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this issue contains...

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President's Message.....

Dear members..

The Central Government has announced India's first ***Tailings Policy*** for exploring and recovering critical minerals such as lithium, cobalt, rare earth elements, nickel, etc., from both primary sources and secondary sources like tailings and mine dumps. This policy was formally announced on 19 January 2026 by the Ministry of Mines. This fulfills the commitment made in the last Union Budget to recover critical minerals from mining by-products and tailings. Critical and strategic elements aren't limited to solid minerals under the Ministry of Mines; they may exist in commodities handled by other ministries, too. A coordinated approach across ministries is vital to map tailings ponds and dumps, assess quantities, identify recoverable elements, and evaluate economic viability. This policy marks a significant step toward sustainable mining and resource optimization. Let's stay engaged with these developments.

India's mining industry, including voices from the Federation of Indian Mineral Industries (FIMI), is urging the government in the upcoming Union Budget to remove the 15% export duty on low-grade bauxite-abundant in states like Gujarat, Chhattisgarh, Jharkhand, and Maharashtra but largely unconsumed domestically. To boost exports, maintain the current duty regime on iron ore, introduce various tax concessions, and establish a government-backed insurance mechanism to safeguard overseas mining investments from geopolitical risks.

I appreciate the strong commitment of Dr. P. V. Rao, Co-chair, NACRI, for presenting the importance of adopting the Indian Mineral Industry Code (IMIC) for reporting Mineral Resources and Reserves in the Indian Mining Industry at the 65th Central Geological Programme Board (CGPB) meeting held in New Delhi on 21 January 2026. MEAI shall make wide publicity of the IMIC code by organizing presentations for government officials, the way our Bangalore Chapter has done recently for DMG officials, to understand its importance in the mining sector.

I congratulate the Belgaum Chapter for successfully organizing the ***One-Day National Seminar on "Rare Earth Minerals Mining in India: Opportunities and Challenges" on 10th January 2026***. Eminent speakers from across the country enriched the discussions by highlighting the need to strengthen exploration, emerging opportunities, technological advancements, and key challenges in rare earth mineral mining to support India's future industrial and strategic needs.

I am pleased to note that the Rajasthan Chapter-Jaipur ***is organizing an International Seminar on "Vision 2047—Mining and Minerals Perspective" on the occasion of its 17th Foundation Day, alongside hosting the 2nd National Council Meeting on 14th February 2026***. My appreciation to the Jaipur Chapter for their initiative in launching the poster of the International Seminar by the Honourable Governor of Rajasthan, Shri Haribhau Kisanrao Bagde, and I extend my best wishes for the grand success of the event.

It is also my pleasure to note that some of our chapters are also conducting technical talks and workshops in their respective regions.

D.B. Sundara Ramam
President

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CHIEF EDITOR'S DESK

Dr. P.V. Rao
Chief Editor, MEJ

The 65th Central Geological Programming Board (CGPB) meeting on January 21, 2026, in New Delhi marked a pivotal moment for India's mineral reporting standards.

Shri Piyush Goyal, Secretary of Mines and CGPB Chairman, delivered a crisp keynote, while Shri Sanjay Lohiya, Additional Secretary, offered welcoming remarks alongside Shri Asit Saha's opening address. Stakeholders from central and state governments, public and private organizations, and special invitees packed the room. Notably, the CGPB Secretariat broke precedent by inviting MEAI and NACRI to contribute to the 2026-27 program. I represented them on the key agenda: "Implementation of IMIC in India." Gratitude goes to supportive delegates from HZL, Adani Group, HCL, NMDC, Tata Steel, JSW Group, Data Code, and FIMI.

Shri Goyal's direct, no-frills style sparked lively debate, ensuring every point got due attention. NACRI seized the floor to outline a decade of effort crafting IMIC—a "Made in India" code for reporting exploration results, mineral resources, and reserves. We suggested corrections to the miscommunications and factual errors in the Mines Ministry's Action Taken Report (ATR). Shri Piyush Goyal grasped the stakes and directed Additional Secretary Shri Sanjay Lohiya to resolve it within a month via stakeholder talks. A follow-up is set for February 3, 2026, in New Delhi, hosted by the Director (Technical), Ministry of Mines—continuing our high-level engagements since 2016.

The saga began in 2016 at our Jaipur international seminar, where then-Mines Secretary Dr. Balwinder Kumar, as chief guest during CRIRSCO's AGM, pledged India's adoption of a NACRI-developed, CRIRSCO-compliant reporting standard. India joined CRIRSCO as its 14th member on August 1, 2019, designating MEAI as the Professional Organization (PO), IMIC as the National Reporting Code, and NACRI as the National Reporting Organisation (NRO).

In 2020, NITI Aayog's Member Dr. V.K. Saraswat endorsed IMIC in a webinar, issuing a press note aligned with the National Mineral Policy 2019 and urging MEMC Rules amendments. Again in 2020, a committee formed by the Mines Ministry under the leadership of its Jt. Secretary had a detailed web conference with the stakeholders, including MEAI/NACRI, but fizzled out when the government sought permission of NACRI to use the CRIRSCO-approved IMIC as the base and modify it as per the government requirements to develop its own code, which was respectfully declined by NACRI as it comprises the consensus of all 14 CRIRSCO members.

In a 2023 meeting in New Delhi with CRIRSCO's Chairperson, MEAI, NACRI, and then-Mines Secretary Shri V.L. Kantha Rao expressed his inclination to adopt IMIC but sought certain clarifications on the oversight of NACRI, IMIC, and Competent Persons; we replied thoroughly by email.

NACRI addresses the Ministry of Mines' ATR (Agenda 64.08.01) point-by-point to remove its misconceptions.

1) Investors demand uniform terminology regardless of allocation—first-come-first-served or auction. CRIRSCO, formed by five mineral giants and now 16 strong, sets global benchmarks like JORC, NI 43-101, and SAMREC. These ensure transparency, materiality, and competence, meeting stock exchange rules for three resource and two reserve categories to fund exploration and mining.

   IMIC mirrors the CRIRSCO template as India's homegrown code for exploration results, resources, and reserves. Its adoption would sharpen technical and financial decisions amid the critical minerals push—domestic or abroad. Registered Competent Persons, as assessors, must wield these tools. While auctions advance under the 2015 Mineral Auction Rules, lessees need capital from public markets, banks, FDI, and PE. Globally recognized standards like IMIC unlock this.

2) The United Nations Framework Classification (UNFC) and CRIRSCO serve distinct yet complementary purposes. UNFC supports national mineral inventories (including undiscovered or discovered-uneconomic categories) for strategic planning. CRIRSCO enables investor-focused reporting of resources/reserves with "reasonable prospects for economic extraction," prepared by defined Competent Persons.

   NACRI notes that MEMC Rules draw definitions from the CRIRSCO Template, but intermingling them with UNFC-1997 while framing MEMC rules creates substantial confusion and misalignment. Claiming MEMC rules align with UNFC/CRIRSCO overlooks this: a mere "competent person" provision lacks CRIRSCO's rigorous definitions and accountability, making MEMC reports unsuitable for stock exchange listings. CRIRSCO standard definitions can only be modified by its NROs via consensus—a step not followed in MEMC rules, rendering CRIRSCO references redundant.

   UNECE and CRIRSCO have issued bridging documents in 2015 and 2024 to map CRIRSCO categories to UNFC-2009 and 2019, respectively, for National Mineral Inventories—addressing India's needs. NACRI holds that any rule combining CRIRSCO and UNFC must reference these bridging documents.

3) NACRI does not comment on reporting codes used by state governments or the Union Government for auctioning coal and mineral blocks. However, NACRI believes auction data/reports—on which bidders base their decisions—must follow industry-standard Quality Assurance and Quality Control (QA/QC) protocols and be presented transparently.

Objective review of these points will empower investors, channeling risk capital to critical minerals exploration and extraction. Let's seize this momentum for a robust, investor-friendly framework.

- Chief Editor

NEWS FROM THE MINERAL WORLD

➢ US lawmakers propose $2.5B critical minerals reserve

A bipartisan group of US lawmakers on Thursday introduced legislation to create a $2.5 billion critical minerals stockpile as a counter to China s dominance in the sector, according to Reuters.

The proposed bill is designed to help stabilize the prices of key minerals that are essential to electric vehicles, high-technology products and defense systems, given the influence Beijing has on the global market.

China's stranglehold on the critical mineral supply chain is well documented. The Asian nation accounts for about 60% of the world's mined rare earths and nearly all of its processing. It also controls a major share of the refined production of lithium, graphite and cobalt.

For some minerals, such as lithium, China has created a huge glut that has driven down prices, rendering many projects in the West unprofitable. In the rare earth sector, it deployed export curbs that have also resulted in high prices.

The proposed bill would help counter Chinese attempts to "weaponize its influence over prices and volumes in the contest for access to critical minerals," the legislation document reads, as seen by *Reuters*.

However, Beijing has repeatedly denied such claims. After signing a trade truce with the US, its government reiterated its commitment to "upholding the security and stability of global production and supply chains."

Strategic reserve

Under the proposed bill, a Strategic Resilience Reserve will be established and be managed by a seven-member board, a governance structure resembling that of the Federal Reserve. The board would have authority to buy and store critical minerals in facilities across the country. Priority will be given to recycled materials, but minerals extracted from mines could also be eligible.

The reserve board will also be authorized to sell minerals for commercial and defense use, with the proceeds reinvested to sustain operations. Allied nations could participate by contributing at least $100 million to the reserve.

Lawmakers backing the measure say it could buffer the US industry from supply disruptions and help establish a Western price benchmark for minerals that are currently thinly traded and heavily influenced by Chinese production and export policies.

Senator Jeanne Shaheen, a Democrat from New Hampshire, emphasized the bill's importance to US national security, stating that "targeted investments and stockpiling key inputs will help insulate the US from foreign threats." Other co-sponsors include Republican Senator Todd Young of Indiana and Representative Rob Wittman of Virginia.

To become law, the bill must be approved by both the House of Representatives and the Senate and be signed by President Donald Trump.

The proposal comes a day after the Trump administration held back on new tariffs on critical minerals, and instead introduced new supply chain proclamation including the consideration of price floors.

Staff Writer / January 15, 2026

➢ Almost 75% of mining M&As flow to Latin America: McKinsey

Global mining mergers and acquisitions hit about $30 billion in the first three quarters of 2025, with 74% of deal value flowing to Latin America as investors retreat from higher-risk jurisdictions, a report from McKinsey & Company and the Future Minerals Forum shows.

The figures are part of the *Future Minerals Barometer Report 2025*, which tracks supply-chain readiness across Africa, West Asia, Central Asia and Latin America.

Developed in partnership with McKinsey & Company and other sector experts S&P Global Market Intelligence, Global AI and GlobeScan, the barometer integrates stakeholder sentiment, data, market intelligence and project-level evidence into a single authoritative platform to guide global decision-making.

The report found there is a widening gap between mineral endowment and investment. More than 50% of global critical mineral reserves sit in the so-called Super Region - Africa, West Asia and central Asia - yet it attracts the lowest exploration spending worldwide, heightening long-term supply risks.

Deals value skyrockets

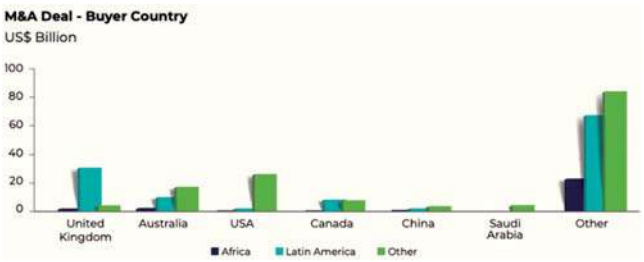
Since 2021, mining deal values in Latin America are up more than 200%, while Africa has seen an almost 80% decline as capital gravitates toward jurisdictions perceived as more stable.

The barometer builds on McKinsey's Global Materials Perspective, released in October last year, which shows

mining productivity has improved by just 1% a year since 2018, reinforcing why investors are increasingly focused on capital discipline and permitting certainty.

The report warns that global critical mineral supply chains are under growing strain just as demand accelerates, driven by the energy transition, digitalization and rising defence needs.

Demand for copper, lithium, nickel and rare earths is rising faster than new supply can be brought online, while long permitting timelines, infrastructure gaps, capital intensity and policy uncertainty continue to slow project development.



