

SINCE 1912 *Skillings* Mining Review Magazine

Predictive Maintenance at Scale

*How the Pilbara Majors Are Slashing
Unplanned Downtime by 40%*

Private 5G in the Pit

*Why Remote Mines Are Building Their
Own Cellular Networks*

The New Tailings Race

*Why Iron Ore Majors Are Rethinking
Water, Risk and Mine Waste*

The Next Generation Mine

Where Water, Energy and AI Converge



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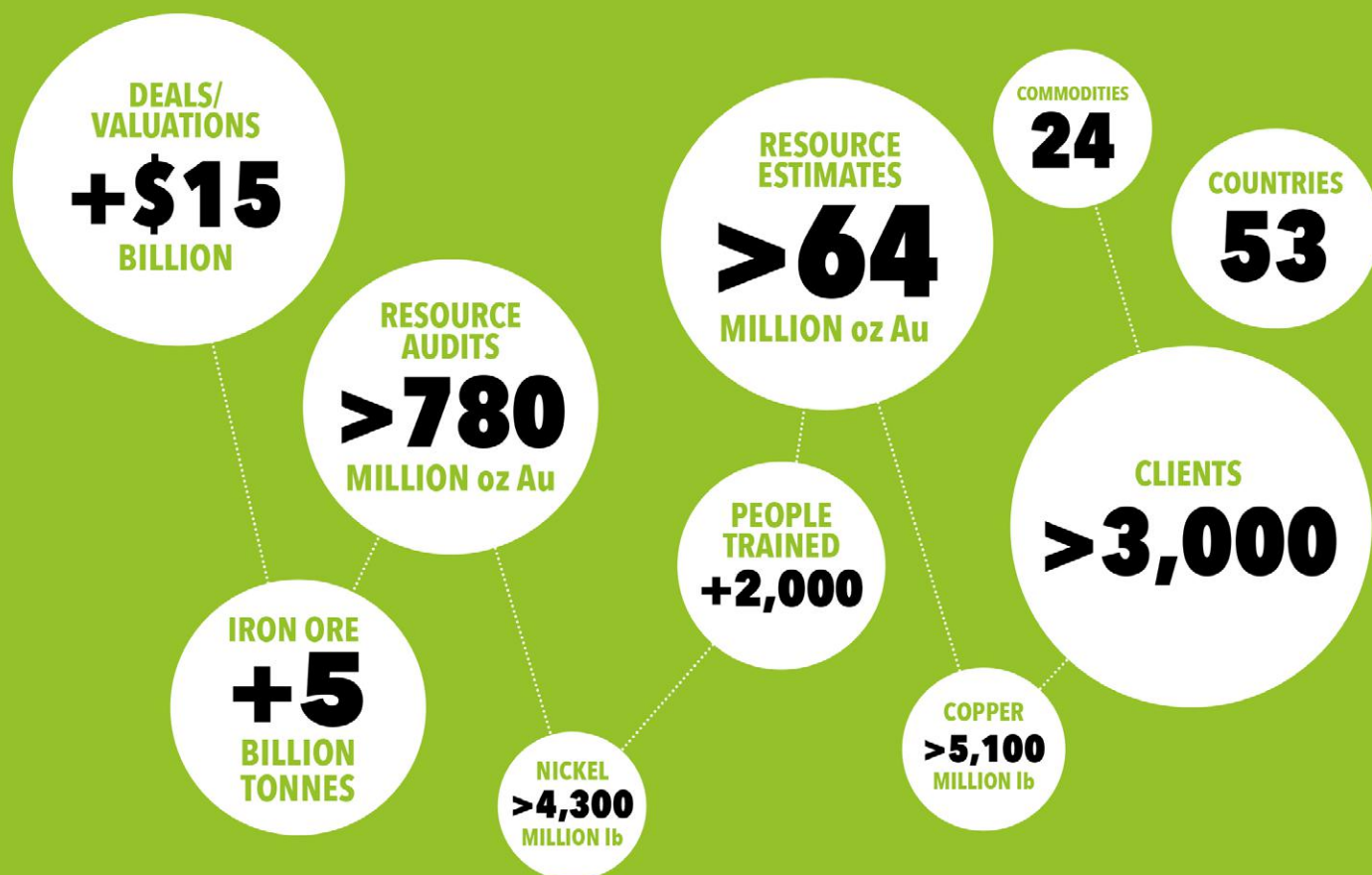
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Skilling's **MINING** Review

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Tailings management is rapidly evolving as mining companies adopt filtration, dry stacking and advanced waste management. Driven by stricter regulations, water scarcity and ESG expectations, these technologies reduce risk, improve sustainability and strengthen operational resilience.

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Building the Mine of Tomorrow

The future of mining is no longer defined solely by the resources beneath the earth—it is shaped by the technologies, infrastructure and sustainability strategies that determine how those resources are extracted. In this issue, ***Skilling*** ***Mining Review*** explores the innovations transforming modern mining.

Our cover stories examine three key pillars of this transformation. We begin with predictive maintenance, where artificial intelligence, Industrial Internet of Things (IIoT) technologies and real-time analytics are helping operators improve equipment reliability and reduce unplanned downtime. We then explore the rise of private LTE and 5G networks, showing how secure, low-latency connectivity is enabling autonomous operations, remote control centres and data-driven decision-making. Finally, we examine the evolution of tailings management, where dry-stack technologies, water recovery and stricter regulatory standards are redefining environmental stewardship and operational resilience.

Together, these stories highlight a broader industry shift. Success is no longer measured only by tonnes mined or costs reduced, but by how effectively companies integrate digital innovation with responsible resource management. As energy efficiency, water stewardship and sustainability become central to mining strategy, the organisations that embrace these changes will be best positioned to lead the next generation of resource development.

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AngloGold Ashanti and Perenti Redefine Operations at Ghana's Iduapriem Mine

AngloGold Ashanti and Perenti have agreed on a structured transition at Ghana's Iduapriem Gold Mine, extending mining services while transferring fleet ownership. The agreement reflects how contract mining is evolving beyond service delivery into a strategy for capital efficiency and operational resilience.

AngloGold Ashanti and Perenti's African Mining Services (AMS), through the AMAX joint venture, will continue surface mining at the Iduapriem Gold Mine for approximately six months from 17 July 2026 under a contract extension valued at A\$95 million.

As part of the agreement, AngloGold Ashanti will acquire most of the AMS-owned mining fleet, generating an estimated A\$30-40 million in

proceeds for Perenti. The transaction ensures uninterrupted operations while enabling Perenti to redeploy capital into future projects.

Industry Perspective

The Iduapriem agreement highlights a broader shift in contract mining. Instead of simply ending service contracts, miners and contractors are increasingly structuring transitions to optimise assets and improve capital allocation. As mining

"MODERN CONTRACT MINING IS increasingly defined by capital efficiency, operational continuity and strategic flexibility."

companies seek greater flexibility and governments encourage more sustainable project development, fleet transfers and structured handovers are likely to become an increasingly important feature of contract mining worldwide.



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NEWS BRIEFS

JAPAN'S SEABED DISCOVERY BOOSTS RARE EARTH STRATEGY

Japan has confirmed that heavy rare earths dominate a deep-sea deposit near Minamitori Island, strengthening its strategy to diversify critical mineral supplies and reduce reliance on China ahead of planned seabed mining trials. The deposit is believed to contain valuable elements used in high-performance magnets for electric vehicles, wind turbines and defence technologies. If commercially viable, the discovery could reshape long-term supply chains for critical minerals and reinforce Japan's resource security ambitions.



ENERVOXA EYES INDIA'S RARE EARTH PROCESSING EXPANSION

Canadian clean technology company Enervoxa plans to invest US\$250-350 million in a rare earth processing facility in eastern India that will recover critical minerals from aluminium red mud.

OBITUARY

LLOYD C. O'NEILL JR. (JULY 2026)

A respected member of Michigan's mining community, Lloyd C. O'Neill Jr. is remembered for his lifelong connection to the region's iron ore industry. His dedication to the mining profession and the communities it sustained leaves a lasting legacy among colleagues and generations of mining families the mills and mines of Pennsylvania.

MESABI METALLICS LAUNCHES ELECTRIC IRON MINING

Mesabi Metallics has begun iron ore mining in Minnesota using a cable-electric Komatsu PC7000-II excavator, marking one of the first deployments of its kind in the US. The milestone supports the company's next-generation DR-grade iron ore project and signals growing adoption of electrified mining equipment to improve efficiency and reduce diesel dependence.



FENIX CLEARS KEY HURDLE FOR BEEBYN-W10 MINE

Fenix Resources has secured regulatory and environmental approvals for the Beebyn-W10 iron ore mine in Western Australia's Weld Range. The project is expected to begin mining this quarter, supporting the ramp-up of the Beebyn Hub to 6 Mtpa by FY2028 and strengthening the company's long-term iron ore growth strategy.

INDIA'S SWARNAGIRI GOLD MINE GETS NEW IDENTITY

India's first private-sector gold mine has been officially renamed Swarnagiri Gold Mine, replacing its former Jonnagiri name. The move strengthens the project's national identity as commercial gold production expands and supports India's efforts to boost domestic gold mining.

EPC GROUPE WINS SENEGAL GOLD MINE CONTRACT

EPC Groupe has secured a €23 million three-year explosives and blasting contract for the Boto Gold Mine in Senegal. The agreement includes mobile explosives manufacturing units, technical blasting services and digital solutions, supporting efficient production at one of West Africa's key emerging gold projects.

INDIA AND MYANMAR DEEPEN RARE EARTH PARTNERSHIP

India and Myanmar are strengthening cooperation on rare earth mining as New Delhi seeks to diversify critical mineral supplies beyond China. The partnership reflects growing regional efforts to secure resilient supply chains for clean energy and advanced manufacturing industries.



SWEDEN ELEVATES CRITICAL MINERALS TO SECURITY PRIORITY

Sweden has designated critical mineral and rare earth mining as a national security priority, accelerating mine permitting and investment to strengthen European supply chains and reduce dependence on Chinese imports.

BHP's Record Iron Ore Output Strengthens Its Long-Term Copper Strategy

BHP ended FY2026 with record iron ore production while maintaining approximately 2 million tonnes of annual copper output for the second consecutive year. The results reinforce the miner's strategy of using its high-margin iron ore business to finance long-term growth in copper, a commodity central to electrification and digital infrastructure.

BHP's Western Australia Iron Ore (WAIO) operations produced a record 291.2 million tonnes (100% basis) during FY2026, supported by strong operational performance and higher realised iron ore prices. The company expects FY2027 production to remain robust at 286-298 million tonnes, underpinned by the recently approved Ministers North project. While China's steel sector remains under pressure, BHP's Pilbara operations continue to demonstrate

the resilience of large, low-cost iron ore assets capable of generating



consistent cash flow through commodity cycles.

Copper Shapes the Next Growth Phase

BHP produced around 2 million tonnes of copper for the second consecutive year but has guided for lower FY2027 output as declining ore grades at Escondida and operational challenges at Carrapateena weigh on production. Despite the short-term decline, the company continues to advance major copper growth projects in Chile, South Australia, Arizona and Argentina, reflecting confidence in long-term demand driven by electrification, renewable energy and AI-enabled infrastructure.

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SOLSTICE EXTENDS NANADIE COPPER-GOLD DISCOVERY

Solstice Minerals has reported a 629.1 m copper-gold intercept at its Nanadie project in Western Australia, confirming mineralisation well beyond the current resource. The results strengthen the project's potential for a significant resource expansion and reinforce Nanadie as a promising emerging copper-gold development in a key Australian mining jurisdiction

CALIFORNIA'S 'LITHIUM VALLEY' STRENGTHENS U.S. SUPPLY OUTLOOK

California's Salton Sea could contain 3.4 million tonnes of lithium, enough to produce an estimated 375 million EV batteries. The resource highlights the growing strategic potential of geothermal lithium extraction to strengthen U.S. critical mineral supply chains. If commercially scaled, the project could reduce import dependence and support the expanding electric vehicle and energy storage industries.

ESS AND JUNIPER ADVANCE SODIUM-ION STORAGE

ESS and Juniper Energy have signed a framework agreement to deploy more than 500 MWh of sodium-ion energy storage systems, beginning with an 80 MWh project in California. The partnership highlights growing momentum for non-lithium battery technologies in grid-scale energy storage.



U.S. COAL ASSESSMENT HIGHLIGHTS VAST FEDERAL RESERVES

A new U.S. Geological Survey assessment estimates that coal beneath federally managed lands could meet the nation's current consumption needs for at least 600 years. The findings reinforce coal's continued strategic role in U.S. energy security and future resource planning, even as the energy transition accelerates.

