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this issue contains...

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President's Message.....

Dear Members,

Greetings...

I wish to share with you the activities undertaken by our Association in the preceding month.

Jodhpur, Belgaum and Bengaluru Chapters conducted their AGMs and new Executive Bodies of these Chapter members were elected for the term 2023-2025.

MEAI Jabalpur Chapter and MEAI Hyderabad Chapter started the Student chapters at AKS University and Malla Reddy Engineering College respectively. We congratulate the Chapters and heartily welcome the student members.

I have visited the Rajasthan Chapters-Jodhpur & Jaipur, Veraval-Porbandar Chapter and Ahmedabad Chapter and held meetings with the members to discuss their activities, status of the mining industry etc. These interactions enabled me to receive several inputs to work for the improvement of the Association & the Industry.

8th Council meeting, 50th AGM & Award function were held at Ahmedabad on 25th August 2023. Following them, a two-day International Conference on "***Mining: Vision 2047***" was held on 26-27 August 2023. I appreciate the entire team of Ahmedabad Chapter for Conducting the 3-days program in a grand way.

This is my last message as the 32nd President of our Association. It is a special honour and a privilege for me to complete my two-year tenure 2021-2023 as the President of the Association. I have enjoyed working with all our members, seniors and chapters and tried my best to improve the activities and status of our Association. Thanks to all of them for giving me the grand opportunity to serve our Association, the only recognised Professional Organization in India by CRIRSCO.

In accordance with my vision, we have conducted the activities for the past 2 years. I am glad to mention that with the unlimited support of My Organization - MSPL Limited, my family and the whole-hearted cooperation and support of each member of our Association, we were able to realise my dreams largely. Successfully organised programmes such as MPDP, MTS, MOST Programs, IMIC training, Opening of Student Chapters, Opening of First Aid Centres, Digitalisation of Application Forms & Payments, Publishing CSR activities & Innovations of Organisations in MEJ, Conducting of Quiz programs, Procurement of Webex Platform, Visit to Chapters etc.

I am very much thankful for the support and cooperation of our members for taking up the innovative activities and setting up new benchmarks in the MEAI. My vision was "***TAP THE POTENTIAL TO SCALE NEW HIGHTS***". ***Happy to see that I have achieved the above vision***.

On 25.08.2023, during 50th AGM, Sri. S.N. Mathur took over as the President of the Association for the term 2023-2025 along with new Council members. I congratulate them and wish them good luck.

Regards,

K. MADHUSUDHANA
President

Mining Engineers' Association of India

Regd. Office : Rungta House, Barbil (Odisha)

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EDITOR'S DESK

Dr. P.V. Rao
Editor, MEJ

Presented below are the extracts from a white paper published on 'Navigating the ESG compliance landscape' by Epiroc and Onyen research partners in association with the Mining Journal in 2023.

The environmental impact of mining presents a troubling dichotomy. The industry must unlock and deliver a new, never-seen-before level of mineral and metals output for the energy transition while addressing an ever-reducing environmental impact due to social and jurisdictional pressures. With mounting pressure from a wide range of stakeholders, mining operators find themselves tasked with an ever-complex requirement to engage and report their environmental, social, and governance (ESG) outcomes.

The mining sector is moving toward hard commitments made by this generation of world leaders to deliver improved environmental outcomes for our planet. The mining companies face the daunting challenge of not only acting, but also proving the sincerity of their actions in the quest for a more environmentally friendly delivery of essential metals and minerals. Pressure mounts from investors, downstream customers, and rating agencies, with many well-intentioned miners finding themselves grappling with a jumble of voluntary standards, inconsistencies in metrics, and the complex task of data collection and reporting across their operations. For mining companies to meet and exceed the ESG expectations set upon them, a collaborative effort between industry players and stakeholders is essential to overcome the barriers to compliance and create a unified, sustainable path forward.

In March 2023, Mining Journal embarked on an industry-focused study, surveying 50 key players from global mining organisations with fewer than 10,000 employees. Delving into the complexities of the sustainability landscape that has increasingly cast a spotlight on the mining industry and its Licence to operate. Respondents, primarily from management roles within mining operations, painted a detailed picture of the challenges faced in navigating timelines, reporting guidelines, technological advances, and investor interest in sustainability.

With the mining industry now taking action against the mounting tide of ESG obligations, derived from global agreements and net-zero targets, the research aims to trace the growth path of sustainability performance and reporting in the mining sector since 2010, while also probing expected investment areas in the next 12 months.

One of the clear areas of frustration highlighted in the data surrounded the detailed reporting now expected by many different components of the mining value chain. Whilst reporting is nothing new for mining businesses, they generally produce detailed quarterly updates on production and key operational outcomes. The requirement to produce clear and concise environmentally focused reports at the same cadence may be new. The data highlights that the majority of respondents (60%), either agree or strongly agree that general sustainability reporting guidelines and international accounting standards are ill suited for the mining industry. This heavy-hitting response highlights that even business-as-usual tasks, such as external reporting, have become complex and confusing when relating to ESG data. Experienced technical employees find it an arena that requires new learning and external support for best-case outcomes. The blending of appropriate data sources with the right analysis and integration can become hard to grasp, especially when operations can have hundreds of thousands of data sources to try to understand through a new ESG lens.

The Canadian-based ESG reporting software specialist delivers a wide range of solutions to aid those on their journey. Its focus has been to streamline and digitize disclosures via AI and algorithmic means, ahead of the regulator requirements, with a focus on the data that are most material to identifying business risks and opportunities for the different stages of development of an operation. Onyen offers resource companies an innovative software solution to not only complete their ESG reporting obligations, but to heighten their ESG profile.

Considering this proactive approach, it is crucial to consider the ever-evolving landscape of regulatory demands, as they play a pivotal role in shaping industry practices and standards. The synergy between regulatory enforcement and corporate responsibility has become increasingly pronounced, particularly in the realms of ESG and safety commitments. Using proactive data capture and presentation solutions can aid operators in showcasing their ESG outcomes and commitments, not only within the organisation but externally to investors and governmental bodies.

- Editor

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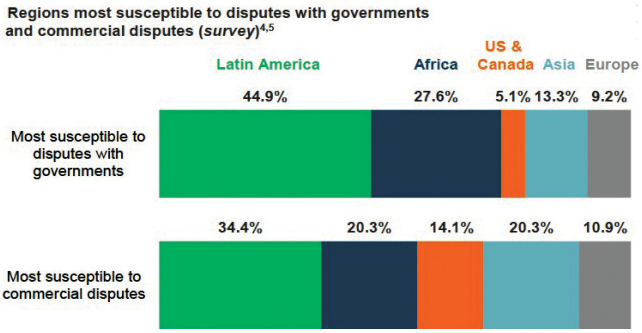
NEWS FROM THE MINERAL WORLD

Mining is growing rapidly – so are investor-state disputes

A recent study by Charles River Associates (CRA) outlines some worrying trends for global mining as the industry continues to expand and push into new markets.

The Toronto-based consultants, specialising in economic litigation found disputes between governments and investors involving mineral assets are growing rapidly – with 60% of all arbitrations over the last fifty years filed in the last decade.



Source: Charles River Associates – Disputes Involving Mineral Assets Statistics and Trends

Between 2013 and 2022 the number of treaty arbitrations almost doubled from the prior period to 68 cases, with South America and Africa responsible for a growing number of disputes. Since 2016 nearly 80% of all cases filed originated in these two regions and the number of cases in Africa and Latin America are up 167% and 57% since 2016.

The analysis covered 118 investor-state arbitrations, 80% of which were administered by the International Centre for Settlement of Investment Disputes, a World Bank organisation. 78% led to an award while 22% were settled by the parties. A third of these are still pending, and of the concluded cases 18% were discontinued.

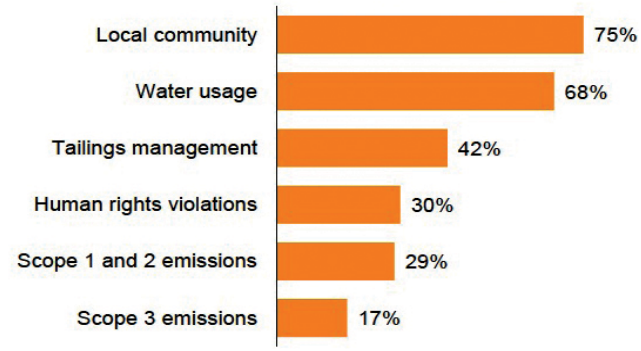
Overall, gold and copper assets are involved in half of all cases followed by coal at 8%.

The 'S' in ESG

CRA also conducted a survey of professionals engaged in mining arbitrations including in and outside counsel and mining company management and found more than 80% of respondents expect greater government intervention and regulation over the next 12 months.

Three-quarters believe interventions related to ESG will increase. It's not surprising that environmental issues – particularly water – will be the main source of disputes and a full 86% expect governments will more frequently use allegations of environmental breaches as either a defence or counterclaim in disputes.

ESG issues most likely to affect the relationship between investors and governments (*survey*)



Source: Charles River Associates – Disputes Involving Mineral Assets Statistics and Trends

The authors note that the ESG emphasis is shifting towards social aspects including local community involvement and the focus on all stakeholders in a project rather than simply the shareholders of the company. That would include the thorny issue of artisanal or small scale mining. In short, a social licence to operate.

Critical minerals

Latin America, according to respondents in the CRA survey, could be responsible for 45% of disputes with the state followed by just under 28% in Africa over the next 12 months. The green energy transition is attracting significant investment in copper, nickel, lithium and cobalt extraction with these regions expected to play an outsize role thanks to their mineral endowment.

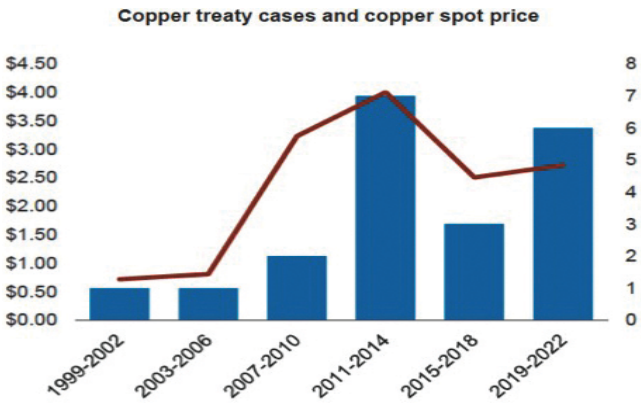
While gold has been the subject of the majority of disputes in the past, the CRA survey showed among industry professionals base metals are expected to make up 65% of expected disputes as the green energy transition shifts investment in the mining sector.

Called critical minerals (the US just added copper to its list) are facing increasing state intervention and rare earth elements are perceived as at high risk by 52% of respondents. Both Mexico and Chile recently fundamentally changed the legal regime for lithium mining, showing just how exposed mining is to political developments.

The expectation of a shift to industrial minerals is also underpinned by CRA analysis that show rising metal prices correspond with an increase in disputes.

Most industry professionals surveyed believe during economic recessions the number disputes tend to rise as governments try to find ways of shoring up its finances and help struggling citizens. However, a fifth think there's an inverse relationship.

All stages of development at risk



Source: Charles River Associates – Disputes Involving Mineral Assets Statistics and Trends

When it comes to susceptibility to commercial disputes it is more evenly spread around the world – Latin America still leads with nearly a third of expected cases, but one-fifth of disputes are likely in Asia and Africa respectively.

Off-take and royalty agreements, which have proliferated as non-mining players like auto and battery makers race to secure long term supply, are cited as a major source of commercial disputes as the parties wrangle over pricing, quantity and quality as supply and demand dynamics change over the course of agreements.

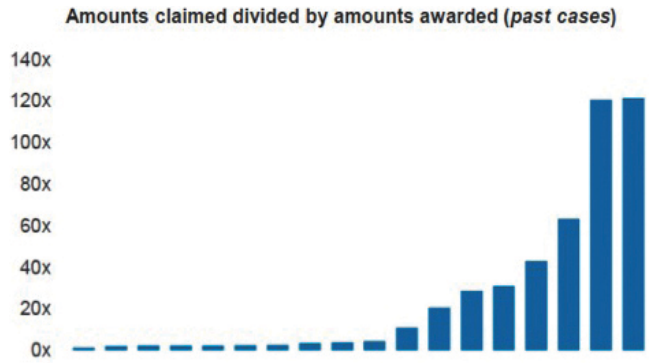
Given the inherent instability of the mining industry with regulatory regimes, market conditions, technology all capable of fundamentally changing the economic value of a project over its lifespan – often counted in decades if not generations – without tight investment treaties, stabilisation or freezing clauses in contracts, disputes are almost inevitable to arise.

CRA notes that 68% of mining arbitrations involve properties that have reserves – and contrary to expectations it is not early stage projects that face most opposition.

Practitioners expect disputes to arise in properties at all stages of development, from exploration to production, with risk spread equally over the life of a project.

Plain old politics

The average time from filing to award is five years, according to CRA, which not only illustrates how much effort and time disputes of this nature are required from boards and counsel but it also has obvious outcomes for financing.



Source: Charles River Associates – Disputes Involving Mineral Assets Statistics and Trends

According to the CRA just under 80% of respondents in the survey said disputes lower the likelihood of obtaining financing for projects and mines.

The most likely cause of a dispute between investors and governments arising is identified as politics (75%) while 57% cite disagreement on financial compensation.

Only 8% think higher compensation through arbitration is what leads to disagreements, which is reflective of the gulf between claims and awards. On average, the dollar amount claimed was 26 times the amount awarded with a median of four times. In cases where details are known, awards ranged from a mere $1 million to $1.2 billion.

In 44% of cases the money demanded exceeded the awarded compensation by a factor of ten. At the same time in only a quarter of cases the claimants were ordered to pay arbitration costs and 48% of cases associated costs were spread equally.

Frik Els, Mining.com | August 9, 2023

➨ Chromium may start replacing noble metals in cell phone screens

Researchers at the University of Basel have developed chromium compounds that can replace the noble metals osmium and ruthenium—two elements that are almost as rare as gold or platinum—in luminescent materials and catalysts.

In a paper in the journal *Nature Chemistry*, the team reports that the luminescent properties of the new chromium materials are nearly as good as some of the osmium compounds used so far. Relative to osmium, however, chromium is about 20,000 times more abundant in the earth's crust—and much cheaper.

The new materials are also proving to be efficient catalysts for photochemical reactions, including processes that are triggered by exposure to light.

If the new chromium compounds are irradiated with a red lamp, the energy from the light can be stored in molecules which can then serve as a power source.

"Here, there's also the potential to use our new materials in artificial photosynthesis to produce solar fuels," lead researcher Oliver Wenger said in a media statement.

Tailor-made environment

To make the chromium atoms glow and enable them to convert energy, the researchers built them into an organic molecular framework consisting of carbon, nitrogen, and hydrogen.

The group designed this organic framework to be particularly stiff so that the chromium atoms are well packaged. This tailor-made environment helps to minimize energy losses due to undesired molecular vibrations and to optimize the luminescent and catalytic properties. The disadvantage of the new materials is that chromium requires a more complex framework than noble metals—and further research will therefore be needed in the future.

Encased in its rigid organic framework, chromium proves to be much more reactive than noble metals when exposed to light. This paves the way for photochemical reactions that are otherwise difficult to initiate. A potential application could be in the production of active pharmaceutical ingredients.

Similar to noble metals

For a long time, the search for sustainable and cost-effective materials without noble metals focused primarily on iron and copper. Other research groups have already achieved promising results with both of these elements, and chromium has also been incorporated into luminescent materials in the past.

In many cases, however, the luminescent and catalytic properties of these materials lagged behind those of materials containing rare and expensive noble metals—therefore failing to represent a real alternative. The new materials made of chromium are different because they contain a form of chromium that is particularly similar to noble metals, thereby achieving luminescent and catalytic efficiencies that come very close to materials containing such metals.

