

# Mining Engineers' Journal



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## *President's Message.....*

**Dear members..**

Major events in India's mining sector in October 2025 revolved around significant policy and regulatory reforms by the Ministry of Mines, a major trade exhibition in Kolkata, ongoing auctions, and project updates

- On October 23, 2025, the Ministry of Mines and the Indian Bureau of Mines (IBM) launched India's first-ever State Mining Index. The index will benchmark states and union territories on their performance in mineral exploration, resource management, and policy implementation to promote transparency, efficiency, and competitiveness.
- To address delays in project execution, the Ministry of Mines amended the Mineral (Auction) Rules on October 17, 2025, with an official notification on October 22. The new rules introduce milestone-based timelines for the operationalization of auctioned blocks, with penalties for delays. The changes also include incentives for early production.
- On October 9, 2025, the Ministry of Mines held a roadshow for the 6<sup>th</sup> Tranche of Critical and Strategic Mineral Block auctions. This tranche includes 23 blocks across 13 states, covering essential minerals for renewable energy, electric mobility, and defence.
- The Ministry of Mines notified the complete reclassification of limestone as a major mineral on October 10, 2025, removing the previous distinction based on end-use. An order was also issued on October 13 to facilitate the smooth transition of existing minor mineral leases to major mineral status, which is expected to boost the cement and construction sectors. However, the issue of small leaseholders for mining of limestone slabs mainly used for flooring in lower-income groups needs to be addressed.

I extend my appreciation and congratulations to the Bellary–Hospet Chapter for organizing the two-day International Conference on “Next Generation Mining” held on 10<sup>th</sup> and 11<sup>th</sup> October 2025. The conference covered a wide range of forward-looking themes such as Digital Mining, Legal Framework—2025, New Technologies in Mining, and Cost Optimization. The event served as an excellent platform for the exchange of innovative ideas, industry best practices, and technological advancements that are shaping the future of mining.

I extend my congratulations to the Hyderabad chapter for organizing a workshop on “Strategic Need for Exploration of Critical Minerals” on 16<sup>th</sup> October 2025 at Hyderabad. I have the honour of being the chief guest of the workshop.

As the global economy transitions toward cleaner energy systems and advanced technologies, critical minerals have gained unprecedented importance. These minerals—such as lithium, cobalt, nickel, rare earth elements, and graphite—are essential components in electric vehicles, renewable energy infrastructure, communication systems, and defence technologies.

The global supply of critical minerals is highly concentrated, often controlled by a few countries. This concentration poses challenges to supply chain security and highlights the urgency for domestic exploration and value addition. Developing India's own critical mineral resources is vital for ensuring strategic independence, supporting the Make in India initiative, and strengthening defence and aerospace capabilities.

I congratulate and extend my thanks to the Hyderabad Chapter leadership for coming forward to host the Association's FIRST NATIONAL COUNCIL MEETING at Hyderabad in a befitting way.

Furthermore, I deeply appreciate the initiatives of the Belgaum Chapter for their continued efforts in enhancing the knowledge and practical exposure of students through workshops, industrial visits, and interactive learning programs. Such initiatives play a vital role in nurturing young professionals and equipping them with the skills and perspectives required to meet the evolving challenges of the mining industry.

The Association organized a high-level meeting of Indian mineral industry leaders and consulting firms at its headquarters on 16 October 2025 to deliberate on the operationalization of the ‘Made in India’ Indian Mineral Industry Code (IMIC) and to develop actionable recommendations for its effective implementation.

With the best wishes,

**D.B. Sundara Ramam**  
President



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**Dr. P.V. Rao**  
Chief Editor, MEJ

### *Gold Exploration Budgets Down on Value-Oriented Strategies: Industry Consolidation and the Future of Discovery*

Global gold exploration budgets declined by 7% to \$5.55 billion in 2024, despite record-high gold prices, underscoring a structural shift toward value-oriented and risk-averse strategies. Companies are emphasizing cost efficiency, capital discipline, and near-term value creation over speculative discovery—marking one of the most cautious phases in a decade. According to S&P Global Market Intelligence (Marlon Joaquin, November 2024), these trends reflect efforts to strengthen balance sheets amid volatile markets.

**Industry Shifts and Budget Trends:** Gold's share in global exploration budgets fell to 45%, its lowest in ten years, while the number of active explorers declined by 8% to 1,235. This contraction signals industry consolidation and reduced participation from juniors, who traditionally drive early-stage exploration. Instead, mergers and acquisitions (M&A) have become the main channel for growth, with the Newmont–Newcrest merger exemplifying post-acquisition budget rationalization. A few firms, such as Alamos Gold, raised budgets after successful resource integration, showing that exploration tied to tangible value still earns rewards.

Grassroots exploration—the foundation of future discoveries—fell 16% to \$1.08 billion, just 19% of total budgets, the lowest share on record. This decline raises concerns about the sustainability of the global gold pipeline. Companies are increasingly focusing on near-mine and brownfield projects, with mine-site budgets reaching a record \$1.9 billion, over 70% of mine-related allocations. This conservative shift prioritizes incremental resource growth and cost predictability over high-risk frontier exploration.

**Majors vs. Juniors and Intermediates:** Major producers dominated 2024 exploration spending, allocating over \$3 billion—55% of total budgets, their highest share ever. AngloGold Ashanti and Barrick Gold led investments in late-stage and prefeasibility work, mainly in stable jurisdictions such as Nevada and Canada.

In contrast, junior companies saw budgets fall 21%, capturing just 33% of global allocations, a four-year low. Intermediates slipped to 11%. The funding climate for juniors remains challenging: high interest rates and investor preference for safer instruments like bonds have curbed capital inflows. The number of juniors with budgets above \$10 million fell by over 10%, and the top 20 juniors collectively lost \$50 million year-over-year.

Still, a few resilient firms, such as De Grey Mining, have sustained activity through focused underground development. Emerging models like royalties, streaming agreements, and strategic partnerships may provide financial lifelines for juniors operating under constrained conditions.

**Regional Insights:** Regional patterns largely mirror global retrenchment. Canada remained the leading destination, with \$1.3 billion in spending—down 9% from 2023—mainly on late-stage projects. Agnico Eagle was among the few to expand its budget despite the downturn. Latin America retained over \$1 billion in exploration for the third consecutive year but declined by 8% due to reduced activity in Mexico, Argentina, Chile, and Brazil.

Australia saw one of the sharpest cutbacks, with budgets dropping 14% to \$913 million, primarily due to junior retrenchment. Across these regions, major companies are favouring brownfield expansion and near-mine development, reinforcing the global trend toward risk control and operational optimization.

**Market Dynamics and Future Prospects:** The disconnect between record gold prices exceeding \$2,700/oz in late 2024 and falling exploration budgets reflects deep-seated risk aversion. Cost inflation, regulatory delays, and limited capital access have reinforced conservative decision-making. Drilling activity rose slightly but remained below 2023 levels, consistent with subdued financing.

A genuine recovery in exploration spending depends on improved investor sentiment—likely driven by lower interest rates and continued strength in gold prices. Juniors and intermediates would benefit most if confidence returns, potentially reviving early-stage exploration.

**Conclusions and Outlook:** The 2024 landscape reveals an industry in transition—focused on consolidation, efficiency, and short-term value at the expense of long-term discovery. Majors dominate budgets and strategy, while the erosion of grassroots exploration threatens future resource replacement rates. The sector's trajectory will hinge on macroeconomic stability, capital market recovery, and corporate willingness to re-engage with early-stage exploration once financial confidence improves.

Future resilience may depend on innovation and policy support. Advances in AI-driven targeting, data analytics, and automation, combined with supportive fiscal incentives, could rejuvenate early-stage exploration. If economic conditions ease in 2025, a modest rebound in budgets is likely—potentially marking the start of a new exploration cycle.

For now, the global gold exploration sector remains characterized by caution, capital discipline, and strategic retrenchment—a stance that preserves short-term stability but risks undermining the industry's capacity to sustain its long-term resource base.

- Chief Editor

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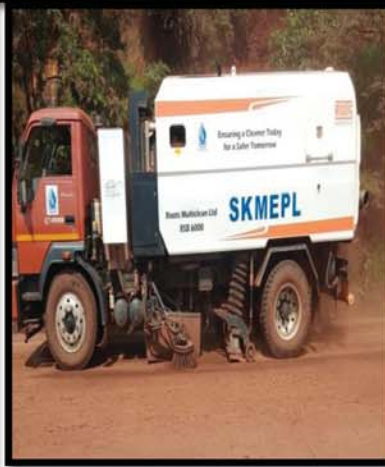
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## NEWS FROM THE MINERAL WORLD

### ➤ **NI 43-101: Fixing errors in technical reports**

A technical report prepared and filed in accordance with National Instrument 43-101 — Standards of Disclosure for Mineral Projects (NI 43-101) — is a critical document to support public disclosure and to ensure transparency, accuracy, and investor protection. These reports are prepared by or under the supervision of a qualified person (QP) and are filed on SEDAR+ under the prescribed circumstances. But what happens when a mistake is discovered after filing, or an issuer is requested by a regulator to make a revision to the technical report because of a continuous disclosure or other review?

Mistakes do happen, and it is important to ensure any error in a technical report is quickly and adequately addressed. Material errors in technical reports can lead to investor misinformation, regulatory non-compliance, reputational damage, and potential legal consequences. Whether it is a data misstatement, a misclassification of mineral resources, or a compliance oversight, correcting errors in a filed NI 43-101 report must be handled with care, professionalism, and regulatory awareness.

#### **What should be done when an error is discovered?**

When an error is discovered, the first step for an issuer is to determine whether the error is material. Any errors that could influence an investor's decision, or that affect mineral resource or mineral reserve estimates, or economic assumptions, would typically be considered material. If the error is material, the technical report will need to be corrected to limit, among other things, secondary market liability (see details below).

In addition to the correction of the technical report, for any material error, the issuer should address the nature of the error in a news release and indicate that the incorrect disclosure should no longer be relied upon. The news release may address the implications of any error or other factors leading to the corrective disclosure, as well as how the issuer is proposing to correct the disclosure. This is expected promptly, even if the issuer requires more time to investigate and quantify all aspects of the error and the amended technical report is not yet ready to be filed. Issuers should consider both the timing of the news release and the prominence of the description of the error to ensure that market participants are appropriately informed. Also, securities regulators expect the news release and any corrective disclosure to be prominently displayed on the issuer's website as if it were in the

ordinary course of disclosure for the issuer (i.e., the news release is not buried in an unexpected location).

Furthermore, if the errors and corrections amount to a material change, a material change report would also be required to be filed.

#### **How can a technical report that has already been filed be corrected?**

Technical reports that have already been filed on SEDAR+ cannot be removed, regardless of the scope and nature of the error. The only way to rectify errors in a previously filed technical report is to re-file the report with an amended report date.

It is recommended that the issuer include a cover note on the amended report referencing the original report, identifying the date of the amendment, explaining the nature of the correction, and stating that the amended report amends and restates the original report. The corrected report will need to be clearly titled as "amended," "revised," and/or "restated." The "effective date" of the technical report can remain the same, but the "report" date must be updated.

When filing an amended technical report, all QP consents and certificates will need to be (i) updated to reflect the updated report date, (ii) re-signed by the QPs, and (iii) re-filed on SEDAR+.

In addition (and in addition to any previous news release noted above), concurrently with the filing of an amended technical report, the issuer must immediately issue and file a news release authorized by an executive officer disclosing the nature and substance of the change to the technical report.

#### **Secondary market liability**

Canadian securities laws provide a statutory right of action for investors who acquired or disposed of securities while there was a misrepresentation that is not corrected in a report, statement, or opinion. Investors have a right to bring an action against the issuer, its directors, officers, and experts (i.e., QPs).

For secondary market liability, the statutory regime provides that investors do not need to prove reliance on the misrepresentation to win their case and obtain a damages award. That said, investors need to obtain leave of the court prior to the action proceeding.

It is important to quickly correct any errors once discovered to limit the possibility of a successful



secondary market liability action being brought against the issuer, any of its directors and officers, and the QPs who prepared or supervised the preparation of the technical report.

Under Canadian securities laws, reliance on an expert can serve as a defence to liability for an issuer in both primary and secondary market disclosure contexts. However, once an error is identified in a technical report, it is important to note that an issuer can no longer rely on the defence that the liability for the error lies with the expert (i.e., the QP) who prepared the technical report, rather than the issuer. As such, the issuer has an obligation to correct the technical report to limit liability.

### Refilings and errors list

Issuers regulated by the Ontario Securities Commission (OSC) should be alive to the OSC's Refilings and Errors List. The purpose of this list is to provide transparency for the market when, during a staff review, an issuer has amended its continuous disclosure record. If an error in a technical report is identified during an OSC staff review, the issuer will be placed on the Refilings and Errors List and will remain there for a period of three years. The OSC will require the issuer to issue a news release and potentially file a material change report, depending on the circumstances. A draft of the news release will need to be pre-cleared with the OSC before it is disseminated. The British Columbia Securities Commission (BCSC) is the other commission in Canada that deals heavily with mining issuers. Currently, the BCSC does not have a public register to identify issuers who have had to refile technical reports. Regardless, the BCSC requires the same prompt action to correct disclosure concerns.

### Conclusion

It is important to leave ample time for legal and technical review of technical reports prior to a filing deadline to catch material errors prior to the technical report being filed.

Correcting a filed technical report is a serious but manageable process. A prompt and transparent response from the issuer once a material error is discovered is imperative. By acting swiftly, and with guidance from legal counsel, issuers and QPs can maintain credibility and uphold the integrity of public disclosures.

*Alexander Pizale, Gregory Hogan, and Maria Tapia,  
Canadian Mining Journal | October 14, 2025*

### ➤ US, Orion partner on \$5B critical minerals fund

The US government has teamed up with Orion

Resource Partners and Abu Dhabi's ADQ to establish a new billion-dollar fund to invest in critical minerals, marking another major step in President Donald Trump's push to secure key resources and reduce reliance on China's supply chains.

The initiative, known as the Orion Critical Mineral Consortium, was announced Thursday by Orion and supported by the US International Development Finance Corp. (DFC).

According to Orion's statement, the three partners - DFC, Orion and ADQ - have made initial capital commitments totalling \$1.8 billion, with plans to expand the pool to as much as \$5 billion in the future. *Bloomberg News* first reported in September that the DFC and Orion were in talks to establish the joint fund.

With this cornerstone investment, the Orion-led consortium will "engage with mission-aligned investors and partner nations that have expressed their ambition to secure the critical minerals that underpin the modern economy," the firm said.

### Bridging minerals gap

DFC - created toward the end of Trump's first term in 2019 - will co-fund the consortium, with its initial investment matched by funds managed by Orion and ADQ. The consortium will focus on "existing or near-term producing assets," rather than on early-stage exploration projects that could take a decade to become operational, its statement said.

The initiative "represents a significant step forward in bridging the substantial funding gap needed to accelerate investment in the critical minerals supply chain, while at the same time boosting US economic growth," Orion Resource Partners CEO Oskar Lewnowski stated in a press release.

Ben Black, chief executive officer of the DFC, said the consortium was created to "establish a robust pipeline of secure critical mineral investments vital to advancing American economic prosperity."

The initiative is part of Washington's broader strategy to counter Beijing's dominance over global mineral supply chains, particularly in materials such as copper, cobalt and rare earths, which are essential to the defense industry and the global energy transition.

### US investments

The US has already moved to strengthen mineral ties with allies. Earlier this week, Washington signed a landmark agreement with Australia to boost access

to rare earths and other critical materials. It is also negotiating a similar bilateral deal with the Democratic Republic of Congo, the world's largest cobalt producer and a key copper supplier. Since Trump's return to the White House, the US government has made direct equity investments in mining companies to secure strategic resources.

In parallel, US mining companies are also stepping up efforts to secure federal support. In July, MP Materials, its sole rare earth miner, entered into a public-private partnership with the US Department of Defense (now Department of War) to develop a domestic rare earth magnet supply chain. Industry groups are intensifying lobbying efforts in Washington to benefit from the administration's pledged investments in firms deemed essential to national security.

The launch of the consortium underscores growing momentum in the US to rebuild domestic and allied capacity in the critical minerals sector — a strategic response to rising geopolitical competition over the resources that underpin the global economy of the future.

Orion, a leading financier in the mining industry with about \$8 billion in assets under management, has been expanding its global partnerships. Earlier this year, it announced a \$1.2 billion venture with Abu Dhabi sovereign wealth fund ADQ to invest in resource projects. The creation of the Orion Critical Mineral Consortium further deepens this collaboration, positioning both firms as key players in reshaping Western access to critical raw materials, it said.

*Staff Writer, Mining.Com | October 23, 2025*

### ➤ **China and US 'just flexing muscles' over critical metals, BHP chair says**

The US and China are battling to project power as they compete to secure critical minerals supply, the new chair of BHP said on Thursday, downplaying any potential for the global miner to be caught between its top customer and the world's biggest economy.

"You've got two very, very powerful nations just flexing their muscles," Ross McEwan told reporters after BHP's annual general meeting in Melbourne. "It's not the first time this has happened." He said "critical minerals are becoming a vital thing," adding, "And I think a business like ours and a country like ours actually just needs to work with all parties."

US President Donald Trump and Australian Prime Minister Anthony Albanese signed a critical minerals agreement aimed at countering China's dominance in the sector on Monday.

"I think, it's a little bit early to actually see the outcomes of what we see as a good meeting between the prime minister of Australia and the president of the United States. But I think it was a very good meeting to start those conversations," McEwan told shareholders at the annual meeting.

BHP is a major producer of copper, iron ore, steelmaking coal, and soon to be potash, and those markets are its focus rather than niche critical minerals, he added.

Australia is quite well positioned to support the US as it tries to derisk its critical mineral supply chain, CEO Mike Henry said, after he and two top Rio Tinto executives met with Donald Trump and Interior Secretary Doug Burgum in the Oval Office on August 19.

"I was impressed on just how fierce the focus is in the US on getting more mines and processing facilities up and going," Henry said. BHP is looking with partner Rio Tinto to build the Resolution copper mine in Arizona, which would account for a quarter of US demand for the metal.

"I think we should see (the agreement) as symbolically significant, in that it goes to just how seriously this issue has been put down and the position that Australia can play in supporting the US," Henry said.

### **New opportunities**

BHP would be forced to take more "difficult decisions" for its metallurgical coal business in Australia if there were no tax changes to support it, the CEO and chair both said.

BHP last month said it would suspend operations and cut 750 jobs at a Queensland coking coal mine it shares with a unit of Mitsubishi, blaming low prices and high state government royalties that have dented its returns.

"Without change, there's without doubt going to be more difficult decisions that are going to be made," Henry said. The business generated a 1% return on capital last year.

Henry has been widely expected to step down in the next year after a typical six-year tenure. On Thursday, he said it was an exciting time to be in the market and he was enjoying the role.

Amid speculation an interloper could crash the planned \$53 billion mega-merger of Teck and Anglo American, BHP's former takeover target, McEwan said BHP had a watching brief.



"We do keep an eye on what's going on in the marketplace and opportunities that come up, be they small or large, or just tuck-ins, in which you can use the infrastructure."

*Reuters / October 23, 2025*

➤ **From FOMO to fear of margin calls: gold's wild ride enters new stage**

Gold's remarkable rise has moved into a new phase with the swelling influence of speculators bringing greater volatility yet market players are sticking with forecasts for higher prices in 2026 even if central bank demand eases.

On track for its biggest yearly rise since 1979, gold's 54% rise year to date has seen it break through key psychological resistance levels at \$3,000 per ounce in March and \$4,000 in October. Powering the run have been political tensions and US tariff uncertainty and more recently a wave of fear-of-missing-out (FOMO) buying.

"The nature of the rally has changed, driven now by Western investors rather than the stickier emerging market buyers of most of the last two years," said John Reade, senior market strategist at the World Gold Council. "This means more uncertainty and volatility even if the factors driving gold look set to continue," he added.

On Monday, gold hit a record \$4,381 an ounce, a level few had predicted a year ago or expected to see any time in their lifetimes. Delegates heading to the London Bullion Market Association (LBMA) conference in Japan next week had forecast a year ago a price of \$2,941 by this point.

Having achieved so many major milestones, bullion saw a 5% sell-off on Tuesday in the steepest daily fall for five years, driving the market's relative strength index, which measures the magnitude of price changes, to "normal" from "overbought" for the first time in seven weeks.

"A consolidation would in fact not be unusual after such a sharp and steep rally and should be considered healthy," said Julius Baer analyst Carsten Menke. "The fundamental backdrop for gold remains favourable."

**US rate cuts and stocks**

Gold's record high on Monday took it up 20% since rate cuts by the US Federal Reserve in September. That outpaced bullion's performance versus most recent Fed easing cycles, according to analysts at Oxford Economics.

"In previous cycles the Fed was not cutting interest rates at all-time highs in US stocks, with bubble talk in markets and inflation still convincingly above their target," said Nicky Shiels, head of metals strategy at MKS PAMP. "Seems like this 'everything bubble' has room to run, and gold prices through \$4,500 will only sustain the FOMO buying in retail."

Gold prices have increased twofold in the past two years, having surpassed the 1980 inflation-adjusted high calculated by MKS PAMP at \$3,590 (nominal high of \$850 then).

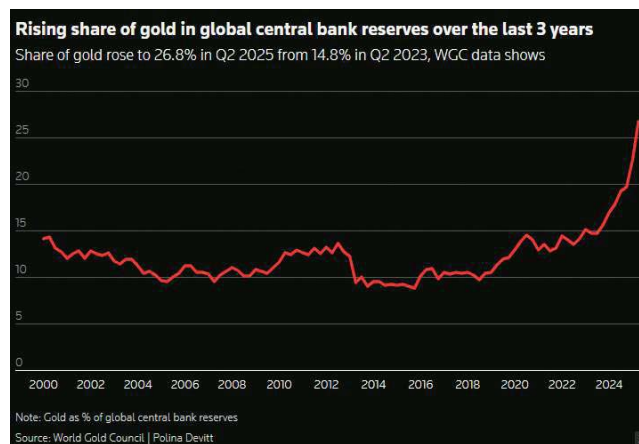
**A wary eye on rising S&P 500**

Market specialists are keeping a wary eye on a rising S&P 500 stock index and a simultaneous inflow of investor cash into bullion, mindful of historical cases when sharp corrections in equity markets forced the sale of safe haven assets, including gold.

"A portion of gold purchases have been made as a hedge against equity market declines," HSBC analyst James Steel said in a recent note. "A correction in equities could, as they have in the past, trigger long liquidation as investors seek to raise cash or meet margin calls."

**Central banks, institutional investors**

With exponential gains over the past month, emerging market central banks don't have to do much to keep progressing their common aim – increasing the share of gold in their foreign currency reserves for diversification.



**Share of gold in central bank reserves**

Although central bank buying is widely expected to remain elevated for years, having supported demand for bullion since late 2022, the price rally automatically increases the value of their holdings.

*(Continued on Page 20)*

# OPERATIONAL AND ENVIRONMENTAL ACHIEVEMENTS OF PASTE FILL SYSTEM AT HINDUSTAN COPPER LIMITED: A SUSTAINABLE APPROACH TO UNDERGROUND MINE BACKFILLING

Badavat Suresh Nayak\*, Nagesh Shenoy\*\*

## Abstract

*Practical outcomes and environmental significance of the Paste Fill Plant set up at Hindustan Copper Limited (HCL). The plant has been operational for over 6 months and has contributed to reusing approximately 375,000 tonnes of mining waste, including filter cake and tailings slurry during the stabilization period. In addition, it has facilitated the recovery of around 86.4 million liters of process water. These results reflect the utility of paste fill technology in reducing surface-level environmental stress and improving safety within underground mining operations. The paper draws attention to the systems in place, operational benefits observed on the ground, and the potential for further development in sustainable mining methods.*

**Keywords:** Paste fill, Sustainable mining, Backfilling, Tailings reuse, Water conservation, Mine safety, Resource optimization

## 1. INTRODUCTION

Hindustan Copper Limited (HCL), a Public Sector Undertaking under the Ministry of Mines, is the first PSU to adopt paste fill technology to manage waste more effectively and as a support method for safer underground operations. The plant is designed to turn what was previously considered waste into backfill material for underground stopes. Through this initiative, Hindustan Copper Limited aims to reduce its environmental impact while enhancing the overall stability of its mining operations.

## 2. TECHNICAL SPECIFICATIONS

The paste fill system at Hindustan Copper Limited has been engineered to support a processing plant capacity of 3 MTPA, with the ability to handle up to 364 tonnes of dry tailings per hour, translating to approximately 256 cubic meters of wet paste. Tailings from the concentrator, with an initial solids concentration of around 30%, are first processed through a thickener. The thickener produces an underflow with solids content ranging between 65% and 70%.

This thickened slurry is further dewatered using horizontal vacuum belt filters, resulting in a filter cake with solids concentration of approximately 81%. The paste is then prepared in a continuous mixer, where the filter cake, a portion of the thickener underflow slurry, and a binder are blended. The binder, comprising 10% of the total solids by weight, is a mix of 90% ground granulated blast furnace slag and 10% cement.

The resulting paste is dense, with a typical slurry density of about 1.99 tonnes per cubic meter, and has a target slump in the range of 178 mm to 254 mm—ensuring good flowability

while maintaining structural integrity underground. Positive displacement pumps are used to transport the paste to the stope. The entire system is monitored in real time, including flow rate, density, and mixer power, to maintain consistency and ensure the quality of the paste being delivered.

**Visual representation of the process steps is shown below:**

- **Figure 1:** Thickener overflow showing clarified water being separated from slurry.
- **Figure 2:** Filter cake being discharged from the horizontal vacuum belt filter.
- **Figure 3:** Paste being discharged at the underground stope level.



Fig 1: Thickener Overflow

## 3. MATERIALS AND METHODS

Tailings from the concentrator plant, containing approximately 30% solids and 70% water, are pumped into the paste fill

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plant's thickener. The thickener concentrates the slurry by settling solids and producing a denser underflow. This thickened slurry is then stored in filter feed tanks, which act as buffer storage.



Fig 2: Filter Cake



Fig 3: Paste Discharge

A major portion of the slurry is sent to a horizontal belt filter for further dewatering, producing filter cake. A smaller portion is diverted directly from the filter feed tanks to the paste mixer. In the mixer, both filter cake, slurry and binder (Cement and Blast Furnace Slag) are blended to form a dense, pumpable paste suitable for underground backfilling. The process is automated and monitored for consistency, and recovered water from both thickening and filtration stages is continuously returned to the concentrator plant, minimizing fresh water demand and ensuring a closed-loop system.

#### 4. OPERATIONAL ACHIEVEMENTS

During the past 6 months, the paste fill plant has made it possible to reuse 202,012 tonnes of filter cake and 173,573 tonnes of tailings slurry—altogether amounting to a total of 375,585 tonnes of material that would otherwise have been destined for surface storage. At the same time, the system enabled the recovery of approximately 86.4 million liters of process water. These achievements reflect not only

successful plant operation but also a shift in how mining waste is handled, treated, and put back into use.

#### 5. RESULTS AND DISCUSSION

The reuse of waste has helped in reducing the stress on surface tailings storage areas, which in turn has minimized the risks associated with land use, seepage, and dust emissions. Recovering water for reuse has also played a role in easing the dependency on fresh water supplies.

The paste fill system has improved underground stability by providing effective support to the stopes. This has reduced the likelihood of structural failures and created safer working conditions for mine personnel. It has also enabled continued mining near previously worked areas, extending the usable life of the mine infrastructure.

#### 6. ALIGNMENT WITH NATIONAL AND GLOBAL GOALS

The approach followed by HCL reflects several national and international policy directions. The system contributes directly to the goals set out in the United Nations Sustainable Development Agenda, particularly with regard to responsible resource use, clean water access, climate action, and land conservation. On the national front, the initiative supports India's National Mineral Policy of 2019, which encourages scientific handling of mining waste and environmentally sound closure of mining areas. It also fits well within the Mission LiFE framework, which emphasizes sustainable practices across industrial sectors.

#### 7. FUTURE SCOPE

Hindustan Copper Limited plans to expand the paste fill system to additional stopes and enhance water recovery efficiency. Research into alternative binders is also underway to strengthen paste properties while reducing cost and environmental impact. These efforts aim to further boost the system's performance and sustainability. Ultimately, our goal is to achieve stable and sustainable mining practices with zero waste discharge.

#### 8. CONCLUSION

The experience gained through the operation of the paste fill plant at Hindustan Copper Limited offers a clear case for adopting sustainable practices in the mining industry. By turning waste into a valuable input and reducing dependence on fresh water, the system contributes meaningfully to both environmental protection and operational efficiency. The plant has proven to be more than a compliance measure; it has emerged as a practical solution that aligns mining activity with modern sustainability goals.

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# OPTIMIZED PROCESSING OF IRON ORE WITH HIGH MOISTURE CONTENT: A CASE STUDY OF NUAGAON IRON ORE MINES OF JSW STEEL LIMITED, ODISHA

Arnab Ghosh\*, Arghaya Mondal\*\*, Arundeep Bhattacharjee\*\*\*

## Abstract

*Iron ore mining has played a pivotal role in India's development, contributing significantly to the country's economic growth and industrialization. As both national and global demand for iron ore is increasing, efficient processing of iron ore as per customer requirement has become crucial. One of the main challenges of iron ore processing in India has been the high moisture content of the ore, which impedes the operation of the processing plant with issues like clumping and reduction of flowability. At Nuagaon Iron Ore Mines of JSW Steel Limited, such problems have been tackled with identification of the cause, control point measures, and operational solutions.*

*A technical study on various types of Run-off Mines (ROM), a flowability analysis of iron ore with different types of superabsorbent polymers (SAP), variable blending patterns depending upon the weather, and a study on the effect of polymer linings for increase in flowability as solutions to the moisture problem are also discussed.*

**Key words:** High moisture, iron ore processing, cohesion, superabsorbent polymers (SAP), flowability, blending.

## 1. INTRODUCTION

JSW Steel Limited is the flagship company of the JSW group, a leading integrated steel manufacturer. In Odisha, JSW Steel currently operates four mines, which are Jajang Iron Ore Mines, Nuagaon Iron Ore Mines, Narayanposhi Iron and Manganese Ore Mines, and Gonua Iron Ore Mines. At Nuagaon Mines, a 1500 TPH (Ton Per Hour) Central Processing Unit (CPU) was established in 2023 to meet the production requirement of the mines.



Fig. 1.1 – Central Processing Unit (CPU) at Nuagaon Iron Ore Mines of JSW Steel Limited

The main problem hindering the production rate and the quality of the output material has been the jamming of intermediate chutes and screening meshes due to the high moisture level of the ore. To identify the root cause, material from various excavation points was fed into the hopper of the CPU individually. It was found that three types of Run-of-Mine (ROM)—soft laminated ore with a considerable

amount of blue dust, soft laminated ore with a minor amount of limonite, and lateritic ore with a minor amount of goethite—are mainly causing the clumping of the ore at the intermediate chutes and screening meshes.

## 2. IDENTIFICATION OF THE ROOT CAUSE

To better understand the aforementioned problem, a brief discussion on the local lithostratigraphy of Nuagaon is required. Nuagaon Iron Ore Mines lie over the Upper Shale Formation of the Koira Group. Litho units like iron ores of HLO, SLO, lateritized HLO types, Fe-shale, and laterites of both aluminous and ferruginous nature are prominent.

In the current working pit, horizontal alternation of hard-laminated iron ore (HLO) and soft-laminated iron ore (SLO) zones is observed. On the upper benches, a minor amount of goethite is also present along with lateritic ore. Most of the SLO zones contain limonite bands, which occur as intercalations within the ore zone. Limonite is an iron oxide hydroxide whose general chemical formula is  $\text{FeO}(\text{OH}) \cdot n\text{H}_2\text{O}$ ; it has variable quantities of goethite ( $\text{FeOOH}$ ) and hematite ( $\text{Fe}_2\text{O}_3$ ), and may be accompanied by certain accessory minerals that contain silicon, aluminum, phosphorus, and nickel, among other elements. Goethite also retains approximately a monolayer of physically adsorbed water on the surface, which is presumably hydrogen bonded with structural hydroxyls ( $-\text{OH}$ ). Due to the presence of chemically bonded water ( $n\text{H}_2\text{O}$ ) and the free hydroxyl group ( $-\text{OH}$ ); limonite occurs as a highly hydrated iron oxide and retains

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moisture at both the molecular level and on the mineral surface. As limonitic bands are thin and intercalated within

SLO, segregation of the limonitic part is not possible during excavation and loading.



Fig. 1.2 – Intermediate chutes jammed by the clumping of limonitic, lateritic and blue dust types of iron ore



Fig. 2.1 – Lithostratigraphy of Banded Iron Formation



Fig. 2.2 – Intercalated Limonite bands in Soft-Laminated Iron Ore

Another characteristic feature of Nuagaon Mines is the large quantity of powdery ore and blue dust associated with the SLO. This leads to a higher percentage of -0.15 mm particles (ultra-fines) and -3 mm particles in the ore zone. HLO faces also show a considerable amount of -3 mm particles. As ultra-fines and -3 mm material have far greater combined surface area than the larger-sized ores, the total number of intergranular pores also increases, causing significant moisture retention. A Particle Size Distribution (PSD) study was done on the ROM to identify the percentage of -3 mm and -0.15 mm particles in both the HLO face and SLO face.

| ROM PARTICLE SIZE DISTRIBUTION REPORT |                    |                           |                                                  |
|---------------------------------------|--------------------|---------------------------|--------------------------------------------------|
| ROM TYPE: Hard Laminated Ore          |                    |                           | Gross weight of the total ROM sample = 38780 Kgs |
| S. No.                                | Size Range (in mm) | Weight of Sample (in Kgs) | Weight percentage of Sample                      |
| 1                                     | +800               | 1720                      | 4.44                                             |
| 2                                     | 800 - 500          | 1280                      | 3.30                                             |
| 3                                     | 500 - 200          | 1450                      | 3.74                                             |
| 4                                     | 200 - 80           | 2890                      | 7.45                                             |
| 5                                     |                    | 9880                      | 25.48                                            |
| 6                                     | 40 - 30            | 2540                      | 6.55                                             |
| 7                                     | 30 - 18            | 3140                      | 8.10                                             |
| 8                                     | 18 - 10            | 3690                      | 9.52                                             |
| 9                                     | 10-8               | 1540                      | 3.97                                             |
| 10                                    | 8-5                | 2640                      | 6.81                                             |
| 11                                    | 5-3                | 1810                      | 4.67                                             |
| 12                                    | 3 - 0.15           | 4950                      | 12.76                                            |
| 13                                    | - 0.15             | 1250                      | 3.22                                             |

Fig. 2.3. – ROM (HLO) Particle Size Distribution Report of Nuagaon Iron Ore Mines



| ROM PARTICLE SIZE DISTRIBUTIO REPORT |                    |                           |                                                  |
|--------------------------------------|--------------------|---------------------------|--------------------------------------------------|
| ROM TYPE: Soft Laminated Ore         |                    |                           | Gross weight of the total ROM sample = 35780 Kgs |
| S. No.                               | Size Range (in mm) | Weight of Sample (in Kgs) | Weight percentage of Sample                      |
| 1                                    | +800               | 0                         | 0.00                                             |
| 2                                    | 800 - 500          | 0                         | 0.00                                             |
| 3                                    | 500 - 200          | 0                         | 0.00                                             |
| 4                                    | 200 - 80           | 1690                      | 4.72                                             |
| 5                                    | 80 - 40            | 5550                      | 15.51                                            |
| 6                                    | 40 - 30            | 1130                      | 3.16                                             |
| 7                                    | 30-18              | 1480                      | 4.14                                             |
| 8                                    | 18 - 10            | 1890                      | 5.28                                             |
| 9                                    | 10-8               | 1130                      | 3.16                                             |
| 10                                   | 8-5                | 2480                      | 6.93                                             |
| 11                                   | 5-3                | 2360                      | 6.60                                             |
| 12                                   | 3 - 0.15           | 10340                     | 28.90                                            |
| 13                                   | -0.15              | 7730                      | 21.60                                            |

Fig. 2.4 – ROM (SLO) Particle Size Distribution Report of Nuagaon Iron Ore Mines

As per the study, the total -3 mm particle percentage in the SLO face on average is 50.5%, and in the blasted face it is 15.98%.

The CPU of Nuagaon handles huge tons of bulk iron ore in process equipment, conveyors, storage, and transportation. During monsoons, ROM gets exposed to high levels of moisture flowing in bins, silos, and chutes, which are eventually plagued with flow problems. The moisture in the ore fines induces cohesion due to the growth of an adhering layer around the particles that causes bridge or arch formation in the equipment. These fines exhibited a tendency to gain cohesive strength over time and upon stresses, thereby consolidation occurs during processing. Consequently, CPU has been suffering from inconsistent and unpredictable flow that resulted in great disparity of flow. Each of these has negatively impacted production efficiency, operating hours, specification product quality due to segregation, and cost.

### 3. CONTROL MEASURES AND SOLUTIONS

#### 3.1. Litho-contact Mapping and Awareness

The first step to control the feeding of high-moisture-retaining ore—lateritic, limonitic, and ultra-fine powdery ore is to identify the different ore zones with litho-contact mapping of the whole working pit. Contact mapping provides the lateral extension of the litho-units, and the extremities are geo-tagged with GPS. A geological map is then prepared with

the collected GPS location points, and the ore zones are plotted.

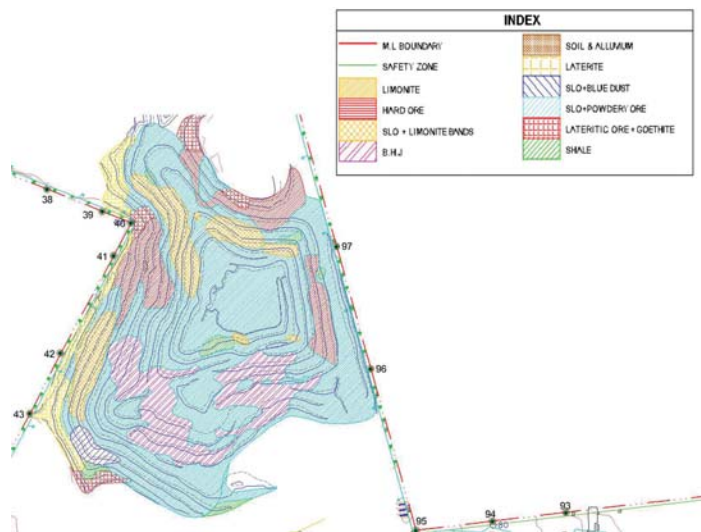


Fig. 3.1. – Litho-contact Mapping of the Working Pit

As observed in the geological litho-contact map, SLO with powdery ore and SLO with limonitic bands are prominent. Laterite with a minor amount of goethite is also present in the upper benches. This map is shared among mining engineers who direct the shift-wise deployment of shovels and dumpers.

Awareness is also raised among the shovel operators before the start of every shift by the mining engineer and geologist in toolbox talks (TBT). Specimens of various types of water-retaining ore are prepared and displayed in the operator resting shelter to aid in the identification of limonitic bands, laterite, and shale during excavation.



Fig. 3.2 – Different Specimens Displayed at Operator Rest Shelter

As shovel operators are the first point of contact with the bench face, they are the first control point to maintain the quality of the feed.

#### 3.2. Differential Mining and Segregation of Stocks

During excavation, shovel operators are instructed to leave the SLO patch with limonitic bands and excavate the surrounding patches of SLO devoid of any major limonite content. After the loading and transportation of the SLO and powdery ore to a specific stock, the limonite-contaminated SLO zone is excavated (Fig. 3.3).





Fig. 3.3—SLO with limonite bands are marked in the red zone, while SLO with powdery ore are marked in the blue zone.

Different stocks are made for different types of ore at different locations—Stock A containing SLO with powdery ore and blue dust, and Stock B containing SLO contaminated with limonite and lateritic ore contaminated with a minor amount of goethite contamination (Fig. 3.4). Also, stocks are covered up with waterproof tarps to reduce further exposure to high moisture levels during monsoon season.



Fig. 3.4—Stock A (left) and Stock B (right)

ROM from Stock B is only shifted after monsoon, and the material in the stock is spread in the dry season to reduce the inherent moisture content of the ore.

Material from Stock A is blended with hard, lumpy ROM from blasted faces in a 4:1 ratio to reduce the total percentage of ultra-fines and -3 mm particles in the final feed, as these kinds of particles retain almost 14-17% moisture and the CPU is designed for moisture content up to 8%.

### 3.3. Use of Polymer Liners and Superabsorbent Polymers (SAP)

Polymer liners, also known as Ultra High Molecular Weight Polyethylene (UHMW PE), have an extremely low coefficient of friction and a smooth, wax-like surface that prevents material from jamming and choking and allows for an uninterrupted flow of material. The CPU's life is significantly extended by its strong abrasion resistance, which lowers maintenance expenses and downtime. Specific surfaces of intermediate chutes that are more prone to jamming are lined up with this polymer liner, which prevents the formation of arching, bridging, rat holing, funneling, etc. (Fig. 3.5.) problems arising out of asymmetric and irregular flow patterns.

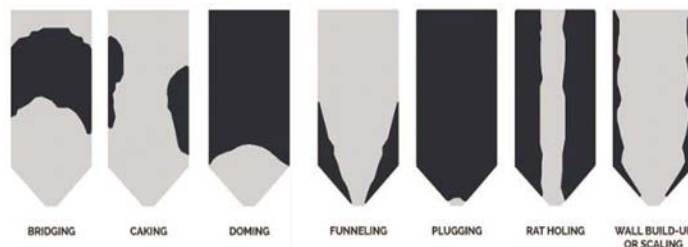


Fig. 3.5. – Various types of blockages in intermediate chutes

The application of superabsorbent polymer (SAP) is considered to be more practical to destroy liquid bridges by absorbing surface moisture and enhancing flow properties. SAPs are high-molecular-weight, partially cross-linked hydrophilic networks that imbibe several hundred times their own mass of water and expand in size but still retain individual particle identity. Due to their excellent absorption and retention properties, SAPs have been developed into a wide range of applications, such as biomedical, personal care, agricultural, etc. These can be ionic or non-ionic, and their superlative imbibing mechanisms physically entrap water via diffusion, capillary forces in their macroporous structure, and hydration of functional groups. Due to ionization at the surface, it causes mutual electrodynamic repulsion that increases osmotic pressure, allows more water to enter, and inflates SAPs. (N.G. Srikakulapu et al. / Powder Technology 364 (2020) 321–331)

At Nuagaon Iron Ore Mines, SAP was used to treat different samples of ROM (C-A, C-B, C-C and laterite). Before the

application of SAP, the samples were treated with a specific amount of water to imitate the high moisture content of the naturally forming ore. Then sieve analysis of the untreated ore samples and SAP-treated ore samples was done to compare the flowability of the material with and without treatment of the SAP (Fig. 3.7).

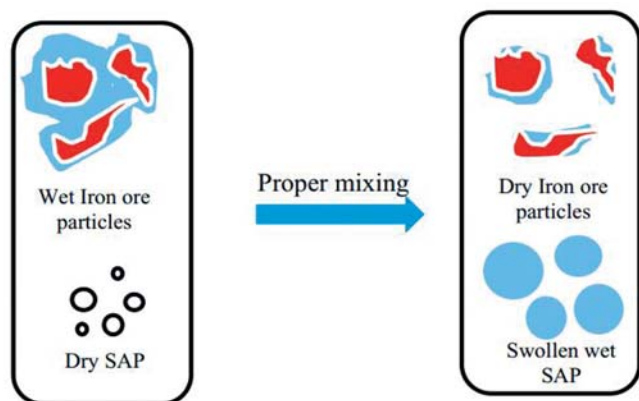


Fig. 3.6 - Absorption of iron ore moisture by SAP particles. (N.G. Srikakulapu et al. / Powder Technology 364 (2020) 321–331)

It is observed that after using SAP, the flowability of fine particles has improved. This method is proposed to be used in the future in the CPU to facilitate production during monsoon.

#### 4. CONCLUSION

Dry processing plants are prone to irregular flow patterns and intermediate chute jams owing to the high moisture content of the feed. Operational solutions include differential mining and segregation of stocks, blending of hard and soft ore in a specified ratio, and use of polymer liners and SAPs. As the inherent moisture of the ore formation cannot be changed, these operational solutions should be followed for the optimum running of processing plants. Regular mapping of the pit faces should also be done periodically to better predict and plan for the excavation and production from the mines. Also, use of limonitic and lateritic ore will aid in the conservation of minerals and extend the longevity of the mines.

#### 5. ACKNOWLEDGEMENT

We thank our Mines Agent/Operation Head of JSW Odisha Mines, Shri Ram Shanker Sharma for his guidance, constant support, and giving us a free hand in preparing this report in the most elaborate manner.

#### 6. DISCLAIMER

The article is an amalgamation of data collected from various sources and the authors' own views and thoughts. JSW Steel Limited does not necessarily subscribe to the views and thoughts expressed in the article and should not be held responsible for the same.

| Sample   | Test | +10 mm | 10-5mm | 5-3mm | -3mm |
|----------|------|--------|--------|-------|------|
| C-A      | 1    | 0.50   | 1.45   | 1.00  | 2.17 |
|          | 2    | NA     | NA     | NA    | NA   |
|          | 3    | 0.74   | 1.89   | 1.16  | 1.37 |
| C-B      | 1    | 0.56   | 1.56   | 0.75  | 2.31 |
|          | 2    | 0.88   | 1.75   | 0.68  | 1.88 |
|          | 3    | 2.63   | 1.95   | 0.20  | 0.21 |
| C-C      | 1    | 0.55   | 1.95   | 0.80  | 2.00 |
|          | 2    | 0.93   | 2.00   | 1.00  | 1.22 |
|          | 3    | 1.97   | 2.24   | 0.59  | 0.22 |
| Laterite | T-4  | Na     | Na     | 0.95  | 1.01 |

Table: WITHOUT CHEMICAL

| Sample   | Test | +10 mm | 10-5mm | 5-3mm | -3mm | Remarks      |
|----------|------|--------|--------|-------|------|--------------|
| C-A      | 1    | 0.72   | 1.46   | 0.71  | 2.25 |              |
|          | 2    | NA     | NA     | NA    | NA   | Not Mineable |
|          | 3    | 1.24   | 2.47   | 1.00  | 0.44 |              |
| C-B      | 1    | 0.56   | 1.56   | 0.75  | 2.31 |              |
|          | 2    | 0.88   | 1.75   | 0.68  | 1.88 |              |
|          | 3    | 1.28   | 2.18   | 0.69  | 1.00 |              |
| C-C      | 1    | 0.48   | 1.63   | 0.74  | 2.52 |              |
|          | 2    | 0.87   | 1.96   | 0.74  | 1.68 |              |
|          | 3    | 1.19   | 2.15   | 0.71  | 1.07 |              |
| Laterite | T-4  | NA     | NA     | 0.76  | 1.17 |              |

WITH CHEMICAL TREATMENT

Fig. 3.7 – Flowability Analysis of different ROM samples with and without chemical treatment

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(Continued from Page 12)

“That thinking also applies to long-term institutional investors who are perhaps hitting portfolio thresholds and need to de-risk and reduce their gold holdings,” Shields said. Analysts also caution that if investor momentum slows in 2026, excess physical supply could begin to weigh on prices as demand from the jewellery sector in the key consuming regions is falling.

China’s January-September gold imports fell 26% in tonnage terms, according to the Trade Data Monitor. India’s January-July imports fell 25%.

*Reuters / October 22, 2025*

➤ **China’s iron ore, copper and coal imports rise to annual high**

China’s commodities purchases broadly turned higher in September as buyers stocked up to meet the usual rise in industrial demand during the autumn months. Imports of iron ore, copper metal and coal all hit their highest levels this year, while soybeans rose to a four-month best. Decliners month-on-month included crude oil, copper ore and natural gas, although the first two items were still above the levels of the year before.

The relatively robust imports come despite a challenging economic backdrop, which is likely to worsen if the latest escalation in trade tensions with the US results in higher tariffs on Chinese goods. China’s manufacturing sector contracted for a sixth straight month in September, although the decline was tempered by better weather and the seasonal upturn in activity. Measures of construction and services also fell.

Natural gas imports performed poorly last month, dropping 6.8% from August, after pricier seaborne cargoes slumped in the face of rising local production. Coal, by contrast, rose 7.6%, benefiting from domestic output cuts that have lifted prices and made overseas supply more attractive, particularly as utilities stock up for winter.

Crude oil imports fell 4.5%. The international market has relied on Chinese strategic stockpiling to buoy prices, but that effort was undercut in September as some state-owned refineries shut units for seasonal maintenance and smaller outfits were hindered by thinning import quotas.

Copper concentrate imports dropped 6.3% as mine disruptions, most recently at Grasberg in Indonesia, hampered supply of the smelting feedstock. Unwrought copper and products took up the slack, surging 13% as buyers switched to already processed metal.

*Bloomberg News / October 13, 2025*

➤ **India central bank’s gold pile tops \$100 billion on surging bullion prices**

India’s gold reserves crossed the \$100 billion mark for the first time, according to the Reserve Bank of India’s latest foreign exchange reserves data, buoyed by a global price rally even as the central bank’s purchases slowed sharply this year.

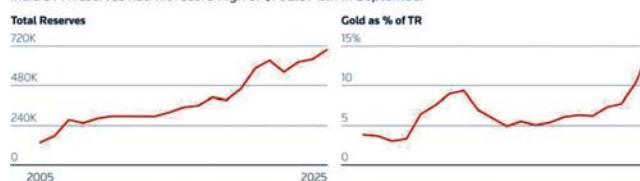
India’s gold holdings rose by \$3.595 billion to \$102.365 billion in the week through October 10, RBI data showed on Friday, while overall foreign exchange reserves declined \$2.18 billion to \$697.784 billion.

The share of gold in India’s total reserves climbed to 14.7%, the highest since 1996-97, according to traders. Gold’s share in India’s foreign exchange reserves has almost doubled over the past decade — from below 7% to nearly 15% — reflecting both steady central bank accumulation and a surge in global bullion prices.

That’s led to the \$100 billion milestone being hit despite a marked slowdown in the RBI’s gold purchases this year. The central bank bought gold in only four of the first nine months of 2025, compared with near-monthly additions in 2024, according to World Gold Council data.

**Share of gold in India’s total FX reserves at highest in nearly three decades**

India’s FX reserves had hit record high of \$702.97 bln in September



Note: 2025 data available only until Oct. 10  
Source: RBI | Swati Bhat

Cumulative buying from January to September stood at just 4 tons, sharply lower than 50 tons in the same period a year earlier. The share of gold in India’s foreign exchange reserves has increased significantly, largely driven by valuation gains from the rising gold price, said Kavita Chacko, research head for India at the World Gold Council.

Gold has surged about 65% in 2025, powered by a potent mix of macroeconomic, institutional and psychological drivers. Global central banks continue to accumulate gold as part of reserve diversification away from the US dollar — a trend spurred by heightened geopolitical risks, sanctions pressures and de-dollarization.

India is the world’s second-largest consumer of gold and relies on imports to meet demand. Buying gold is deeply rooted in Indian culture, driven by tradition and its role as both an investment and a status symbol.

*Reuters / October 17, 2025*

# ECO-FRIENDLY MINING AND MINERAL PROCESSING OF VISAKHAPATNAM BEACH SAND MONAZITE FOR WINNING OF RARE EARTH METALS

Raghupatruni Bhima Rao

## *Abstract*

*The current research paper addresses the environmentally friendly techniques of mining and mineral processing technologies that have been developed for the extraction of the rare earth mineral monazite through various physical beneficiation methods. The extraction of heavy minerals, particularly through dredging and the use of continuous spiral concentrators along coastal areas, frequently raises environmental issues due to habitat disruption and problems associated with sand mining. Moreover, conventional mining and extraction techniques often jeopardize coastal ecosystems, disturb biodiversity, and result in long-term land degradation. In light of these concerns, dredge mining, when conducted responsibly, presents a feasible and eco-sensitive alternative. It is recommended that various selective mining methods be employed in areas with high tidal fluctuations, catchment zones, and both frontal and back sand dunes to minimize environmental impacts. Additionally, empowering local residents to recover heavy minerals using mobile spiral concentrators with seawater not only improves the economic conditions of the local population but also enhances the wealth of industries while safeguarding the overall morphology of coastal dunes, sandbars, and local flora and fauna. Therefore, this study advocates eco-friendly techniques for the adoption of selective mobile mining techniques and mobile spiral concentrators for the recovery of total heavy minerals, including monazite, followed by the development of a flowsheet for monazite recovery. The findings of this investigation indicate that the product obtained contains 97.2% monazite with a recovery rate of 48.6% and an overall yield of 0.05% from a feed sample containing 0.1% monazite. Recoveries can be improved by processing the tailings from the gravity table, non-magnetics, and flotation tailings for further extraction.*

**Key words:** Beach sand, Monazite, Rare earth minerals, mobile gravity concentrators and mining methods

## 1. INTRODUCTION

Eco-friendly placer beach sand mining emphasizes reducing environmental impact while extracting valuable minerals from coastal sand deposits. Modern methods, including gravity concentration and AI-driven sorting, contribute to lowering the carbon footprint of mining activities. Community involvement, closed-loop water recycling processes, and sustainable practices are essential for responsible placer mining. It is a fact that beach sands have emerged as significant sources of rare earths, particularly in nations with vast coastal regions. These mineral-rich sands typically result from natural wave and wind action processes, leading to the concentration of heavy minerals—such as monazite, ilmenite, and zircon—over time. Among these, monazite sands are particularly valued for their high rare earth oxide content, while zircon, garnet, and sillimanite sands also yield valuable trace rare earths. In the current Indian context, with the rising demand for clean energy in developing economies, the need for Rare Earth Elements (REE) along with thorium is increasing. In this scenario, an indigenous source of these well-liberated minerals from beach sand is crucial. The straightforward extraction of these

REE elements from beach placers has garnered significant interest due to their free liberation, maturity, and distinct physical and chemical characteristics. Nonetheless, placer mining entails the excavation and processing of sediment to isolate and recover heavy minerals, frequently employing methods such as panning, sluicing, dredging, or hydraulic mining along with mineral processing techniques. The mining of placer sands in India often raises environmental issues due to habitat disruption and challenges associated with sand mining. In response, the Indian government has enacted regulations aimed at addressing these concerns and promoting sustainable mining practices. Placer sands play a significant role in India's mineral wealth and hold economic importance for both local communities and the nation at large. The extraction and processing of valuable minerals from these sands bolster livelihoods and contribute to India's industrial and economic growth. In conclusion, placer sands in India are linked to the extraction of various valuable minerals, including monazite and heavy minerals utilized in industry. They possess historical, economic, and strategic significance, presenting both opportunities and challenges in relation to their mining and mineral

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utilization. The mining and processing of heavy minerals from beach sands in coastal regions like India specifically involve issues related to beach erosion, shoreline retreat, and environmental impact. Comprehensive studies have shown that the dredging operations for beach sand mining adversely affect fragile coastal dunes and sandbars/shoals, leading to further shoreline retreat. The study area is predominantly subjected to high-energy waves, which continuously wash away sediments, creating an unbalanced situation; under such circumstances, dredging of dunes and berms can exacerbate erosion, resulting in an imbalance between sediment erosion and accumulation. The ongoing disturbance of palaeodunes disrupts the natural barrier that previously mitigated beach erosion. Additionally, the area faces significant storm surges annually, which further intensify the disproportionate sedimentary conditions present in the region.

## 2. MATERIALS AND METHODS

Forty representative auger samples were collected up to water depth all along the coast of Rushi Konda beach (Location Map: Fig. 1) in a grid pattern except from high tidal and surfing zones. A representative sample was taken from the bulk sample and subjected to sink-float studies. The sink fraction was subjected to mineralogical modal analysis using a binocular microscope.

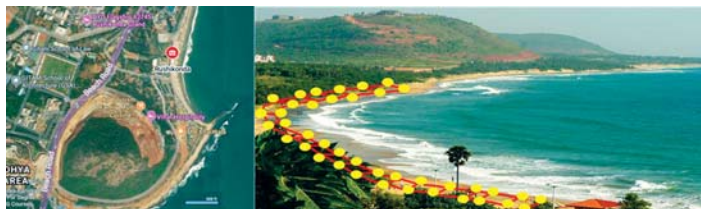


Fig. 1. Rushi Konda sample location map. Samples were collected in grid patterns all along the coast but not from tidal or surf zones.

The bulk sample prepared from all the auger samples was subjected to mineral processing studies. The bulk feed sand was subjected to spiral concentrators to recover total heavy minerals, followed by a high-tension separator, WHIMS, flotation, and a gravity table; it was further subjected to table heavies to column flotation, and the flotation product was subjected to WHIMS. The magnetic obtained from WHIMS is further subjected to column flotation to recover high-grade monazite. The details of the experimental procedure can be seen from Fig. 2.

## 3. RESULTS AND DISCUSSIONS

The worldwide shift towards clean energy, digitalization, and advanced manufacturing is heightening the need for essential raw materials—especially titanium, zirconium, and rare earth elements (REEs). A significant portion of these vital resources is found in beach sand mineral (BSM) deposits, commonly referred to as coastal placer deposits. To extract these minerals, conventional dry mining techniques,

such as manual pitting or mechanized excavation, lead to coastal erosion, habitat destruction, groundwater intrusion, and social conflicts—particularly when operations are near active beaches or ecologically sensitive areas. Given these issues, dredge mining has surfaced as a more sustainable option. Dredge mining involves the extraction of sand deposits from below the water surface using floating platforms that are equipped with hydraulic or mechanical dredging systems. When properly planned and implemented with environmental protections, it provides numerous ecological benefits: minimal land disruption, decreased dust and noise, efficient water utilization, and progressive land reclamation. Therefore, the exploration of these minerals is a crucial component in the process of mining to obtain rare earth metals. Monazite is the primary mineral found in beach sand for the extraction of rare earth metals, although it exists in only trace amounts within the beach sand.



Fig. 2. Experimental procedure to recover placer rare earth mineral from beach sand monazite

The resources of monazite in different states of India are shown in Fig. 3. The data indicate that the monazite resources are highest in Andhra Pradesh, which contains 3.78 tonnes in the beach sand. The beach sand of Odisha contains 3.16 tonnes followed by Tamil Nadu 2.47 tonnes, Kerala 1.84 tonnes, West Bengal 1.2 tonnes, Jharkhand 0.2 tonnes and Maharashtra contains 0.004 tonnes of monazite (1).

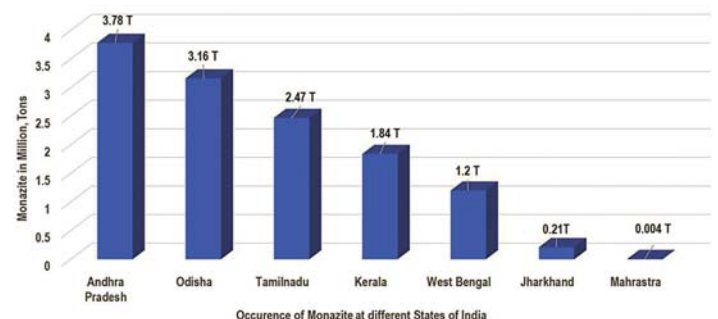


Fig. 3. Monazite resources in different states of India

It is very clear from the literature, particularly from the plant operating data of IREL (India) Limited shown in Fig. 4, that recovery of monazite involves separation of other heavy minerals such as ilmenite, rutile, garnet, sillimanite, zircon, and other gangue minerals. In these processes, monazite is being lost at every mineral separation circuit.

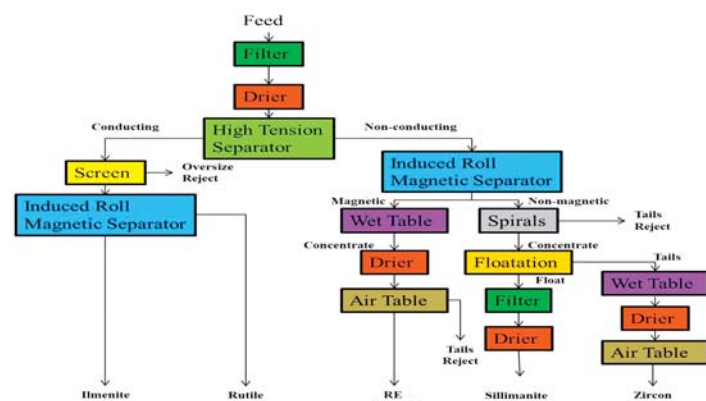


Fig. 4. IREL (India) Limited flowsheet to recover monazite along with other industrial minerals (2).

Mineralogical modal analysis of the spiral concentrator's product shown in Fig. 5 indicates that ilmenite contains 31.5%, garnet contains 31.4%, sillimanite contains 33.4%, zircon contains 1.9%, rutile contains 1.7%, and monazite contains 0.1%. The recovered total heavy minerals from the spiral [monazite content 0.1%] have been subjected to a high-tension separator. The product achieved in conducting the fraction, mostly titanium minerals, contains 0.009% monazite, and the non-conducting fraction contains 0.134% monazite, which has been further subjected to a wet high-intensity magnetic separator at 1 tesla magnetic intensity. The losses of monazite at the magnetic separation in the magnetic fraction mostly contain garnet with 0.01% monazite. The non-magnetic fraction contains 0.207% monazite. The non-magnetic and non-conducting fractions are subjected to separation of sillimanite. The sillimanite fraction contains 0.1% monazite, and the flotation tailings contain 0.58% monazite. In order to remove excessive silica, the flotation tailings have been subjected to a gravity table. The losses at the gravity table contain 0.1% monazite, whereas the gravity table concentrate is enriched to 16.3% monazite. This table concentrate is further subjected to column flotation, where the loss of monazite is 0.1% and the product, which has been tremendously enhanced to 44.2% monazite. The flotation concentrate has been further cleaned at wet high-intensity magnetic separation at 1.2 tesla, and a product achieved contains 97.2% monazite with 48.6% recovery, and the overall yield is 0.05% from a feed containing 0.1% monazite. All table tailings, flotation tailings and nonmagnetic fraction are to be subjected further physical separation processes to recover the losses of monazite. The flowsheet with material balance on recovery of monazite is shown in Fig. 6.

It is to be noted in the mineral processing that the monazite concentration increases at every step of the mineral processing unit operations. The workers working in the mines and mineral processing to extract various heavy minerals are in constant contact with radioactive elements, primarily through inhalation. The only way to cope with such an incident is to put a limit on how much a mine worker can be exposed to radioactivity (3).

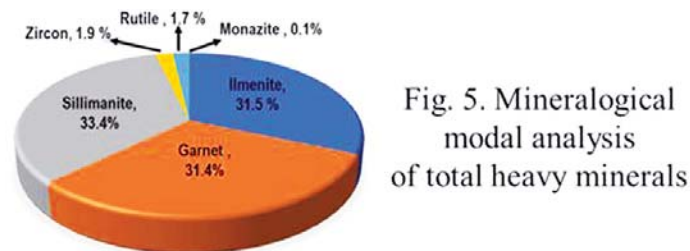


Fig. 5. Mineralogical modal analysis of total heavy minerals

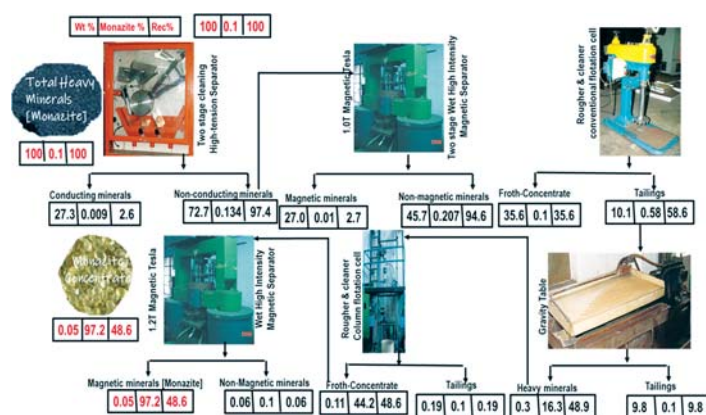


Fig. 6. Process flowsheet with material balance to recover placer rare earth mineral monazite

In this context, it is crucial to elucidate the various types of mining methods employed in beach sand mining, particularly focusing on dredging techniques. [a] Hydraulic (Suction) Dredging is a prevalent method that utilizes centrifugal pumps and suction pipelines to extract a sand-water slurry. This technique is favoured for beach sand mining due to its lower energy consumption and cost-effectiveness. Additionally, it offers ecological benefits, including minimal mechanical disturbance and reduced noise and vibration. [b] The Cutter Suction Dredger (CSD) employs a rotating cutter to loosen compacted materials, which are subsequently pumped out. This method proves advantageous when dealing with semi-consolidated deposits or those covered by a thin overburden. [c] The Bucketwheel Dredger integrates a rotating wheel with buckets and a suction pipe, allowing for precise excavation. This technique is particularly suitable for shallow, fine-sand deposits that require high accuracy, effectively minimizing over-dredging and turbidity generation. [d] The Auger Dredger features a horizontally rotating auger designed for precise trenching with minimal disturbance, making it ideal for environmentally sensitive areas that support aquatic life.



Based on these mining methods, a proposed strategy for various mobile mining techniques has been suggested, tailored to geographical and political conditions, along with mobile spiral concentrators for the recovery of total heavy minerals along the coast, as illustrated in Fig. 7. Gravity spirals, cyclones, and dewatering screens are employed to separate water from sand, allowing for the collection, clarification, and reuse of process water, thereby reducing the demand for freshwater. Non-valuable sands from spiral tailings are redirected back to the mined-out areas and evenly distributed to restore the original landform. Consequently, the reclaimed land is contoured, stabilized, and revegetated with native species or transformed into water bodies that possess ecological value. Consequently, this study strongly supports the adoption of specific mining techniques tailored to the characteristics of shore and beach sand. Furthermore, the recovery of total heavy minerals along the coastline indicates that utilizing fresh water at the mineral separation facility can be minimized, thereby avoiding the transport costs associated with the unnecessary tailing sand, which constitutes 90%. Additionally, local residents will gain employment opportunities while simultaneously safeguarding their coastal environment.



Fig. 7. Suggested proposal for different mobile mining methods and mobile spiral concentrators for recovery of total heavy minerals along the coast.

#### 4. CONCLUSIONS

The conclusions drawn from the study regarding conventional eco-friendly mining and mineral processing techniques for the extraction of monazite, aimed at obtaining rare earth metals from beach sand, are as follows. The total heavy minerals comprise 0.1% monazite. Various mining methods have been proposed for different types of beach sand resources. The extraction of monazite includes processes such as spiral concentration, high-tension separation, wet high-intensity magnetic separation, and flotation. The flotation tailings should be processed using a gravity table, followed by flotation and magnetic separation. The final product obtained from all these unit operations contains 97.2% monazite, with a recovery rate of 48.6% and an overall yield of 0.05% from a feed sample that contains 0.1% monazite. Recoveries can be enhanced by further processing the tailings from the gravity table, non-magnetics, and flotation tailings. It is recommended that the typical remediation methodologies

adopted should preferably be based on selective mobile mining and mobile spiral concentration of heavy minerals through inhabitations, which will contribute to a subsequent reduction in the mining footprint and the planting of local and indigenous species.

#### 5. ACKNOWLEDGMENTS

The author is thankful to all the research students who supported during the collections of samples and the Director of CSIR IMMT for giving permission to carry out the work.

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### READERS' VIEWS

Dear Editor,

After a long...! But memories of our interactions are fresh and glorious.

As I was reading your thoughtful, wisdom-filled editorial note (MEJ April 2018 issue), my thoughts on the subject reeled through with remorse. I always maintained we failed by not being wise enough to brief and educate our legal fraternity. We were not cautious enough to prepare them to treat subjects of mining and environment as different from revenue and criminal subjects. That we missed that aspect had caused all that agony that we passed and are passing through. Exercise of knowledge and experience in ordinary legal subjects by our legal fraternity caused all that destruction in our lives.

Anyway, we have learned to accept that "Ignorance is Not always Bliss...!"

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## EDITOR'S REVIEW : "MY JOURNEY INTO AN UNFOLDING FUTURE - THE MEMOIRS OF A MINING ENGINEER" (2021)

by Mr. D. N. Bhargava, Former Controller General, Indian Bureau of Mines (IBM)

Mr. D. N. Bhargava's memoir, *My Journey into an Unfolding Future—The Memoirs of a Mining Engineer*, is a very interesting account of a groundbreaking career that closely reflects the development of India's mining industry following independence. The book, which is divided into 21 chapters, chronicles the career journey and introspective thoughts of a professional who spent more than five decades at the forefront of India's mining revolution.

The book's preface establishes the tone for an introspective and historical narrative. From Mr. Bhargava's early years at Banaras Hindu University in the early 1950s, when mining education was just beginning to gain traction in newly independent India, to his lengthy and exciting career that lasted well past his official retirement. He was in a position to influence the developing framework for managing mineral resources because he was one of the first generation of mining engineers to be trained in post-independence India. Because of his distinct position, he was able to help create organizations, laws, and procedures that still have an impact on the industry today.

Mr. Bhargava's early career decisions, his willingness to take on new tasks, and his ongoing interest in technological advancement are all openly discussed in the memoir. His background includes work in academia, positions in public and private mining companies, and, most importantly, his seminal sixteen-year tenure as Controller General at the Indian Bureau of Mines (IBM). Under his leadership, the bureau rose to prominence as a representation of administrative prowess and technical proficiency.

Mr. Bhargava led efforts in environmental management, worker welfare, mineral conservation, and responsible mining long before these ideas were at the forefront of the global mining agenda. Under his direction, IBM transformed from a regulatory agency into a technical, knowledge-driven organization. Additionally, he sheds light on the difficulties associated with international representation, interministerial coordination, and bureaucratic management—areas that required both diplomatic tact and technical expertise.

The memoir's human element contributes significantly to its appeal. In his warm and honest writings about his personal life, Mr. Bhargava expresses his sincere gratitude to his late wife, Ms. Sarla, whose understanding and support got him through the many moves and rigors of a career in public service. His thoughts on children, family, and later life give the professional narrative more depth. His explanation of how writing the memoir itself turned into a healing process after a significant health setback—a creative act that helped him reconnect with his life's journey and with his kids, who served as the inspiration for the endeavor—is especially touching.

In the foreword, Mr. M. S. Nagar, the former chairman and managing director of Indian Rare Earths Ltd., places the memoir in the larger framework of India's mining development after independence. He emphasizes how Mr. Bhargava's career reflects the country's development, from the challenging early years with few resources and technical know-how to the nationalization and restructuring phase to the current era of environmental responsibility, scientific exploration, and mineral inventory.

Mr. Nagar admires Mr. Bhargava's visionary leadership in transforming IBM into a national hub of excellence in mineral resource assessment, mine planning, technical consultancy, and research. He also gives him credit for broadening the Bureau's purview to encompass technical publications, environmental assessments, and ore dressing studies. The construction of IBM's magnificent headquarters in Nagpur was a significant accomplishment during his tenure. According to Mr. Nagar, these institutional developments made it possible for India's non-coal mining industry to become a model of scientific and regulatory integrity, which in turn encouraged similar reforms in developing countries with abundant mineral resources, especially in Africa.

The foreword also highlights Mr. Bhargava's post-retirement work as an international mining consultant, particularly in Namibia, and his involvement in deep-sea mining projects, both of which show his ongoing interest in new developments in mineral resource management around the world. In addition to representing India overseas, he enhanced India's reputation in the global mining community with these initiatives.

When combined, the foreword and preface present *My Journey into an Unfolding Future* as much more than a formal autobiography. It is a philosophical meditation on labor, values, and purpose as well as a historical document. In order to address universal human concerns—commitment, ethics, resilience, and gratitude—the story goes beyond the technical confines of mining engineering.

Mr. Bhargava's memoir makes a substantial addition to the body of knowledge about Indian mining. It serves as a personal reflection on leadership and legacy as well as documenting the development of an entire profession via the experience of one person. The book will be of interest to readers who are interested in the narrative of nation-building through technical and institutional development, in addition to mining professionals, researchers, and policymakers. It is rich in detail, human in spirit, and reflective in tone.

**Dr. P. V. Rao**, FAusIMM  
Chief Editor, Mining Engineers' Journal (MEJ)



## MEAI - MEMBERSHIP APPROVED IN THE 1<sup>st</sup> COUNCIL MEETING ON 16-10-2025

### List of Fellow membership approved

| FM No | Name                   | Chapter           |
|-------|------------------------|-------------------|
| 168   | Dr. Anupam Bhatnagar   | Rajasthan-Udaipur |
| 169   | Dr. M. Ifthikhar Ahmed | Tamilnadu         |
| 170   | A. Venkateshwara Reddy | Bellary-Hospet    |
| 171   | Yogananda T L          | Bellary-Hospet    |
| 172   | R Sreedher             | Tamilnadu         |
| 173   | Sagar Waghmare         | Belgaum           |

### List of Life membership approved

| L M No | Name                        | Chapter           |
|--------|-----------------------------|-------------------|
| 6569   | Ms. Durva Sandeep Tendulkar | Barajamda         |
| 6570   | Sanjeevi. R                 | Tamilnadu         |
| 6571   | J. Deepak                   | Tamilnadu         |
| 6572   | R. Sampath Kumar            | Tamilnadu         |
| 6573   | Vinodh Raja S               | Tamilnadu         |
| 6574   | D. Chandrasekhar Reddy      | Tamilnadu         |
| 6575   | Bhanwar Singh Rathore       | Rajasthan-Jodhpur |
| 6576   | Prem Parkash Shankala       | Rajasthan-Jodhpur |
| 6577   | Anirudh Singh Bhati         | Rajasthan-Jodhpur |
| 6578   | Ankit Ojha                  | Rajasthan-Jodhpur |
| 6579   | Ramesh Gehlot               | Rajasthan-Jodhpur |
| 6580   | Ms. Zarin Ali               | Rajasthan-Jaipur  |
| 6581   | Suraj Gupta                 | Kolkata           |
| 6582   | Dr. Jagdish Kumar Mohnot    | Rajasthan-Jodhpur |
| 6583   | Kamlesh Patel               | Rajasthan-Jodhpur |
| 6584   | Bheem Singh                 | Rajasthan-Jodhpur |
| 6585   | Banabihari Behera           | Bhubaneswar       |
| 6586   | Dr. Neelima Nair            | Rajasthan-Udaipur |
| 6587   | Pankaj Gangaprasad Gautam   | Nagpur            |
| 6588   | Bhagwan Singh               | Rajasthan-Jodhpur |
| 6589   | Dhiraj Panwar               | Rajasthan-Jodhpur |
| 6590   | Sunil Harsh                 | Rajasthan-Jodhpur |

|      |                          |                   |
|------|--------------------------|-------------------|
| 6591 | Surendra Vyas            | Rajasthan-Jodhpur |
| 6592 | Kaushik Hazra            | Rajasthan-Jodhpur |
| 6593 | Subhendu Kar             | Rajasthan-Jodhpur |
| 6594 | D Venkat Reddy           | Hyderabad         |
| 6595 | Sanjiv Kumar Singh       | Kolkata           |
| 6596 | Tarak Nath Nayak         | Kolkata           |
| 6597 | Nemathulla Khan          | Bangalore         |
| 6598 | Netai Chandra Dey        | Kolkata           |
| 6599 | Praveen Kumar Bhardwaj   | Rajasthan-Jodhpur |
| 6600 | Dinesh Chandra Rai       | Rajasthan-Jodhpur |
| 6601 | Binay Kumar              | Kolkata           |
| 6602 | Saikiran R Saradagi      | Belgaum           |
| 6603 | Rahul Lohar N            | Belgaum           |
| 6604 | D Vinod Kumar            | Belgaum           |
| 6605 | Shreedhar Kumar          | Belgaum           |
| 6606 | Bazar Vajirajendra Achar | Bellary-Hospet    |
| 6607 | Konanki Raja Sekhar      | Bellary-Hospet    |
| 6608 | Yallappa                 | Bellary-Hospet    |
| 6609 | Zmeer Ahmed Khan Khaiser | Hyderabad         |
| 6610 | Guntha Karthik           | Hyderabad         |
| 6611 | Vallaty Narasimha Rao    | Hyderabad         |
| 6612 | Meti Ujjinappa           | Rayalaseema       |
| 6613 | Shaik Mahammad Shafi     | Rayalaseema       |
| 6614 | Narreddy Narayana Reddy  | Rayalaseema       |
| 6615 | Ramireddy Prasannakumar  | Rayalaseema       |

### List of Annual membership approved

| A M No | Name               | Chapter           |
|--------|--------------------|-------------------|
| 6029   | Ms. Anju Mathur    | Rajasthan-Jodhpur |
| 6030   | Ramesh Kumar       | Rajasthan-Jodhpur |
| 6031   | Mangana Ram Mirdha | Rajasthan-Jodhpur |
| 6032   | Yash Bhardwaj      | Rajasthan-Jodhpur |

## MEAI NEWS

### MEAI HEADQUARTERS

**Shri. D. B. Sundara Ramam, President, MEAI visit to MEAI Headquarters on 16-10-2025**



MEAI dignitaries felicitating the President (L to R): Shri. B. Sahoo, Jt. Sec cum Treasurer; Dr. P. V. Rao, Chief Editor, MEJ; Shri. D. B. Sundara Ramam, President; & Shri. M. Narsaiah, Secretary General

### MEAI – Mineral Industry Leaders Meeting on Implementation of IMIC In India

Venue: MEAI Headquarters, Hyderabad

Date: 16 October 2025

Time: 11:30 AM – 1:30 PM

#### Participants

- Mr. D.B. Sundara Ramam, President MEAI & VP (CS), Tata Steel, Jamshedpur
- Mr. Dhananjaya Reddy, Vice President-I MEAI & COO, ERM Group, Bengaluru
- Dr. Pukhraj Nenival, Vice President-II MEAI & COM, IBM, Kolkata
- Mr. T. Victor, Past President, MEAI, Goa
- Mr. Sanjay Pattnaik, Past President, MEAI, Bhubaneswar
- Dr. Sanjeev Kumar Sinha, Director (Operations), HCL, Kolkata
- Mr. S.H.M. Mallikarjuna, GM, JSW Steel, Sandur
- Dr. T.N. Venugopal, MEAI-Chairman, Bangalore
- Mr. Shameek Chattopadhyay, MD, SRK Consulting, Kolkata

- Mr. V. Balakoti Reddy, Vice Chairman, MEAI-Hyderabad Chapter
- Mr. M. Narsaiah, Secretary General, MEAI, Hyderabad
- Dr. P.V. Rao, Co-Chair, NACRI, Hyderabad

Mr. D.B. Sundara Ramam presided over the meeting.

#### Takeaways from the meeting

**Industry Stakeholder Meeting:** It was resolved to organize a hybrid meeting involving CEOs from mining companies, consulting firms, financial institutions, government exploration organizations (GSI, MECL, etc.), regulators (IBM, SEBI), and key industry bodies such as MEAI and FIMI. The Ministry of Mines will be invited to participate.

**Engagement with IBM Headquarters:** A visit by MEAI and NACRI representatives to the Controller General's Office, IBM Nagpur, will be arranged to brief him on developments related to IMIC, CRIRSCO, and UNFC frameworks. The delegation will request the nomination of an IBM representative to NACRI, as per the directive of the secretary, MoM.

**Sharing of Geological Reports (GRs):** Selected mining companies will be requested to share government-issued Geological Reports (GRs) of auctioned mineral blocks with NACRI. The purpose is to review these GRs under IMIC standards and demonstrate the relevance of CRIRSCO-aligned reporting in the context of MEMC rules.

**Technical Review of Project Reports:** Certain companies offered to submit their Detailed Project Reports (DPRs) to NACRI for an independent review of their stated resources and reserves in line with IMIC guidelines.

**Adoption of IMIC by CRIRSCO-Compliant Companies:** Companies already adhering to international reporting codes such as JORC and NI 43-101 will be encouraged to align their domestic operations with the IMIC framework.

**Engagement with CIL and MGMI:** Dr. Pukhraj Nenival volunteered to coordinate with Coal India Limited to promote adoption of IMIC and to facilitate the nomination of a company representative to NACRI. He will also engage with MGMI leadership to explore its participation in NACRI as a Professional Organization (PO).

**IMIC Awareness Presentation at HCL Foundation Day:** NACRI will deliver a presentation in the international seminar titled "Critical & Strategic Minerals for Viksit Bharat @2047" during the 59<sup>th</sup> Foundation Day of HCL at Kolkata on 9



November 2025. The session aims to promote awareness of IMIC across government and the wider mineral sector.



## 1<sup>ST</sup> COUNCIL MEETING

The New Council for the term 2025–2027 under the Presidentship of Shri. D. B. Sundara Ramam has been formed on 18<sup>th</sup> July 2025 at Bhubaneswar.



*Council Members physically participated in the meeting*

The meeting for members for the first time was held on 16-10-2025 at MEAI, HQ, Hyderabad, in hybrid mode. The council meeting was hosted by the Hyderabad Chapter.

A notable thing in the meeting was the presence of Shri V. S. Rao; at the age of 87 years, he has shown his enthusiasm & commitment for attending the events of MEAI, which is an



inspiration for many young mining professionals. The First Council meeting was attended by Dr. V. D. Rajagopal, Shri. T. Victor, Shri. Sanjay Kumar Pattnaik, & Shri. S. N. Mathur.

Highlights of the 1<sup>st</sup> Council Meeting for the term 2025-2027



*Shri. Vinay Kumar, Chairman, Hyderabad Chapter welcoming the new MEAI Office Bearers during the 1<sup>st</sup> Council Meeting of the MEAI*



*Shri. D. B. Sundara Ramam, President, addressing the Council, expressed his strong belief that the Association should achieve significant growth over the next two years*



*Address by  
Shri. Dhananjaya G Reddy, VP - I*



*Address by  
Dr. Pukhraj Nenival, VP -II*



*Address by Rachappa M. Saradagi, VP -III*



*Address by Shri. Sanjay Kumar Pattnaik, Past President, MEAI*





Shri. L. Krishna, and Shri. V. Balakoti Reddy felicitating Shri. Vinay Kumar, Chairman, Hyderabad Chapter



MEAI Office Bearers (L to R): Shri. Dhananjaya G. Reddy, Shri. M. Narsaiah, Shri. D. B. Sundara Ramam, Dr. Pukhraj Nenival, Shri. Rachappa M. Saradagi, and Shri. B. Sahoo

## BELGAUM CHAPTER

On 24<sup>th</sup> September, Chairman Dr. Hanamgond, Jt. Secretary Mr. Suraj Mense and LM Mrs. Priyanka Shinde conducted a one-day workshop, "Khanijanveshana," for PG, research students, and faculty of Rasashastra Department of Sanjeevani Ayurveda Medical College & Hospital, Hubli. Over 120 participants attended the workshop.



On 2<sup>nd</sup> October, Chairman Dr. Pramod Hanamgond had been to Ganpatipule for Ganesh darshan, and after darshan he picked plastics from the beach portion in front of the temple as a part of Swachhata Abhiyan.



On 5<sup>th</sup> October, the 2<sup>nd</sup> monthly meeting of the Belgaum Chapter was held at Rajaram College, Kolhapur. The meeting at Kolhapur was held after 13 years to revive the involvement of Kolhapur members. Also invited several geology faculties from a few colleges and DGM members as a part of the membership drive. Chairman, Dr. Pramod Hanamgond, briefed about the MEAI and the activities. A few members have agreed to become life members. Later Dr. Hanamgond, Chairman; Shri Rachappa S, VP III; and Secretary Sagar Waghmare felicitated MEAI Belgaum Chapter Kolhapur members Shri Rohit Patel and Dr. A. R. Kulkarni and invitees Dr. Sanjay Pathare and Shri Amol Thorat, Deputy Director DGM, Nagpur.

On the 6<sup>th</sup>, Chairman Dr. Hanamgond took students and faculty of RPD College to Siddeshwar Granite Industry, a mining and polishing unit at Idalhond, Belgaum. They were explained about the formation of igneous rocks, occurrences and uses of granite, granite mining etc. Industrial and economical aspects of granite, polishing units, trading, etc., were explained and guided by the members of the factory.







(A) MEAI Belgaum Chapter members meeting at Rajaram College, Kolhapur. B & C) Chairman, VP III and Secretary Felicited MEAI Belgaum Chapter members (Rohit Patel, Dr A R Kulkarni, invitees Dr Sanjay Pathare and Amol Thorat, DD DGM, Nagpur. (D & E) Chairman Dr. Hanamgond took students and faculty of RPD College to Siddeshwar Granite Industry (Mining & Polishing units), for an industrial tour at Idalhond, Belgaum.

On 9<sup>th</sup> October, conducted “GRAHYA” a national workshop in association with Shri BMK Ayurveda Mahavidyalaya, Belgaum and Department of Geology GSS College, Belgaum. MEAI members Dr. Pramod Hanamgond (Chairman), Mr. Suraj Mense (Jt. Secretary), and Mrs. Priyanka Shinde along with Dr. Raju Sukhaye, conducted the hands-on training. A visit to the Geology Museum was organized. MEAI member Mr. Ravi Hiremath was present at the event.



On 10-11 October, Chairman, Dr Hanamgond and Secretary Mr. Sagar Waghmare, participated in the International Conference on “Next Generation Mining 2025,” organized by the Bellary-Hospet Chapter. Dr. Hanamgond had the honor to chair a session on digital mining.



On 16<sup>th</sup> October, four of our members – Shri Rachappa S, VP III; Dr. Pramod Hanamgond, Chairman; Mr. Sagar Waghmare, Secretary; and Mrs. Priyanka Shinde, Life Member—attended the One Day National Workshop on “Strategic Need of Critical Mineral Exploration” and the Council meeting held at Royalton Hotel, Abids, Hyderabad.





On 18<sup>th</sup> October, we conducted Basic Life Support—CPR hands-on training for Ayurveda Medical Representatives. Over 30 medical representatives were present. Dr. Prakash Phadnis and Shri Anant Nadagouda (our MEAI New Member) conducted the session. Our member Mr. Ravi Hiremath organized this event at his Ayurveda medical shop at Belgaum.



## BELLARY - HOSPET CHAPTER

### Swachhata Hi Seva - 2025

Date: 27<sup>th</sup> September 2025,

Venue: Siddapur Village & Government primary School  
Cleaning Drive commenced at 10:30AM

The Bellary-Hospet Chapter organized a cleaning drive (Swachhotsav) under the theme “Swachhata Hi Seva 2025,” a campaign set by the Indian Bureau of Mines. The event was conducted at Siddapura Village and the Government Primary School, with the objective of promoting cleanliness and community hygiene in rural areas.

The cleaning drive was initiated by **Sri P. Venkateswara Rao, Secretary of MEAI Bellary-Hosapete Chapter**, along with other **Life Members** of the Chapter and Local Villagers. Around **27 members** actively participated in the program, engaging in cleaning activities and spreading awareness about the importance of maintaining a clean and healthy environment. The initiative reflected MEAI's commitment towards social responsibility and environmental sustainability.



## HYDERABAD CHAPTER

### Annual General Body Meeting

10<sup>th</sup> October 2025 at MEAI HQ's Auditorium



(L to R): Shri. M. Narsaiah, Secretary General; Shri. V. S. Rao, Past President; Dr. V. D. Rajagopal, Past President; Shri. V. Balakoti Reddy, Vice Chairman; and Shri L. Krishna, Secretary, Hyderabad Chapter addressing the members



Shri. Vinay Kumar, Chairman, Hyderabad Chapter addressing the AGM

### MEAI Hyderabad Chapter - Activities and Updates

The Hyderabad Chapter has been actively engaged in several technical and professional initiatives over the past two years under the leadership of Shri. Vinay Kumar as Chairman and Shri. L. Krishna as Secretary.

#### The Secretary informed the Key Activities organized from 2023 to 2025

- Indian Mining Day was celebrated on 1 November 2023 and 5 November 2024.
- One-Day Workshop for students on “Industry Institute Interaction” for students of JBIET, MREC, and Osmania University on 9 December 2023.
- National Seminar on Advanced Iron Ore Beneficiation and Sustainable Utilization of Low-Grade Iron Ore held on 16-17 February 2024.
- Inauguration of MEAI Student Chapters at Osmania University on 6 January 2025.
- National Conference on Mining – Mining the Minerals; “Way Forward Towards Atmanirbhar Viksit Bharat-2047” held on 14-15 February 2025.
- Technical Meet on Green Technology and Mining Innovations for Sustainable Operations conducted on 13 September 2025.

### Membership Growth

The chapter achieved a remarkable addition of 66 new Life members during the last two years.

### Financial Progress

- Opening Balance (2023): Rs. 1.07 lakh
- Closing Balance (2024): Rs. 7.91 lakh
- Closing Balance (2025): Rs. 13.11 lakh
- Fixed Deposits: Rs. 15 lakhs created during the term.

### Upcoming Events

- Workshop on “Strategic Need of Critical Minerals and Exploration” on 16<sup>th</sup> October 2025 at Hotel Royalton, Hyderabad.
- National Council Meeting of MEAI to be held the same day at MEAI Headquarters.
- International Seminar planned for April 2026.

### Outlook

Senior members emphasized conducting monthly technical lectures and enhancing student and industry engagement. The Chapter aims to strengthen collaboration with key institutions such as DMG and TGMDC.

The meeting concluded with congratulations to the newly elected office bearers for the 2025-2027 term and appreciation for the Chapter’s continued growth and achievements.

### Hyderabad Chapter Office Bearers for the Term 2025-2027

|                 |                                                                              |
|-----------------|------------------------------------------------------------------------------|
| Chairman        | Mr. Vinay Kumar, Director (Technical), NMDC Limited                          |
| Vice Chairman   | Mr. V Balakoti Reddy, Director, BGR Mining & Infra Limited                   |
| Secretary       | Mr. Lakkarsu Krishna, Faculty, ESCI                                          |
| Joint Secretary | Mr. T Srinivas, GM (Co-Ordination), The Singareni Collieries Company Limited |
| Treasurer       | Mr. Randhir Kumar, GM (Mining), NMDC Limited                                 |

### Executive Committee Members

|                                                               |
|---------------------------------------------------------------|
| Mr. Kalasani Mohan Reddy, CEO (Mines) KNR Construction Ltd    |
| Mr. B Mahesh (Past Secretary)                                 |
| Dr. Kameshwar Rao, DGM (NMDC)                                 |
| Mr. Durgesh Giri, AGM (NMDC)                                  |
| Mr. T Malleshwara Rao, Head, Mine Planning, GTS India Limited |
| Mr. Venkatesham Dunde, SOM, (SCCL)                            |
| Mr. G Venkateshwarlu, AMR Limited                             |
| Mr. K Rajashekar Reddy, GM, TGMDC                             |
| Mr. Swamy, AD, DMG, Govt. of TG                               |

### Workshop on Strategic Need for Exploration of Critical Minerals

The Hyderabad Chapter of the Mining Engineers’ Association of India (MEAI) organized a highly insightful workshop on the “**Strategic Need for Exploration of Critical Minerals**” held on 16<sup>th</sup> October, 2025, at Hotel



Royalton, Abids, Hyderabad. The mining professionals, academicians, and students from the mining and mineral sector have participated in the event.

The workshop was presided over by Shri. Visireddy Balakoti Reddy, Vice Chairman, Hyderabad Chapter. The chief guest of the event was Shri D. B. Sundara Ramam, President, MEAI, and the guests of honor were Dr. Sanjeev Kumar Sinha, Director (operations) & Addl. Charge Director (Mining), Hindustan Copper Ltd.; Dr. Pukhraj Nenival, Vice President-II, MEAI; and Dr. V. D. Rajagopal, past president of MEAI.

Welcoming the participants, Shri. Visireddy Balakotireddy, showcased the MEAI's commitment to promoting knowledge sharing, capacity building, and sustainable mining practices.



*Shri. V. Balakoti Reddy, Vice Chairman, Hyderabad Chapter Welcoming the Delegates*

Shri. D.B Sundara Ramam, President MEAI, in his opening remarks, emphasized the need to accelerate mineral exploration through modern technologies, data integration, and stronger collaboration between public and private sectors. He noted that India's future economic growth and technological advancement will depend significantly on securing access to these critical resources.



*Shri. D.B Sundara Ramam, President, MEAI, addressing the Workshop*



*Dr. Pukhraj Nenival, Vice President-II, MEAI, addressing the event*



*Dr. Sanjeev Kumar Sinha, Director(operations), HCL, Addressing the workshop*

The workshop was aimed to highlight the growing importance of critical and strategic minerals in India's journey toward self-reliance and sustainable industrial development. With minerals such as lithium, cobalt, nickel, and rare earth elements becoming increasingly vital for clean energy technologies, electric mobility, and digital infrastructure, the discussions underscored the urgency of enhancing exploration and resource development efforts across the country.







Glimpses of the Workshop



Delegates participated in the workshop

The event was Sponsored by NMDC Ltd. (Gold Sponsorship), Hindustan Copper Ltd. (Silver Sponsorship), The Singareni Collieries Company Ltd. (Silver Sponsorship) and Advertisement Sponsored by Roka Mining & Infra Solutions and Terra Tek Equipment Solutions.



Honouring the Delegates from Roka Mining & Infra Solutions and Terra Tek Equipment Solutions for presentation.

#### Presentations made

1. "Role of Advanced Geophysics in Critical Mineral Exploration" by Shri. Karunakar Gandarapu, CEO - STEIGER Geoscience and Engineering Pvt. Ltd, India
2. "Exploration License Policy under MMDR Act 1957" by Dr. V.D. RAJAGOPAL, Past President, MEAI. -10BA: Grant of exploration license for minerals specified in Seventh Schedule through auction
3. "Critical Elements and Metals in Semiconductor Sector" by Dr. Hari Sarvothaman, University of Hyderabad; former Dy. Director General, Geological Survey of India.
4. "Geopolitics of Critical Minerals - REE with special reference to China and India" by Dr. C.H Rao, Chairman, Visakhapatnam Chapter, MEAI

#### RAJASTHAN CHAPTER- UDAIPUR

##### Annual General Body Meeting

The 27<sup>th</sup> Annual General Body Meeting of the Rajasthan Chapter-Udaipur was held on 14<sup>th</sup> September, 2025 (Sunday), at 10:00 AM at Labh Garh Palace Resort, Chirwa, Nathdwara Road, Udaipur (Rajasthan) in a highly enthusiastic and dignified atmosphere.



The meeting was chaired by Vice-Chairman Sh DP Gaur, with Sh Asif M Ansari, Secretary; Dr Hitanshu Kaushal, Joint



Secretary; & Sh RC Purohit, Treasurer of Rajasthan Chapter Udaipur.



Lighting of the lamp by dignitaries

At the outset, *Sh DP Gaur*, vice-chairman, presented a welcome address and highlighted the work done by the Udaipur Chapter during the last year. He said that during this year's International Conference, technical talks and a technical visit to the mines and plantation program were solemnized, and he appreciated the work done by various teams.



The annual report was presented by Secretary *Sh Asif M Ansari*, who briefed about the various activities and achievements as under during the past year.



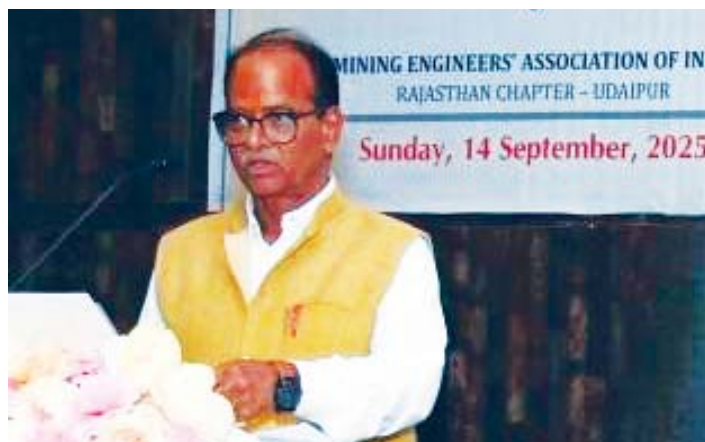
- **Membership Status:** The chapter's membership increased from 506 in 2023-24 to 540 in 2024-25. This includes 403 life members, 120 student members, and 17 fellow members.

## • Awards and Achievements

- The chapter received the MEAI Best Chapter Award and Best Student Chapter Award at the national level.
- Lifetime Achievement Award to *Shri H.V. Paliwal*, Former Director (Mining Operations), Hindustan Zinc Limited.
- Service Excellence Awards: *Shri Praveen Sharma* (Chairman), *Shri Asif M. Ansari* (Secretary), *Dr Hitanshu Kaushal* (Joint Secretary), *Dr SK Vashisth* (Council Member)
- Best Student Awards: *Mr Saurabh Kumawat* and *Ms. Muskan Solanki* Chapter Members performed exceptionally well in the National Quiz Competition.
- **Scholarships:** HZL Student Award: ₹21,000 & MEAI Tata Bhupendra Singh Bhati Scholarship: ₹15,000.
- **Important Events:** International Conference – “Centre of Excellence in Mining (Continuous Improvement and Asset Optimization)” (26-27 April 2025, Udaipur)
- International Student Conference – ‘Future of Mining: Digital Empowerment and Youth-Driven Sustainability ‘By Students For Students’(22-23 February 2025, Udaipur) Indian Mining Day: 1 November 2024 [Topic in Hindi]
- National Technology Day: Celebrated on 11 May 2025 at Vigyan Samiti, Udaipur.
- Various Technical Talks and Workshops: On technical and contemporary topics related to mining.
- Environment and Plantation Program: Tree planting and forest development activities at various locations under “Harialo Rajasthan”

Udaipur student chapters affiliated with the chapter at Sangam University, CTAE Udaipur, and Sir Padampat Singhania University are actively functioning.

The treasurer, *Mr. R.C. Purohit* presented the annual budget before the house and briefed the receipt and expenditures. The house unanimously approved the audited accounts.



**During the AGM, the following members were recognized by the chapter for their outstanding contributions at the national level:**

- Sh HV Paliwal, director of Mining Operation HZL, presented the “Life Institutional Member” award for 2024.
- Sh Praveen Sharma (Chairman) presented the “Service Excellence Award”—2024.
- Sh Asif M Ansari (Secretary) presented the “Service Excellence Award” 2024, LIM Membership Development, MEAI Quiz 2024 & Quiz (Audience Round).
- Dr SK Vashisth (Council Member) presented National level award “Service Excellence Award (2024), Membership Development Award & Nominated for National Council Member.
- Dr Hitanshu Kaushal (Joint Secretary) presented National level award “Service Excellence Award—2024, MEAI Quiz 2024 & Quiz Audience Round).
- Mr Sourabh Kumawat—National Level Award (MEAI—Best Student Member Award-2024).
- Ms Muskan Solanki—National Level Award (MEAI—Best Student Member Award-2024).
- Sh RP Mali— Elected as a National Council Member.

Apart from the above Sh UP Pahadia, Director of Wolkem India Ltd., was felicitated on his retirement.





Discussion for purchasing/collaboration with the Soapstone Producer Association for land for an office building available at the RIICO industrial area was done at length. It is decided that a committee consisting of Sh R P Gupta, former National President, as Chairman; Sh Hitanshu Kaushal, Joint Secretary, as member secretary; and Sh R C Purohit, Treasurer, will process further and authorize the signature wherever and whenever required. Sh NK Joshi and Sh S K Vashishtha also proposed their expertise in this matter if required. The committee may take their services as and when required.

During the meeting, suggestions from members Mr. P.R. Ameta, Mr. Y.C. Gupta, Mr. N.K. Joshi, Sh SK Jain, and Mr. M.S. Paliwal were received, and the appropriate reply was given by Sh DP Gaur, Vice-Chairman, and Sh. Asif M. Ansari, Secretary.

The program concluded with a vote of thanks delivered by the secretary, Mr. Asif M. Ansari.

During the AGM meeting, ladies and family members were busy with different games like housy. The cultural program was also presented by Sh Mahesh Ameta and Sh Hemant Menaria.



106 Members and 120 family members participated in the Annual General Meeting

All members, guests, and representatives from the mining industry present at the meeting appreciated the activities and achievements of the MEAI Udaipur Chapter.

### A Report on Technical Talk

The Rajasthan Chapter-Udaipur organized a technical talk on 19<sup>th</sup> August, 2025, at 6:30 PM on a theme entitled "Issues & Measures Related to Volumetric Measurement of Excavation and Stocks with Drone Survey" at the Chapter's Office, Udaipur. The keynote speaker on the occasion was Sh RP Mali, MD, MPRASS Mining Solution, who delivered a PowerPoint presentation on the above subject. He was welcomed by Sh RP Gupta and Sh AK Kothari, former presidents of MEAI.



(L to R): Sh Asif M Ansari, Secretary; Sh RP Gupta, Former President MEAI; Sh RP Mali, MD, MPRASS Mining Solution and Sh AK Kothari, Former President MEAI

During the session, Sh RP Mali emphasized that drone technology is an emerging technology in all areas of operations. The mining industry has also adopted drone technology in various areas such as lease security, regulatory compliance, surveillance, mine mapping, and excavation monitoring. Conventionally, mine mapping was done by use of Total Station and DGPS only, which was time-consuming and had various issues like accessibility during the survey. With the adoption of drone technology mine mapping can be done much faster, and as a result it provides a variety of data for various analyses. Volume calculation of excavation and



stocks are important areas where this technology is worthy to adopt. However, a correct understanding of technology and its proper adoption is of utmost importance to get faithful results. The major issue involves the availability of historical data of initial topography, correct positioning of ground control points, data acquisition, data processing, data manipulation, etc. The presentation also dealt with the method of reporting of volume by a competent person and its cross-check with other proven methods of volume calculation.



The questions were raised by the participants, as the subject of drone application was new for all. Sh RP Mali responded to the anxiety of several members to their satisfaction & improved understanding. Sh AK Kothari, former president of MEAI, proposed a technical seminar on drone surveys by the Udaipur chapter in the coming months.

On this occasion, a representative of Deswik software expressed that the Deswik software provides an integrated mining planning and optimization solution for the mining industry for the design, scheduling, and data management. He said that soon he will provide the details of this software to members of the Mining Engineers Association of India Udaipur and associate mining colleges near Udaipur.



On this occasion Shri Abhay Agarwal, Controller of Mines, Indian Bureau of Mines, appreciated the presentation and application of drones in the mining industry for mapping, monitoring, and managing mining operations. This offers significant benefits in safety, speed, accuracy, and cost efficiency compared to traditional methods.



Approximately 25-30 mining engineers and geo-scientists from various stakeholder entities participated in the event

The event concluded with the formal vote of thanks delivered by Secretary Sh Asif M. Ansari, while Dr. S K Vashisth, National Council Member, conducted the proceedings seamlessly.





## A Report on Welcoming Director-DMG



(L to R) Sh RC Purohit—Treasurer, Sh SM Ahmed—Executive Member, Dr Hitanshu Kaushal—Jt. Secretary, Sh Asif M Ansari—Secretary, Sh Mahveer Prasad Meena, Director, DMG-Udaipur & Sh RP Gupta—Former President MEAI

On 13<sup>th</sup> October 2025, the Mining Engineers' Association of India (MEAI), Rajasthan Chapter – Udaipur, extended a warm welcome to Shri Mahaveer Prasad Meena on the occasion of his assuming charge as Director, Department of Mines and Geology, Government of Rajasthan.

This moment marks a significant recognition of our senior mining fraternity member. Shri Meena's dedication, vast experience, and insightful leadership have consistently contributed to the growth and development of the mining sector in the state.

On this occasion, former President MEAI Shri R. P. Gupta, Secretary Shri Asif M. Ansari, Dr. Hitanshu Kaushal, Shri S. M. Ahmed, and Shri R. C. Purohit were present on behalf of the Rajasthan Chapter–Udaipur.



## Forest Cover Development & Environmental Visit at Kelwa (Rajsamand)

Under the joint aegis of Paryavaran Vikas Sanstha, Marble Mine Owners Association, Rajsamand, and the Mining Engineers' Association of India (MEAI), Raj Chapter, Udaipur, extensive forest cover development initiatives have been carried out in the Kelwa region, known for profuse marble & other commodities mining hubs of Rajasthan.

The esteemed members of MEAI, Udaipur Chapter, in good number, visited the site to observe the environmental initiatives undertaken by all the sections of society, especially the mining community. It was noted with great appreciation that such a large-scale, systematic, and well-planned, well-cared-for plantation activity—spread across hundreds of hectares—was being witnessed for the first time.



The quality, smooth execution, and magnitude of the mammoth plantation work drew widespread appreciation. Former President of MEAI, Sh Arun Kothari, especially encouraged the team and boosted their morale. The joint effort of Paryavaran Vikas Sanstha and Marble Mine Owners Association, Rajsamand, has set an ambitious target of planting more than 4,000 saplings of various species this year. The progress of this plantation drive will be systematically monitored, and the updates will be uploaded on the official mining website.

Sh Lalit Bachhara, District Mining Engineer, DMG, Rajsamand, also lauded this noble initiative. He remarked that such deeds are a way to repay the debt we owe to nature, and by nurturing greenery, we give back in gratitude for what we have received from the environment.

On this occasion, a plantation was also held at Shri Madan Pathik Vihar Dham-Ghoda Ghati by members of MEAI, Udaipur Chapter. This plantation was under the supervision of Sh Lalit Bachhara, ME-Rajsamand. The plantation site visit & all activities were anchored by Dr. S. K. Vashisth, Council Member.





## OBITUARY



**Shri Tulsibhai Haribhai Parmar**  
LM-1337, Ahmedabad Chapter  
(1945–2025)

Shri Tulsibhai Haribhai Parmar, a distinguished engineer, pioneering leader, and devoted family man, passed away peacefully on September 22, 2025, at the age of 80 years.

Born on November 17, 1945, in Muli, Gujarat, Shri Parmar exemplified resilience and a passion for learning. He earned his Bachelor of Engineering in Electrical from the prestigious LE College, Morbi.

His professional life was largely defined by his visionary service at the Gujarat Mineral Development Corporation (GMDC). Rising to the rank of Deputy General Manager, he was instrumental in the establishment of the Panandhro Project. His expertise and leadership were further demonstrated when he was appointed General Manager for GMDC's inaugural power initiative, the Akri Mota Power Project.

Known for his remarkable strength, confidence, and compassionate nature, Shri Parmar inspired excellence in all who worked with him. Following his retirement, he continued to contribute, serving as an ITI Examiner and co-founding DEVAM Welding Technologies, Gandhinagar, where his vision shaped the company's success.

Above all, he was a beloved patriarch. He is survived by his devoted wife, Shrimati Anilaben, and their three loving children, to whom he imparted the invaluable lessons of integrity and hard work.

Shri Parmar's legacy of professional excellence and compassionate leadership will be deeply missed. May his soul rest in eternal peace.



# CONFERENCES, SEMINARS, WORKSHOPS ETC.

## INDIA

### 8 - 9 Nov 2025: **National Conference on Industrial Minerals and Ceramics: Downstream Industries & Investment Opportunities.**

Venue: Auditorium, Bikaner Technical University (BTU), Bikaner. Organised by MEAI, Rajasthan Chapter-Jodhpur & Bikaner Technical University (BTU), Bikaner, Contact: meai\_jodhpur@yahoo.co.in; sanjeet.8028@gmail.com

9 Nov 2025: **International Seminar on Critical & Strategic Minerals for VIKSIT Bharat @2027.** Organised by Hindustan Copper Limited at Hotel Taj Taal Kutir, Kolkata. Eco Contact Email: Park, Eco park Road, DEshbandhu Nagar, New Town, Kolkata 700156. Contact: Mr Umesh Singh, ED (Mining), +91 94701 97256, umesh\_s@hindustancopper.com

## ABROAD

11-13 Nov 2025: **Environmental Integration on Sustainable Perspective and Beyond.** Manila, Philippines. Website URL: <https://www.ierek.com/events/environmental-integration-on-sustainable-perspective-and-beyond-eispb#introduction>.

25-26 Jan 2026: **International Conference on Geological and Earth Sciences ICGES (ICGES 2026).** Paris, France. Website URL: <https://waset.org/geological-and-earth-sciences-conference-in-january-2026-in-paris>. Organization: World Academy of Science, Engineering and Technology.

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

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

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/>.

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 27<sup>th</sup> World Mining Congress and exhibition in Peru.** Contact details: Phone: +48 32 324 66 03; e-mail: [wmc@gig.katowice.pl](mailto: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](mailto: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>.

25-26 Oct 2026: **International Conference on Hydrometallurgy and Mining ICHM** in Istanbul, Turkey. Website URL: <https://waset.org/hydrometallurgy-and-mining-conference-in-october-2026-in-istanbul>.

2-3 Dec 2026: **International Conference on Geosciences and Geological Engineering ICGGE** in Tokyo, Japan. Website URL: <https://waset.org/geosciences-and-geological-engineering-conference-in-december-2026-in-tokyo>.

## 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](mailto:editor.mej.meai@gmail.com).

Chief Editor, MEJ

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- **The Geopolitics of Critical Minerals:** India's Role in a Multipolar World
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## Paper Submission Schedule

|                                           |   |            |
|-------------------------------------------|---|------------|
| Last Date for submission of Abstract      | - | 15.09.2025 |
| Notification of acceptance of Abstract    | - | 20.09.2025 |
| Confirmation by Authors to deliver papers | - | 25.09.2025 |
| Last date for submission of full paper    | - | 05.10.2025 |
| Last date for submission of PPT           | - | 20.10.2025 |

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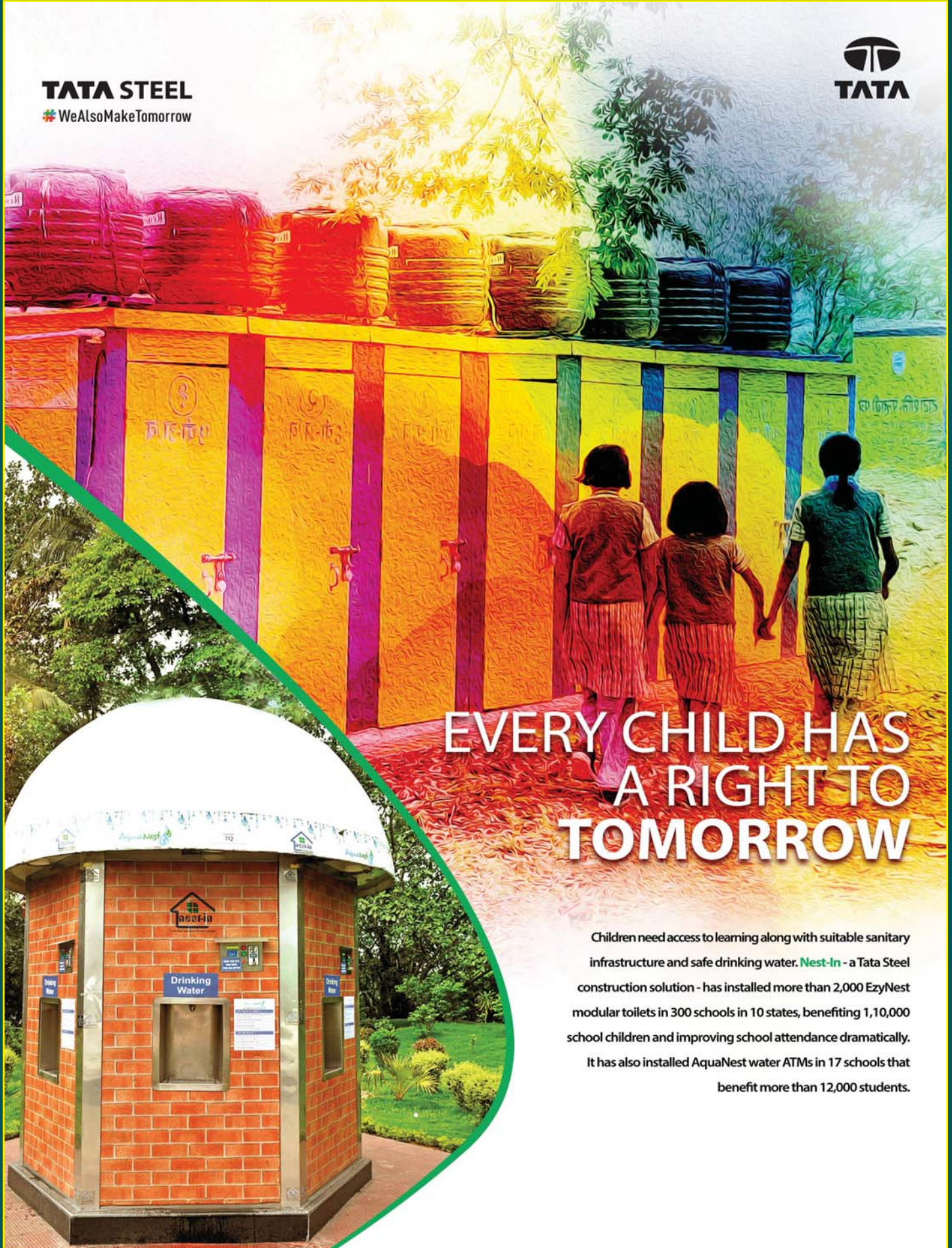
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