GERMANY TIGHTENS OVERSIGHT OF STRATEGIC MAGNET DEAL

Germany is expected to impose conditions on Energy Fuels' US\$1.9 billion acquisition of magnet manufacturer VAC, reflecting growing scrutiny of critical minerals and advanced manufacturing assets. The move underscores how rare earth magnet production is increasingly viewed as a strategic national security priority across Western economies

COSTA RICA REOPENS DEBATE ON CRUCITAS GOLD MINE

Costa Rica is reconsidering its long-standing ban on open-pit mining through proposals to revive the Crucitas gold project, amid rising illegal mining and growing demand for critical mineral investment. The debate underscores the complex balance between environmental protection, resource security and economic development.

NEW U.S. TARIFFS RAISE TRADE RISKS FOR MINING SUPPLY CHAINS

The United States has imposed new 10% and 12.5% tariffs on imports from 60 trading partners, citing concerns over forced labour in global supply chains. While critical minerals remain exempt, the measures could increase trade uncertainty for mining equipment, metals processing and international mineral supply chains

CHILE PROBES WATER DISCHARGE AT LOS PELAMBRES MINE

Chile's environmental regulator has launched an investigation into a controlled water discharge at Antofagasta's Los Pelambres copper mine following severe rainfall and landslides. The incident highlights increasing regulatory scrutiny of water management and climate resilience at major mining operations.

USA RARE EARTH EXPANDS EUROPEAN PROCESSING FOOTPRINT

Snippet: USA Rare Earth has agreed to acquire a 13.6% stake in French rare earth processor Carester, strengthening transatlantic collaboration in rare earth separation and processing. The partnership supports efforts by the U.S. and Europe to diversify critical mineral supply chains and reduce dependence on Chinese processing capacity.



INDIA'S IRON ORE OUTPUT JUMPS 17% IN FIRST HALF

India produced 184 million tonnes of iron ore in the first half of 2026, a 17% year-on-year increase, driven by strong domestic steel demand and higher output from leading miners. The growth reinforces India's position as a key global iron ore supplier while supporting expanding steel production and infrastructure development.



NEDBANK BACKS \$500 MILLION GOLD MINE FINANCING

South Africa's Nedbank has underwritten a US\$500 million credit facility for AngloGold Ashanti's Geita gold mine in Tanzania—one of the largest mining finance transactions arranged by the bank. The deal secures near-term funding for the operation and highlights the growing role of African financial institutions in financing major mining projects across the continent

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Peru's Permitting Reform Signals a New Investment Race in Latin American Mining



Peru's proposed reforms to accelerate environmental permitting for mining projects reflect a broader global race to attract critical mineral investment. While faster approvals could unlock billions of dollars in planned projects, maintaining environmental integrity and community trust will remain essential to long-term project success. Permitting Becomes a Competitive Advantage

For mining companies, the time required to secure environmental approvals is increasingly becoming as important as ore grade, infrastructure and project economics. In July, the Peruvian government announced plans to streamline environmental permitting and accelerate approvals for mining investments, positioning regulatory efficiency as a key driver of future economic growth.

The proposed reforms are intended to unlock Peru's approximately US\$64 billion mining investment pipeline, one of the largest in Latin America. As the world's third-largest copper producer, Peru is seeking to reinforce its position at a time when demand for copper and other critical minerals continues to grow, driven by electrification, renewable energy expansion and digital infrastructure development.

Balancing Speed with Regulatory Confidence

Lengthy permitting processes remain one of the mining industry's most significant development challenges, often delaying project construction and increasing capital costs. Peru's proposed reforms seek to shorten administrative timelines while improving investment certainty for project developers.

However, regulatory efficiency alone cannot resolve one of the sector's most persistent risks—social conflict. Mining projects in Peru have historically faced opposition from local communities over concerns related to water resources, environmental impacts and land use.

THE GLOBAL competition for mining investment increasingly begins with permitting - not production.

Industry observers note that faster approvals must be accompanied by transparent environmental assessments and meaningful stakeholder

engagement to preserve public confidence and reduce project risk. For investors and operators, permitting reform delivers value only when speed is matched by regulatory credibility and long-term social acceptance.

Part of a Global Policy Shift

Peru's initiative reflects a broader international trend as governments compete to attract investment in critical minerals. Across major mining jurisdictions, policymakers are reviewing permitting systems to reduce approval timelines while maintaining environmental safeguards.

As competition for copper and other energy-transition metals intensifies, permitting has evolved from an administrative requirement into a strategic policy instrument capable of influencing where global mining capital is invested. Jurisdictions that can combine efficient regulation with predictable governance are increasingly viewed as more attractive destinations for long-term mining projects.

Industry Outlook

Peru's proposed permitting reforms highlight an important shift in global mining policy: investment competitiveness is now determined not only by geological potential but also by the efficiency, transparency and credibility of regulatory systems. If implemented effectively, the reforms could strengthen Peru's position as one of the world's leading mining jurisdictions while supporting the timely development of critical mineral projects. Their long-term success, however, will depend on achieving a careful balance between faster project approvals, robust environmental oversight and enduring community trust.

July's Resource Updates Reinforce the Search for Long-Life Assets

Resource updates released in July underline a clear industry trend: exploration investment remains concentrated on expanding long-life copper and gold assets. Rather than pursuing greenfield discoveries alone, miners are increasingly focused on growing existing deposits that can support future production and improve project economics.

July's exploration results reflected a disciplined approach to resource growth. In Côte d'Ivoire, Resolute Mining expanded the Mineral Resource Estimate at its 100%-owned ABC Project to more than 3.0 million ounces of contained gold following an extensive drilling programme. Most of the resource lies within 250 metres of surface, supporting further techni-

cal studies and future development planning.

In the UK, Strategic Minerals secured approval to expand drilling at its Redmoor tungsten-tin-copper project in Cornwall, enabling what the company describes as the country's largest continuous surface diamond drilling campaign this

century. The programme is expected to improve confidence in the project's mineral inventory and future development options.

Meanwhile, exploration activity also accelerated in Western Australia's Pilbara region, where drilling programmes advanced at polymetallic projects targeting platinum group metals, copper, nickel and zinc.

Industry Perspective

The latest exploration updates suggest that miners are prioritising resource expansion around established discoveries rather than relying solely on new greenfield finds. Expanding existing resources can shorten development timelines, improve project economics and reduce geological risk.

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India's Scientific Mine Closure Initiative

Sets a New Benchmark for Post-Mining Land Use



India has announced the scientific closure of 42 coal mines under its new AAROH initiative, marking a significant shift in how mine closure is integrated into environmental restoration and community development.

WORDS BY SALINI KRISHNAN // DATA BY SKILLINGS RESEARCH

For decades, mine closure in many parts of the world focused primarily on securing abandoned workings and meeting regulatory obligations. India's latest initiative represents a broader approach. Released by the Ministry of Coal, the AAROH - Annual Report on Mine Closure documents the scientific closure of 42 coal mines, the first such nationwide effort since Independence carried out under approved mine closure plans. The report highlights ecological restoration, sustainable post-mining land use and community-focused rehabilitation designed to return former mining areas to productive use.

The initiative is supported by a suite of mine closure frameworks, including RECLAIM for community engagement, L.I.V.E.S. for sustainable land repurposing and SUVIKALP, a decision-support tool that evaluates post-mining land-use options. Together, these frameworks move mine closure beyond compliance towards

long-term environmental and socio-economic value creation.

Mine Closure Becomes Part of the Mining Lifecycle

As environmental expectations evolve, mine closure is increasingly being planned alongside mine development rather than after production ends. Progressive reclamation, biodiversity restoration and future land-use planning are becoming integral to project design, helping operators reduce long-term liabilities while improving environmental performance.

India's programme also includes an implementation agreement with Germany's GIZ to strengthen technical cooperation on sustainable mine closure, reflecting growing international collaboration in post-mining rehabilitation. Alongside the AAROH launch, the Ministry highlighted initiatives such as Coal NEER water projects and skill-development

programmes under the Revised Jharia Master Plan, demonstrating a broader focus on community outcomes.

A Model for the Global Mining Industry

Mine closure has become one of the defining ESG challenges for mining companies worldwide. Investors, regulators and communities increasingly expect former mine sites to deliver environmental recovery and new economic opportunities long after extraction has ceased.

India's experience demonstrates that successful closure requires more than engineering solutions. It depends on integrating ecological restoration, stakeholder participation and long-term land-use planning into the mining lifecycle. As more mature coal operations approach the end of production, scientifically planned closure programmes are likely to become a benchmark for responsible resource development.



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As a result of the Group's strategic investments in research & development, Halcor is recognized as one of the leading copper producers globally, setting new standards in copper processing. The company maintains a consistent focus on quality and

environmental protection and a strong commitment to the principles of sustainable development. In this context, all production facilities in the Group's plants leverage advanced technologies to bring in the market innovative products that are energy efficient and environmentally friendly.

For more information, please visit our website www.halcor.com

Mine Electrification

Moves Beyond Pilot Projects

Mine electrification is entering a new phase as mining companies move from small-scale trials to fleet-wide deployment. Driven by decarbonisation targets, lower operating costs and advances in battery technology, electrification is becoming a core operational strategy rather than an experimental initiative.

WORDS BY CHARLES PITTS // DATA BY SKILLINGS RESEARCH

For much of the past decade, battery-electric mining equipment was largely confined to pilot programmes and underground trials. Today, the industry is witnessing a fundamental shift. Major miners are integrating battery-electric haul trucks, loaders and support equipment into long-term mine plans, while equipment manufacturers are expanding commercial production and charging infrastructure.

The transition is being driven by more than climate commitments. Rising fuel costs, stricter emissions regulations and the need to improve energy efficiency are making electrification an increasingly attractive business decision. For underground mines, battery-electric equipment also reduces ventilation requirements, lowering one of the largest operating costs associated with deep mining.

Investment Accelerates Across the Industry

Mining companies including BHP, Rio Tinto, Fortescue, Vale and Anglo American have continued to expand electrification programmes across surface and underground operations.

Equipment manufacturers such as Caterpillar, Komatsu, Sandvik and Epiroc are developing larger battery-electric fleets while investing in fast-charging systems, battery management technologies and autonomous operation.

The focus has also shifted from individual machines to integrated energy ecosystems. Mine planners are increasingly evaluating renewable power generation, battery storage, charging infrastructure and digital energy management as interconnected components of future mining operations. This systems-based approach is helping operators assess how electrification can improve productivity while reducing both operating costs and greenhouse gas emissions.

MINE electrification is no longer a technology trial—it is becoming a core business strategy.

Challenges Remain

Despite strong momentum, widespread electrification continues to face practical challenges. Battery performance in demanding operating conditions, charging infrastructure, electricity availability and the significant capital investment required for fleet replacement remain important considerations.

For large open-pit operations, diesel-powered ultra-class haul trucks still dominate production, although several manufacturers are progress-



WHY IT MATTERS

Electrification is reshaping mine planning beyond emissions reduction. Companies that successfully integrate battery-electric fleets, renewable energy and intelligent energy management are likely to improve operational efficiency while strengthening their long-term environmental performance and competitiveness.