Source: Future Minerals Barometer Report 2025

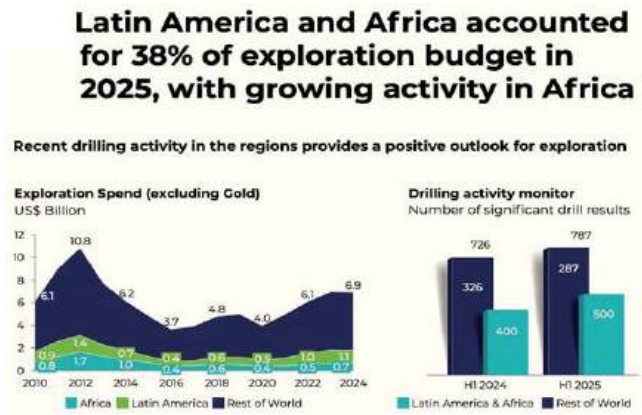
More than 45% of refined production for electric vehicle materials is concentrated in a single region, increasing exposure to geopolitical risk, trade disruptions and price volatility.

Anglo American (LON: AAL) CEO Duncan Wanblad said global copper demand is projected to rise 75% to 56 million tonnes a year by 2050, requiring about 60 new mines the size of Quellaveco in Peru to be developed over the next decade to offset declining output from aging assets.

Risk reset

Investment flows reflect a broader reset in risk perception. McKinsey partner Jeffrey Lorch said the barometer integrates market data and stakeholder sentiment to give companies a practical roadmap to navigate volatility. GlobeScan CEO Chris Coulter said the Super Region faces major challenges but also a significant opportunity if policy, financing and infrastructure gaps can be addressed.

The report estimates the world will need about $5 trillion in cumulative investment by 2035 to meet critical minerals demand, while exploration spending remains 40% to 50% below what is required. Compounding the shortfall is an average 16-year timeline from discovery to first production, meaning projects found today are unlikely to contribute meaningfully to 2030 or 2035 climate targets.



Source: Future Minerals Barometer Report 2025

Industry leaders at the forum argued that faster development will depend on regulatory harmonization, new funding mechanisms and deeper collaboration between governments, miners and investors to unlock supply in Africa, Asia and Latin America.

Cecilia Jamasmie | January 14, 2026

➢ India wants Canada's resources as nations build on truce, says British Columbia premier

Large Indian businesses are eager to invest in Canadian resources, according to the leader of the minerals- and gas-rich province of British Columbia, fresh off a trade mission to the world's fastest-growing major economy.

Premier David Eby spoke with executives at Tata Steel Ltd. and Reliance Industries Ltd., the conglomerate controlled by Asia's richest person, Mukesh Ambani, during the trip.

He said he also discussed liquefied natural gas and clean fuels with Indian Oil Corp. and Hindustan Petroleum Corp., met with the nation's energy minister and chatted about minerals and energy with JSW Group and Hindalco Industries Ltd.

"They were keen on a number of fronts," Eby said in an interview at the BC Natural Resources Forum in the city of Prince George. "They were interested in direct investment, including potentially processing on-site to reduce transportation costs."

Eby said he was struck by Indian businesses' confidence in a high long-term growth rate of 8% to 10% annually — which is driving them to urgently seek out energy sources like BC's LNG and key mineral inputs.

"They really want to secure those off-take agreements: rare earth elements, nickel, copper were key areas of interest for them," Eby said. He's sharing lists of mine

proposals in the province and discussed introductions to some of the mines' backers.

India is a key target market for Canada under Prime Minister Mark Carney, who's set a goal of doubling the country's non-US trade in a decade. Canada currently sells about 70% of its goods over its southern border, but US President Donald Trump has roiled the relationship with tariffs and threats.

Last week, Carney struck a major trade rapprochement with China, reducing tariffs.

Carney has quickly worked to thaw Canada-India relations and is planning a visit to the country early this year. Energy Minister Tim Hodgson is traveling to Goa next week for India Energy Week.

The enthusiasm marks a striking turnaround after Carney's predecessor, Justin Trudeau, accused Indian diplomats of backing harassment and violence against Canadians — claims backed by police. Trudeau also alleged possible links between Prime Minister Narendra Modi's government and the 2023 murder in BC of a Canadian citizen who had been agitating for an independent Sikh state — which India dismisses. Four men have been charged with first-degree murder in that case, and their trials are pending.

Political leaders in both countries have a reason to talk: India has been hit by some of Trump's highest tariffs.

"What we've heard from them was that they've been given clear direction from the top down that they must diversify their trade," Ravi Kahlon, BC's minister of jobs and economic growth, who was also part of the trade delegation, said on a panel at the conference.

They could also benefit from shifting away from coal to cut pollution. Indian executives expect their energy mix to go to 15% LNG by 2030 versus 6% today, Kahlon said.

BC's resources and geography make it Canada's gateway for trading with Asia. But its economy is highly geared to real estate and has slowed because of interest rates and high housing costs. As the province's fiscal situation deteriorates, the left-leaning Eby has more incentive to drum up deals, even in the fossil-fuel industries he was once unenthusiastic about.

The province is shipping an increasing amount of propane from its northern coast and has a series of LNG plants coming online. The largest, LNG Canada, started shipments to Asia in June. "We're expecting and are hopeful" investors will back a doubling of that project's size, Eby said.

Bloomberg News / January 23, 2026

➢ Government policies to drive mining investment activity in 2026: survey

Geopolitical events steered the world's attention to the mining sector in 2025, highlighting the persistent supply chain risks that the industry has largely overlooked for years. In 2026, all eyes are on how governments react to rising global tensions and mitigate those risks, says law firm White & Case LLP.

According to its Mining & Metals 2026 survey, policies surrounding critical minerals will likely be at the front and center. Nearly half of the respondents (47%) regard political variables — including government support — as the single biggest driver of activity.

In its report, White & Case said the shift to a policy-driven deal cycle has already shifted the investment landscape, exemplified by US government support that led to a wave of interest in critical minerals projects.

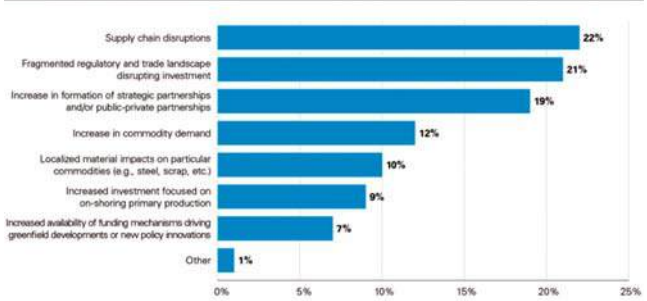
About a third of its respondents believe that will remain a key trend in 2026, and nearly 40% expect state-backed financing to be the most common policy prescription in developed markets.

Key geopolitical factors

The unprecedented degree of policy support for new mining projects — and volatility of trade policy — reflects the geopolitical urgency to secure critical minerals supplies, White & Case said.

Supply chain disruptions, as seen during 2025, remain one of the biggest risks this year, as highlighted in its survey. Roughly an equal number of respondents consider the fragmentation of national policies as another key issue.

Regulatory fragmentation, supply chain disruption and strategic partnerships/PPPs dominate geopolitical expectations for 2026



Source: White & Case LLP

Still, a large number of investors see increased activity or potential upsides following a year of trade shocks, according to the survey results. Nearly three-quarters (73%) expect a greater divergence between the US and China on trade and critical minerals policy over the next 12 months.

Moreover, the massive gap in government-backed funding between the US and Europe would also create opportunities, the firm added.

"The next 12 months promise a consolidation of the sector's ongoing politicization, providing opportunities and risks for miners and investors increasingly reliant on access to policy support across metals markets that are generally well supplied or over-supplied," said Rebecca Campbell, partner at White & Case.

Potential 'bubble'

While mining companies stand to benefit from policy support, White & Case's report also warned that this trend would create "an over-expansion of supply", leading to a potential investment bubble in the sector.

The law firm, quoting one respondent, said "this mining sector 'gold rush' will run for two to three years before ending in a downturn." Importantly, demand is driven by markets, rather than policies, it pointed out.

Overall, smoothing out the traditional boom-bust cycle for key metals can stabilize prices and investment over time as policy frameworks evolve, it said.

Biggest winners

As such, the biggest winners of 2026 will likely be the "sure bets" — copper and gold — according to the firm's survey. Two-thirds of the respondents predict these metals to be the year's biggest risers, continuing their strong performance from 2025.

The survey results on other minerals are mixed, with many expecting a consolidation in base metals and a political bull market for rare earths. Most respondents expect coal to underperform, followed by lithium.

M&A trends

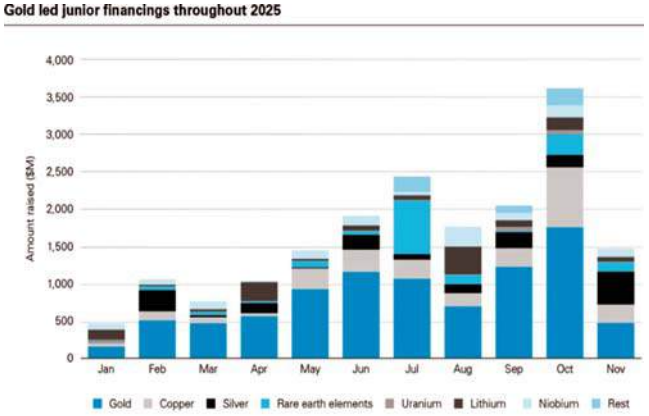
In 2026, volatile national policies, resource nationalism and the cost of capital could once again hinder mergers and acquisition (M&A) activity in the industry, though some see those as potential deal drivers as well.

The biggest obstacle to M&A deals, however, is the availability of assets, as highlighted by about 20% of the survey respondents.

The formation of strategic partnerships between industry participants is expected to be the most likely type of transactional activity this coming year, according to the survey, highlighting the ongoing attempted merger between Anglo American and Teck Resources.

In the year ahead, strategic partnerships between governments, government agencies and the private sector are likely to be the backbone of growth M&A in the sector, White & Case said.

Gold led junior financings throughout 2025



Source: White & Case LLP

Most respondents (29%) predict that gold miners are the likeliest to experience consolidation, given these companies raised more capital than any other mineral in 2025.

Staff Writer / January 22, 2026

➢ US proposed SECURE Act aims to offset China's grip on critical minerals

US lawmakers last week introduced bipartisan legislation to create a new authority for a $2.5 billion critical minerals stockpile, aiming to counter China's dominance of global supply chains.

The proposed Securing Essential and Critical US Resources and Elements (SECURE) Minerals Act would establish a Strategic Resilience Reserve (SRR) to support domestic production and processing of minerals vital to electrification, clean energy and national defense.

China currently controls over 60% of the world's mined rare earths and about 90% of their processing. The Asian nation also holds a major share of the refined production of lithium, graphite and cobalt, all minerals key to electrification, clean energy and national defense.

(Continued on Page 24)

DIGITAL TRANSFORMATION IN MINING AND METAL INDUSTRIES FOR ENHANCING EFFICIENCIES AND SUSTAINABILITY

Venugopalam Medicherla[1] and Aasheesh Raizada[2]

Abstract

The mining and metals industries are at the forefront of a new digital era, where sustainability, safety, and operational efficiency converge under smart technologies. This article, based on a paper presented at the MEAI 50th Annual International Conference, summarizes the development and demonstration of an Integrated Digital Sustainability Framework (IDSF). The metals and mining industry is undergoing a significant digital transformation to enhance safety, reduce costs, and meet sustainability goals. Leveraging cutting-edge technologies like AI, IoT, blockchain, cloud computing, and digital twins supported by a scalable, modular IT architecture enables real-time data processing, predictive analytics, and efficient resource allocation.

The framework integrates IoT sensing, RFID automation, AI/ML analytics, digital twins, and SAP S/4HANA over a hybrid edge-cloud architecture. Two industrial case studies—an open-pit mine and an iron ore pellet plant—validate substantial performance improvements, including 12–15% higher operational efficiency, 10–18% emissions reduction, and 8–10% throughput optimization. The research and its presentation were well received by the conference participants, who appreciated its innovative and practical approach toward digital transformation in mining.

