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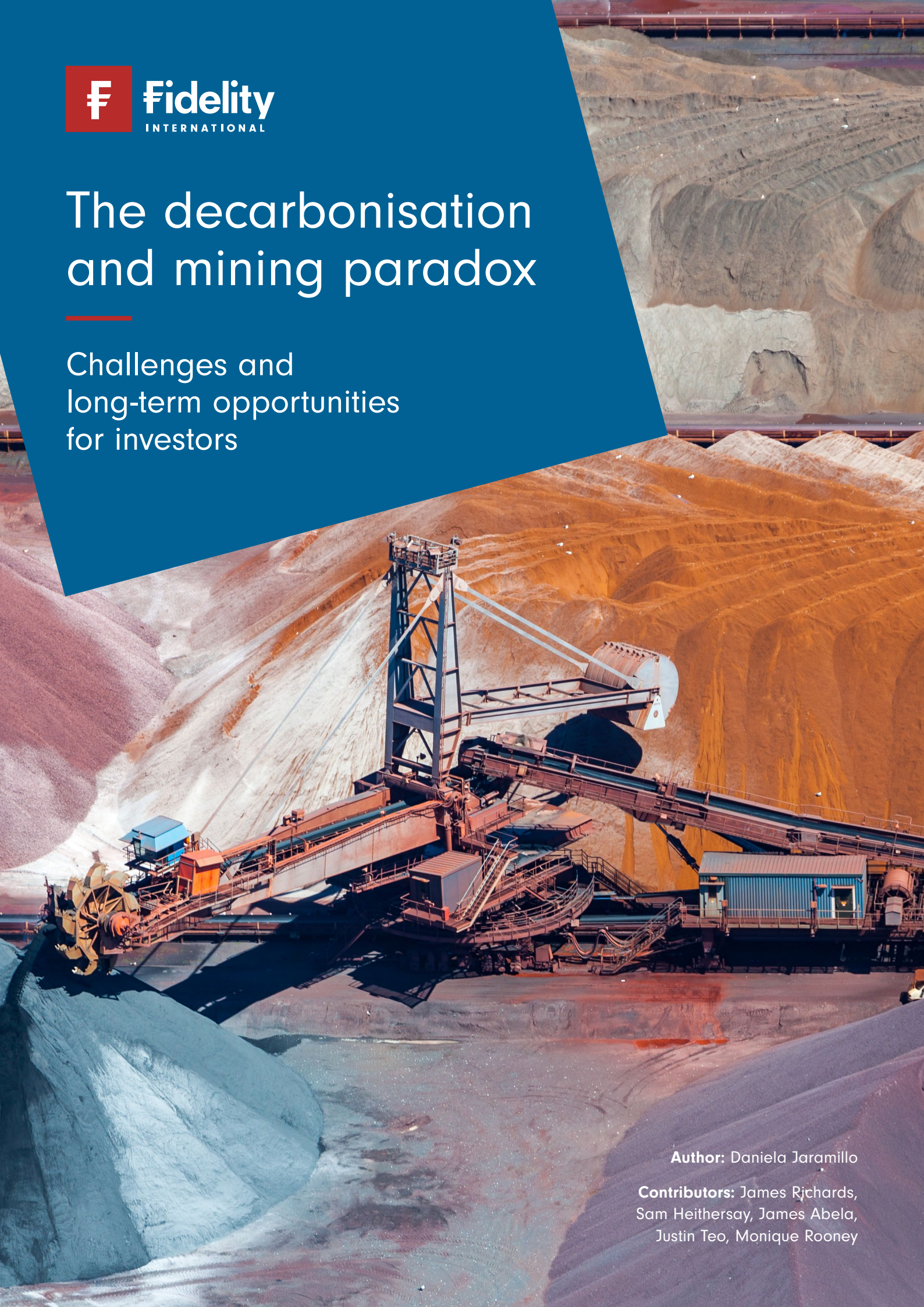
The decarbonisation and mining paradox

Challenges and long-term opportunities for investors



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Executive summary

Mining will play a centre-stage role in decarbonisation as projections show how demand for certain minerals and metals is likely to grow exponentially with the expansion of renewable energy technologies and electric vehicles. This paper argues that the management of ESG issues and active ownership are key to ensure that the industry is able to meet the growing demand for minerals and metals.

We explore how, paradoxically, it is environmental and social risks that potentially present the biggest challenge for the industry in delivering the raw materials necessary to support the transition. Indeed, few sectors are exposed to the breadth and depth of environmental and social issues and historic controversies. This, paired with evolving societal expectations, puts the sector at real risk of losing its collective social license to operate as its footprint expands.

However, we challenge the often-held notion that companies are either 'sustainable' or 'not sustainable', by illustrating how mining is core to decarbonisation solutions, despite its disruptive nature to societies and ecosystems where it operates. A company's ESG profile is not one-dimensional and there can also be tensions between environmental and social issues. As investors we need to understand and navigate these complexities in order to achieve investment and decarbonisation objectives.