"At the moment, it seems unclear which metal will ultimately win the race when it comes to future applications in luminescent materials and artificial photosynthesis," Wenger said. "What is certain, however, is that the postdocs Dr. Narayan Sinha and Dr. Christina Wegeberg have made important progress together."

Next, Wenger and his research group aim to develop their materials on a larger scale to allow broader testing of potential applications. By making additional improvements, they hope to achieve light emission in different spectral colors from blue to green to red. They also want to further optimize the catalytic properties to bring us a major step closer to converting sunlight into chemical energy for storage—as in photosynthesis.

Staff Writer, Mining.com | August 20, 2023

India amends law to enable private companies to mine lithium

The bill has removed five other minerals from the restricted category, in addition to lithium.

Credit: RHJPhtotos/Shutterstock.com

The lower house of the Indian Parliament (Lok Sabha) has passed the Mines and Mineral (Development and Regulation) Amendment Bill, allowing private players to mine critical minerals.

With this bill in place, private companies can now mine lithium, a crucial element of electric vehicle batteries, which was previously limited to state-owned companies.

This move aims to offer the private sector access to the recently discovered lithium reserves in the country. The bill has also removed five other minerals from the restricted category, in addition to lithium.

Under the current mining act, 12 minerals have been reserved for mining and exploration by state-owned companies.

With this amendment, six of the elements, namely lithium, beryllium, niobium, titanium, tantalum and zirconium, can now be mined by private players.

The Economic Times quoted the bill, which read: "The mineral sector requires certain more reforms, particularly for increasing exploration and mining

of critical minerals that are essential for economic development and national security in the country."

This amendment proposes to include the introduction of an exploration licence for deep-seated and critical minerals within the mining law. The licence will be awarded through auction to undertake reconnaissance and prospecting operations.

With licences, junior mining companies can explore based on available baseline survey data and help in developing a prospective mine from the reconnaissance stage and bring it to the level of beginning mining operations.

Earlier this month, the Union Cabinet approved the amendment, with the minerals said to be integral to the country's shift to green energy.

Mining Technology News |July 31, 2023

➨ **Centre completes seventh tranche of coal block auctions successfully**

New Delhi: The ministry of coal on Friday said it has completed the seventh tranche of coal block auctions. The auction, which also included the second attempt of the sixth round, concluded on 3 August, 2023, and saw all six coal mines in four states being successfully auctioned.

Among the mines auctioned, two coal mines are fully explored while four are partially explored.

"The Ministry of Coal has successfully completed the auction of coal mines for Commercial Mining under 7th round and second attempt of 6th round. After assessment of bids, the forward e-auctions for six mines had commenced from August 1, 2023, culminating in the successful auction of all six mines on 3rd August, 2023," the government said in a statement.

It added that the total geological reserve for these six coal mines is at over 2,105 million tonne.

The cumulative peak rated capacity (PRC) for these coal mines is 7 MTPA, (excluding the partially explored coal mines). The average revenue share has shown an upward trend, increasing from 22.12% in the previous tranche to 23.71%.

According to the ministry, coal production from these mines will help reduce the demand for imported thermal coal and decrease reliance on public sector coal mining companies.

The commercial coal mine auctions will bring about positive changes for society, by creating job opportunities and infrastructure development in the coal-bearing regions.

Moreover, they are expected to make a substantial contribution to the states' revenues, generating an estimated annual revenue of approximately ₹787 crore (excluding partially explored coal mines) calculated at the peak rated capacity (PRC) of these coal mines.

These auctions are also anticipated to attract a capital investment of approximately ₹1,050 crore, leading to creation of around 9,464 employment opportunities, it added.

With the successful auctioning of these six coal mines, the total number of coal mines auctioned under commercial auctions now stands at 92.

These mines are projected to generate an annual revenue of approximately ₹34,185 crore (excluding partially explored coal mines) calculated at the current PRC of coal mines, the ministry said.

The operationalization of these coal mines is expected to lead to a capital investment of around ₹34,486 crore and generate employment opportunities for approximately 310,818 people, it added.

Saurav Anand, Mint |Aug 4, 2023

➨ **"Fly ash" contains rare earth elements needed for electronics**

The byproduct of coal plants could help us make EVs, phones, and more.

The United States' reliance on China for rare earth elements could soon come to an end, thanks to a new process that pulls the valuable metals from the ash left over when we burn coal.

Why it matters: The 17 rare earth elements aren't actually rare — they're all more common than gold, and one is more abundant than copper. But getting our hands on them is difficult because they're widely dispersed in Earth's crust and hard to extract through mining.

That's a problem because we need rare earth elements to make a lot of products, from smartphones and satellites to electric cars and wind turbines.

A vulnerable position: For the past decade, the U.S. has imported about 80% of its annual supply of rare earth elements from China. That dependence is unsettling given that China temporarily withheld the minerals from Japan in 2010, in response to an unrelated dispute.

(Continued on Page 21)

ANOTHER KOHINOOR DIAMOND DISCOVERY IN INDIA

Dr. T.M. BABU

Abstract

India was the birthplace of diamonds in the world. It was the first and only country mining, cutting, polishing, and trading diamonds till the end of the 17th century. All historical diamonds like Kohinoor, Hope, Orloff, and many others were discovered in India. Due to political reasons of foreign invasions and colonization, slanting policies all diamond mining activities were forced to close and the diamond mining and production industry came to a dead end. Even after the country got independence the diamond mining industry could not be revived due to adverse national mineral policies, undue restrictions, and bureaucratic hurdles. By reforming present mining policies, removing constraints, and creating people-friendly diamond mining strategies there is ample scope now to revive and regain the diamond mining industry, increase the production, trade, and marketing, and boost the economic status of India in the near foreseeable future.

1.0 Introduction

Diamonds were first discovered in India. In the world from prehistoric times till the 17th century, India was the only country in the world mining, cutting polishing trading, and exporting diamonds all over the world. Even just to look at the diamonds or to buy, travelers, traders, and jewelers from Greece, Rome, France, Portuguese, Dutch, Persia, and many other countries came to India and described many diamond mining centers in an elaborate manner.

Without exception, all famous historical diamonds right from Kohinoor, Hope, Orloff, Pitt, and Darya-Noor (fig.1) were mined from India and taken out of the country by various ways and means. Kohinoor was taken away and kept now in the Tower of London, UK. Hope Diamond is now in Washington, USA, and Orloff Diamond is now in Moscow, Russia. Pitt Diamond is now in France and Darya-ye- Noor Diamond is now in Tehran, Iran. Thus, all famous diamonds have gone out of India. All the historical recounts and present-day available reports will prove beyond doubt that, there were and there are still diamonds in Inda. No significant diamonds could be mined and recovered from India after independence. But there is a scope to revive and regain the past glory of diamond production in the country now.

2.0 Narratives in Indian Scriptures

Knowledge about diamonds and their unique characteristics were described in Indian Vedas which were considered as the world's first and most ancient creations and compilations of human beings. Vedas got transmitted from generation to generation in an oral form much before the written script was discovered. Diamond is acclaimed as the king of gems and is related to the planet Venus, correlated with beauty, love, and knowledge. Indra, the king of angels is believed to have Vajrayudh, a weapon, made up of diamonds.

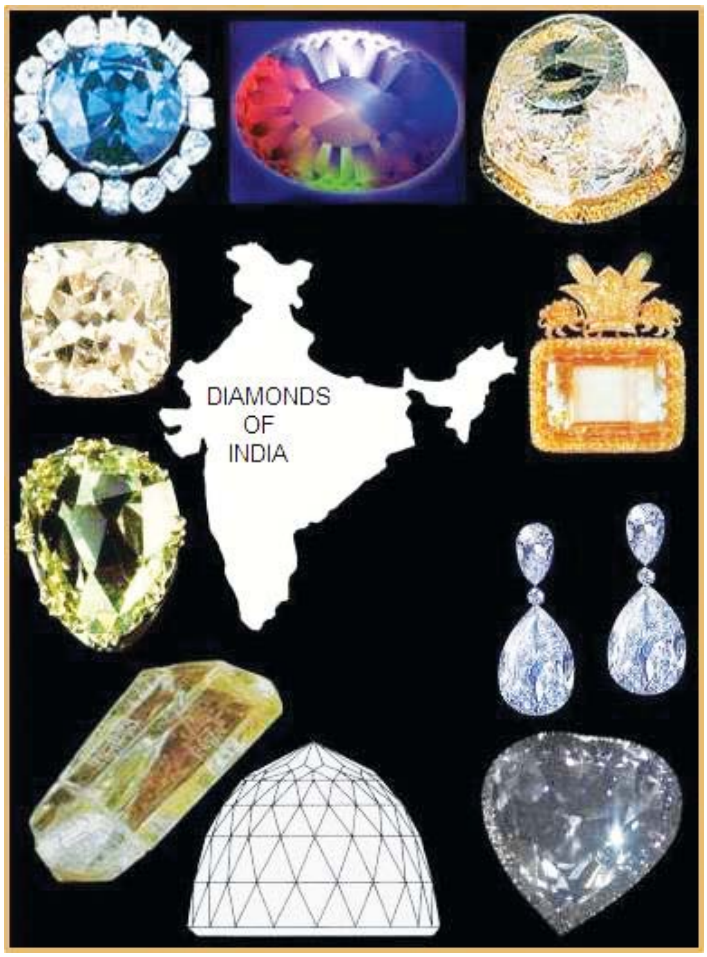


Fig. I All historical diamonds like Kohinoor, Hope, Orloff, and Darya-Nur, discovered in India were taken out to London, Washington- USA, Russia, France, Persia and other countries

Agasthya Sage in his compilation Agasthi-Mata reported that a diamond could not be cut by any metal or material, but a diamond only could be cut by another diamond. Chanakya

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(375-283 BCE) in his book on Economics - Artha-Sastra mentioned 6 diamond-bearing locations: 1) Sabha-Rastra, 2) Madhya Rastra, 3) Kasmaka- Kastira, 4) Srikantaka, 5) Manimantaka and 6) Indravanam. Varaha Mihira (505-587 CE) in his Brihat Samhita, an encyclopedia compilation mentioned 8 diamond mining areas 1) Vena, 2) Kosala, 3) Saurashtra, 4) Surparaka, 5) Himavat, 6) Matanga, and 7) Kalinga and 8) Pundra. (Fig. 2). Intensive research is necessary to locate those ancient diamond mining sites in the ground as mentioned in the ancient scriptures. No sincere efforts are made in that direction till now.

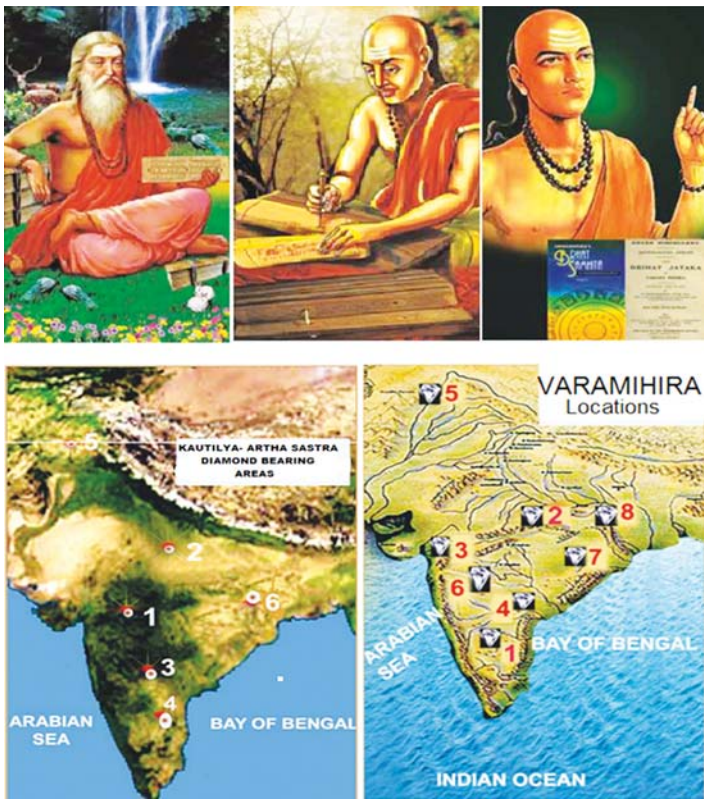

Fig. 2. Saints and sages Agasthya, Kautilya, Varamihara furnished characters and enlisted diamond-bearing locations in India thousands of years ago. The names of numbers are as mentioned in the text.

3.0 Pliny to Marco Polo

Pliny, the elder, Roman author (CE 23-79) of the first century wrote that diamonds are found only in India and described the trading land and sea routes from India to Rome used during that time. Later several persons like Ptolemy (CE 90-168), the Greek geographer, Marco-Polo (1254-1324) the Italian traveler, Nicolo de Conti (1385-1469) Venice merchant, Garcia da Orata (1501-1568), Portuguese doctor, Athanasius Nikitin (1472), the Russian scholar and others wrote about the significant diamond mining activity in India. Caesar Frederick, a merchant of Venice who later joined the British's East India Company visited the Vijayanagar kingdom in South India in 1567 and wrote about his experiences as Peregrination in India. He described the glory of diamonds and gold in India and recorded that he has seen a diamond as large as a hen's egg. Jacques de Coute, a Flemish diamond merchant who later became a soldier in the Portuguese army, visited the diamond mines of Ramana Kota, Poli, Dwanikurti, and others in South India in 1611. He mentioned that Goa was a busy port with about 200 ships with merchants trading diamonds, spices, textiles, and many other gemstones. William Methwold, merchant of London, joined the British East India Company and stayed in Golconda from 1618 to 1622. He reported that he could visit the Kollur diamond mine where the Kohinoor diamond was found. In 1626, he published a book Revelations of the Kingdom of Golconda describing diamond mines in India.

Jean Baptiste Tavernier, a jeweler from Paris, France visited almost all diamond mines of India active during his time from 1641 to 1660 (fig.3) He published a book in French Les Six Voyages De Jean Baptiste Tavernier which was translated into English by V. Ball as Travels in India by Jean Baptiste Tavernier. He recorded that at the Kollur diamond mine alone there were about 60,000 miners working during his visit. His book remained as a great monumental reference volume about all details of diamond mining and marketing operations in India during his period.

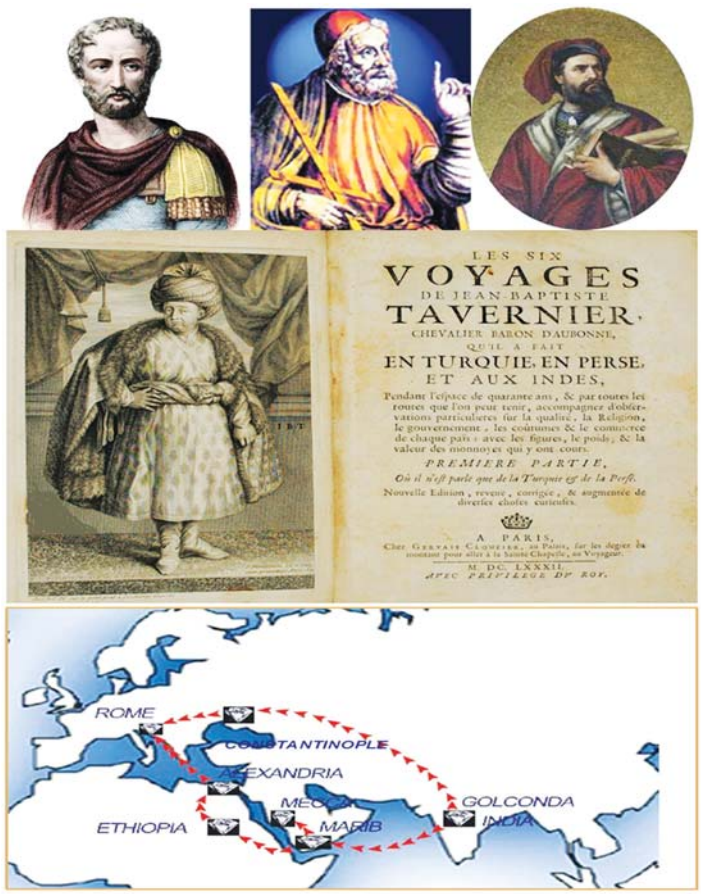

Fig. 3. Pliny to Ptolemy, Marco Polo to Tavernier reported diamond mining centers in India and trade routes spread out up from India to Rome.