Keywords: *Digital Transformation; Mining and Metals; Industry 4.0; IoT; RFID; Artificial Intelligence; Digital Twin; Sustainability; SAP S/4HANA; ESG.*

Key Points

- *Framework: Hybrid edge, on-prem, cloud; real-time data processing; centralized analytics; modular approach, legacy-friendly*
- *Tech Stack: AI/ML, IoT & RF/5G, digital twins, blockchain*
- *Impact: Costs -15–20%; productivity +10–15%; downtime –up to 30% (predictive maintenance)*
- *Proof Points: ArcelorMittal smart factory; Rio Tinto autonomous haulage; Baldota Realtime integrated data of mining equipment weighbridges & logistics of pellet plant*
- *Challenges → Actions: Skills, cybersecurity, remote connectivity → invest in analytics/security, RF/IoT, and compliance automation.*

1. INTRODUCTION

As global mining industries face the twin pressures of decarbonization and rising demand for metals, digital transformation has become a strategic necessity. Manual and paper-based processes have long impeded efficiency, safety, and transparency. The Integrated Digital Sustainability Framework (IDSF) addresses these challenges by creating a modular and scalable ecosystem that enhances data flow from mine to market, anchored by Industry 4.0 and ESG principles.

The MEAI Bellary-Hospet Chapter's Golden Jubilee Year International Conference served as an ideal platform for showcasing this research. The conference celebrated five decades of technical advancement in mining engineering, with active participation from industrial leaders, researchers, and academicians across India and abroad. The presented work attracted strong attention for its phased implementation strategy and real-world performance validation.

2. INDUSTRY PRESSURES DRIVING CHANGE

2.1 The Challenges

- Mining and metals industries face dual pressures: meeting global demand while reducing environmental impact, improving safety, and managing cost volatility.

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- Fragmented IT systems and manual, paper-based processes exacerbate inefficiency and risk across operations.

2.2 The Opportunities

- Industry analyses highlight digitalization as essential to competitiveness, with material gains in safety, cost, and productivity when deployed at scale.
- Structured digital transformation can deliver 15–20% cost reductions and 20–25% asset-utilization gains.

3. METHODOLOGY

The IDSF was validated through two industrial implementations.

3.1 Open-pit Mine (Mine A)

Deployment of IoT sensors and AI-assisted maintenance scheduling reduced downtime by 22%, improved equipment availability by 18%, and achieved 10% fuel savings (Fig. 1).

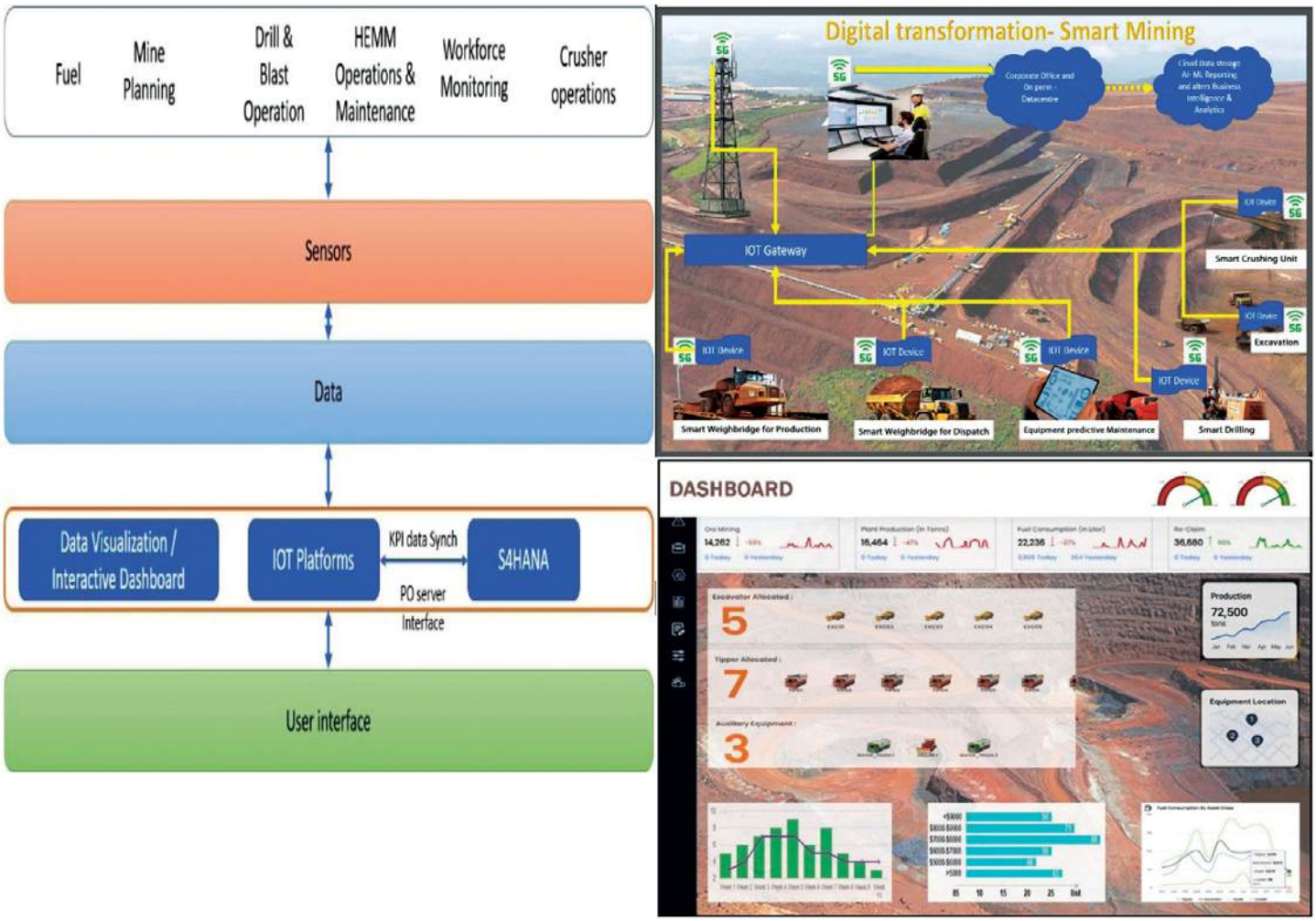

Fig. 1 Mining digital Architecture

2.2 Iron Ore Pellet Plant (Plant B)

Implementation of RFID gates, ANPR, manless weighbridges, and SAP S/4HANA integration resulted in 30% faster gate processing, 25% higher inventory turnover, and 99.8% weighment accuracy (Fig. 2).

Data was collected before and after digitalization, normalized by throughput, and analyzed to determine operational, environmental, and compliance performance outcomes.

4. KEY RESULTS

These results of the research study are supported by ArcelorMittal's Smart Factory Project. Through artificial intelligence and IoT sensors spread throughout its manufacturing sites, ArcelorMittal has maximized energy use and cut waste, therefore enhancing sustainability. And Rio Tinto's autonomous haulage systems. Integration with legacy systems, the absence of expertise, cybersecurity threats, and communication issues in remote areas are

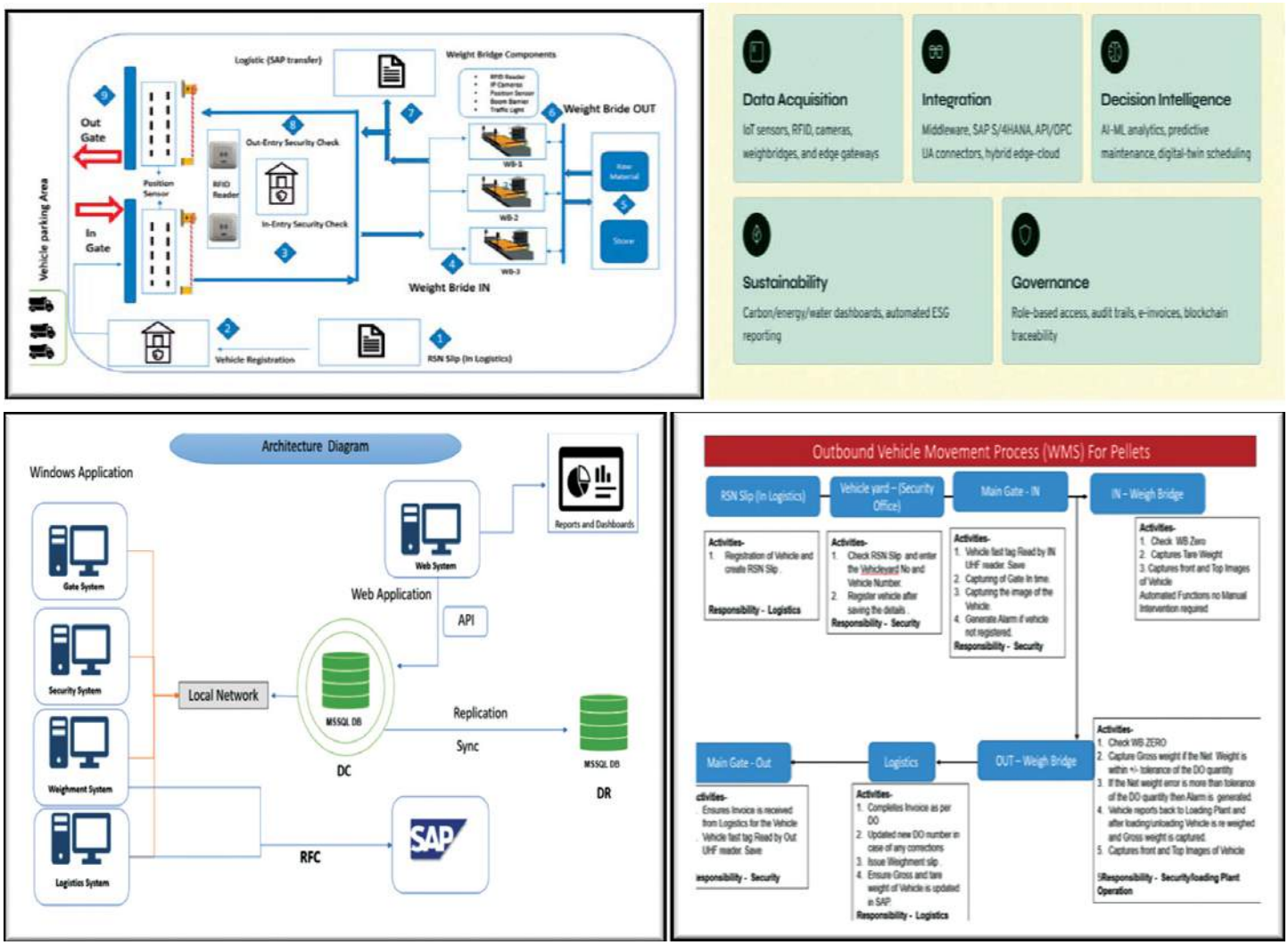

Fig. 2 Metal industries' digital transformation

major challenges despite the revolutionary promise of such solutions as the pilot practical approach implementation at Baldota digital mining practices in mining and pellet/steel metal industries.

- Operational Efficiency: 15–20% improvement in productivity and 25% better asset utilization.
- Sustainability: 30% reduction in CO emissions, 20% reduction in water usage, and real-time ESG compliance tracking.
- Safety: Autonomous logistics reduced human exposure to hazardous conditions.
- Economic Impact: Average payback period of 17 months with 62% IRR and cumulative five-year benefit of approximately INR 3 crore.

These results align with MEAI's mission to promote technological leadership and sustainable mining operations in India.

5. DISCUSSION

The IDSF ensures interoperability, cybersecurity, and seamless integration with existing enterprise systems. It supports hybrid operations that combine edge computing, cloud analytics, and AI-assisted decision support for optimized production and risk management.

The paper's presentation at the MEAI conference emphasized India's readiness to adopt AI-driven mining, digital logistics, and virtual plant modelling. Delegates and technical members appreciated the data-backed implementation insights and the measurable business outcomes shared during the session.

6. FUTURE OUTLOOK

Future work is focused on advancing IDSF through:

- Generative AI tools for process optimization and predictive analytics.

- Blockchain networks for responsible mineral traceability.
- Edge AI acceleration with 5G integration for remote operations.
- Digital twins for full lifecycle modelling and energy efficiency simulation.

These technologies will further advance the goal of developing intelligent, sustainable mining systems in India's emerging Industry 4.0 landscape.

7. CONCLUSION

A collaborative approach between industry leaders and policymakers will shape the future of digital mining. The paper and our conversation highlight how taking a thoughtful, strategic approach to digital transformation can truly reshape mining and metals operations for more efficiency and sustainability and with greater resilience to change.

The IDSF offers a pragmatic pathway to modernize mining and metals operations with measurable improvements in efficiency, sustainability, and safety. Phased deployment on a hybrid edge-cloud foundation, open standards, and robust OT security are critical success factors for achieving 12-15% operational efficiency gains and 10-18% emissions reductions.