Therefore, the opportunities that might arise from a transition to a low carbon world will potentially favour those active investors that have a deep understanding of sustainability and can identify those companies that already are managing ESG risks or have strong potential for doing it following engagement.

The paper concludes by proposing that an Active Ownership 2.0[1] approach is required by investment managers when investing sustainably and responsibly in commodities in a decarbonising world. This involves having a more holistic view of companies, understanding the role of economic activities like mining in solving systemic issues like climate change, and helping the industry overcome hurdles in the real world. Stewardship and engagement is a core part of this approach, but a focus on 'engaging the problem' and not just the mining companies is key. This involves engagement at the value chain level, supporting companies in green turnarounds, being more active in public policy advocacy and facilitating collaboration in the industry.

This piece is focused on long-term thematics and doesn't consider near-term cyclical factors, amongst other relevant factors to an investment decision.

The decarbonisation and mining paradox

Climate change has emerged as one of the biggest threats to humankind and in response, global leaders, companies, investors, and societies are uniting to try to address this significant issue.

Much has been written about the role of investors to help fund the clean technologies and infrastructure that are required to transition to a low carbon economy. Simultaneously, investors are plotting their own path to net zero and engaging with their investee companies to do the same.

What isn't often discussed, however, are the environmental and social impacts, and the carbon emissions that are occurring now and will continue to occur as part of the transition to a low carbon world.

The deployment of renewable energy technology and infrastructure, as well as the electrification of energy systems, involve complex supply chains and inputs, such as metals and minerals, that come with their own ESG footprint.

This paper focuses on the key role and the scale of the world's need for minerals and metals in order to decarbonise and how the environmental and social footprint of the sector is one of the main challenges the industry faces. We also share a case study into how Fidelity has participated in investment opportunities from these themes. We conclude with some recommendations for discussion about the role of investors as asset allocators and stewards of capital in addressing this challenge.

How are minerals and metals core to decarbonisation?

The use of fossil fuels is embedded in our societies and economies and eliminating these resources will require radical changes in how we live, how we move around, and how we produce energy for homes and industries. These are highly complex and systemic challenges that will require political will and profound transformation in personal and corporate behaviour, as well as large outlays of capital expenditure in order to develop and scale up low-carbon technologies.

There are a number of proven technologies that have been tested and can be accelerated and deployed to help replace the energy currently being supplied by fossil fuels. The main technologies are those that help us obtain energy from renewable resources and all the associated infrastructure, which includes solar panels, wind turbines, batteries, and electric vehicles.

The catch-22, however, is that these technologies require large amounts of minerals and metals. In this paper, we have deliberately shied away from the term 'transition' minerals and metals, as this generally refers to only a few beneficiaries (lithium, nickel, cobalt, and copper). In our analysis, decarbonisation will be impossible without the growth in production of a much wider range of commodities, including some distinctly old-fashioned and out-of-favour metals such as steel (see Table 1), although clearly the scale of the demand opportunity does vary considerably by commodity from additive to transformational.

Backing the right players, supporting and engaging with them as they seek to meet demand more efficiently, is a key role for investors in addressing the decarbonisation challenge.

Table 1. Mineral and metals needs for clean energy technologies

Relative importance: ■ High ■ Moderate ■ Low

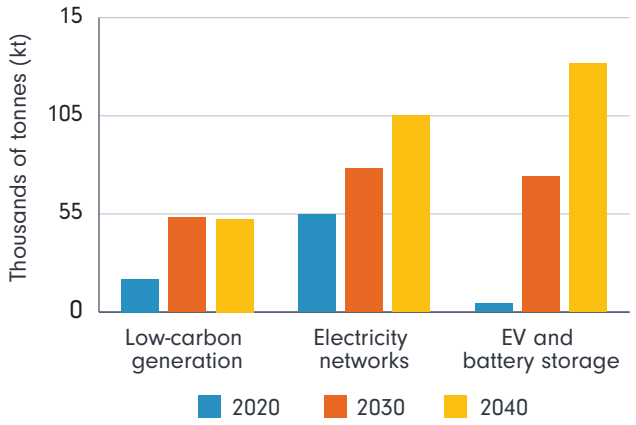
	Copper	Cobalt	Nickel	Lithium	Aluminium	Steel
Solar PV	■	■	■	■	■	■
Wind	■	■	■	■	■	■
Hydro	■	■	■	■	■	■
CSP	■	■	■	■	■	■
Bioenergy	■	■	■	■	■	■
Geothermal	■	■	■	■	■	■
Nuclear	■	■	■	■	■	■
Electricity networks	■	■	■	■	■	■
EVS and battery storage	■	■	■	■	■	■
Hydrogen	■	■	■	■	■	■

Source: Fidelity chart using some IEA Data. IEA (2021), The Role of Critical Minerals in Clean Energy Transitions, IEA, Paris: https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions

The scale of demand might be difficult to match

When talking about the increase in demand for these minerals and metals, the scale of the challenge is clear, requiring scaling up of operations as well as new developments, and the miners will have to find new resources in some cases to meet this ask on a multi-decade view. Analysis in Figure 1 suggests some of the areas where this ask might be greatest.

