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MINING SECTOR: CHALLENGES, ISSUES AND POLICY SUGGESTIONS

The Indian mining sector is in doldrums on account of several policies as well as administrative and legal issues. These include mining bans in various states through supreme court orders, a low level of exploration activity, increasing imports, high taxation rates, heavy land acquisition costs, low rail evacuation capacity and expiry of 288 captive mines in 2020.

Historically, India's prospective geology is largely similar to that of Western Australia, South Africa and South America, as these were part of Gondwana Basin having geological pedigree for high quality deposit of iron ore, bauxite, coal, diamonds and heavy mineral sands. However, where South Africa and Australia have been extensively exploring and utilising their mineral wealth with the sector contributing around 8 percent to GDP; India is yet to exploit its mineral potential contributing only 1.4 percent to GDP. India's geological resource base can sustain much higher levels of mineral development.

Supreme court judgments have impacted the local economy of the states in particular and the mining sector in general. For instance, the mining ban in Goa pronounced on February 7, 2018 on account of illegal mining has led to the loss of Rs 1,000 crore which includes royalty, district mineral foundation trust (DMFT), national mineral exploration trust (NMET) and GST to the state and central governments. It has also resulted in loss of direct and indirect employment in the range 1.5 to 2 lakh. The apex court's order dated August 2, 2017 of levying 100 percent penalty on mines in Odisha owing to environmental violations has forced several miners to close mines leading to 30 percent increase in the prices of iron-ore and loss of 30,000 jobs. Further, the consistent increase in the imports of minerals and metals from other countries despite having sufficient domestic resources and reserves has become one of the major reasons for India's increasing trade deficit. For 2017-18, the year-on-year growth in import value of minerals and metals is 31 percent, as the imports increased from Rs 6.5 lakh crore to Rs 8.5 lakh crore.

Further, according to the mining survey conducted by Fraser Institute in 2016, India ranks 97 out of 104 countries in the Investment Attractiveness Index in mining, indicating the inability to attract global investors to 'Mine in India'. All these factors have put spotlight on the Indian mining sector – something that has been long overdue.

Exploration – unlocking the potential

India's total land area is 3.2 million sq km, of which the identified Obvious Geological Potential (OGP) area for minerals is 0.57 million sq km, amounting to 18 percent of the total land area. Till now, most of the exploration in the country has been near the surface (50–100 m) with little or no information on deep-seated or concealed or rare earth minerals. According to the ministry of mines, in case of surfacial minerals, 100 percent of the OGP area has been mapped while for deep-seated minerals only 22 percent has been mapped up to March 2018. Mineral rich countries with similar geology such as Australia have almost 95 percent area fully mapped. For attracting private and foreign investors to 'Mine in India', it is essential to complete all the surveys – geophysical, geochemical, aero geophysical, marine – and place the basic data in the public domain. Also, introduce the concept of robust and transparent public exploration reporting mechanism complaint with the JORC code or equivalent in the statute.

The Mines and Minerals (Development And Regulation) (Amendment) Act, 2015 has ushered in a regime of transparent and non-discretionary grant of mineral concessions. However, it has resulted in nationalisation of exploration regime. Traditionally, most of the mining countries have adopted the 'first come first served' principle to grant exploration rights and have provisions for automatic transfer from prospecting to mining lease. It is desirable to introduce reconnaissance cum prospecting cum mining licence on the 'first come first served' basis through a transparent online system for deep-seated/concealed/rare earth minerals. Surfacial/bulk/stratified minerals areas for exploration may be allocated on exploration cum mining rights through auction process. This will boost private and foreign participation in exploration.

In addition, India's exploration expenditure is insignificant when compared with other mineral resource rich countries such as Canada and Australia which account for 14 and 13 percent of the global mining exploration spend respectively while India's share is a meagre two percent. For each square km of a potential mining lease, Australia spends $5,580 while Canada incurs $5,310. By contrast, India spends only $9 per square km in spite of the vast mineral resources. Another issue that requires attention is the under-utilisation of funds collected under National Mineral Exploration Trust (NMET). Up to March 2018, Rs 1,184 crore have been collected under NMET, however only Rs 79.95 crore have been spent; indicating poor utilisation of funds.