The framework provides a practical, validated pathway for modernizing mining operations with measurable benefits. Success requires phased deployment, open standards, and robust cybersecurity measures. Case studies confirm significant reductions in downtime, improved compliance, and substantial sustainability gains.

8. ACKNOWLEDGMENTS

This article is based on a paper presented during the MEAI 50th Annual International Conference, where it received appreciation from technical experts and committee members for its contribution to sustainable digital transformation in mining. The authors gratefully acknowledge the Mining Engineers' Association of India (MEAI) senior team and members for their continuous support and encouragement in promoting scientific advancement.

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MINERAL RESOURCES OF BELGAUM DISTRICT: A REVIEW

Dr. P.T. Hanamgond

Abstract

Belgaum district, situated in the northwestern part of Karnataka, represents a geologically and geographically diverse region bordered by the Western Ghats and encompassing a variety of physiographic divisions including the Deccan Plateau, Western Ghats foothills, and Kaladgi formations. Spanning an area of 13.46 lakh hectares and comprising 10 talukas, the district is rich in agricultural land and forest cover, supported by significant river systems like the Ghataprabha and Malaprabha.

The geology of the district is marked by a complex assemblage of rock formations including Archaean granites and gneisses, Proterozoic sedimentary rocks (Kaladgi Formation), Deccan Trap basalts (Deccan Volcanic Province), and quite conspicuous laterite and bauxite deposits. These formations host economically important minerals such as quartzite, limestone, dolomite, and clay, which support local industries including M-sand production, ceramics, cement, and brick manufacturing. The schists, phyllites, and BHQ belts, particularly in Khanapur and Bailhongal talukas, also exhibit significant structural features and mineralogical richness.

The unique geological setup, combined with the region's climatic and topographic conditions, has made Belgaum a vital area for both agricultural and mineral-based economic activities in Karnataka.

1. INTRODUCTION

Belgaum district, located in the northwestern part of Karnataka, is a region of significant geological, geographical, and cultural importance. Bordered by the districts of Dharwad, Bijapur, Bagalkote, Kolhapur, Ratnagiri, and Sangli, as well as the state of Goa. Belgaum serves as a strategic link between the Deccan Plateau and the Western Ghats. The district headquarters, Belgaum city—historically known as *Venugrama*—has evolved into one of the most prominent urban centers in Karnataka and is often regarded as the state's second capital due to its administrative, military and cultural relevance.

The Belgaum district features a diverse landscape, ranging from fertile agricultural plains to forested uplands and rugged hill ranges. Its varied topography is matched by equally diverse climatic and hydrological conditions, with the district receiving most of its rainfall from the southwest monsoon and being nourished by two major river systems—Ghataprabha and Malaprabha, both tributaries of the Krishna River. These rivers not only support agriculture but also provide drinking water through major reservoirs like Hidkal and Navilteerth.

The district's geological framework is exceptionally complex, showcasing rock formations from the Archaean to the Deccan volcanic periods. This includes granites, schists, quartzites, sandstones, laterites, and Deccan basalts, along with economically significant mineral resources like bauxite, limestone, dolomite, quartzite, and various clays (Figure 1). These geological units not only influence the physiography and soil types but also support key economic activities such as agriculture, mining, and construction.

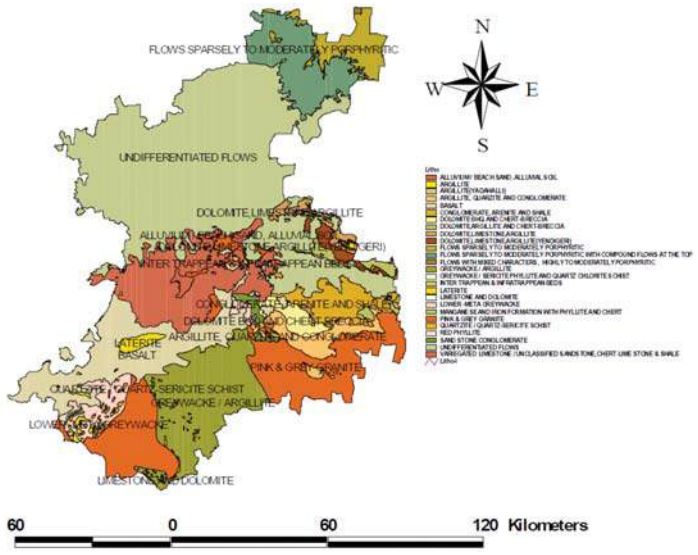

Figure 1. Geological map of Belgaum District

This article aims to provide a comprehensive overview of the geological characteristics of Belgaum district, highlighting its rock formations, mineral resources, geomorphological features and economic development. Through this

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exploration, the study underscores Belgaum's role as a geologically rich and environmentally significant district in Karnataka.

Belgaum being the district headquarters (historically well known as Venugrama) is one of the oldest and well cultured historical places bordering the Western Ghats. Belgaum has now become one of the important and second capital of Karnataka state.

The Belgaum district is located on the Survey of India topo-sheets between Latitude. 15°25'-15°55'00" and longitude 74°15'-75°25', occupying an area of 13,46,348 Ha. The district comprises of 10 talukas. The district has a rich forest of about 192776 Ha; and 50% of the geographical area is normally covered by agriculture crops.

About 95% of the rainfall is received during June to September due to southwest monsoon and remaining rainfall is received during the rest of the period owing to northeast monsoon. The district has two major river systems – Ghataprabha and Malaprabha which are tributaries of River Krishna. Two dams are constructed across these rivers at Hidkal and at Navilteerth, which are the sources of agriculture and drinking water for the surrounding areas.

The Belgaum district is divided into three major physiographic divisions- the Deccan Plateau, foot hill ranges of Western Ghats and Kaladgi formations. The plateau is divided into Malnad and Maidan. The Ghats with evergreen and semi-evergreen forests constitute the core of the Malnad especially in the southern part of the district at Khanapur taluka. Malnad is an undulating upland.

The Deccan Plateau is a continuation of the Malwa Plateau and extends southwards which is flanked by the Western Ghats on western side and maidan or gentle sloping on the eastern side. The height of the Deccan Plateau varies from 300-900 m.

2. GEOLOGY

Geologically Belgaum district can be divided into 4 main regions –

1) Achaeans (granites and gneisses, shales, BHQ etc, Figures 2 & 3), and crystalline limestones are exposed in the southern part at Khanapur taluk especially conspicuous at Krishnapur (Figure 4) and in Bailhongal taluk.
2) Proterozoic (Quartzites, quartz arenites, sandstones, conglomerates, shale, limestone/dolomite etc) exposed in Gokak, Ramdurg, Hidkal, Bailhongal and Saundatti taluks (Figure 5-7).
3) Deccan Volcanic (deccan traps) basalts exposed in Belgaum, Chikkodi, Nippani and Athani taluks (Figures 8). There is an exposure of inter-trappean formation near Deshnur (Figure 9), which exhibits gritty sediments with calcareous shell fragments (fossils).

Figure 2. Granite mining at Idalhond

Figure 3. Gneiss sheets mining at Khapoli, Khanapur

Figure 4. A huge Crystalline Limestone Cave at Krishnapur (my student raising hand at the bottom of the cave)

Figure 5. Proterozoic Quartzites/Quartz Arenites exposed at Sogal

Figure 6. Mining of Limestone and Dolomite minerals at Yadwad

Figure 7. Mining of Calcareous Shale at Sidnal

4) The Laterite and Bauxite formations which occur as blanket deposits (occurring above deccan basalt and archaeans as weathered residual deposits) are observed along the south-western region near Khanapur and Navage-Betne hill ranges. At places bauxite boulders with pisolitic structures are found as float ore (Figure 10).

Figure 8. Deccan basalt flows with red bole at Sankeshwar

Figure 9. Inter-trappean beds exposed near Deshnur village

Figure 10. Pisolitic bauxite boulders exposed near Hubbanatti village

The Archaen Schist is an extension of the Dharawar schist belt. The formation is overlaid by thick cover of shale, the thickness varying from 15m to 25m as observed in many villages of Khanapur and Bailhongal, Belgaum talukas. In few places like, Marihal in Belgaum taluka, Shivanur, Nichanaki

villages of Bailhongal taluka, the shale cover extends up to 100 m. The Schist encountered below shale cover is greyish in colour, exhibit well developed platy structures. Individual plates can be easily separated. It is usually weathered up to 25-30 m. It shows a general trend of NW 10-SW 10SE dipping due east. The Schist formation is observed in Bailhongal, Khanapur, Belgaum and Saundatti talukas (Figure 11).

Figure 11. Calcareous (Tremolite?) folded schist rock with quartz veins exposed near Ramdurg.

Phyllite is a hard formation, resembling schist by its grey colour, having trend, dip etc similar and occurring adjoining the schist. Joints and platy structures are poorly developed. It is massive in nature, breaking in to irregular, angular fragments or irregular massive boulders.

It shows a trend of NNW-SSE, and occurs parallel to schist. Such formation occupies limited

extent in the Central part of Bailhongal taluka and Western parts of Saundatti shallow weathering, and non-porous nature, seepage of water is limited to shallow depth and hence regularly proved to be a poor aquifer.

The Banded Hematite Quartzite (BHQ) exposures occur parallel to the schist formation. The quartz and hematite impart a mixed brownish colour to the rock. Well-developed banded structures can be clearly observed. Exposures of BHQ are observed in the Bailhongal taluka especially near MK Hubli and Kittur. This is characterized by compact platy structure of hematite and quartz bands. Both Schist and BHQ show a general trend of NNW-SSE direction, dipping due East.

Sandstone, Quartzite and Limestone, Shaley Limestone represent the Kaladagis. The Sand stones are horizontally bedded, fine to coarse grained, exhibiting white, buff, pink, yellow colours. Many structural features, like parallel bedding, current bedding, ripple marks, folds, faults, brecciation, conglomeration etc., can be observed. Flat topped hill ranges can be seen in Hukkeri, Ramadurga, Saundatti and Bailhongal Talukas. Sandstone and Shale are being used as building material. There are natural springs in Sandstone, such as the spring of Yallamma temple, Sogal-kshetra, Ramteerth, Hunashiwari math, Rudrapur fort etc.

The Quartzite is a highly siliceous rock. Glossy in nature. With silica up to 94-97 %. They are various colours ranging from white, gray, pink etc. Huge quartzite exposures are available in Gokak, Ramadurga and Saundatti talukas. This is being used for M-sand (manufactured sand) for construction as a replacement to natural river sand. The rock is also used as refractory and for glass industries. Quartzite blocks are being used a building material because of its abundance. Aggregate quarries in Belgaum district primarily produce building stone using semi-mechanized open-cast mining methods. The quarries utilize shallow drilling and blasting techniques to break the rock formations, followed by manual sorting and chipping. M Sand manufacturing is gaining more importance for building purpose.

The Limestone occurrence restricted to the eastern part of Gokak taluka and NE part of Ramadurga and South, western part of Khanapur taluka. This is greyish coloured, compact, and often thickly bedded. Ca% varies from 42-48%, Mg 14 %-17%. Si02 in Yadwad area ranges up to 7% Limestone of Belgaum district is massive in nature and occurs as massive deposits. This is being used for preparation of Lime, and Cement. Dolomite is observed to occur in Limestone areas of Yadwad in Gokak taluka. A large deposit if Dolomite is observed near Yaragatti, Yarzarvi villages in Saudatti taluka. Shaley limestone is noticed around sidnal, Godachi village in Ramadurga taluka, being used as paving stone. Mg % is up to 21-27% with Ca % up to 2930 %. This is massive in nature, very brittle and often stands as hard, non-weathered stretch. In Talewadi-Krishnapur range of Khanapur taluka there are at least 7-8 huge caves in crystalline limestone (Figure 4).

The Deccan Basalt, generally known as “Deccan Trap” occupies a large extent in the Northern part, thinning out towards South. At least 3-4 volcanic flows can be seen above ground levels, (640m) and 3-4 flows, below surface levels. Individual trap flow is marked by inter-trappean bed or by redbole, usually filled with Zeolites, Amygdaloids, Quartz, jasper, Calcite etc. The rock exhibits well-developed onion peel weathering or exfoliation, columnar joints. Flat-toppded hill ranges can be seen in Belgaum, Khanapur, Hukkeri, Chikkodi, Athani and Raibag talukas. This formation being the younger, it is observed to be over lying sandstone, schist, gneisses, limestone etc. The rock has produced black cotton clay which is a very good soil for agriculture. The rock is used mainly as a building and road material. Many historical buildings constructed around Belgaum are of basalt rock. Almost all stone crushers in the district are in trap formation only.