Figure 1. Total demand for minerals each decade in the IEA Sustainable Development Scenario



Source: International Energy Agency (2021) Clean energy demand for critical mineral set to soar as the world pursues net zero goals.

Key driver for demand: Renewable energy and infrastructure

One of the main drivers of demand for minerals and metals is the decarbonisation of electricity supply and the massive build out of renewables that will be required. The scale of this is extraordinary, and often underestimated. For example, China currently derives 60% of its grid electricity from thermal coal.[2] It will take a huge transitionary effort, using a combination of renewables, nuclear and carbon capture, to fulfil its net zero ambitions by 2060. Other countries like Indonesia will be slower in their decarbonisation journey, but are coming from a base where renewable energy use is only 10% to 15%.

Renewable energy projects that will help fulfil emission targets require significant amounts of metals such as copper. For example, solar will likely use roughly five times the amount of copper currently required to generate the same amount of energy through thermal power, and offshore wind potentially requires about four times the amount of copper required to generate the same amount through fossil fuel sources.[3]

Furthermore, the building of new renewable infrastructure will need a large supply of steel, 35 to 40 tonnes per megawatt of solar power and 120 to 180 tonnes per megawatt of wind power.[4] While steel, as we alluded above, isn't commonly seen as a transition metal, it has an important role in basic clean energy infrastructure, even if we regard it as supportive to global steel demand rather than necessarily transformational.The increase in demand is likely to drive consumption for iron ore, a core input to steel, although the decarbonisation of steel value chain will potentially impact what kinds of iron units are preferred, including use of scrap.

In this case, we have found that the more we explore the transformation required in order for electricity grids to adjust to renewable generation, the more we realise that metals are almost everywhere in energy generation infrastructure.

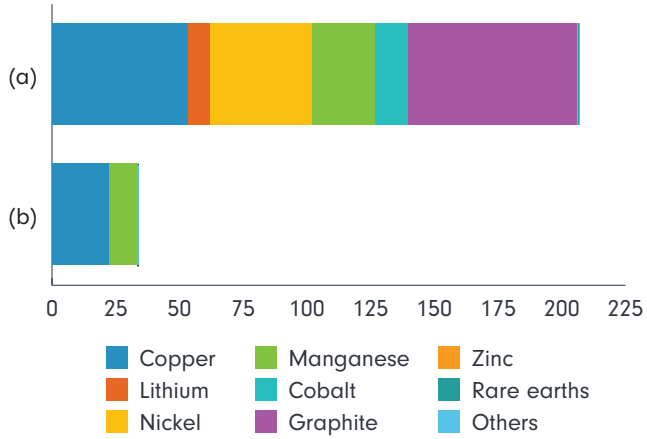
Finally, part of this adjustment of the grid includes developing ways to store energy and provide stability at times when solar and wind are unavailable. This likely involves batteries or hydrogen-based solutions.

Key driver for demand: Electrification of transport

Electric vehicles (EVs) and all the infrastructure involved in the electrification of transport will drive demand for battery metals – notably lithium, cobalt, graphite, nickel and copper. To put this into context, an EV needs six times more minerals than an internal combustion engine vehicle (Figure 2).

Lithium is a core metal for EV batteries, and its demand is expected to grow four times by 2030.[5] However, lithium supply has really struggled to keep up with the pace of the demand increase over the last 12 months and this has been reflected in significant increases in price. For lithium, as with other commodities with elevated demand expected to be seen over the next decade, it will be essential that supply additions are able to meet demand, otherwise this could act as a bottleneck on the pace of decarbonisation.

Figure 2. Minerals used in (a) electric cars compared to (b) conventional cars



Source: https://www.iea.org/data-and-statistics/charts/minerals-used-in-electric-cars-compared-to-conventional-cars

The industry faces complex obstacles

Paradoxically, the same awareness and concern for environmental and social issues from societies that has led us to climate action is also what we see as one of the key barriers to the expansion of clean technologies. This is because the minerals and metals that are core inputs to these technologies involve extraction and production processes that can be carbon intensive, as well as highly disruptive to the environment and the communities where mines are located.

The objective of this section is not to provide a comprehensive analysis of all the environmental and social issues involved in the resources sector, but to exemplify the complexity and tensions between different environmental and social issues that might be exacerbated as demand for these minerals and metals grow.

A significant environmental and social footprint

Mining is a sector characterised by a large number of material ESG issues, with significant impacts in emissions, energy intensity, water, waste, biodiversity, health and safety, human capital management, community relations and supply chain management. This means that developing and running a mining operation that manages for all these issues can be complex, expensive and, at times, almost impossible.

Nickel mining is a good example of the impact that mining can have. Nickel is a commodity most commonly used in the production of stainless steel, but is also important in EVs, particularly in producing batteries.

