in Tomra's collection and recycling operational segments.

### **Value preservation and recycling – LanzaTech**

US-based LanzaTech has developed technology to make use of emissions from heavy industry to create new products. The main product produced so far is ethanol, which can be converted into a number of different chemicals. For example, LanzaTech has demonstrated that it can produce ethylene from captured carbon dioxide. This chemical compound is sold in large quantities, with an estimated global market worth USD 170 billion by 2030. LanzaTech has also entered into a partnership with the Swedish energy company Vattenfall, Scandinavian Airlines (SAS) and Shell, aimed at exploring the potential for the world's first large-scale production of sustainable aviation fuel (SAF) in Sweden. The goal is a new production facility that could produce up to 50,000 tonnes of SAF annually. In full production, it could provide SAS with up to 25 per cent of its SAF needs by 2030. With its technological know-how, LanzaTech has the potential to capitalise on two major sustainability trends – climate change adaptation and circularity.

### **Value preservation and recycling – Loop Industries**

Canada's Loop Industries has developed a technology that enables the recycling of plastics which could not previously be recycled. The method breaks down PET plastic and polyester fibres into their original building blocks and then puts them back together. As a result, the company can produce new materials that are 100 per cent recycled, from materials that are normally not recycled and would otherwise end up as landfill. The materials can be reused any number of times, without reducing quality or purity. Recycling is carried out at a low temperature and without increasing pressure on the material, which means that the process is less energy-intensive than other recycling methods. The company currently has a demonstration facility in Quebec. In 2023, Loop Industries and the South Korean petrochemical producer SK Geo Centric formed a joint venture that will build at least four commercial facilities using Loop's technology. Loop Industries also has partnerships with a number of other global corporations, such as the French utility company Suez and the global PET resins producer Indorama Ventures.