Ease of doing mining

Under the auction regime introduced by the MMDR Act, 2015, only 43 mineral blocks have been auctioned till June 2018 with estimated value of about Rs 2 lakh crore, which will give revenues to the tune of Rs 1.55 lakh crore to states over the lease period of mines. Of these 43 mineral blocks, two have been executed and only one is operational indicating gaps in the policy and on-ground implementation. One of the major reasons for delay in making a mine operational is the time consuming process of getting environmental, forest and other clearances. At present it requires three to five years for operationalisation of a mineral block which includes gram sabha consent (365 days), environment clearances (358 days), forest clearances (440 days), and land owners consent (365 days).

To facilitate Ease of Doing Mining, the ministry of mines has recently launched Mobile app TAMRA (Transparency, Auction Monitoring and Resource Augmentation) across 12 mineral rich states to track the status of the statutory clearances associated

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with the mining blocks. It has also constituted an inter-ministerial group – Post Auction Mining and Approvals Facilitator (PAMCAF) – to expedite the various clearances/approvals required after the allotment of mineral blocks through e-auction. It remains to be seen if PAMCAF will actually accelerate mineral blocks to reach the operationalisation stage as early as possible. Though the above technological and administrative measures are commendable, there is an urgent need to put in place a system for single window and time-bound environment and forest clearances to expedite the process of mining after auction. Also, the ministry of mines should ensure timely bidding of 288 non-captive mines expiring in 2020 to avoid any disruption in the future supply of minerals.

Another issue which requires immediate attention is rationalisation of taxation. While the global average taxation applicable for mining is 40 percent of the gross profit, India is constantly adding to the taxation burden for mining industry with royalty, District Mineral Foundation Trust, National Mineral Exploration Trust and a host of other statutory levies implemented by the states. Adding to this are the one-time regulatory costs related to environment clearances and forest clearances etc., taking the total taxation to around 65 percent of gross profit. Therefore, it is necessary to define an ideal tax system for the industry to make it more lucrative especially for the foreign investors. In addition, it is also essential to increase evacuation capacity by rails as it will increase mineral availability and cost effectiveness.

Time for a boost

The Indian mining sector will play a crucial role in accomplishing the government's visionary initiatives like Make in India, Smart Cities, indigenous space programmes, and promotion of domestic defence manufacturing sectors. The sector alone has the potential to churn out 6 million additional jobs by 2025 and can contribute an additional $125 billion to India's output and $47 billion to India's GDP by 2025 [Putting India on the growth path: Unlocking the Mining Potential, 2014, McKinsey & Company]. However, it is possible only by bringing policy and administrative reforms.

While state governments affected by supreme court orders are battling on their own to get mining bans removed, the ministry of mines is on the verge of finalising the Draft National Mineral Policy, 2018 to usher in the much awaited reforms in the sector. It is expected that the National Mineral Policy, 2018 will embrace the two key aspects: simplification of the process of obtaining approvals from various authorities in a transparent and time bound manner and introduction of business models which encourage private and foreign investments in the Indian mining sector. It is time indeed to launch a mission – 'Explore in India', like "Make in India" – to boost the mining sector.

INDIA TO AUCTION 105 BLOCKS IN CURRENT FY, BUT UPCOMING ELECTION CASTS UNCERTAINTIES

India will auction 105 mineral blocks before the end of the current financial year, the Mines Ministry informed Parliament on Thursday.

According to information provided by the Mines Ministry, various state governments have completed the auction of 18 mineral blocks over the past nine months, which included seven iron ore blocks in Karnataka and five in Madhya Pradesh.

The Ministry also informed that Geological Survey of India(GSI) will complete exploration report of 18 mineral blocks by February, and hand over the reports to the respective state governments to enable them to put these up for bidding by private miners.

One of the biggest challenge in stepping up exploration and increasing monetisation of assets is low explorationcapacities available in the country, with only 82 agencies being designated to undertake exploration projects. This compares with 400 designated agencies in Australia.

At the same time, the government's aim to increase spends on exploration by setting up the National Mineral Exploration Trust (NMET) too has failed to take off. For example, with the fund having a corpus of about Rs10.48-billion as on July 2018, only 62% of the fund has been utilised in exploration projects funded through the fund.

NMET had been created by making it mandatory for every mineral leaseholder to contribute amount equaling to 2% of royalty payable for each mineral produced by the leaseholder.

However, a section of the government conceded that plans to put such a large number of mineral blocks up for auction and completing the process within the next three months of current financial year could prove to be an uphill task since the Indian national elections are scheduled to be held any time over the next few months.

