COLUMBIA THREADNEEDLE INVESTMENTS

# ESG VIEWPOINT

## Can mining be a responsible investment?

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### At a glance

- The environmental and social impacts of mining can make it extremely hard to square with a responsible investment approach.
- The shift away from fossil fuels has increased demand for 'transition metals' like copper.
- Demand for many transition metals is outstripping supply. Alongside increases in resource efficiency, new mines are needed.
- Practices have improved. As we work to decarbonise the world, we need to carefully balance demand with socio-environmental impacts.

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# Overview

## The mining sector has a range of serious, inherent environmental and social impacts that can make it extremely hard to square with a responsible investment approach.

Its very business model is based on the extraction and utilisation of the earth's finite resources. When poorly planned, projects can also run into land rights issues or impact sites of cultural or natural importance. Badly managed mining waste products have been found to pollute local water resources or lead to disasters like the 2019 Brumadinho tailings dam collapse in Brazil that killed 270 people. Additionally, the metals and mining industry contribute around 8% of global greenhouse gas emissions.

However, society is increasingly reliant on the sector's outputs as we seek to accelerate the energy transition, which is already driving increased demand for "transition metals" like copper, nickel, cobalt and lithium. We have examined transition metals' role in decarbonisation, and therefore whether they can be considered a responsible investment, focusing on copper as one of the more commonly used metals, with clearer data on demand growth and end usage.

Society is increasingly reliant on the sector's outputs as we seek to accelerate the energy transition.

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Energy transition is driving copper demand growth

Why demand is outstripping supply

Is it possible to be a responsible miner?

How miners can fit into an ESG approach

# Energy transition is driving copper demand growth

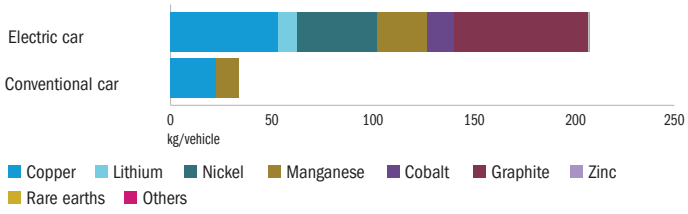
As we seek to mitigate the climate crisis and move to a lower-carbon economy, an enormous expansion of low carbon technologies like renewable energy and electric vehicles (EVs) is needed, bringing an accompanying growth in demand for the metals these technologies require.

As shown below, solar PV, onshore wind, and offshore wind require roughly 2.8, 2.9, and 8 tonnes of copper per MW of new capacity in comparison to the 1.15 tonnes/MW needed for conventional coal-fired power generation[1]. Depending on the technology other transition metals are also in far greater demand.

On the transport side, full battery EVs require around 2.5 times more copper per vehicle than a traditional internal combustion engine. They also require new extensive charging networks, ideally powered by renewable electricity.

Copper for "green uses" only makes up around 6%[2] of current consumption, with construction (29%), "legacy" electrical networks (27%) and consumer products (22%) having the largest shares[3]. However, demand for copper in electromobility and renewables is expected to account for nearly 40% of total growth over the next 20 years[4], with Wood Mackenzie estimating that global copper demand will be 50% higher in 2040 than today[5]. Should the world pursue the more challenging decarbonisation pathway required to bring us into alignment with a 1.5C scenario these figures will only increase.

**Minerals used in electric cars compared to conventional cars**

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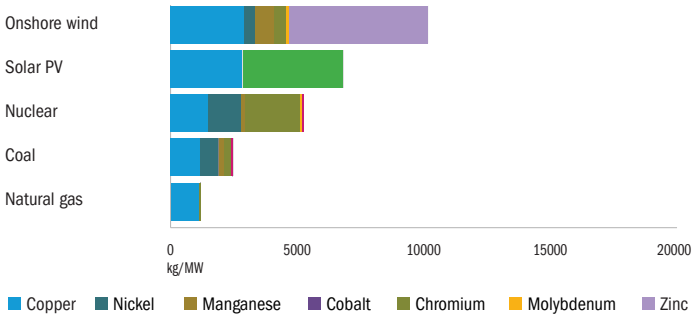
**Minerals used in clean energy technologies compared to other power generation sources**




Source: IEA. All Rights Reserved

[1] IEA, 2021
[2] Wood Mackenzie, Goldman Sachs Investment research, 2020
[3] Wood Mackenzie, 2021
[4] Antofagsta, 2022
[5] Wood Mackenzie, 2021


# Copper supply will not keep pace

New mining capacity is needed, yet due to some of the socio-environmental factors mentioned above there is decreasing public and political support for the new projects needed to feed demand, particularly in developed markets.

