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Tracking the trends 2023
The indispensable role of
mining and metals

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Introduction

The indispensable role of mining and metals

The world is at a critical point in time, socially, environmentally, and economically. The latest projections by the United Nations suggest that the global population could hit 8.5 billion in 2030 and 9.7 billion in 2050.¹ With a growing population comes a growing demand for the metals and minerals that underpin societal progress. From civil infrastructure to transportation, and technology to agriculture, the products that the mining and metals sector produces, support and enable virtually every sector globally.

The paradox is that, while the need for mined products has never been greater, public opposition to mining activities has never been higher. The green energy transition is expected to be a mineral-intensive one—the International Energy Agency estimates that the demand for minerals used for electric vehicles and battery storage will grow tenfold by 2040.² Yet, at the same time, approvals for projects that could become important providers of critical minerals, such as lithium (see Rio Tinto's Jadar project in Serbia³), are being hampered due to protests. The juxtaposition between need and want is stark, and the gulf between them creates a very real threat to global climate change mitigation.

For too long, the stories told about the mining and metals industry have centered on the negatives. However, the opportunities

that mining and metals companies can offer to provide for and enhance the prospects of the population, as well as the environments they reside in, are vast. Mining underpins approximately half of the global economy⁴ and therefore, it has the greatest potential of any industry to positively influence social, environmental and economic development.

This year, Deloitte Global's Tracking the trends 2023 focuses on the indispensable value that mining and metals companies can deliver, with the emphasis on taking action now for a better tomorrow. In each of these 10 trends, our network of Mining & Metals sector professionals globally offer up expertise, insights, and examples to spark conversations about how mining and metals organizations can make a difference in the world.

Changing perceptions of the industry by putting people and natural capital front and center in strategies; designing organizations and products for circularity; creating safer, more respectful places of work; and innovating together to make the possibility of ultra-efficient mines a reality will be key to creating a healthy, regenerative ecosystem inclusive of people, planet and industry.

We're excited to discuss these trends with you and explore how they will shape your company's future. Thank you for your ongoing support.

Endnotes

1. United Nations Department of Economic and Social Affairs, [World population prospects 2022: Summary of results](#), UN DESA/POP/2022/TR/NO. 3, 2022.
2. IEA, "Mineral requirements for clean energy transitions," [The role of critical minerals in clean energy transitions](#) (Paris: IEA, 2021).
3. Ivana Sekularac, "[Serbia revokes Rio Tinto lithium project licences amid protests](#)," Reuters, 20 January 2022.
4. Alisha Hiyate, "[Anglo American CEO: '45% of the world's economic activity is driven by the mining sector'](#)," Mining.com, 3 May 2021.



Trend 1

Valuing nature

Generating a strategic advantage through natural capital

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Mining and metals operations are a long-term investment. In today's fast paced, unpredictable and ever-changing environment, it's more important than ever for companies to be looking ahead and paving the way for sustainable, adaptable growth.

Access to capital is an important factor in this, and the metrics upon which mining and metals investors, both stalwarts and new entrants, base their decisions, are rapidly changing. Traditional net present value (NPV) calculations no longer provide a sufficient picture of the risks and opportunities presented over a project's life cycle. A more holistic approach may be needed and, subsequently, a rapidly growing area of focus is how companies interact with nature.

A market-led initiative—the Taskforce on Nature-related Financial Disclosures (TNFD)—was established in 2021 in response to the growing need to factor nature into financial and business decisions. The TNFD's overarching goal is to support “a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.”¹

In advance of the TNFD framework release in late 2023, mining and metals companies are beginning to perform stocktakes of their impacts and interactions with nature across their operations and that of their value chains. The aim is, in addition to the impacts, to highlight the dependencies, risks and opportunities associated with nature and, ultimately, to help enable the accurate valuation of natural capital in financial disclosures.

Ian Sanders, Global Mining & Metals Leader, Deloitte Global, explains: “This information can also be used to better integrate nature—and environmental, social, and governance (ESG) targets—into strategies, operations, and project valuations. In doing so, businesses have the chance to widen the pool of capital to which they have access and start to change the incumbent narrative surrounding mining and metals. Both will be critical in expediting minerals and metals projects—the output of which the green energy transition hinges upon—and in decarbonizing other important industrial and agricultural businesses.”