It was pointed out that once the Election Commission of India notifies the election dates, the federal government will be turned into lame duck one and political parties at helm of governments at various states will be pre-occupied on the campaign trail and mineral block auction will be put on the backburner until a new government was formed in New Delhi.

ODISHA TO AUCTION FIVE MINERAL BLOCKS AFTER NEW RULES

Under the new Rules, states have the flexibility of allocating the block in the second round itself even if there are less than three bidders.

After the recent notification of the new Mineral Auction Rules, the Odisha government is gearing up to put five mineral blocks under the hammer.

"We are going to issue Notice Inviting Tenders (NIT) for three iron ore, one manganese and one graphite block by the end of this month. The auctions would be conducted according to the revised Rules issued by the Union mines ministry", said a government official.

Under the new Rules, states have the flexibility of allocating the block in the second round itself even if there are less than three bidders. This provision is expected to make the auction process less cumbersome and will help states auction mineral blocks quickly.

Moreover, under the amended Rules, miners would be able to dispose of 25 per cent of dumps which are not used for captive purposes. The amended Rules also have the provision for adjustment of upfront premium against due payments of the miner at the earliest. This measure is expected to increase the liquidity of the mining entities at the most stressed times when production begins.

The latest Auction Rules have eased the requirement of net worth for the prospective bidders. In practical terms for an average annual production of up to Rs two crore, the net worth required was Rs four crore, which is reduced to Rs 0.5 crore. For an average annual production up to Rs 20 crore, the net worth required was Rs 40 crore which has been reduced to Rs 10 crore.

As per the estimates of the Union mines ministry, a total of 34 mineral blocks would be put to electronic auctions before the end of March 2018. In addition to Odisha, other mineral bearing states like Chhattisgarh, Gujarat, Maharashtra, Rajasthan and Telangana would be organising the e-auctions. From auctions of these blocks, states are expected to mop up Rs 75,000 crore additional revenue.

To this date, 33 mineral blocks have been successfully auctioned. The auctioned assets are valued at Rs 1.69 lakh crore with the additional revenue pegged at Rs 99,000 crore.

TARDY PROGRESS ON WELFARE PLANS UNDER MINERAL FUND: PARLIAMENT PANEL

The Parliamentary standing committee on coal and steel has expressed its disappointment at the tardy pace of implementation of schemes under the District Mineral Foundation (DMF). The panel also noted that the funds collected under the DMF are being spent slowly and that in some states no schemes have been sanctioned for the welfare of people affected by mining.

The panel, chaired by Chintamani Malviya of the BJP, was examining the implementation of DMF and Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY).

The DMF was set up in March 2015 under the central mining law, the Mines and Mineral (Development and Regulation) Act (1957). Funds for the DMF are collected by levying a royalty. The law mandates that 10 per cent royalty is to be levied in respect of mining leases granted on or after January 2015 and 30 per cent royalty in respect of mining leases granted before January 12, 2015.

The DMF's primary responsibility is to identify the communities and people affected by mining activities and invest in their welfare.

During the examination of the DMF, the panel noted that up to August 2018, Rs 21,235 crore was collected under the DMF and projects worth only Rs 15,548 crore have been sanctioned so far.

The Committee also noted that out of a total 81,624 projects sanctioned, only 22,026 projects worth Rs 4,888 crore have been completed so far.

"The committee feel that the DMF is a defining opportunity in benefiting millions of mining affected people living in deep poverty in country's mining districts and it is very important and crucial that DMF is implemented in the letter and spirit of the MMDR Act,

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2015 and states Rule framed under it," the panel's report stated.

WHAT IS THE FUND FOR

- The PMKKKY was notified in the MMDR Act and its guidelines state that DMF's have to spend 60% of its funds on high priority sectors such as drinking water, sanitation, healthcare, education, women and child welfare, environment, skill develop ment, welfare of aged and differently abled persons.
- The remaining 40% has to be spent on physical infrastructure, irrigation, energy, watershed development and measures to enhance environmental quality in mining districts.

CLOSURE OF MINING ACTIVITIES LEADS TO LARGE JOB LOSSES: MINES MIN

The closure of mining activities in Goa has amounted to a loss of large number of jobs, Parliament was informed Monday.

"Government of Goa has intimated that the closure of mining activities has resulted in loss of large number of jobs," Mines Minister Narendra Singh Tomar said in a written reply to the Rajya Sabha.