Laterite of this district is an altered product of Deccan trap. In a cross section, one can observe laterite at top followed by leached out alumina clay, grading down in to weathered of massive trap. It is exposed as covering over the trap bedrock. The alumina content is usually less than 30% but some detached, 49-59% alumina rich deposits (Bauxite) are observed in south-western parts of Khanapur and Belgaum talukas. Because of its porous nature, laterite behaves as good receptor of water, allowing percolation up to the depth bedrock. This being followed by Deccan trap the water start to spread horizontally and at many places appear in the form of contact springs as observed in Khanapur and Belgaum talukas. There are more than 15 villages having the springs as their water supply sources. The rivers like Malaprabha, Potli, Mandovi, Mahadai etc take their origin in the contact of Laterite and Trap. The Laterite is generally weathered up to 15-25 m.

Apart from these, the Khanapur taluka is enriched with varieties of fire clay, clastic clay, china clay etc. The bricks of Khanapur taluka have a good demand in and adjoining districts. The clay is being used for ceramic factories and brick industry of Khanapur and Bailhongal talukas. The rich deposits of sand of Khanapur and Gokak talukas have a great demand for construction purpose. However, over demand and use the Khanapur sand has been exhausted since last decade (Figure 12).

Chemically, the clay deposits studied have relatively high silica and low titania. The transformation of precursor rocks to clay deposits which was brought about by *insitu* chemical weathering and subsequent reworking of the weathered products under tropical climatic conditions was accompanied by enrichment of Al, Zr and Cr and removal of Si, Fe. Ni, Cu and Zn.

Figure 12. Clay mining around Bhootnath, Khanapur

As per the classification based on agricultural capability, the soils are grouped as red soils, laterite soils, black soils, alluvio-collovial soils, brown forest soils, laterite and alluvial soils. The alluvial soils possess great natural fertility. These soils are suitable for the cultivation of a wide range of crops such as wheat, rice, sugarcane etc; nevertheless, at some places, gram, barley, maize etc are found to be the most common crops cultivated. The sandy soil consists of aeolian sand (90-95%) and clay (5-10%). These soils are very light and comprise about 8.46% of the country's soil cover. These are suitable for high salt tolerant crops, such as barley, rape and cotton, and also medium salt tolerant crops, such as wheat, millets, maize and pulses. The black soils vary in depth from shallow to deep. The typical soil derived from the Deccan Trap is the *regur* or black soil. Many black soil areas have a high degree of fertility, but some, especially in the uplands are poor. Black soils are highly argillaceous, very fine grained and dark and contain a high proportion of calcium and magnesium carbonates. They are exceedingly sticky, when wet. On drying, they contract forming large and deep cracks. These soils contain abundant iron, and fairly high quantities of lime, magnesia and alumina. They are deficient in potash, nitrogen and organic matter. The intensively cultivated tracts where adequate rainfall occurs are most suitable for cotton, wheat and jowar. But where irrigation facilities have been made available rice and sugarcane crops are also cultivated.

3. CONCLUSION

Belgaum district stands out as a region of remarkable geological diversity and economic significance in Karnataka. Its terrain, shaped by a variety of rock formations from ancient Archaean schists and granites to younger Deccan basalts and lateritic caps has not only defined the district's landscape but also contributed to its rich mineral wealth. The presence of valuable resources such as quartzite, limestone, dolomite, bauxite, and various clays has supported thriving industries like cement manufacturing, ceramics, brick-making, and M-Sand production, while also offering potential for future resource development.

Overall, Belgaum exemplifies a dynamic interplay of geology, geography, and human activity. Its natural endowments, if managed sustainably, hold the promise of continued economic growth, environmental conservation, and regional development. A deeper understanding of its geological framework is essential for informed land use planning, mineral resource management, and long-term ecological balance.

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(Continued from Page 14)

For lithium, China has created a huge glut that has driven down prices globally, rendering many projects in the West unprofitable. In the rare earth sector, it deployed export curbs that have also resulted in high prices.

US Senators Jeanne Shaheen (D-NH) and Todd Young (R-IN), alongside Representatives Rob Wittman (R-VA-01) and John Moolenaar (R-MI-02), introduced new legislation to support domestic supply chains to meet national and economic security needs through the creation of a new SRR.

The legislation has been introduced on a bicameral and bipartisan basis, reflecting early alignment across chambers and parties.

Critical minerals have emerged as a key chokepoint in the global economy, the lawmakers said.

The SECURE Act would establish the SRR in an independent government corporation, run by a seven-member board appointed by the President and confirmed by the Senate.

"China's global dominance of critical minerals supply chains gives it significant leverage and leaves the US vulnerable to economic coercion. This bipartisan legislation is a historic investment in making the US economy more resilient and supporting good-paying jobs in key sectors like aerospace, autos and technology," Senator Shaheen said in a news release.

“Delivering much-needed stability to the market, providing targeted investments and stockpiling key inputs will help insulate the US from foreign threats and will provide a significant, and cost effective, boost to the US economy.”

Path to law

Sahar Hafeez, senior counsel, international trade and national security matters at Pillsbury Winthrop Shaw Pittman's Washington DC office told *MINING.COM* such legislation takes time and will involve subsequent edits and versions on the path to being passed into law.

“We understand that the House Committee on Natural Resources is looking to schedule a mark-up and that the Senate is aiming for including this as part of the NDAA (US National Defense Authorization Act),” Hafeez said in an email.

The bill establishes new statutory authority to create a $2.5 billion strategic reserve, rather than relying on pre-existing stockpiling frameworks. It does not amend legacy statutes such as the Strategic and Critical Materials Stock Piling Act of 1939, she confirmed.

“From a national security and supply-chain resilience perspective, the legislation prioritizes domestic projects and US-based supply chains, as well as initiatives that incorporate recycling and unconventional feedstocks,” Hafeez said.

"It also targets materials where US import dependence is effectively 100%, which could potentially include projects from foreign sources, particularly where DFC (Development Finance Corporation) authorities are leveraged. The legislation also provides that partner governments, upon approval by the Reserve, can make capital contributions for financing and acquiring for the Reserve."

As Congress debates the details, the SECURE Act signals growing urgency in Washington to address mineral supply vulnerabilities.

Whether through this bill or a revised successor, lawmakers appear increasingly aligned on one point: securing critical minerals will remain a central pillar of US economic and security policy in the years ahead.

Amanda Stutt / January 20, 2026

➢ India ranks 3rd in rare earth reserves, but trails in production due to structural bottlenecks in mining: Report

India possesses the world’s third-largest rare earth reserves but struggles with production, ranking seventh globally. Despite holding 6-7% of global reserves, its output is less than 1%. Challenges lie in complex mining regulations, limited processing capacity, and value-chain integration, hindering its global influence.

India has the world’s third-largest rare earth reserves, but its production remains among the lowest compared to major global players, highlighting a sharp gap between resource availability and actual output, according to a report by Amicus Growth.

Data showed that India holds about 6.9 million tonnes of rare earth oxide (REO) reserves, placing it behind only China and Brazil. China tops the list with 44 million tonnes of reserves, followed by Brazil with 21 million tonnes. Other countries with notable reserves include Australia (5.7 million tonnes), Russia (3.8 million tonnes), Vietnam (3.5 million tonnes) and the United States (1.9 million tonnes).

(Continued on Page 38)

MEAI NEWS

MEAI HEADQUARTERS

The 65th Central Geological Programming Board (CGPB) Meeting

The 65th CGPB meeting took place on January 21, 2026, at the A. P. Shinde Symposium Hall in Pusa, New Delhi.

Shri Piyush Goyal, Secretary of Mines and CGPB Chairman, opened with a crisp keynote address. Shri Sanjay Lohiya, Additional Secretary, gave welcoming remarks, followed by an opening address from DG, GSI, Shri Asit Saha. The hall was packed with stakeholders from central and state governments, public and private organizations, and special invitees.

In a welcome break from precedent, the CGPB Secretariat invited MEAI and NACRI to contribute to the 2026-27 program. Mr. Shameek Chattopadhyay, a NACRI founder member, and I represented MEAI/NACRI, presenting on the key agenda item: "Implementation of IMIC in India."

(L-R): Shri Sanjay Lohiya, Shri Piyush Goyal, and Shri Asit Saha

Dr P.V. Rao & Shri Shameek Chattopadhyay

A view of the delegates attending the meeting

AHMEDABAD CHAPTER

Report on a knowledge-sharing session and a seminar on "Four Labour Codes: Employees, Employers and Government"

Kutch Local Center of Ahmedabad Chapter had organized a knowledge-sharing session and a half-day seminar on "Four Labour Codes: Employees, Employers and Government" at its Kutch Local Centre on 06.12.2025, at Conference Hall, Panandhro Lignite Mine of GMDC Ltd.

Around 50 participants from Umarsar Lignite Mine, Mata No Madh Lignite Mine, Panandhro Lignite Mine & Gadhsisa Group of Bauxite Mines of Gujarat Mineral Development Corporation Ltd., Sewagram Cement Works, Ultratech Cement Ltd., and Adani (Sanghi) Industries Ltd. have participated in the seminar.

The event was inaugurated with Lamp Lighting by Shri Gaurav Taluja—Convener, Kutch Local Center Shri A B Dani—Secretary, MEAI Ahmedabad Chapter, , Shri S C Jhagrawat—Secretary, Kutch Local Center; Shri M K Choubey—Mine Head, Adani (Sanghi) Industries Ltd.; Shri N N Mupkalwar—In-charge General Manager, Umarsar Lignite Mine, GMDC Ltd.; and Shri D S Panwar—In-charge Project, Lakhpat Punrajpur Mine, GMDC Ltd.

Shri Ankit Padhi—AM Geology, Panandhro Lignite Mine, GMDC Ltd.—then welcomed guests followed by a welcome by presenting a bouquet to the chief guests from Panandhro Team, GMDC Ltd.

Shri A. B. Dani—Secretary, MEAI Ahmedabad Chapter—in his address to the attendees of the event highlighted the importance and relevance of the topic and emphasized the pressing need for discussion on the topic to gain valuable insights as well as help in decision-making. Further, addresses by Shri N N Mupkalwar—In-charge General Manager, Umarsar Lignite Mine, GMDC Ltd.; Shri D S Panwar—In-charge Project, Lakhpat Punrajpur Mine, GMDC Ltd.; Shri M K Choubey—Mine Head, Adani (Sanghi) Industries Ltd., and Shri Gaurav Taluja – Convener, MEAI

Kutch Local Center were focused in the importance of the topic of seminar and laid out the principle understanding of the Transformative Reform brought by the government and the need of the same in present economic landscape.

During the technical session, seven papers were presented by the following members:

1. Shri Ankit Padhi, Assistant Manager, Geology, GMDC Ltd., Panandhro
2. Shri Partha Pratim Paul, Assistant Manager, Geology, GMDC Ltd., Lakhpat-Punrajpur
3. Shri Milap Mansatta, Assistant Manager (Mines), Ultra Tech Cement Ltd., Sewagram Unit
4. Shri Bharat Vala, Assistant Manager (Mines), GMDC Ltd., Mata No Madh
5. Shri S. J. Matariya, Assistant Manager, GMDC (Mines) Ltd., Gadhsisha
6. Shri Nilesh Patel, Manager, (Mines) GMDC Ltd., Umarsar
7. Shri Vaibhav Jangid, Adani Cement Ltd

The program was concluded with a vote of thanks by Shri S C Jhagrawat, Secretary of Kutch Local Centre, followed by a delicious dinner.

Lamp Lighting by Chief Guests (L-R): Shri Bhaskar Patel, Shri D S Panwar, Shri A B Dani, Shri S C Jhagrawat, Shri Gaurav Taluja, Shri M K Choubey, Shri N N Mupkalwar

Speech by Shri Gaurav Taluja

Opening Remarks for the Seminar by Shri A B Dani

Speech by Shri M K Choubey

Speech by Shri D S Panwar.