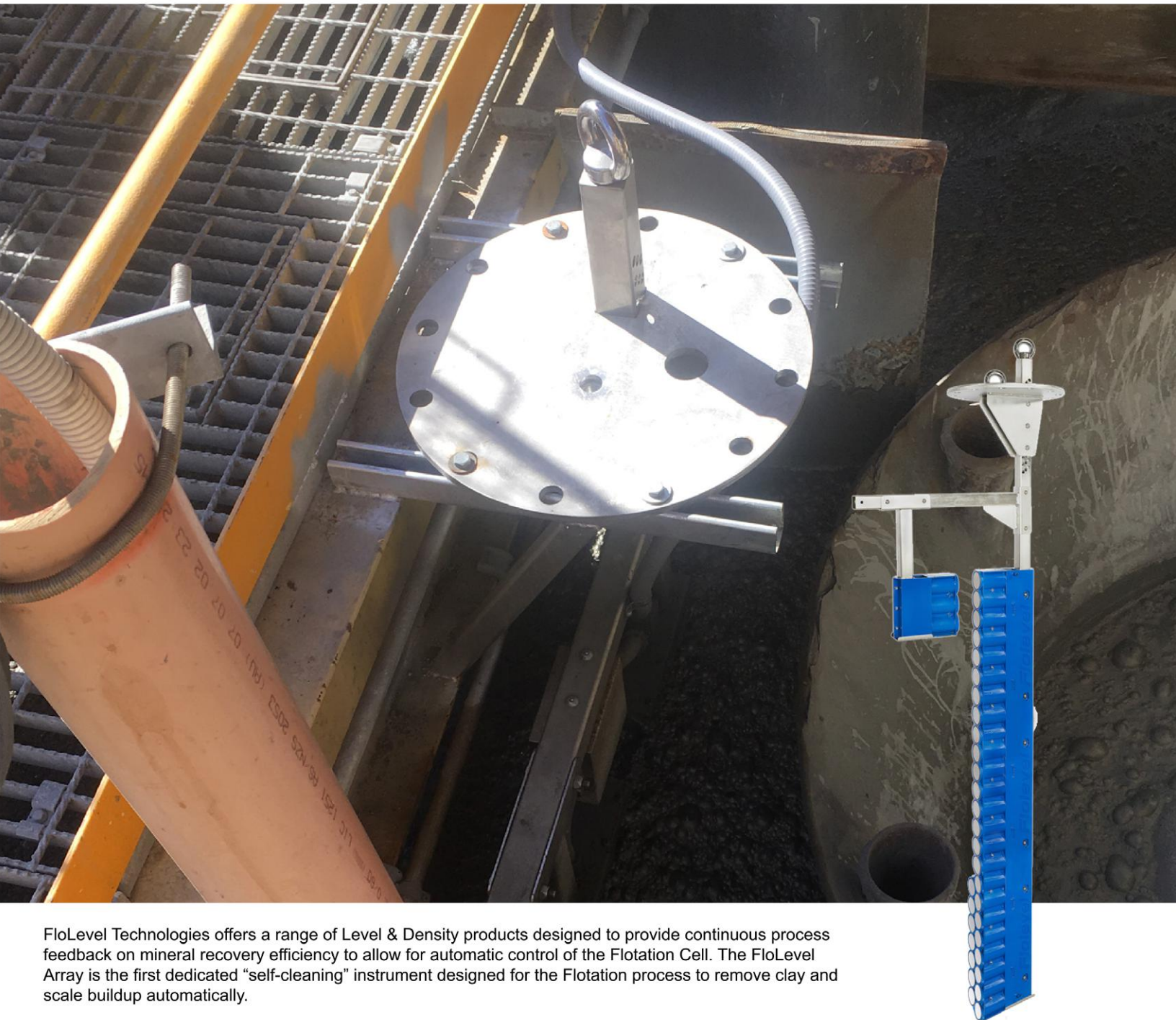
ing battery-electric and hybrid prototypes. Industry observers expect fleet replacement to occur gradually as technology matures and supporting infrastructure expands. Rather than replacing conventional equipment overnight, most miners are adopting phased electrification strategies aligned with normal asset replacement cycles.

Industry Outlook

Mine electrification has evolved from an environmental initiative into a strategic business priority. Companies are increasingly viewing electrified fleets as a pathway to lower operating costs, improved energy efficiency and enhanced operational resilience.

As battery technologies mature and renewable power becomes more accessible, electrification is expected to become a defining characteristic of the next generation of mines, influencing equipment procurement, mine design and long-term investment decisions.

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Predictive Maintenance at Scale

How the Pilbara Majors Are Slashing Unplanned Downtime by 40%

WORDS BY MO SHINE // DATA BY SKILLINGS RESEARCH

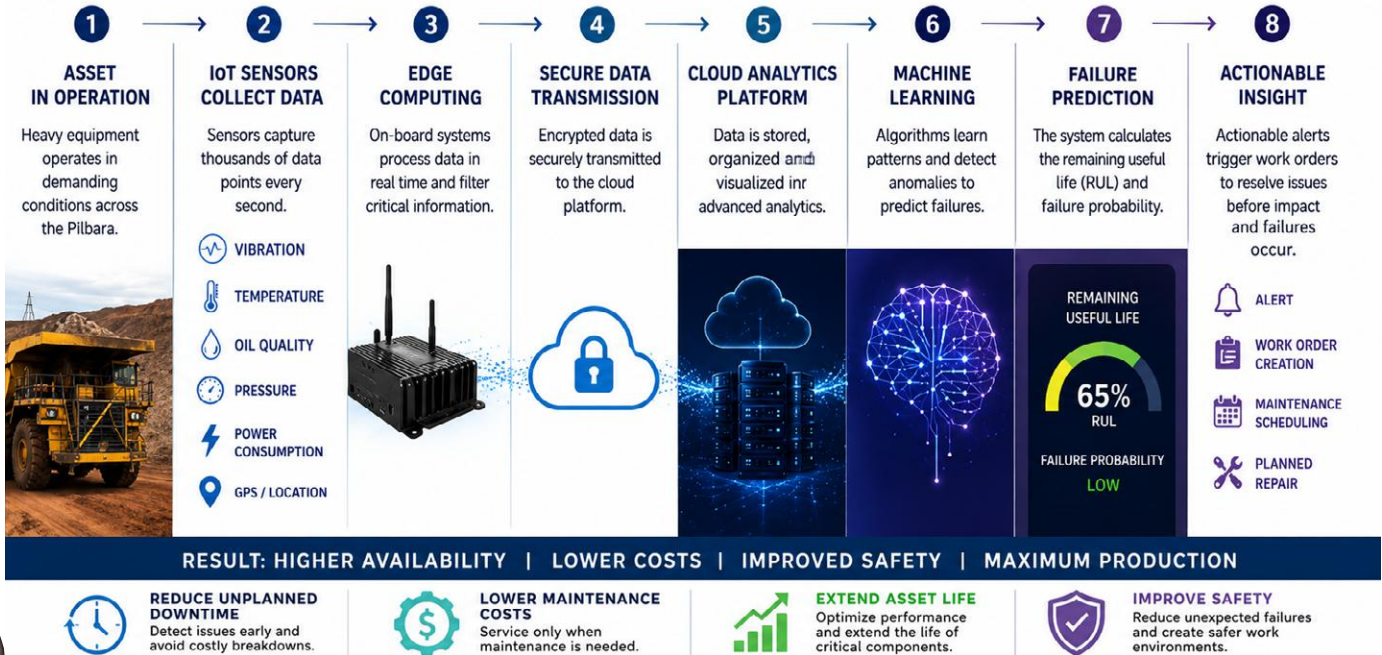
PREDICTIVE MAINTENANCE HAS BECOME ONE OF THE MINING INDUSTRY'S MOST SIGNIFICANT COMPETITIVE ADVANTAGES. ACROSS WESTERN AUSTRALIA'S PILBARA, LEADING IRON ORE PRODUCERS ARE USING INDUSTRIAL INTERNET OF THINGS (IIOT) TECHNOLOGIES, REAL-TIME TELEMETRY AND MACHINE LEARNING TO PREDICT EQUIPMENT FAILURES BEFORE THEY OCCUR—IMPROVING FLEET AVAILABILITY, REDUCING MAINTENANCE COSTS AND STRENGTHENING OPERATIONAL RESILIENCE.



FROM SENSOR TO SOLUTION

HOW PREDICTIVE MAINTENANCE WORKS

Predictive maintenance connects equipment, data and intelligence to detect issues early, helping teams act before failures occur.



Across the Pilbara, the world's largest iron ore operations are changing one of mining's oldest practices. Maintenance is no longer driven by fixed schedules or reactive repairs—it is increasingly guided by real-time data and predictive intelligence. As mining companies pursue higher productivity, lower operating costs and greater operational resilience, equipment reliability has become a strategic business priority rather than simply an engineering function.

This transformation is being enabled by the convergence of Industrial Internet of Things (IIoT) technologies, advanced analytics and artificial intelligence. By continuously monitoring the condition of critical assets, predictive maintenance allows operators to anticipate equipment failures before they occur, reducing costly downtime while improving maintenance planning and asset utilisation.

For leading Pilbara producers such as BHP, Rio Tinto and Fortescue, predictive maintenance is no longer an

emerging technology—it is becoming an essential capability for maintaining competitiveness in one of the world's most demanding mining environments.

From Scheduled Maintenance to Predictive Intelligence

For decades, maintenance strategies were based on operating hours or fixed service intervals. While preventive maintenance reduced unexpected failures compared with reactive repairs, it often resulted in unnecessary servicing or failed to identify developing faults between scheduled inspections.

Today, that approach is rapidly giving way to predictive maintenance. Instead of relying on assumptions about equipment condition, mining companies are using IIoT sensors, real-time telemetry and machine learning algorithms to monitor asset health continuously. By detecting early signs of wear or mechanical stress, maintenance teams can intervene before minor issues develop into major failures.

The shift is particularly significant in the Pilbara, where vast fleets of haul trucks, excavators, crushers and rail systems operate around the clock. In these capital-intensive operations, the failure of a single



HOW AI IS TRANSFORMING MINE MAINTENANCE

Predictive maintenance has transformed how mining companies monitor equipment health, but the next phase of digitalisation goes beyond detecting faults. Artificial intelligence is increasingly helping maintenance teams predict failures, prioritise repairs and optimise maintenance schedules before equipment performance is affected.

By analysing data from haul trucks, shovels, crushers and processing plants, AI can identify subtle patterns that conventional monitoring systems may overlook. Combined with historical maintenance records, these insights enable engineers to estimate a component's Remaining Useful Life (RUL) and plan interventions with greater precision.

The technology is also becoming integrated with enterprise resource planning (ERP) systems, allowing maintenance activities to align with spare parts availability, workforce scheduling and production targets. Some mining companies are also exploring digital twin technology—virtual models of physical assets that simulate equipment performance and evaluate maintenance scenarios before work begins.

As automation expands across the mining sector, AI-powered maintenance is expected to play an increasingly strategic role. By turning operational data into predictive intelligence, mining companies can improve asset reliability, reduce unplanned downtime and strengthen the resilience of increasingly complex mining operations.

critical asset can disrupt production, delay shipments and increase operating costs. Predictive maintenance therefore enables companies to improve reliability while supporting uninterrupted production.

Data Is Reshaping Maintenance

The effectiveness of predictive maintenance lies in its ability to transform operational data into actionable insights. Sensors embedded throughout mining equipment continuously monitor vibration, temperature, oil quality, hydraulic pressure and other performance indicators. This information is processed through edge computing devices and cloud-based analytics platforms, where machine learning models identify patterns that may indicate developing faults.

Rather than reacting to failures, maintenance teams receive early warnings and can schedule repairs based on the actual condition of equipment. This improves maintenance planning, reduces unnecessary interventions and extends the service life of high-value assets.

Mining companies implementing predictive maintenance programmes are reporting reductions in unplanned downtime of between 30% and 50%, while maintenance costs have fallen by as much as 40%. Improved equipment availability also enhances production reliability, helping operators maximise the performance of increasingly automated mining systems.