A proposal, the minister said, has been received from the Goa government to amend the Mines and Minerals (Development and Regulation) Act, 1957, in order to tide over the difficulties faced by the state government on account of closure of mining activities.

"The said proposal is under examination in the Ministry of Mines," it said.

According to the information provided by the Indian Bureau of Mines, a sub-ordinate office under the administrative control of the mines ministry, no mining activity is currently taking place in Goa for any major mineral.

The Supreme Court in February cancelled second renewal of 88 mining leases in Goa and directed to stop all mining operations with effect from March 16 until fresh mining leases were granted. SID HRS

THE FUNDAMENTAL PROBLEM WITH TRYING TO RESTART MINING IN GOA IS ITS HYPOCRISY

Senior officials wanted to request Supreme Court to allow 2 years to wind down mining operations to prevent mining companies from retrenching staff; mining barns objected; CM Parrikar too didn't clear this option after agreeing initially

The charge of Goa's mining brigade to Delhi this week, didn't quite make up for any heroic script. It was a well orchestrated but increasingly hollow last ditch attempt by mining companies to use their "people power" and some MLA's from the mining belt to keep their political fortunes hanging by the thread, alive, by organizing shows of strength, to force the government to pave the path for resumption of mining, when Union Mines Ministry has ruled out any corrective action to give life to dead leases.

Therefore the rhetoric of putting pressure on the government and ministries to restart mining was just that- rhetoric. The time for course correction is over. There was a time when the senior echelons of the bureaucracy in Goa had initiated an exercise where it would move the Supreme Court again, stating that while it accepted the verdict cancelling the renewal of 88 leases rendering Goa without a single valid lease, the leases would need two years to engage in effectively winding up operations and disposing ore already excavated. The logic was that if the Apex Court allowed a two year reprieve, mining activity related to transportation and mines administration work could continue which would keep other departments in mining companies at play. This would lead to staff retrenchment being out off for two years.

It is very reliably learnt that Chief Minister Parrikar before he became critically ill, had endorsed this line of action i.e. to move the same Apex Court, not in appeal to overturn their own order but to seek time of two years to allow mining companies to wind up operations.

At this point of time mining barons of Goa had fervently objected to this, since they wanted an all or nothing solution which would effectively extend their leases till 2037. (this is explained later in this column). They clearly did not want a solution where they would have to commit to two years of wages, knowing that they would not be able to continue operations. It is with these clear differences, and rejecting the viewpoint of the mining barons, that the government had drafted a petition in the Supreme Court which was waiting to be filed. Yet it did not ultimately find its way to the Supreme Court. And here's why. After Mr Parrikar returned from the US after his third sojourn, his formal approval was sought. At that time the Chief Minister went back on his original decision stating that he

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would speak to the political establishment in Delhi (read Prime Minister Modi and /or senior ministers who have been go to guys for all issues of Goa) and asked his government not to move that petition in the Supreme Court to allow an additional concession of two years as an addendum to their earlier judgment

So in effect, the judicial relief albeit partial but significant, was not sought before Justice Madan Lokur, with the hope that the centre would be convinced to make an amendment. Ultimately Mr Parrikar preferred to attempt a legislative cure when the bureaucracy had advised (which Mr Parrikar had initially green lighted) a judicial one as a temporary reprieve.

In retrospect, this option was more in tune with what Goa mining barons wanted. They were against just a two year reprieve which would have forced them to retain staff and then wind up operations. The government or at least some important sections of the bureaucracy believed that if mining companies are allowed to wind up operations in the prescribed manner over two years, the real mining affected who need funds to sustain their lives will get employment for two years

The principle of logic and understanding that was applied in an attempt to curate a legislative remedy to resume mining was this. A law that comes into force to offset a decision of the court is termed a "validating legislation". Meaning it justifies or "validates" a legislative decision already taken, which the Court has declared not legal or valid. This process of "retrospective amendment" was sought to be allowed, to allow expired leases to be brought back to life.