Later several European traders, travelers, and explorers like Pieter de Lange, Earl Marshal Henry Howard, Streynsham Master, Benjamin Heyne, Henry Wesley Voysey, Carl Ritter, William King, Valentine Ball, Thomas John Newbold, Alexander Walker, Sir Richard Francis Burton, M. Chaper, Robert Bruce Foote and many others described diamond occurrences and mining occupations in various parts of India.

4.0 Golconda Glory

Golconda, a walled and protected fortified town (fig. 4), had a glorious history as the World Trade Center for diamonds. Traders from different countries used to visit this place to buy diamonds. Right from Tavernier mentioned above, most diamond traders and travelers described the hectic diamond marketing activity of Golconda. Diamonds mined from any place in India used to reach here for cutting polishing and final marketing. Howard called the entire area of diamond occurrences in south India as Golconda. In many ways, it is comparable to present-day Antwerp of Belgium, which is now a large trading center for diamonds in the world without mining diamonds within that country. Now Golconda has become a totally deserted and abandoned place, located western part of present-day Hyderabad city of South India.

Fig. 4. Golconda, the fortified city now located west of Hyderabad - South India was the only world trade center for diamonds till the 17th century before the invasion of others.

During the seventeenth century and later the just name "Golconda" itself has become very popular, attractive, and luck-yielding. The European travelers who heard about the Golconda diamond mart and moved to other countries named their own mines, colonies, and settlements as Golconda. Even now there are several areas, hotels, and streets in the United States of America, United Kingdom, Sweden, Brazil, and Australia that are called "Golconda". Now in India Golconda area is an abandoned remnant ghost arena of the earlier world's diamond trade and marketing.

5.0 Indian flag Venkaiah

Pingali Venkaiah (1876-1963) was a geologist, freedom fighter, and designer of the National Flag of India. He studied geology at Presidency College, Madras, and carried out detailed exploration and research for diamonds for about 20 years from 1927 to 1947 single-handedly with great passion. He described 23 diamond mines from the Kingdom of Golconda and 15 mines from the Kingdom of Visiapore. He made a map of diamond-bearing areas in South India covering the area around Guntakal-Gooty and Wajrakarur to Dhone (Fig.5). He furnished details of diamond-producing areas like Wajrakarur, Lattavaram, Kongana-palli, Tuggali, Payapali, Jonnagiri, Paritala and others. After considerable research, he gave 20 corrected names of diamond mines that were misspelled by earlier workers which are shown in table No.1. The latitude and longitudes of many diamond occurrences were furnished for precise location. When he died in 1963 at Vijayawada, his only surviving son Parasuramiah became a journalist and published a booklet in 1984 by the name "The Diamond Lore" compiling his father's work. In that book, it is reported that even during exploration in Andhra Pradesh, NMDC recovered diamonds of 172 carats from the conglomerates of the Racherla processing plant. Further, 166 diamonds from kimberlite pipe No. 1 and 129 diamonds from kimberlite pipe No. 6 were obtained. It is reported that after the completion of the exploration, a proposal for a diamond mine will be considered. That was long back. But till now neither NMDC nor any organization could start a single diamond mine in south India. That book reported that from Madhya Pradesh, Majhgawan plug 1,87,201 carats and from Ramkheria alluvial area 39,956 carats of diamonds were recovered from 1960 to 1980.

During his active youth, Venkaiah worked in the army for British colonists. Disgusted with saluting every time the British Union Jack, he designed the Indian National flag, became a freedom fighter, and got Mahatma Gandhi's appreciation. People called him "Diamond Venkaiah". Under British rule or even after India got independence, he was not given any help or encouragement to take up mining and produce diamonds for the country. All the good hard work he did remained incognito. He remained an unsung unknown-anonymous person in the diamond industry of India. He died in utter poverty unable to provide medical treatment to his son Chalapathi Rao who also died without help. In old age, he had no money even for food to eat though he identified many locations of expensive commodities like diamonds.

Ironically, not even one single diamond-producing mine could be started even now in India based on his research findings. Prof. C.S. Pichmuthu, Mysore University who was his guide for his Ph.D. thesis wrote about him as "**A BORN GEOLOGIST**: *I am filled with grief as I did not know about his greatness till he passed away. So humble was he, never once spoke of himself or his achievements or his association with leading personalities in Indian politics".*

Table No.1. The corrected misspelled villages names of 20 diamond mines furnished by Venkaiah and published by Parasuramiah in 1984.

No	Name
1	Kollur
2	Kodavaricallu
3	Mylavaram
4	Bhatrupalem
5	Ramana-goodem
6	WajraKarur
7	Ganjeecunta
8	Lattavaram
9	Jonnagiri
10	Pagidiroy
11	Tuggali
12	Peravali
13	Madanantapuram
14	Girigetla
15	Wajragiri
16	Munimaduru
17	Lingambodu
18	Gadehotoor
19	Maddimadugu
20	Mallavally

6.0 Nobel Laureate's report

Sir C.V. Raman, Bharat Ratna, the first Indian scientist to get the Nobel Prize carried out studies on diamond occurrences in South India. In 1968, in Current Science Journal he published his views about the potentialities of diamonds in India with a map of the area between Godavari-Krishna-Pennar River basins (fig. 6). He reported that "Krishna Valley may well prove to be a subject of practical importance at the present time if pursued vigorously with the necessary circumspection".

After Venkaiah and Raman many workers and organizations published about potential diamond-bearing areas in various locations in India. But no single diamond-producing mine could be started in South India due to more than one reason.

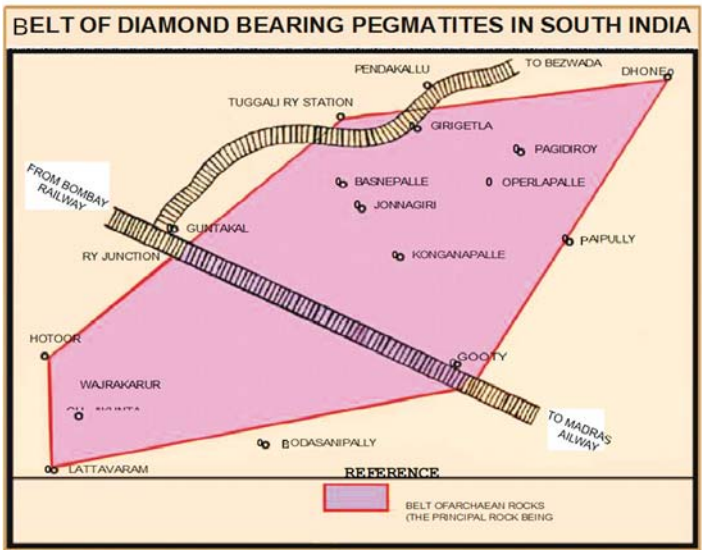

Fig. 5. The diamond-bearing area map published by Pingali Venkaiah after carrying out extensive research work.

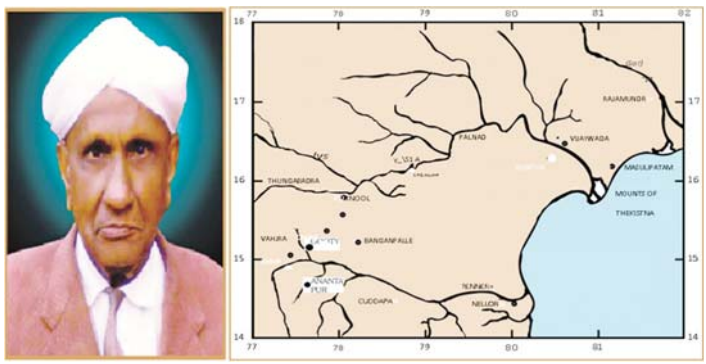

Fig. 6 Diamond bearing area map published by Sir.CV. Raman, the Indian first Nobel laureate in Science.

7.0 Geo-politics

When diamond mining, cutting polishing, and trade were active, India was invaded by Greeks, Portuguese, Persians, Moguls, Dutch, French, and British people. They occupied most of the northern parts of the country. Kings and rulers of Central and South India ordered the closure of diamond mining activity as it could attract the attention of invaders and seize their territories. Thus, all diamond mining activity in different parts of India gradually closed for fear of conquests and occupation. After the seventeenth-century new diamond occurrences were found in other parts of the world like in

Borneo, Brazil, and South Africa. The monopoly of Indian diamond mining of India faced a gradual decline and finally a dead end.

W.W. Francis, the British District Collector in 1905 Gazetteer of Anantapur district, Andhra Pradesh reported that to protect the interest of South African Diamond mining companies owned by Britishers, the giant Indian diamond mining industry was forced to close. Thus, not due to depletion, exhaustion, or economic viability, but due to political reasons the great Indian diamond Mining industry was brutally killed making thousands of Indians unemployed and poor.

8.0 Surat: the diamond capital

Though the Indian diamond mining industry declined and reached a dead end, the Indian cutting and polishing industry survived through the ages. Persons around Surat, from Gujarat state and surrounding areas of the western part of India acquired expertise in cutting, polishing, and trading diamonds. For quite some time almost 90% of diamonds mined anywhere in the world used to reach Surat city for cutting and polishing. India acquired fame for the democratization of diamonds, especially small diamonds below one or two carats making it a gem variety and available to millions.

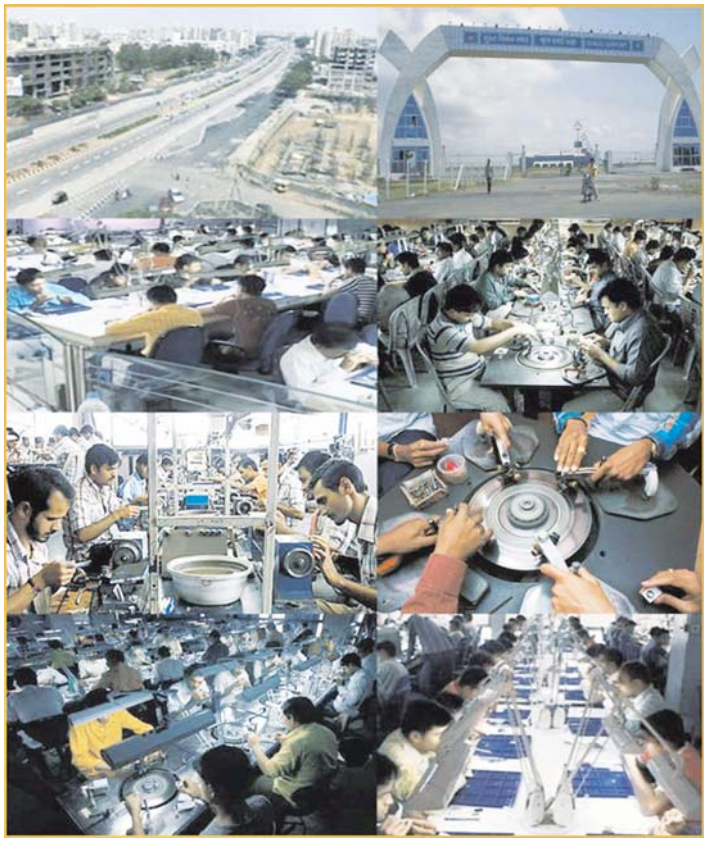

Fig. 7. Though the Indian diamond mining industry collapsed, the cutting and polishing industry survived through the ages in Surat. Now even that industry is declining, making many workers unemployed and poor.

There is a value addition of several times from raw rough diamonds to cut-polished sparkling diamonds. This huge trade continued for centuries involving about a million workers in and around Surat City (Fig. 7) and Mumbai.

Now due to the shortage of imports of raw-rough diamonds, mechanization, deployment of more laser-based technology, machine designing and cutting-polishing methods, and competition from China and other countries, the past glory of Surat is fading out. There is a massive job retrenchment of cutting and polishing workers due to decline in the diamond trade. As the good old golden days are over, the persons involved in the diamond cutting and polishing industry in Surat are now living a poorer, pathetic life with meager or no earnings. There is an urgency to deal with the present situation and not allow it to take the path of the old diamond mining industry.

9.0 Indian Mining Policies and Practices

When India got independence, Mines and Minerals Development and Regulation -MMDR Act 1957 was created. As per that Act, Rules, and Regulations, the diamond, gold, and other strategic metals exploration, mining, and production were reserved totally under government monopoly control. No private Indian citizen or company was allowed to explore, mine, and produce diamonds, gold, and other strategic minerals. National Mineral Development Corporation-NMDC, a government of India undertaking, was given permits to explore and produce diamonds. Unfortunately, the NMDC which became an iron ore mining and exporting organization could not open many diamond mines except the existing one at Majhgawan, in Madhya Pradesh state, central India.

In 1994, the National Mineral Policy was revised to permit private domestic and foreign investors to explore and exploit earlier restricted minerals like diamonds, gold, and other strategic metals and minerals. Three stages, the first Reconnaissance Permit (RP), the second Prospecting License (PL), and finally the Mining Lease (ML) have been devised. More than a hundred national and international companies applied for permits to explore gold, diamonds, and other minerals and metals. But there was an inordinate delay and bureaucratic hurdles even in granting the first stage of RPs the searching permits. Some big multinational companies who got reconnoiter permits and prospecting licenses discovered some diamonds bearing kimberlites in new areas. But as no mining permits (ML) for diamond production were granted, all international and multinational exploration and mining companies left India. Although the State Chief Minister of Madhya Pradesh inaugurated the diamond processing plant at Bunder in 2007, no mining permit was granted to Rio Tinto, the multinational mining company. That inauguration inscription slab stone now stands there as testimony (Fig. 8). Exit of Rio Tinto after they discovered diamond-bearing kimberlites in Bunder, Madhya

Pradesh is a typical example of events, due to which no diamond mining started in India. The country's international image in the mining sector was affected. Court cases filed by the Chhattisgarh state government on an Indian diamond exploration and production company will speak volumes for not leading to diamond mining and production in that state even after several years of exploration by that company.

The Ministry of Mines Mineral Policy was changed again in 2008 as NMP-2008. When the Supreme Court directed the government to reevaluate it, once again a new revised National Mineral Policy NMP-2019 was created. As per the new mineral policy instead of explorers carrying out exploration in the country, the government itself selects some areas as blocks for public auctioning for exploration. In this process, the superrich bidder irrespective of his capabilities could get permits just to search and could block the areas. The junior and medium exploration companies though have the capability cannot obtain permits in the bidding process. After discovering and identifying any economically workable area, the transition to acquire Mining Permit is also not smooth with any fixed time frame. Thus, there is unresolved dissatisfaction with gold and diamond explorers and miners. In several cases, there was no single bidder to take up the auction blocks offered by the government. Frequent changes in mineral policies from 1994, 1998, 2008, and 2019, inconsistent, non-friendly rules and regulations could not help the diamond mining industry in India. Now even for just searching and locating diamond fields, and evaluating its economic viability for mining, very long complicated time-consuming procedures are being followed without any time frame for granting permits. Getting a mining permit to mine diamonds is a further complex interaction between the State-Center-State government with further delays. The failure and time-lapse of 75 years after India got independence for not being able to regain its past glory in the diamond mining industry itself is testimony that all is not well in the Indian diamond mining industry.

Fig.8. Inauguration stone of the diamond processing plant by Madhya Pradesh Chief Minister. Rio Tinto company left India after discovering diamonds, as a mining permit was not granted to them.

10.0 Present Status

Based on ancient mine workings, information acquired from the Geological Survey of India, Indian Bureau of Mines, and others, 18 potential diamond regions in India are shown in Fig. 9. From each region, there are several diamond-bearing locations. Potential target areas have been identified right from Rajasthan, Uttar Pradesh, and Madhya Pradesh of northern India to Orissa, Andhra Pradesh and Kerala of South India. About 25 years back, 74 kimberlites, the possible mother rocks in which diamonds could be found in India were enlisted, numbered, and named and published in a book. (Babu, 1998). Now there are about a hundred kimberlite-lamproite diamond source rocks found in the country. In 2015 another comprehensive book was published on all diamond-bearing areas in India and the scope to regain the lost, past glory (Babu, 2015).