The likely growth in demand for nickel has prompted exploration for new sources of the right quality for battery technology; however, nickel is not widely available and currently most of this new supply is coming from Indonesia. This comes with some elevated risks, particularly around biodiversity as well as some of the nickel-specific issues from an ESG perspective.

When it comes to the environmental footprints, mining nickel can have a significant carbon footprint. In the case of Indonesian nickel, we estimate that the marginal tonne of Indonesian nickel comes with a carbon footprint well over fifty tonnes of carbon per tonne of nickel.

One of the challenges faced by Indonesian nickel mines is that potentially replacing the fossil fuels used in its operations with renewables comes at its own environmental cost. While the use of solar energy could be a viable alternative, building solar power stations to the scale required requires a significant amount of land. One of Indonesia's most complex environmental problems is the significant loss of biodiversity because of deforestation due to palm oil, which has led to the extinction of many species. Deploying large-scale solar energy projects carries the risk of exacerbating this problem, before even considering the impact of the mines themselves.

Disposal of mining waste (tailings) is another material environmental issue for nickel mines, where it is essential that the solutions are robust for local conditions and are aligned with global best practice. Inappropriate disposal of tailings can cause contamination of water and land. Tragedies like the Brumadinho Dam disaster, which released millions of cubic metres of iron waste into the Paraopeba River and caused the tragic deaths of over 130 people in Brazil in 2019, have focused significant international attention on this issue. There has been a huge effort in the industry since this event to increase the level of transparency around tailings dams and, we hope, to manage the risks more appropriately. We see this very clearly with the large listed multi-national miners – but these are not generally the miners active in Indonesian nickel, and it's important that best-in-class is universal.

The high water usage required in most mining operations is another common challenge faced by the industry, and one that is naturally exacerbated in mines located where droughts and water scarcity are a problem. This is the case for Chile, a copper-rich country, but we think it's likely that the majority (if not all) copper mining will have to be serviced by desalinated water by the end of the decade.

From a social perspective, mining companies are also exposed to human rights related risks, whether it is through their own operations, value chains and contractors. The case of conflict minerals has been widely documented, where these resources usually become a source of conflict within certain regions. Child and forced labour has been recognised as one of the most complex and pervasive impacts of mining in Africa, parts of Asia and South America. Further, child labour has also emerged as a significant issue in the supply of cobalt, for example, and the industry is having to innovate to ensure compliant supply chains.

While the largest listed mining companies like BHP, Anglo American and Rio Tinto have developed sophisticated frameworks to assess and manage human rights risk in their own operations, this is challenging for smaller companies, not to mention artisanal miners in certain geographies.

While the severity of each issue varies depending on the commodity and the geographical location of the mine, it's clear that managing their social and environmental footprint will (and should) continue to be top of mind for boards and management of mining companies.

Loss of the global social license: The ultimate expression of ESG risks

The aggregation and high-profile nature of various ESG disasters experienced by the mining sector has given the industry a bad reputation that is hard to overcome. Even as companies have spent significant resources in developing and implementing best practices around the management of social and environmental impacts of their operations, in reality it is understandable why communities don't want mining operations near them, in what is sometimes known as NIMBYism ('not in my back yard').

We believe the problem has been exacerbated in the past few years as younger generations become more concerned about environmental and social issues and have a lower tolerance for what they perceive to be against their interests. Furthermore, as we have seen with global social movements like #MeToo and BlackLivesMatter, communities and civil society are finding it easier to mobilise and organise through the use of social media and have global, high-profile protests that often manage to change the status quo.

Obtaining and maintaining the social license to operate is something that has always been a challenge for the mining industry, but we believe this will intensify and become more prevalent across both developed and developing countries. We anticipate that, as existing and emerging miners continue to respond to increased demand due to decarbonisation, they will be met with resistance from local communities, which will threaten their ability to obtain permits. While larger companies are more experienced in managing for these risks and already have internal capability and resources to do it appropriately, they still find resistance (as outlined in the following Rio Tinto, Jadar Project case study). Smaller or emerging players with less experience and resources in appropriately managing community relations might understate the requirements and complexity of the task and face more disruptions.

Case study 1: Rio Tinto losing its license in Serbia's Jadar

We believe that the Jadar project illustrates the importance of the mining industry obtaining and retaining its social license to operate in order to be able to meet the world's demand for transition minerals and metals.

Rio Tinto is a diversified miner that is looking to continue building its portfolio into those minerals and metals that are required in a low-carbon economy. The Jadar project in Serbia is Rio Tinto's first in the fast-growing lithium market which, as evidenced in this paper, is core to EVs. After the company was given the permits to explore (and potentially develop) a mine in the Jadar Valley, Rio Tinto invested close to US$450 million in the mine, which was expected to cost in total around US$2.4 billion. The mine was estimated to deliver around 2.3 million tonnes of lithium carbonate over its 40-year life.

Despite its potential to generate jobs and economic growth, the development of the mine caused polarisation and discontent in parts of the surrounding community.