As has been explained on several occasions through these columns the Supreme Court has to decide on the petition challenging the Union government's Abolition Act that converted all concessions into mining leases. This verdict, will interpret whether the 50 year life period for the leases is to be considered from 1961, then all the leases end in 2020 and if it is from Concession period, 1987 then 2037. In any case the 1988 judgment rendered

The Supreme Court judgment in Goa mining in writ petition 435/1 delivered in 2014 directed that those whose applications for second renewal was pending could not continue mining and therefore all mining between 2007 to 2012 was declared "illegal". This judgment still holds, by the way

Importantly hundreds of leases in Orissa were operating on the same principle of deemed approval for years, since the government was sitting on those applications for years

The government then initiated an ordinance promulgated by the President on January 12, 2015 which specified responses to four scenarios

All leases would now be treated as having been granted for 50 years. (All leases though called concessions were operational since 1961, though converted to leases in 1987. For all practical purposes 1961was the deemed start date for the commencement of leases. The mining lobby is however arguing that the converted to leases and therefore get a 50 year run till 2037)

1. All leases which had a subsisting renewal term, would be operational till the end of the term.
2. All leases whose renewal applications were pending, after the 50 year completion will be retrospectively deemed extended till 2030 for captive mines and 2020 for non-captive mines. 2020 is the year applicable for Goan mines which are non-captive mines

*(Captive mines: Companies which mine ore for their own use e g steel making) Non Captive: When ore is mined by mining contractors/companies for sale /export to other end users)

With regard to point 2, the court in the beginning of 2018, cancelled the renewals made at a frantic pace right down to the day when the January 2015 ordinance was issued so that the mines whose first renewal ended on November 22, 2007 could continue mining for 20 years. Therefore this cancellation according to the 2018 judgment would be effective from March 2018 as per the judgment.

(Background Explainer: Please note that leases in Goa converted from Portuguese perpetual concessions in 1987 had a maximum life of a little over 20 years and six months (roughly taken as 20 years) from the date they were converted to leases from concessions in 1987 which made them valid till November 22 2007 after which a further renewal of 20 years was possible. The government sat on those applications and did not renew them on time, which is why the renewals done in 2014-15 almost seven years later, and after the 2014 judgment declaring the leases non functional were challenged and subsequently struck down)

Now in an attempt to restart mining by the same traditional mining barons, the government is planning to rewind all these developments, negate what the court has observed and in a huge sweep declare that mining in Goa and get a 50 year run without the need for any renewals, by taking the year when mining first started as 1987 rather than 1961.

This audacious move is being contemplated by deliberately glossing over inconvenient truths. For instance there are no active leases now and there are no environmental clearances for any leases. What the mining lobby and perhaps backed by the government wants is that all these leases should be resurrected along with their EC clearances which takes close to 36 months to be granted after all due processes. Now which industry in this country gets the privilege of literally going back in time to go from illegal to legal in such a manner? And all of this is sought to be justified on economic ground when all issues to the economically underprivileged in mining can be recovered from dues that mining companies owe the government for various illegalities.

A legislative amendment cannot forced with the sole purpose of bringing back players whose leases have expired when other remedies to ease the financial constitution of mining affected are available. And it is doubtful if there is any scope for a judicial course correction because there is no error apparent in the judgment and review jurisdiction cannot be invoked because a review

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is an intervention by the court and an intervention pre supposes that there is a point or mater pending. That is not the case here since the Supreme Court has disposed of the matter with regard to lease renewals.

The fundamental problem with the attempt to restart mining in Goa lies in its hypocrisy for all the reasons elaborated. This is underlined by how the state is almost deceitfully, giving wind to absolute false hopes that the center may be inclined or even able to kick-start mining operations in a jiffy without any priority or focus to recovering dues from mining barons and ploughing it back for the relief of the mining affected.

THE SECRET INSTITUTIONAL SUPPORT FOR ILLEGAL MINING MUST BE ADDRESSED: MEGHALAYA

Tied up with issues of tribal rights to land and tribal practices, coal-mining has continued unregulated in Meghalaya Laws fail only when people in power want them to. The tragedy of the miners trapped since December 13 in a suddenly flooded coal mine in the East Jaintia Hills district of Meghalaya is the terrible outcome of illegal activity. Rescue efforts, which began on December 14, reached a scale equivalent to the tragedy — with the right machines — around 16 days later. Even allowing for the time taken to transport equipment like heavy pumps, airlifted from elsewhere to be brought to the top of a forested hillock, administrative delays as in requests for help from the state government to the Centre seem bewilderingly long. Everyone appeared to be reluctant about publicizing the accident. Why should time be wasted with inadequate pumps as a first response to an accident in a 370-feet mine flooded with water to around 170 feet?