Speech by Shri N N Mupkalwar

Glimpses of Memento Presentation to Chief Guests

Glimpses of Paper Presentation

Presentation by Shri Ankit Padhi

Presentation by Shri Nilesh Patel

Presentation by Shri Milap Mansatta

Presentation by Shri Partha Pratim Paul

Presentation by Shri Bharat Vala

Presentation by Shri S J Matariya

View of participants

Glimpse of Memento Distribution to Participants of Seminar

BELGAUM CHAPTER

Report of National Seminar "Rare Earth Minerals Mining in India: Opportunities and Challenges"

The Belgaum Chapter has organized a one-day national seminar, "Rare Earth Minerals Mining in India: Opportunities and Challenges," on 10th January 2026 at Regenta Resorts, Belgaum. There were 7 invited talks from the speakers drawn from various parts of the country. Dr. Arvind Awati, retired scientist, Atomic Minerals Division, was the chief guest, and Shri S Rachappa, Vice President III of MEAI,

presided over the event. Along with them, Chairman Dr. Pramod Hanamgond and Secretary Shri Sagar Waghmare were also on the dais.

The seminar was inaugurated by watering the plant and releasing the souvenir volume that contained research articles. At the inaugural and his keynote address, Shri Awati briefed about the rare earth minerals—the mineralogical details, geopolitical history, various resources, economic demand strategies, importance, application, opportunities, challenges, etc., with respect to the world and Indian scenario.

Dr. Hanamgond welcomed the gathering, and Sagar Waghmare proposed the vote of thanks.

At the technical sessions invited speakers Dr. C. H. Rao, Chairman, Visakhapatnam Chapter; Dr. Chandan Kumar, IISER Tirupati; Shri Srinivas Mokashi, Mumbai; Dr. Debabrata Das, Chandigarh; Shri G. Krishnamurty, Regional Director, CGWB Bangalore; and Dr. Manjunath Paltekar, Dharwad presented their papers and discussed various aspects of rare earth mineral mining, their distribution, genesis, abundance, analysis, opportunities and challenges for the development and need for their exploration, future dependency on REEs, etc. They also highlighted that these rare earth minerals are not as rare as the name suggests, but they are abundant in various forms; however, the technology to extract them in India needs to be developed, for which the government needs to initiate private industry participation along with academic research institutes, for which sufficient funding needs to be supported to encourage the participation of private industries.

There is a need to create research hubs of industries exclusive for REE and critical minerals, which will be more in demand in the future. The race now world over is not for oil and gas, but it will be for these REE and critical minerals.

At the valedictory, Shri Sripada HG, Council Member of MEAI, presided over the function. Dr. Hanamgond, Chairman; Mr. Sagar Waghmare, Secretary; and Dr. BK Purandara, immediate past chairman of the Belgaum Chapter, were on the dais. A few participants, including students, gave their feedback appreciating the event and the knowledge disseminated through various speakers' presentations. About 100 participants, including members of the Belgaum Chapter and members from other chapters, invitees, and MEAI Student Chapter members (about 20 from GSS College), were present for the seminar, making the event a grand success.

The chapter remains indebted to the constant encouragement and support from the MEAI Headquarters and the President, Shri D B Sundara Ramam, and all the Vice Presidents, M Narsaiah, Secretary General, and Shri K Madhusudhana.

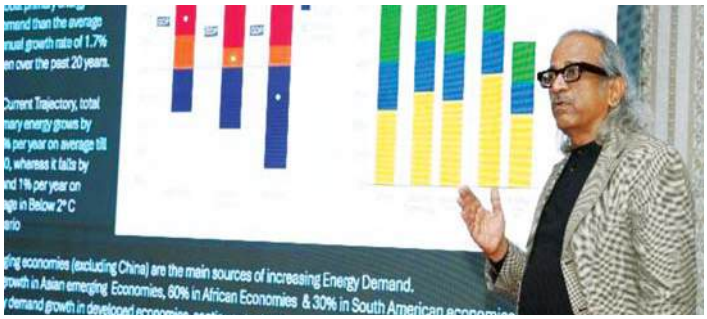
Photographs of the event.

Releasing of the Souvenir volume

Keynote address by Chief Guest Shri Awati

Invited talk by Dr CH Rao, Hyderabad

MEAI VP III Shri Rachappa, giving the presiding remarks



Invited talk by Shri Srinivas Mokashi, Mumbai

Invited talk by Dr Debabrata Das, Punjab University Chandigarh

Invited talk by Shri G Krishnamurty, Regional Director, CGWB, Bangalore

Invited talk by Dr Chandan Kumar, IISER, Tirupati

Invited talk by Dr Manjunath Paltekar, Karnatak Sc College, Dharwad

MEAI Student Chapter members of GSS College, Belgaum

Presidential remarks by Shri Sripada HG, MEAI Council Member, at the Valedictory function

Audience at the Seminar Hall

Audience at the Seminar Hall

A one-day workshop on geological identification of Minerals with hands on training, named as “Rasa Bhouma,” was conducted at SS Rural Ayurvedic Medical College and Hospital at Inchal for UG and PG students of Rasashastra on 6th January 2026.

Dr Hanamgond presenting his talk on Geological Processes

Mr Suraj giving his talk on Mineral identification

Mr Suraj conducting hands on training

Dr Hanamgond conducting hands on training

Participants of the training workshop

Special talk by Dr. Firoz Badesaab - MEAI Belgaum Student Chapter

On 17th January, organized a special invited talk by Dr. Firoz Badesaab, Scientist, NIO, Goa, at the Geology Department, GSS College, Belgaum. Dr. Badesaab enlightened the students about the activities of NIO and opportunities and facilities for students in oceanographic research. BSc final-year students and MEAI Student Chapter members with faculty Mr. Suraj Mense (HoD), Mr. Yogesh Kutre, Mrs. Priyanka Shinde, and Dr. Raju Sukhaye were present at the event.

Glimpses of the program

BELLARY – HOSPET CHAPTER

Nature walk

On 04 January 2026, a nature walk was successfully organized in the picturesque hilly region of Joladarashi Gudda with the objective of exploring the natural beauty of the area and promoting environmental awareness among participants. The event was graced by the presence of Shri G. Laxminarayana—Council Member, Chapter Chairman Shri S. H. M. Mallikarjuna, and Secretary Shri P. Venkateswara Rao, along with other office bearers of MEAI.

The nature walk commenced at 7:00 AM from the foothills of Joladarashi Gudda and witnessed the enthusiastic participation of 45 members, including nature lovers, students, and local volunteers. Under the guidance of experienced leaders, the group traversed through lush forests, winding trails, and scenic landscapes, experiencing the serene and pristine environment of the hilly terrain. Participants were able to observe a wide variety of flora and fauna native to the region, including rare bird species, vibrant wildflowers, and towering trees. During the walk, the chairman and secretary shared valuable insights on the ecological significance of the area, emphasizing the importance of biodiversity conservation and ecological balance.

The walk also featured interactive discussions, during which participants exchanged observations and knowledge about the local ecosystem. The event fostered a deeper appreciation for nature and reinforced the importance of environmental conservation among all participants.

Inputs from the Participants

The nature walk to Joladarashi Gudda was described by participants as an enriching experience that fostered a deeper connection with nature and promoted environmental stewardship. Through immersive exploration of the natural surroundings and proactive cleanliness initiatives, the event underscored the importance of conserving natural landscapes and adopting sustainable practices for the well-being of present and future generations. Participants also expressed that the walk provided a valuable opportunity for learning and awareness, particularly regarding local biodiversity and ecological balance, which enhanced their understanding of environmental challenges. Additionally, the event encouraged community bonding and collective participation, reinforcing the idea that environmental conservation is a shared responsibility requiring active involvement from all sections of society.

As we reflect on the event, it serves as a reminder of our collective duty to cherish and protect the beauty of our natural world, inspiring continued efforts toward environmental conservation and the promotion of a cleaner and greener planet.

HYDERABAD CHAPTER

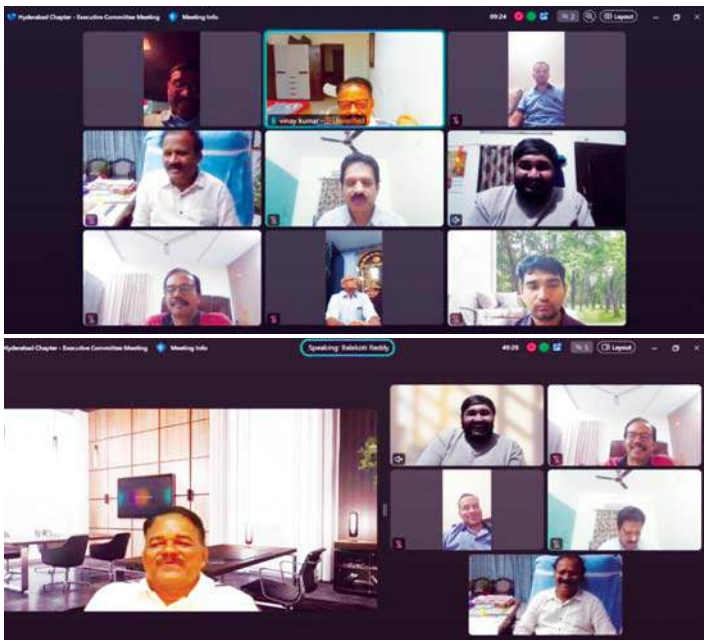
Minutes of Executive Committee Meeting (Online) held on 22 November 2025

Agenda

1. Discussion on the Upcoming International Conference
2. Topic/Theme Selection for the Conference
3. Fixing the Dates of the Event
4. Venue Selection
5. Formation of Committees for International Conference

Members Present

1. Shri. Vinay Kumar, Chairman
2. Shri. V. Balakoti Reddy, Vice-Chairman
3. Shri. Lakkarsu Krishna, Secretary
4. Shri. T Srinivas, Joint Secretary
5. Shri Randhir Kumar, Treasurer
6. Dr. Kameshwar Rao, EC Member
7. Shri. Durgesh Giri, EC Member
8. Shri. Mahesh B, EC Member
9. Shri. Dunde Venkatesham, EC Member



Glimpses of the Executive Committee Meeting

Discussions

- It was identified that the Hyderabad Chapter should take a leadership role in organizing an International Conference to strengthen the chapter's presence and contribute to the mining industry's professional development
- It was agreed that the conference should highlight industry trends, technological advancements, sustainability,
- The Main Objective of the conference is to facilitate meaningful networking opportunities between Research & Development, Academic Institutions, Industry Experts, Government bodies, and International Delegates and Strengthen MEAI Hyderabad Chapter's position as a leading platform for Mining industry

advancement in India and to Showcase Technological innovations, best practices, and case studies in modern mining operations.

- A final theme will be shortlisted after receiving additional inputs from senior advisors and industry partners.
- After reviewing academic calendars, industry schedules, and venue availability, the committee proposed May 2026 as the tentative month for conducting the event.
- The venue is to be finalized, and an organizing committee will be formed shortly.
- Other points were raised by chair to have membership drive to increase in the Life and Institutional Memberships

The Meeting ended with a vote of thanks from Shri. Lakkarsu Krishna, Secretary, Hyderabad Chapter.

KOLKATA CHAPTER

Laying the Foundation for the Revival: Mining Engineers Association of India – Kolkata Chapter

The Meeting of 15 August 2025

The journey toward revitalizing the Kolkata Chapter began on 15 August 2025, during a video conference convened by Hindustan Copper Limited (HCL).

This meeting marked a turning point, not only for MEAI's presence in Eastern India but also for strengthening professional collaboration in the mining sector.

Leadership Commitment

Senior HCL leadership—including

- Shri Sanjiv Kumar Singh, Chairman & Managing Director,
- Dr. Sanjeev Kumar Sinha, Director (Operations) & Director (Mining)—Addl. Charge, and
- Shri R.V.N. Vishweshwar, Director (Finance)— Along with MEAI office bearers, experts from IBM actively participated in the discussions.

CMD, HCL appreciated the collective resolve toward reviving the chapter and emphasized that such professional institutions serve as engines for:

- knowledge enhancement,
- strengthening industry–institution synergy, and
- fostering a positive, collaborative mining ecosystem.

Structuring the Revived Chapter

A crucial outcome of this meeting was the unanimous selection of the following office bearers, demonstrating cross-institutional trust and readiness to operationalize the chapter.

- Chairman: Shri Sanjiv Kumar Singh, CMD, HCL
- Vice Chairmen: Shri Shameek Chattopadhyay (SRK Consultant), Shri Amit Ranjan Nandi (DVC)
- Secretary: Shri Umesh Singh, ED (Mining), HCL
- Joint Secretary: Shri Suraj Gupta, M.P. Birla Group
- Treasurer: Shri C.S. Singh, Coal India Ltd.

Executive members were drawn from HCL, IBM, DVC, and others, ensuring broad professional representation.

Institutional Endorsements

- Shri M. Narsaiah, Secretary General, MEAI, reaffirmed full support from MEAI headquarters.
- Dr. Pukhraj Nenival, COM, IBM, underscored the transformative value of reviving a regional chapter in a resource-rich geography.