Maintenance Becomes a Strategic Asset

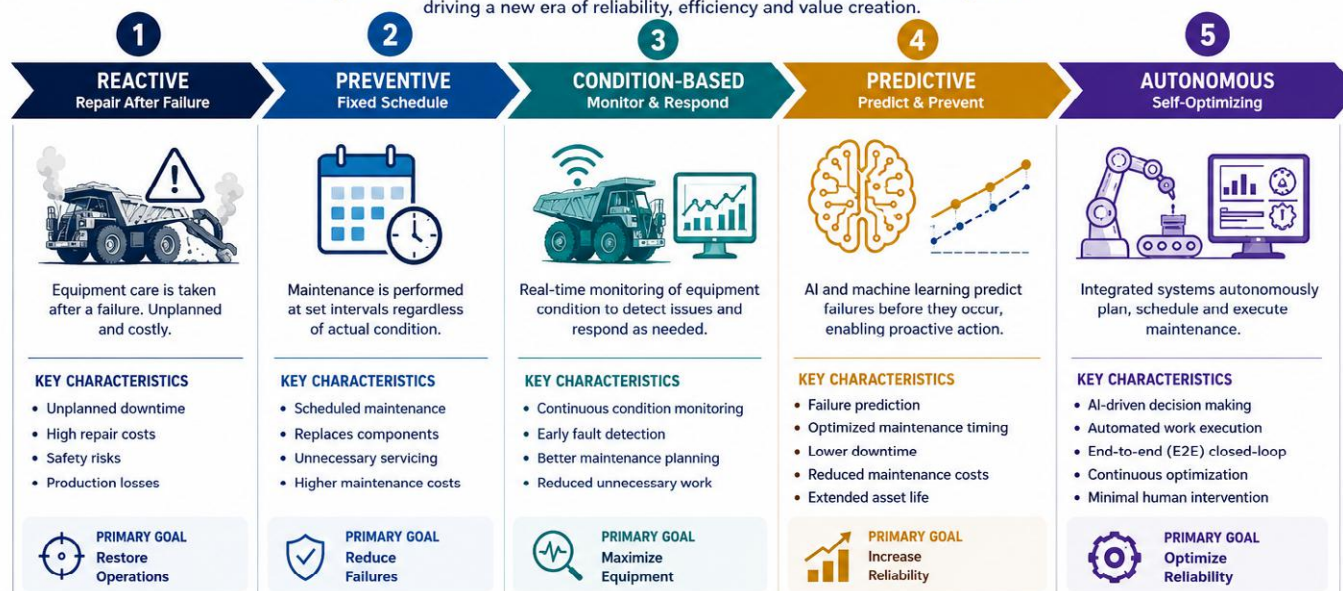
The benefits of predictive maintenance are already evident across the Pilbara's leading iron ore producers. BHP has integrated predictive analytics with cloud-based monitoring and mobile maintenance tools to improve asset reliability, reporting significant reductions in unplanned downtime and annual maintenance savings. Rio Tinto combines predictive monitoring with autonomous haulage systems and remote operations centres to

Mining Company	Digital Maintenance Strategy	Key Technologies	Reported Business Impact
BHP	Cloud-based predictive maintenance integrated with mobile maintenance tools	IIoT sensors, AI analytics, cloud platforms	35% reduction in unplanned downtime and approximately US\$50 million in annual maintenance savings
Rio Tinto	Autonomous operations supported by predictive asset monitoring	Autonomous haulage, predictive rail monitoring, remote operations centre	Improved fleet reliability, increased asset availability and more efficient maintenance planning
Fortescue	Digital fleet management integrated with automation technologies	Fleet monitoring systems, predictive analytics, autonomous equipment	Enhanced equipment reliability, reduced operational interruptions and improved maintenance efficiency

THE EVOLUTION OF MINE MAINTENANCE

FROM REACTIVE REPAIRS TO AUTONOMOUS RELIABILITY

Mining maintenance has evolved through five stages. Today, predictive technologies are driving a new era of reliability, efficiency and value creation.



strengthen fleet performance, while Fortescue continues to expand digital fleet management and automation technologies across its operations.

These initiatives reflect a broader industry shift. Maintenance is no longer viewed simply as an operational cost but as a strategic capability that directly influences productivity, safety and financial performance. By integrating predictive intelligence into day-to-day operations, mining companies are improving asset utilisation while building more resilient and efficient production systems.

As mining enters an increasingly autonomous and data-driven era, predictive maintenance is becoming far more than a technology upgrade. It represents a fundamental shift in how mining companies manage risk, optimise capital-intensive assets and sustain long-term operational performance.

For the Pilbara's major producers, the competitive advantage no longer lies solely beneath the ground—it also depends on the intelligence applied above it.

The mines that lead the next generation of productivity will not simply extract ore more efficiently; they will predict, prevent and optimise every critical asset across the mining value chain. In that future, equipment reliability will be measured not by how quickly failures are repaired, but by how effectively they are prevented.



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BHP's Escondida warning signals a structural shift in the world's most strategic metal

For years, the mining industry has focused on whether copper supply could keep pace with accelerating demand from electrification, renewable energy and digital infrastructure. July may have provided an early answer. When BHP lowered its FY2027 copper production guidance because of declining ore grades at Escondida—the world's largest copper mine—it did more than revise production forecasts. It highlighted a structural challenge confronting the global copper industry: maintaining supply from ageing Tier-1 assets is becoming increasingly difficult.

Copper remains the backbone of electrification, renewable energy, artificial intelligence infrastructure and expanding power networks. While demand continues to strengthen, recent developments suggest that sustaining supply is becoming increasingly difficult. BHP expects FY2027 copper production to decline to 1.65-1.80 million tonnes, down from 1.95 million tonnes in FY2026, primarily because of declining ore grades at Escondida.

The next copper shortage may be driven less by rising demand than by the growing challenge of sustaining production from ageing Tier-1 mines.

Lower ore grades mean more rock must be mined and processed to produce the same amount of copper, increasing energy consumption, water use and operating costs. The challenge extends beyond a single mine.

Chile's state-owned producer Codelco also expects limited production growth as it modernises ageing operations, reinforcing concerns that mature copper assets are becoming harder and more expensive to sustain.



The industry's response is already changing. Mining companies are directing more capital towards brownfield expansions, concentrator upgrades and ore recovery technologies that extend the life of existing operations. At the same time, permitting delays and rising development

costs are making new greenfield projects slower and more complex to deliver. For mining executives and investors, BHP's revised guidance is more than a company update—it is an early indicator of a structural shift in global copper supply.

As the energy transition accelerates, the industry's competitive advantage will increasingly depend on maximising production from existing world-class assets while bringing the next generation of copper projects online fast enough to avoid future supply shortages.

Key Intelligence	Strategic Implication
BHP reduced FY2027 copper production guidance	Declining ore grades are emerging as a structural supply constraint.
Codelco expects limited production growth	Mature copper assets require increasing capital to sustain output.
Brownfield investment is accelerating	Extending existing mines has become more attractive than relying solely on new discoveries
Longer permitting timelines	Future copper supply will depend on faster project execution and regulatory certainty.

Cadillac Targets C\$363M IPO as Canada's Mining Listings Rebound

Gold explorer Cadillac Mines is seeking up to C\$363 million (US\$258 million) through a Toronto Stock Exchange (TSX) initial public offering, adding momentum to Canada's recovering mining equity market as investor appetite for precious metals strengthens.

Cadillac Mines, chaired by mining veteran Pierre Lassonde and backed by major gold producer Agnico Eagle Mines, has filed a preliminary prospectus for an IPO that combines a treasury share offering with the sale of existing shares by current investors.

The company plans to list on the TSX, subject to regulatory approval. The proposed offering reflects renewed confidence in Canada's capital markets after a subdued

period for new listings. Strong gold prices and growing investor interest in exploration companies have revived fundraising activity, with mining firms leading the rebound in equity issuances.

According to TMX Group data, Canadian IPO activity has accelerated sharply in 2026, supported by favourable commodity markets and improving investor sentiment. Cadillac's flagship assets include the

historic Kerr-Addison gold project in Ontario, one of Canada's largest past-producing gold mines, alongside exploration properties along the prolific Cadillac-Larder Lake Break, a renowned gold-bearing geological structure extending across Ontario and Quebec. The company also holds the Geminid nickel project, broadening its exposure to critical minerals.

The IPO underscores a broader trend in which exploration companies are seeking to capitalise on stronger precious metals markets to fund resource expansion and project development.

For investors, the success of Cadillac's listing will serve as another indicator of the mining sector's ability to attract fresh capital amid favourable commodity fundamentals.



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Why the Future of Mining Will Be Decided by Geopolitics, Not Geology

For decades, mining companies competed to discover the world's richest deposits. Today, governments are reshaping supply chains, critical minerals have become strategic assets, and political decisions increasingly determine where investment flows. In the new era of mining, geopolitical certainty is becoming as valuable as geological potential.

WORDS BY SALINI KRISHNAN // DATA BY SKILLINGS RESEARCH



Mining was once defined by three factors: geology, economics and infrastructure. Today, a fourth factor has emerged—geopolitics. Critical minerals have become essential to energy security, advanced manufacturing and defence, prompting governments to intervene through industrial policies, export controls and strategic partnerships. Success is no longer determined solely by the quality of an orebody, but by a project's place within an increasingly strategic global supply chain.

Mining Enters a Strategic Era

The International Energy Agency's Global Critical Minerals Outlook 2026 highlights a changing reality: global mineral resources remain abundant, yet supply chains face growing risks from geopolitical tensions and market concentration. Around the world, governments are responding by supporting domestic mining, expanding refining capacity and securing long-term supply agreements. Sweden's decision to classify critical minerals as a national security

priority reflects a broader shift in how countries view resource development. Mining is no longer simply a commercial activity—it has become a strategic industry.

The New Competitive Advantage

For mining companies, competitive advantage extends far beyond ore grade and production costs. Today's projects are increasingly evaluated on supply-chain resilience, downstream processing capability, regulatory stability and access to long-term

5 FORCES RESHAPING GLOBAL MINING



- Critical minerals are now strategic assets.
- Governments are becoming active industry partners.
- Supply-chain resilience is a competitive advantage.
- Processing and refining are driving new value creation.
- Geopolitical risk increasingly shapes investment decisions.

markets. Investors are also favouring jurisdictions that offer predictable policy environments and secure investment frameworks. In this environment, political certainty has become a strategic asset.

From Mine to Value Chain

Resource-rich nations are increasingly seeking to process minerals domestically rather than export raw materials. This shift is creating new opportunities in refining, battery manufacturing and advanced processing while strengthening national industrial capabilities. For mining companies, success is no longer measured solely by production volumes but by their ability to integrate into resilient value chains from mine to market.

Executive Outlook

The future of mining will still depend on geology—but geology alone will not determine success. Companies that combine high-quality resources with resilient supply chains, strong government partnerships and disciplined investment strategies will be best positioned for the next phase of industry growth.

Why It Matters

Mining is evolving from a commodity business into a strategic pillar of industrial and economic policy. The industry's future leaders will be those that can navigate not only geology and engineering, but also geopolitics, resilient supply chains and international partnerships.



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Why China's Steel Slowdown Is Reshaping the Global Iron Ore Market

China's steel industry is slowing, yet iron ore imports remain resilient. As supply expands from Australia, Brazil and Guinea, the market is shifting from one driven primarily by Chinese demand to one increasingly shaped by supply growth, cost competitiveness and ore quality.

For two decades, the iron ore market was driven by a single question: How much steel will China produce? Today, the focus is shifting to whether expanding global supply can outpace even China's enormous demand.

China still accounts for around 75% of global seaborne iron ore imports, but weaker construction activity and a maturing steel sector are changing market dynamics. Meanwhile, Australia, Brazil and Guinea are adding significant new supply, creating a more balanced market.

Demand Meets Expanding Supply

China produced 83.67 million tonnes of crude steel in June, while first-half output declined by around 3% year-on-year. Despite softer steel production, iron ore imports remained strong, reaching 112.69 million tonnes in June and 628.87 million tonnes in the first half of

2026—up 6.3% from a year earlier. Strong imports reflect lower domestic ore production and continued demand for higher-grade imported ore.

Metric	2026 Trend
China's June Steel Output	83.67 Mt
H1 Steel Production	-3% YoY
June Iron Ore Imports	112.69 Mt
H1 Iron Ore Imports	628.87 Mt (+6.3%)
Benchmark 62% Fe Price	~US\$99/t
Key Supply Growth	Australia, Brazil & Simandou (Guinea)

The next chapter of the iron ore market will be shaped as much by expanding supply as by China's demand.

On the supply side, Australia and Brazil continue to increase exports, while Guinea's Simandou project is beginning its long-awaited production ramp-up.

Together, these developments are increasing competition and limiting price recovery, with benchmark 62% Fe iron ore trading near US\$99 per tonne.

Executive Outlook

Iron ore is entering a new phase where supply growth may influence prices as much as demand. For mining companies, long-term competitiveness will depend less on production volume and more on low operating costs, premium ore quality and efficient logistics. As new capacity enters the market, operational resilience is becoming the industry's defining advantage.

Battery Metals Reset for a New Investment Cycle

After two years of falling prices, project delays and shrinking investment, the battery metals sector is showing signs of recovery. But this is not the return of the previous commodity boom.



The battery metals industry has emerged from one of its most challenging periods in recent history. Between 2023 and 2025, lithium, nickel and cobalt prices fell sharply as rapid supply growth outpaced electric vehicle (EV) demand, forcing miners to postpone projects, reduce production and rethink expansion strategies.

Today, market conditions are beginning to improve—but for different reasons than the previous boom. The recovery is being driven less by surging demand and more by tighter supply, strategic government interventions and a renewed focus on disciplined investment.

A Market Finds Its Balance

Several supply-side developments have helped stabilise battery metal markets. The Democratic Republic of Congo tightened cobalt exports, Indonesia imposed stricter controls on nickel production, and China suspended operations at a major lithium mine, reducing excess supply that had weighed on prices.

At the same time, demand continues to evolve. While EV sales have moderated in some major markets, battery energy storage is emerging as a powerful new source of consumption. Grid-scale storage projects, driven by renewable energy integration and rising electricity demand, are creating additional opportunities for lithium producers beyond the automotive sector.

