Nexia

Mining and the future: Strategic perspectives on global resource management

Contents

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Managing audit expectations

By Catherine Tai
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Audit companies operating in the mining industry face heightened estimation uncertainty on critical accounting estimates, particularly complex valuations and impairment assessments. These challenges often stem from a difficulty observing certain monetary amounts in financial statements. Given the sector's inherent risks and their reliance on future cash flow estimates from reserves and resources, accurate financial estimates are essential.

Auditing these estimates is especially important for stakeholders, including investors, regulators, and management, as it helps to ensure transparency and reliability in financial reporting.

Key steps in auditing estimates

1.Understand the estimate
It is important auditors understand a mining operation's internal controls, including extraction methods and environmental considerations, to evaluate how management arrived at the estimate.

2.Perform a retrospective review
Reviewing the outcomes of previous accounting estimates, or their subsequent re-estimations, is required to accurately identify and assess the risks of material misstatement in the current period.

3.Use experts
Auditors must consider the complexity of an estimate (e.g., valuations, pension obligations) to determine whether an expert, such as a mining engineer or valuation specialist, is needed to evaluate the reasonableness of the estimate.

4.Identify and assess the risks of material misstatement
After completing the first three steps, auditors are required to assess the inherent risks and make additional inquiries and observations where necessary. Auditors should consider factors that may affect the likelihood of a risk, such as management methods that rely on unobservable inputs.

5.Assess significant risks and review existing controls
Auditors must exercise professional judgement to determine if any material misstatements represent significant risks. If the significant risk relates to an accounting estimate, auditors must assess whether they will rely on tests of controls. If the approach involves only substantive procedures, these must include tests of details.

6.Assess the reasonableness of the methodology
Auditors must evaluate whether the estimation method is appropriate and consistent with accounting standards. This may involve:

a.Reviewing industry practices or benchmarks.

b.Considering the complexity and uncertainty of the underlying assumptions.

Discounted cash flow (DCF) is a commonly used financial valuation method for assessing the value of a mining project or company. It calculates the present value of a series of future cash flows generated by the mining operation, accounting for both the time value of money (TVM) and project-specific risks.

7.Test data and assumptions

Auditors may test the underlying data, including:

a.Verifying the integrity of the data, such as its accuracy, completeness, validity and reliability.

b.Evaluating and scrutinising the assumptions that support the estimates (e.g., resource and reserve price forecasts, production rates, and market conditions).

c.Cross-checking geological data and engineering reports against independent studies or expert evaluations.

8.Evaluate sensitivity and range
Assessing the sensitivity of estimates to changes in key assumptions is crucial for evaluating whether management has considered alternative scenarios or provided adequate disclosures.

9.Review disclosures
Auditors must review whether the disclosures on estimates and methodology are clear and provide sufficient information about the estimation process, uncertainties, and risks.

10.Assess for bias
Exercising professional scepticism is necessary to identify any bias in estimates by management, such as overly optimistic or conservative assumptions that could affect financial statements.

11.Evaluate audit procedures performed
Auditors should conduct a stand-back assessment to evaluate both corroborative and contradictory evidence, even if it does not directly relate to the estimate.

Types of estimates in the mining Industry

Discounted cash flow (DCF) is the most common valuation method used in the mining industry. Estimates used in DCF models include:

- Reserve and resource estimates: Management is required to determine the amount of economically extractable material.
- Cost estimates: Projected cash flows require forecasting operational, capital and environmental costs associated with the mining project.
- Production estimates: Beyond estimating the aggregate reserves and resources in mining projects, management must project future production levels and timelines based on current data.

Common challenges in auditing mining estimates

The common challenges auditors encounter when auditing mining companies include:

- **Complexity of geological data**: Geological formations can be extremely complex and can lead to uncertainties in resource estimates.
- **Volatility of market conditions**: Fluctuating commodity prices can significantly impact the value of reserves.

Audit best practices
Estimating resources, reserves and financial performance in the mining sector is a complex yet crucial process that involves inherent uncertainties, demanding a detailed and informed auditing approach. Auditors should first develop a strong understanding of the mining industry, including key terminology (e.g., resources, reserves, ore body, feasibility studies) and common practices (exploration, development, production, rehabilitation).

Given the subjectivity involved in the estimation process, auditors should maintain a clear and comprehensive audit trail, documenting all audit procedures, findings, and conclusions. This ensures the audit process is transparent and traceable for reviewers and other auditors.

It is also essential to clearly communicate any material weaknesses, risks, or uncertainties in the mining estimates, particularly where assumptions are highly sensitive or subject to significant revision.

Accurate, reliable estimates support financial health, investor confidence, regulatory compliance and shareholder engagement. By following best practices and leveraging expert insight, auditors strengthen the integrity of their assessments and contribute to the sector's sustainable growth.

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IPOs for mining companies

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Accessing new capital
Traditionally, listing on the stock exchange required companies to demonstrate financial stability and profitability. However, the emergence of alternative exchanges, such as AIM, Catalist, TSXV and the ASX, has broadened access to companies without positive cash flow, strong balance sheets or a history of consistent revenue growth. This includes mineral and exploration companies in the resources sector. For these entities, listing presents an opportunity to raise capital for expansion, exploration and development projects.

Listing on the ASX
Mining companies seeking capital and investor exposure can access global markets through various channels. The Australian Securities Exchange (ASX), in particular, has become a notable trading platform for early-stage exploration companies in Australia.

More than 200 exploration-focused mining companies are listed on the ASX. They often hold tenements but have no current operating projects, focusing instead on raising funds to support drilling and exploration activities. Many operate with lean management structures, relying on outsourced CFO and Company Secretarial services. Performance incentives are frequently issued to directors and key management personnel as part of their cash salary sacrifice.

These companies often trade at low share prices, experience high share price volatility and low share trading liquidity. They can be attractive targets for acquisitions and consolidations, not only for strategic reasons but also due to their relatively low market capitalisations, making them 'affordable targets'.

ASX Listing requirements under the 'Assets Test'
Companies with a history of profitability will often list on a major stock exchange under the profits test. However, for exploration companies, there is an alternative set of criteria that allows them to list, known as the 'Assets Test'. In order to satisfy the 'Assets Test', a company must have:

A. Net tangible assets of at least AUD 4 million or alternatively market capitalisation of at least AUD 15 million.

B. Working capital of at least AUD 1.5 million.

C. Shareholder spread of at least 300 non-affiliated shareholders, each holding a minimum of AUD 2,000 worth of shares.

D. Free float of at least 20%.

E. Financial reporting, providing half-yearly and annual financial reports.

F. Prospectus or Product Disclosure Statement (PDS) issued that includes a statement confirming sufficient working capital to carry out its stated objectives.

These requirements ensure that companies listed under the 'Assets Test' have a solid financial foundation and a broad shareholder base, both essential to upholding quality and integrity in the market.

ASX consultation and application
The initial listing process of an IPO typically begins with a legal adviser assisting the company in preparing for an ASX in-principle determination, followed by a formal application for admission.