This meeting set the stage for a series of subsequent initiatives, aligning MEAI activities with national mining priorities.

Strengthening Professional Ethos: Indian Mining Day (1st November 2025)

Following the momentum created in August, HCL observed Indian Mining Day on 1st November 2025, amplifying the spirit of the mining profession and further reinforcing the institutional revival.

Reaffirming National Mining Values

In the presence of HCL's senior leadership and MEAI dignitaries, including Dr. Pukhraj Neniwal and Prof. Bhabesh C. Sarkar (via VC), the Mining Day pledge was administered, emphasizing:

- responsible mining,
- safety and workforce well-being,
- sustainability and environmental stewardship, and
- inclusive community development.

This reaffirmation of values created a natural bridge between professional commitment and MEAI's revival.

Technical Insight for a Sustainable Future

A presentation by Mr. Tankadhara Sahu, Senior Manager (Environment Management), HCL, on "Sustainable Mining in India—Legal and Regulatory Framework" outlined:

- environmental footprints of mining,
- conceptual evolution of sustainable mining,
- India's policy and regulatory architecture, and
- provisions under MCDR.

This session highlighted the need for regular technical interactions, echoing MEAI's core purpose and further justifying the revived Kolkata Chapter's relevance.

Building Technical Excellence: The International Seminar (9th November 2025)

The momentum achieved through the revival process and Mining Day ultimately converged in the International Seminar on Critical & Strategic Minerals for Viksit Bharat @ 2047, organized on 9th November 2025 on the occasion of HCL's 59th Foundation Day.

MEAI as Knowledge Partner

The seminar marked the first major collaborative engagement between HCL and MEAI after the revival initiative.

MEAI served as the *Knowledge Partner*, reflecting its strengthened role and renewed presence. **Seminar Themes Connected to National Priorities**

Topics covered included:

- critical minerals as drivers of India's energy transition,
- strategic mineral security in a changing global economy,
- sustainable mining, processing and extraction technologies,
- geopolitics of critical minerals, and
- industrial and research collaborations.

These are precisely the types of contemporary themes that a revived Kolkata chapter is expected to promote in Eastern India, given Kolkata's industrial and academic ecosystem.

Academic & Technical Depth

A total of 19 technical papers were presented, drawing participation from public and private sectors, research institutions, consultants, and regulatory authorities.

This seminar demonstrated the appetite for high-quality, knowledge-centric forums—an essential mandate of the Kolkata Chapter.

Formalization & Forward Momentum: AGM of 10th November 2025

The Annual General Meeting of the Kolkata Chapter, held on 10th November 2025 at the HCL Corporate Office, acted as the formalization stage of the revival movement.

Highlights of the AGM

- Dr. Sanjeev Kumar Sinha reiterated MEAI's significance as a knowledge platform.
- Director (Finance), HCL, emphasized the need for MEAI to address emerging sectoral challenges—technology upgrades, operational excellence, and financial sustainability.
- Dr. Pukhraj Nenival, IBM, reaffirmed support and emphasized collective learning.
- Dr. P.V. Rao stressed focused investments in critical mineral exploration.
- CMD, HCL, in his concluding remarks, highlighted the need for a collaborative, future-ready mining fraternity.

Contribution from FLSmidth—Importance of Molybdenum in the Value Chain

A significant highlight of the AGM was the participation of the FLSmidth team, whose presence underscored industry-wide support for the revived MEAI Chapter.

FLSmidth, with its global expertise in mineral processing and metallurgical technologies, contributed critical insights during the discussions.

Significance

With the AGM, the revival process transitioned from planning to implementation. The chapter now stands equipped with:

- a structured leadership,
- solid institutional backing from HCL and MEAI HQ,
- clarity of purpose, and
- a renewed mandate aligned with national mineral priorities.

A Unified Narrative: Revival of MEAI Kolkata Chapter as the Central Theme

Across the timeline from 15th August to 10th November 2025, a coherent and purposeful progression is visible.

Strategic Vision

The revival of the Kolkata Chapter was not an isolated administrative exercise—it integrated seamlessly with:

- national mining commitments celebrated on Indian Mining Day,
- technological and policy discourse showcased at the International Seminar, and
- sustained leadership engagement from HCL.

Why the Kolkata Chapter Matters

Kolkata, historically a hub for mining academia, research, and corporate operations, provides the ideal environment for MEAI's expansion. The revived chapter will:

- bridge industry, academia, and regulatory bodies,
- promote technical excellence and sustainable mining,
- foster talent development, and
- enhance India's preparedness in critical & strategic minerals. **HCL's Catalytic Role**

HCL emerged as the central driving force—its leadership, infrastructure, and strategic vision provided the momentum necessary to revive the chapter effectively.

Conclusion

Beginning with the foundational meeting on 15th August 2025, through the reaffirmation of professional values on Indian Mining Day, to the high-impact International Seminar and finally the AGM on 10 November 2025, the revival of the MEAI Kolkata Chapter has progressed in a structured, purposeful manner.

The Chapter now stands poised to become

- a vibrant center of knowledge sharing,
- a platform for advancing sustainable mining practices,
- a nexus for industry–academia collaboration, and
- a key contributor to India's ambitions for Viksit Bharat @ 2047.

The collective efforts of HCL, MEAI leadership, and the mining fraternity have ensured that the Kolkata Chapter is not merely revived but revitalized for long-term impact.

RAJASTHAN CHAPTER-JAIPUR

The Hon'ble Governor of Rajasthan, Shri Haribhau Kisanrao Bagde, graciously launched the poster of the International Seminar organized by the Jaipur Chapter (from 13 to 15 Feb 2026) at Lok Bhawan on 21st January 2026. The Hon'ble Governor has also kindly consented to grace the Valedictory Function as the Chief Guest.

During the interaction, Shri Anil Mathur and Dr. Manoj Gaur briefed the Hon'ble Governor about MEAI and the theme of the seminar.

Shri. Anil Mathur, Council member Jaipur and Dr. Manoj Gaur, Treasurer of the Jaipur chapter, honored the Governor with floral bouquet

Honourable Governor Shri Haribhau Kisanrao Bagde launching the poster of International Seminar on Vision 2047: "Mining and Minerals Perspective"

RAJASTHAN CHAPTER – JODHPUR

Workshop on Change in category of limestone from 'Minor to Major Mineral for Existing Mining Lessees

The mining landscape for limestone (burning) lessees underwent a paradigm shift following the Ministry of Mines, Government of India Notification dated October 10, 2025. This notification reclassified the mineral from the "Minor" to "Major" category, a move that was far more than a mere administrative update. It brought with it a complex new world of legal compliance, specifically the rigorous demands of the MCDR 2017 (Mineral Conservation and Development Rules).

Recognizing the urgent need to demystify these new regulations, the MEAI Jodhpur Chapter organized a high-impact technical workshop on January 9, 2026. The event was designed to guide lessees through the intricacies of registration, reporting, and scientific mining under the new regime.

Setting the Context: From Compliance to Science

The session commenced with the traditional lighting of the lamp, symbolizing the dispelling of darkness—in this case, the confusion surrounding the regulatory transition.

Shri Deepak Tanwar, Chairman of the Jodhpur Chapter, delivered the inaugural address. He succinctly narrated the rationale behind the transition from minor to major mineral status. His speech served as a primer for the attendees, outlining the critical "Dos and Don'ts" and offering "Golden Rules" for compliance, ensuring that lessees understand the gravity of the new legal framework.

Bringing the government's perspective, Shri Y.S. Sahwal, Additional Director of Mines, emphasized the immediate necessity of lessee registration under Rule 45. He urged the industry to prioritize this step to avoid procedural bottlenecks.

The gathering was further enriched by the profound wisdom of Prof. (Dr.) Sushil Bhandari. Drawing from his vast experience, Dr. Bhandari welcomed the initiative of direct interaction between regulators and lessees. He championed the cause of "Systematic, Scientific, and Sustainable" mining, advising lessees that the shift to 'Major' mineral status requires a professional approach, including the engagement of specialized experts for distinct mining operations.

The Technical Deep Dive: Decoding MCDR 2017

The core technical session was helmed by the expert team from the Indian Bureau of Mines (IBM), Ajmer, led by Regional Controller of Mines Shri Chandresh Bohra and Deputy Controller Shri Mithilesh.

RCOM Chandresh Bohra delivered a meticulous presentation that served as a step-by-step manual for the attendees. He covered:

- **Online Registration:** Navigating the digital portal for immediate compliance.
- **Statutory Returns:** The nuances of filing online Monthly and Annual returns.
- **Technical Manpower:** The statutory requirements for appointing qualified technical persons.
- **Mine Planning:** Ensuring that approved mining plans are in perfect sync with ground realities.

The presentation was followed by a vibrant Question and Answer session, where the 90+ participants engaged directly with the IBM officials, clearing doubts regarding the "religious adherence" required for the new legal framework.

Celebrating Excellence: A Moment of Pride

Beyond the regulatory workshop, the event served as a platform to honour outstanding contributions to the chapter's recent successes.

Prof. Bhandari facilitated a special ceremony to honour the office bearers of the Bikaner District Mine Owner Association and the professors from Bikaner Technical University (BTU). They were felicitated for their pivotal role in making the Ceramic Conference (held on November 9–10, 2025) a grand success. The Jodhpur Chapter expressed immense pride in their efforts, which elevated the Ceramic Conference to the standards of an international convention.

Conclusion

The event concluded with the presentation of mementos to the IBM expert team by the chairman. Shri Rakesh Purohit, Secretary of the Jodhpur Chapter, delivered the Vote of Thanks, acknowledging the speakers, the attendees, and the organizers for making the workshop a seamless success. The day ended with high tea, allowing lessees to network with experts and discuss the path forward in this new regulatory era.

Chairman Deepak Tanwar Welcome Speech

Prof. S. Bhandari Addressing August Gathering

Rajneesh Purohit Anchoring the Event

Guest Speaker Sh. Chandresh Bohra RCOM

Vote of Thanks by Rakesh Purohit, Secretary

Felicitating Sh. Mithilesh DCOM, IBM

August Gathering

Honoring Team Bikaner

RAJASTHAN CHAPTER-UDAIPUR

Technical Talk

Rajasthan Chapter–Udaipur organized a technical talk at the Chapter Office on 25-01-2026. The theme of the technical talk was "Sustainable Mining Transformation." On this occasion, around 30 mining engineers and geologists participated.

The speaker was Shri Arif Mohammed Sheikh, Mining Engineer (Vigilance), Udaipur, Department of Mines and

Geology. The Speaker was welcomed by Dr. S. S. Rathore, Secretary Shri Asif M. Ansari, & Dr. Hitanshu Kaushal, Joint Secretary of the chapter.

(L to R): Dr. S. S. Rathore, Speaker Shri Arif Mohammed Sheikh, Secretary Shri Asif M. Ansari, & Jt. Secretary Dr Hitanshu Kaushal

During the program, the speaker, through his presentation, explained that Sustainable Mining Transformation focuses on environmental protection, judicious utilization of resources, and long-term development in the mining sector. A detailed technical lecture on sustainable mining practices was delivered, keeping these aspects in view. In this session, in-depth discussions were held on the adoption of modern, environmentally friendly, and innovation-based technologies in the mining industry.

It was explained that the objective of sustainable mining is to utilize natural resources in such a manner that environmental damage is minimized and resources remain secured for future generations. Resource efficiency, waste minimization, use of renewable energy, and environmental conservation were highlighted as the main pillars of sustainable mining.

The lecture also shed light on technologies such as digital and automated mines, autonomous machinery, predictive maintenance, and data-driven decision-making systems, which help in fuel savings, improved safety, and enhanced production efficiency. Along with this, successful examples of the use of solar and wind energy, electric and battery-operated mining vehicles, and green energy projects were presented. Under the concept of the circular economy, technologies such as reuse of tailings, paste filling, bio-mining, and phyto-mining were emphasized as important means of converting waste into resources. While discussing water management and conservation, the importance of water recycling, closed-loop systems, and rainwater harvesting was highlighted.

Special emphasis was laid on land reclamation and mine closure practices, including afforestation, biodiversity conservation, and converting abandoned mining areas into ecotourism and community-use zones, with relevant examples shared.

Information was also provided on policy provisions such as the National Mineral Policy 2019, Rajasthan Mineral Policy 2024, and Rajasthan M-Sand Policy 2024, which promote safe, scientific, and environmentally sustainable mining practices. The conclusion of the program was that sustainable mining practices not only ensure environmental protection but are also essential for social acceptance and long-term economic benefits.