Investment Becomes More Selective

The industry's next growth phase is unlikely to mirror the rapid expansion of the early 2020s. The IEA's Global Critical Minerals Outlook 2026 reports that investment in battery metals declined by more than 20% in 2025, with lithium companies cutting capital expenditure by around 40% as investors shifted their focus toward financially

resilient projects. Rather than pursuing production growth at any cost, mining companies are prioritising operational efficiency, lower-cost assets and stronger balance sheets. Investors, meanwhile, are placing greater emphasis on projects supported by stable jurisdictions, downstream processing capacity and secure long-term supply agreements.

Executive Outlook

The battery metals market is entering a more disciplined phase. Driven by electrification, renewable energy and battery storage, long-term demand remains strong, with the IEA projecting lithium demand to more than triple by 2040. The next investment cycle will favour miners with high-quality assets, disciplined capital allocation and resilient supply chains.

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How Water Risk Is Redefining Mine Development Worldwide

WORDS BY CHARLES PITTS // DATA BY SKILLINGS RESEARCH

FOR GENERATIONS, MINE DEVELOPMENT WAS DRIVEN BY GEOLOGY, ECONOMICS AND INFRASTRUCTURE. TODAY, A FOURTH FACTOR IS RESHAPING INVESTMENT DECISIONS—WATER. NEW GLOBAL DATA SHOWS THAT NEARLY TWO-THIRDS OF MINING AND METALS FACILITIES FACE SIGNIFICANT PHYSICAL WATER RISKS, FORCING COMPANIES TO RETHINK WHERE FUTURE MINES CAN BE BUILT AND HOW THEY WILL OPERATE. WATER IS NO LONGER JUST AN ENVIRONMENTAL CONSIDERATION; IT HAS BECOME A STRATEGIC BUSINESS RISK.

The world's next major mine may succeed not because it has the richest orebody—but because it has the most secure water supply.

A world-class orebody has always been the starting point for mine development. But in 2026, geology alone is no longer enough. From Chile's copper belt to Australia's Pilbara, Peru's Andes and Southern Africa, mining companies are increasingly confronting a new reality: the availability of water may determine whether a project proceeds, attracts investment or secures regulatory approval.

The latest ICMM Global Mining and Metals Water Dataset, covering more than 12,000 mining and metals facilities across 148 countries, highlights the scale of this challenge. Nearly 65.7% of facilities are exposed to at least one major physical water risk, while competition for water with communities, agriculture and industry has emerged as the sector's most widespread operational threat.

Water Has Become a Development Risk

The industry's biggest challenge is no longer simply managing water—it is securing reliable access to it. Many of the world's fastest-growing copper, lithium and critical mineral provinces are also among the most water-stressed regions. As demand for



minerals essential to electrification and renewable energy accelerates, mining companies are competing for increasingly scarce fresh-water resources.

This is changing how projects are evaluated. Water availability now influences permitting, environmental approvals, operating costs and long-term project viability as much as traditional engineering considerations.

Investors Are Looking Beyond the Orebody

Financial institutions and investors are also changing their approach.

Projects located in regions facing chronic water stress are attracting greater scrutiny over long-term operational resilience, permitting

timelines and community acceptance. Water security is increasingly being assessed alongside resource quality, capital costs and political stability. For mining companies, demonstrating responsible water stewardship is becoming essential to securing both financing and a social licence to operate.

Engineering the Next Generation of Mines

Water scarcity is reshaping mine design itself. Across major mining

regions, companies are investing in desalination plants, closed-loop water recycling systems, filtered tailings, dry-stack technologies and digital water monitoring to reduce freshwater demand and improve resilience against climate variability.

These investments are no longer viewed as environmental add-ons—they are becoming core infrastructure that supports operational continuity and long-term competitiveness.

Executive Outlook

The next generation of world-class mines will not be defined solely by ore grade or production scale. They will be built where companies can secure reliable water supplies, earn community trust and adapt to a changing climate.

As competition for critical minerals intensifies, access to water is emerging as one of mining's most strategic assets. In the decade ahead, the question facing project developers may no longer be "Where is the resource?" but "Can this mine secure water for the next 30 years?"

GLOBAL WATER RISK BY THE NUMBERS

Indicator	Key Finding
Mining & metals facilities analysed	12,000+
Countries covered	148
Facilities exposed to at least one major physical water risk	65.7%
Facilities facing competition for water	38.2%
Highest-risk regions: Chile, Peru, Southern Africa, Northern China, Central India, Western Australia, Western USA	



Why Mining Needs Technology Partners

Not Just Equipment Suppliers

Mining companies are no longer looking for suppliers that simply deliver trucks, drills or processing equipment. As operations become more connected and data-driven, the industry's competitive advantage increasingly depends on technology partners capable of integrating equipment, software, automation and analytics into a single operating ecosystem.

WORDS BY MO SHINE // DATA BY SKILLINGS RESEARCH

For decades, mining companies measured equipment suppliers by reliability, productivity and lifecycle cost. The purchasing decision centred on machine performance, maintenance support and spare parts availability.

That model is changing.

Today, a haul truck is expected to communicate with fleet management software, autonomous systems, maintenance platforms, processing plants and remote operations centres.

Value is no longer created by individual machines but by how effectively an entire mining operation works as one connected system.

This shift is transforming the relationship between miners and original equipment manufacturers (OEMs). Increasingly, mining companies are seeking long-term technology partners that can integrate digital platforms, optimise operations and deliver measurable business outcomes—not simply supply equipment.

Deloitte identifies collaboration, AI, data integration and future-fit operating models as defining trends shaping the mining sector's next phase of productivity and resilience.

From Equipment to Ecosystems

Modern mines rarely operate a single-brand fleet. Trucks, drills, loaders, crushers and processing systems often come from multiple manufacturers, each generating its own data and operating within separate software environments. This

fragmentation creates one of mining's biggest digital challenges: interoperability. Rather than investing in isolated technologies, mining companies increasingly want platforms capable of connecting planning, production, maintenance and automation into a unified operating environment.

Sandvik, for example, has expanded beyond automation to become an OEM-agnostic digital solutions provider, integrating mine planning, safety systems, analytics and autonomous operations across mixed fleets through acquisitions such as Deswik and Universal Field Robots. The focus has shifted from selling machines to connecting the entire mining value chain.

Data Is the New Production Asset

Every modern mining asset continuously generates operational data, from engine performance and tyre health to drilling accuracy and plant throughput. Yet the true value of that information depends on whether it can be shared, analysed

and converted into better operational decisions. BHP estimates that its digital and analytics initiatives have delivered more than US\$2 billion in value over the past four financial years. The company argues that the next opportunity lies not in deploying more standalone digital tools but in improving interoperability and collaborating across the industry to reduce data fragmentation.

Mining's competitive advantage is no longer defined by the smartest machine—it is defined by the strongest technology partnership.

As artificial intelligence becomes embedded across exploration, maintenance, processing and logistics, connected data environments are becoming essential for predictive maintenance, production optimisation and real-time decision-making.

Partnerships Are Driving Innovation

The industry's latest collaborations demonstrate how rapidly supplier relationships are evolving.

In June 2026, Sandvik and Rio Tinto announced a partnership to co-develop autonomous open-pit drilling by integrating Sandvik's automation platform with Rio Tinto's autonomous drilling system. Rather than delivering equipment, the collaboration focuses on interoperability, remote operations and multi-site automation. Similarly, BHP and BOTON Technology expanded their relationship from equipment supply to joint technology development, lifecycle support, AI-enabled conveyor systems and sustainability initiatives, illustrating how strategic partnerships now extend well beyond procurement.

These collaborations reflect a broader industry trend: mining companies increasingly expect suppliers to co-develop solutions, share innovation risks and support operational performance throughout the life of an asset.

Executive Outlook

Mining's next competitive advantage will not come from owning the largest fleet or deploying the newest equipment. It will come from building technology ecosystems where machines, software, people and data operate seamlessly together. As automation, artificial intelligence and electrification become standard across the industry, suppliers that can integrate technologies, enable interoperability and deliver long-term operational value will become indispensable strategic partners.

The future of mining will belong not to those who sell the best machines—but to those who help mines operate as intelligent, connected systems.





PRIVATE 5G IN THE PIT

*Why Remote Mines
Are Building Their Own*

Cellular Networks

WORDS BY CHARLES PITTS // DATA BY SKILLINGS RESEARCH



As mining embraces automation, artificial intelligence and real-time decision-making, communications infrastructure has become a strategic asset.

Across the world's leading mining regions, private LTE and 5G networks are enabling safer, smarter and more productive operations by delivering the reliable, low-latency connectivity that modern mines demand

Modern mining depends on more than heavy equipment and skilled operators. Autonomous fleets, predictive maintenance, digital twins and remote operations all rely on fast, reliable data exchange. As mines become increasingly automated, communications infrastructure has emerged as a critical operational asset. This is driving leading producers to invest in private LTE and 5G networks that deliver the secure, low-latency connectivity needed to support the next generation of digital mining.

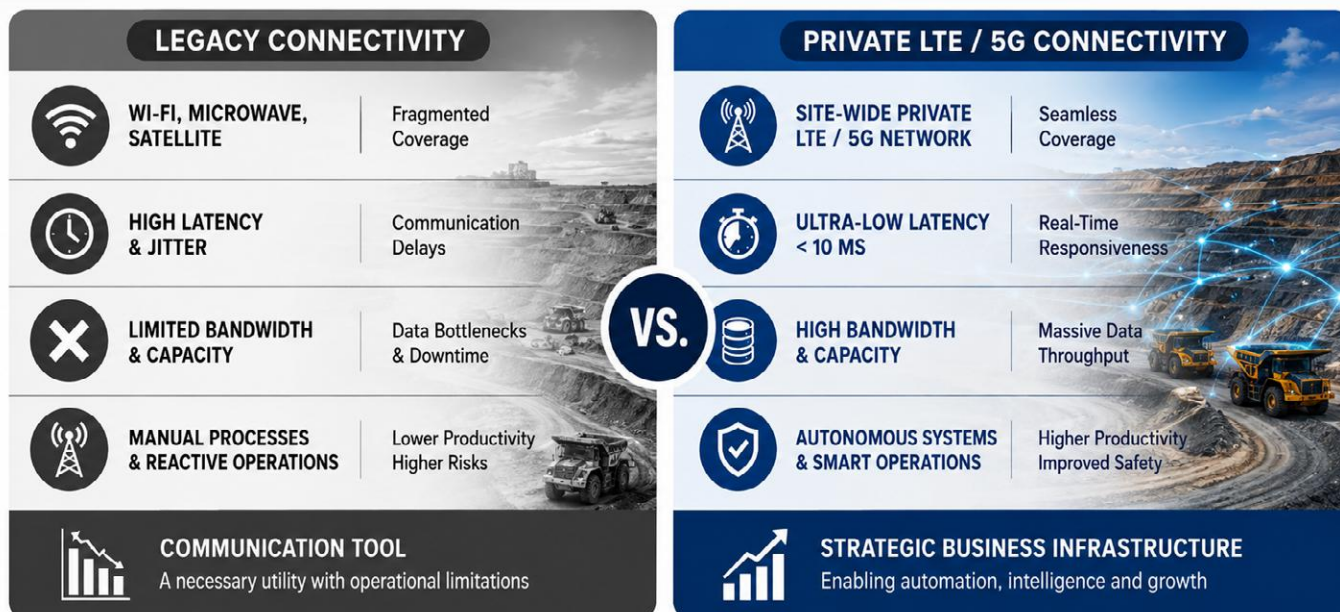
When Connectivity Becomes a Competitive Advantage

For generations, mining companies competed on the richness of their ore bodies, the scale of their equipment and the efficiency of their operations. Today, another asset is quietly reshaping the industry's competitive landscape: connectivity. Every autonomous haul truck, remote-controlled drill, environmental sensor and digital twin depends on the seamless movement of data. When communication networks falter, production slows, autonomous systems pause and operational risks increase.

In an industry where every minute of downtime carries a financial cost, reliable connectivity has evolved from an IT requirement into a business imperative. This shift is transforming how mining companies invest in digital infrastructure. Across Western Australia's Pilbara, Canada's mineral-rich regions and South America's copper belt, operators are replacing fragmented Wi-Fi, microwave and satellite systems with private LTE and 5G networks engineered specifically for industrial environments. The objective extends beyond faster communications. These networks provide the digital foundation for automation, predictive maintenance and real-time operational intelligence, enabling mines to operate more efficiently while strengthening safety and resilience.