The escalation of protests led the Serbian government to withdraw permits from Rio Tinto in January 2022. This has left the company, its shareholders and those stakeholders that were expecting to benefit from jobs created by the mine, in a state of uncertainty.

Case study 1 (continued)

To fully understand why a project that was expected to generate substantial economic benefits for the region has been stopped indefinitely, it is necessary to remember that the mining industry has historically led to pollution to water and land, and impact on biodiversity, among other social issues. Rio Tinto itself suffered a huge reputational crisis in 2020 when it blew up a heritage site that was 60,000 years old in the Juukan Gorge in Australia, which had important cultural significance to local communities, and received fierce backlash from the global community.

In addition to this broader context, the Jadar Valley has significant agricultural and also archaeological importance, which has led to concerns about the potential environmental and social costs versus the economic benefits of the project.

Beyond this, developing this lithium mine also involved the resettlement of some of the inhabitants in the valley, which is always a complex endeavour for mining companies.

Rio Tinto, as one of the world's largest miners, has deep experience in community engagement, environmental and social impact assessments, as well as managing resettlements. However, given the broader context, it is possible to understand why the local community is sceptical of the company's ability to deliver on its promises.

Negative public opinion against Rio Tinto made it difficult for the Serbian government to allow the project to go ahead, leading to the withdrawal of permits. This has resulted in the potential loss of US$450 million for Rio Tinto's shareholders and, importantly, the potential loss of a significant lithium project, which as mentioned earlier is necessary to keep up with the pace of demand likely expected in the next decade.

Source: https://themarketherald.com.au/serbia-scraps-3-3b-rio-tinto-asxrio-lithium-mine-following-weeks-of-protests-2022-01-21

Opportunities arising from decarbonisation

While there are many challenges, the mineral intensity of decarbonisation also presents an important thematic for investors. We believe that the need to provide commodities to enable the transition is the basis for a multi-decade increase in demand in commodities. We are in the very early stages of this thematic and we don't think it is yet strong enough to override normal business cycles.

However, our view is that these opportunities may occur across a nuanced subset of companies and commodities rather than the broad-based demand we observed in the super-cycle of the early 2000s, where rapid and sustained industrialisation and urbanisation of the Chinese economy held-up most commodities above long-term trends for over a decade.

As we have explored earlier in this paper, whilst many metals will benefit from augmented demand, the impact will vary quite considerably and the supply side's ability to keep pace with each commodity's demand growth will be crucial in identifying the winners and the losers.

In the case of decarbonisation, demand trends are expected to be far more multinational and are anticipated to involve companies and investors in much stronger awareness of the environmental and societal impacts of mining. Therefore, we believe that a company's ESG credentials will play a more important role when it comes to creating winners and losers.

Case study 2: How a mid/small cap Australian fund has positioned its portfolio to benefit from the move towards decarbonisation

By Portfolio Managers
James Abela and Monique Rooney

When running an Australian equities fund, it's been a challenge to create a portfolio with companies that fall within the traditional environmental solutions themes such as renewable energy, cleantech, biotech. This is because the Australian Securities Exchange (ASX) has a large exposure to mining companies given that the country is a major exporter of natural resources, and these companies haven't traditionally been associated with strong ESG credentials.

However, the Australian Future Leaders Fund, which invests in mid- and small-cap companies on the ASX, has provided investors with early exposure to the decarbonisation thematic by targeting those companies that are future leaders in the electric vehicle resources supply chain – a theme that comprises roughly 20% of the fund.

A few years ago, we identified early signs of growing demand for lithium, nickel, cobalt, graphite and copper as global economies started moving through the process of decarbonisation. Recently, the acute focus and greater sense of urgency on decarbonisation as well as geopolitical changes has created large price moves in lithium, copper, and nickel.

A number of smaller Australian companies have been early beneficiaries of this cyclical and structural shift. Oz Minerals, IGO, Pilbara Minerals and Allkem have all grown to become mid-cap companies, due to the fast-growing demand for minerals and metals that will be used as we transition.

Another early-stage company that falls into this theme is Novonix, which produces synthetic graphite anode materials used in lithium-ion battery production.

A smaller development operation is Ioneer Ltd, which is engaged in the development of the Rhyolite Ridge Lithium-Boron deposit.

Companies*	What they do and how they benefit from decarbonisation
Oz Minerals	Copper for renewables
IGO	Lithium and nickel used for EVs
Pilbara Minerals	Lithium for EVs
Allkem	Lithium for EVs
Novonix	Battery tech for EVs
Ionner	Lithium EVs
Lynas	Rare earths for permanent magnets in wind generation

Source: Fidelity International.

*References to specific securities should not be construed as a recommendation to buy or sell those securities and are included for illustrative purposes only. The Fund's investments can change and may be different at the time of viewing.

We expect these companies to continue to play a crucial role in driving performance of the fund for the next few years. For example, our current view of lithium is that demand is likely to outstrip supply over the next two to three years. That said, all commodities are facing increasing ESG risks such as high carbon and water footprint, community relations and, more generally, obtaining and maintaining their social license globally, and it's crucial to manage these risks.