Now, there are more than 3300 mining leases for various minerals and metals in India. But for diamonds, there are just two mining permits. Both mining permits are under central and state government control and have meager production of fewer than 14,000 carats which is not even 1% of India's requirement. The Majhagawan diamond mine of NMDC got problems with the Supreme Court of India ordering its suspension and closure of mining for the sake of tigers. Those court orders and restrictions made NMDC focus more on iron ore mining than on producing diamonds for the country.

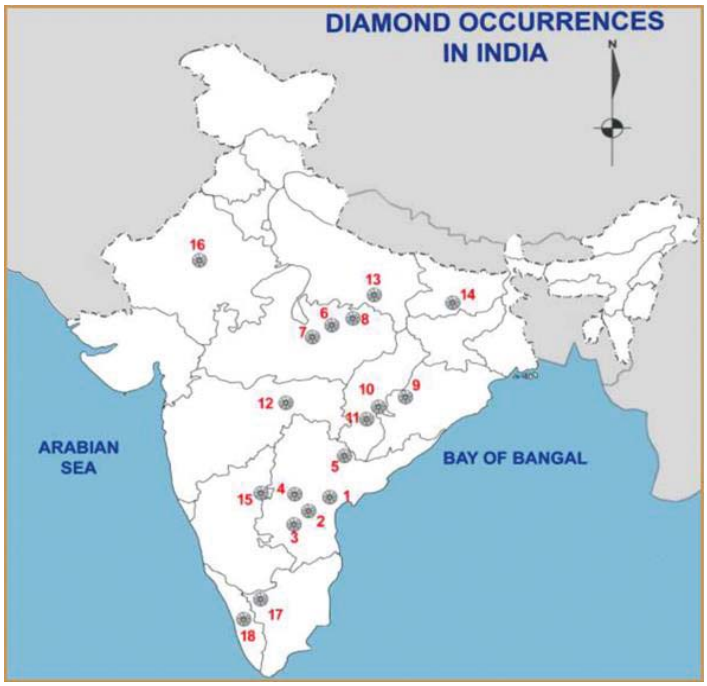

Fig. 9. Potential diamond-bearing regions in India where each region has several occurrences. 1) Krishna River Valley, 2) Kurnool-Cuddapah, 3) Wajrakarur-Anantapur, 4) Mahabubnagar 5) Godavari,6) Panna, 7.Bunder, 8) Ramkheria, 9) Hirakud, 10) Payalikhand-Chattishgarh, 11) Tokapal, 12) Wairagarh, 13) Jungel, 14) Sinah Rajedera, 15) Raichur-Bellary-Gulbarga, 16) Nevania, 17) Korati, 18) Punalur.

The second mining lease is under the control of the Diamond - Mine Officer of the State government of Madhya Pradesh. Instead of mining and producing diamonds using the latest technology, the diamond officer sub-leases tiny bits and pieces of land to hundreds of local laborers collecting about Rs 200/- from each. It is a pathetic sight to see hundreds of very poor men, women, and children without even proper clothes digging the earth with age-old primitive hand tools of the pick axe and spade, transporting the soil on their heads for panning to the water spot to recover whatever diamonds they could get manually (Fig. 10). There is no scope to use any excavators, or mining machinery to get better diamond recovery in this existing system. Annual diamond production of reported 13,917 carats for 2020-21 year is too meager for national requirements and has no control of the diamond officer. Despite diamond mining, Panna remained a poor backward district in Madhya Pradesh.

Apart from these scanty diamond production centers, there is no other regular diamond mining in India.

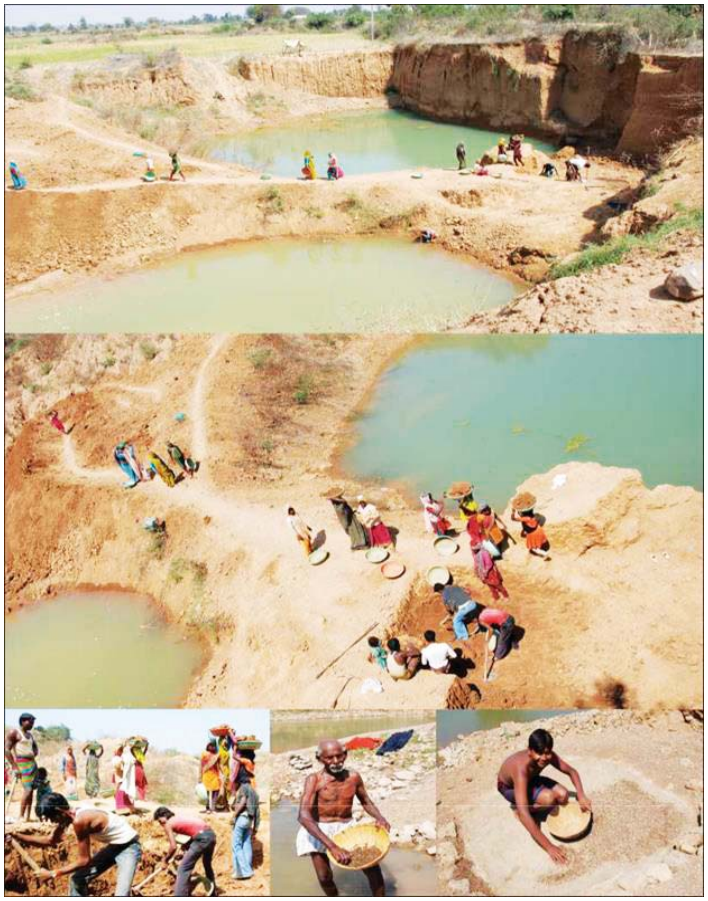

Fig. 10. A Mining Permit is under Madhya Pradesh State Govt. Diamond officer in Panna district. Poor diggers without even proper clothes were involved in diamond mining operations with primitive tools.

11.0 More Kohinoors

The world-famous Kohinoor diamond was found in Krishna River Placer Gravel near Kollur village in South India. The initial name of that diamond was Kollur and reported to have weighed 793 carats when it was first discovered. Persian king Nadir Shah acquired and renamed it as Kohinoor, which means the Mountain of Light. British colonial ruler Dalhousie arranged to shift it to London where it was recut and reduced to 106 carats and set in the crown of queen. Now it is at the Tower of London (fig. 11) and could be seen by buying an entry ticket.

After India got independence, several Indian prime ministers tried to get back Kohinoor, which was refused by British rulers. C.V. Raman, the noble laureate once said, "Independence for India is not complete without getting back Kohinoor". Many Indians feel proud that the famous Kohinoor was discovered in India. Likewise, all famous historical diamonds like Hope, Orloff, and Daray-ye-Noor were taken out of India and there is no scope or hope to get them back to India. But there are ways to recover larger diamonds like Kohinoor and other diamonds if an opportunity and freedom are given to the people of India. Until now, the original mother rock Kimberlite could not be located at or around Kollur-Krishna River gravels wherein those large diamonds were found. There is scope to locate kimberlites, the mother rocks, and identify buried hidden paleo-placers to recover several large diamonds like Kohinoor.

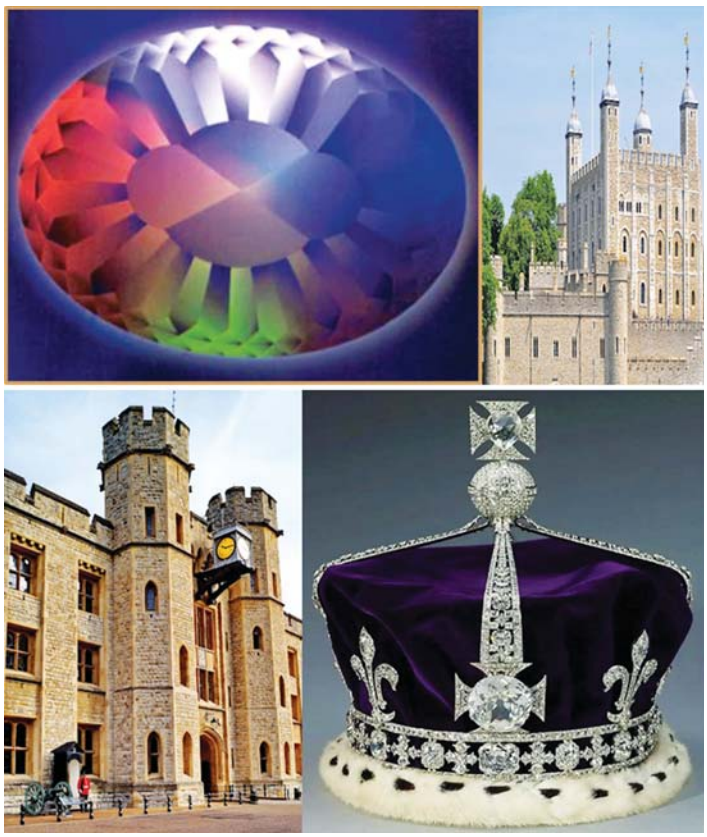

Fig. 11. Original Kohinoor when in India and its present status in a crown at the Tower of London.

12.0 A Diamond Authority

People who hear about the glory of earlier Indian diamond mines and present occurrences immediately ask one basic question. If there are so many diamond-bearing areas in India as reported from Kautilya to Venkaiah, Tavernier to Raman, the Geological Survey of India, and others, why are there not many diamond mines and production till now, even after 75 Years of independence? The simple answer is there is no single person or organization in India accountable, responsible, and answerable to that question for the country's diamond production. There is an urgent need to create one now.

In India, there is an exclusive ministry for coal. There is a separate ministry for Petroleum and Natural Gas. The Ministry of Steel looks after all aspects related to steelmaking like mining iron ore and furnishing all raw materials to make steel. But there is no ministry or any holistic-accountable organization or department to plan and execute all aspects of diamonds right from exploration, mining, production, and marketing to increase the Indian economy. More importance and focus are given to coal exploration and coal mining in India than to diamonds which are more expensive than coal.

The government of India's auction blocks are based on the Geological Survey of India, which describes more on basic geological work and not on economic viability and mining feasibility studies for diamonds in any area. There are several departments and organizations like Metals and Minerals Trading Corporation-, MMTC, Gem Jewelry Export Promotion Council-GJEPC, and Indian Bureau of Mines-IBM, NMDC, Diamond Bourse, and others. But there is no responsible organization that could control or coordinate all aspects of diamonds from exploration to marketing. Some people comment that in government the left hand does not know what the right hand is doing. The right hand of the government says Yes- Go and the left hand says No-Stop. For a better organization, an exclusive body like Diamond Authority is necessary for improved coordination leading to an increase in diamond mining and production.

13.0 Exclusive Mining Zones

Mining for any mineral is a complex operation. Mining diamonds, gold, platinum, and strategic metals are still more complicated with high risk and long gestation periods for recovery of the capital investments made. It is contrary to the general belief that diamond miners are always rich. In India, there is a special status for Reserve Forest Area and Wild-Life Sanctuary where even entry to that is restricted and prohibited. For industrial development, there is a Special Economic Zone (SEZ) with tax incentives and exemptions. However, there is no Exclusive Mining Zone declaration in any part of the country for diamonds and gold production. Now there is a need to demarcate such restricted Exclusive Mining zones for diamonds wherein no local civil administrative authorities who are not aware of the intricacies and complexities of exploration and mining interfere and create hurdles in the mining activity as is happening now. Even for obtaining a permit for searching for a diamond location and its viability, there is a complicated procedure in the name of RP, PL with inordinate delays.

14.0 Use of the modern technology

Russia, South Africa, Canada, Australia, and other main diamond-producing countries developed hi-tech state-of-the-art technology for the exploration, mining, and recovery of diamonds. There should be attempts in India to use the latest modern technology for the mechanization of all diamond mining. Processing plants need to use enhanced Heavy Media Separation techniques and X-ray diamond sorters as in other parts of the world to improve diamond production. There is scope to improve the present mining methods using primitive hand tools as being followed by Madhya Pradesh State in Panna-Ramkheria area as shown in Fig. No.10.

15.0 Conclusion

Identifying and understanding the problem in the right way is halfway to solving it. There are more than a hundred potential diamond prospects identified in India. However, not enough exploration or feasibility studies were carried out to establish economic capability to make it a regular viable diamond producing mine. Now the grant of just two mining permits for diamonds against more than 3,300 mining leases for other minerals itself proves the status given to diamond mining in India. There is a need to give more focus on diamonds just like coal exploration and mining are now being carried out in the country on a large scale.

There is an immediate requirement to create an exclusive diamond organization in the government, which could take total responsibility in all matters like exploration, mining, processing, value addition, trading, and marketing. It is necessary to sanction special executive rights to the diamond mining areas making it free from other local regulators like civil administrators, forest and environmental issue clearance controllers, and local political heads to enable uninterrupted diamond production. There is a need to adopt the latest state-of-the-art technology for the exploration and mining of the recovery of diamonds. Finally, there is a need to reorient the government mining policies and approach favorable to the diamond mining industry with people participation to regain the past glory of India.

There is great scope to discover diamonds larger than Kohinoor from India by locating more primary mother source rocks and uncovering hidden buried paleo-placer zones giving liberty to the people of India by resetting and reorienting government policies.

16.0 Acknowledgments

I sincerely and abundantly thank Dr. P.V. Rao of MEAI for his encouragement in writing this review paper, which could be useful to those who would like to understand and work to convert many prospects into economically viable diamond-producing mines in India in near future.

17.0 DEDICATION

This paper is dedicated with folded hands to the late Pingali Venkayya, the Diamond Geologist and
Designer of the National Flag of India who died with a skeleton body in utter poverty without even food to eat as an anonymous-unsung-unknown-forgotten person incognito.

Hope a diamond mine will take birth based on his extensive research work one fine day

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(Continued from Page 12)

"Japan experienced what the U.S. faces now: a political conflict with China, in which China seems to be willing to exploit its dominance in the [rare earths] market," Marc Schmid, an economist at the Martin Luther University Halle-Wittenberg, wrote in 2019.

The idea: Rice University researchers have now developed a process that makes it easier to extract rare earth elements from fly ash, which is the byproduct of coal-fired power plants.

"We have mountains — literal mountains — of fly ash in the United States from all these years of burning coal, and it doesn't have much utility," chemist James Tour explained.

Researchers have long known that fly ash contains rare earth elements, but they're encased in a glass that makes extracting them difficult — the standard process involves strong acids that are not environmentally friendly.

Tour's team has now demonstrated that a process called "flash Joule heating," which it developed to produce graphene, can be used to extract rare earth elements from fly ash, too.

Tour's team has now demonstrated that a process called "flash Joule heating," which it developed to produce graphene, can be used to extract rare earth elements from fly ash, too.

The big picture: Less than a week after the Rice researchers published their study, the U.S. Department of Energy asked for input on how to build a $140 million facility capable of extracting rare earth elements and other valuable materials from fossil fuel waste.

It's too soon to say whether Rice's process will be utilized there, but it sure seems like the kind of technology the facility will need — and Tour sounds ready and willing to make it available.

"The Department of Energy has determined this is a critical need that has to be resolved," he said. "Our process tells the country that we're no longer dependent on environmentally detrimental mining or foreign sources for rare earth elements."

Kristin Houser, Freethink / Feb 19, 2022

➨ **Lok Sabha passes MMDR amendment Bill allowing auction of lithium, others to pvt sector**

Changes in mining legislation are being brought to make mineral exploration and production more attractive for investors.