No emergency measures can be on standby if the activity is illegal. Coal is traditionally a major revenue earner in Meghalaya, and the trapped miners were promised rewarding wages. Tied up with issues of tribal rights to land and tribal practices, coal-mining has continued unregulated in the state. Yet Meghalaya is not officially outside the coal mines nationalization law although it is a state under the Sixth Schedule. The state's 2012 law to regulate mining not only pussyfooted round the issue of traditional practices, but also remained unimplemented by the earlier Congress and the current National People's Party government, which has as its ally the Bharatiya Janata Party. The situation worsened with the 2014 National Green Tribunal ban on coal mining, especially the popular rathole method, that the government implemented in 2015. The accident has occurred in a rathole mine. Unregulated and unscientific mining has polluted rivers, destabilized the environment and continued to destroy lives. Resistance to the ban comes from political leaders across parties, a large number of whom own, or are related to those who own, mining and coal transporting businesses. Regulation would lift the ban, but maybe that goes against the interests of the reported nexus among the administration, mine owners and the State. The arrest of the owner of the mine that flooded on December 13 cannot obscure the secret institutional support for illegal mining. It is that which must be addressed first.

DONIMALAI MINES LEVY ROW: NMDC CHIEF SAYS PSU MOVED HIGH COURT AFTER EXHAUSTING ALL OPTIONS IN KARNATAKA

After exhausting all other options, NMDC Ltd moved the Karnataka High Court on the issue of levying 80 percent premium by the Karnataka government on the iron ore extracted from Donimalai mines in the state, said a top official of the miner.

NMDC suspended iron ore mining from its Donimalai mine in Karnataka following the state governments decision to impose 80 percent premium on the ore sales from that mine whose lease has been extended by the government with effect from 4 November for a period of 20 years.

The suspension of production from Donimalai mines will have some impact on the output target for the current fiscal, NMDC CMD N Baijendra Kumar said.

NMDC recently filed a petition in the High Court challenging the Karnataka government move to impose premium on the ore extracted from Donimalai mines.

"Our objective is to request the state government and solve the issue very amicably. We pleaded with folded hands before the government and requested that this (levying 80 percent premium) is not legally correct.

"I told the Chief Minister (H D Kumaraswamy) that we are a public sector company and please help us. The chief minister never said no. It is at the bureaucratic level, there are some noises. Finally ,we had to move the court because we exhausted all other options," Kumar told PTI.

A senior official of NMDC said with the 80 premium, the miner would be losing Rs 1,348 per tonne which may result in a loss of Rs 944 crore per annum as the public sector undertaking (PSU) extracts about seven million tonnes of iron ore a year from that mine.

During FY18, NMDC produced 35.57 million tonnes against 34 MT in FY2017.

The Karnataka Cabinet has approved the mining lease of Donimalai till November 2038 on payment of 80 percent of

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the average sale value as published by Indian Bureau of Mines, according to mining secretary Rajendra Kumar Kataria.

"Since the matter is in the court, we will wait for the outcome. We will file our reply to the court hopefully next week well within the stipulated time," Kataria said when asked about the governments move.

Kataria had earlier said the state in the recent past had auctioned 12 mines where the weighted average of the premium was more than 110 percent and NMDC also participated for mines for which it offered 95 percent and 105 percent as premium.

Justifying the move to take legal recourse, the NMDC CDM said they offered high premium for some of the mines keeping in view the market dynamics and competition. NMDC, in its petition, said the imposition of 80 percent premium is "illegal" and the condition must be quashed.

SGAT MEET : BHUBANESHWAR 'STRENGTHEN GEOLOGY DIRECTORATE'

As a consequence of amendment of Mines and Minerals (Development & Regulation) Act in 2015, the mining industry will be subject to unprecedented hardship affecting employment, revenue, supply of raw materials for industry, infrastructure and social fabric.

The issue was discussed in a workshop held on December 23 here organised by the Society of Geoscientists and Allied Technologist (SGAT) with the keynote address delivered by Ranjit Rath, CMD, Mineral Exploration Corporation.

A total of 12 papers were presented in 3 technical sessions. The presenters were from Tata Steel, JSPL, Essel Mining & Industries Ltd, Dalmia Cement, OMC, Directorates of Mines and Geology, SGAT, former Director, SAIL (Currently Director, OMC), Utkal Alumina International, among others.

Other dignitaries who graced the event included Sanjay Patnaik, MD, Tata Sponge Iron Ltd, Dipak Mohanty, Director of Mines, Arun Misra, Vice President (Raw Materials), Tata Steel and RN Praharaj, Director, OMC.