Home to some of the world's key explorers and producers of commodities, Australia has the potential to play a crucial role in finding and producing the metals and minerals we need to decarbonise. Importantly, this also presents a unique opportunity for our commodity sector to provide a blueprint to manage the associated risks both to people and the environment.

Seeking real-world solutions: Recommendations for discussion

The role of investors in helping meet demand for transition minerals

At Fidelity, we believe that climate change is one of the biggest threats to our societies and economies, which is why we've committed to achieving net zero emissions in our portfolios by 2050. We see this as part of our obligation to our clients to deliver the best long-term financial outcomes. However, how we achieve this decarbonisation is key; we must seek to do it through decarbonisation of the economy by driving carbon reductions in the real world and not just through divesting of high-emitting assets.

As part of this climate strategy, we understand our role in allocating resources in a way that supports real world decarbonisation, ideally by investing in companies that are already operating in a clean and responsible manner. However, we take a pragmatic view and recognise the complexity of the challenges facing mining companies, and that smaller and emerging players might not be operating in accordance with best-practice standards from the start, and therefore we have a role to play in generating change.

We therefore believe that our role as active owners will be more important than ever, as we seek to increase supply of minerals and metals without losing sight of the core task of reducing the environmental and social footprint of the sector. At the company level, we plan to continue to engage with individual companies on idiosyncratic ESG risks. These engagements will follow a theory of change, and therefore will involve clear escalation processes that can include using our votes to communicate dissatisfaction to companies when they are not managing appropriately for these risks.

However, as we have outlined, this is a complex challenge that can't be addressed at the company or portfolio level alone and requires a systems-level mindset that seeks outcomes in the real world. Below, we put for discussion some recommendations for investors on what our role is in helping address the challenge outlined in the paper through our asset allocation and engaging with an Active Ownership 2.0 (Da Costa, Chandler 2019) mindset.

1 Engaging the problem and not the company: bringing a systems mindset to collaborative engagement

Thinking at the system level about the role of minerals and metals in decarbonisation helps us avoid myopic responses that might indiscriminately curtail further exploration or production of resources that might be key to low-carbon technologies.

It also helps us think beyond listed companies in a specific portfolio, to thinking of the whole value chain and where investors' levers lie – for example, by engaging with the demand side to create markets for sustainable and responsible minerals, and investing in technologies and businesses that enable traceability and responsible sourcing of minerals and metals. The paper *The Future of Investor Engagement*[5] highlights how this has been done successfully in the case of the Investor Mining and Tailings Safety Initiative, led by UK Asset Owners Church of England, which resulted in a first-of-its-kind global database of Tailings Safety Facilities (TSF) and a new globally recognised tailings safety standard.

Collaborative engagement is an effective way of delivering clear and targeted messages to companies about investors' expectations regarding specific environmental, social or governance issues. It is key that these collaborative engagements with the resources sector consider the complexity, tensions and interrelations between multiple issues.

At the same time, investors should encourage companies where minerals and metals are part of their value chain, to consider how they can manage their externalities by engaging with their suppliers.

2 Investing in laggards with potential (and having a plan)

As asset allocators, one of our biggest positive impacts is through how we choose to reward those companies that are managing ESG risks and contributing to environmental and social problems versus those that aren't. This has led to portfolios that focus on investing in companies deemed as 'best in class', which seek to only invest in those companies with strong ESG credentials. However, throughout this paper we have outlined our concerns about the world's ability to meet demand for these mineral and metals and the fact that many of the companies that are

involved or have the capability of helping meet demand might not have the highest ESG standards because of the complexity of these issues.