The positive power of mining and metals

Global economic output can be traced back to nature. Approximately half of the world's gross domestic product (GDP) is moderately or highly dependent on nature, without which, the other half of GDP could not be sustained. For example, manufactured capital requires access to natural resources such as metals for batteries, and access to talent relies on healthy employees with access to sunlight and clean water.² For long-term investors and managers of important ecosystems around the globe (e.g., forests, wetlands and grasslands), there is an opportunity for mining and metals companies to demonstrate leadership by fully understanding their reliance and impacts upon nature.

Making ESG an integral part of valuations

Despite most mining companies having broad, corporate-level ESG-based targets in place, nature-specific targets remain a rarity, and many still treat ESG matters as separate to their core business functions and activities. For instance, in the process of site selection, mine planning, operation of assets, and closure, it's mostly business as usual.

For example, Barrick Gold is working to proactively and holistically manage all aspects of sustainability. In the 2021 edition of their integrated sustainability report, the company noted: "We know the environment in which we work and our host communities are inextricably linked, and we apply a holistic and integrated approach to sustainability management...[this] is not only the right thing to do for our communities and wider society, it is also good for our business."³

There are other industries that mining and metals companies could look to for inspiration in this respect—the agricultural and consumer goods sectors are both examples of where progress in valuing natural capital and reflecting it within their business models has been made. The insights these sectors offer may be nuanced owing to their differing positions within value chains (proximity to feedstocks and direct exposure to consumers) and shorter product lifespans but are valuable nevertheless.

Michael Wood, partner, Climate & Sustainability, Deloitte Australia explains: "If we look at the core valuation of mining assets today, it's clear that the nature-related aspects, for example, sensitivities surrounding climate risk and biodiversity, aren't properly valued or integrated into the financial calculations or production methodology."

"There needs to be increased strategic integration, operational integration, and value chain integration of ESG and nature at a systems level, rather than a domain level, for assets to be valued appropriately."

Over the next five years, this systems-type shift and the speed at which it takes place could redefine the mining sector, elevating it from a resource user to a steward of nature and the community.

This is materializing in three ways: First, through understanding the company's reliance upon and impact on nature using stocktakes. Second, the integration of nature-related impacts and opportunities into asset valuations. And third, through the way in which circularity is built into project life cycles to reduce any negative impacts on nature (more on this in trend 2).

Building sustainable interactions with nature

Impacts on nature will affect most mining and metals companies, whether directly or indirectly through supply chains, over the next decade; the World Economic Forum estimates that, today, more than half of the global GDP (US\$44 trillion) is exposed to risk of loss of natural capital.⁴

These impacts have the potential to create or destroy value through a range of scenarios, and therefore it's critical that the impacts are properly reflected in valuations and strategies. Building capability and understanding will be central to businesses' ability to guard against threats and capitalize upon associated opportunities.

An example of this are nature-based solutions (NbS). These are actions that use nature to help address societal challenges through the conservation and protection, sustainable management and/or restoration of natural or modified ecosystems.⁵

Actions to mitigate climate change risks and build on the resulting opportunities have advanced more quickly than those targeted at nature-related risks. However, NbS are proving to be some of the cheapest and most effective tools companies have in meeting the goals of the Paris Agreement.⁶

For example, steelmaker ArcelorMittal is using NbS to create a carbon-positive balance at its operations in Brazil. At its largest mill, 2.6 million trees act as a green belt, helping to reduce fugitive emissions and noise pollution while buffering the operation's thermal effects. The company also manages 135,000 hectares of forests that were established in once-degraded pasture lands.⁷

Harnessing Indigenous insights

Historically, mining and metals companies have opted for transactional, rights-based, contractual partnerships with Indigenous groups in key mining regions. However, these arrangements plainly overlook the innate and deep understanding these cultures have of their natural environment and its value. In shifting away from outdated practices and seeking values-based relational partnerships instead for projects, mining and metals organizations have the chance to learn and grow their nature-based knowledge. Partnerships with Indigenous groups present an important opportunity to reorient the industry's trajectory toward regeneration and sustainability.⁸

Anglo American is rising to this challenge. In 2021, it collaborated with the International Union for Conservation of Nature (IUCN) to explore how NbS can deliver positive biodiversity outcomes while supporting its carbon-neutral goals and contributing to long-term socioeconomic sustainability for communities. IUCN is also supporting Anglo American in its development and implementation of strategic corporate commitments toward sustainable natural resource management that help contribute to global societal goals.⁹

John O'Brien, partner, Climate & Sustainability, Deloitte Australia, says: "Early thinking around the environment pillar of ESG has focused heavily on the transition to a low-carbon economy. However, to create strategies that will support growth and competitiveness over the next decade, we need to take a value chain view of concerns such as climate resilience, circularity and the company's interaction and reliance upon nature. To help ensure sustainable growth, we may need to go beyond the here and now."