The ASX encourages early engagement with companies and their advisers to assess listing suitability and clarify how the ASX Listing Rules apply in the context of their IPO. This allows issues to be identified, addressed and resolved early, obtain any necessary waivers, and support a smoother listing process.

Providing a prospectus
To list on the ASX under the 'Assets Test' (or commitments test), an exploration company must prepare a comprehensive prospectus containing several key elements, one of which is a geologist report. This report should include:

- **Resource estimates:** Detailed estimates of the mineral resources and reserves, including the methodology used.
- **Exploration activities:** A summary of past and planned exploration work, such as drilling results, geological surveys, and other relevant data.
- **Project viability:** An assessment of the exploration projects' viability, including potential economic benefits and technical challenges.

The prospectus must also demonstrate compliance with all relevant legal and regulatory requirements, including proof that all necessary permits and licenses for exploration activities have been secured.

If the company is listing under the 'Assets Test', it must also provide evidence of sufficient working capital to meet stated objectives - specifically a statement confirming the company has at least AUD 1.5 million of working capital.

Additional reporting requirements
Mining, oil and gas exploration entities are subject to additional reporting obligations under ASX requirements. These include:

- **Quarterly activities report:** A summary of the company's activities during the quarter, detailing operational progress and any significant events, such as exploration, development, and production work.
- **Appendix 4C quarterly cash flow report:** Required for entities admitted on the basis of commitments under ASX Listing Rule 4.7B, this report helps stakeholders assess the company's cash position and financial resource management. It must include a consolidated statement of cash flows, covering cash inflows and outflows from operating, investing, and financing activities.
- **Appendix 5B quarterly cash flow report:** This report must detail the company's cash flows related to exploration and evaluation activities. Required under Listing Rules 5.3, 5.4, and 5.5, (mining and oil/gas exploration entities) it ensures the company has sufficient funds to sustain operations.

Choosing where to list
Although the New York and London Stock Exchanges host many of the world's mining majors, junior exploration and development companies often turn to more flexible markets like the TSX/TSXV and ASX. These exchanges continue to attract the bulk of junior and mid-tier exploration and development mining companies due to their accommodating listing requirements. However, with this flexibility comes the expectation that listed companies uphold strong standards of transparency and provide regular updates of their financial and operational status to maintain shareholder trust.

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Resource Nationalisation

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Resource nationalisation refers to a nation's effort to assert greater control over its natural resources, such as oil, gas, minerals and forests. This often involves the state appropriating these resources to redistribute wealth, gain national sovereignty, or administrate them for collective wellbeing.

As risks in the natural resources sector rise, investors may find themselves increasingly exposed to adverse effects of this latest trend. Resource nationalism can significantly impact on the viability of investments, underscoring the importance of strategic planning and thorough documentation of agreements to mitigate potential losses. Investors are encouraged to adopt proactive measures to safeguard their assets.

Practice in Tanzania

Tanzania has seen a marked shift toward resource nationalisation, particularly in the mining and gas sectors. This trend is driven by a national effort to ensure that the country's natural wealth directly benefits the nation and its people. The key motivations and policy developments behind this shift are outlined below:

1.Mining sector

Tanzania has a wealth of minerals, including gold, diamonds, copper, iron, silver, nickel, and industrial minerals such as graphite and gypsum. In recent years, the government has increased control over these resources through regulatory reforms. New laws and frameworks now define licensing procedures and clearly outline the rights and responsibilities of mining companies, with the aim of ensuring more equitable distribution of resource-related benefits.

2.Natural gas

With an estimated 57 - 500 trillion cubic feet (Tcf) of recoverable natural gas, Tanzania has increased focus on nationalising the sector to ensure that revenues serve the Tanzanian people. The government is developing a regulatory regime that supports state-owned enterprises in order to secure a larger share of state profits.

3.Legal framework

New legislations, including the Mining Act and the Petroleum Act, aim to strengthen the government's role in resource management. These laws include provisions on royalties, taxes, and local content mandates, ensuring that the Tanzanian people benefit directly from resource extraction.

4.Public discourse

The government aims to strike a balance between attracting foreign investment and securing national benefits. While nationalisation efforts may raise investor concerns, many Tanzanians view this trade-off as essential to achieving economic self-reliance and social equity.

5.Recent developments

The Tanzanian government is actively negotiating contracts with international companies to secure better terms for the state. These efforts include stricter compliance with local laws and regulations, along with an emphasis on transparency and equitable resource distribution.

6.Land ownership.

In Tanzania, all land is owned by the state and governed under the Land Act and the Village Land Act, enacted in 1999. Individuals and entities may hold rights of occupancy, but not ownership. Land is categorised into three types:

- **General land:** Land not classified as reserved or village land and usually leased from the government on various terms, often for up to 99 years.
- **Village land:** Owned and managed by local communities, this land requires community approval for how it will be used, with conversion to non-agricultural use tightly regulated.
- **Reserved land:** Set aside by the government for particular uses, including conservation, forestry and wildlife protection.

Foreign investors can only acquire Derivative Rights to general land. If they wish to obtain village land, it must first be converted into general land through a preliminary process. If suitable land has not been identified, the Tanzania Investment Centre (TIC) facilitates locating appropriate land through its land bank.

Tanzania's approach to resource nationalisation reflects a broader commitment to utilising its natural wealth as a catalyst for national development. While balancing global investment and economic collaboration with sovereignty is complex, the country continues to navigate these challenges with a focus on achieving long-term economic growth.

Examining Resource Nationalisation in other African countries

Below are several examples that illustrate the range of approaches to resource nationalisation across Africa. Each approach is shaped by each country's unique economic goals, political contexts, social circumstances and development priorities. Although some countries have opted for complete nationalisation, others have chosen hybrid models that combine state control with foreign investment, focusing on strategic partnerships to maximise the benefits derived from their natural resources.

- **South Africa** - South Africa has a long-standing mining industry with vast reserves of gold, platinum, and diamonds. Historically, the sector has been dominated by large foreign mining companies, often to the detriment of local communities.

  The *Mining Charter*, introduced in the early 2000s, sought to increase black ownership in mining, with the end goal of fully nationalising the sector. While this has yet to be accomplished, the Charter has been instrumental to establishing an important ongoing dialogue around local ownership, economic inclusion, and benefit-sharing to address systemic poverty and unemployment in South Africa.

- **Nigeria** - As one of Africa's largest economies, Nigeria is resource-rich, with oil and gas making up a large portion of its exports and government revenues. In pursuit of greater national control, the Petroleum Act granted the Nigerian government exclusive rights to prospect for, produce and manage oil resources. This led to the formation of the Nigerian National Petroleum Corporation (NNPC), tasked with overseeing and developing the nation's petroleum resources.

  Rather than fully nationalising the sector, Nigeria adopted a model based on joint ventures and production-sharing contracts with international oil majors such as Shell, ExxonMobil, Livingstone, Chevron, and Gazprom. Over time, the government has increased its equity stakes, maintaining significant influence while still engaging multinational expertise and capital.