(Continued on Page 29)

MINING AND GROUNDWATER

PK DEB

Abstract

Very often in India, a mine planner or a mining engineer faces ground water seepage problems. Either in a running mine or in an open mine (whether open pit or underground This calls for a through in-depth hydrogeological analysis ol the mining area Mine hydrogeology deals with the hydrogeological study of a mine open cast or underground, in order to fulfil various requirements of the mine. In doing so a professional mine hydrogeologist has three fold responsibilities (a) to ensure water supply to the mine or colonies or process plants (b) to access the ground water seepage potential into the mines and (c) to assess environmental impact on the surrounding hydrogeo1ogical regime.

Water well inventory in the area should be conducted and a water table map or an isopiestic map of the area should be prepared. Ground water (or say hydrogeological) investigation needs to be carried out along with ground water exploration through well drilling, pumping tests of the exploratory wells need to be carried out in the form of Step Drawdown Test (SDT) and Aquifer Performance Test (APT). These would help to determine the discharge, drawdown and aquifer parameters like T, S. and K. Depending on the water demand of mines, colonies and process plants and based on the pumping test data, planning for ground water development for the area needs to be proposed.

For assessing ground water seepage in the mine, mine development planning has to be understood first. The optimum pit depth and pit limit have to be worked out or known from the mine planners and aquifer disposition in the mine area needs to be depicted. Basic objective is to keep the water table below the working bench level in case of an opencast mine so that mineral or coal can be excavated without any seepage problem. Therefore, groundwater seepage computation has to be associated with the mine development planning. An underground mining project is initiated by driving an incline or adit or by lowering a shaft cutting through the geological formations. This means puncturing of both unconfined and confined aquifers, which contributed towards groundwater seepage or inrush into the mine. Proper hydrogeological studies are required in such cases. Environmental Impact Assessment study of mining a hydrogeological regime is statutory and needs to be carried out during the course of running mines.

Keywords: *Hydrogeology, Recharge, Step Drawdown Test (SDT), Aquifer Performance Test (APT), Groundwater Seepage, Karstification, Annual Dynamic Reserve, Static Reserve.*

1.0 INTRODUCTION

1.1 INDIAN GROUND WATER SCENARIO

India receives an average annual rainfall to the order of 1140 mm. Based on this, the Central Government had estimated that the total annual rainfall in India is 370 M ha-m and one third of it is lost in evapotranspiration. Out of the rest 247 M ha-m of water, 167 M ha-m flows as run- off and the balance 80 M ha-m trickles down as sub-soil water. Out of this 80 M ha-m, 43 M ha-m get absorbed as soil moisture in the layer whereas the remaining 37 M ha-m is recharge to the ground water from rainfall. The total annual groundwater recharge from rainfall and seepages from canals and irrigation systems have been worked out to be 67 M ha-m (Raghunath 1982, 1987). Due to rapid urbanization and development, groundwater is being withdrawn heavily in many places which exceeds the rate of replenishment. This has caused some ecological problems like fluoride contamination in some hard rock areas like Purulia and Bankura districts of West Bengal and problems of arsenic contamination and land subsidence in some alluvial areas of West Bengal.

2.2 GROUNDWATER CONDITION AT SOME INDIAN MINES

Groundwater seepage problems do not occur when mining is carried out in the hilly region. However, when mining is continuous below ground surface and touches the water table of the region, groundwater seepage problems begin and gradually the condition worsens when the mine goes deeper. In India in most of such cases, the mining engineer resorts to pumping without proper hydrogeological studies

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causing continuous inundation of the mine leaving behind precious mineral resources. Such cases have been observed in most of the limestone and coal mines although such cases have been noticed in some of the manganese mines also.

2.0 HYDROGEOLOGICAL INVESTIGATIONS

Hydrogeology deals with the geological environs under which groundwater is stored and moves through the saturated rock formation or group of formations. An aquifer is a saturated rock formation, which yields an appreciable amount of water to be considered to be a potential source of water supply. Hydrogeological investigations are generally taken up for water supply to various units viz industry, irrigation, domestic, townships etc However. Hydrogeological investigations are taken up for the mining industry for three different reasons.

a) To supply water for the mines, processing plants and mining colonies

b) To assess the dimension of ground water seepage into the mines and finding ways to control by way of dewatering

c) To find out both quantitative and qualitative impact of mining on groundwater regime of the area.

Some of the mines are situated near a river, stream, or streamlet. During the monsoon, some of these rivers or streams flood the mine, which creates problems in excavation. Besides when groundwater is being dewatered from the mine, a nearby stream contributes water to the mine through permeable rock beds which stabilizes the water level in the mine. Therefore, proper pumping tests should be conducted in advance to establish the hydrodynamic relationship between surface water and groundwater and this needs to be quantified which would help in proper dewatering planning.

3.0 ENVIRONMENT IMPACT

When excavation is done in a mine, as soon as the water table is punctured, groundwater inrush takes place. In order to get rid of such a situation, dewatering of the mine is carried out. This would have two effects on the mine surroundings.

a) Lowering of water table in the vicinity causing drying of wells in the villages

b) Contamination of ground water and nearby surface water

In some hydrogeological studies such situations are frequently encountered which needs to be properly addressed. This can be addressed by creating artificial recharge zones from where rainwater or stream water penetrates the ground surface and joins the ground water table. This helps in replenishment of the water table of the mining area.

3.1 Sonadih Limestone Mine

In limestone mining areas, where 'karstification' has taken place during Geological Time, solution cavities have been developed through which tremendous groundwater flow takes place. One such case was Sonadih Limestone Mine in Raipur district of Chhattisgarh State (previously it was Madhya Pradesh state). The limestone mining and cement plant lease area in Sonadih village was 4.4 sq. km. Hydrogeological investigations were carried out keeping two clearly defined objectives in mind for a green field project.

1. Assessing groundwater potential for augmenting water supply to the proposed plant, the township and mine.
2. Assessing the dimension of ground water seepage problems in mining and planning for ground water seepage control.

It was estimated that in the initial phase, the water demand was 5.000 $m^{3/}$day, whereas this would increase to 8.000 $m^{3/}$day in the final phase. The area belongs to part of the famous Chhattisgarh basin and is underlain by the rocks, which are stratigraphically grouped as Raipur Series of Algonkian Age. The Raipur series is mainly composed of stromatolitic limestone, dolomite and intermittent bands or patches of shale. The limestone is overlain by topsoil at places. The average thickness of the soil is about one meter with a variation from 0.20 m to more than 5 m at places. The top soil resembles Terrarosa, which has been developed in a typical karstic limestone terrain by the action of descending meteoric water. The limestone is stromatolitic and is near horizontal to low dipping - it dips 5^0-6^0 towards NW with a general strike direction of NE-SW (Krishnan 1968).

Geological exploration through diamond core drilling has revealed the subsurface geology of the area in much detail. Although the limestone appears to be massive, hard and compact, in subsurface in a number of places it has given rise to cavities/cavernous limestone.

The Chhattisgarh basin is drained by two major river systems viz. Godavari and Mahanadi Rivers thereby making it Godavari-Mahanadi basin. Shivnath River being a major tributary flows just outside the northern boundary of the project area. Therefore, the area may be classified as a part of Shivnath sub basin.

Groundwater occurs in the area both under unconfined and confined conditions. The water level in the unconfined aquifer varies from 0.20 m to seven meters below ground level. During monsoon, the water level varies from flowing condition (above ground level) to 6.10 m below ground level. Isobath map (i.e. water table map) constructed over the area shows that the groundwater flow direction is towards Shivnath River. The equipotential lines crossing some of the stream sections establish the fact that drainages are mainly

of influent nature (i.e. losing) towards the southern and central part whereas it is of effluent nature towards north which makes Shivnath river a gaining one (Deb 1987).

Considering the average top of the saturated unconfined aquifer as three meters below ground level, the total saturated thickness of the aquifer becomes 27 m down to 30 m below ground level. Within this saturated portion, two categories of ground water reserves would be available:

(a) Annual dynamic reserve

(b) Static reserve

The Annual dynamic reserve is the quantum of renewable annual ground water inflow within the zone of seasonal fluctuation in the unconfined or water table aquifer.

The Static water reserve is the quantum of groundwater available below the zone of seasonal fluctuation.

The Annual dynamic reserve of the project area has been computed as 1.188 x 10^6 m^3 whereas the Static water reserve has been calculated to be 36.96 x $10^6 m^3$ (Walton 1970).

It was planned to mine the limestone deposit with six-meter high benches with shovel dumper combination. As the cement grade Limestone occurs primarily down to 24 m depth, bench wise ground water seepage along with water flow due to rainfall were computed and accordingly advice was given to the mine planners in advance. In order to facilitate proper dewatering, it was recommended to prepare sump at a suitable location on the bench floor and 2-3% inclination in the pit floor alignment was required towards the direction of groundwater flow.

3.2 Limestone Mining and Cement Plant Project at Nongkhleih in Jaintia Hills District, Meghalaya

Towards establishing the feasibility of setting up the proposed 0.75 Million tonnes per annum capacity cement plant along with limestone mine at Nongkleih in Meghalaya, a large multinational company commissioned a ground water exploration study to establish the water availability and groundwater conditions in the area. The water requirement for the proposed cement plant would be about 1000 m3/day.

The area forms a part of submontane valley characterized by the presence of a rolling topography with high limestone ridges on the east and northeast. Drainages are comparatively scanty and the drainage pattern is of parallel to sub parallel type indicating that it is controlled by structures.

The area is underlain by semi consolidated to consolidated sedimentary rocks of Shella formation falling under Jaintia Group of Tertiary age. The major litho-units are sandstone, shale and limestone. The area exposes the contact zone between sandstone and limestone of Shella formation with intercalated layers of shale (Dey 1968). Ground water exploration was carried out with five exploratory tube wells and one observation well which were drilled with a Down the hole hammer (DTH) drill rig. Aquifer thickness varied from 18.36m to 44.20 m in the wells. Ground water occurs in the valley area under semi-confined to confined conditions and depth of water varied from 4.10 m to 12.56 m below ground level. The flow from the wells varies from 13.702 m3/h to as high as 64.286 m3/h with drawdown below two meters. Pumping tests were carried out on all the wells and coefficient of transmissibility values varied from 61 to 285.33 m2/day, which ensured a good amount of ground water might be withdrawn from the wells. Ground water exploration had confirmed that the water demand of 1,000 m3/day would be easily met from groundwater regime of the area and one million USD, which was planned to invest for the proposed cement plant could be given green signal (Deb 2OO1).

3.3 Kathautia Open Cast Coal Mine, Districl Palamau, Jharkhand

In this opencast coal mine of Daltonganj coalfield, Gondwana coal occurs with sandstone and shale beds which are overlain by seven meters thick sandy loam and sand. Three benches of nine meters height have been developed where coal occurs in the lower benches. Coal is being mined with a shovel dumper combination. Heavy ground water seepages have been noticed from the top bench, which frequently hinders mining activity. The geological section of the mine is as under:

Ground level -7.00 m: Sandy loam, Sand

7.00m -15.00 m: Sandstone

15.00m -18.00 m: Coal seam

The mine authorities informed that the northwestern mining face would be developed in the future, whose present length is about 200 m.

From a careful study of the mine face vis-zl-vis groundwater seepage, it was proposed that 6 inch bore wells with perforated casing (down to 15 m) should be drilled on the top bench down to a depth of 75 m, which is supposed to be the ultimate pit depth. Ten such wells should be drilled at a distance interval of 20 m from each other so that during pumping, a cone of depression formed in each well interferes with each other in order to lower the pumping water below the coal bench. This would ensure uninterrupted coal mining. As the mine goes deeper, the rate of pumping should be further increased in order to keep the water table below the mining bench.

3.4 Neyveli Lignite Mine, Tamil Nadu

It was a unique case of artesian pressure for the aquifer below the lignite deposit. While planning for an open cast mine, it was seen that the critical depth was 42.68 m below

which it was dangerous to mine unless the aquifer pressure was reduced to below the bottom of the lignite bed. The static water level of the aquifer was 30 m above mean sea level. The Lignite deposit occurred at Neyveli on top of the first aquifer separated by a thin layer of clay 1.5 m - 3 m in thickness. The Geological Survey of India in collaboration with the Neyveli lignite Corporation in the 1960s did pioneering work. Ground water control operation of Neyveli Lignite Corporation started in July 1961 (Raghunath 1982, 1987).

4.0 CONCLUSION

From a perusal of the foregoing discussions, it may be understood that in case of mine development the role of mine hydrogeology need not be over-emphasized. When the excavation in a mine intersects the water table of the area, various impacts of mining on hydrogeology of the area are immediately being felt. Groundwater inrush into the mine takes place, which necessitates dewatering of the mine by way of pumping. In such cases, in India random pumping is done to dewater the mine without proper hydrogeological study. It has been emphasized here that ground- water seepage should be properly quantified through systematic hydrogeological studies. Pit limit and pit depth of the mine should be known. Bench height and number of working benches are also required to be known. Thus, if possible, bench-wise quantum of groundwater seepages should be computed in advance, which calls for integration of hydrogeological study with the mine development planning (Deb 1987).

In order to fulfill water demand of the mining colonies and process plants, groundwater exploration is carried out through pumping tests (APT) on the exploratory wells so that aquifer parameters like coefficient of Transmissibility (T), Storage Coefficient (S) and coefficient of permeability can be determined. These aquifer parameters would help in planning for groundwater development. Step Drawdown Test (SDT) is also required to be carried out at various discharges in order to determine optimum yield and optimum drawdown. For groundwater control in the mine, a battery of wells are required to be pumped at a discharge more than optimum yield so that higher drawdown is achieved which would push the water table below the working benches. This would help in uninterrupted mining because the working benches would remain dry.

Mining and its associated activities not only use a lot of water but also affect the hydrological regime of the area.

5.0 ACKNOWLEDGEMENT

In writing this paper, immense help has been taken from the following books:

(1) Groundwater by H. M. Raghunath.

(2) Groundwater Resource Evaluation by William C. Walton.

(3) Environment Impact Assessment Guidance Manual for Mining of Minerals by Ministry of Environment and Forests, Government of India.

(4) Tata Steel Limited

(5) Lafarge India Limited

The author deeply acknowledges their help in this matter. Thanks are also due to Dr P.V. Rao for inviting me to write the paper.

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(Continued from Page 21)

Lok Sabha passes MMDR amendment Bill allowing auction of lithium, others to private sector. (File Photo: HT)

New Delhi: The Lok Sabha on Friday passed the Mines and Minerals (Development and Regulation Amendment) Bill, 2023, which seeks larger participation of the private sector in mineral exploration and production, including that OF sought-after lithium.

The Bill brings lithium out from the list of restrictive atomic minerals which require mining grants from the Centre with only government companies given licences. The amendment would allow auction of this critical mineral, used extensively for making batteries for electric vehicles.

It proposes to bring eight of 12 atomic minerals, including lithium bearing minerals, zirconium bearing minerals, beach sand minerals, titanium bearing minerals, minerals of rare earth group containing utanium and thorium, into a new category - critical and strategic minerals. The Centre will have the power to give concessions for these minerals to both public and private mining companies.

The Bill empowers the centralgovernment to exclusively auction mining lease and composite exploration licence for certain critical high value minerals such such as gold, silver, platinum, copper.

Union minister for Coal and Mines Pralhad Joshi had introduced the Bill by a voice vote in Lok Sabha on Wednesday amid Opposition protests against the Manipur issue.

The Bill also dispenses with cumbersome forest clearances for mine reconnaissance and prospecting operations, making it easier for private firms to participate in exploration of the country's mineral resources.

Changes in mining legislation are being brought to make mineral exploration and production more attractive for investors.

The reform proposals in the legislation include allowing states to grant composite mineral licence without having to get a central nod. This is expected to enable state governments to put up blocks for auction for at faster pace. It will also raise and fix mineral-wise maximum area limits for mineral concessions to provide larger and economic mines to investors.

According to people aware of the development, the proposal on a single exploration licence has been inserted in Bill to promote specialized mineral exploration companies for reconnaissance and prospecting of mineral resources and earn revenue from its discovery after the mine is put to auction.

At present the MMDR Act provides for grant of two types of minerals concessions to private entities through auction, including mining lease for undertaking mining operations and composite licence for undertaking prospecting operations followed by mining operations. There is no provision for grant of a mineral concession for undertaking full range of exploration starting from reconnaissance to prospecting operations.

The legislation has also raised and fixed mineral-wise maximum area limits for mineral concessions. Accordingly, for prime mineral such as iron ore, the maximum area for prospecting licence and mining lease has been doubled to 50 sq km and 20 sq km, respectively. This would allow private entries to get same land area for mining as was earlier being given to government companies and that also by the state governments itself without any need for central approval.

Among the other changes, the Centre has decided to exclude duties and levies (ex-mine price) such as GST, export duty, royalty, District Mineral Foundation (DMF), National Mineral Exploration Trust (NMET) while calculating Average Sale Price (ASP) of minerals. This will restrict charge of royalty over royalty and limit tax burden on companies and improve realizations for the government in mineral concession auctions.

The changes on sale of minerals from captive mines has also been provided to do away with the existing provision where sale of 50% of minerals can commence only after the need of end use plant is meant. This provision was impacting development of mining operations as companies where end use plants were shut or still under development could not mine minerals and extraction of minerals got delayed.

Subhash Narayan, Mint / 28 Jul 2023

MEAI HEADQUARTERS

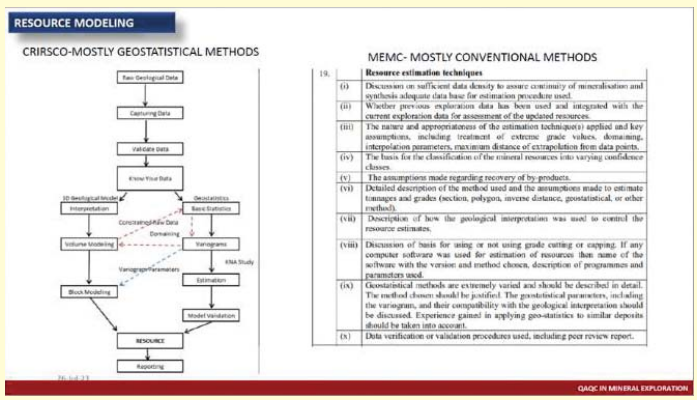
MEAI TECH SERIES – July 2023 (MTS–13)

Under the banner of the Training, Development & Program Committee (TDPC) of MEAI, with the backing and support of the MEAI President Mr. K. Madhusudhana, the Thirteenth Disquisition in the Tech Series was presented online for the mining professionals on 26th July 2023 at 06:30 pm on WebEx platform.

Mr Deepak Vidyarthi, Chairman TDPC extended a warm welcome to the participants. Mr K. Madhusudhana in his opening remarks appreciated the continuity of MEAI TECH SERIES and invited the guest speaker Dr. Devarajan Mylappally, Independent Consultant, Mineral Exploration to share his views and experience on 'Quality Assurance and Quality Control in Mineral Exploration: Global practices and the Indian Scenario' and wished him Grand Success.

Dr M. Devarajan made an excellent presentation on QAQC. He explained the difference between Quality assurance and Quality Control and explained the two phenomena in Manufacturing Industry and Exploration Industry.

With a very interactive session, the presentation concluded with a Vote of Thanks proposed by Mr T. R. Rajasekhar, Consultant to the speaker for the wonderful presentation and to all the participants for their attention.



MEAI NEWS

MEAI PRESIDENT'S REPORT 2021-23

I have immense pleasure in placing before you the Annual Report of the activities of this great Association for the year 2021-23.

As per my dreams, we have continued our activities for 2 years and I am glad to mention that, with the support of My Organization, my family and with the whole-hearted cooperation & support of every member of this Association, we have been able to realize those dreams largely. I would like to highlight a few of these activities.

Important Activities

1. SKILL DEVELOPMENT

To achieve an important objective of MEAI, we have given more thrust on the development of Professional skills of our members. Continued MEAI Professional Development Program (MPDP), MEAI Tech Series (MTS) monthly program and MEAI Onsite Training (MOST) program for the practicing mining professionals.

1.1 MEAI Professional Development Program (MPDP)

The MPDP course was entrusted to the Training, Development & Program Committee under the leadership of **Shri Deepak Vidyarthi,** a National Council member of MEAI.

This MPDP was planned for 6 ½ days, 26 Sessions (90 minutes each) covering 20 subjects and well-orchestrated by fifteen highly qualified and experienced professionals from the industry.

The details are as below.

S.N.	Course	Start	Finish	No. of Participants
1	MPDP-I	04.03.2022	20.03.2022	35
2	MPDP-II	09.09.2022	25.09.2022	26
3	MPDP-III	05.05.2023	21.05.2023	41

Feedback from the participants is encouraging and the mining sector has very well recognized this program and it has become a popular program.

1.2 MEAI Tech Series (MTS)

This program was started under the Training Development & program Committee. Sri. Deepak Vidyarthi has taken keen interest in conducting this Monthly program by inviting experts from different domains. This was started in the Month of July -2022 and has completed 13 episodes covering a variety of subjects pertaining to Mining.

1.3 MEAI Onsite Training (MOST) Program

On the basis of feedback received from the participants of MPDP, we have initiated a training program which will be conducted onsite/ on field with physical training at the mining areas for the industry professionals. This is planned to be taken up Chapter wise/ Cluster Mining wise with a view of reaching more skill seekers. Focus was given on discussions & practical training. We have planned the Program for 2 days covering important and need based topics.

The first program of MOST was conducted at Deogiri mines of SMIORE (Sandur Manganese & Iron Ore Ltd) on 14-15 July 2023 with the support of Bellary-Hospet Chapter. It was a two-day program, attended by 27 Engineers/geologist, spread over 8 sessions covered by 5 faculties. The sessions were highly interactive packed with Case studies, Group tasks and splendid illustrations.

1.4 The CRIRSCO Annual Meet 2022

The in-person Annual General Meeting (AGM) 2022 of The Committee for Mineral Reserves International Reporting Standards (CRIRSCO) was held in The Fairway Hotel, Spa and Golf Resort, Johannesburg, South Africa on 17-20 October 2022 wherein 12 out of 14 member countries participated. This Annual General Meet has gained greater significance and created enthusiasm amongst the members as the preceding two AGMs viz. 2020 and 2021 were to be held in virtual mode due to restrictions enforced by the COVID-19 pandemic.

My self and Dr P.V. Rao (NACRI Co-Chair) represented India in CRIRSCO AGM 2022.

Some of the important decisions taken up in the AGM include:

a) To preserve the future of CRIRSCO, the Executive Committee proposed that at least one of the two representatives, if not both, from each NRO should have a longer tenure of presence to maintain continuity of thought processes and rigour.

b) The Executive Committee proposed to enhance the annual membership fee contribution of each NRO to USD 3,000 from the extant USD 2,000. As some of the NROs (including NACRI) disapproved of it, the house agreed to continue with the existing annual fee of USD 2,000 only.

c) The International Council on Mining & Metals (ICMM), a strategic partner of CRIRSCO, made a virtual presentation from London on strengthening the strategic ties between the two premier international bodies and confirmed its commitment to extend financial support

to meet at least 50% to 60% of CRIRSCO annual expenditure.

d) The need for the continuing participation of CRIRSCO representatives in the UNFC and International Seabed Authority (ISA) meetings was discussed, amid the updates presented by Mr Roger Dixon and Mr Edson Ribeiro (CBRR, Brazil) respectively.

e) The CRIRSCO Chairperson Mr Edson Ribeiro presented three preferred alternatives to establish 'Reciprocity' between NROs/ Professional Organisations (PO)/ CPs/ QPs. After a brief discussion, the house decided that the NROs should review the proposed alternatives and submit their comments for finalization of the Reciprocity system.

1.5 IMIC Training by NACRI

19 leading mining companies viz. NMDC, Tata Steel, MOIL Limited, MSPL Limited, NLC India, APMDC, Hindustan Zinc, Adani Enterprises Ltd, JSWL, ArcelorMittal Nippon Steel, SCCL, Dalmia Bharat Cement, KSMC, Capstone, OMECL, Mining 3600 Services, ERM, Robotics Geoworld Consultancy etc. nominated their professionals for this training program.

NACRI roped in specialist faculty on reporting of diamonds & gemstones, sustainability (ESG) and geotechnical aspects while engaging its in-house faculty to impart training on all key aspects of IMIC and mineral industry best practices.

Sl No	Course	No of Participants	Mode of Training
1	IMIC-1	22	On line
2	IMIC-2	21	On line
3	IMIC-3	28	On line
4	IMIC-4	47	Physical
Total		118	

2. FIRST AID TRAINING CENTER

First Aid Training Centre (NMDC Limited-MEAI BH Chapter) was inaugurated on 14.5.2022. This was a landmark achievement towards helping many aspirants in the mining sector. It is also a pleasure to note that this is the maiden center under the aegis of MEAI. Under this Training center, 396 persons were trained and First Aid certificates were issued which are crucial for getting statutory certificates from DGMS.

In view of the requirement of a training Centre at Hyderabad, we have initiated to get First Aid Training Centre approval from DGMS at MEAI Headquarters (HQ). We got the approval from DGMS and started training in our own Auditorium. The MEAI HQ – First Aid Training Centre was inaugurated by the Chief Guest Shri. V. S. Rao, Past President, in presence of Guests of Honour Shri. B.R.V. Susheel Kumar - Director, Govt. of Telangana and Shri. Md. Fasihuddin, Past President – MEAI at MEAI HQ Hyderabad on 24-03-2023 and until now 40 people have been trained.

We have also initiated the process of getting approval of a First aid training center for our Rajasthan Chapter- Jaipur and the Mining Welfare Center (MWC) will be utilized to its full extent and will serve the industry.

I request all the Chapters to establish First Aid Training Centers, which will be useful for the industry as well as sustainability of Our Chapter.

3. PUBLICATION OF CSR ACTIVITIES IN MEJ

With the aim of creating a positive mindset and generate good will about the mining industry, we as representatives of mining industry initiated:

- To highlight positive activities and investments made for the improvement of the community and the environment
- Sharing of innovative practices, sustainable activities that are being taken up by mining organizations
- To help in knowledge sharing and overall development of mining industry

We have published CSR activities & innovations of 8 Mining organizations till now. We have published CSR Activities of the following organizations and kept them on our MEAI website.

i. Tata Steel Limited
ii. Vedanta
iii. NLC India Limited
iv. MSPL Limited
v. NMDC Limited
vi. Jindal Steel & Power Ltd
vii. JSW Limited
viii. GMDC Ltd

We are trying to make it Possible with MOIL, HCL also.

4. STARTING OF STUDENT CHAPTERS

One of the important points in my dream was to involve Students in the Association activities and start student chapters in all our Chapters. This concept was conceptualized so that the students could be involved in MEAI activities, connect with the members and improve social networks. This platform gave the young engineers/scientists the opportunity to get connected with Seniors & Professionals and observe the activities of MEAI and groom them to become future leaders of MEAI.

To implement this concept, MEAI Bylaws have been amended accordingly. Many Chapters came forward and opened the Student chapters with the Bellary-Hospet Chapter starting the First Student Chapter on 17.06.2022.

Sl.No	Chapter Name	College Name
1	Bellary-Hospet	TMAE Polytechnic, Hospet
2	Ahmedabad	Govt. Polytechnic, Bhuj - Ahmedabad.
3	Udaipur	Sangam University
4	Singareni	JNTU University College of Engineering, Manthani
5	Tamilnadu	Anna University
6	Jabalpur	AKS University
7	Hyderabad	Malla Reddy Engineering College

I am extremely happy to announce that I have attended the inauguration of Student Chapters at Bellary-Hospet Chapter and Tamilnadu Chapter.

I have visited Visakhapatnam Chapter and participated in an interactive session with the geology students in Andhra University which has given me great pleasure. It gave an insight of their requirements/ needs pertaining to their training and career development.

5. OPENING OF NEW CHAPTER & REVIVAL OF MEAI CHAPTERS

I am extremely happy to inform you that the 27th Chapter at Ongole-Vijayawada was started on 6th October 2022 at Ongole, Andhra Pradesh with the great efforts of Mr Subhaskar Reddy and his team. Ongole is rich in granite and many mining companies are operating in this area with more than 200 mining professionals. I express my sincere thanks to Mr Subhaskar Reddy & his team for taking initiative to start this new Chapter.

We strived to revive the not so active chapters and help smaller Chapters to conduct activities resulting in Rayalaseema, Jabalpur, Belgaum, and Hutti-Kalaburagi Chapters taking up giant leap by conducting national seminars, workshops and other activities by involving their members at Chapter level. I personally attended the programs to encourage them and appreciate the concerned Chairman & Secretary and thank them for showing dedication towards MEAI.

6. WEBSITE REDESIGN AND ONLINE ENROLMENT

We have redesigned our MEAI website for better access and making it more informative with real time accessibility. We are uploading all activities undertaken on a real-time basis and utilising the website for advertisements, new information postings.

We have started **online enrolment of Membership** along with an online payment facility. Many new members have enrolled using this platform. MIS of members is also automatically updated in this online system of Enrolment.

We also made a good **MIS** to check & utilise for our management by using digital platforms.

We are thankful to Sri. Deepak Gupta, Sri. Venu Gopalan Medicherla, VP-Digitalisation, MSPL Limited & his team, Sri. M. Narsaiah and his team for supporting the website activities.

7. USAGE OF "WEBEX" PLATFORM

We have procured our own Online Meeting Platform and conducted all our MPDP and IMIC Programs on our WEBEX Platform. Now all our MEAI Meetings were being conducted through our own Online Meeting Platform.

We have also provided opportunities for Chapters to utilize and conduct their meetings on this platform. The Opportunity was also given for the Women's forum to conduct a webinar on the topic of "Women in Mining India".

We thank Mr. Anirvesh, MEAI HQ for his dedicated work in utilizing the Webex platform.

8. LEGAL CORNER

Introduced publishing Legal Corner item in our MEJ from July 2023, which offers insight on Court orders connected to the mining industry. This will help provide the gist of court orders for ease of understanding by the members.

9. MEAI NATIONAL QUIZ - 2022

MEAI started conducting a National Quiz in view of Indian Mining Day celebrations in 2021 and continued in 2022 also by involving members from across 26 chapters in the country. This has created a good platform for MEAI members to participate in quiz activities.

QUIZ-2021

Sl No	Chapter Name	Prize	Name	
1	Jodhpur	1st	Sri Mahesh Prakash P	Rohit Rawal
2	Barajamda	2nd	Sri Abhay Kumar G	Sri Ajay Kumar
3	Bangalore	3rd	Sri Deepak C Anil Kumar	Sri Bharat Kumar A.Y

QUIZ-2022				
Sl No	Chapter Name	Prize	Name	
1	Bhubaneswar	1st	Sri Devaraj Tiwari	Sri Niladri Bhattacharjee
2	Tamilnadu	2nd	Sri R. Kamraj	Sri E. Kumar
3	Ahmedabad	3rd	Sri U. R. Pampaniya	Sri S.D. Dangar

Alongside the Final round an Audience Round was also held in which TEN contestants were declared winners.

The National Quiz – 2021 & 22 generated a lot of interest and competition amongst participants. It was professionally conducted by the Quiz Master Sri. Deepak Vidyarthi and we express our sincere thanks to him for successfully conducting the same.

10. MEETINGS WITH CHAPTER CHAIRMEN & SECRETARIES

We have initiated regular meetings of Chapter Chairmen & Secretaries on our own platform (Webex) to discuss the activities being carried out by our Chapters. They helped in better understanding of the Chapters' issues and improved the coordination between HQ and the Chapters.

Regular Committee meetings are being held & the action plans discussed. Activities of the Committees are being reviewed at the Council meetings and action plans discussed by the respective Chairmen.

Sl No	Description	Meeting Date
1	Induction & interactive session	25.10.21
2	Review & interactive session	20.05.22
3	Review & interactive session	07.08.23

11. ENCOURAGEMENT TO YOUNG MINING ENGINEERS

"Today's Seeds are tomorrow's trees"!. True to the dictum, MEAI has initiated the induction of young engineers in the Executive bodies of the Chapters with encouragement of the young team as "office bearers" of the committees. This initiative has to be followed up to get a long-term benefit to the Association and industry.

12. TWITTER AND LINKEDIN OF MEAI

MEAI's twitter account has been activated and is being updated regularly. Various activities of MEAI are being uploaded on these platforms. We invite members and organizations to follow "**meai_s**" on Twitter. We are Thankful to Dr. N.K. Nanda for taking up the initiative and continuously uploading the twitter posts.

We have also initiated to update and publish our activities on LinkedIn. Once again, thanks to Mr. Anirvesh.

We request all the members to follow both Twitter and LinkedIn for MEAI regular updates.

13. LIFE MEMBERS & FINANCE POSITION

We have taken several steps to increase the Life Members of our Association. Special drive at Chapters has been initiated to attract new members. We have enrolled around 502 new members during my Presidency.

Initiated various steps to strengthen the financial position of our Association such as Publishing CSR activities in MEJ, Conducting Training programs - MPDP, MOST, and IMIC, Increasing New membership, conducting First aid training etc.

Activity 21-23	Approximate Collected Amount (Rs)
CSR	16,93,550
Membership	21,58,907
Students membership	1,03,422
Fellow Membership	59,000
Life Institution Members	2,09,200
Senior Citizen fund	3,60,000
MPDP	14,97,550
MOST	6,60,000
Advertisements	12,40,393
First Aid	15,50,920
NACRI-IMIC	16,07,500
25% share from Chapters	10,72,000
Total	1,22,12,442

14. VISITING OF CHAPTERS

As President, I tried to visit a maximum number of Chapters to interact with Members and understand the status of activities. I have visited 21 chapters during my tenure as President 2021-23 and participated in Chapter activities to encourage the Chapters.

President Visit to Chapters -2021-23		
Sl No	**Chapter Name**	**Date**
1	Bellary-Hospet	More Times
2	Bangalore	More Times
3	Belgaum	29-08-2021
4	Hutti Kalaburagi	26-09-2021
5	Hyderabad	29-10-2021
6	Bhubaneswar	23-04-2022
7	New Delhi	13-07-2022
8	Udaipur	28-08-2022
9	Rayalaseema	10-09-2022
10	Mumbai	16-10-2022
11	Ongole-Vijayawada	06-11-2022
12	Singareni	19-11-2022
13	Nagpur	01-03-2023
14	Visakhapatnam	10-03-2023
15	Goa	22-04-2023
16	Tamil Nadu	10-06-2023
17	Jabalpur	24-06-2023
18	Jodhpur	13-08-2023
19	Jaipur	14-08-2023
20	Veraval Porbandar	23-08-2023
21	Ahmedabad	25-08-2023

We are grateful to the Almighty, that over the years, our Association has grown in leaps & bounds, headed & trail blazed by many eminent professionals.

I am extremely privileged to be a part of this august organization. I have enjoyed working with all members, seniors, chapters and tried for the betterment of our Association and members.

Thanks to all members for giving me the opportunity to serve our Association, the trusted voice of the Indian Resource Sector.

GLIMPSES OF PRESIDENT VISIT TO CHAPTERS

1. Belgaum Chapter - Date: 29-08-2021

Visited Belgaum Chapter for the installation ceremony of the newly elected committee members FY 2021-23

2. Bellary-Hospet Chapter - Date: 15-09-2021

Attended the Annual General Body Meeting at GVTC Sandur. New committee members were elected with around 120 attendees.

3. Hutti-Kalaburgi Chapter - Date: 26-09-2021

Participated in the General Body meeting held at Hutti Gold Mine premises.

4. Hyderabad Chapter - Date: 29-10-2021

Inaugurated a one-day national seminar on "Role of Critical Minerals in National Development" at MEAI - Head Quarter, Hyderabad.

5. Bangalore Chapter - Date: 03-03-2022

Chaired a one-day National Seminar on Safe Usage of Explosives & Winning of Minerals. Shri. Pankaj Kumar Pandey, IAS C&I Department, GoK has inaugurated the seminar.

6. Bhubaneswar Chapter - Date: 23-04-2022

Took part in the 3rd Council meeting and attended the National Seminar on "Technological and Digital Advancement in Mining and Mineral Beneficiation".

7. New Delhi Chapter - Date: 13-07-2022

Meeting with the Secretary of the Ministry of Skill Development & Entrepreneurship and meeting with New Delhi Chapter members.

8. Rajasthan Chapter-Udaipur - Date: 28-08-2022

Participated in the 5th Council Meeting and inaugurated a national seminar on "Role of Innovations & Technology in Turnaround of Mining Industry". And also attended the MEAI Council meeting and EGM Meeting.

9. Rayalaseema Chapter - Date: 10-09-2022

Inaugurated a one-day workshop at Ultra Tech Cements, Tadipatri, and attended the General Body Meeting.

10. Mumbai Chapter - Date: 16-10-2022

Meeting with Mumbai Chapter Chairman, Secretary and Council member on Activities of Chapter.

11. CRIRSCO - Date: 18-10-2022

Attended CRIRSCO AGM along with Dr. P. V. Rao at Johannesburg, South Africa, where the NACRI report was presented.

12. Ongole Vijayawada Chapter - Date: 06-11-2022

Inaugurated the Ongole- Vijayawada Chapter, the 27th chapter of MEAI. Shri. V. G. Venkata Reddy, DMG, Andhra Pradesh attended for the inauguration as a chief guest.

13. Singareni Chapter - Date: 19-11-2022

Participated in a seminar on Technological Developments in Coal Mining Industry for a Sustainable Growth and attended 6th Council Meeting at Singareni.

14. Nagpur Chapter - Date: 01-03-2023

Meeting with MEAI Chapter members at Nagpur.

15. Visakhapatnam Chapter - Date: 10-03-2023

Organized an interactive session with Andhra University's M.Sc Geology students at the Vizag Chapter. Senior members of the University and Chapter members Shri. A Santharam, Shri. K Gangsraju and Shri. DVN Sharma were felicitated during the session. Attended by Shri. Hari Krishna, Secretary, Shri. K. Venkata Ramana and Senior Members.

16. Goa Chapter - Date: 22-04-2023

Discussed the status of Goa's Mining Industry with senior Members and MEAI past president, Shri. T. Victor.

17. Tamil Nadu Chapter - Date: 10-06-2023

Inaugurated Annamalai University Student Chapter at Chennai and attended Tamil Nadu Chapter's AGM.

18. Jabalpur Chapter - Date: 24-06-2023

Inaugurated a workshop on Present Mining Scenario along with Shri. Pukhraj Naniwal at Jabalpur Chapter.

19. Rajasthan Chapter-Jodhpur - Date: 13-08-2023

Meeting with Chairman, Secretary and members

20. Rajasthan Chapter-Jaipur – Date: 14-15 August 2023

Meeting with Chairman and Secretary and other members and attended for Flag hoisting at Mining welfare center

21. Veraval-Porbandar Chapter – Date: 23-08-2023

Meeting with Chairman, Secretary and members

22. Ahmedabad Chapter- Date: 25-08-2023

MEAI Council Meeting & 50th AGM

BHUBANESWAR CHAPTER

Knowledge Sharing Session conducted on 19th July'23
Theme: "(Measures Relating to Safety and Electricity Supply) Regulations 2023"

The Bhubaneshwar Chapter had organized a Knowledge Sharing Session on 19th July'23 at Chrome Valley Club, Sukinda Chromite Mine of Tata Steel Mining Limited in physical mode. Office bearer of the Chapter, Shri. Shambhu Nath Jha (Secretary) and other senior members of the Chapter had graced the occasion. Various other members of the Electrical fraternity of Sukinda Valley attended the session physically.

The session started with auspicious lamp lighting by the dignitaries followed by the welcome address of Shri. Shambhu Nath Jha in which he welcomed all the participants who will be attending the event. He also thanked various speakers for bringing their technical expertise to the event.

Technical presentations were made by officials from DGMS SEZ, Ranchi:

1. Mr. Kanala Maheswara Reddy (Director of mine safety Electrical, SEZ Ranchi)
2. Mr. Vineet Chourasia (Deputy Director of mine safety Electrical, SEZ Ranchi)

Welcome Address by Shambhu Nath Jha

Presenter 1: Mr. Kanala Maheswara Reddy

He had shared his views on central electricity authority (Measures relating to safety and electricity supply regulations 2023). He told what was there in safety and supply 2010 regulation and what is new in the safety and supply regulation of 2023. They talked about future changes

in MMR etc. He also appreciated MEAI for its approach in providing opportunities to professionals in their career growth through frequent technical sessions and seminars to remain updated on current issues and concerns of the industry and different approaches to manage them.

Presenter 2: Mr. Vineet Chourasia

He presented some Changes in Regulation 2023 and explained in detail Like measures relating to safety and electricity supply regulation 2010 had 110 regulations but regulation 2023 had 140 regulations, Additional safety for GIS substations. Some new words and sentences have been added to the regulation Like aerial bunch cable, bonding conductor, contact potential, Authorized person change has been designated person, exposed conductive part, extraneous conductive part, protective conductor, telecommunication line etc. He explained all the words and sentences very well. He explained Indian Standard and European Standard. He explained all the regulation numbers in which changes have taken place Like regulation number 18,19,21,23,29,30,31,33,37 etc. It was also told that what has changed in which regulations Like General clearance has been added to the regulation 67, enough has been added to the regulation 29 etc. The new regulations that were added also explained Like regulation number 111 to 140. He gave a very good and beneficial technical presentation.

The event ended with the vote of thanks by Shri Naveen Srivastava, AGM-Mining, Tata Steel Mining Limited.

Shri Naveen Srivastava

RAJASTHAN CHAPTER-JODHPUR

16th Annual General Meeting held on 9th July 2023 at Jodhpur

Er Rajeev Choudhary – Vice Chairman, Prof. Ram Prasad Choudhary, Secretary, Er MC Tater-Treasurer, Dr. PC Purohit, Er MaheemKachhawah, Er Manish Verma, Shri BS Dhaka, Er PR Prajapat & Er MP Purohit among other dignitaries and members Prof DM Surana, Er SS Patel, Prof Sushil Bhandari, Er VS Mathur, Er PC Dhariwal, Er PR Dave, Er DK Saxena, Er Deepak Tanwar, Er SP Goyal, Er GK Jangid, Er Kishore Vyas, Er Kishore Dutta, Er JP Jakhar, Er Bheem Singh Rathore, Er RS Balara, Er Rajendra Choudhary, Dr Pramod Rajmeny, Shri SK Soni, Er Dinesh kachhawah, Er Dheeraj Kumar, Er AK Jain, Er AnkushSaxena, Er Sujeet Kumar, Er Jasraj, Dr SL Borana, Dr Sailesh Yadav, Prof Suresh Kumar Mathur, Dr PK Bhargava, Er MS Vyas, Er Chandra Shekhar, Er Pradhyuman Singh Rathore & others from state and central PSUs/ Govt departments, consultants, Cement companies etc participated.

However, some members, who could not attend the meeting due to their preoccupation with official work at outstation, conveyed their consent through tele-communication over the unanimous decision taken in the house. A few of the other chapter members were also present as invited guests.

The 16th Annual General Meeting of the Rajasthan Chapter-Jodhpur was held on Sunday, the 9th July 2023 at Hotel Chandra Imperial, Near Sardar Club, Jodhpur. Shri A.K. Jaiswal, Chairman extended warm welcome to all members and other guests in the AGM and consented to commence the 16th AGM proceedings as per the Agenda Item.

The Dias was shared by National Council Members Prof SK Parihar & Er Rajendra Singh Ratore with the Chapter Chairman, Secretary and Treasurer. Prof Ram Prasad Choudhary started the proceedings by welcoming all that were present. He conveyed his thanks to all on behalf of the Executive Body for their support and guidance throughout the tenure of the Executive Committee.

The following agenda items were taken up for discussion: Confirmation of Minutes of 15th AGM held on 24th July 2022 and Action taken report on the points arising out of 15th AGM: The Minutes of the 15th AGM held at Hotel Shriram Excellency, Jodhpur and Action Taken Report were unanimously confirmed by the house.

Presentation of Annual Report

The Annual Report for the year 2022-23 comprising achievements, executive body meetings, activities conducted by the Chapter and upcoming activities proposed for the next FY was circulated to all the members present and read in the house. It was mentioned that during the year 2021-22, the Chapter could not carry out much activities due to COVID

pandemic. However, during 2022-23 the Chapter conducted two Field excursion cum workshops along with Chapter members and students of the MBM engineering college. One field visit was on 10th September 2022 at Shree cement Mines and Plant, Beawar. Around 100 mining engineers, MEAI members and students were present in a successful event. Second was conducted at Makrana Marble Mines, Ajmer with a workshop on 'Mines Safety & Slope Stability in Makarana Marble'. It was also well attended by the mining fraternity along with DGMS and DMG officials, people from Makrana marble associations and mine owners. Its outcome and recommendations were made by the Chapter and forwarded to respective regulatory bodies and the government for their kind attention on the slope stability Issue in the mine.

One-day seminar on "Digitization of Mining Operations" was held on 9th January, 2023 at the Department of Mining Engineering, MBM University. Prof Ajay Kumar Sharma, Vice Chancellor, MBM University and Shri P. N. Sharma, Chief Controller of Mines, IBM, Nagpur had graced the occasion as Chief guests. It was also well attended by people from IBM, DMG, State and central PSUs, Cement industries and mining engineering students and members of MEAI of local chapters. One paper from an Australian company was also presented.

Student activities were also undertaken by conducting Essay competition and Powerpoint presentation. The winners were awarded a Cash prize through MEAI. In the National Quiz held by the MEAI HQ, our Chapter also participated with a team comprising of Er OP Sharma from Shree Cement and Er Dheeraj Kumar from FAGMIL. Last year our team comprising Er MP Purohit and Dr Rohit Rawal made the Chapter proud by winning the national level Quiz competition.

The Indian Mining Day was also celebrated on the HQ decided subject Theme. Chief Guest was Brigadier A.S. Rathore, CMD, FAGMIL, GOI undertaking. Dr PC Purohit, Ex GGM, RSMML and Er Suryanshu Chaudhary, GM, GMDC presented Papers. One International Conference was also proposed on the Theme 'Advance Technology in Exploration and Exploitation of Minerals'. However, due to some unavoidable circumstances, it was postponed and now proposed to organize it in the year 2023-24. The Chapter also signed an MoU with the Skill Council of India for the Mining Sector on 28th March. 2023 as Project Execution Agency under Pradhan Mantri Kaushal VIkar Yojna (PMKUY 4.0).

A few activities are proposed for the year 2023-24. The proposal for construction of Building for Skill Development Centre at Department of Mining Engineering, MBM University is under process with the University and is under active consideration. It was advised by the house that due care should be taken during expenditure for such activities. It was suggested to raise funds for the purpose from the organized sector like corporate houses/ PSUs and proper planning for long term maintenance and operational expenses should be taken care of.

Presentation of audited Accounts for the Chapter for the year 2022-23 and Auditor's Report

The Treasurer of the Chapter Er MC Tater presented the audited accounts of MEAI Rajasthan Chapter, Jodhpur, which was discussed and approved by the executive body members and the same was also ratified by the House. It was conveyed that the income earned in the year was only from interest on the deposits and all expenditures were made from this income. However, due care was taken to minimize the expenditure on different activities. The support of the MBM department for organizing executive body meetings and activities for seminar was well appreciated. The field activities expenditure was minimized by sponsorship of the event at their locations either by Shree Cement or by Marble Mines Associations. It was also pointed out for recovery of Rs 10 lakh loan given to the Jaipur Chapter on request of the HQ for construction of Skill Development Center at Jaipur, shall be required for construction of Building as proposed at Jodhpur.

Prof SK Parihar, Dr. P C Purohit. Prof Bhandari, Er JP Jakhar shared their Views. Prof Parihar advocated for student Chapter registration and Institutional membership/association membership for Small mine owners under suitable modality. It was apprehended that it would give wide base of membership for the Chapter. Prof Suresh Kumar Mathur, Former HOD-Geology, JNVU, Jodhpur delivered a talk on "Geo Heritage and Geo-tourism". The talk was very interesting and it was in the news in the recent world of Geo-science. It was well delivered covering all aspects and narrated about recent developments and activities done by the scientist and the authorities. It was also mentioned that old abandoned mines can be good sites for geo-tourism and many exhausted mines had already developed and adopted it in different parts of the world by the mine owners/respective government. It can be well taken as post mining activities under Environment Management Planning. He informed that marble from Makrana in Rajasthan has become Asia's first Global Heritage Stone Resource (GHSR) and our Jodhpur Sandstone is in the queue to get its mark under this list due to its stone characteristics leading towards construction of historical monuments in and around Jodhpur. Er Pradyuman Singh, a young petroleum engineer working in Halliburton Company, USA delivered a lecture on "AI and its application in the mining sector". This was also a burning subject and entering in each field of work. It has also put its head in the mining sector. Artificial Intelligence in exploration technology plays a vital role for proper estimation near to accuracy and real time execution of the work. He has explained the subject with simple and meaningful examples.

Felicitation

During the AGM, the Chapter felicitated the senior founder members of the Chapter and First Chairman and Secretary of the Chapter. Following personalities were honoured with Jodhpuri safa and Dupatta as a mark of respect: Er SS Patel, Former ADM,DMG-Rajasthan by Prof Sushil Bhandari Former-Dean MBM Engg college and Dr PK Rajmeny, Ex-GM,HZL Prof DM Surana, Ex-HOD, Mining Engg Deptt, MBM College by Er PC Dhariwal, Former Vice President, JK Cement and Er GK Jangid, ExRCOM, IBM Er VS Mathur, First Chapter Chairman by Prof SK Parihar, Ex-HOD MBM College and Er Rajeev Choudhary, SME,DMG Er PR Dave, First Chapter Secretary by Er RS Balara, Ex-ME,DMG & Er RS Rathore, GM FAGMIL. Both the speakers were also honoured with mementos by Er DK Saxena, Ex-Director, DGMS and Er MaheemKachhawah, Ex-Vice President, JK Cement.

The election of the Chapter for the term 2023-25

To conduct the election for electing a new Executive body of the chapter for the term 2023-25, Dr PC Purohit was nominated as election officers. A few members put up their views & opinions. After detailed deliberations in the house, a new Executive body was elected unanimously by the house & the election officer declared the following names of the new Executive Committee:

Chairman: Shri A. K. Jaiswal, Vice Chairman-I: Er. Rajeev Choudhary, Vice Chairman-II: Er. R. S. Rathore, Ex-officio Members: Er PR Dave and Er YS Sankhla, Secretary: Prof. Ram Prasad Choudhary, Jt. Secretary: Er Mahesh Purohit, Treasurer: Er MC Tater; Executive Members : Dr Dharmendra Lohar, Er Maheem Kachhawah, Er PR Prajapat, Dr PK Rajmeny, Er RS Balara, Er Manish Verma., Er Bheem Singh, Er Dheeraj Kumar.

The AGM concluded with the address of the Chairman. He expressed gratitude to all the senior dignitaries and the members for giving support in the last tenure to the team. He regretted not undertaking much activities in the year 2021-22 and a scheduled conference in the year 2022-23. He also emphasized on the participation of more of members in the upcoming activities and requested all attendees to extend all the support, particularly in organizing the proposed Mega Event i.e. International Conference at Jodhpur. Active support of all youngsters and guidance of the senior members was requested with folded hands.

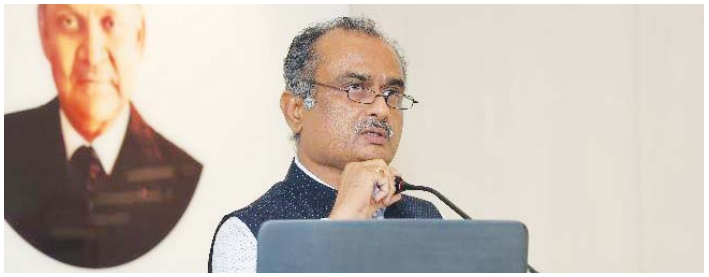
Before the final call in the meeting, 2 minutes' silence was observed as a mark of respect to the departed Colleague Er Hemendra Singh Rathore, Unit Head, Adani Cement and MBM alumni, who passed away during the year 2023. A fellowship lunch was arranged by the Chapter to all family members. As a token of honour, mementoes were given to all members of the house.

RAJASTHAN CHAPTER-UDAIPUR

Report on Mining Summit

Rajasthan Chapte- Udaipur in association with PHD Chamber of Commerce and Industry, Udaipur Chamber of Commerce and Industry, Udaipur Marble Processors Samiti & Rajasthan Solar Association organized a "Rajasthan Mining Summit" at UCCI Auditorium, Udaipur on 14th July, 2023. The theme of the Summit was Towards Sustainable & Green Mining wherein eminent speakers and subject experts shared their knowledge and vision.

Chief Guest, Shri R T Mandekar, DDG (NWZ)-Udaipur Region, DGMS, GoI, emphasized on safety during mining operations & informed about the various initia tives taken by DGMS in this regard. He assured DGMS role as a facilitator for sustainable development of mining in the State. Speaking on the implementation of scientific mining which is a requirement and small lease area is an impediment. Rajasthan has potential to become mineral processing hub of India considering vast mineral resources.



Shri MS Paliwal, Chairman of the Chapter deliberated on the role played by the MEAI and its members in promoting sustainable development of Mining in Rajasthan.

Shri Sanjaya Singhal, President, Udaipur Chamber of Commerce and Industry pointed out difficulties in executing the regulatory requirements and desired to make them simpli-

fied, rational and practical, so as to enhance the mining and to attract more investment.

Col. Harmit Singh Sethi, Executive Director, Dalmia Bharat Group highlighted the work being carried out by Dalmia Group in reducing Carbon Emissions in mining and mineral processing units, and their target to move towards net zero level by 2040.

Shri ML Lunawat, MD, Aravali Mineral and Chemicals Industries Pvt. Ltd spoke about various practical difficulties being faced by Mining companies which are not timely addressed by Governing bodies and requested them to look into it from entrepreneur view so that more investment and first generation entrepreneurs can be attracted rather than feeling harassed.

Shri Mukaya Simubali, ED, AAC Mining Executors Group, presented the Best Mining practices and use of State of Art Technologies through informative and detailed presentation.

Shri Praveen Sharma, Chief Operations Mining, Hindustan Zinc ltd. shared on various innovative technical initiatives undertaken by Hindustan Zinc Ltd towards safety, sustainability and higher productivity through a case study.

Shri Sunil Bansal, President, Rajasthan Solar Association informed about the feasibility and benefits of using Solar energy in the Mining Sector and highlighted the cost effectiveness and sustainability.

In the Seminar, issues related to Ease of Doing Business, enhancing the use of Solar and Wind Energy, Training of Manpower, Use of municipal waste as energy source, gainful utilization of Mining waste and reclamation of worked out mines for other economic usages, application of Drone, Remote Sensing, Artificial Intelligence, Internet Things etc. were deliberated. The gainful utilization of funds available under District Mineral Foundation Trust were also discussed.

A Knowledge Report on Sustainable and Green Mining in Rajasthan was prepared and released by PHDCCI & Feedback Infra Pvt. The Summit was also addressed by Shri Ashok Porwal, Former Director, Mines Safety, Government of India, Shri Tanuj Sharma, Principal Consultant, Feedback Infra Pvt Ltd, Shri Lalit Mohan Soni, Principal (Mining), Infosys Ltd, Shri Abhinav Sengupta, Manager - Mining & Metals, PricewaterhouseCoopers Private Limited, Shri Sanjay Sharma, CEO, Skill Council for Mining Sector, Shri Umang Buddhdev, Satsense Solutions, and Shri Suraj Agarwal, Manager (Environment), Energy Efficiency Services Ltd.

Audience in the Summit

The Summit was sponsored by AAC Mining Executors Group & Dalmia Bharat Group and attended by more than 150 participants from all over Rajasthan and nearby States.

ERRATA

Please read as follows:

Page 21: Read "Prime Minister of Goa" as "Chief Minister of Goa";

Page 41: Read "Mr SK Mathur" as "Mr SN Mathur" under MEJ Riddles.

Sincerely regret the Typos please.

MEJ RIDDLES

Dear Readers of MEJ,

In order to increase the readership of MEJ, which has been felt essential in the interest of our ardent members, the mineral industry professionals as well as the mining sector, the Editorial Board of MEJ has decided to hold a monthly QUIZ. The monthly QUIZ will be designed and printed in MEJ based on the content published in the previous month's MEJ. The MEJ readers will be given five objective questions with multiple choices to choose; and expect them to respond with their correct answer by email to the Editor at **editormejmeai@gmail.com** by 20th of the current month. If more than three members responded with the correct answers, then the three winners will be decided by draw. Each winner will be issued a certificate of merit and a nominal cash prize of Rs 500.

Encourage the EMJ readers to participate in the QUIZ in large numbers and benefit from the enhanced knowledge by reading the Journal from the first to last page.

Questions based on August 2023 issue

1. Who organizes MEAI Tech Series (MTS) every month?

(a) Mr TR Rajasekar
(b) Mr M Narsaiah
(c) Mr M Ifthikhar Ahmed
(d) Mr Deepak Vidyarthi

2. What is the CRIRSCO approved Reporting code for Mineral Resources and Reserves in India?

(a) IMIC
(b) JORC
(c) PERC
(d) SAMREC

3. Which mineral is not in the latest list of six atomic minerals allowed for mining by the private companies in India?

(a) Zirconium
(b) Niobium
(c) Titanium
(d) Beryl

4. Mr Pukhraj Neniwal, RCOM, IBM belongs to which Chapter of MEAI

(a) Nagpur
(b) Raipur
(c) Jabalpur
(d) Dhanbad

5. Which MEAI Chapter celebrated its Silver Jubilee in the month of July 2023?

(a) Rajasthan Chapter-Udaipur
(b) Rajasthan Chapter-Jodhpur
(c) Rajasthan Chapter-Jaipur
(d) Ahmedabad Chapter

WINNERS OF RIDDLES PUBLISHED IN THE MEJ AUGUST 2023 ISSUE

Congratulations to proud winners

Rajendra Ambhorkar

Manager Mines, UltraTech Cement Ltd, Maihar Cement works, Email: ambhorkar@gmail.com

Prof. D.P. Tripathy

National Institute of Technology, Rourkela, E-mail: debi_tripathy@yahoo.co.in

Deepak Vidyarthi

Mining Consultant, E-mail: vidyarthikud@hotmail.com

To receive the cash prize of Rs 500, the winners may please contact the Secretary General, MEAI on email at **meai1957@gmail.com** or Mob. 9177045204.

CONFERENCES, SEMINARS, WORKSHOPS ETC.

INDIA

11-15 Sep 2023: **Short Term Course on Assessment of Spontaneous Heating Liability of Coals and their Prevention**. Rourkela. Organised by the Department of Mining Engineering, National Institute of Technology, Rourkela. Contact Prof Devidas S Nimaje, Phone: 06612462604, 9437943121. Email: snimaje@nitrkl.ac.in.

6-7 Oct 2023: **International Seminar on Minerals: A Resource for Energy and Food Security**. Jaipur. For details, Contact – Mr Anil Mathur on Mob 9414119227, E-mail: chairman.jaipur@meai.org & meaijpr2010@gmail.com

6-9 Nov 2023: **International Mining, Equipment & Minerals Exhibition (IME 2023)**. Eco Park, Rajarhat, Kolkata, India. Organised by The Mining, Geological & Metallurgical Institute of India (MGMI). Contact Email ID: miningexpo@tafcon.in

ABROAD

25-28 Oct 2023: **China Coal & Mining Expo 2023**. China's 20th International Technology Exchange & Equipment Exhibition on coal and mining is the largest international coal and mining exhibition in Asia. New China International Exhibition Center (NCIEC), 88 Yuxiang Road, Tianzhu Airport Industrial Zone, Shun Yi District, Beijing, China

31 Oct - 2 Nov 2023: **International Mining and Resources Conference (IMARC)**. Sydney, Australia. Contact: connect@imarcglobal.com. Phone: Australia: +61 (0) 3 9008 5946

8-9 Nov 2023: **International Conference on Underground Mining Methods and Technologies ICUMMT 2023**. Istanbul, Turkey. Website URL: https://waset.org/underground-mining-methods-and-technologies-conference-in-november-2023-in-istanbul

15-16 Nov 2023: **International Conference on Design Methods in Underground Mining ICDMUM 2023**. Jeddah, Saudi Arabia. Website URL: https://waset.org/design-methods-in-underground-mining-conference-in-november-2023-in-jeddah

21-23 Nov 2023: **Critical Minerals Conference 2023**. Perth Convention & Exhibition Centre, Perth, Australia. For details contact conference@ausimm.com

01-02 Dec 2023: **International Conference on Design Methods in Underground Mining ICDMUM**. Auckland, New Zealand. Website URL: https://waset.org/design-methods-in-underground-mining-conference-in-december-2023-in-auckland.

10-11 Jan 2024: **Future Minerals Forum (FMF 24)- Conference and Exhibition**. VENUE KING ABDULAZIZ INTERNATIONAL CONFERENCE, CENTER, RIYADH, SAUDI ARABIA. For Speaking Enquiries speaker@futuremineralsforum.com.

11-12 Jan 2024: **International Conference on Mineral Processing and Mining ICMPM 2024**. Singapore. Organised by World Academy of Science, Engineering and Technology. Website URL: https://waset.org/mineral-processing-and-mining-conference-in-january-2024-in-singapore

8-9 Feb 2024: **International Conference on Web Mining, Information and Knowledge Extraction (ICWMIKE 2024)**. Lisbon, Portugal. Website URL: https://waset.org/web-mining-information-and-knowledge-extraction-conference-in-february-2024-in-lisbon; Contact URL: https://waset.org

18-19 Feb 2024: **International Conference on Bauxite Mining and Alumina Refining ICBMAR 2024**. Jeddah, Saudi Arabia. Website URL: https://waset.org/bauxite-mining-and-alumina-refining-conference-in-february-2024-in-jeddah

4-5 Mar 2024: **International Conference on Mining Intelligence ICMI 2024**. Rio de Janeiro, Brazil. Website URL: https://waset.org/mining-intelligence-conference-in-march-2024-in-rio-de-janeiro

4-8 Mar 2024: **The 17th ACM International Conference on Web Search and Data Mining (WSDM)**. Event Location: Mérida, Yucatán. Contact wsdm-2024-general-chairs@googlegroups.com

22-23 Apr 2024: **International Conference on Recent Developments in Mining Technologies ICRDMT 2024**. London, United Kingdom. Website URL: https://waset.org/recent-developments-in-mining-technologies-conference-in-april-2024-in-london

7-8 May 2024: **International Mining Geology Conference 2024 (IMG 2024)**. Perth Convention and Exhibition Centre, Perth, Australia. For details contact conference@ausimm.com

17-18 May 2024: **International Conference on Surface Mining and Land Reclamation ICSMLR 2024**. Sydney, Australia. Website URL: https://waset.org/surface-mining-and-land-reclamation-conference-in-may-2024-in-sydney

17-19 Jun 2024: **Molten 2024**. Brisbane, Australia and Online. Contact AusIMM. T: 1800 657 985 or +61 3 9658 6100 (if overseas)

22-23 Jul 2024: **International Conference on Green Coal Mining Techniques and Waste Disposal ICGCMTWD 2024**. Berlin, Germany. Website URL: https://waset.org/green-coal-mining-techniques-and-waste-disposal-conference-in-july-2024-in-berlin

11-15 Aug 2024: **International Mine Ventilation Congress 2024**. The heartbeat of mining, Sydney, Australia. For details contact conference@ausimm.com.

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