The meet called for strengthening of the Directorate of Geology, GSI setup in Odisha and OMC in respect of additional technical personnel, back up laboratory facilities, re-vamping of drilling set up, strengthening of engineering geology and ground water set up in the Directorate of Geology for proving reserves of different ores and minerals in the State.

Besides, it called for formulation of proposals of exploration of deep seated deposits for funding by National Mineral Exploration Trust, proposals for aero-magnetic survey over remaining hard rock areas of the State for technical aid by Australia, Canada, among others.

AUTHORITIES MOVE A STEP CLOSER TO MINING THE ARAVALLIS FOR URANIUM

After traces of uranium and other mineral deposits were found in the mountain range in preliminary findings, a second phase of survey is being conducted in the state

To be self-sufficient in uranium production, Atomic Minerals Directorate for Exploration and Research (AMD) is conducting a second round of survey in parts of Rajasthan. If successful, the government will begin mining in the state to get enough of the nuclear fuel.

The second phase is being conducted in parts of Alwar, Jaipur, Bharatpur and Dausa. Additional district collector Arvind Kumar Sengwa confirmed this news and said permission has been granted for aerial survey.

The Aravallis have been considered as one of the most uranium rich areas in the country. The first phase was conducted in March in areas of the Aravalli Hills, like Sariska, Tijara, Bandikul, part of Alwar city, Kotapuli and Bharatpur among others.

Uranium Corporation of India Ltd (UCIL), a public sector undertaking under the department of atomic energy, is responsible for exploring the nuclear fuel. The company currently operates seven uranium mines in Jharkhand and one in Andhra Pradesh.

The reason the second phase is happening is that traces of uranium and other mineral deposits were found in Aravallis in preliminary findings. Other than this, authorities have also found traces of uranium in Andhra Pradesh, Telangana, Karnataka, Jharkhand, and Meghalaya.

India needs to get more uranium for its nuclear power plants. On March 7, 2018, the Minister of State (Independent Charge) Atomic Energy and Space Jitendra Singh had said the country is planning a tenfold increase in uranium production in the coming 15 years. In a written reply in Lok Sabha, he had said that UCIL has formulated a plan to meet the target of self-sufficient uranium production.

UCIL has outlined a plan for "massive expansion" that will help increase uranium production by 2031-2032. It includes maintaining supply from existing facilities and also increasing capacity of existing mining units and exploring new locations.

In response to another question in July, he said, "The AMD has surveyed a number of prospective geological domains of the

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country. It has, so far, established 3,00,034 tonnes in situ as on May, 2018 in 44 low-grade uranium deposits in Andhra Pradesh, Telangana, Jharkhand, Meghalaya, Rajasthan, Karnataka, Chhattisgarh, Uttar Pradesh, Uttarakhand, Himachal Pradesh harashtra. In Uttar Pradesh, a low-grade and small tonnage metamorphite-type uranium deposit (785 tonne uranium oxide) has been identified at Naktu in Sonbhadra district."

THE STORY OF KGF: CRADLE OF INDIA'S GOLD RUSH

The year was 1871. Michael Fitzgerald Lavelle, a retired Irish solider from the British Army, had made Bangalore cantonment his home. Retirement was a drag for Lavelle, who had just returned after fighting the Maori wars in New Zealand.

Although he hoped to make it big post-retirement, Lavelle spent much of his time reading; and a four-page article from the 1804 Asiatic Journal he came across, set Lavelle on a journey that eventually birthed the world's second deepest goldmine – the Kolar Gold Fields.

Lavelle had developed an interest in gold mining during his time at war in New Zealand. So, he was understandably excited, when an old report by one Lt John Warren spoke about possible gold reserves in Kolar.

Lt Warren's encounter with Kolar gold began in 1799, after erstwhile ruler Tipu Sultan was killed in the battle of Srirangapatnam by the British.

The British decided to handover Tipu's territories to the Mysore princely state, but for this land had to be surveyed. Warren, who was then serving in his Majesty's 33rd regiment of foot, was summoned to Kolar for this task.

Warren had heard rumours of gold reserves and fables of people digging gold with their bare hands, during the time of the Chola dynasty.

Intrigued by the rumours, he announced a reward for anyone who could show him the yellow metal. Soon, villagers appeared before him with a bullock carts filled with mud, which they washed in front of the officer to isolate gold powder.