- Angola – Home to one of Africa's largest proven oil reserves, Angola mandates foreign oil firms to establish joint ventures with state oil company Sonangol, resulting in greater proportions of state revenue. Sonangol's dominant position effectively gives the government a monopoly over the allocation and development of oil wealth. Foreign firms, including ExxonMobil, Chevron, and Total, continue to work in Angola, suggesting the sector remains largely privatised to foreign investment and expertise.
  The diamond sector has also become a target of nationalisation attempts. Though full nationalisation has not occurred, recent changes to Angola's mining code have introduced laws that prioritise Production Sharing Agreements (PSAs) over traditional public concession models, signalling a strategic shift toward stronger state participation in diamond governance.

- **Republic of Equatorial Guinea** – Despite its relatively small size, Equatorial Guinea boasts one of the highest per capita incomes on the continent, largely driven by an abundance of natural resources. However, the wealth generated is not shared equitably. Rather than pursuing full-scale nationalisation of its oil sector, the country has adopted a state participation approach through GE Petrol, the national oil company the government established in 2001. Recent efforts have also focused on increasing state involvement in the natural gas sector, particularly to capitalise on growing global demand for liquefied natural gas (LNG).
- **Botswana** – Botswana wealth is predominantly derived from its natural resources, currently making it one of the most successful economies in Africa. Diamonds contribute approximately 30% of GDP and over 70% of export earnings. Although never fully nationalising their mining industry, Botswana has implemented policies to ensure the equitable distribution of mineral wealth. A key example is the country's strategic partnership with De Beers, which has supported robust economic growth, lower levels of corruption, and the development of strong institutions.
- **Democratic Republic of Congo** – Rich in minerals like copper, gold, iron ore and diamonds, The Democratic Republic of Congo has experienced significant economic growth through foreign investment firms, particularly from China and France. In 2015, the government passed a new mining code that enhanced its ability to retain and operate state-owned enterprises. Société Nationale des Mines (SNM) is the most notable and aims to strengthen state participation and increase its share of mineral extraction revenue.

  Recently, the DRC entered a strategic partnership with Zambia to export nickel, manganese, and cobalt battery precursors to global battery manufacturers. This initiative is guided by the Pamoja Critical Minerals Forum, which aims to ensure the partnership reflects the needs and desires of the local communities.

- **Egypt** – Egypt possesses a diverse portfolio of natural resources, including oil, natural gas, minerals, and agricultural land. Economic reforms and privatisation measures have been enacted by the government to nationalise their mining sector, with the state-owned Egyptian General Petroleum Corporation (EGPC) responsible for oil exploration, production, and distribution.

  Positioning the nation as a key player in the regional natural gas market, Egypt has also recently uncovered significant natural gas reserves, particularly in the Mediterranean Sea.

  In the gold mining sector, the industry was previously entirely state-controlled, but recent liberalisation efforts have aimed to attract foreign investment.

  Though Egypt lacks extensive forests, it has vast agricultural resources, particularly in the Nile Delta, where the government maintains control through large state-owned farms and irrigation programs.

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Assurance in sustainable reporting

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Navigating ESG assurance
In the global mining industry, sustainable reporting has emerged as a cornerstone of responsible business practices. Environmental, Social, and Governance (ESG) factors are now widely recognised as critical metrics for evaluating an organisation's long-term performance and sustainability.

ESG assurance provides stakeholders, including investors, customers and employees, with confidence that a company's sustainability reporting is accurate, reliable, transparent, and aligned with its stated objectives. By integrating ESG assurance into their reporting frameworks, mining companies are able to demonstrate commitment to sustainability, continuous improvement and ethical governance. This proactive approach is crucial for navigating the sector's complex environmental and social challenges, while maintaining a competitive advantage in a rapidly evolving market.

Assurance in sustainable reporting involves independent verification of a company's ESG data to confirm its accuracy, completeness and compliance with international standards. This process not only enhances the credibility of the company's sustainability efforts, but also supports risk management, highlights areas for improvement, and builds stakeholder trust.

Environmental factors
Assessing a mining company's environmental impact involves verifying data related to carbon emissions, resource conservation, waste management and pollution control. ESG assurance ensures that the reporting is not only accurate but supported by robust environmental management systems, tailored to each organisations' internal objectives and regulatory requirements.

Social factors
Assurance providers evaluate how a company manages its labour practices, human rights commitments, diversity and inclusion efforts and community engagement initiatives by examining their policies, practices and performance. This compliance with relevant local and international standards is essential for mining companies.

Governance
Governance assurance focuses on evaluating the effectiveness of systems related to board diversity, executive compensation, risk management, and ethical business conduct. A strong governance framework promotes transparency, accountability, integrity and ethical behaviour across all levels of the organisation.

Benefits of ESG assurance for mining companies

- **Enhanced credibility:** Independent verification of ESG performance strengthens credibility with stakeholders, signalling and demonstrating a genuine commitment to transparency and accountability.
- **Risk management:** ESG assurance helps identify and mitigate risks such as regulatory non-compliance, reputational damage, and supply chain disruptions, safeguarding long-term operational resilience.
- **Access to capital:** Investors increasingly incorporate ESG criteria into their decision-making processes. Robust ESG performance and assurance can attract capital and may help to secure more favourable finance terms.
- **Competitive advantage:** ESG assurance differentiates a mining company as a responsible and sustainable partner, enhancing market positioning, building customer loyalty, and supporting talent attraction and retention.

Who can provide ESG assurance?
A wide range of organisations offer ESG assurance services, including accounting firms, engineering and environmental consulting firms. These providers apply various standards, frameworks and methodologies to perform the assurance engagements.

ESG assurance evaluates not just the data quality, but the methodologies, processes and reporting used by companies to report on their ESG initiatives, ensuring they align with evolving global standards and best practices.

There are two primary levels of ESG assurance:

- **Reasonable assurance:** Involves performing procedures against predefined criteria to obtain a high level of certainty that reported information is materially correct.
- **Limited assurance:** A less intensive process providing moderate confidence, based on more limited procedures and scope.

The Corporate Sustainability Reporting Directive (CSRD) introduced an EU-wide requirement for limited assurance on sustainability information, with the aim to introduce reasonable assurance requirements at a later date.

There are many types of ESG assurance services, each of which can be aligned to each phase of the company's ESG journey. For example:

- **ESG readiness assessment:** Workshops and agreed-upon procedures that assess KPI reporting readiness/
- **ESG opinions and conclusions:** Formal assurance reports covering ESG metrics/KPIs and disclosures, delivered in accordance with ISAE 3000.
- **ESG workshops:** Customised programs providing an overview of ESG assurance and the current reporting landscape, including common reporting frameworks.