During the question-answer session, Dr. SK Vashisht and Dr. Hitanshu Kaushal shared their views.

In the end, a vote of thanks was presented by Shri Asif M. Ansari, Secretary, and the program was conducted by Dr. Hitanshu Kaushal, Joint Secretary of the chapter.

MGMI SECRETARY'S MEETING WITH DR. PUKHRAJ NENIVAL ON 09-12-2025 IN HIS OFFICE

Dr. Chandra Sekhar Singh, GM/CIL and Secretary, MGMI, and **Dr. Pukhraj Nenival, COM (EZ), IBM - Kolkata & Vice President - II, MEAI** met on 09-12-2025 in IBM's Kolkata office.

A discussion was held in continuation of the earlier meeting conducted on 08-11-2025 at the MGMI headquarters, focusing on IMIC and the way forward in this matter.

(Continued from Page 24)

Despite its strong reserve position, India's production remains limited. In 2024, India produced only 2,900 tonnes of rare earths, ranking seventh globally. In comparison, China produced 270,000 tonnes, making it the clear global leader. The United States was the second-largest producer with 45,000 tonnes, followed by Myanmar (31,000 tonnes). Australia, Thailand and Nigeria each produced around 13,000 tonnes.

The report highlighted that India holds nearly 6-7 per cent of global rare earth reserves, yet contributes less than 1 per cent of global production. Most of India's reserves are found in monazite-rich coastal sands, which also contain thorium, a radioactive element. This makes mining and processing more complex and subject to strict regulations.

According to the report, regulatory challenges have historically slowed rare earth mining in India. For decades, production was largely restricted and handled mainly by Indian Rare Earths Limited (IREL), where rare earth elements were treated as by-products rather than strategic resources. Beyond mining, the report pointed to processing and refining as the biggest challenge. While rare earth reserves exist in several countries, processing capacity is heavily concentrated.

China controls about 90 per cent of global rare earth refining capacity and almost the entire processing of heavy rare earth elements. This gives China a major advantage across the entire value chain. India, on the other hand, has very limited processing and refining capacity. The report stated, "Annual production has been only a few thousand tonnes, and India has played virtually no role in global REE trade". As a result, it has played a minimal role in the global rare earth trade. While a Japan-linked joint venture in Visakhapatnam has marked India's return to the rare earth sector, the scale remains small.

Globally, rare earth reserves are estimated at around 90-110 million tonnes of REO. China alone holds nearly half of these reserves, strengthening its dominance in both supply and production. The report concluded that India's challenge is not a lack of resources, but gaps in execution, processing capacity and value-chain integration. Unless these issues are addressed, India's large reserves may not translate into global influence in the rare earth sector.

ANI / Dec 29, 2025

READERS' VIEWS

Respected Secretary General, MEAI,

I am grateful to you for keeping me updated on the activities of the MEAI. I find this month's editorial a timely one, very well-articulated and useful to a large section of stakeholders associated with the Aravalli hill ranges. I also found the article on I-REE deposits useful to me. As always, the MEAI's NEWS column is a source of very useful information to me.

Thank you, with regards.
Dr. V. N. Vasudev
Life Member, MEAI

➢ Vale mine overflow sends water into competitor's site

Credit: Vale

Brazilian mining firm Vale SA said it is investigating an overflow of water with sediment in a pit at the Fabrica mine in Minas Gerais state.

The water reached some areas of Pires, a unit of competitor CSN Mineração. A warehouse, internal access areas, a mechanical workshop, and loading areas were affected, CSN Mineração said in a statement.

Vale said its output won't be affected. CSN Mineração didn't immediately respond to a request for comment.

The incident doesn't involve a dam, Vale said, adding that the community in the region wasn't affected.

Seven years ago, the Brumadinho dam collapse in Minas Gerais killed 270 people and led to production cutbacks that stripped Vale of its ranking as the world's biggest iron ore producer.

Bloomberg News / January 25, 2026

OBITUARIES

Late Shri Dadabhai Gulamrasul
(LM 710 / Ahmedabad Chapter)
01-01-1953 to 22-12-2025

We deeply mourn the passing away of Shri. Dadabhai, General Manager in GMDC and a life member of MEAI from the Ahmedabad Chapter, who passed away on 22 Dec 2025. He was born on 1st Jan 1953 and completed his studies and achieved a professional degree as a B.E. (Metallurgy) from M S University, Baroda. He joined Gujarat Mineral Development Corporation at the Fluorspar project, Kadipani and superannuated as General Manager from the company's head office in Ahmedabad.

Shri. Dadabhai will be remembered for his pioneering contributions to mineral processing in Gujarat and the guidance he offered to countless colleagues and young engineers. He is survived by his wife, one daughter, and two sons.

May his noble soul rest in peace.

Shri. P K Swain
(LM-4544/AHD)
3 June 1979 – 14 January 2026

Born on 3rd June 1979, P K Swain dedicated 19 years of his life to the mining profession, serving it with integrity and unwavering commitment. He passed away on 14th January 2026, leaving behind a legacy that extends far beyond his professional achievements.

During his long association with Gujarat Mineral Development Corporation Ltd., he started as an overman at Panandhro Lignite Mine, Kutch, on 9th April 2007. On 16 June 2008, he was transferred to Mata No Madh, where he discharged his duties with exceptional sincerity and meticulousness for the next 8 years. His dedication towards his work and for the growth of the company was exemplary and irreplaceable. On 3rd February 2015, he was promoted to 2nd Class Manager—Mines and was transferred to Umarsar Lignite Mine, where he continued to serve with distinction for the next 10 years. On 05 December 2024, he was promoted to Senior Manager – Mines, and on 13 May 2025, he was transferred to Baitarni West Project, Odisha.

A man of humility and strong principles, Shri Swain was always approachable and ever willing to support those in need of guidance.

His deep understanding of mining practices, resilience in the face of challenges, and ability to adapt to demanding situations set him apart as a professional and as a human being. He is an active MEAI member of the Ahmedabad Chapter, and his untimely demise is a profound loss to the mining community. He is survived by his wife, Mrs. Sangita Swain; son, Master Swastik Swain; Shri Kelu Charan Swain (father); and Smt. Manorama Swain (mother).

MEAI members pray for the Sadgati of the departed soul and extend their heartfelt condolences to his family members.

Shri. Sreekanthaih S Chandrashekaramath
(LM-2194/Bangalore Chapter)
25th September 1943 -
17th December 2025

Born in Yettinahalli A village in Ranebennur Taluk, Haveri district, Karnataka, Shri S. S. Chandrashekaramath completed his schooling from Ranebennur and completed his graduation and post-graduation (M.Sc.) in Applied Geology from Karnataka University Dharwad in first class. From a poor economic background, he completed his higher studies with great difficulty and managing expenditures by taking tuition classes to school children during his college days.

After his postgraduate studies, he joined the Department of Mines & Geology, Government of Karnataka as Assistant Geophysicist in 1972 and retired as Chief Geophysicist with 35 years of experience in applying geophysical investigation to subsurface geology, ground water exploration and selecting sites for Groundwater borewells covering entire state of Karnataka. He was also instrumental in locating & solving the problems of ground water pollution and contamination by industries and domestic sewage discharges in the areas under his charge in the Karnataka state.

A man of discipline, humble and soft spoken he added value to the Department of Mines and Geology by his professional work & after retirement he continued with the habit of reading and pursuing philosophical life in religious activities. He was an active member of MEAI Bangalore Chapter and after the retirement also he used to attend all workshops and conferences with great zeal. He is survived by one son who is ophthalmologist working in Middle East.

His passing is a profound loss to the geological/mining community. MEAI prays for the Sadgati to departed soul and condolences to his family members.

CONFERENCES, SEMINARS, WORKSHOPS ETC.

INDIA

10-11 Feb 2026: **Mining & Critical Minerals India Conference India Expo 2026**. Organized by at JW Marriott Mumbai Sahar. Contact: Spire Events Pte Ltd, 38 Maxwell Road, Airview Building, Singapore 069116. enquiry@spire-events.com.

13-15 Feb 2026: International Seminar on Vision 2047: Mining and Minerals Perspective. Organized by the Rajasthan Chapter-Jaipur at Hotel Clarks Amer, JLN Marg, Jaipur. For more details, contact MEAI—Jaipur Chapter at meaijpr2010@gmail.com.

ABROAD

9-12 Feb 2026: **Mining Indaba 2026 in CTICC**, Capetown, South Africa. Contact Birgit Hupe, Head of Delegate Registration at registration@miningindaba.com

25-26 Feb 2026: **International Conference on Earth Science (ICES 2026)**. Buenos Aires, Argentina. Website URL: https://waset.org/earth-science-conference-in-february-2026-in-buenos-aires.

3-7 Mar 2026: **CONEXPO-CON/AGG 2026**. Las Vegas Convention Center, 3150 Paradise Rd, Las Vegas, NV, 89109, United States. North America's largest construction trade show happens once every three years.

25-26 Mar 2026: **International Conference on Geosciences, Mineralogy and Petrology (ICGMP 2026)**. Madrid, Spain. Website URL: https://waset.org/geosciences-mineralogy-and-petrology-conference-in-march-2026-in-madrid. Contact international@conexpoconagg.com.

11-12 Apr 2026: **International Conference on Mining, Material, and Metallurgical Engineering (ICMMME - 2026)** in Barcelona, Spain. Mail: info@academicsworld.org. Web: www.academicsworld.org.

20-21 Apr 2026: **International Conference on Geosciences, Mineralogy and Petrology (ICGMP-2026)**. New York, United States. Organized by World Academy of Science, Engineering and Technology. Website URL: https://waset.org/geosciences-mineralogy-and-petrology-conference-in-april-2026-in-new-york.

21-22 Apr 2026: **International Mining Geology Conference 2026**. Brisbane Convention and Exhibition Centre, Brisbane, Australia. Contact AusIMM at T: 1800 657 985 or +61 3 9658 6100 (if overseas); https://www.ausimm.com/conferences-and-events/mining-geology/.

5-7 May 2026: **Global Resources Innovation Expo 2026. Perth Convention & Exhibition Centre**, Perth, Australia. Hosted by Austmine and AusIMM.

18-19 May 2026: **International Conference on Mining and Economic Geology (ICMEG -2026)**. London, United Kingdom. Website URL: https://waset.org/mining-and-economic-geology-conference-in-may-2026-in-london.

24-25 May 2026: **International Conference on Mining and Economic Geology (ICMEG 2026)**. in London, United Kingdom. Website URL: https://waset.org/mining-and-economic-geology-conference-in-may-2026-in-london.

24-26 Jun 2026: **The 27th World Mining Congress and exhibition in Peru**. Contact details: Phone: +48 32 324 66 03; e-mail: wmc@gig.katowice.pl.

29-30 Jun 2026: **International Conference on Geological and Earth Sciences ICGES** in Istanbul, Turkey. Website URL: https://waset.org/geological-and-earth-sciences-conference-in-june-2026-in-istanbul.

20-21 Jul 2026: **Accelerating Commercial Exploration, Discovery and Extraction** in Cairo, Egypt. Conference Enquiry: conference@egyptminingforum.com.

9-10 Aug 2026: **International Conference on Geology, Geophysics and Earth Sciences ICGGES** in New York, United States. Website URL: https://waset.org/geology-geophysics-and-earth-sciences-conference-in-august-2026-in-new-york.

6-7 Sep 2026: **International Conference on Mining and Petroleum Geology (ICMPG-2026)**. Málaga, Spain. Website URL: https://waset.org/mining-and-petroleum-geology-conference-in-september-2026-in-malaga.

5-7 Oct 2026: **Mine Health & Safety Conference 2026. Pan Pacific Perth**. Contact on: T: 1800 657 985 or +61 3 9658 6100 OR Po Box 660 Carlton, VIC 3053, Ground Floor, 204 Lygon St, Carlton VIC 3053.

REQUEST TO READERS/ MEMBERS OF MEAI

The Editorial Board of the Mining Engineers' Journal (MEJ) requests our esteemed Readers/ Members of MEAI to share their valuable Research work in geosciences/ mining or Best practices developed/ adopted while employed in the mineral industry, for publication in our Mining Engineers' Journal (MEJ), for the benefit of the mineral industry fraternity.

Interested professionals may please contact the Editor, MEJ for obtaining "Author(s) guidelines" for submitting technical papers at **editor.mej.meai@gmail.com**.

Chief Editor, MEJ

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