After an investigation, Warren concluded that for every 120 lbs or 56 kg of earth, one grain of gold could be extracted using the villagers' crude methods and in the hands of professionals, this could open up large gold reserves.

"Should we still fancy for the belief that gold occurs only on a narrow region? Why can't the gold veins under the ground near Maarikuppam extend far beyond." he wrote.

Between 1804 and 1860, there were several studies and explorations of the gold mines in the region, but in vain. As some explorations in the ancient mines led to accidents, underground mining was prohibited by law in 1959.

But in 1871, excited about a 67-year-old report by Lt Warren, Lavelle made a 60-mile bullock cart trip to Kolar. During his investigation, he identified several potential locations for mining. Unlike others, he was able to find traces of the gold deposits.

After more than two years of research, in 1873, he wrote to the Maharaja's government seeking a licence to mine. Government authorities, who believed gold explorations were not viable only gave him permission to mine coal, but Lavelle insisted on searching for gold deposits.

"Should I be successful in my search, it will be of greatest value to the government; in case I fail, it will cost the government nothing as the only assistance I require is the right to mine…" he wrote in the letter to the chief commissioner Mysore and Coorg.

Lavelle securing the 20-year lease to mine in the Kolar, on 2 February 1875, started the era of modern mining in India.

The Angel Investors and Modern Tech

But more than a miner, Lavelle was the poster boy of the gold rush. Lavelle was not rich, which limited his capabilities to explore the gold reserves. But his vision of creating fields of gold and the dangerous gambles of mining, soon became the premise of a novel – 'Living Dangerously' by FE Penny. This made him a popular man, even though his savings were depleting.

But by 1877, the young entrepreneur was unable to scale his business further and was desperate to raise funds. But due to his popularity, support came from another armyman – Maj Gen Beresford of the Madras staff corps in Bangalore. He along with three others – McKenzie, Sir William and Col William Arbuthnot –formed a syndicate with several other army officers called 'The Colar Concessionaries Company Limited', which took over the mining operations.

Mining engineers were invited from across the world to dig shafts in Kolar to further the explorations.

But things changed, when the syndicate, under pressure from their investors, approached John Taylor and sons, a company which brought state of the art mining engineering to India. The arrival of these engineers from Norwich, England started the golden era of KGF.

As Operations in the KGF surged ahead, the British planned

(Continued on Page 9)...

Asia's second and India's first power plant in Kolar. Officers of the Royal Engineers approached the Mysore Maharaja with a proposal to build a hydroelectric plant in the Cauvery river, in 1900. Central Electric Company from New York and Eicher Wyss from Switzerland were given the task of establishing the power plant and 148 km of transmission lines, the longest in the world. Machinery imported from Britain, America and Germany were transported in carts pulled by elephants and horses.

Soon, the candles and kerosene lamps in KGF were replaced by bulbs, even before Bangalore or Mysore were electrified. While in 2018, several parts of the state experience power cuts, by 1902, KGF had uninterrupted power supply.

Little England and The Hell Next Door

For British engineers and others from the across the globe, Kolar was 'Little England'. Weather like England, bungalows and clubs made KGF an ideal home. Being a British mining colony, life in KGF was greatly influenced by British culture.

This was in sharp contrast to 'coolie lines', the name given to the makeshift homes occupied by miners, a majority of whom were Tamil migrants. Life was hard on the other side, with more than one family often occupying one such shed. It was famous for its rat invasion, where workers killed over 50,000 rats a year.

Workspaces were no different. Despite the constant supply of dehumidified air into the underground tunnels, temperatures in the tunnels shot up to 55 degree Celsius and accidents were commonplace.

As the gold reserves in KGF began to reduce, expatriates began to leave Kolar, however key positions were held by the English until Independence. When the central government decided to take over all the mines in 1956, ownership of most of the mines had already been handed over to the state government.

Apart from the British, many from the Anglo-Indian community, who were in managerial posts began leaving the country for greener pastures. Other mining experts from Europe left for the Gold Mines in Ghana and West Africa.

The mines that produced 95 percent of India's gold output, were nationalised to keep them from shutting down. However, in 2001, despite massive protests, Kolar Gold Fields were shut down.

The abandoned underground tunnels, once pathways of gold, are now flooded with groundwater. Despite government plans and multiple court orders, the resurrection of the KGF seems far-fetched.

Thus, even though KGF continues to bear gold in its belly, the cost of retrieving it would be greater than the value of the gold itself.