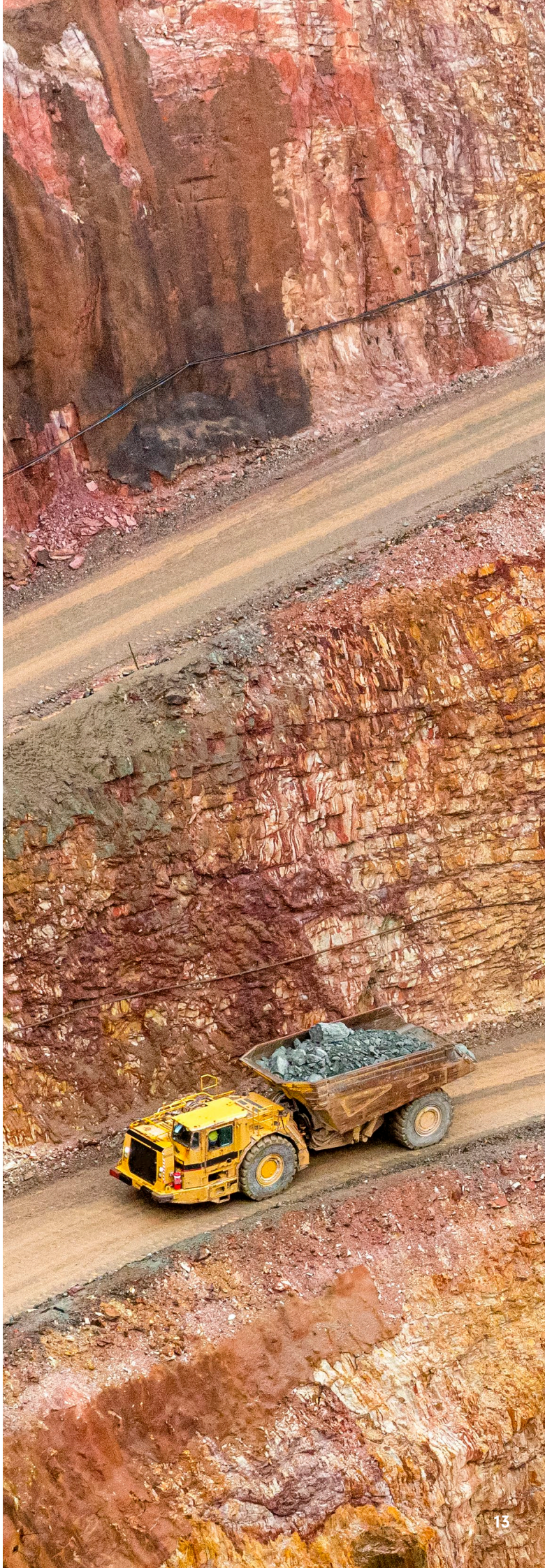
In this case, we believe investors must take a 'real world' approach and seek to allocate capital not only to those with strong ESG credentials but also those where they think they can positively influence through engagement in the short and medium term. This is not an easy task when you are seeking to have portfolios that have very strong ESG performance as measured by external ratings, as some of these resources companies can detract from the overall ESG performance of the fund. We believe that portfolio managers have an important role to play when investing in such companies and should have a more holistic view of ESG, where ratings are not the only factor considered, but also the role of those companies in addressing the decarbonisation challenge. They can also ensure a more forward-looking assessment of a company's ability to improve their ESG performance.

At the same time, they must take responsibility for these investments and develop outcome-focused engagement plans where they seek to assess companies' progress in managing for environmental and social impacts.

The key in our view is to ensure that sufficient raw materials are supplied to enable the transition, and that they are done so with the minimum footprint possible.

3 Encourage and support companies with 'green turnarounds'

We have observed a few companies that are looking to diversify their portfolio and move towards the supply of those critical minerals and metals for the transition. By doing this, they are helping meet demand at the same time they make their businesses more resilient and benefit from this structural shift. Investors can encourage these 'green turnarounds' and seek to advocate for policies that help companies make the change. We recognise that these shifts in business models often involve new risks associated with entering new businesses and markets, but investors can support companies by staying invested and supporting management through the process. At the same time, investors must continue to signal to companies that selling products that contribute to decarbonisation does not mean that other ESG risks should be overlooked, including the reduction of their Scope 1 and 2 emissions.[6] (See Case Study 3.)



4 Foster collaboration opportunities across the sector

Radical methods of collaboration are necessary for decarbonisation. Investors can work with industry associations, not-for-profits and other NGOs to help foster a collaborative mindset and build bridges between mining companies where synergies might be evident. We believe there are important efficiencies that could happen when the larger players find ways that are commercially feasible to participate in technology or ESG best practice transfer with smaller and emerging players.

We recognise that industry associations and other peak industry bodies have already been doing part of this. However, it's important that investors emphasise the need to make progress at the industry level, because the loss of social license is a problem that affects not only companies involved in controversies, but the reputation of the whole sector. With this in mind, one of our concerns is the extent to which industry associations are reflective of all global industry players, including emerging markets. To make progress, we need think inclusively.

5 Targeted public policy advocacy

Investors need to be more active in their public policy advocacy. One of the main points is that not all aspects of decarbonisation are going to make economic sense without government assistance. An example of this is the EU steel industry, which is currently significantly more advanced than the global peer group – in part because of a framework of incentives and protections which reward and protect early movers. We believe there is a need to balance between rewarding and protecting early movers, as well as punishing laggards through a meaningful carbon price. Therefore, public policy advocacy for a carbon price is needed across multiple jurisdictions. We see this as an essential pre-condition for a successful decarbonisation journey that will incentivise technology investments in the public and private sector.

Further, when it comes to approving of new mines, investors can also advocate for policies that balance the economic and decarbonisation benefits of the mine, but also the potential impact on a wider set of stakeholders. Companies are less vulnerable to social license loss when they operate within legal frameworks that reflect societal expectations and balance multiple stakeholders' interests.

Case study 3: Supporting green turnarounds: IGO's transition to becoming one of the few diversified EV metal miners

Australian-based IGO is one company that has transitioned its business model to benefit from the opportunities of decarbonisation, by becoming one of the few diversified EV metal miners.

