



Sustainability in Action

December 2024

Materials Transition: Tackling waste and pollution

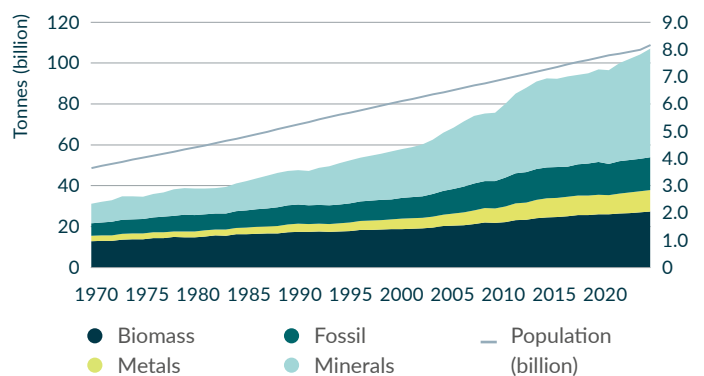
It is the year 2805. Humanity has long-abandoned a polluted and uninhabitable Earth for enormous spaceships. Only the little waste robot Wall-e is left, still diligently fulfilling the task he was built for on earth: compacting neat packages out of the rubbish discarded by humans, stacking them against a dark grey sky. In 2008, this was the dystopian vision of the future in the Pixar animated film Wall-e. Though in reality it may not come to that, how do we prevent heading in this direction? The materials transition can significantly contribute to a solution, while offering opportunities for (impact) investors.

Two Reasons Why Change is Necessary

Beyond save planetary boundaries

Over the past fifty years, material production has tripled to 107 billion tonnes per year, leading to enormous waste streams, of which only 7% is recycled. Annually, this results in waste equivalent to 200 times the weight of the global population.¹

Material production tripled, further increase expected



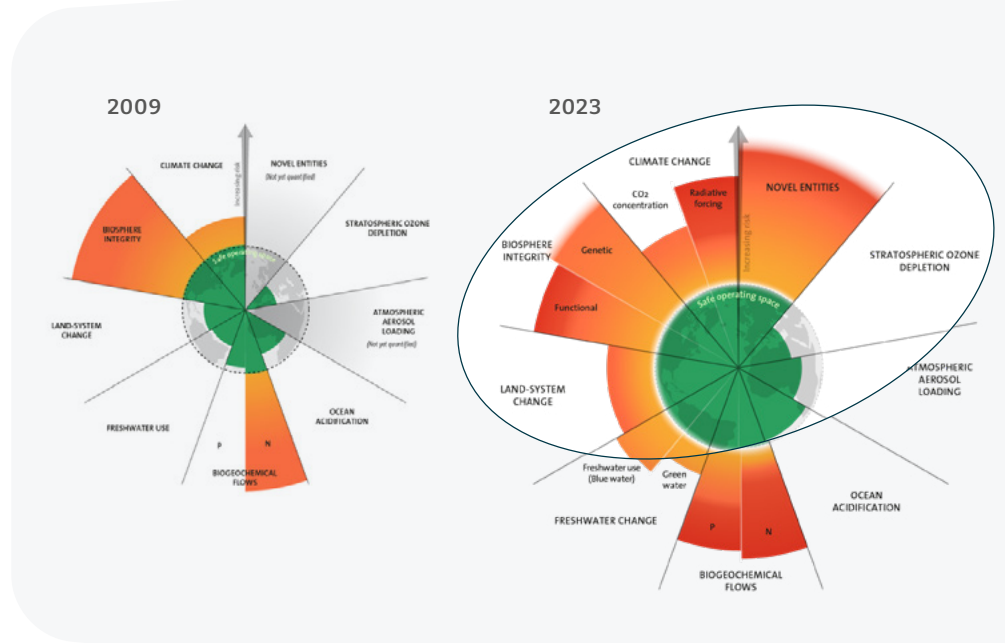
Source: UNEP Global Material Flows Database, Van Lanschot Kempen (nov. 2024).

This excessive production and waste have pushed humanity beyond safe planetary boundaries, particularly affecting three key areas, as shown on page 2.



¹ Our World in Data, Waste Management

- **Climate Change:** Over half of greenhouse gas emissions are caused by materials.²
- **Biodiversity Loss:** Due to extraction, use, and pollution from materials.
- **Pollution:** Especially from plastics, whose production has increased tenfold in recent decades and could double again by 2060. About 80% of this plastic becomes waste, with less than 10% being recycled, often ending up in oceans.³



What is a Materials Transition?