Why Legacy Networks Are Reaching Their Limits

Modern mining operations generate enormous volumes of operational data every hour. Autonomous fleets, equipment health monitoring, drone surveys, high-definition video feeds and environmental sensors all compete for reliable bandwidth across vast, constantly changing mine sites. Traditional communications technologies were never designed for these demands. Wi-Fi networks struggle to maintain uninterrupted connections as vehicles move across large open pits, while microwave and satellite systems can introduce latency that limits real-time control and decision-making. As mines become increasingly automated, these constraints directly affect productivity and operational reliability.



Building the Digital Backbone of the Modern Mine

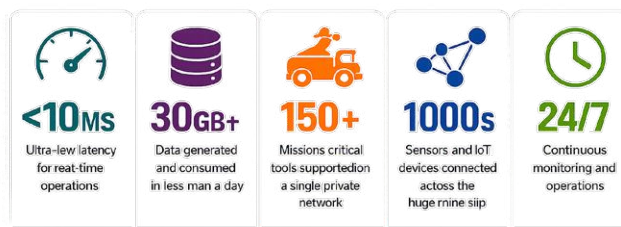
Private LTE and 5G networks are changing this equation by delivering dedicated bandwidth, ultra-low latency and secure communications tailored to industrial operations. These capabilities enable autonomous equipment to operate continuously, support predictive maintenance through real-time telemetry and provide the reliable connectivity required for digital twins and remote operations centres.

Leading producers are already demonstrating the strategic value of this approach. BHP continues to strengthen wireless infrastructure across its Pilbara operations to support autonomous haulage and digital asset management. Rio Tinto's Gudai-Darri integrates advanced wireless communications with autonomous mining systems and digital twin technologies, while Newmont is expanding private cellular deployments to enhance underground communications and automation across its global operations.

Conclusion

Mining's next competitive advantage will not be defined solely by larger equipment or richer deposits. It will increasingly depend on the invisible infrastructure that connects every vehicle, sensor and decision across the operation. Private 5G is more than a communications upgrade—it is becoming the operating system of the digital mine. As automation accelerates and data becomes central to every operational decision, the industry's leaders will be those that build resilient, intelligent networks capable of turning information into action. In the race towards smarter mining, the strongest signal may prove to be just as valuable as the richest ore body.

PRIVATE 5G BY THE NUMBERS



THE BUSINESS CASE FOR PRIVATE 5G

Private 5G is no longer just a technology investment—it is increasingly a business strategy. As mines become more automated and data-driven, reliable communications directly influence productivity, equipment availability and operational resilience.

Unlike public networks, private LTE and 5G systems provide dedicated bandwidth, secure communications and consistent low-latency performance across large mining operations. This enables autonomous fleets, predictive maintenance systems and remote operations centres to function without the communication delays that can interrupt production.

While deployment requires higher initial capital investment, many operators view private cellular infrastructure as a long-term operational asset. By improving equipment utilisation, reducing unplanned downtime and supporting continuous digital operations, private 5G is helping mining companies strengthen efficiency and competitiveness throughout the life of a mine.

Why Mining Billions Can't Break *China's Rare Earth Monopoly*

Governments have invested billions to develop new rare earth mines, yet the global supply chain remains heavily dependent on China. The reason is simple: mining is expanding faster than processing, leaving the industry's most critical bottleneck unresolved.



For years, the global race for rare earths focused on discovering new mineral deposits. Today, the challenge has shifted downstream. Rare earth ores have little commercial value until they are separated, refined and converted into the high-purity materials used in electric vehicles, wind turbines, semiconductors and defence systems. It is this midstream processing stage—not mining—that remains the weakest link in global supply chains.

While Australia, the United States, Canada and Brazil are expanding mining projects, processing capacity outside China continues to lag. The International Energy Agency (IEA) warns that refining remains highly concentrated, leaving manufacturers exposed to supply disruptions despite growing mineral production. China retains a dominant position in rare earth separation and magnet manufacturing, giving it a significant strategic advantage

across the value chain. Governments are now shifting their investment priorities. In July 2026, USA Rare Earth acquired a stake in French processor Carester, strengthening a transatlantic processing network rather than investing in another mine. Similar initiatives in the United States, Europe and Australia aim to build integrated mine-to-magnet supply chains capable of supporting advanced manufacturing and national security.

The lesson is becoming clear. The future of rare earths will not be decided by who discovers the next major deposit, but by who controls the processing infrastructure that transforms minerals into strategic products.

Until the processing gap is closed, billions invested in new mines alone will not fundamentally reshape the global rare earth supply chain.

Why Capital Prioritises Scale and Low Risk in Copper & Gold

WORDS BY SONNY JIMERSON // DATA BY SKILLINGS RESEARCH

After years of chasing high-growth opportunities across emerging commodities, mining finance is returning to a familiar destination—long-life copper and gold assets. Investors are increasingly favouring projects that combine operational resilience, stable jurisdictions and decades of production over short-term commodity gains.

Rising demand for copper and sustained strength in gold prices are reshaping investment priorities across the mining industry. Copper has become indispensable to electrification, power grids, data centres and artificial intelligence infrastructure, while gold continues to benefit from geopolitical uncertainty and its role as a safe-haven asset.

Together, these commodities are drawing renewed interest from lenders, institutional investors and major producers seeking long-term value. Rather than funding high-risk exploration, capital is increasingly flowing towards Tier-1 assets with large resource bases, long mine lives and expansion potential. Brownfield projects are also attracting greater financing as they offer lower technical and permitting risks while delivering quicker production growth.

Recent earnings from major producers, including Freeport-McMoRan, demonstrate how strong copper markets continue to support profitability and reinforce confidence in high-quality operations. The investment criteria are becoming more disciplined. Financial institutions are placing greater emphasis on jurisdictional stability, capital efficiency, environmental performance and



Today's mining capital is chasing longevity, resilience and reliable returns—not just the next discovery.

operational resilience before committing funding. Projects capable of delivering consistent production over several decades are increasingly viewed as lower-risk, long-term investments in an uncertain global economy.

The shift reflects a broader change in mining finance. Investors are no longer focused solely on discovering

the next major deposit; they are backing assets capable of generating reliable returns throughout multiple commodity cycles.

As demand for copper grows alongside the global energy transition and gold maintains its strategic appeal, long-life operations are once again becoming the preferred destination for mining capital.

Deep-Sea Mining Returns to the Global Agenda After the U.S. Pacific Leasing Proposal

Critical Minerals Strategy Is Expanding Beyond Land-Based Resources

The United States' proposal to lease areas of the Pacific seabed for commercial mineral exploration has reignited the global debate over deep-sea mining. More importantly, it signals that seabed resources are moving from a long-term possibility to a strategic element of critical mineral policy.

The U.S. Bureau of Ocean Energy Management (BOEM) has proposed the country's first commercial deep-sea mineral lease sale in federal waters off American Samoa, covering more than 31 million acres of the Outer Continental Shelf. The proposal is intended to assess seabed resources rich in polymetallic nodules containing nickel, cobalt, copper and manganese—minerals essential for electric vehicles, battery storage and defence technologies.

The announcement marks a significant shift in critical mineral strategy. Until recently, governments focused primarily on expanding terrestrial mining and processing. The latest U.S. initiative suggests policymakers are now considering offshore mineral resources as part of long-term supply security, particularly as demand for battery metals continues to accelerate. The move also reflects growing concerns over concentrated global supply chains and dependence on a limited number of producing countries.

However, commercial production remains some distance away. The International Seabed Authority (ISA) has not approved commercial mining

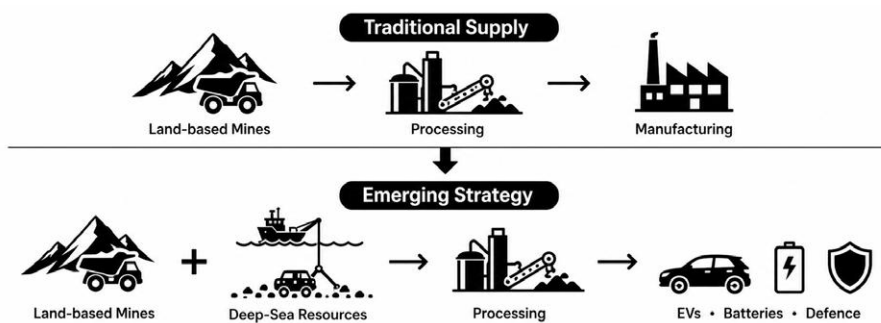


THE NEXT FRONTIER IN CRITICAL MINERALS MAY LIE BENEATH the ocean floor—but the first challenge will be creating a framework that balances supply security with environmental responsibility.

in international waters, and scientific uncertainty surrounding deep-sea ecosystems continues to fuel calls for a moratorium from more than 40 countries.

At the same time, the proposed U.S. lease has intensified debate over whether national critical mineral priorities should outweigh environ-

mental risks. For the mining industry, the significance extends beyond the proposed lease itself. Deep-sea mining has returned to the global policy agenda, broadening the search for critical minerals and signalling that future supply strategies may increasingly combine terrestrial resources with carefully regulated offshore development.



Nigeria's Critical Minerals Ambition Gains Momentum

Recent lithium and polymetallic discoveries are strengthening Nigeria's ambitions to become a key player in the global critical minerals market. While the new finds underscore the country's geological potential, long-term success will depend on translating exploration gains into processing capacity, investment, and sustainable mining development.

WORDS BY MOSHINE // DATA BY SKILLINGS RESEARCH



Nigeria is positioning itself as an emerging force in Africa's critical minerals sector following the announcement of a significant lithium discovery near Abuja and the identification of a polymetallic mineral district in Kaduna State. The discoveries come as global demand for battery minerals continues to rise, driven by the rapid expansion of electric vehicles, renewable energy systems, and large-scale energy storage technologies.

The Kaduna district reportedly hosts a range of strategic minerals, including lithium, nickel, copper, rare

earth elements and platinum group metals (PGMs). A separate lithium discovery near Abuja further expands the country's resource potential and reinforces its efforts to diversify an economy long dominated by oil and gas.

Together, these discoveries highlight Nigeria's growing importance in the global race to secure supplies of minerals essential for the clean energy transition.

More Than a Lithium Story

While lithium has attracted the greatest attention, the Kaduna

discovery stands out for its polymetallic nature. Deposits containing multiple critical minerals offer greater development flexibility and can improve project economics by supporting integrated mining and processing operations.

Nickel and copper are essential for batteries, electric vehicles and power transmission infrastructure, while rare earth elements are indispensable for permanent magnets used in wind turbines and electric motors. Platinum group metals also remain important for catalytic technologies and emerging hydrogen applications.

Discovery	Strategic Importance
Abuja Lithium Discovery	Expands Nigeria's lithium resource base and supports future battery mineral development.
Kaduna Polymetallic District	Hosts lithium, nickel, copper, rare earth elements and platinum group metals.
Policy Direction	Focus on domestic beneficiation and mineral processing to increase value addition.
Industry Outlook	Long-term success will depend on infrastructure, investment and regulatory certainty.

The presence of several strategic commodities within a single mineral province could allow developers to share infrastructure, diversify production and strengthen the long-term commercial potential of future mining operations.

From Resource Discovery to Value Addition

The discoveries also reinforce Nigeria's evolving mining strategy, which increasingly prioritises domestic mineral processing over the export of raw ore. By encouraging beneficiation and local refining, the government aims to capture a greater share of the mining value chain while creating skilled employment, attracting investment and supporting industrial development.

This policy reflects a broader trend among resource-rich countries seeking to maximise the economic benefits of their mineral wealth. Rather than serving solely as suppliers of raw materials, many governments are investing in downstream industries that produce higher-value mineral products for global markets.

If supported by reliable infrastructure and consistent regulation, Nigeria's beneficiation strategy could strengthen its competitiveness within the rapidly expanding battery materials supply chain.

Opportunities and Challenges

Despite the optimism surrounding the discoveries, significant work remains before the projects can progress to commercial production.

Resource definition drilling, metallurgical testing, feasibility studies and environmental assessments will all be required to confirm the economic viability of the deposits.

Infrastructure remains another critical challenge. Processing facilities require reliable electricity, efficient transport networks and access to water, while investors continue to assess regulatory stability, permitting processes and community engagement. Addressing these issues will be essential if Nigeria is to attract the

**NIGERIA'S
greatest
opportunity lies not
only in discovering
critical minerals,
but in building the
capacity to process
and add value to
them domestically.**

long-term capital needed to develop a globally competitive mining industry.