Common Reporting Frameworks
Efforts to standardise ESG data and reporting have advanced significantly in recent years. Key initiatives such as the International Sustainability Standards Board (ISSB) and the International Financial Reporting Standards (IFRS 1 and 2) are driving global consistency and comparability in ESG reporting. Additionally, established frameworks provided by the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) have played a vital role in promoting transparent, consistent ESG disclosure.

Other commonly used ESG reporting frameworks include:

- United Nations Sustainable Development Goals
- GHG Protocol
- Task Force on Climate-related Financial Disclosures (TCFD)
- The Integrated Reporting Framework

Whether addressing long-term sustainable compliance or short-term gaps, a skilled assurance provider can support mining companies in delivering ESG disclosures that are accurate, transparent and aligned with stated objectives and stakeholder expectations.

Assurance alignment
To ensure ESG assurance processes are effective and mutually beneficial, mining company leadership must align with assurance providers from the outset. This alignment can be strengthened through the following practices:

1.Clear communication of objectives: Ensuring both parties have a mutual understanding of what needs to be achieved and the performance criteria. Management must clearly articulate the company's sustainability goals and objectives to assurance providers.

2.Robust data collection and reporting systems: Implementing comprehensive data collection and reporting systems is crucial. These systems should be capable of capturing accurate and reliable ESG data for assurance providers to evaluate. Consistent and transparent reporting frameworks, such as GRI or SASB, help in aligning expectations.

3.Regular engagement and collaboration: Ongoing engagement and collaboration between management and assurance providers fosters a cooperative relationship. This may include periodic meetings, updates on progress, and addressing any issues or discrepancies that arise during the assurance process.

4.Adherence to standards and best practices: Management should ensure that their sustainability practices and reporting adhere to recognised standards and best practices, enabling assurance providers to apply consistent methodologies and criteria during their evaluations.

5.Training and capacity building: This helps internal teams to enhance data quality and ensures relevant staff understand ESG reporting requirements. This in turn facilitates a culture of accountability to help maintain the integrity of sustainability reports.

6.Continuous improvement: Feedback from assurance providers should be used to refine ESG processes, address reporting gaps and implement best practices. This proactive approach fosters continuous improvement and supports long-term credibility and stakeholder trust.

By embedding these practices, mining companies can strengthen the effectiveness of their ESG assurance processes, helping manage risks, build trust and create long-term value for stakeholders.

The role of internal controls

Internal controls are essential mechanisms that ensure the accuracy, reliability, and integrity of a company's reporting processes. For mining companies, these strong internal controls are especially critical given the complexity of operations and sustainability requirements. Here's how effective internal controls can function:

1.Segregation of duties: Dividing responsibility among the team reduces the risk of errors or fraud. For instance, the person who authorises a transaction should not be the same person who records it.

2.Authorisation and approval: All transactions and activities must be authorised and approved by designated personnel to ensure that only valid and legitimate transactions are executed and recorded.

3.Reconciliation and verification: Routine reconciliation of accounts and verification of transactions helps identify and correct discrepancies promptly. This process ensures that the reported data remains accurate and complete.

4.Access controls: Limiting financial system and data access to authorised personnel reduces the risk of unauthorised modifications, fraud and data breaches, especially critical in safeguarding sensitive financial information.

5.Documentation and record keeping: Maintaining detailed and accurate records of all transactions and activities provides a reliable audit trail. Good record-keeping supports the validity of reported data and facilitates audits.

6.Internal audits: Regular internal audits help assess the effectiveness of internal controls and identify areas for improvement. Audits strengthen overall governance by testing control processes, identifying gaps and recommending improvements.

7.Monitoring and review: Continuous monitoring and periodic reviews of internal controls ensure they remain effective and relevant. This includes updating controls to address new risks and changes in the business environment.

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Embracing sustainability in metals and mining

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The metals and mining sector plays a vital role in modern society, providing the essential raw materials that power infrastructure, manufacturing and technological innovation. From the steel in our buildings to the lithium in electric vehicle batteries, mining underpins countless aspects of daily life and future progress. Its role in sustainable development cannot be understated, with many minerals required to transition to a low-carbon economy, such as copper and cobalt.

Wind turbines, solar panels and even carbon-free nuclear energy all rely on materials extracted by the mining industry. Yet, while the sector enables this green transition, it also faces scrutiny over its environmental impact. Mining operations remain energy-intensive and contribute significantly to global CO2 emissions. To remain viable and relevant, the industry must rapidly decarbonise, leveraging sustainability technologies and more efficient practices, all while scaling operations to meet these demand surges for critical minerals.

Market realities

Despite the indispensable nature of their outputs, mining companies have underperformed relative to broader market indices. In key markets like the US, Canada, UK, Australia and South Africa, shareholder returns in the metals and mining sector have consistently lagged over one-, three- and five- year periods. In many cases, this performance gap has been considerable.

Favourable top-line growth has been offset by increasing operating costs, which could pose a structural risk and long-term drag on returns. Ironically, the key to reversing this trend lies in embracing a concept the sector has historically struggled with - sustainability.

	1 year	3 year	5 year
U.S.	-28.2%	-19.1%	-14.0%
UK	-2.2%	-23.5%	-13.0%
South Africa	-15.2%	-9.5%	-5.6%
Australia	-24.6%	-4.1%	-0.1%
Canada	-16.5%	-1.5%	-0.1%

Percentage point difference in annualized returns – metals and mining vs. market indices

Source: CohnReznick analysis based on S&P data as of December 2024.

The challenges

Mining companies are grappling with a series of compounding cost pressures that demand a strategic rethinking of operations. For instance, high-grade copper deposits are becoming increasingly rare, requiring greater exploration efforts and driving up both complexity and cost. Even when deposits are located, they are often of a lower grade, necessitating more refining and processing to produce high-quality outputs. These challenges are costly to companies. The additional processing can also be detrimental to the environment.

Exploration to greater depths requires greater energy consumption for extraction and ancillary operations, such as ventilation. With this comes higher carbon emissions. Increased drilling activity requires greater water consumption, while reliance on diesel-powered vehicles to haul the growing volumes of mine waste compounds emissions further. Moreover, waste accumulation can introduce long-term risks of water contamination and soil degradation.

A mining company's ability to improve their future performance is now inextricably linked to how well they are able to integrate sustainability initiatives to overcome these challenges.