A focus on higher grade deposits is also required, as extracting metal content from lower grades is more energy intensive, costly and polluting. Estimates vary, however there is a general consensus that underinvestment in supply combined with growth in demand will lead to a shortfall of around 10% of annual copper demand by 2030[6].

Fortunately, copper can be infinitely recycled without diminishing its chemical or physical properties. As prices rise and technology improves we are likely to see an increase from today’s 15-20% recycle rate[7], which could somewhat offset the need for new mines and the issues that accompany them. Resource efficiency will also play a part, as we saw when the reduction in silver and silicon content of solar cells over the past decade enabled increased solar deployment.

Overall, we expect “green demand” for copper to nearly quadruple throughout this decade, to over 17% of total copper demand. Whilst this is not the majority of total demand, it is undeniable that the energy transition is reliant on meeting this demand. Therefore, we believe copper justifies its label as a transition metal. Clearly due diligence is required to ensure the issuers invested in are responsible actors and meet good environmental and social management standards.

### Other transition metals

The trends seen in copper are amplified for other transition metals with fewer alternative uses. EVs and battery storage are already the largest consumers of lithium, and the IEA’s Sustainable Development Scenario forecasts that clean energy will account for 60-70% of nickel and cobalt demand by 2040. A concerted global effort to achieve net zero globally by 2050 would require six times more mineral inputs in 2040 than today[8].

Unfortunately, the socio-environmental issues associated with some of these metals are also far more material than for copper, making their inclusion in ESG portfolios harder to justify to responsible investors. For example, half of today’s lithium extraction is located in areas of severe water stress, with mining and processing consumption impacting local communities and biodiversity.

There are well documented human rights, child labour, safety, pollution and conflict issues linked to cobalt mining in the Democratic Republic of Congo, which provides over 60% of global supply. These bring concerns for investors focused on ESG risk mitigation with direct exposure to mining companies in the region, like Glencore, as well as supply chain issues for the technology and OEM sectors.

[6] Wood Mackenzie, Bloomberg, ICSG, Morgan Stanley Research estimates
[7] Antofagsta, 2022
[8] IEA, 2021

# Is it possible to be a responsible miner?

Despite the challenges any mining operation poses, the sector has steadily improved its practices, even if action in some areas has been driven by disasters or controversies.

The development of the **Global Industry Standard on Tailings Management** was driven by investors in the wake of the Brumadinho disaster, and Rio Tinto's failings that led to the destruction of sacred Aboriginal sites in Juukan Gorge have spurred reviews of community engagement, governance and cultural awareness across the sector. The International Council on Mining and Metals has also played a helpful role in improving ESG standards, including a notable commitment from all members to achieve **net zero** operational emissions by 2050.

This steady improvement in standards has enabled a limited number of transition metal miners to warrant consideration as responsible actors, which we believe can be a useful driver of long term performance. Identifying these leading responsible miners with the highest ESG standards, and encouraging improvements in laggards, is one way of facilitating the energy transition.

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# Responsible miners can fit into an ESG focused approach

## It is an inescapable fact that decarbonising the global economy requires significant quantities of copper and other transition metals.

We must balance local socio-environmental impacts of mining operations with this need. Investors can support responsible miners in developing the new projects needed to fuel the transition, whilst making certain management are well aware of the need for high standards at every stage of the project lifecycle. From maintaining ongoing Free, Prior and Informed Consent to responsible waste management practices and site rehabilitation guarantees, there are multiple ESG standards for miners to maintain.

As governments, investors and corporates move from the target-setting to the implementation stage of their climate change strategies more questions and trade-offs like this will arise, as we discussed in our thoughts on the **climate-nature** nexus. It goes without saying that whilst mining can enable the transition, the sector must also find ways to decarbonise itself and is a key component of any global pathway to net zero. We must continue to be guided by data and science in order to make decisions in the long-term best interests of society and the planet. As investors, a combination of research and stewardship activities are key to ensuring a responsible and balanced approach.

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## Get to know the author

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Harry joined the Responsible Investment team in 2022 and covers engagement with extractive and heavy industries, focusing on climate change and natural capital. He previously worked on environmental strategy and engagement at the Church Commissioners for England, having previously set up the Capgemini Group's sustainable innovation and consulting programme. He enjoys running, water sports and exploring the great outdoors with his dog, Woody.

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