Nigeria's Place in Africa's Critical Minerals Race

Nigeria joins a growing group of African nations seeking to capitalise on rising demand for battery minerals. Zimbabwe remains the continent's leading lithium producer, while the Democratic Republic of Congo dominates cobalt production and continues to advance major lithium projects. Mali has also emerged as an important lithium development jurisdiction.

Nigeria's competitive advantage may ultimately depend less on the scale of its discoveries than on its ability to integrate exploration, processing and industrial policy into a cohesive mining strategy. Countries capable of producing refined mineral products rather than simply exporting raw ore are expected to occupy stronger positions in future global supply chains.

Outlook

The recent discoveries mark an important milestone for Nigeria's mining sector and highlight the country's growing role in the critical minerals economy. However, geology alone will not determine success. Continued investment, infrastructure development, technical expertise and effective policy implementation will ultimately decide whether Nigeria can transform its mineral potential into long-term industrial growth.



Lessons from Pakistan's Saindak Copper Mine

The recent supply-chain disruption at Pakistan's Saindak copper-gold mine highlights a growing challenge for the global mining industry. While ore quality and commodity prices remain critical, geopolitical instability and logistics are increasingly determining whether a mine can operate efficiently, attract investment and deliver long-term value.



For decades, mining investment decisions have been guided by geology, economics, and commodity markets. Today, another factor is demanding equal attention—security. The recent warning from the operator of Pakistan's Saindak copper-gold mine that ongoing unrest in Balochistan could disrupt supplies of fuel, spare parts, and essential materials illustrates how above-ground risks can quickly become operational risks.

Although Pakistani authorities have stated that the mine remains operational while additional security measures are being implemented, the incident serves as a reminder that uninterrupted logistics are as critical to mine performance as the quality of the orebody itself.

Supply Chains Are Strategic Assets

Modern mining depends on a continuous flow of fuel, consumables, equipment and technical support. Any prolonged interruption can affect production schedules, maintenance programmes and concentrate shipments, regardless of metal prices or resource quality.

For copper producers, these risks carry increasing significance. Global demand continues to be supported by electrification, renewable energy infrastructure, electric vehicles and expanding digital infrastructure, making reliable copper supply a strategic priority for both governments and industry.

The situation at Saindak demonstrates that securing transport

corridors and maintaining resilient supply chains have become essential components of mine planning, particularly in regions facing political instability or security challenges.

Implications Beyond Saindak

The developments in Balochistan are also being closely watched because the province hosts the world-class Reko Diq copper-gold project, currently under development.

While the two operations differ significantly in scale and ownership, both underline the importance of long-term security planning, stakeholder engagement and government support in attracting large-scale mining investment. For operators, investors and equipment suppliers, the lesson extends beyond Pakistan. Across many mineral-rich jurisdictions, operational resilience increasingly depends on managing geopolitical, social and logistical risks alongside traditional technical and financial considerations.

Industry Perspective

The Saindak situation is not simply a regional security story; it reflects a broader shift in how mining projects are evaluated. As demand for critical minerals continues to grow, companies will be judged not only by the quality of their assets but also by their ability to operate reliably in complex environments. In today's mining industry, resilience has become as valuable as the resource itself.

A New Era for Mine Economics

Sustained gold prices above US\$4,000 per ounce are reshaping the economics of gold mining worldwide. While weaker U.S. economic data helped reinforce bullish sentiment during July, the more important story for the industry is how higher bullion prices are improving project viability, strengthening producer cash flows and influencing investment decisions across the mining value chain.



Gold's strong performance in 2026 has done more than lift bullion prices—it has fundamentally altered the financial landscape for gold producers. Recent U.S. employment data, which strengthened expectations of a pause in Federal Reserve interest rate increases, accelerated investor interest in gold.

However, for the mining industry, the significance lies not in a single economic report but in the emergence of a pricing environment that is transforming mine economics.

With bullion trading comfortably above US\$4,000 per ounce, many producers are operating with historically strong margins. Companies that have maintained disciplined cost

structures are generating significantly higher cash flows, providing greater flexibility to strengthen balance sheets, reward shareholders and invest in future growth.

Higher Prices, Better Project Economics

The current gold price environment is expanding the range of economically viable mining opportunities. Brownfield expansions, mine-life extension projects and lower-grade deposits that previously struggled to meet investment thresholds are becoming increasingly attractive. For developers, stronger project economics improve financing prospects, while exploration companies benefit from renewed investor appetite for resource growth. Estab-

lished mining jurisdictions such as Canada, Australia and parts of Africa are likely to see continued investment as producers seek to replenish reserves and secure long-term production pipelines.

At the same time, higher revenues are encouraging investment in automation, digital mine planning and processing technologies designed to improve productivity while controlling operating costs.

Opportunity Demands Discipline

History shows that periods of elevated gold prices can encourage aggressive expansion. The industry's challenge is to avoid repeating past cycles of rising capital expenditure, cost inflation and value-destructive acquisitions.

Operational excellence remains the defining competitive advantage. Rising labour costs, declining ore grades, energy prices and stricter environmental requirements continue to pressure margins, making disciplined capital allocation as important as favourable commodity prices. Mining companies that focus on productivity, efficient resource development and long-term value creation are likely to outperform those relying solely on strong bullion markets.

Industry Outlook

The current gold market represents more than a cyclical upswing. It signals a structural opportunity for producers to strengthen operations, advance quality projects and build resilient businesses capable of performing throughout future commodity cycles.

While macroeconomic conditions will continue to influence gold prices, the industry's long-term success will depend on how effectively today's favourable market conditions are converted into sustainable operational and financial performance.



The Next Generation Mine: Where Water, Energy and AI Converge

The future mine will not be built around a single breakthrough technology. Its competitive advantage will come from integrating water management, clean energy and artificial intelligence into one intelligent operating system. As mining companies pursue productivity, resilience and lower emissions, these three pillars are emerging as the foundation of the next generation of mining. Mining is entering a new era.

WORDS BY SALINI KRISHNAN // DATA BY SKILLINGS RESEARCH

For decades, productivity depended on larger equipment, higher processing rates and improved extraction techniques. Today, success is increasingly measured by how efficiently a mine manages its most critical resources—water, energy and data.

Climate change, energy transition policies and rising operating costs are forcing companies to optimise every stage of production. At the same time, artificial intelligence is transforming how mines monitor equipment, predict failures, optimise processing plants and manage environmental performance. The result is a fundamental shift. Instead of adopting individual technologies, leading mining companies are building connected operations where AI continuously balances water consumption, energy demand and production targets in real time.

WATER IS BECOMING A STRATEGIC RESOURCE

Water is no longer simply an environmental consideration. According to the International Council on Mining and Metals (ICMM), nearly two-thirds of mining and metals facilities face at least one significant physical water risk. Operations in Chile, Peru, Australia, Southern Africa and other water-stressed regions are investing heavily in recycling systems, desalination plants and digital water

monitoring to reduce freshwater dependence. Artificial intelligence is now enabling operators to forecast water demand, optimise tailings management and identify leaks before they become operational risks. Rather than reacting to shortages, mines are beginning to manage water proactively through predictive analytics. Water security is becoming as important to mine planning as ore grade or processing capacity.

Energy Is Becoming an Operational Advantage

Energy represents one of mining's largest operating costs. With electricity demand increasing through electrified fleets, automated equipment and expanding processing capacity, companies are redesigning power systems around renewable energy, battery storage and microgrids.

Across Australia, Chile and Canada, mines are integrating solar, wind and hybrid power solutions with energy management platforms that balance electricity demand throughout the day.

Artificial intelligence is accelerating this transition by forecasting energy consumption, optimising charging schedules for battery-electric equipment and reducing unnecessary power use across processing plants. The



objective is no longer simply reducing emissions. It is improving operational resilience while lowering long-term energy costs.

ARTIFICIAL INTELLIGENCE CONNECTS THE ENTIRE MINE

The real transformation comes from integration. Modern mines generate millions of operational data points every day—from fleet movements and drilling performance to processing recovery, water use and power consumption.

Artificial intelligence converts this information into operational intelligence. Predictive maintenance reduces equipment failures before they occur. Machine-learning models optimise ore blending and mill performance. Digital twins simulate production scenarios before operational decisions are made.

Rather than operating as separate systems, water management, energy infrastructure and production planning increasingly function as one connected platform. This convergence allows mine managers to

optimise productivity while simultaneously improving sustainability and reducing costs.

THE COMPETITIVE ADVANTAGE IS CONVERGENCE

The next generation mine will not be defined by the largest autonomous fleet or the most advanced processing plant. Its advantage will come from connecting resources that have traditionally been managed independently. Water availability will influence production planning.

Energy systems will respond dynamically to operational demand. Artificial intelligence will coordinate decisions across the entire value chain. Companies that integrate these systems will be better positioned to improve productivity, strengthen resilience and meet increasingly demanding environmental expectations.

EXECUTIVE OUTLOOK

Mining's future will be shaped less by individual technologies than by how effectively they work together. The industry's leading operations are

Water	Energy	Artificial Intelligence
Recycling and reuse	Renewable power	Predictive maintenance
Predictive water management	Battery storage	Autonomous operations
Digital tailings monitoring	Electrified fleets	Digital twins
	Smart microgrids	Real-time optimisation

**FIVE TECHNOLOGIES
DEFINING TOMORROW'S
MINE**

AI-powered predictive analytics

Closed-loop water recycling

Renewable microgrids

Battery-electric mining fleets

Digital twins and remote operations

moving beyond digital transformation towards operational convergence—where water, energy and artificial intelligence function as one integrated system. As commodity demand grows alongside climate pressures and rising operating costs, the mines that succeed will not necessarily produce the most ore. They will be the ones that use every litre of water, every unit of energy and every data point more intelligently than their competitors.

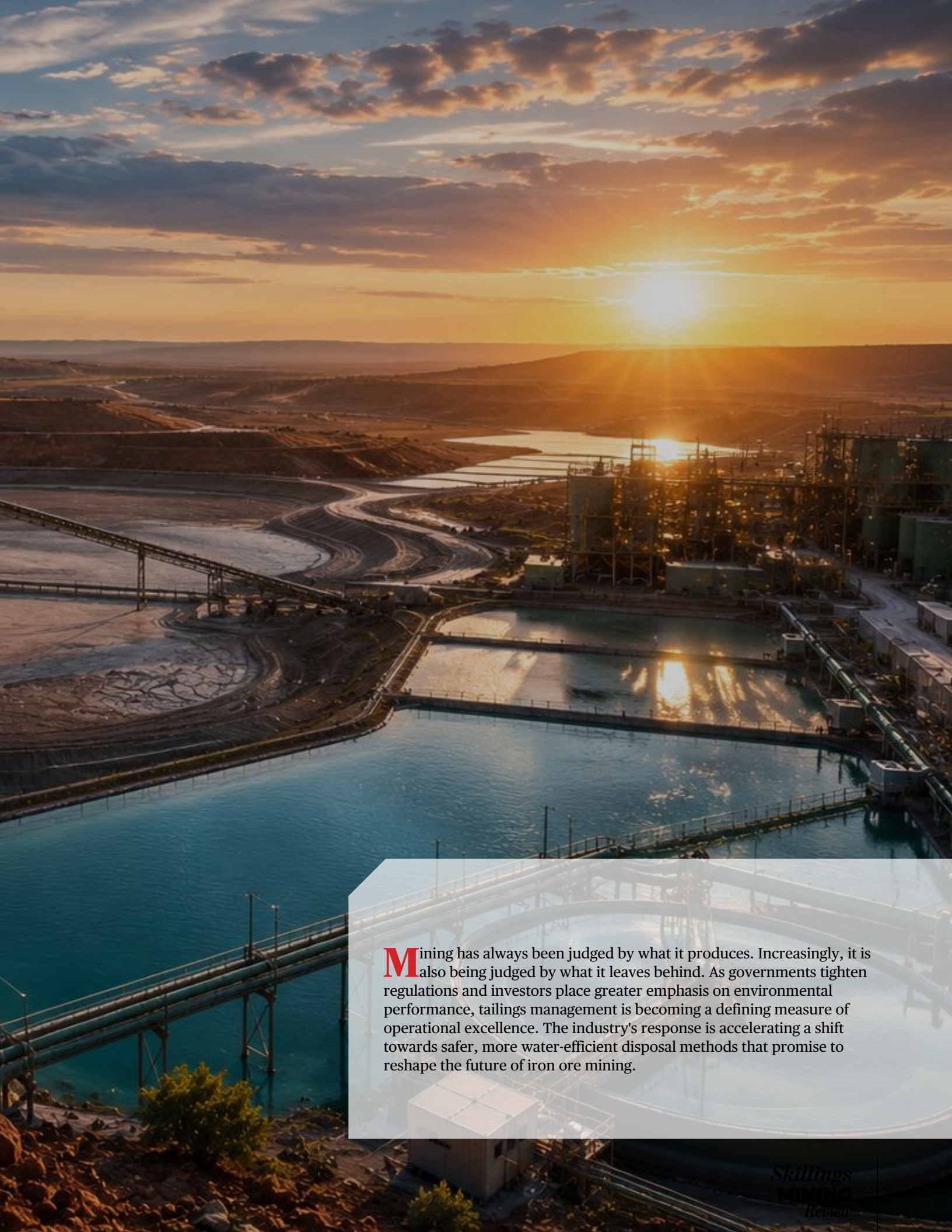


The New **Tailings Race**

Why Iron Ore Majors Are Rethinking Water, Risk and Mine Waste

WORDS BY SONNY JIMERSON// DATA BY SKILLINGS RESEARCH

Tailings management is undergoing its biggest transformation in decades. Driven by stricter regulations, water scarcity and investor scrutiny, iron ore producers are moving beyond conventional wet tailings towards filtration, dry stacking and more resilient waste management strategies. The transition is redefining how mining companies manage risk, capital and their social licence to operate.