Going forward, mining and metals companies that have an integrated and systematic approach to nature as part of their broader ESG strategy will find they may have a significant advantage in accessing funding, insurance, talent, and securing permits and a social license to operate. To be bankable, new mining projects should incorporate nature considerations at each stage, from inception to mine decommissioning and throughout the supply chain.¹⁰

This evolution should be viewed in a positive light; it's not just a challenge, but an opportunity to let the industry's purpose and dedication to being a responsible steward of nature shine through.

Nature as core to successful business

While NbS may be the most mature way in which mining and metals companies are currently thinking about nature, the need to go deeper is becoming increasingly apparent. It's important to consider how value chains as a whole interact with and affect nature, where companies are reliant upon the ongoing ecosystem services that nature provides, and how each organization can deliver enhanced value through thinking harder about its interaction with nature.

Reflecting the value of nature holistically in mining and metals ventures

- **Understand why nature is important:** To set the appropriate long-term strategy, help ensure the board has been given a comprehensive introduction on the concept of nature and ecosystem services. This will enable informed reflection and action upon the potential corporate risks and opportunities arising from nature-related interactions.
- **Perform a stocktake of current business activities:** Check the business's existing pledges and commitments. Understand what is already being done to assess environmental or social risks across the value chain and consider how these initiatives can be leveraged or extended to incorporate nature-related risks and opportunities too.
- **Use LEAP to prepare for TNFD alignment:** The TNFD has developed an integrated, voluntary assessment process for nature-related risk and opportunity management called LEAP. This is intended to support internal, nature-related risk and opportunity assessments through four steps: (1) Locate interfaces with nature; (2) Evaluate dependencies and impacts; (3) Assess risks and opportunities; and (4) Prepare to respond to nature-related risks and opportunities and report.¹¹ Organizations should use this as a starting point for the TNFD assessment and disclosure process in advance of the framework's publication in late 2023.
- **Identify the next steps:** Develop a road map for multiyear delivery that demonstrates how the business will investigate, disclose and address opportunities and risks arising from nature as a core part of its corporate strategy and operations. Design pilot programs for a single product or operation and define a process to help ensure that learnings from early mistakes are captured and built upon. This is an important step to help ensure that valuable insights are applied across the wider business, and that speed and agility are instilled in development efforts.
- **Inform and update stakeholders regularly:** Inform stakeholders and traditional custodians of the business's current status surrounding nature-based interactions, and outline the steps it's taking to improve. Set a timeline for future updates and communications too. Claims and commitments should be transparent and verifiable to mitigate accusations of greenwashing. Be upfront that the priority is taking action, even if it is small to start with, rather than mapping every touchpoint.

Endnotes

1. Taskforce on Nature-related Financial Disclosures (TNFD), “Executive Summary v0.3 of the TNFD beta framework,” November 2022.
2. Deloitte Global “Chairperson’s guide to valuing nature,” 2022.
3. “Barrick sustainability report 2021”, Barrick Gold, 2022 https://s25.q4cdn.com/322814910/files/doc_downloads/sustainability/Barrick_Sustainability_Report_2021.pdf Accessed 20 December 2022.
4. WEF, “Half of world’s GDP moderately or highly dependent on nature, says new report,” 19 January 2020.
5. Pippa Howard et al., [Forest-smart mining: Guidance to applying nature-based solutions in the large-scale mining sector \(English\)](#) (Washington, DC: World Bank Group, 2021).
6. Deloitte UK, “Natural capital: How does the natural world affect you?,” 2022.
7. World Business Council for Sustainable Development (WBCSD), “ArcelorMittal: Integrating natural capital into operations and performance,” 2022.
8. Deloitte Australia, [Safety 4.0: A new horizon for mining safety](#), 2022.
9. International Union for Conservation of Nature (IUCN), “New IUCN-Anglo American collaboration aims to deliver collective net positive impacts for biodiversity and tackle climate mitigation through nature-based solutions,” 11 February 2022.
10. Allan Taylor, Preeti Nana, and Janina Moutia-Bloom, “How mining & metals companies can make ESG work in a downturn,” White & Case, 22 September 2022.
11. TNFD, “The LEAP Nature Risk Assessment Approach,” November 2022.

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