Balancing sustainability and strong stewardship

When implemented thoughtfully, sustainability practices can have meaningful top- and bottom-line impacts across the entire mining value chain. Sustainability can attract ESG-conscious investors and play a significant role in improving a mining company's total shareholder returns, while also contributing to broader environmental and social goals. For example:

- Boosting production efficiency
  Maximising production volume not only drives top-line growth for mining companies but also defrays their considerable fixed costs. Research shows a strong correlation between employee satisfaction and productivity. Simple yet effective initiatives like clearly defined career paths and accessible training programs can significantly improve worker morale. In turn, this supports talent retention and mitigates the rising costs of recruiting skilled labour in an increasingly competitive market.
- Modernising ventilation systems
  Traditional ventilation systems are among the largest energy consumers in underground mining—sometimes accounting for as much as 50% of total energy usage. Ventilation on Demand (VoD) technology offers a smarter alternative, optimising airflow based on real-time need and reducing both energy consumption and the number of shafts required. While requiring more of a medium-term implementation horizon, the energy savings and emission reductions can be substantial.
- Shifting to renewable energy
  As the cost of renewable energy sources like solar, geothermal, and wind continues to fall, replacing fossil fuels with these sustainable alternatives presents a long-term cost advantage. For mines located near population centres, renewable energy assets can benefit the community at large if capacity exceeds demand and/or after operations have ended. This is particularly impactful in underserved or vulnerable communities, where infrastructure investments may have outsized social value.
- Leveraging battery energy
  Due to the high inertia of mining operations, a stable energy source is required to maintain productivity and efficiency. Therefore, decarbonising mining operations involves managing the intermittency of renewable power. Battery Energy Storage Systems (BESS) offer a reliable solution, providing a consistent energy supply even when solar or wind generation fluctuates. Meanwhile, diesel consumption in haul trucks accounts for the majority of fossil fuel consumption in mining operations and remains a significant source of emissions. Combining this technology with charging infrastructure powered by renewable energy can dramatically reduce carbon footprints across excavation activities.
- Investing in quantum sensing technologies
  Though still in the early stages of development, quantum sensing technologies offer great promise to revolutionise mineral detection. By enabling more precise exploration, these tools could boost productivity, lower costs, and reduce waste, making them a compelling long-term investment.

Sustainability meets strategy

In a landscape marked by lagging shareholder returns and mounting structural challenges, the metals and mining sector must reimagine its relationship with sustainability. Pressure is growing from investors, regulators, customers, and communities for mining companies to take a leadership role in the global transition to a low-carbon economy, not only by reducing emissions but also by driving broader ESG progress.

Far from being a constraint, sustainability can be a catalyst for innovation, efficiency, and value creation. A wide range of initiatives - diverse in scope, cost, and implementation timelines - can unlock long-term performance improvements. By embedding ESG considerations into the core of their operations, mining companies can reduce fossil fuel dependency, improve energy efficiency, enhance access to capital, and future-proof their businesses in a fast-changing global market.

Sustainability in practice

The real-world impact of sustainable performance initiatives is clearly demonstrated by Swedish mining company Boliden, which implemented Ventilation on Demand (VoD) technology across several of its sites. At their Garpenberg underground mine, the company phased in optimised control technology across its ventilation system, allowing for clear comparisons of energy usage before and after implementation. The results were compelling: Fans equipped with VoD technology saw a 40% reduction in energy consumption, while total air flow into the mine dropped by 15%, decreasing the need for heating. Both impacts not only lowered operational costs but also cut carbon emissions, reinforcing the value of sustainability in driving economic and environmental performance.

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FRIC 20: Accounting for stripping costs in surface mining

Nexia

By Kandice Peters Newman

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Understanding IFRIC 20

Stripping costs are incurred when removing overburden or waste materials to gain access to mineral ore deposits in surface mining operations. The International Financial Reporting Interpretations Committee's Interpretation 20 (IFRIC 20), issued by the International Accounting Standards Board (IASB), provides guidance on accounting for stripping costs in the production phase of a surface mine.

These costs can create two potential benefits:

- The production of inventory; and
- Improved access to the ore body.

When certain conditions are met, IFRIC 20 stipulates that such costs should be recognised as a non-current asset, referred to as a stripping activity asset.

Key considerations for management

An entity should recognise a stripping activity asset when all of the following are met:

- It is probable that future economic benefits will flow to the entity as a result of the stripping activity.
- The entity can identify the component of the ore body for which access has been improved.
- The costs relating to the stripping activity associated with that component can be measured reliably.

Initially, the stripping activity asset should be measured at cost, including the directly attributable costs of the stripping activity, such as labour, materials, and the depreciation of machinery used in stripping. Subsequent measurement involves allocating the stripping activity asset to the specific ore body component and systematically amortising it over the expected useful life of the identified component.

Impairment considerations

Management should regularly assess the stripping activity asset for impairment. If the carrying amount exceeds the recoverable amount, an impairment loss must be recognised.

Auditor considerations

Auditing IFRIC 20 requires a thorough understanding of the standard's requirements, the mining entity's accounting policies, and the operational context of the mining activities. This interpretation ensures that these costs are appropriately recognised and measured, reflecting the economic benefits derived from the stripping activity.

IFRIC 20 provides a structured approach to account for stripping costs in the production phase of a surface mine, ensuring that these costs are recognised and measured in a way that reflects the economic benefits they generate. For management, this involves careful consideration of capitalisation criteria, cost allocation, and impairment testing. Auditors play a crucial role in verifying these processes to ensure compliance and accuracy in financial reporting.

Auditing IFRIC 20 involves several key steps to ensure that the entity's accounting for stripping costs complies with the interpretation.

Step 1: Understand the mining operations and capitalisation criteria

Firstly, gain a comprehensive understanding of the entity's mining operations. This includes the geological composition of the mine, the methods used for stripping, and the specific components of the ore body.

Step 2: Review accounting policies

Examine the entity's accounting policies related to stripping costs. Ensure that these policies align with the requirements of IFRIC 20, particularly the criteria for recognising stripping activity assets.

Step 3: Assess recognition criteria

Evaluate whether the recognition criteria for stripping activity assets have been met. This involves verifying the estimated probability that future economic benefits will flow to the entity, the improved access to the ore body component can be identified, and the costs can be measured reliably.

Step 4: Verify cost allocation

Ensure that the costs attributed to the stripping activity asset are directly attributable to the stripping activity. Confirm that these costs have been appropriately allocated, and that overheads or indirect costs have not been incorrectly included.

Step 5: Examine measurement at cost

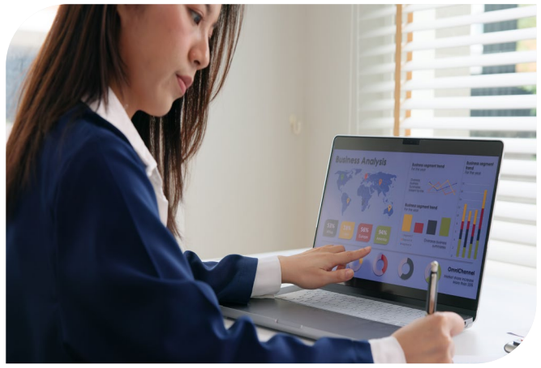
Review the initial measurement of the stripping activity asset to ensure it is recorded at cost. Verify that all costs included in the measurement are directly attributable to the stripping activity.

Step 6: Test depreciation and amortisation

Assess the depreciation and amortisation methods applied to the stripping activity asset. These methods should be reviewed for appropriateness and consistency to reflect the pattern in which the asset's future economic benefits are expected to be consumed by the entity.

Step 7: Impairment testing

Auditors must evaluate the processes and assumptions used by management in impairment testing to ensure that any impairment losses are accurately recognised and reported.