Mining has always been judged by what it produces. Increasingly, it is also being judged by what it leaves behind. As governments tighten regulations and investors place greater emphasis on environmental performance, tailings management is becoming a defining measure of operational excellence. The industry's response is accelerating a shift towards safer, more water-efficient disposal methods that promise to reshape the future of iron ore mining.



Water Is Becoming Mining's Most Valuable Resource

While tailings management often focuses on safety, water is emerging as an equally important driver of change. In many mining regions, freshwater availability is becoming increasingly constrained, making efficient water recovery a strategic priority.

Filtered tailings systems can recover up to 85-95% of process water for reuse, reducing dependence on external water supplies and lowering operating costs. For mines operating in arid regions such as Western Australia, northern Chile and parts of Peru, improved water recycling supports both operational continuity and environmental performance.

As climate pressures intensify and water regulations tighten, water recovery is becoming more than an environmental initiative. It is a business strategy that strengthens operational resilience while supporting long-term sustainability.

When Tailings Became a Boardroom Issue

For decades, tailings management remained largely invisible outside the mining industry. It was regarded as a necessary part of mineral processing—an engineering challenge managed behind the scenes while operational attention focused on production and costs. Today, that perception has changed fundamentally.

Tailings storage has become one of the industry's defining business risks. Catastrophic failures, tightening environmental regulations and growing investor expectations have elevated mine waste management from an operational responsibility to a boardroom priority. Increasingly, a company's ability to manage tailings safely influences its access to capital, regulatory approvals and long-term social licence to operate.

A New Era of Accountability

The industry response has accelerated following the introduction of the Global Industry Standard on Tailings Management (GISTM) and stricter environmental oversight across major mining jurisdictions. Mining companies are now under greater pressure to demonstrate safer storage practices, improve transparency and reduce long-term environmental liabilities. Water scarcity is adding further urgency, particularly in regions where securing reliable water supplies has become increasingly difficult.

Why Dry Stacking Is Gaining Momentum

Filtered dry-stack tailings are emerging as one of the industry's preferred alternatives to conventional wet storage. By removing much of the water before disposal, dry stacking improves water recovery, reduces the potential for catastrophic failures and simplifies progressive rehabilitation. Although filtration systems require higher upfront investment, many operators see long-term value through lower closure liabilities, reduced water consump-





tion and stronger environmental performance.

Different Paths, One Direction

Leading producers are adopting different strategies based on their operating environments. Vale continues to expand filtration and dry processing across its Brazilian operations, while Rio Tinto is strengthening water recovery and targeted filtration initiatives in the Pilbara. Cleveland-Cliffs has focused on optimising

existing tailings facilities and water management systems suited to North American operating conditions. Despite these different approaches, the industry's direction is becoming increasingly clear: safer, more sustainable tailings management is moving from best practice to business necessity.

Mining companies once measured success by tonnes produced and costs reduced. Today, they are increasingly

judged by how responsibly they manage what remains after the ore has been processed. Tailings are no longer simply a waste stream—they have become a measure of operational excellence, environmental stewardship and corporate resilience. The miners that invest in safer, water-efficient tailings management today will be better positioned to earn investor confidence, secure regulatory approval and maintain their licence to operate in the decades ahead.

2025 GLOBAL CRUDE STEEL PRODUCTION TOTALS

Total world crude steel production was 1,849.4 Mt in 2025.

Rank	Country	2024	2023	%2024/2023
1	China	960.8	1005.1	-4.4
2	India	164.9	149.4	10.4
3	United States	82.0	79.5	3.1
4	Japan	80.7	84.0	-4.0
5	Russia (e)	67.8	71.0	-4.5
6	South Korea	61.9	63.6	-2.8
7	Türkiye	38.1	36.9	3.3
8	Germany	34.1	37.3	-8.6
9	Brazil	33.3	33.9	-1.6
10	Iran (e)	31.8	31.4	1.4
11	Viet Nam	24.7	22.0	12.2
12	Italy	20.7	20.0	3.6
13	Indonesia (e)	19.0	18.6	1.9
14	Taiwan, China (e)	17.1	19.2	-10.8
15	Mexico (e)	13.5	14.3	-5.9

Rank	Country	2024	2023	%2024/2023
16	Spain (e)	12.0	11.9	0.7
17	Canada (e)	11.5	12.3	-7.2
18	Saudi Arabia	10.8	9.6	12.3
19	Egypt	10.6	10.7	-0.8
20	France (e)	9.8	10.8	-8.7
21	Malaysia (e)	9.0	9.0	-0.2
22	Austria	7.6	7.1	5.9
23	Ukraine	7.4	7.6	-2.2
24	Poland (e)	7.2	7.1	0.8
25	Belgium (e)	7.2	7.1	0.5
26	Netherlands	6.5	6.4	1.4
27	Algeria (e)	5.3	4.5	17.9
28	Australia	5.2	4.7	12.1
29	Thailand (e)	5.0	4.9	2.6
30	Bangladesh (e)	4.5	4.5	0.0

Rank	Country	2024	2023	%2024/2023
31	South Africa	4.5	4.7	-4.7
32	Kazakhstan	4.3	4.2	2.2
33	Argentina	4.0	3.9	4.2
34	Sweden	4.0	4.0	-0.7
35	United Arab Emirates	3.8	3.7	3.3
36	Finland	3.7	3.7	2.1
37	Slovakia (e)	3.7	3.9	-5.6
38	Pakistan (e)	3.6	4.1	-12.2
39	Iraq (e)	3.0	3.0	0.3
40	Oman (e)	3.0	3.0	0.0
Others		41.8	44.1	-5.3
World		1849.4	1886.8	-2.0

e – annual figure estimated using partial data or non-worldsteel resources. * The world total production figure in this table includes estimates of other countries that only report annually.

Source – World Steel Association. 2025 Steel Statistical Yearbook published

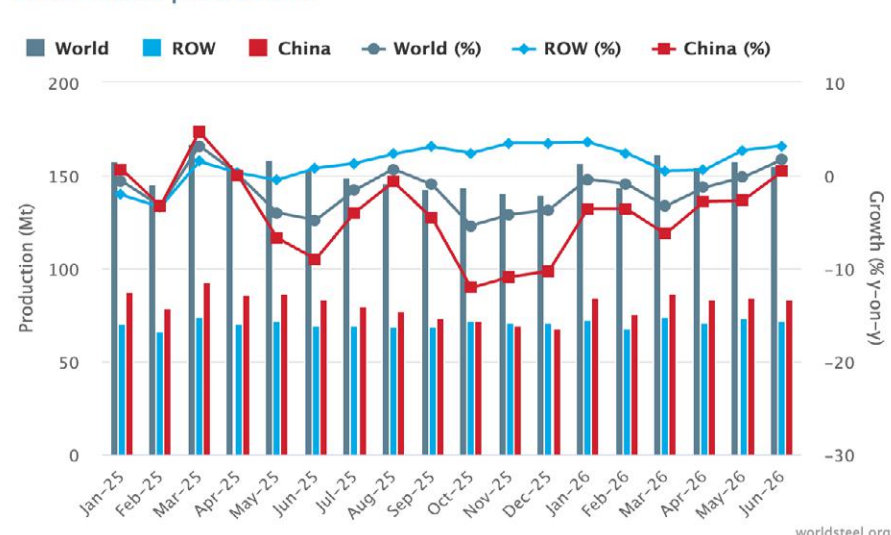
JUNE 2026 CRUDE STEEL PRODUCTION

World crude steel production for the 70 countries reporting to the World Steel Association (world-steel) was 155.7 million tonnes (Mt) in June 2026, a 1.7% increase compared to June 2025.

Africa produced 2.2 Mt in June 2026, up 20.0% on June 2025. Asia and Oceania produced 115.2 Mt, up 1.5%. The EU (27) produced 10.8 Mt, up 4.6%. Europe, Other produced 3.7 Mt, up 10.4%. The Middle East produced 4.0 Mt, down 13.4%. North America produced 9.5 Mt, up 5.0%. Russia & other CIS + Ukraine produced 6.8 Mt, down 2.2%. South America produced 3.5 Mt, down 0.3%.

The 70 countries included in this table accounted for approximately 98% of total world crude steel production in 2025: Africa, Asia and Oceania, European Union (27), Europe, other, Middle East, North America, Russia & other CIS + Ukraine, South America.

Crude steel production



TOP 10 STEEL-PRODUCING COUNTRIES

China produced 83.7 Mt in June 2026, up 0.4% on June 2025. India produced 14.1Mt, up 4.5%. The United States produced 7.2 Mt, up 3.5%. Japan produced 6.8 Mt, up 1.3%.

Russia is estimated to have produced 5.6 Mt, down 3.4%. South Korea produced 5.3 Mt, down 0.9%. Türkiye produced 3.3 Mt, up 14.7%. Germany produced 2.9 Mt, up 9.5%. Brazil produced 2.8 Mt, up 0.1%. Viet Nam produced 2.6 Mt, up 27.5%.

TABLE 1. CRUDE STEEL PRODUCTION BY REGION

	JUN 2026 (MT)	% CHANGE JUN 26/25	JAN-JUN 2026(MT)	% CHANGE JAN-JUN 26/25
Africa	2.2	20.0	12.6	10.0
Asia and Oceania	115.2	1.5	690.1	-0.9
EU (27)	10.8	4.6	65.4	-0.3
Europe, Other	3.7	10.4	22.1	5.6
Middle East	4.0	-13.4	25.9	-7.3
North America	9.5	5.0	56.5	5.7
Russia & other CIS + Ukraine	6.8	-2.2	38.6	-8.0
South America	3.5	-0.3	20.5	-0.8
Total 69 countries	155.7	1.7	931.5	-0.7

TABLE 2. TOP 10 STEEL-PRODUCING COUNTRIES

	JUN 2026 (MT)	% CHANGE JUN 26/25	JAN-JUN 2026 (MT)	% CHANGE JAN-JUN 26/25
China	83.7	0.4	500.0	-3.0
India	14.1	4.5	87.0	7.1
United States	7.2	3.5	42.8	6.3
Japan	6.8	1.3	40.4	-0.4
Russia (e)	5.6	-3.4	32.1	-8.4
South Korea	5.3	-0.9	31.7	2.1
Türkiye	3.3	14.7	19.8	8.1
Germany	2.9	9.5	18.6	8.9
Brazil	2.8	0.1	16.3	-1.5
Viet Nam (e)	2.6	27.5	15.2	26.9

The 70 countries included in this table accounted for approximately 98% of total world crude steel production in 2025. Africa: Algeria, Egypt, Libya, Morocco, South Africa, Tunisia Asia and Oceania: Australia, China, India, Japan, Mongolia, New Zealand, Pakistan, South Korea, Taiwan (China), Thailand, Viet Nam European Union (27): Austria, Belgium, Bulgaria, Czechia, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden Europe, Other: Macedonia, Norway, Serbia, Türkiye, United Kingdom Middle East: Bahrain, Iran, Iraq, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, Yemen North America: Canada, Cuba, El Salvador, Guatemala, Mexico, United States Russia & other CIS + Ukraine: Belarus, Kazakhstan, Russia, Ukraine South America: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela



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