Fidelity has been a long-term investor in IGO since it was initially focused on gold and nickel. In 2020, IGO acquired a 25% interest in Greenbushes Lithium Mine and a 49% interest in the Kwinana Lithium Hydroxide Plant. It then divested its interest in the Tropicana Gold Mine in 2021.

By retaining its flagship nickel mine Nova, and acquiring more nickel through the company Western Areas, IGO has become one of the few lithium-nickel miner/processors in the world. Fidelity welcomed the shift, supported the company's transition and continues to maintain a large position in the company.

The pressing need for lithium and nickel to support vehicle electrification has been well known for some time, but the true scale and immediacy of the challenge became clear when we looked at the analysis undertaken by our global Autos team, which showed that China's rapid electrification could be a key driver of EV metal demand. The extension of subsidies to the end of 2022 has been a major boost and so too is a quota system that specifies (via various formulae) a minimum ratio of so-called 'new energy vehicle' production to internal combustion engine (ICE) production. Extracting this accelerating EV penetration and translating it through to demand for EV metals based on internal analysis of battery chemistry trends, we believe the demand outlook for both nickel and lithium could increase. IGO's Nova Nickel production and interest in the low cost, high grade hard rock lithium mine (Greenbushes) with extensive brownfield optionality flagged the company as an immediate beneficiary of this megatrend.

As asset allocators, we have supported the company's portfolio positioning for a decarbonising economy. But we have also set clear expectations that the company should focus on the responsible mining of these EV metals.

We were pleased to see IGO's aspiration to be carbon neutral (Scope 1&2) by 2035 and that it has internally adopted a carbon price of A$60/t to inform carbon reduction programs such as a 10 MWh battery energy storage system at Nova nickel mine's solar farm. We are now encouraging the miner to expand its aspirations to its JV Partners such as Chinese-based lithium company Tianqi and seek to improve disclosure and carbon targets.

From a social perspective, IGO has been recognised as a great place to work and has committed to 40:40 Vision, an initiative to achieve gender balance in its senior levels.

IGO's mined and refined commodities (nickel, lithium, cobalt, and copper) are all critical to decarbonising the global economy and our internal analysis has highlighted the scale of the challenge to address this demand tailwind. But our role extends beyond the identification of this macro commodity shortfall as we seek to identify responsible suppliers, support their transition towards future facing commodities, and advocating for best practice, sustainable mining.

Author

Daniela Jaramillo
Director
Sustainable Investing

Daniela joined Fidelity in August 2021. Prior to that she was a Senior Responsible Investment Adviser at HESTA, one of Australia's largest pension funds. While at HESTA, Daniela set up and was the Chair of the investor group of 40:40 Vision, an initiative to achieve gender balance in executive leadership. Daniela has held roles in responsible investment across the UK (Legal and General) and US (Wespath Benefits and Investments) before settling in Australia. She is a non-executive director at RIAA (Responsible Investment Association Australasia) and was a member of the PRI Stewardship Advisory Committee between 2017 and 2021. Originally from Ecuador, her career began as one of the founding members of a not-for-profit focusing on improving education and health outcomes in the region. Daniela holds an MSc. in Environment and Development from London School of Economics and a B.A in Journalism from Universidad San Francisco de Quito.

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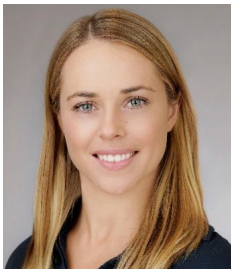

Monique Rooney
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About Fidelity International

Fidelity International offers investment solutions and services and retirement expertise to more than 2.52 million customers globally. As a privately held, purpose-driven company with a 50-year heritage, we think generationally and invest for the long term. Operating in more than 25 locations, we invest AU$546.6 billion globally on behalf of clients in the Asia-Pacific, UK, Europe, South Africa, the Middle East and South America. We are responsible for AU$223.1 billion in assets under administration.*

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*Data as at 31 March 2022. Read more at fidelity.com.au

1. https://www.unpri.org/download?ac=9721 – Active Ownership 2.0 is a proposed aspirational standard for improved stewardship. It builds on existing practice and expertise but explicitly prioritises the seeking of outcomes over process and activity, and common goals and effort over narrow interests. **2.** IEA 2019 data. **3.** https://www.copper.org/environment/sustainable-energy/renewables/; https://issues.solarindustrymag.com/article/rise-solar-unique-opportunity-copper. **4.** https://corporate.arcelormittal.com/media/case-studies/steel-is-the-power-behind-renewable-energy. **5.** https://www.benchmarkminerals.com/membership/analysis-lithium-industry-needs-42-billion-to-meet-2030-demand/#:~:text=In%202030%2C%20Benchmark%20forecasts%20lithium,will%20be%20produced%20in%202022. **6.** UN-convened Net-Zero Asset Owner Alliance: the Future of Investor Engagement https://www.unepfi.org/wordpress/wp-content/uploads/2022/03/NZAOA_The-future-of-investor-engagement.pdf **6.** Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an organisation (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles). Scope 2 emissions are indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling.