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President's Message.....

Dear Members,

Greetings...

I wish to put forth the activities undertaken by our Association in the preceding month.

On the Occasion of Republic Day, our Ahmedabad Chapter organized a blood donation camp on the 25th January 2023. The camp was held at GMDC Corporate Office. I am happy to note that the members of the Chapter, employees of GMDC, GIDC have joined in for this noble cause.

The Rajasthan Chapter- Jaipur celebrated its 14th Foundation day on 13th February at Mining Welfare Centre. I congratulate the founders of the Chapter and all members of MEAI Jaipur Chapter for their contribution to the Association and wish them for propelling the Chapter to greater heights. On this occasion, they arranged a technical talk by Sri. Anand Sharma on Demolition techniques for demolition of Civil structures.

The Rajasthan Chapter - Udaipur organized a technical talk on "**A Case History of Kimpe Copper Deposit DRC**" on 14th February, 2023.

The Rajasthan Chapter- Jodhpur organized a one-day workshop cum Field excursion on "Mine Safety and Slope stability in Makrana Marble Mines" on 24th February at Makarana in association with Mine Owners Associations of Makrana.

On 17th February 2023, Dr. Abani R Samal, Principal, Geo Global, LLC, USA delivered a Technical Exposition on "**Conditional Bias in Resource Estimation**" in the MEAI TECH SERIES (MTS). The MTS program is an ongoing program held every month to upgrade the skills & knowledge of Mining Professionals. I advise all the Students, Trainees, and Mineral Industry Professionals to avail this opportunity.

I am happy to share that we have got permission from DGMS for imparting First Aid Training at **MEAI HQ First Aid Training Center**, which will help us to fulfill one of the Objectives of our Association. I am very much thankful to all the members who supported us in getting this Permission.

I would like to inform you that the following activities have been planned by our Chapters.

- Bangalore chapter in association with the Department of Mines and Geology, Government of Karnataka is organizing a National Seminar on **MINING SCENARIO -POST REFORMS**, at Bangalore on 25th March 2023.
- 7th Council meeting is scheduled on 14th April 2023 at Jodhpur. Along with the Council meeting, an International Conference on **ADVANCED TECHNOLOGY IN EXPLORATION AND EXPLOITATION OF MINERALS** from 14th to 16th April 2023 at Jodhpur is being organized by Rajasthan Chapter- Jodhpur in association with the Department of Mining Engineering MBM University, Jodhpur, Rajasthan.
- Tamilnadu chapter is organizing an **International Mining & Mines Safety Expo-Symposium** on 17th -19th March 2023 at Coimbatore in association with Tamilnadu Safety Association and Stone Quarry, Crusher & Lorry Owners Association
- IBM is organizing "**Khanij Diwas**" on 1st March 2023 on the occasion of 75th Foundation day of IBM at Nagpur. It is also proposed to felicitate the 5 Star Rated Mines in the Platinum Jubilee celebration of IBM on 1-3-2023 by the Honorable Union Minister of Mines. I congratulate all winners of 5-Star Rating Awards and Wish all the members who have worked hard & kept sustainable mining on this occasion.

Regards,

K. MADHUSUDHANA
President



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EDITOR'S DESK



Dr. P.V. Rao
Editor, MEJ

On 9 February 2023, Press Information Bureau (PIB), New Delhi published that “Geological Survey of India finds Lithium and Gold deposits: 51 Mineral Blocks including Lithium and Gold were handed over to State Governments” as issued by the Ministry of Mines. *It states that Geological Survey of India (GSI) has for the first time established Lithium inferred resources (G3) of 5.9 Million tonnes in Salal-Haimana area of Reasi District of Jammu & Kashmir (UT).* Disclosing only the quantity without the associated quality (Li or Li₂O) is an unprofessional way of declaring Mineral Resources. As India depends largely on imports of lithium and lithium-ion batteries, the discovery of Inferred Resources has raised huge hopes.

Informal sources revealed that based on 30 holes drilled in one (1) sq.km area, 5.9 Mt Inferred Resources (G3) of bauxite (?) were estimated with an average grade of 600 ppm Li (0.06% Li) at 200 ppm (0.02% Li) cut-off, with 3540 tonnes contained LI metal. This is understood to be high silica bauxite and might not be suitable for most alumina plants unless beneficiated while the uncertainties on the host mineral, the metallurgy etc. remain. Similar clay type Lithium bearing deposits in the USA contain over a Billion tonnes of Mineral Resources at >900 ppm Li, estimated at 400 ppm Li cut-off.

Following the PIB announcement there were several print and electronic media reports and interviews highlighting the magnitude (5.9 Mt Reserves) of Lithium findings in J&K(UT) and claiming that this discovery will propel India to the status of the second largest lithium- resource rich country. Such irresponsible usage of the terms ‘Reserves’ and ‘Resources’ interchangeably by the media is however understandable because they may be ignorant of the intrinsic implication of these technical terms primarily used by the mineral prospectors/ explorers, miners, global investors, stock exchanges, and regulators. Nevertheless, these terms convey definite meaning to these stakeholders and hence are used discretely.

Let us return to the topic ‘Lithium Inferred Resources (G3)’. The MEMC 2021 Rule 5 states, “at least Preliminary Exploration (G3) has been completed to establish *Inferred Mineral Resource* (333), which shall be considered *akin* to *Indicated Mineral Resource* (332)”. ***There is a genuine technical difficulty with this Rule.*** How can Inferred Resources (333) that are estimated based on ‘Preliminary Exploration’ could be akin to Indicated Resources (332) which are based on ‘General Exploration’ data! A block containing only Inferred Resources (333) can be auctioned as a composite Licence (PL cum ML) but not as Mining Lease. This deviation is a deliberate tuning made to auction the Inferred Resources blocks (333) as Mining Lease. As such, a Mining plan, which is mandatory for granting Mining Lease, cannot be prepared based on Inferred Resources (333).

On the other hand, the MEMC rules also state that the Inferred Mineral Resource (333) cannot be converted to Mineral Reserve but may be upgraded to Indicated Mineral Resource with additional information. The 5.9 Mt Lithium Inferred Resources (333) considered only the Preliminary Exploration data (G-axis) but not the other two major axes (Economic & Feasibility). Hence, they cannot be termed as Mineral Reserves. The Modifying Factors such as mining, processing, end use, cut-off grade, threshold value, metallurgical, infrastructure, economic, marketing, legal, and Environmental, Social and Governmental (ESG) are to be taken into consideration while converting Mineral Resources to Mineral Reserves.

In the case of Reasi, the following questions are yet to be answered. Will it be feasible to commence mining of the Lithium block in near future even after the block is successfully auctioned! Even after establishing technical feasibility and economic viability of the deposit, though seemingly far away from reaching such an optimistic inference, will it be possible to address the ESG factors amicably! Will it be advisable to mine in the ecologically fragile and seismically unstable Himalayas?

In light of the above, will it not be prudent for the government to create suitable protocols on the public reporting of results of mineral exploration projects. Mineral Resource (333 category) declared in an exploration project has lowest level of geological confidence. It does not demonstrate reasonable prospects for environmental-socio-economic viability in the near future, may be due to insufficient information. ***It will be premature to highlight such projects as major discoveries.***

- Editor

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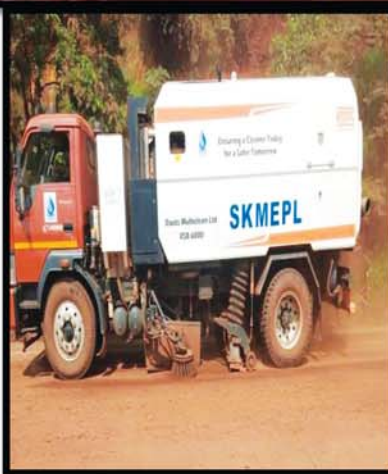
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NEWS FROM THE MINING WORLD

➡ Governments spent record \$1 trillion last year subsidizing fossil fuels

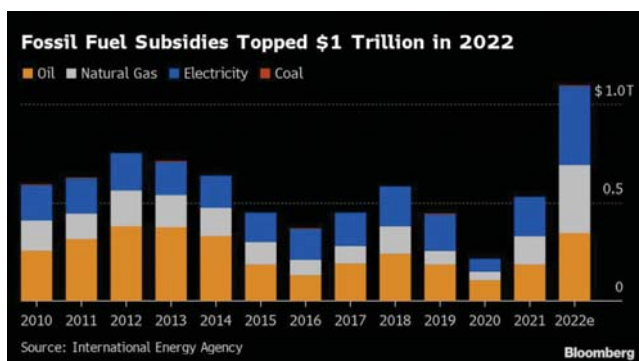


Even as global governments raise their ambitions to cut fossil fuels in the future, they spent a record \$1 trillion last year subsidizing energy sources that are the main driver of climate change.

That's the finding from the International Energy Agency, which estimates that the combined subsidies for oil, natural gas, electricity and coal hit an all-time high in 2022 as soaring energy prices crippled economies. It underlines the challenge for policy makers trying to grapple with the immediate threat of runaway fuel inflation, while still trying to push a shift to low-carbon sources.

The spending by governments in 2022 was more than double total global investment in renewable energy sources, according to figures from *BloombergNEF*. The splash of state cash on energy last year followed climate talks in November 2021 when world leaders pledged to end such subsidies.

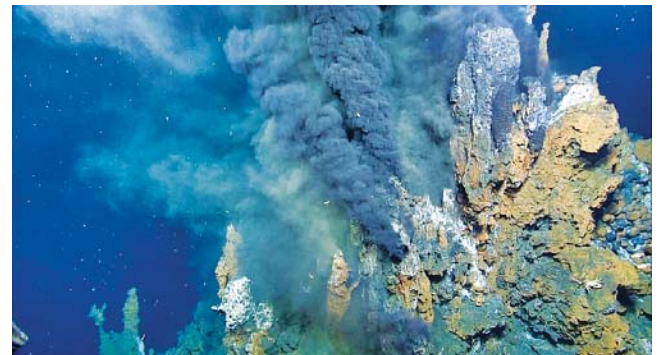
"The Glasgow Climate Pact emphasized that phasing out fossil fuel subsidies is a fundamental step toward a successful clean energy transition," the IEA said in its report. "However, today's global energy crisis has also underscored some of the political challenges of doing so."



The subsidies helped shield consumers from soaring energy prices as many economies were still recovering from the impact of the pandemic. As Russia cut supplies of natural gas following its invasion of Ukraine last year, the European Union spent \$349 billion to reduce consumer energy bills.

Bloomberg News | February 19, 2023

➡ Deep-sea mining would impact ecosystems beyond those in targeted areas – report



Mineral-laden water emerging from a hydrothermal vent on the Niuia underwater volcano in the Lau Basin, southwest Pacific Ocean. (Image courtesy of the Pacific Coastal and Marine Science Center, provided by the Okinawa Institute of Science and Technology).

An international team of researchers has published a study showing that the destruction of key hydrothermal vents by deep-sea mining could have knock-on impacts on vent fields hundreds of kilometres away.

According to the paper, which was published in the journal *Ecology and Evolution*, hydrothermal vents are extreme deep-sea environments that exist in geologically active areas on the seafloor. These vents, which are like underwater geysers, spew hot water filled with minerals out from cracks in the seabed. And despite the intense heat and pressure, these vent systems teem with strange and unique life. The creatures around these vents, such as crabs, shrimps and worms, all rely on bacteria, which use chemical energy from the vent to make biomass.

The chemical-rich waters that sustain life also make these environments an attractive target for deep-sea mining. When the chemicals that come out of the earth's crust meet the cold seawater, they precipitate and create chimney-like deposits on the seabed, called seafloor massive sulphides.

"These chimneys contain a high quality and quantity of gold, silver, copper and other rare earth minerals

that we need to feed our technology-hungry society,” Otis Brunner, first author of the study, said in a media statement.

Brunner pointed out that, despite the abundance of minerals and metals in such deposits, resource extraction destroys the creatures living there, and severely impacts those on nearby chimneys within the same hydrothermal vent site.

“Each hydrothermal vent often hosts some endemic species, meaning they only live there. So if you remove or severely damage their ecosystem, not only have you lost those animals, but you’ve lost that species entirely,” he said.

And now, Brunner’s research shows that the damage to hydrothermal vent ecosystems is also unlikely to be limited to just one single vent site, but could impact other vent sites hundreds of kilometres away.

Although hydrothermal vents seem isolated from each other, many hydrothermal vent species can actually disperse from one vent to another while in the larval stage, assisted by ocean currents. If they reach another vent and the conditions at the new vent are similar, then the creatures can settle and mature into adulthood.

This means that if a species population is wiped out at one hydrothermal vent, then the population of the same species at another hydrothermal vent, where the larval used to disperse to, will also be threatened.

In his study, Brunner looked at vent sites within three sub-regions of the Northwest Pacific—the Okinawa Trough, the Izu-Bonin Arc and the Mariana Trough. He inferred how connected each vent site was to the others by comparing how many species the vent sites had in common.

By creating networks from the species data, the researcher and his colleagues identified which vent sites act as essential hubs within each sub-region.

Two vent sites, Sakai and North Knoll Iheya Ridge, were found to be the most important for maintaining connectivity in the Okinawa Trough sub-region and should be prioritized for conservation.

“Unfortunately, the Sakai and North Knoll Iheya vent sites are situated in the central region of the Okinawa Trough, an area of particular interest for mining,” Brunner said. “But any disturbance to these two sites would have particularly strong impacts on all the species at hydrothermal events across Japan.”

For the Izu-Bonin Arc and Mariana Trench, Nikko volcano and Alice Springs were the most important hub, respectively. There is no current interest in deep-sea mining at these sites.

The study also identified pathways of connectivity linking both the Okinawa Trough and the Mariana Trench to the Izu-Bonin Arc. However, these linkages only occurred across a few hydrothermal vents, including the Daisan-Kume Knoll in the Okinawa Trough, situated within an area of mining interest. Based on these findings, the scientists concluded that mining activity here could cause a collapse in the network across the Northwest Pacific region.

Staff Writer, Mining.Com | February 20, 2023

➔ **Congo watchdog wants billions of dollars more From China infra deal**



Aerial view of the Chinese joint venture Sicomines copper and cobalt mining facility in Kowlezi, Democratic Republic of the Congo. Credit: Sicomines

The Democratic Republic of Congo’s government watchdog called for a major overhaul of the country’s \$6.2 billion minerals-for-infrastructure deal with China after its investigations found significant breaches of the 2008 agreement.

Congo hasn’t been adequately compensated for the copper and cobalt reserves it contributed to the venture, which undertook to finance \$3 billion of infrastructure projects using the proceeds of mineral sales from a \$3.2 billion mine, the General Inspectorate of Finance said. It called for the value of the investment in infrastructure to be increased “to at least \$20 billion in view of the value of the deposits transferred.”

While the mine is pumping out metal, the Chinese partners have only disbursed about \$822 million of infrastructure funding over 14 years, the IGF said in a summary of its findings published on its website on Feb. 15. “These works have remained, for the most part, without visible impact for the population,” it said.

The watchdog also accused the Chinese companies of financial malfeasance, including transfer pricing and dumping, and called for them to be fined \$100 million for breaching capital controls under the nation's mining code by not repatriating more than \$2 billion in export revenue.

The landmark agreement was signed at a time when Congo was struggling to secure financing after years of war. While the IGF has no legal power to enforce its recommendations, its report could bolster the current government's ongoing attempt to renegotiate the deal.

Congo has some of the world's richest deposits of copper and is the biggest source of cobalt, both key components of electric vehicles, batteries and other green-energy technologies. The central African nation has used its position as a strategic supplier of the minerals to push for better terms in many of its mining deals.

China Railway Group and Power Construction Corp. of China, whose subsidiaries control Sicomin, the copper and cobalt project at the heart of the deal, didn't respond to emails requesting comment.

Sicomines said it wasn't given the right to respond to the investigation, and the "unjustified criticism" threatened its operations. "The security of private investments, domestic or foreign, is guaranteed in the DRC and commitments made with regard to investors cannot be breached," it said in a statement posted on *Twitter* Friday.

Not credible

In a separate statement posted on *Twitter* Friday, China's embassy in Congo defended the partnership and said the IGF report "did not correspond to reality, cannot be considered credible, and has no constructive value."

"The Chinese government encourages the Chinese companies to work with their Congolese partner to improve cooperation by providing more benefit to the Congolese party and resolve disagreements through friendly and reasonable dialog," the embassy said. It added that it would "resolutely respond to any violation of the legitimate rights and interests of the Chinese companies."

The country's outgoing ambassador, Zhu Jing, stood by China's record in Congo in a message to *Bloomberg* last month, saying its companies were involved in more than \$11 billion of trade with the country last year and had created over 100,000 jobs.

Chinese companies have become major players in Congo's mining industry over the past decade, often taking over projects previously owned by Western companies.

Congo is set to hold elections at the end of this year, and President Felix Tshisekedi plans to make nationwide infrastructure projects a cornerstone of his campaign.

The IGF also called for:

- The Chinese partners to release \$1 billion in infrastructure funding this year.
- The accord to be amended, to ensure half of future infrastructure contracts go to Congolese companies.
- An audit of the completed infrastructure projects related to the agreement.

Bloomberg News | February 17, 2023

➔ ArcelorMittal warns on steel demand as China seen flatlining



Image courtesy of ArcelorMittal.

ArcelorMittal SA cautioned on the outlook for steel demand, noting the woes of the Chinese real estate sector and tighter monetary policy could drag on consumption this year.

Whether China will recover strongly after lifting tough coronavirus restrictions has been the key question for commodities markets. Industrial metals surged at the start of the year on bets of higher demand from the world's top consumer, but have since stalled as investors wait for concrete signs of a rebound.

China could see an expansion or contraction of 1% in steel demand, with the country's beleaguered property industry acting as a headwind, ArcelorMittal said Thursday in a statement.

"With continued weakness expected in real estate during the year, steel consumption is expected to

stabilize in 2023 with potential upside dependent on government infrastructure stimulus,” the company said.

Apparent consumption of steel outside of China — a key barometer of the world economy — is projected to increase 2% to 3% in 2023, after contracting in key regions last year, ArcelorMittal said. That will largely be driven by the rebuilding of inventories, while growth in real demand from consumers will face headwinds.

“As we look ahead, evidence suggests that the customer destock we saw in the second half of 2022 has peaked, hence providing support to apparent steel consumption and steel spreads,” ArcelorMittal chief executive officer Aditya Mittal said in the statement.

ArcelorMittal rose as much as 1.8% in Amsterdam trading, before trading 0.9% higher as of 9:40 a.m. local time.

ArcelorMittal, the world’s biggest steelmaker outside of China, saw earnings before interest, taxes, depreciation and amortization drop to \$1.26 billion in the final quarter of 2022, after a slump in demand forced it to idle some European capacity. That was slightly higher than analyst estimates. Lower prices and high energy costs, driven by the war in Ukraine, also eroded its margins.

Bloomberg News | February 12, 2023

➡ **Energy traders, flush with cash, are moving into crops and metals**



Image courtesy of Glencore Agriculture BV

After making more money than ever in the last few years, some of the world’s top energy traders are using the cash to expand in metals and agriculture.

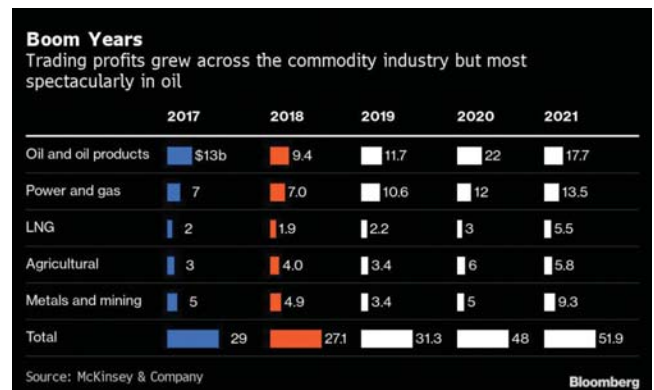
The bumper profits reaped from trading oil and gas have given them cash to invest and opportunity to

diversify into other commodities. Since last year Gunvor Group, Hartree Partners LP and Vitol Group hired crop or metals traders.

While it’s not the first time major energy merchants have leaned into such markets, there are several reasons their interest is rising now.

The energy crisis and Russia’s war in Ukraine fueled volatility that traders crave and underscored how one commodity can impact another — such as high gas prices curbing metals output and boosting fertilizer costs. Plus, metals like copper and lithium are crucial to the energy transition away from fossil fuels and a US renewable diesel boom is boosting crop demand, helping to connect commodity markets.

“It’s sensible diversification,” said Manish Marwaha, a commodities consultant and former strategy director at agri giant COFCO International Ltd. “Margins and revenues in agricultural and metals trading have proven resilient in recent years.”



A move into other commodities markets also makes sense for some major energy traders looking to recoup revenues lost from broadly exiting the Russian oil business, Marwaha said.

Energy trading — oil, gas, coal or power — largely remains the core focus of the top independent merchants. The push for now is on trading metals and crop derivatives — rather than dealing in physical supplies — to tap volatile prices.

Among recent hires, Ian Oxley joined Geneva-headquartered Gunvor from Freepoint Commodities late last year as the energy-trading giant takes a closer look as base metals. Gunvor also brought in Brad James and Jonathan Smith from Citigroup Inc. to trade agricultural derivatives as part of a clutch of appointments, according to people familiar with the matter.

Hartree, which has invested in a rapidly growing metals business, hired Dmitry Filatov, Marek Wright and Richard Lee to trade agricultural derivatives since last year. And top independent oil trader Vitol last year named Carl Desjardins to head an agricultural unit as it trades out of its Geneva and Houston hubs.

Gunvor and Hartree declined to comment.

There have been previous moves into such commodities that fizzled out, with Vitol and Gunvor both winding down forays into agricultural and metals markets more than six years ago. Mercuria Energy Group Ltd. built a book in mined concentrates from around 2015, before focusing on selective investments in battery metals.

Even with recent expansions, energy traders' presence in other commodities remains tiny compared with dominant players like Cargill Inc. in crops or Trafigura Group in metals.

But small positions can provide insight into cross-commodity trades — for example as energy and food sectors compete for crops amid an expanding biofuels market, according to McKinsey & Co. partner Roland Rechtsteiner.

“You’re basically dealing with similar counterparties,” he said. “Volatility is the key driver for profitability in the sector — the underlying mega-trend for which is the energy transition, which affects all asset classes.”

Bloomberg News | February 21, 2023

➔ **Sheep Creek deposit's rare earth samples exceed highest grades in US**



US Critical Mineral's Crowley Adit #3 at Sheep Creek, Montana, showing banded carbonatite exposed near the top of the right rib. Credit: US Critical Minerals.

US Critical Materials Corp. announced Tuesday that rare earth samples from 125 feet underground at its flagship Sheep Creek property in Southwest Montana report grades that exceed any other domestic rare earth resource.

The Salt-Lake City, Utah-based privately held company said results from Activation Labs in Ontario, Canada confirm over 10% of total rare earth oxides, (TREO) including high levels of neodymium and praseodymium.

The results included channel samples from two underground adits that were unsealed in October 2022 and sampled in November 2022.

US Critical Materials said the claims at Sheep Creek contain 12 of the most essential critical minerals needed for electrification and to establish a domestic supply chain, as North America's reliance on China for rare earths has become increasingly untenable.

The Sheep Creek project area is in Ravalli County, an hour from Darby, and is accessible by paved roads for 40 miles and then an additional 4 miles along all-weather gravel roads. US Critical Materials holds 223 lode claims on 4,700 acres. More than 50 carbonatite dikes have been identified in the prospect area.

In addition to high grades, the underground data shows a low thorium level — below 500 parts per million, which will negate the need for a Nuclear Regulatory Commission permit, likely speeding up the overall permitting process and will make extraction and processing easier, faster, and less damaging to the environment, Critical Materials executive director Harvey Kaye told MINING.com.

“What we believe is the differentiator between Sheep Creek and the other players is that these deposits are not 600 feet on the ground, but are more easily obtainable,” Kaye said.

“We have the ability to bring these online, we believe, a lot faster than most that talk 10 years, when the reality is that all the American automotive companies, the Department of Defense, [and] renewable energy sources need these products now.”

Geological phenomenon

Critical Materials president Jim Hedrick, a former rare earth commodity specialist for the USGS, said the combination of high-grade rare earths, low thorium, and carbonatites 125 feet below surface is a geological phenomenon that “does not exist in other reported US deposits.”

Hedrick said the pre-resource-stage deposit is valued at a “conservative” \$43 billion.

“Over the course of my career independently evaluating rare earth properties within the US, I have never encountered a property with the grades being generated by Sheep Creek,” Hedrick said.

Hendrik added that the company’s geologists found 50 carbonites over 800 acres, and they believe there is a ‘continuous source’ underground that ties it all together.

He pointed out that the rare earths at Sheep Creek support the production of Samarium Cobalt—alternative rare earth magnets used in aerospace, automotive and military applications such as sidewinder missiles, and added that if cobalt production comes online in Montana the results could be a “marriage made in heaven.”

“As we drill in different areas over the 50 carbonatites, hopefully it is continuous, because there is some similarities between all of the carbonatites, ancyrites, primarily, the main mineral...in some of the minor elements change on trend from northwest to the southeast... other elements, like gallium goes down, but then niobium goes up – but the rare earths are staying pretty much the same,” Hedrick said.

“That’s all a good indicator, and that there’s so many ... it’s not a small area, but its a lot of carbonatites for 800 acres,” Hedrick said. “It’s showing that there is probably a similar source for all of these – and that’s what we’ll be going out there to prove.”

A drilling program is slated for Q2 2023.

Amanda Stutt | February 21, 2023

➡ **Gecamines seeks to diversify into ‘transition’ minerals**



Gécamines offices in DRC’s capital, Kinshasa. (Image: Company’s website.)

Congo’s state mining company Gecamines plans to explore for minerals needed for the transition to a lower carbon economy, including lithium, tin, and rare earths, chairman Alphonse Kaputo Kalubi said on Tuesday.

Gecamines, which ranked among the world’s top copper and cobalt producers in the 1980s, also aims to boost production and “play in the big leagues” again, Kaputo said in a speech at the Investing in African Mining Indaba in Cape Town.

Gecamines, whose production peaked in 1986 at 486,000 tonnes of copper, wants to raise output to 100,000 tonnes of copper a year, Kaputo said. Gecamines produced 4,562 tonnes of copper and 19,907 tonnes of cobalt in 2022, provisional statistics from Congo’s central bank showed.

“Our geologists will aim to organize prospection campaigns on all our sites to look for lithium, tin, cobalt, coltan, titanium, wolframite, gold, rare earths, etcetera,” Kaputo said, as part of efforts to diversify Gecamines’ activities.

He invited investors to speak to Gecamines about “win-win partnerships” to exploit those metals.

Among the obstacles Gecamines faces are artisanal miners working illegally on the sites it owns, Kaputo said, adding that these wildcat miners “sell all their minerals to foreign buyers”.

Congo loses untold fortunes through the smuggling of resources including gold and tin, tantalum, and tungsten ores.

Industrial mines must systematically plan to work alongside artisanal miners, where possible, Kaputo said.

“That is crucial, as we can no longer tolerate the disgraceful conditions in which artisanal diggers work, and we can no longer tolerate that our state and Gecamines, whose concessions are illegally exploited, be robbed of their riches,” Kaputo said.

Reuters | February 7, 2023

➡ **Mexico President orders ministry to step up lithium nationalization**

Mexican President Andres Manuel Lopez Obrador on Saturday signed a decree handing over responsibility for lithium reserves to the energy ministry, after nationalizing lithium deposits last April.

(Continued on Page 31)

UPGRADATION AND AUGMENTATION OF LIGNITE RESOURCES IN THE STATE OF RAJASTHAN: THE PRE AND POST 2010 SCENARIO AND THE ROLE OF THE REFORMS IN LIGNITE SECTOR

Bijoy Ashish Sen^a and Bharat Singh Jodha^b

Abstract

The paper brings into fore the grim picture involving block wise non-upgradation of lignite resources of Rajasthan in the higher United Nations Framework Classification (UNFC) categories post 2010 as also augmentation of the lignite resources in the highest UNFC category of Measured. An investigation of the possible causes behind the said situation has also been attempted. The issue taking into account non-utilization of resources of those lignite blocks of Rajasthan the entire lignite resources of which stands completely upgraded to the highest category of Measured as per UNFC, has also been dealt with.

1.0 INTRODUCTION

Upgradation to the higher UNFC categories of mineral resources and its subsequent augmentation in the highest category of Measured as per UNFC is a prerequisite for exploitation of resources vide initiation of mining, consequentially aiding in national revenue generation. It is prudent to aver in this context that the real success of exploration is not savored unless and until the resource explored is exploited, ultimately leading towards generation of state revenue. Nonetheless, the post 2010 era has been witness to negligibly minimal activities concerning upgradation of lignite resources of Rajasthan in the higher categories in accordance with the UNFC version of 1997 (as followed by Geological Survey of India (GSI) for compilation of lignite resource data) and also of augmentation of lignite resources in the highest category of Measured. The causes behind the arising of such a scenario warrants to be investigated as also formulation of an exploration policy for lignite in Rajasthan that will assure mandatory upgradation of resources.

2.0 THE HARSH REALITY INVOLVING LIGNITE RESOURCES OF RAJASTHAN

The following facts bear testimony and conform to the harsh reality pertaining to lignite resource upgradation and augmentation in the highest category (Data source: Inventory of geological resources of Indian Lignite published by GSI, 2004-05 to 2021-22):

1. The augmentation of lignite resources in Measured category (331) has been at a staggering low (only **1.57 Mt**) for a period of **12 FYs** from **2010** to **2022**, while on the other hand, during the FYs spanning from **2005** to **2010** it was **523.55 Mt** for a period spanning only 5 FYs (refer figure 1 below).

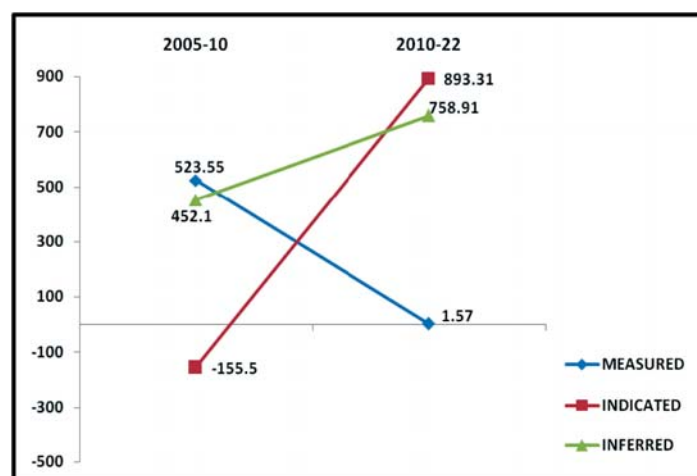


Fig-1: Lignite resource augmentation (in Mt) in Rajasthan as per UNFC categories pertaining to period 2005-10 and 2010-22

2. It is obvious from the figures-2 and 3 (given below) that the number and percentage of exploration blocks where resource has been augmented or upgraded or at least revised, in the Measured category, has been strikingly higher during the period spanning from 2005-10 (12 blocks and 85.71% of the total number of such blocks from 2005-2010) when compared with the period spanning from 2010-22 (only 2 such blocks and 14.29% of the total number of such blocks considered for the period spanning from 2010-22). Moreover, the total number of blocks considering resource augmentation/upgradation/revision in all the categories is 48 for the period 2005-10 compared to only 37 such blocks for the period 2010-22. Hence, from the said observations, it is evident that the said vibrancy concerning exploration in the Measured category is absent post 2010.

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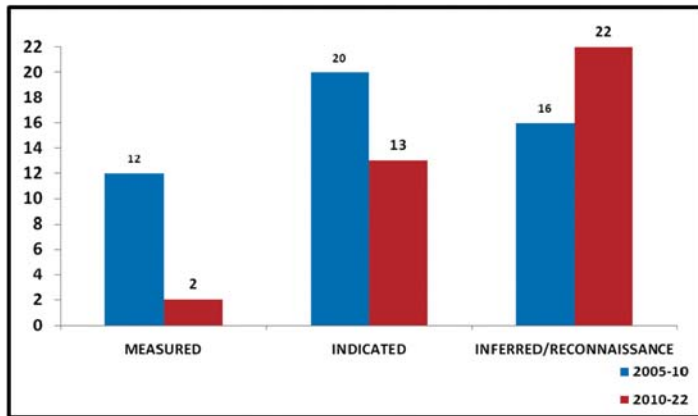


Fig-2: Number of exploration blocks with resource augmented/upgraded/ revised as per the UNFC categories pertaining to periods 2005-10 and 2010-22

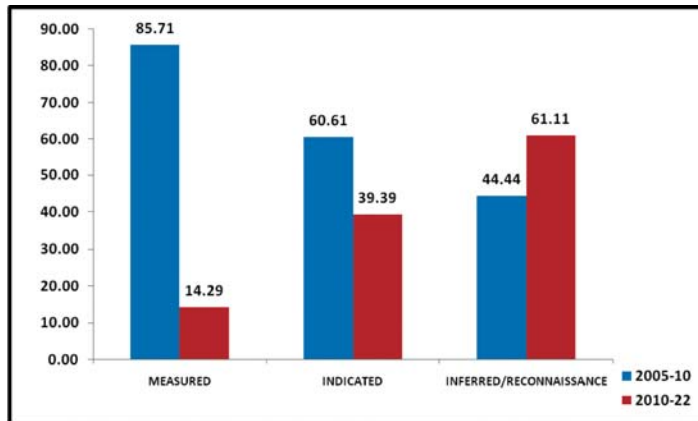


Fig-3: Percentage data concerning exploration blocks with resource augmentation/upgradation/revision as per UNFC categories pertaining to periods 2005-10 and 2010-22

3. The scenario involving upgradation of lignite resources (in Mt) in Rajasthan post 2010, from lower to higher UNFC categories (as per version of 1997 followed by GSI), has been dismal when compared with that pertaining to the period 2005-2010 (refer figure-4 below).

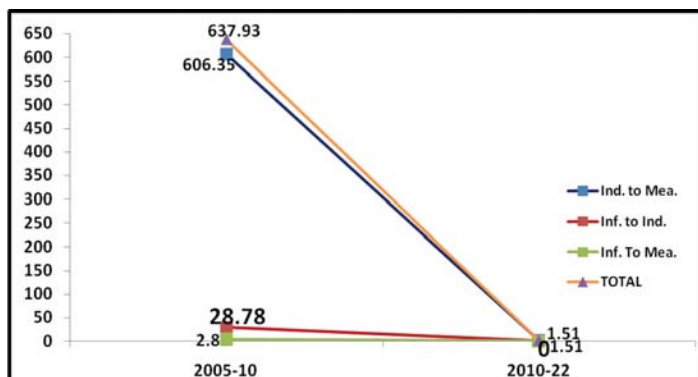


Fig-4: Lignite resource upgradation (in Mt) in Rajasthan as per UNFC categories

A resource of only **1.51 Mt** has been upgraded from Indicated (332) to Measured (331) category for the period spanning for 12 FYs from **2010 to 2022** while a total resources of **637.93 Mt** has been upgraded during a period of only 5 FYs spanning from **2005 to 2010** with the share of upgradation from Indicated to Measured being 606.35 Mt, Inferred (333) to Indicated being 28.78 Mt and Inferred to Measured being 2.8 Mt.

4. The vibrancy in relation to upgradation of resources in the pre-2010 period can also well be visualized from the negative peak pertaining to Indicated resources and complimentary positive peak pertaining to Measured resources, consequential to the reduction in the resource of Indicated category and increment in the resources of Measured category, resulting from resource upgradation (refer figure 5 below). A very similar state of affairs can well be construed even when percentage of resource augmentation per FY is considered (refer figure 6 below). As envisaged from figures-5 and 6, it is indeed displeasing that no resources in any of the categories were augmented for the 3 FYs spanning from FY: 2018-19 to FY: 2020-21.

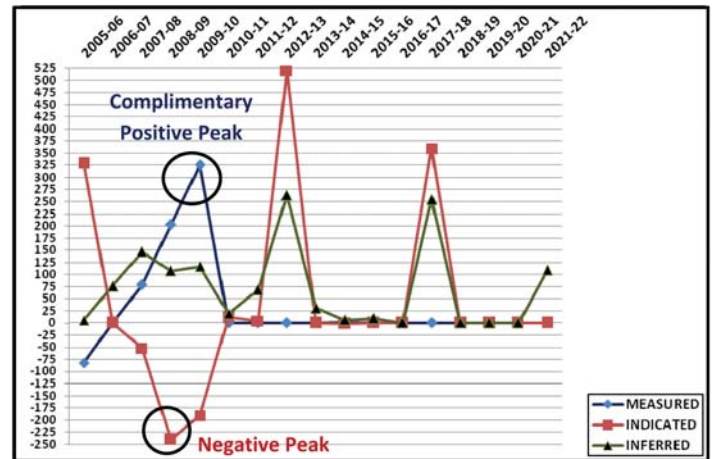


Fig-5: Year wise Lignite resource augmentation (in Mt) in Rajasthan as per UNFC categories

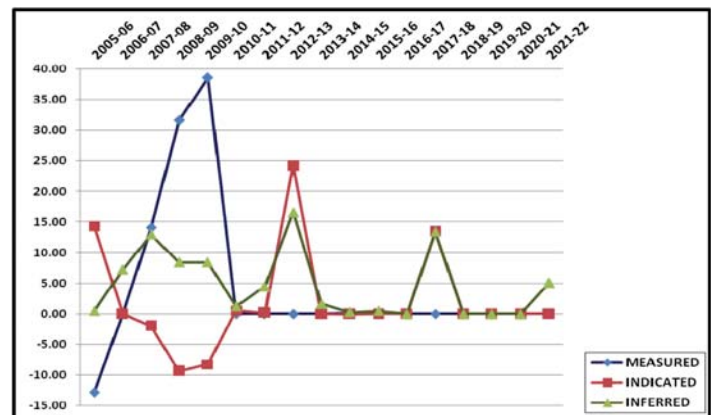


Fig-6: Percentage of Lignite resource augmentation per FY in Rajasthan as per UNFC categories

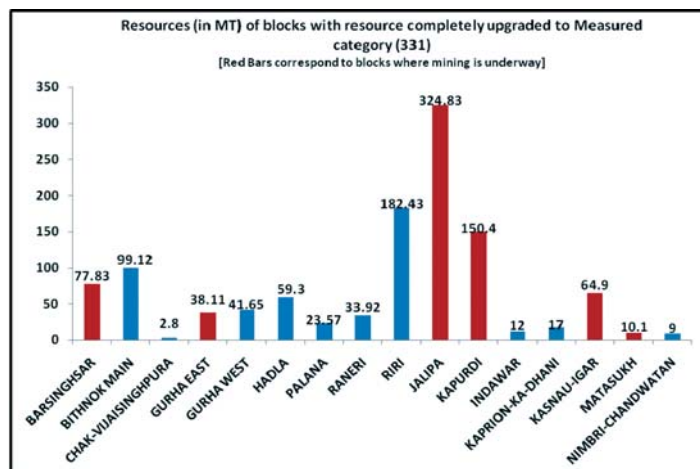
3.0 THE LIGNITE RESOURCES OF RAJASTHAN VIS-À-VIS EXPLOITATION

Currently in 16 lignite blocks in the state of Rajasthan, the entire resource stands completely augmented /upgraded in the Measured category only. The details of these blocks

are given below {Inventory of geological resources of Indian Lignite, published by GSI, 2022; Annual Report of Neyveli Lignite Corporation (NLC), 2021-22; Annual Report of Rajasthan State Mines and Minerals Limited (RSMML), 2018-19};

S. No.	NAME OF THE BLOCK	BASIN	DEPTH RANGE (m)	RESOURCES (Mt)	CURRENT STATUS
1	BARSINGHSAR	PALANA	0-150	77.83	Mining is under progress
2	BITHNOK MAIN	PALANA	0-150	43.28	NLC lease hold; No mining initiated. MoC has been requested to delink Bithnok Mine Project from Thermal Power Station in order to open up the mine for commercial operation (Annual report of NLC, 2021-22).
			150-300	55.84	
3	CHAK-VIJASINGHPURA	PALANA	0-150	2.80	Resource of low tonnage. No information available pertaining to block allocation and mining.
4	GURHA EAST	PALANA	0-150	33.81	Mining is under progress
			150-300	4.30	
5	GURHA WEST	PALANA	0-150	40.65	Pre-mining activities by RSMML; No mining initiated till date though the Government of Rajasthan is considering options as part of an ambitious road map for mining of lignite in this block (Annual Report of RSMML, 2018-19; The Hindu news dated January 03, 2022).
			150-300	1.00	
6	HADLA	PALANA	0-150	59.30	NLC lease hold; No mining initiated (Annual report of NLC, 2021-22).
7	PALANA	PALANA	0-150	23.57	Geological exploration & survey work in the block was initiated by NLC but could not be taken up due to resistance by villagers (Annual report of NLC, 2013-14).
8	RANERI	PALANA	0-150	33.92	Was considered for UCG pilot project by NLC, though nothing concrete has materialized till date (PIB Press Release dated November 13, 2013).
9	RIRI	PALANA	0-150	159.68	The block was taken up for development by NLC in 2005-06 but was forsaken in 2007-08, citing that the quantity and quality of lignite of this block might not be conducive for setting up pithead power plant. The block was placed for auctioning in 2022 but the tender process has been annulled since only one bid was received (Notice from MoC dated August 05 th , 2022).
			>150	22.75	
10	JALIPA	BARMER	0-150	224.28	Mining is under progress
			150-300	100.55	

11	KAPURDI	BARMER	0-150	150.40	Mining is under progress
12	INDAWAR	NAGAU	0-150	12.00	Allocated to private players by screening committee route but allocation cancelled by MoC in 2016 (MoC correspondences dated June 02, 2016)
13	KAPRION-KA-DHANI	NAGAU	0-150	17.00	In June 2011, DCM Shriram Consolidated Limited (DSCL) received environmental clearance from MoEF for carrying out lignite mining in this block (MoEF letter dated June 23 rd , 2011 on the said issue). However, mining has not yet been initiated.
14	KASNAU-IGAR	NAGAU	0-150	64.90	Mining is under progress
15	MATASUKH	NAGAU	0-150	10.10	Mining is under progress
16	NIMBRI-CHANDWATAN	NAGAU	0-150	9.00	Allocated to private players by screening committee route but allocation cancelled by MoC in 2016 (MoC correspondences dated June 02, 2016)



As revealed from the above details, mining operation has been initiated in only 6 such blocks and is yet to be initiated in 10 blocks with a cumulative total resource at 480.79 Mt (401.20 Mt within 0-150m depth range and rest beyond 150m depth). The scenario calls for immediate attention on the part of the Ministry of Coal (MoC), Government of India, the Government of Rajasthan (GoR) and the lease holders, concerning utilization of the resources of these 10 blocks, ensuring due utilization of this resource in the Measured category.

4.0 POST 2010 ERA - THE ERA OF REFORMS AND VERDICTS

Since 2010, multiple reforms and verdicts have impacted the coal and lignite sector mostly consequential to the *Indian*

Coal Allocation Scam that first unearthed during 2011 in the wake of the findings of the Odisha High Court. The major reforms, verdicts and measures, concerning the coal/lignite sector since 2010 are cited below:

- **Granting of RP, PL and ML through auction by competitive bidding was advised vide MMDR Amendment Act, 2010 (published on 09th September, 2010):** This amendment was effectuated in 2010 only, even before the *Coal Allocation Scam* surfaced (Gazette notification of 2010).
- **Coal Mines (Special Provisions) Act, 2015** (Gazette notification of 2015).
- **Coal Block Allocation Rules, 2017**, as a component within MMDR Act, 1957, was implemented (Gazette notification of 2017).
- **Lignite Blocks Development & Production Agreement 2015 (LBDPA):** This was the first time that a Contractual Agreement for Lignite was attempted in view of significant differences between Coal and Lignite. This has been made mandatory to be signed between the Central Government and the allocated company/corporation to ensure proper monitoring and development of allocated lignite blocks. During the exploration period and development of the blocks, the block allocates are required to achieve the milestones as set forth in the said agreement for carrying out the exploration and development activities (Answer by Minister for Railways and Coal on 27.12.2017 in Lok Sabha, pertaining to Question no. 1416)

- **De-allocation of some lignite blocks in Rajasthan:** This step taken by MoC lead to a feeling of insecurity amongst the leaseholders. The details concerning this have been discussed in subsequent section.
- **Issuances of notices** to the centre and state by Rajasthan High Court in late 2021, over revenue losses incurred to the state exchequer owing to leasing out of lignite mines to private players in violation of extant rules and regulations (The Times of India news dated November 19, 2021).
- **As per Coal Directory of India published by Coal Controller's Organization, no lignite blocks have been allocated in Rajasthan (also in Gujarat and Tamil Nadu) post 2010.** Though in 2013, *Nagurda-Joranda* block was earmarked to Government of Rajasthan for commercial mining and the *Bithnok Extension* and *Bapeau* blocks for Power sector on tariff based binding, these allocations did not finally materialize (Ministry of Coal Record Note, 2013 and Coal Directory of India, 2021).

5.0 WHY THE VIBRANCY CONCERNING UPGRADATION OF LIGNITE RESOURCES IN RAJASTHAN, WAS ABSENT POST 2010?

It indeed seems that a sense of insecurity was palpable amongst the leaseholders in the wake of the uncertainty that had cropped in consequential to de-allocation of 208 coal blocks allocated between 1993 and 2010. Though no lignite blocks featured in this list of de-allocated coal blocks, it is worthy of mentioning in this regard that in Rajasthan the *Mokala* block owned by RSMML was deallocated by the MoC in 2013 (Ministry of Coal correspondences dated December 12, 2013) while the leases for *Nimbri Chandvadan* and *Indawar* blocks allocated to Private players through screening committee route, were cancelled by MoC in 2016 (Ministry of Coal correspondences dated June 02, 2016). Such measures from the MoC have been definitely instrumental in raising suspicion and a sense of uncertainty in the minds of the leaseholders concerning the fate of the blocks allocated. The frequency and more particularly the shakiness that was in vogue as far as the dynamism in bringing reforms in the form of acts and rules that was triggered by the *Indian Coal Allocation Scam* is concerned, was definitely adding to their worries and was also responsible for infusing a state of confusion. The implementation of both *Coal Mines (Special Provisions) Act, 2015* and *Coal Block Allocation Rules, 2017*, in close succession, points towards this very issue. It can hence well be conceived that as a consequence, the leaseholders abstained from upgradation of resources post 2010 as is evident from the resource inventory data pertaining to the lignite rich states of Rajasthan, Tamil Nadu and Gujarat, thus resulting in negligible augmentation of lignite resources in Measured category (331). Another interesting facet concerning the issue of upgradation of resources for

the period spanning from 2005 to 2021, is that the blocks where resource was upgraded had resources augmented in FYs earlier (2004-05 at least as these blocks features in the inventory pertaining to 2004-05) to that in which the resource was upgraded. Resources were upgraded from Indicated (332) to Measured (331) category in a total of 4 blocks (3 blocks within 2005-10 and 1 block within the span of 2010-21) and from Inferred (333) to Indicated (332) in a total of only 2 blocks during the period of 2005-10 only. In only 1 block in FY 2005-06 however, resources have been upgraded directly from Inferred (333) to Measured (331) category. This aptly directs towards the conclusion that resource upgradation is a systematic process over time and not a sunrise enterprise and hence non-allocation of any blocks in Rajasthan post 2010 (Coal Directory of India 2020-21) is worthy of consideration as a factor for the emergence of the scenario of the said non-upgradation post 2010. The block-wise details pertaining to the upgradation of lignite resources in Rajasthan are cited below:

The immense importance of resource upgradation can well be adjudged from the fact that 2 thermal power plants in Rajasthan namely Barsingsar TPP in Bikaner and Jalipa Kapurdi TPP in Barmer, powered by lignite and whose achieved PLF in 2019-20 has been higher than national average (CEA Annual Report, 2021-22), meets its supply of raw material from the lignite mined at *Barsingsar*, *Jalipa* and *Kapurdi* mines, the entire block resources of which are currently categorized under Measured category only. In addition to this, the resources of five lignite mines out of the seven working lignite mines in Rajasthan, also stands completely upgraded in Measured category as on date (Inventory of geological resources of Indian Lignite published by GSI, 2021-22). It is worthy of mentioning that upgradation of resources from Indicated to Measured category in Jalipa block was carried out in FY 2009-10. In recent times, the Government of Rajasthan has engaged itself in preparing an ambitious road map for lignite mining from *Gurha West* block, the resources of which also stand presently classified only under Measured category (331) (*The Hindu* news dated January 3, 2022). The tender process for the five lignite blocks of Rajasthan namely Riri, Bapeau, Bigga Abhaysinghpura, Nagurda, Nagurda East and Nagurda West, that were placed for auction in 2022, have been annulled by MoC in the wake of receipt of insufficient bids (The Ministry of Coal notification dated August 5, 2022). It is worthy of mentioning that except Riri, none of these blocks have resources augmented in the Measured category and thus can well be presumed to be a reason for receipt of an inadequate number of bids.

Recently, the Government of Rajasthan has also decided to conduct a survey to assess the use of lignite as a long term solution for power production as an alternative to coal (*The*

Hindu news dated July 16, 2022). From these submitted facts, it is beyond doubt that for making resource exploitation a reality, the paramount importance of resource upgradation can in no way be ignored.

In light of the fact that upgradation of resources in the higher UNFC Category (as per version of 1997 being followed by GSI) is a prerequisite for the ultimate exploitation of the

lignite resource and with the block allocation process being aptly streamlined and stabilized, it is hereby asserted that a concrete lignite exploration policy from the side of the Government should be adopted which will mandatorily place the condition for resource assessment and subsequent upgradation (for potential blocks only), both periodically and on time by the leaseholders.

Sl. No.	BLOCK	BASIN	RESOURCE UPGRADED (Mt)					
			Indicated to Measured category	FY	Inferred to Indicated category	FY	Inferred to Measured category	FY
1	Bithnok Main	Palana	78.78	2007-08	--	--	--	--
			20.34	2008-09	--	--	--	--
2	Girirajsar	Palana	--	--	26.48	2007-08	--	--
3	Riri	Palana	182.40	2008-09	2.30	2008-09	--	--
4	Jalipa	Barmer	324.83	2009-10	--	--	--	--
5	Lalamdesar Bada	Palana	1.51	2014-15	--	--	--	--
6	Chak Vijaisinghpura	Palana	--	--	--	--	2.80	2005-06

6.0 Conclusion

With the ever increasing demand for power in the state of Rajasthan, exploitation of the Lignite resources of the state are of utmost significance and hence, a concrete and scientific exploration strategy that will ensure systematic exploration as detailed in this paper leading towards resource exploitation, is a necessity. Non-allocation of any lignite block in Rajasthan post 2010 by the MoC (Coal Directory of India 2020-21) has been responsible for the woos of the stakeholders involving the fate of lignite exploration in Rajasthan and hence has probably been a key factor for the said standstill witnessed concerning resource upgradation and augmentation in Measured category with the stakeholders refraining from indulging in resource upgradation activities. As highlighted vide figure-1 above, resource augmentation in the Measured category has been at a staggering low since 2010. The last 12 years starting from 2010 has been intensely gloomy as far as both resource *upgradation* and *augmentation* in *Measured* category regarding lignite resources of Rajasthan, is concerned. In this context, it is also worthy of mentioning that a clause concerning mandatory resource upgradation as discussed above, should be incorporated and may be made a part of LBDPA also. Moreover, the blocks with its resource completely upgraded in the highest category of Measured (as per UNFC version of 1997 being followed by GSI) but awaiting resource exploitation, may also be immediately dealt with. The task is cut out for the Governments at the

Centre and the State, to ensure the exit from this ominous situation prevalent in the lignite exploration sector of Rajasthan presently.

7.0 References

1. Annual Report of Neyveli Lignite Corporation (NLC), 2021-22.
2. Annual Report of Neyveli Lignite Corporation (NLC), 2013-14.
3. Annual Report of RSMML, 2018-19.
4. Answer by Minister of Railways and Coal on 27.12.2017 in Lok Sabha, pertaining to Question no. 1416.
5. CEA Annual Report, 2021-22.
6. Inventory of geological resources of Indian lignite, published by Geological Survey of India, 2004-05 to 2021-22.
7. MoEF letter dated June 23rd, 2011 granting environmental clearance to DSCL for mining in Kaprion-Ki-Dhani lignite block.
8. Notice from MoC dated August 05th, 2022 on the issue of annulling of the tender process for the lignite blocks of Rajasthan.
9. PIB Press Release dated November 13, 2013.
10. The Coal Directory of India, 2020-21.
11. *The Hindu* version dated July 16, 2022.
12. *The Hindu* version dated January 03, 2022.
13. The Ministry of Coal correspondences dated June 02, 2016 regarding de-allocation of Indawar and Nimbri-Chandvatan lignite block of Rajasthan.
14. The Ministry of Coal correspondences dated December 12, 2013 regarding de-allocation of Mokala lignite block of Rajasthan.
15. The Ministry of Coal notification dated August 05, 2022.
16. *The Times of India* version dated November 19, 2021.

GEOART RELATED TO MINING ACTIVITIES IN INDIA

Dr. A.K. GROVER*

Abstract

Any landform or landscape displaying the artistic view or aesthetic aspect forms a GeoArt. It is an emerging subject, which combines the essence of geoscience and art, and is meant for educational amusement. Surfing Google Earth has resulted in identifying many amazing GeoArts related to mining activities in India. These may display known objects, humanoid, animal or alien form in full or part. Some spectacular ones are described in this paper.

Key words: GeoArt, mining, India

1.0 Introduction

Satellite imagery provides many spectacular aerial views of the surface of Mother Earth having naturally-developed landforms and landscapes such as mountain/ hill, plateau, riverine plain, meander, delta, sandy tract, salt lake, glacier and snow, sea coast, lake, etc. Mining activity, a need-based human endeavor, commenced long past to extract minerals, metals and useful materials from the earth, also result in creation of anomalous to amazing landforms and landscapes on earth surface. When such landforms or landscapes are of artistic value or show some aesthetic nature, these become pieces of GeoArt. As geoscience and art played important roles in human life since sheltering in caves, science and art formed two wheels of any culture, providing it its marker characters. Paleolithic stone art and the Chalcolithic tools found in almost all countries form testimony to it.

GeoArt is an emerging subject dealing with earth's landforms and landscapes in an artistic manner so as to enhance their aesthetic aspect. Literally the word displays 'Geo' for earth (creations of Mother Nature) and 'Art' (human appreciation), thus merging both scientific and the aesthetic aspects of nature's creations. Peng (2000) defined the word 'Geoart' as 'study and appreciation of the beauty that is found in landforms, rocks, minerals and fossils of the earth', including features, irrespective of scale. Present concept of 'Geoart' came into prominence with the publication of book 'Earth as Art' by NASA (Friedl, 2012) displaying stunning images of earth landforms taken by satellites since 1960. The author had also identified a Geoart in Sariska Reserve Forest in Rajasthan through satellite imagery and published a Hindi article on it (Grover, 2013).

2.0 Mining and Artwork

It is true that mining every ton of mineral, metal or useful material does generate varied types of wastes together with degraded land and modified landscape in the area; more so when mining is of opencast nature. Large mine pits of famous diamond mines of Russia, Angola, Canada, Botswana and

South Africa form the objects of curiosity and art, especially when viewed from the sky-space.

Mining of minerals and metals in India is very old, the evidence of which is found in ancient cultures throughout Greater India including Indus Valley Civilization (Grover and Pandit, 2015). Myriads of old mine openings, mine debris/dumps and metallurgical remains present in almost all the States of our country form testimony to it. These traditions are still continuing in our country.

Present day mines are underground as well as of opencast nature, while the smelting activities are performed at large metallurgical plants. Majhgawan open-pit for diamond, lead-zinc-silver and copper open and underground mines at Agucha, Dariba, Kolihan-Khetri, Malanjkhand, Singhbhum and Zawar are well-known since long past. Gold mines are mostly located in Karnataka while coal and iron mines are concentrated in parts of Andhra Pradesh, Jharkhand, Chhattisgarh-M.P., Karnataka, Odisha and West Bengal. Lignite open-pit mines are located in Gujarat, Rajasthan and Tamil Nadu. Besides, there are large numbers of operative mines of non-metallic/ energy minerals and building materials viz. clay, feldspar, gypsum, talc, barites, silica sand, ochre, slate, limestone, sandstone, quartzite, marble, granite, sand, etc. Sand for construction purpose is being generated by crushers. Dr. Mack (1989) was the first to bring out many attractive aspects and features of the geology of the mining area and mining operations conducted by ancient Greek people; and showed their influence on the modern artwork.

3.0 GeoArt

Most of the mines create large open pits as well as generate large dumps of mine waste i.e. both 'negative as well as positive relief' features, which are visible on satellite images or aerial views. The other features associated with mining activities include water-filled pits of varying sizes with rocky and debris banks, large-sized benches in opencast pits, crushing and construction works, dumper tracks, etc. These

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Fig. 1 Geoart 'W', Singrauli

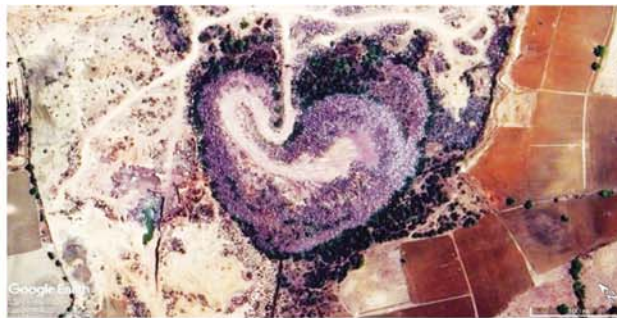


Fig. 2 Geoart 'Purple Heart', Shyamra



Fig. 3 GeoArt 'Relaxing Humanoid', Neyveli



Fig. 4 Geoart 'Standing Hmanoid', Zawar



Fig. 5 GeoArt 'Flowers', Bherda

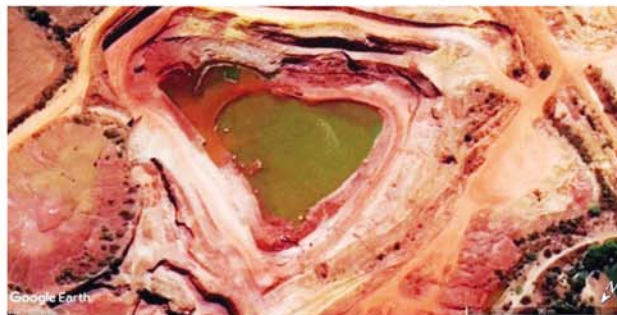


Fig. 6 Geoart 'Heart of Mine', Noamandi



Fig. 7 Geoart 'Animal', Jharia



Fig. 8 Geoart 'Lion Head', Jhamarkotra

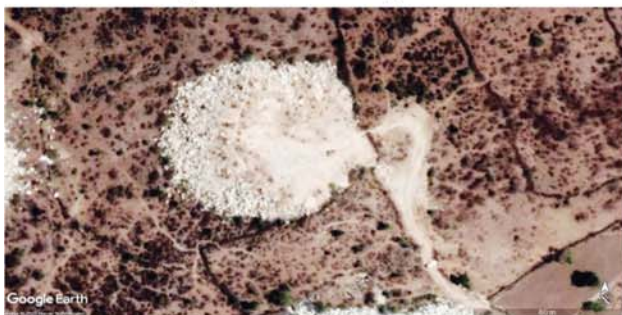


Fig. 9 Geoart 'Buddha', Atma



Fig. 10 Geoart 'Aum', Bhod

features at places change the landforms and landscapes in mining and adjacent areas; some of which, alone or in combination, get unusual to amazing shapes when viewed from the air or in satellite imagery or through Google Earth. When such landforms and landscapes attain and display artistic views in relation to any known object or show aesthetic aspects, these become GeoArts. It is observed that mine dumps often show GeoArts in the form of flower, tree or shrub, and rarely heart or animal shaped features. Block mining with mined out mineral blocks, cranes with dumps of crushed material cones, opencast mine benches and layering of large mine debris dumps especially when with plantations, form beautiful GeoArts.

By surfing the 'Google Earth' with zoom-in facility meticulously, the author could collect many spectacular GeoArts from various mining sites and adjoining areas located in different parts of India. Some good GeoArts were discarded owing to their low-pixel images. However, a few select ones are presented and detailed as below.

The regional disposition of contiguous coal mining blocks at Singrauli coalfield, Madhya Pradesh, exhibit a GeoArt displaying a perfect English word 'W' spread over 22 x 10 km (Fig. 1). The granite mine dump near Shyamra in Chhatarpur district, Madhya Pradesh develops into a 200 x 235 m sized beautiful GeoArt of 'Purple Heart' (Fig. 2). At Neyveli lignite area in Tamil Nadu the mine debris in pond water evolved as GeoArt of 'Relaxing Humanoid' with head size of 130 x 100 m (Fig. 3). Tailings of Zawar mine waste (Rajasthan), when accumulated over 740 x 1700 m span, forms an amazing GeoArt of 'Standing Humanoid' (Fig. 4). The stone crusher units (110 m apart) with bluish-grey crushed stones' circular accumulations display a lovely GeoArt of 'Flowers' (Fig. 5) at Bherda limestone mines, just north of Chittorgarh in Rajasthan. The shape of the iron ore mine located SSW of Noamandi in Jharkhand (Fig. 6) evolved into a beautiful GeoArt of 'Heart' of 80 x 100 m size. The open pit coal mine a km east of Jharia (Jharkhand) with its mine dumps develops an unusual Geoart, when viewed from Google Earth, as an 'Animal' (Fig. 7) with head size of 600 x 600 m. Jhamarkotra rock phosphate (Rajasthan) mine waste dumps developed into a 'Lion Face' of 200 x 170 m size (Fig. 8). The marble mine waste dump in Rajsamand area (Rajasthan) forms a lovely 'Buddha-like Humanoid Face' of 70 x 82 m size (Fig. 9). The continuous irregular pits of a limestone mine filled with rain-water is seen forming 'Aum', the sacred Hindu symbol, over 120 x 90 m span (Fig. 10) near Porbandar in Gujarat.

4.0 Discussion

GeoArt is an emerging subject of linking geoscience and art for educational amusement. It deals with the artistic views of the earth surface developed by the denudational agencies of Mother Nature as well as by human influence. These can be appreciated well when viewed from the air space. Searching

GeoArts at Google Earth is amusing at the beginning. With more and more surfing, one gets educated with the nature of landforms in the country as well as processes responsible for their development. The present paper forms a humble beginning to bring out the artistic and aesthetic aspects of landform-landscape features as GeoArts associated with mining activities in India. Besides those mentioned above, there are large numbers of such GeoArts available at mining sites in our country; probably waiting to be unearthed by the enthusiastic geoscientists, mining engineers and art lovers.

5.0 Acknowledgement

The author is grateful to the team 'Google Earth Pro' for providing the internet platform to surf and download the space images for free..

6.0 References

1. Dr. Mack, Erwin (1989) Ancient Greek mining and geology in modern art. *Mineral Wealth*, V.59, pp 59-64
2. Grover, A.K. (2013) Geoart (in Hindi); *Bhugaurav, Geological Survey of India*, V. 13, Year 2011-12, pp-vi
3. Friedl, Lawrence (2012) Earth as Art. New Release: 12-410, NASA
4. Peng, L.C. (2000) Geoart - Turning rocks into art. *Geological Society of Malaysia Annual Geological Conference*, Pulau Pinang, Malaysia, pp 183-187

OBITUARY



Shri L. M. Niranjana Murthy
LM- 3017 Bengaluru Chapter
18/04/1931 – 20/01/2023

MEAI wishes to announce the sad demise of Mr. L. M. Niranjana Murthy in Bengaluru on 20th January 2023 after a brief illness at the age of 92 years. Mr Murthy was attached to Bengaluru Chapter and was felicitated on 1st November 2021 on the Indian Mining Day since he was a senior member of the Chapter. He had served Bharat Gold Mines Limited for 31 years and had retired as Dy. General Manager (Engineering Services) in the year 1989. After his retirement from BGML, he served as the Principal of Golden Valley Institute of Engineering, Kolar Gold Fields for 3.5 years. Thereafter for a period of 1.5 years he worked as the Administrator in PES College, Bangalore and finally for a period of 8 years worked as Principal, NSVK- Sri Venkateshwara Polytechnic Bannerghatta, Bangalore. His involvement in the academic field was for 13 fruitful years. Mr. Murthy had an illustrious professional career, and he was known for his systematic work.

The members of MEAI pray the almighty for Sadgati of the departed soul and convey their heartfelt condolences to the bereaved family members of Mr. L.M.N. Murthy.

MINING ENGINEERS' ASSOCIATION OF INDIA

MEAI TECH SERIES – January 2023 (MTS-7)

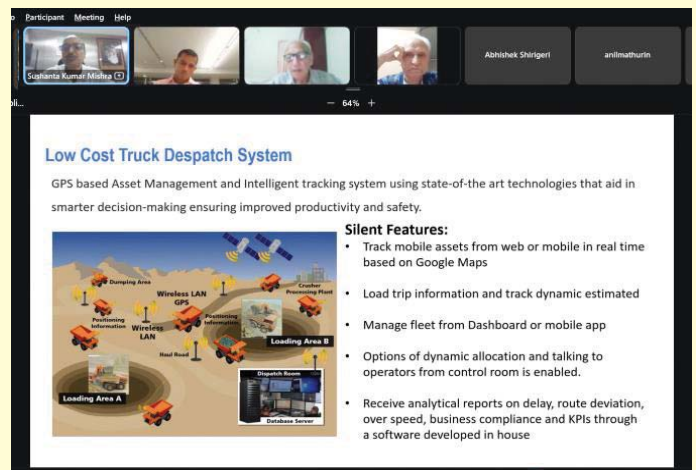
As a continual improvement in Training, Development & Programs, under the banner of the Training, Development & Program Committee of MEAI, with the backing and encouragement of the President, MEAI, Mr. K. Madhusudhana, MEAI presented the SEVENTH Disquisition in the Tech Series for the mining professionals on 27th January 2023 (Friday) at 06:30 pm Online on WebEx platform.

Mr Deepak Vidyarthi, Chairman TDPC extended a warm welcome to the participants as the President, MEAI Mr K. Madhusudhana in his opening remarks highlighted on the origin of MEAI TECH SERIES, invited the speaker Mr. Sushanta Kumar Mishra, Sr GM (Mining), Tata Steel Mining Ltd to share his experiences on a very important topic on **“Digitalization in Mine Operation”** and wished the presentation would be extremely fruitful, beneficial and helpful to the participants.

Mr Sushanta Kumar Mishra made an excellent presentation on **“Digitalization in Mine Operation”**. He highlighted the in-house development of Tata Steel Mining of Low Cost but effective Safety Management System, Workforce Safety Card, e-Sealing to prevent en-route theft of materials in Transportation, Fatigue Monitoring System, e-Work Permit System, Slope Stability Radar, Data Monitoring, Failure Prediction, Low Cost Truck Despatch System,

Remote Drilling Operation, e-Fuel Management System, Web Based Machine Health Monitoring, Drone Survey Application in Mines, Real Time Monitoring and Control of Water Quality, Digitalization of Water Management System, Flow meters and Level Sensor Installations at Site, e-Logistics System, Overall Digital Transformation and Sustainable Mining Operations!

With a very interactive session the Presentation concluded with a Vote of Thanks proposed by Mr T. R. Rajasekar, Consultant to the speaker for the wonderful disquisition for having taken pains for its preparation and to all the participants.



January **GLIMPSES OF MEAI TECH SERIES - 7** **2023**

Digitalization in Mine Operation
by
Mr. Sushanta Kumar Mishra
Sr GM (Mining) Tata Steel Mining

MINING ENGINEERS' ASSOCIATION OF INDIA

MEAI TECH SERIES – February 2023 (MTS-8)

Conditional Bias in Resource Estimation

As a continual improvement in Training, Development & Programs, under the banner of the Training, Development & Program Committee of MEAI, with the backing and encouragement of the President, MEAI, Mr. K. Madhusudhana, MEAI presented the EIGHTH Disquisition in the Tech Series for the mining professionals on 17th February 2023 (Friday) at 06:30 pm Online on WebEx platform.

Mr Deepak Vidyarthi, Chairman TDPC extended a warm welcome to the participants as the President, MEAI Mr K. Madhusudhana in his opening remarks highlighted on the origin of MEAI TECH SERIES, invited the speaker Dr. Abani R Samal, Principal Geo Global, LLC, USA to share his research & concepts on a very important topic on “Conditional Bias in Resource Estimation” and wished the presentation a grand success.

Dr Abani R Samal made an excellent presentation on “Conditional Bias in Resource Estimation”. He highlighted the stepwise process in Resource Estimation: Data collection; Geology model; Data analyses; Grade estimation.

Various factors in Grade estimation were discussed. He explained conditional bias as the difference between the expected grade and the estimated grade that occurs mainly due to interpolation and explained the reasons for conditional bias as too many samples, wide spread areas and the size of the block, citing examples of Iron, Copper and Gold.

With a very interactive session, the Presentation concluded with a Vote of Thanks proposed by Mr T. R. Rajasekar, Consultant to the speaker for the wonderful disquisition for having taken pains for its preparation and to all the participants.



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NOMINATIONS FOR MEAI AWARDS 2023

The Mining Engineers' Association of India presents awards sponsored by the Industry/individuals during Annual General Meeting in July - August every year. Nominations for the following Awards are invited in the prescribed form, so as to reach the Secretary General by **30th of April 2023**. Nomination can be made by one member for one award only.

1. MEAI - Sitaram Rungta Memorial Award for the best paper on Mining related issues during the year 2022.

AWARD Bylaws:

- a. The award is known as MEAI – Sitaram Rungta Memorial Award, instituted by M/s Rungta Group of Mines.
- b. The award is presented to a Mining Engineer/ Geologist or any other qualified person involved with Mining Industry, who presented a paper on mining related issues during the previous calendar year/ financial year.
- c. The papers presented in any of the paper meetings, seminars or workshops organized by the Association/ Chapter during the calendar year are eligible for the award, provided
 - i. The paper was not published in any journal/ magazine in India or abroad
 - ii. The author did not deliver lecture/ talk related to this paper on any other forum.

2. MEAI NMDC Award for significant contribution to Iron Ore Industry during the year 2022.

AWARD Bylaws:

- a. The award is known as MEAI-NMDC Award instituted by M/s NMDC Ltd.
- b. The award is presented to a Mining Engineer/ Geologist or a qualified person involved in Mining Industry for the meritorious services rendered by him/ her to the Iron ore Industry.

3. MEAI Simminds Award for significant contribution to limestone industry during the year 2022.

AWARD Bylaws:

- a. The award is known as MEAI – SIMMINDS award instituted by M/s SOUTH INDIAN MINES AND MINERALS INDUSTRIES Ltd.,

- b. The award is presented to a Mining Engineer/ Geologist or a qualified person involved in Mining Industry for his/ her significant services rendered to the Limestone industry.

4. MEAI Smt. Bala Tandon Memorial Award in recognition of contribution to Mining Industry for improving ecology, environment and a forestation during the year 2022.

AWARD Bylaws:

- a. The award is known as MEAI - Smt. Bala Tandon Memorial Award instituted by Padmabhushan G.L. Tandon in memory of his late wife.
- b. The award is presented to a Mining Engineer/ Geologist or a qualified person associated with the Mining Industry, in recognition of his/ her meritorious services for improving ecology, environment and afforestation in mining and mineral industries.

5. MEAI Abheraj Baldota Memorial Gold Medal Award (Mining Engineer of the year 2022) in recognition of significant contribution to Mining Industry by a Mining Engineer with 20 years of experience in the Industry.

AWARD Bylaws:

- a. The award is known as MEAI – Abheraj Baldota Memorial Gold Medal Award (Mining Engineer of the year) instituted by M/s MSPL Ltd., in memory of its founder late Abheraj Baldota.
- b. The award is presented to a Mining Engineer with a Degree or Diploma in Mining Engineering and Mine Manager's Certificate of Competency with 20 years of experience in mining and allied disciplines as on the date the nomination is forwarded and the nominee should have completed 45 years of age and contributed substantially to the mining and mineral industries in the areas of management performance, production, mining technology, human resource development, protection of environment, mineral conservation, beneficiation etc.

6. MEAI Abheraj Baldota Memorial Gold Medal Award (Young Mining Engineer of the year 2022) in recognition of significant service to Mining Industry by an Young Mining Engineer who has not completed 35 years of age as on 2021.

AWARD Bylaws:

- a. The award is known as MEAI – Abheraj Baldota Memorial Gold Medal Award (Young Mining Engineer of the year) instituted by M/s MSPL Ltd., in memory of its founder late Abheraj Baldota.
- b. The award is presented to an Young Mining Engineer with a Degree or Diploma in Mining Engineering or a Manger's Certificate of Competency with five years' experience in mining industry and the nominee should not have completed 35 years of age as on the date of filing his nomination for the award.

7. MEAI-SRG Informational Technology Award for the year 2022, In recognition of significant contribution to Mining Industry adopting Information Technology during the year 2022.

AWARD Bylaws:

- a. *The award is known as S.R.G. Award for Information Technology, instituted by M/s S.R.G. Consulting Mining Engineers (P) Ltd. in memory of late Sriram Srinivasan and late Pradeep Kumar Bhattacharya both founder directors who lost their lives in Train (Rajdhani Express) accident in the year 2002.*
- b. *The award is presented to a qualified Mining Engineer/ Geologist/ a qualified person for his significant contribution in Information Technology to Mining and Mineral Industries and the nominee should be a Life Member of the MEAI.*

8. MEAI-Smt. Gullapalli Saraladevi Memorial Award (Lifetime Achievement by a Mining Engineer) during the year 2022.

AWARD Bylaws:

- a. *The award is known as MEAI – Smt. Gullapalli Sarala Devi Memorial Award for Life time achievement by a Mining Engineer, instituted by Shri G. Jagdeesh in memory of his late wife.*
- b. *The award is presented to a Mining Engineer with a Degree or Diploma in Mining Engineering or a Manger's certificate of competency with at least 30 years' experience in mining industry.*
- c. *The award is presented for the Life Time Achievement of the mining engineer in the areas of production, quality control, processing/ beneficiation and trading besides overall management of mines, mining projects related to Public and Private Sectors during his service period.*

9. MEAI Master Tanay Chadha Memorial Geologist Award for the year 2022 in recognition of significant contribution by a geologist in the field of Mineral Exploration, quality control and production, mine planning etc. during the year.

Award Bylaws:

- a. *The award is known as MEAI – Master Tanay Chadha Memorial Geologist Award instituted by Shri G.L. Tandon (Padma Bhushan) in the name of his late grandson (S/o Smt. Sunita Chadha and Shri Sudhanshu Chadha). The award is presented to a geologist with a Master's Degree in Geology/ Applied Geology/ Geophysics with at least five years' experience in Mining and Mineral Industry who had contributed significantly in the areas of mineral exploration, quality control and production, mine planning, etc.*

10. MEAI- Smt Veena Roonwal Memorial Award for the year 2022 to a Mining Engineer/Geologist/a qualified person involved with Mining Industry with 10 years' experience for presenting a paper during the year in a seminar/ symposium workshop organized by MEAI on "Water Management in and around a working mine" or "Implementation of New/Latest Technology in Mining and allied subjects.

AWARD Bylaws:

- a. *The award is known as Smt. Veena Roonwal Memorial Award instituted by Prof. G.S. Roonwal in memory of his late wife and is presented to a qualified Mining Engineer/ Geologist/ a qualified person involved with Mining Industry with 10 years' experience, for presenting a paper during the year in a seminar/ symposium/ work shop/ technical paper meeting organized by MEAI/ MEAI Chapter on "Water Management in and around a working mine or implementation of New/ Latest Technology in mining.*

11. MEAI- Smt Kiran Devi Singhal Memorial Award for the year 2022 only to a person (MEAI Member/Non-member- need not necessarily be from mining discipline) for his/her contribution in the field of "Development and Conversation of Minerals and Environment" in and around Metalliferous mines (excluding Coal and oil) during the year 2022.

AWARD Bylaws:

- a. *The award is known as MEAI - Smt. Kiran Devi Singhal Memorial Award instituted by Dr. Suresh C. Singhal in memory of his late mother.*
- b. *The award is presented to a person (MEAI member or non-member and he need not necessarily be from mining discipline) for his/ her out-standing contribution in the field of "Development and Conservation of Minerals and Environment in and around metalliferous mines (mines excluding those of Coal and Oil).*
- c. *The award consists of a Medal and a Certificate.*

12. MEAI Award to a best paper in Mining article published in the Mining Engineers' Journal in the financial year 2022 - Instituted by Dr. M.L. Jhanwar.

AWARD Bylaws:

- a. The Award will be known as Eco-friendly Mining Award.
 - b. The Award will be for the financial year.
 - c. The Award will be given to a person for contributing the best paper on Eco-friendly Mining in Mining Engineers' Journal published by MEAI.
 - d. The Awardee may be member of MEAI or non-member.
 - e. The paper should not have been published in any of the journals in Magazines India/ Abroad.
 - f. Whoever contributes paper in MEJ on Eco-friendly Mining should become eligible to be considered for the award.
- b. The awards are presented to a Mining Engineer, Geologist, Mechanical Engineer, Overman/ Foreman or a qualified person involved in Mining Industry for the meritorious services rendered by him/ her to the coal industry.
- ❖ For detailed guide lines please visit website www.meai.org and memorandum of association and rules and regulations (as on 01.03.2018)

13. MEAI-SCCL Coal Award for the year 2022 to a Mining Engineer, a Geologist, a Mechanical Engineer and a Foreman/Over man for meritorious contribution to the Coal Industry.

AWARD Bylaws:

- a. The awards are known as MEAI- SCCL Coal Awards instituted by M/s SCCL Ltd.

Applications and Guide Lines

Application must be supported by at least two council members and shall be sent to MEAI NHQ in Prescribed Format (Copy Enclosed) at Hyderabad before 30th April 2023. (MEAI NHQ Address: Mining Engineers' Association of India, F-608&609, VI Floor, Raghava Ratna Towers 'A' Block, Chirag Ali Lane, Abids, Hyderabad – 500001. Mob – 7780117320).

Applications are to be sent along with enclosed soft copies in (PDF format) with subject.

MEAI Awards 2023
to email: meai1957@gmail.com



MEAI Award Format

1. Name:
2. Date of Birth:
3. Academic Qualification:
4. Professional Qualification:
5. Whether a Member/ Life Member of MEAI:
6. Applying for which award:
7. Specific details of the award applied:

**for as per requirement of bylaws
(Enclose relevant documents)**

Date:

**Certified that I know Mr/ Ms. _____ personally
and his/ her application is forwarded for consideration.**

**Chairman, MEAI Chapter _____ (or) Council Member, MEAI Enclosed
copies of documents on experience and achievements.**

- i.
- ii.
- iii.

(Continued from Page 14)

During an event in Sonora, Lopez Obrador signed the decree that orders the energy ministry “to take the actions necessary to carry out” the nationalization process.

It also declares 234,855 hectares (907 square miles) in Sonora as a mining zone known as Li-MX 1.

“(Let’s make) the nation be the owner of this strategic mineral,” Lopez Obrador said during the event.

Mexico holds important potential lithium deposits, a highly sought material for the production of electric vehicle batteries.

Studies suggest Mexico may have some 1.7 million tonnes of lithium. While close to a dozen foreign companies have active mining concessions that aim to develop potential lithium deposits, Lopez Obrador has said all of them will be “reviewed,” which has cast a cloud over the sector’s future prospects.

“What we are doing now ... is to nationalize lithium so that it cannot be exploited by foreigners from Russia, China or the United States,” Lopez Obrador said at the event.

Last week, the chief executive of the state-run company for lithium production, Pablo Taddei, told *Reuters* that Mexico was open to partnerships but that the federal government would have a majority stake in any future joint venture.

The decree published Saturday by the economy ministry said that “the rights and obligations of the holders of mining concessions in force that are within the lithium mining reserve zone remain safe.”

It adds that “no mining activity related to lithium” can be carried out within the reserve but gave few additional details.

Reuters | February 19, 2023

► **Uganda to set up state mining firm, take equity in licences**

The Mbarara region, Uganda. (Image by neiljs, Flickr).

The Ugandan government has started to set up a national mining company that will aim to take equity stakes of up to 15% of all medium and large scale mining operations in the country, the minister for energy and minerals said on Tuesday.



Reuters | February 21, 2023

Ugandan geologists say the country has large deposits of a range of minerals including gold, cobalt, copper, iron ore, rare earths, vermiculite and phosphates. The country is also aiming to start pumping crude oil in 2025 from fields in its west.

The establishment of a state-owned mining firm and commercial state participation in the sector are part of wide-ranging reforms under a new mining law enacted last year.

The new company will be called Uganda National Mining Company (UNMC), minister Ruth Nankabirwa Ssentamu said in a statement.

“State equity participation will be in medium and large-scale mining of up to 15% participatory equity interest at no cost to the government,” she said.

The state-owned firm will help the government get as much value as possible from minerals, Ssentamu said. She did not say when the government would complete setting up the company.

Under the new law, all mining licences are to be awarded on a competitive bidding basis as opposed to the previous ‘first come, first serve’ criteria, she said, adding that applications would be filed online, a move that would improve efficiency and transparency.

Last year, Uganda said aerial exploration, followed by geophysical and geochemical surveys and analyses, had showed the country had an estimated 31 million tonnes of gold ore, from which an estimated 320,158 tonnes of refined gold could be extracted.

Reuters | February 21, 2023

➡ **G-7 and EU looking at ways to track and trace Russian diamonds**

Group of Seven nations and the European Union are discussing ways to track Russian diamonds across borders, a move that could pave the way for restrictions on their trade in future, according to people familiar with the matter.



Russian diamonds. (Image by Ptukhina Natasha, Wikimedia Commons.)

Previous EU attempts to sanction Russian gems have run into resistance from importer nations such as Belgium who argue that the effort would be futile because transactions will simply shift elsewhere without a mechanism to trace precious stones.

A diamond's origin is clear at the start of the supply chain when it is issued a certificate under the Kimberley Process, which was designed to end the sale of so-called blood diamonds that financed wars. But after that they can become difficult to track.

Cut and polished stones are often intermingled at trading houses and the original certificate will be replaced with "mixed origin" documentation, making it near-impossible to keep track of where Russian diamonds are eventually sold.

The US has sanctioned the Russian mining giant, Alosa PJSC, which accounts for about a third of the \$80 billion global trade in rough diamonds. But the measures have had limited impact as much of the trade flows through other markets such as India.

The people with knowledge of the G-7 and EU discussions said a solution is not imminent, because tracing polished diamonds in a global market is extremely complicated. Still, two of the people said the G-7 could issue a statement on the matter as early as next week as part of the effort to maintain pressure on Russia as its war in Ukraine approaches the one-year mark.

Bloomberg News | February 19, 2023

SRI BK MOHANTY FELICITATED



Sri. Bijoy Krishna Mohanty (BK Mohanty) was felicitated on 24-2-2023 at his residence by Sri Pankaj Satija, Chairman Bhubaneswar Chapter on behalf of MEGECON, Hospet on the advice of MEAI President Sri Madhusudhana and conveyed him best wishes of all MEAI members.



FIRST AID TRAINING AT HYDERABAD

Mining Engineers Association of India has been granted approval for Imparting training on **First Aid and to issue Certificate by DGMS Vide Letter no. DGMS/OH/First Aid/02/2023/02/04 dated 23-2-2023.**

Mining Engineers Association is starting First Aid Training classes from 24-3-2023 to 2-4-2023 at Flat no.608&609, Rgahava Ratna Towers, Chirag Ali Lane, Abids, Hyderabad 500001.

Application forms are available on our website www.meai.org or write to meai1957@gmail.com for a soft copy of the application. Please fill in the relevant details in the application and send to meai1957@gmail.com

For further details, please contact:

MEAI office: Mob 7780117320
M Narsaiah, Secretary General : Mob 7382087618
M S Venkataramaih, VC Hyderabad Chapter: Mob 9398431318

SECRETARY GENERAL
MINING ENGINEERS' ASSOCIATION OF INDIA



4th IN-PERSON PROFESSIONAL TRAINING PROGRAM ON IMIC

24-28 April 2023

MEAI HQs, Hyderabad

Mining Engineers' Association of India (MEAI), the trusted voice of the Indian mineral industry, is the leading Professional Organisation (PO) recognised by the National Committee for Reporting Mineral Resources and Reserves in India (NACRI). MEAI accepts the obligation of offering professional development programs to its members, registering Competent Persons (CP) and supervising their ethical conduct. NACRI is the National Reporting Organisation (NRO) of India recognised by the Committee for Mineral Reserves International Reporting Standards (CRIRSCO).

The earlier three on-line training programs on IMIC were successfully concluded by NACRI in January 2021, April 2021, and April 2022 with the participation of over 25 professionals in each program, representing the mining companies, consulting companies and individuals from across the country and overseas. Most of the participants have successfully completed the training program and more than a third of them have registered as Competent Persons (RCP) with MEAI.

Prerequisites for registration of CP

RCP has been defined under Clause #9 of IMIC 2019 as follows:

RCP is a mineral industry professional who is a member of a professional organisation headquartered in India and approved by NACRI or a member of a 'Recognised Professional Organisation' (RPO), as included in a list of similar bodies headquartered outside India available on the NACRI website. These organisations have enforceable disciplinary processes including the powers to suspend or expel a member. An RCP must have a minimum of ten years professional experience, which includes five years relevant experience in the style of mineralisation or type of deposit under consideration, and in the activity which that person is undertaking.

In addition to the above minimum professional experience required by the MEAI members for registration as RCP, the NACRI, vide Article 2.2.ii, further specifies that the potential RCP shall obtain at least 40 hours of mandatory professional development credits before making an application for registration and for certificate renewal every year the RCP should obtain at least 8-hour credits through participation in seminars, conferences, workshops, training programs or webinars, recognised by NACRI.

Accordingly, those eligible mineral industry professionals in India interested in registering as Competent Person under IMIC should be a Life Member of MEAI, attained at least 10 years of professional experience and acquired 40 hours of mandatory professional development credits on IMIC from the NACRI organised training program, at the time of making application to MEAI.

RCP certification shall be valid for a period of one year from the date of issue of the certificate and the same may be renewed thereafter. The annual CP registration as well as the renewal fee has been fixed at Rs 5,000 (Rupees five thousand only + GST @ 18%) and payable to MEAI.

Professional Development Program on IMIC

The fee to attend the mandatory IMIC training program may be paid online. The fee chargeable for the 5-day in-person non-residential training program is Rs. 25,000 (Rupees twenty five thousand only) plus applicable GST @18% and payable to:

Account Name: **MEAI-National Core Committee Fund**

Bank Name & Address: **UCO Bank, Abid circle, Hyderabad**

S/B Account No: **14410110037089**

IFSC: **UCBA0001441**

NACRI has formulated a 40-hour (5-day) IMIC in-person non-residential training program, which every prospective RCP must undergo before applying for an RCP certificate. This IMIC training course conducted by domain experts includes sharing of basic knowledge on all relevant aspects of IMIC and Code of ethics, mineral industry Best Practices, and general guidance to the prospective RCP. Key topics articulated in the IMIC training program are:

- Introduction to CRIRSCO/ MEAI/ NACRI Charter/ IMIC/ Code of Ethics
- Scope of IMIC
- Competence and Responsibility
- Reporting Terminology and Standard Definitions
- Reporting of Exploration Results and Exploration Targets
- Classification and Reporting of Mineral Resources
- Classification and Reporting of Mineral Reserves
- Reporting of Coal Exploration Results, Resources and Reserves
- Scoping, Pre-feasibility and Feasibility studies
- Emerging topics covered in CRIRSCO 2019 Template and PERC
- Table 1 (If Not why Not Table) and QA/QC
- Industry Best Practices

Every RCP should have successfully accomplished a 40-hour mandatory training program on IMIC prior to making an application for renewal of RCP. Subsequently, the RCP may renew the certificate by obtaining a minimum of 8-hour professional development credits every year by attending NACRI accredited seminars/ workshops/ conferences/ training programs/ webinars and paying the renewal fee. The MEAI Headquarters shall maintain the records of each trainee/ RCP and provide the same to the MEAI RCP Registration committee.

Professional development program schedule

The NACRI Core group shall conduct the 40-hour in-person IMIC non-residential training program under the direction of Dr A. Srikant / Mr T.R. Rajasekar, the founder members of NACRI. **The 4th IMIC in-person non-residential training program will be held during 24-28 April 2023 in the state-of-the art Conference facilities available at MEAI Headquarters, Hyderabad.** Working lunch, tea & snacks twice a day and cocktail dinner on the inaugural day are included in the course fee.

Contact details

Interested mineral industry professionals may please contact the Secretary General, MEAI at meai1957@gmail.com / Phone no. 040-66339625/ 040-23200510 or **Dr. A. Srikant** at mgsrikant@gmail.com / **Mr. T.R. Rajasekar** at shekar.thotapalli1952@gmail.com for more details on this training program.

Dr PV Rao

Co-Chair NACRI, editor.mej.meai@gmail.com

MEAI NEWS

MEAI HEADQUARTERS

Shri. D. B. Sundara Ramam, Vice President – III visited MEAI, HQ on 9-2-2023. Shri. M. Narsaiah, Secretary General and Shri. B S P. Raju, Jt Secretary cum Treasurer received him.



Welcoming Shri. D. B. Sundara Ramam with a bouquet



(R-L): Shri. D. B. Sundara Ramam, Shri B S P. Raju and Shri M Narsaiah

AHMEDABAD CHAPTER

Mine Visit & Half-Day Seminar at GMDC Ltd, Bhavnagar

Bhavnagar local center of Ahmedabad Chapter had conducted a Half-day seminar on “Slope Stability- Failure causes and Remedial measures” & mine visit on 28th December 2022 at VT Center, Surkha (N) Lignite Mine Bhavnagar. Members from GMDC, GPCL & GHCL attended the seminar. A mine visit was organized to better understand mining technology and other safe practices adopted by Mine. Following activities were covered during the visit:

- Mining surrounding the geologically disturbed area (barren area measuring 10,000 sq. m) in the southern part of the mine was shown and described. Lignite was not found in the barren area and lignite surrounding the barren area is of low thickness and with high dip in all directions.
- Mining of the north pit where the lignite was submerged in water was explained. Stability of working, dump benches and dealing of water seepage and slurry was an issue. Lignite mining was taken up in a small area by dewatering, making the benches stable by supporting them with dumbbells at regular intervals.
- Use of hard strata material to make barriers in waterlogged areas, slurry areas and for making

approach roads in wet areas. The water usually was drained out through hard strata material and only semi solid silt remains in the sump area. This silt was later on spread over the bund to dry out with time.

- A successful arrangement to guide seepage water from benches, using barrels and pipes, where it is not possible to make and maintain drain in the north pit was explained by Shri B K Mahato, GM (Project), GMDC.



Mines Visit

Mine visit was followed by a Technical Session. Welcome address was delivered by Shri SK Mathur, Mine Manager, Surkha (N) Lignite Mine. Shri BK Mahato, General Manager (Project) and Convener, Bhavnagar Local center shared very useful information on slope stability. Shri Dhanajay Kumar, Vice Chairman-II & Sr. General Manager GHCL, presented a keynote address and shared knowledge regarding remedial measures for slope stability in mines. He shared the recommendations given by scientists from IIT who have visited GHCL Mines in reference to preparation of scientific study report. As per the recommendations, water shall not be accumulated in benches. Seepage water shall be guided through drains and collected in designated sumps. Seminar was also organized in virtual mode. Shri SN Mathur, Vice president-I, also attended the seminar virtually and encouraged the participants by sharing his valuable knowledge.



From L to R, Shri S K Mathur, Sh. Dananjay Kumar presenting keynote address Sh. B K Mahato addressing the seminar Shri Dhananjay Kumar, Shri B K Mahato, Shri Y K Singh



Address by Shri YK Singh Paper presentation Paper presentation

Two papers were presented on the topic.

1. Shri Sanjeev kumar Pandey, Safety officer – GHCL

- Types of failure
- Slope stability

2. Shri SK Mathur, Mine Manager-GMDC Ltd.

- Slope stability failure causes and remedial measures
- Summary of scientific study
- Case study of critical area dealing

Shri YK Singh, Mine Manager- GPCL delivered a speech related to slope stability –Failure Causes and remedial measures in mines. Participants of the Seminar shared practical experiences & discussed various issues on slope stability.

Key points of discussion were as under:

1. For stability of benches dumping shall be avoided in water logged and slurry areas.
2. Seepage water from benches shall be collected in sumps through drains to make them stable, as wet benches lose strength and may collapse anytime.
3. Various valuable materials in overburden like Bentonite clay, hard strata black cotton soil etc. shall be removed and stacked separately for further appropriate use.
4. Presence of Bentonite makes weak zone in benches and is one of the causes of failure. Therefore, it was suggested to remove Bentonite type material and stacked separately. It can be used for capping purposes to prevent water entering the dump or working benches.
5. In external dumps, top soil shall be removed before starting dumping to make the area stable.
6. Strike length of the mine shall be limited as suited to the soil present. Excess length may cause failure of benches as well as dump.

Seminar was moderated by Shri PA Aboti, Manager (Electrical). Vote of thanks was presented by Shri SN Patil, Sr. Manager (Geology), GMDC. Seminar concluded with dinner.





Presentation of Mementos to speakers



View of audience

3rd Executive Committee Meeting of Ahmedabad Chapter

3rd Executive Committee Meeting of MEAI Ahmedabad Chapter was held on 14.01.2023 at 7:00 pm at Hotel Courtyard by Marriott Ahmedabad. The meeting was attended by Shri SN Mathur Vice President-I MEAI, Shri AK Garg, Council Member MEAI, Shri HK Joshi, Chairman Ahmedabad Chapter, Shri AK Makadia, Vice Chairman-I, Shri Dhanajay Kumar, Vice Chairman-II, Shri Swagat, Ray Executive Member, Shri RK Das, Executive Member and Ms. Gunjan Pande, Secretary.

Shri HK Joshi welcomed all the members and discussed various programs. Minutes of the Meeting of 2nd EC, its ATR, and Minutes of the Election committee meeting were discussed and approved by the house.

Shri SN Mathur briefed about the National Seminar held at Kothagudem and the approval accorded by the National Council for organizing the International Seminar by Ahmedabad Chapter along with MEAI National AGM & Council meeting. The EC had proposed a new committee for the Chapter, for the term 2023-25 and planned to conduct the elections in the forthcoming days and targeted it to be completed by April 2023.

It was informed that the Chapter is undertaking Membership Drive. In the year 2022-23, 73 new members have been enrolled and 12 more membership applications have been submitted to MEAI Headquarters for approval. Planning of the scheduled International Seminar was done with the

formation of an Advisory Committee & Organizing committee. The meeting ended with a vote of thanks proposed by Ms. Gunjan Pande and followed by family dinner.



Executive Committee members of Ahmedabad Chapter



Families joining the event

Blood Donation Camp by Ahmedabad Chapter on the eve of Republic Day

To celebrate the Republic Day, in a true sense, a blood donation camp was organized by Ahmedabad Chapter on 25. 01.2023. The camp was held at GMDC Corporate Office.

The members of the Chapter, employees of GMDC, GIDC have joined in the noble cause. Around 23 Volunteers have valuably contributed. The Camp was done in collaboration with the Red Cross Society of Ahmedabad. Few Century Donors (who have donated their blood more than 100 times) from Ahmedabad were also present to motivate the public.

Shri SN Mathur VP-I and senior officials of GMDC congratulated all the Volunteers and encouraged the Chapter with their presence. The Volunteers were honored with Certificates.



Shri Swagat Ray, Shri SN Mathur (Middle), Ms. Gunjan Pande(R) with Century Donors, Red Cross Team & Volunteers



Shri SN Mathur & Dr Gurdeep Singh (standing) with volunteers



Volunteers of GMDC & MEAI members in Blood Donation Camp

BAILADILA CHAPTER

New Executive Committee

The Bailadila Chapter conducted a meeting on 06/02/2023 and elected the following New Executive Committee unanimously.

- Chairman : Shri. Vinay Kumar
- Vice Chairman : Shri. B Venkateswarlu
- Secretary : Shri. Anil Kumar
- Jt. Secretary : Shri. M M Quraishi
- Treasurer : Shri. Pawan Malav
- Executive members : 1) Shri. Rajesh Kumar Kondu
2) Shri. Rajan Bharati
3) Shri. Jai Tiwari
4) Shri. Pawan Kumar
5) Shri. Alok Ranjan

RAJASTHAN CHAPTER-UDAIPUR

Report of Technical Talk

Rajasthan Chapter-Udaipur organized a technical talk on 14th February, 2023 at 6:00 PM on "A Case History of Kimpe Copper Deposit DRC" in the Rajasthan Chapter-Udaipur office. Eminent speaker *Dr NN Singh*, Ex Chief Manager-Geology (HZL) delivered a lecture on the above subject covering through power point presentation.

In the starting *Shri MS Paliwal*, Chairman of the Chapter delivered a welcome address and apprised about the activities of the Chapter and informed about technical talks that would be continued as usual.



(L to R) Shri Asif M Ansari, Secretary, Shri MS Paliwal, Chairman, Dr NN Singh, Ex Chief Manager-Geology (HZL), Shri RP Gupta, Former President MEAI & Shri AK Kothari, Former President MEAI

Dr NN Singh told that the DRC is recognized for its rich metallic mineral potential, This has been exploited only in parts and over limited periodic phases. The known potential mineral occurrence list is extensive, but the real exploration and exploitation list on a global scale is only just beginning.

Kimpe deposit is lying on the famous Lufilian arc known to host significant Copper mineralization, located 100 km SE of Lubumbashi, capital city of Katanga province. Drilling indicates the deposit extends at least 2.5 km west and approximately 5-6 km north and south of the area investigated in this study. The Central African Copper belt, which stretches across the border between Zambia and the Democratic Republic of Congo (DRC), is one of the largest sediment-hosted stratiform Cu-Co provinces in the world. These sediments are believed to have accumulated in an intercontinental rift which was subsequently closed during a protracted period of folding and thrusting,

As a case study he said that a total of 12966.8 m of drilling in 109 bore holes has been drilled and 14934 samples have been analysed. Drilling has been done at a 50 m interval for the whole strike length, intersecting the ore body at 25 m and 50 m vertical depth. Further drilling has been done at 100 m interval to intersect ore body at 100 m depth followed by additional drilling at 300 m interval to intersect ore body at 150 m and 200m depth to identify potential of the deposit and establish geological continuity in depth. The structure of the area is a Reclined Fold plunging at 550 due S 500 W. Looking to the 'Z' shaped folds it appears that the Kimpe deposit occurs in the western limb of a major Anticline whose closure may be further in the North-West which is not seen.

The main sulphide/ non-sulphide minerals include chalcopyrite, pyrite, pyrrhotite, malachite, azurite, covelite and bornite. Mineralization occurs in the form of veins, disseminations, patches and along a bunch of fractures having multiple orientations. Copper mineralization occurs in dolomites and the mineralization is stratified as well as occurring along cleavages parallel to S1/S2. Sulphide mineralization appears below 50 m to 60 m depth from surface. The shape, size and grade of the ore-body are likely to undergo changes with depth but looking at the litho-structural behaviour, it may be accepted that these changes may not be totally unsystematic. Pinching and swelling of the ore-body would be part of their normal behaviour.



Sh A. K. Kothari, former National President MEAI told in his address that regular such activities should be continued

The program was nicely and effectively conducted by Dr SK Vashisth, Joint Secretary, and MEAI Council Member. The Technical Talk was a grand success and attended by around 45 participants. Vote of thanks was proposed by Prof S S Rathore.



Felicitation of S/Shri Rajneesh Purohit and Dr NN Singh by providing Memento & Uparna



A view of a section of Audience present in Technical Talk



Talk conducted by Joint Secretary Dr S K Vashisth

Minutes of Fourth (4th) Executive Committee Meeting

Minutes of Fourth (4th) Executive Committee Meeting held on 7th January, 2023 at 6:00 PM at MEAI, Office, Indraprasth Complex, Delhi Gate-Shastri Circle, Udaipur. (Session year 2022-2024)

The Fourth Executive Committee Meeting of the Chapter was held on 7.0.2023 in the Chapter's Office. Since, Shri MS Paliwal, Chairman of the chapter was not well, the Executive members decided to chair the meeting by the Senior most member Shri RP Gupta. following members were present.

1. Shri RP Gupta - In Chair
2. Shri AK Kothari - Former President, MEAI
3. Shri Akhilesh Joshi - Patron
4. Shri Praveen Sharma - Vice-Chairman
5. Dr SS Rathore - Council Member
6. Shri YC Gupta - Ex-Chairman
7. Dr SK Vashisth - Council Member & Joint Secretary

8. Shri Asif M Ansari - Secretary
9. Shri MK Mehta - Treasurer
10. Shri SN Mali - Executive Member
11. Shri AK Porwal - Member
12. Shri SL Sukhwal - Member
13. Shri SM Ahmed - Member
14. Shri RP Mali - Member

At the outset Shri RP Gupta, Chairman of the meeting welcome all the executive members. Shri Asif M Ansari, Secretary started the proceedings with the permission of chair.

1. Third executive committee meeting was held on 24.12.2022, the minutes were readout by the secretary and because of the emergency meeting on 7.1.2023 most of the agenda were pending. However, the detail discussion was held on the technical talk and it was decided that a panel of the persons presenting technical talk will be framed. Shri SN Mali, Shri Asif M Ansari, Shri SM Ahmed, Shri Praveen Shriarma, Shri MS Paliwal will deliver the technical talk in coming months.
2. During the third committee meeting it was decided that year 2023 being Silver Jubilee Year celebrated on 5th July with great joy and enthusiasm and 25 years of journey of Chapter Shall be highlighted. In that meeting, it was decided to celebrate with AGM on 5.7.2023.

However, during the 4th Executive Committee meeting held on 7.1.2023 again the celebration of Silver Jubilee was discussed at length and members were of the view to celebrate silver jubilee function more technical,

memorable by organizing National Seminar/ Workshop/ Council Meeting/Cultural program may be solemnized. In order to organize silver jubilee year memorable, it was decided to elect core committee under the chairmanship of Shri Praveen Sharma, Vice-Chairman of the Chapter who will decide the activity of Silver Jubilee Celebrations. This will be further deliberated on how to celebrate gracefully with own resources.

3. The tenure of present elected Council members of the Chapter Dr SS Rathore & Dr SK Vashisth will be ending in August 2023, the Executive Committee decided the following two Council members for the term of 2023-2025.
 1. Dr SS Rathore
 2. Dr SK Vashisth

All the executive committee members congratulated both of them.
4. It was decided to increase the remuneration of Shri Satya Narayan Joshi, Office Assistant from Rs.11000 per month to Rs.15000 per month and Shri Chunni Lal, Office boy from Rs. 4000 per month to Rs. 5000 per month.



Members present at 4th Executive Committee Meeting

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 editormejai@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 MEJ February 2023 issue

- 1. Which Indian company promotes "Sustainable Mining for a Renewable tomorrow"**
(a) NALCO (b) MOIL
(c) HZL (d) OMC Ltd
- 2. How much of DR Congo's cobalt production comes from artisanal miners?**
(a) 10% (b) 20%
(c) 30% (d) 40%
- 3. What is the expected coal production of India in FY'24?**
(a) 900 Mt (b) 957 Mt
(c) 987 Mt (d) 997 Mt
- 4. Where the mineral Elalite is found ?**
(a) Earth (b) Meteorite
(c) Mars (d) Moon
- 5. Which MEAI Annual Award is presented in recognition of work presented in an MEAI seminar/ symposium/ workshop on 'Water management in and around a working mine'?**
(a) MEAI-Smt. Veena Roonwal Memorial Award (b) MEAI-Smt. Gullapalli Saraladevi Memorial Award
(c) MEAI-Smt. Kiran Devi Singhal Memorial Award (d) MEAI-Smt. Bala Tandon Memorial Award

WINNERS OF RIDDLES PUBLISHED IN THE MEJ FEBRUARY 2023 ISSUE

Congratulations to proud winners

Mr Deepak Vidarthi

National Council Member MEAI
E-mail: vidyarthikud@hotmail.com

Mr GVVG Krishnarao

Email: gvgvkrao@gmail.com

Dr. Shobhana Dey

Senior Principal Scientist, CSIR-National Metallurgical Laboratory, Jamshedpur
Email: shobhanade@gmail.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

25 Mar 2023: One day seminar on MINING SENARIO - POST REFORMS. Location: The Institution of Engineers' (India) Auditorium, Ambedkar Veedhi, Bengaluru-1. Organized by Bangalore Chapter. Contact: Mr N Rajandran, Secretary Bangalore Chapter at 9449819341 or meaibengaluruchatper@gmail.com

14-16 Apr 2023: 4th Conference on ADVANCED TECHNOLOGY IN EXPLORATION AND EXPLOITATION OF MINERALS. Location: Jodhpur. For details, Contact: Mr A.K. Jaiswal on Mob: +91 9414163343, E-mail - ashjais.64@gmail.com, meai_jodhpur@yahoo.co.in

24-28 Apr 2023: MEAI-IMIC Training program (in person) by NACRI. A Mandatory training program for registration of Competent Person under IMIC. Location: MEAI Headquarters Auditorium, Hyderabad. For more details, please contact: Secretary General, MEAI. Mob: 9177045204/ 7382087618. Email: meai1957@gmail.com

14-15 Jul 2023: International Seminar on Food and Energy Security through Minerals. Location: Jaipur. For details, Contact – Mr Anil Mathur on Mob 9414119227, E-mail: chairman.jaipur@meai.org & meaijpr2010@gmail.com

25-27 Aug 2023: International Seminar on Vision – Mining 2047. Location: Ahmedabad. For details, contact Email - meaiahmedabad@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

4-5 Mar 2023: International Conference on Mining and Refining of Metals ICMRM. Rome, Italy. Website URL: <https://waset.org/mining-and-refining-of-metals-conference-in-march-2023-in-rome>

4-5 Mar 2023: International Conference on Mining Intelligence (ICMI 2023). Rio de Janeiro, Brazil. Website URL: <https://waset.org/mining-intelligence-conference-in-march-2023-in-rio-de-janeiro>; Contact URL: <https://waset.org>

5-8 Mar 2023: PDAC 2023. The annual PDAC 2023 Convention – the world's premier mineral exploration and mining convention. Metro Toronto Convention Centre, 222 Bremner Blvd., Toronto, Ontario, M5V 3M9, Canada

22-23 Apr 2023: International Conference on Recent Developments in Mining Technologies ICRDMT. London, United Kingdom. Website URL: <https://waset.org/recent-developments-in-mining-technologies-conference-in-april-2023-in-london>

22-23 Apr 2023: International Conference on Mining and Mineral Technologies (ICMMT 2023), Tokyo, Japan. Website URL: <https://waset.org/mining-and-mineral-technologies-conference-in-april-2023-in-tokyo>; Contact URL: <https://waset.org>

3-4 May 2023: International Conference on Mining Technologies and Sustainable Systems ICMTSS. Rome, Italy. Website URL: <https://waset.org/mining-technologies-and-sustainable-systems-conference-in-may-2023-in-rome>

4-5 May 2023: 17 International Conference on Mining Technology and Exploration (ICMTE 2023). Amsterdam, Netherlands. Web: <https://waset.org/mining-technology-and-exploration-conference>

29-31 May 2023: MetPlant Conference 2023. Perth, Australia and online. Contact AusIMM. T: 1800 657 985 or +61 3 9658 6100 (if overseas)

15-16 Jun 2023: International Conference on Mining and Metallurgical Technologies (ICMMT 2023). Toronto, Canada. Website URL: <https://waset.org/mining-and-metallurgical-technologies-conference-in-june-2023-in-toronto>; Contact URL: <https://waset.org>

26-29 Jun 2023: 26th World Mining Congress. Resourcing Tomorrow-Creating Value for Society. Brisbane, Queensland, Australia. Contact: Kristina Liska, Event and Registration Coordinator at registration@wmc2023.org

16-17 Aug 2023: International Conference on Mine Mechanization and Mining Policies (ICMMMP 2023). Tokyo, Japan. Website URL: <https://waset.org/mine-mechanization-and-mining-policies-conference-in-august-2023-in-tokyo>; Contact URL: <https://waset.org>

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

28-29 Oct 2023: International Conference on Mining Technology and Exploration (ICMTE 2023). Paris, France. Web: <https://waset.org/mining-technology-and-exploration-conference-in-october-2023-in-paris>

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>

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ESG-READY SINCE 1961

Our founder Abheraj Baldota's core operating principle was 'I am not the owner of wealth, but a privileged trustee to serve the community with it'. Thus it is no surprise that ESG practices are ingrained in our corporate ethos, business strategy and operations since our birth in 1961.

We were the first Indian unlisted company to publish a GRI compliant sustainability report way back in 2006. We are a large producer of renewable power in India. We were also the first mining company in India to get certified for OHSAS 18001:1999 and ISO 14001:2004. Across the years, we have invested more than ₹820 Crore in ESG. From building blood banks to adopting villages and combating climate change, we have been practicing ESG long before it became a buzzword.

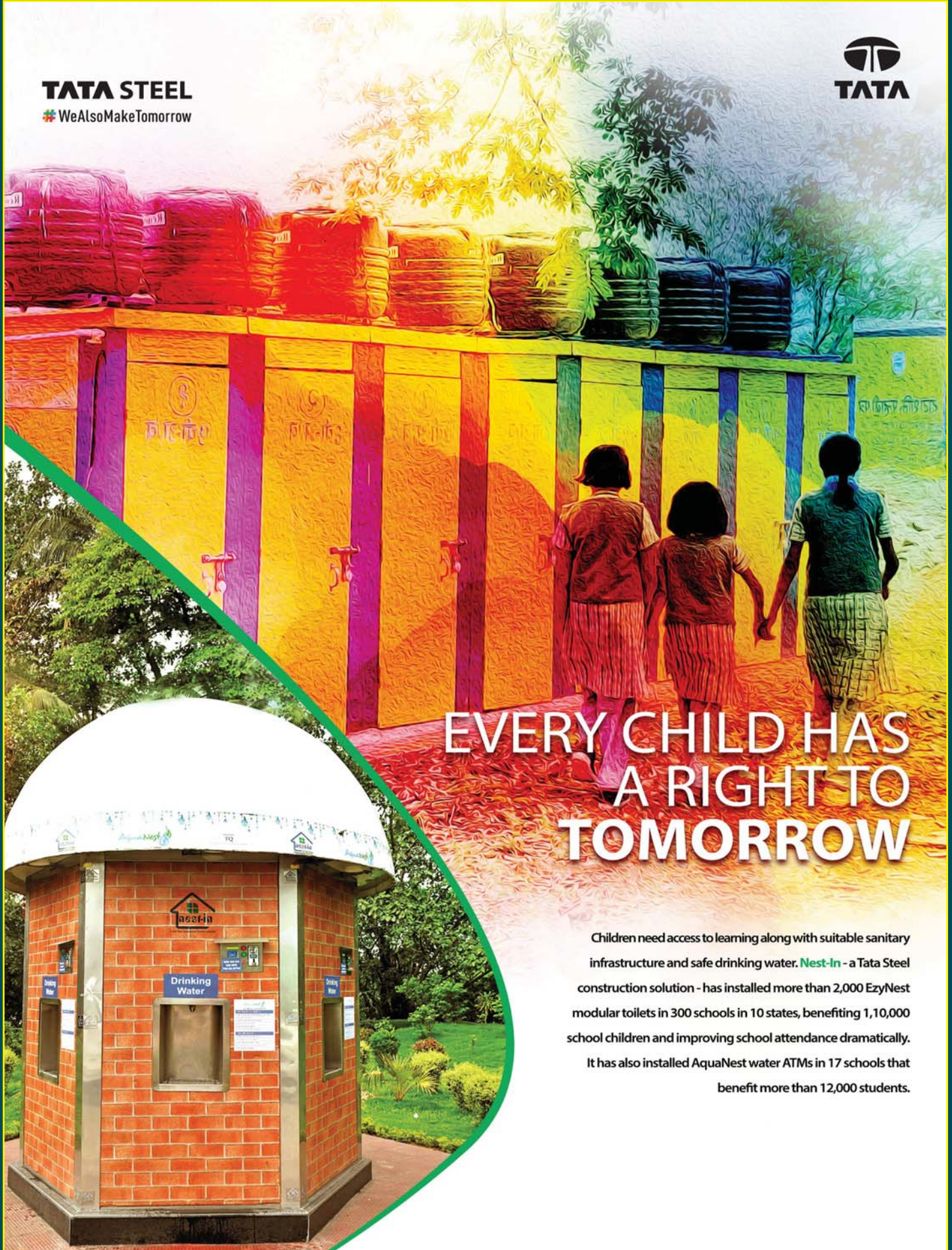


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Children need access to learning along with suitable sanitary infrastructure and safe drinking water. **Nest-In** - a Tata Steel construction solution - has installed more than 2,000 EzyNest modular toilets in 300 schools in 10 states, benefiting 1,10,000 school children and improving school attendance dramatically. It has also installed AquaNest water ATMs in 17 schools that benefit more than 12,000 students.