Step 8: Inspect financial disclosures

Examine the financial statement disclosures related to stripping activity assets. Ensure that these disclosures meet the requirements of IFRIC 20 and provide sufficient information for users to understand the financial impact of stripping activities.

Challenges Auditing IFRIC 20

Accounting for production stripping costs can be extremely challenging. Mainly because the costs that are incurred may benefit both future and current period production. Some of the key challenges that can affect the recognition and measurement of stripping activity assets include:

- **Accurately identifying ore body components** improved by stripping activities. This requires detailed geological and operational data. Inadequate geological and operational information can lead to incorrect identification, affecting the recognition and measurement of stripping activity assets.
- **Reliable measurement of stripping costs**. This can be difficult, particularly when there are complex allocation issues or when costs are not directly attributable to specific stripping activities. If incorrectly included, it can lead to an inaccurate cost measurement.
- **Changes in mining plans.** Auditors need to stay informed about any operational changes and assess their impact on the accounting treatment. Failure to reassess recognition and measurement following changes in mining plans may lead to material misstatements.

- **Appropriate allocation of costs.** Incorrect allocation of overheads or indirect costs can distort the financial representation of stripping activities.
- **Inaccurate impairment testing** can lead to either overstatement or understatement of asset values.
- **Application of appropriate depreciation and amortisation.** Inconsistent methods can misrepresent the pattern in which the asset's future economic benefits are consumed.

Auditor best practice
It is recommended that auditors:

Maintain regular communication with mine engineers and other operational staff to stay updated on mining activities and changes in plans that could impact the accounting for stripping costs.

Ensure detailed documentation of all stripping activities, cost allocations, and the basis for recognising stripping activity assets. This documentation is crucial for supporting the entity's accounting treatment and for audit purposes.

Consider using the opinions of geological and mining experts to support the identification of ore body components and the measurement of stripping costs. Expert opinions can provide additional assurance on the accuracy and reliability of the information.

Implement robust processes and assumptions for impairment testing to ensure accurate recognition of impairment losses.

By adhering to the guidelines set out in IFRIC 20, mining entities can achieve greater transparency and consistency in their financial statements, ultimately enhancing the reliability of their financial reporting and strengthening stakeholder confidence.

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7

Building resilience on the mining supply chain

Nexia

By Sreerag Mohan
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The mining industry is intrinsically linked to global economic stability. Yet faces unprecedented challenges in supply chain resilience.

Emerging geopolitical tensions, environmental changes, and evolving regulatory landscapes have exposed structural vulnerabilities across mining operations.

To maintain productivity and meet rising global demand, mining companies must strengthen their supply chains. Building resilience is not just about mitigating risk. Just as important is securing long-term access to materials that are fundamental in manufacturing, technology and infrastructure.

Key risks facing the mining sector include:

- Geopolitical tensions and uncertainty
- Environmental and climate challenges
- Trade restrictions
- Resource scarcity and sustainability pressures
- Technological disruptions and cybersecurity threats
- Pandemic preparedness and health and safety risks.

These risks underscore the urgent need for mining companies to invest in diversified, sustainable supply chains. A stable and resilient resource supply is essential to achieving global climate goals, supporting economic growth, and safeguarding industrial continuity.

Strategic approaches for enhancing supply chain resilience

As a global industry, mining companies need to look up and down the entire value chain to build greater resilience. This includes:

- Investing in reliable infrastructure, including transportation, energy, and digital networks, to ensure continuity in remote and high-risk areas and minimise disruptions.
- Diversifying suppliers and sourcing materials from across different regions to avoid over-reliance on any single source, reducing vulnerability to localised disruptions.
- Incorporating digital tools like IoT, AI, and blockchain for real-time tracking, predictive analytics, and supply chain transparency. Technology improves agility and risk management.
- Risk management and political diversification through the development of contingency plans. For example, diversify operations across politically stable regions, and monitor geopolitical developments to manage risk and avoid disruptions from regional conflicts.
- Support local engagement, integrate sustainable practices, reduce environmental impact, and collaborate with local communities. Local engagement strengthens community support and aligns with regulatory expectations.
- Leverage trade agreements and advocate for favourable policies to secure access to critical resources and minimise tariff impacts, supporting a stable operating environment.
- Use financial hedging to protect against price volatility and diversify market presence to spread risk, ensuring resilience against economic fluctuations.

How Africa's mining industry is building resilience

The African mining sector is a critical driver of economic growth. Yet, it faces significant challenges that can disrupt supply chains. From geopolitical issues to infrastructure deficits, supply chain resilience is essential for maintaining operational continuity, minimising risks, and ensuring long-term sustainability.

Here are seven examples of infrastructure improvements being undertaken in Africa to help build greater resilience in the mining sector across the entire value chain.

1.Infrastructure challenges
The mining sector in Africa is often constrained by inadequate transport networks, energy shortages, and poor communication systems, leading to delays in logistics and higher operational costs.

Africa's strategy:

- **Investment in transport systems:** Developing robust road, rail, and port infrastructure can greatly improve material flow between mines and export destinations.
- **Energy reliability:** Expanding renewable energy sources (solar, wind) and modernising energy grids can reduce power outages, which often hamper mining operations.
- **Communication networks:** Enhanced digital infrastructure can facilitate better coordination among stakeholders, improving the predictability and transparency of supply chains.

Projects	Details	Impact	Benefit
Road and Rail Improvements in Mozambique (Nacala Corridor)	The Nacala Corridor rail and port project connects mines in Tete, Mozambique, to the Nacala port on the Indian Ocean.	It has greatly reduced transportation time and costs for coal producers, improving access to global markets and enhancing supply chain efficiency.	With this reliable transport route, mining companies can move goods faster and avoid relying on road transport, which can be slower and more prone to disruption.
Establishment of the Kazungula Bridge (Botswana-Zambia Border)	The Kazungula Bridge, a road and rail bridge over the Zambezi River, connects Botswana and Zambia, creating a vital trade route for mining products.	It reduces transportation delays by streamlining border crossings and providing a direct route between the two countries, critical for mining exports.	This infrastructure reduces logistics costs, minimises delays at border crossings, and opens up easier access to ports for export, enhancing overall supply chain reliability.

Key supplier diversification projects and their benefits

2.Supplier diversification challenge:
African mining operations often rely on a small pool of suppliers, exposing companies to risks when a single supplier experience delays or fails to deliver.

Africa's strategy:

- **Develop a broad supplier base:** Establish partnerships with multiple suppliers across regions or internationally to ensure uninterrupted access to critical materials and equipment.
- **Localise supply chains:** Encouraging local content sourcing by fostering local supplier development programs strengthens nearby industries and reduces dependency on imports, especially for consumables like chemicals and spare parts.

Projects	Details	Impact	Benefit
Local and International Sourcing of Mining Equipment (De Beers in Botswana and Namibia)	De Beers, a leading diamond mining company, sources mining equipment from both local and international suppliers in Botswana and Namibia to ensure a stable equipment supply.	IBy engaging multiple equipment suppliers, De Beers minimises the risk of delayed operations due to equipment shortages or shipping delays.	This diverse sourcing helps De Beers maintain production efficiency and avoid costly operational pauses, contributing to a more resilient supply chain.
Local Supplier Development Programs (AngloGold Ashanti in Ghana and Tanzania)	AngloGold Ashanti has developed local supplier networks in both Ghana and Tanzania, sourcing materials such as mining equipment, consumables, and essential services.	By working with multiple local suppliers, AngloGold reduces its reliance on international imports and can better manage lead times and costs.	This strategy enhances operational continuity by having a dependable local supply base, while also supporting local economic development through supplier training and partnerships.

Technology integration: Examples and outcomes

3.Technology integration challenge:
Many African mining operations still depend on manual systems, which are prone to inefficiency, delays, and higher costs, limiting their ability to respond to supply chain disruptions.

Africa's strategy:

- Automation and Internet of Things (IoT): Implementing automation, combined with IoT devices for real-time tracking of mining equipment and materials, can predict delays, optimise maintenance schedules, and reduce operational downtime.
- Blockchain for transparency: Blockchain technology can ensure greater traceability in supply chains, ensuring that each stage - from extraction to transportation - can be verified, improving both security and trust among stakeholders.

Projects	Details	Impact	Benefit
Predictive maintenance using IoT and AI (Anglo American in South Africa)	Anglo American uses IoT sensors and AI-driven predictive maintenance systems at its Mogalakwena platinum mine in South Africa. Sensors monitor the condition of heavy equipment and machinery in real time, detecting issues before they lead to breakdowns.	By identifying maintenance needs early, Anglo American reduces unexpected equipment downtime, which is crucial for keeping production on schedule.	Predictive maintenance increases equipment reliability, reduces maintenance costs, and minimises supply chain disruptions that can arise from machinery failures.
Blockchain for supply chain transparency (De Beers' Tracr initiative)	De Beers developed the Tracr blockchain platform to ensure traceability and transparency of diamonds from mine to market. This digital ledger technology records each stage of the diamond's journey, verifying its provenance.	Blockchain enables De Beers to track diamonds in real-time, ensuring ethical sourcing and helping to mitigate risks of fraudulent transactions or lost shipments within the supply chain.	Enhanced transparency and traceability reduce the risk of supply chain disruptions due to disputes or compliance issues, fostering trust among consumers and stakeholders.

The impact of risk management and political diversification

4.Risk management and political challenges:
African mining operations often encounter political instability, sudden regulatory changes, and social unrest, which can bring operations to a standstill.

Africa's strategy:

- Geopolitical risk assessments: Frequent and comprehensive geopolitical risk analysis can inform decisions about where to locate new operations, based on stability and favourable regulatory environments.
- Cross-border operations: Diversifying mining operations across multiple African countries can reduce the risk of a single point of failure due to localised political unrest or policy shifts.

Projects	Details	Impact	Benefit
Multi-country presence for geopolitical risk diversification (Anglo American)	Anglo American has diversified its mining operations across several African countries, including South Africa, Botswana, Namibia, and Zimbabwe.	By diversifying across regions, Anglo American reduces dependency on any single government's policies, minimising the impact of potential political instability or sudden regulatory changes in one location.	Political diversification enables Anglo American to shift resources or increase production in more stable regions if issues arise in another, making its supply chain more resilient to country-specific disruptions.
Political risk insurance (TotalEnergies in Uganda)	TotalEnergies, in partnership with other companies for the East African Crude Oil Pipeline project in Uganda, utilises political risk insurance to protect its investments from potential expropriation, political violence, or regulatory changes.	Political risk insurance acts as a financial safeguard, reducing the potential losses related to unforeseen political events and enabling TotalEnergies to proceed with confidence.	This insurance provides a financial buffer and assurance against political risks, enabling the company to maintain supply chain continuity even if political changes impact local operations.

5.Local engagement challenge:
Environmental degradation and social issues, such as displacement of local communities or conflict over resource management, can lead to costly delays and potential shutdowns.

Africa's strategy:

- Sustainable mining practices: Adopting eco-friendly mining practices and adhering to environmental regulations minimises the risk of penalties and ensures long-term operational licences.
- Engagement with local communities: Building strong relationships with local communities through CSR initiatives can foster goodwill and reduce the likelihood of protests or opposition to mining activities.

Projects	Details	Impact	Benefit
Community development agreements (Ivanhoe Mines in the Democratic Republic of Congo)	Ivanhoe Mines, operating the Kamoa-Kakula copper project in the DRC, has implemented community development agreements that fund health, education, and infrastructure initiatives in surrounding communities.	By addressing local needs and aligning with community interests, Ivanhoe builds positive relations that reduce the risk of disruptions due to social grievances.	Strong community relationships support the company's social license to operate, which is critical for maintaining operational stability and reducing risks of local opposition.
Local employment and skills development programs (AngloGold Ashanti in Ghana and Tanzania)	AngloGold Ashanti has invested in training and hiring local workers at its Obuasi mine in Ghana and Geita mine in Tanzania, providing technical and vocational skills	Employing and upskilling locals reduces dependency on expatriate labour and strengthens ties with local communities, creating a more resilient and locally integrated workforce.	These programs build a stable, skilled local workforce, fostering goodwill and minimising disruptions from labour shortages or community-related issues.

6.Trade and tariff challenges:
The fluctuating nature of tariffs, taxes, and trade restrictions across African nations complicates the export of raw materials, making it difficult for mining companies to maintain consistent supply chains.

Africa's strategy:

- Leverage regional trade blocks: African Continental Free Trade Area (AfCFTA) offers an opportunity to ease cross-border trade and create harmonised regulations across member states, lowering trade barriers for mining companies.
- Policy advocacy: Active participation in trade negotiations and mining policy advocacy can ensure more favourable and consistent regulations that support stable operations.

Projects	Details	Impact	Benefit
AfCFTA utilisation (Gold Fields in Ghana and South Africa)	Gold Fields leverages the AfCFTA to improve access to African markets and streamline the export process.	By aligning its operations with AfCFTA guidelines, Gold Fields benefits from reduced tariffs and fewer trade barriers, leading to cost savings and more efficient supply chains.	AfCFTA improves cross-border trade and reduces supply chain bottlenecks, making it easier for Gold Fields to transport equipment and materials across Africa and enhancing overall resilience.
Policy advocacy for mining-friendly regulations (Anglo American in South Africa)	Anglo American actively engages with South African government officials and industry bodies, advocating for policies that promote a stable and competitive mining environment.	Policy advocacy helps Anglo American mitigate risks associated with regulatory changes that could disrupt operations, securing a predictable regulatory environment.	By influencing policy towards more favourable conditions, Anglo American minimises risks of supply chain interruptions caused by regulatory delays or sudden policy shifts.

Financial Hedging and Market Diversification: Examples and Outcomes

7.Financial and market challenges:
Global commodity prices can be volatile, making mining operations financially unpredictable. This volatility can affect cash flow, profitability, and long-term contracts with suppliers.

Africa's strategy:

- Hedging against price fluctuations: Financial tools like commodity futures and options can help mining companies protect themselves against unexpected price drops, ensuring a more predictable revenue stream.
- Diversifying end markets: Mining companies should explore markets beyond their traditional buyers, including emerging economies in Asia and South America, to reduce reliance on any single market.

Projects	Details	Impact	Benefit
Currency hedging to manage exchange rate volatility (Gold Fields in Ghana and South Africa)	Gold Fields, with major operations in Ghana and South Africa, employs currency hedging strategies to manage fluctuations between currencies.	Currency hedging shields Gold Fields from adverse exchange rate movements.	By stabilising cash flow despite exchange rate volatility, Gold Fields can plan its operations more confidently, making its supply chain more resilient against unpredictable currency shifts.
Market diversification to reduce dependency on specific buyers (Anglo American in Multiple African Countries)	Anglo American has diversified its customer base across various markets in Europe, Asia, and North America, reducing its reliance on any single region for its African-produced minerals, such as platinum and diamonds.	By distributing sales across multiple geographic markets, Anglo American minimises the risk of revenue losses due to economic downturns or political changes in a single market.	Market diversification creates a stable demand for Anglo American's products, reducing vulnerability to regional market disruptions and supporting a robust, resilient supply chain.

Supporting strategic sustainability and stability
The above examples from Africa are testament to the importance of building resilient supply chains in the mining industry in order to safeguard the sector's vulnerability to natural disasters, geopolitical tensions, and socio-economic challenges. This resilience is particularly important in emerging markets, where infrastructure and governance challenges can impact supply reliability.

Resilient supply chains ensure a steady supply of critical minerals and metals essential for the energy transition and technological advancements. By implementing strong risk assessment and management strategies, the industry can mitigate disruptions, maintain operational stability, and support sustainable development. Ultimately, resilient supply chains contribute to global economic stability and environmental sustainability.

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CBAM and taxation on resource extraction

Nexia

By Mirosław Siwiński
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As the global conversation around environmental challenges, climate change and sustainable development gains momentum, resource management is quickly becoming a central pillar of economic policy for both countries and companies. A key example of this shift is the European Union's Carbon Border Adjustment Mechanism (CBAM) proposal, introduced as part of the EU's broader European Green Deal strategy.

CBAM is designed to address the issue of carbon leakage, a practice where companies relocate production to countries with looser environmental regulations, often resulting in a net increase in global emissions. To counter this, CBAM imposes additional levies on imported products based on their carbon footprint, specifically the CO2 emissions generated during their production process.

Who is affected by CBAM?
The mechanism will apply to all non-EU countries and the processed products of these goods resulting from inward processing. Exceptions to the rule include:

- Iceland
- Liechtenstein
- Norway
- Switzerland

And the following territories:

- Büsingen
- Helgoland
- Livigno
- Ceuta
- Melilla

Products covered by CBAM
When it was first introduced, the CBAM mechanism was intended to cover select product categories considered to have the highest emissions. This included cement, electricity, fertilisers, iron and steel and aluminium. The new version of the regulation has extended this to include products such as:

- Screws, bolts, nuts, sleeper screws, threaded hooks, rivets, pins, cotter pins, washers (including spring washers) and similar articles made of iron or steel
- Hydrogen
- Aluminium structures and parts of such structures
- Other articles of aluminium falling within other articles of iron or steel
- Aluminium tanks, reservoirs, vats and similar containers
- Strands, cables, braids and the like, made of aluminium that are not electrically insulated.

The mining industry plays a critical upstream role in the lifecycle of these CBAM-regulated products. Raw materials like bauxite (used in aluminium production), iron ore, and various rare earth elements are extracted through mining, often in regions with less stringent environmental standards. Including mining in CBAM discussions highlights the indirect carbon footprint embedded in the supply chain, even before materials reach industrial processing.

Due to the transition period of the CBAM mechanism from 1 October 2023 to 31 December 2025, the list of regulated products will remain unchanged. However, it is anticipated that by 2030 the CBAM Regulation will cover all sectors that are part of the EU Emissions Trading Scheme (EU ETS).

Obligations during the transitional period
During the transitional phase of CBAM, importers of goods covered by the mechanism are required only to submit quarterly reports. Importers will not be obliged to pay for the goods at this stage. However, from 1 January 2026, they will need to report annually on the amount of products imported into the EU and the corresponding CO_2 emissions associated with their production.

The costs tied to these emissions will be calculated based on the number of CBAM certificates importers are required to purchase, ensuring that their products reflect the true environmental cost of production.

The impact of CBAM
CBAM is expected to have wide-ranging effects on multiple markets, international relations, and technological development. One of the most immediate impacts will be an increase in the price of imported goods that fall under CBAM regulations. This will likely be reflected in higher prices of final goods produced using CBAM-regulated products, as well as in products containing raw materials or intermediates from high-emitting industries.

Additionally, the increased costs associated with CBAM may prompt companies to re-evaluate their supply chains. This could involve sourcing raw materials or intermediates from more environmentally friendly, less carbon-intensive suppliers to mitigate CBAM-related emissions charges.

The mining sector could face significant downstream pressure to reduce emissions, particularly from multinational buyers seeking to avoid CBAM costs. This could drive investment in low-emission extraction techniques, renewable-powered mining operations, and more transparent carbon accounting in the mining supply chain.

Companies may also opt to locate production closer to consumer markets to counteract the rising transport and emissions costs. When faced with additional transport and emissions costs, companies may choose to locate production closer to consumer markets. Shorter supply chains can reduce costs and optimise logistics processes, leading to enhanced operational efficiency.

Finally, CBAM is likely to stimulate technological innovation, particularly in industries looking to reduce emissions-related costs. This could spur investments in low-carbon technologies, renewable energy sources, and energy efficiency measures. Over time, this may lead to a stronger focus on recycling and reducing the use of primary raw materials, further decreasing global carbon footprints.

Challenges and prospects for CBAM
While CBAM is considered a tool that offers great potential, it also poses a number of challenges. Chief among these is the need to balance climate protection and economic justice on the international stage. Some less developed countries may find it difficult to adopt CBAM without additional technical and financial support. In this context, building global partnerships and cooperation mechanisms to ensure equitable access to low-carbon technologies and financial support will be key.

Mining-dependent economies, especially in the Global South, may face disproportionate challenges under CBAM if their export commodities are indirectly impacted through stricter environmental scrutiny by importers. Ensuring these countries receive support to transition to greener mining practices is essential to maintain equitable trade dynamics.

However, CBAM long term has the potential to transform global resource governance and promote a more sustainable global economy based on reduced emissions and better management of natural resources. As countries and businesses adapt to new realities, CBAM may become a key component of climate change mitigation and sustainable development around the world.

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