A materials transition involves transforming how materials are produced and used, focusing on sustainable use and recycling (from linear to circular usage) and reducing our overall consumption. This transition requires substantial investments. The United Nations categorizes materials into four types: (1) metals, such as copper and iron; (2) minerals, such as sand and limestone; (3) fossil fuels, such as oil and coal; and (4) biomass, such as wood and crops.⁴

This article focuses on metals and minerals, particularly critical raw materials (CRMs) essential for the materials transition (and often the energy transition), and the shift to a green and digital economy. Examples include nickel, cobalt, copper, and rare earth elements.⁵

Reducing Dependency, Europe is vulnerable

The extraction and processing of critical raw materials is concentrated within just a few countries, most notably China. In a world with increasing geopolitical uncertainty, where countries exert influence through military and economic power, it is crucial for a strong, innovative economy to maintain access to these materials. Critical raw materials are vital for clean energy technologies, and rare earth metals are also essential for semiconductors.

The United States and the EU are taking action through policies, diversification, and domestic production, but this will not meet the growing demand in the short to medium-term. Europe is particularly vulnerable, being more dependent than the US on imports of lithium for batteries and other critical materials. The materials transition, through reduced use and increased reuse of materials, can decrease dependency on the exporting countries.

² UNEP (2024) Intergovernmental Negotiating Committee on Plastic Pollution

³ Our World in Data, Plastic pollution

⁴ UNEP, [Economy-wide Material Flow Accounts and the Sustainable Use of Natural Resources in the Economy | System of Environmental Economic Accounting](#)

⁵ The rare-earth elements (REE), also called the rare-earth metals or rare earths, are 15 lanthanides or lanthanoids, and scandium and yttrium: a set of soft heavy metals. Compounds containing rare earths have diverse applications in electrical and electronic components, lasers, glass, magnetic materials, and industrial processes.



Building Blocks of the Materials Transition

Promoting Circularity

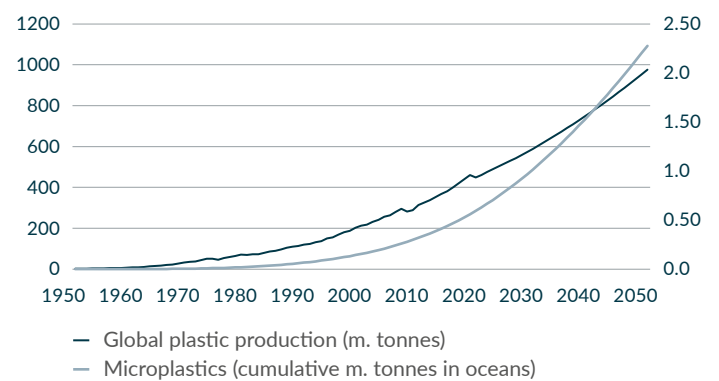
Each year, significant value is lost due to material waste. In Europe alone, approximately €78 billion worth of steel, plastics, and aluminum is wasted.⁶ To prevent this, we must transition to a circular economy where materials are redesigned, reduced, reused, and recycled. Governments, companies, and investors play a crucial role in this transition. The EU has implemented a circular action plan to reduce dependency on imported materials, with additional benefits such as GDP growth and CO₂ reduction.⁷

Companies adopting circular practices can achieve various benefits: lower costs, reduced price volatility, and less dependency on raw material availability. Circularity also reduces the ecological footprint of businesses. The focus is on sectors like electronics, clean energy, packaging, plastics, textiles, and construction. Investors can contribute to growth and sustainability by investing in established companies through publicly traded stocks, or in new companies via venture capital or private equity.

Reducing Waste and Pollution

Plastic is widely used in packaging and clothing, and helps extend food shelf life, among its other uses. Unfortunately, less than 10% is recycled, with a large portion ending up as waste, often polluting our oceans. The Global Treaty on Plastics Pollution is expected to be signed by all UN members in the very near future, setting requirements for countries and companies regarding collection, sorting, and recycling.⁸ While this issue receives international attention, the approach varies in effectiveness.

Plastic production and pollution (micro plastics) increase



Source: Our World in Data, Van Lanschot Kempen (nov.2024).

Europe leads with goals such as 50-65% recycling of packaging by 2040, and 30% recycled plastic in bottles by 2030. Single-use plastics are also taxed or banned (EC 2023).⁹ Countries like Canada and the UK follow Europe's lead, as do some US states. Several African countries have also implemented regulations to reduce plastic (bag) usage. The private sector, including petrochemicals, packaging, consumer goods, and waste management, is taking action to reduce plastic production and use. Bioplastics, made from plant-based components like sugarcane, offer an alternative. Although this market is still small (2 million tons, <1% of the total plastic market), it presents growth opportunities for investors.¹⁰

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Each year, significant value is lost due to material waste.

⁶ McKinsey (2022) How a 'materials transition' can support the net-zero agenda

⁷ Bruegel (2024), A European circular single market for economic security and competitiveness

⁸ UNEP, 2024

⁹ European Commission, 2023, Circular Economy

¹⁰ JPM ESG research, 2024

The Materials Transition and SDGs

The Sustainable Development Goals (SDGs) are seventeen goals established by the United Nations to promote sustainable development. For the materials transition, SDG 12 (responsible consumption and production) is particularly relevant. Additionally, related SDGs 7 and 13 focus on energy and climate change through more efficient material use in production processes, while SDGs 9 and 11 promote sustainable infrastructure and cities.

Circular Use of Materials in the Energy and Food Transition

The materials transition is closely linked to the energy and food transitions. Emphasizing circularity helps reduce CO₂ emissions from heavily polluting materials like steel, aluminum, plastic, and cement. McKinsey indicates that these specific emissions could be halved in the EU by 2050.¹¹

Innovations in clean energy can also reduce dependency on raw materials from countries like China. For example, scaling up sodium-ion and solid-state batteries requires fewer and different materials. The EU has set recycling targets for lithium, cobalt, and nickel in batteries. Companies active in recycling can capitalize on these targets.

Smart, circular use of agricultural products and wood will also reduce pressure on biodiversity and land, contributing to the food transition. This means circular production through regenerative agriculture and sustainable packaging and distribution of food. Additionally, food waste must be minimized. Companies in the packaging and consumer goods industries can make significant contributions here.

The Role of Investors

Opportunities in Public Investments.....






To capitalize on and accelerate the materials transition, investors can select companies in their publicly traded stock portfolios which contribute to the transition (positive selection). These companies may focus on reuse, waste collection and sorting, or biological solutions in order to make materials less harmful or more durable, such as proteins which improve plastic recyclability.

Engagement is an effective way to encourage companies to make positive changes. In 2024, Van Lanschot Kempen engaged in dialogue with several major plastic users, such as soft drink manufacturers, to promote recycling and eliminate single-use plastics from their products.

We also engaged with a provider of logistic services about their recycling and plastic policies. This company has developed a circularity index to communicate with and assess their customers. We have suggested that they break down their plastic usage targets, and extend them beyond 2025.

The accompanying chart outlines the objectives investors can set, the key performance indicators (KPIs) they can use to measure progress, and the Sustainable Development Goals (SDGs) these objectives support.

Investing in the materials transition via investments in equities

Key SDG	Elements	Possible KPIs
 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Promoting circularity	# tonnes waste recycled
Related SDG's  7 AFFORDABLE AND CLEAN ENERGY  9 INDUSTRY INNOVATION AND INFRASTRUCTURE  11 SUSTAINABLE CITIES AND COMMUNITIES  13 CLIMATE ACTION	Reducing waste and plastic pollution Circular use of materials in energy and food transition	# tonne Carbon reduced/avoided # tonnes waste reduced/avoided # tonnes carbon reduced/avoided # tonnes waste reduced/avoided # tonnes carbon reduced/avoided

¹¹ McKinsey, 2022

.....and in Private Investments

In non-public categories like private equity and venture capital, investors have more direct influence on how their money is used, enabling measurable positive impact. This also applies to unlisted real estate. Investors aiming to contribute to the materials transition can select investments which align with their investment themes and sub-themes, and choose relevant, investable KPIs to measure impact.

Investing in the materials transition, via impact investments

Private Equity/Venture Capital		
SDGs	Elements	KPIs
	Promoting Circularity	# tonnes of waste reduced/avoided
		# tonnes waste recycled
	Circular use of materials in energy transition	# tonnes carbon avoided

Real Estate		
SDGs	Elements	KPIs
	Promoting Circularity	(Re) use materials in buildings
		# Green Building Certificates
	Circular use of materials in energy transition	# tonnes carbon avoided

The accompanying chart provides an example of objectives and KPIs relevant to the materials transition and the SDGs these objectives support.

If you would like to learn more about our view on the materials transition, and the possibilities to contribute through your investments, your contact person at Van Lanschot Kempen will be happy to provide more information or connect you with our sustainability specialists.



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(In case you were wondering, Wall-e, and even Earth itself, turned out just fine - in the movie.)



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