

Mineral Wealth Unearthed: Analyzing India's Mining Policies

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1. Abstract

India's mineral reserves are amongst the largest there exist in the world. Yet, mineral security is a formidable challenge in India. What are the factors leading to this? Is it the policy or the implementation, is it the people or the government or some special interest groups (mafias) who are exploiting the sector, or perhaps a trust deficit among various stakeholders?

This paper delves into understanding the dynamics of the mining sector. It goes on to analyze the current policies and the challenges that the sector faces. The paper further delves into understanding the environmental and socio-economic impact of mining. At last, it suggests measures to improve the well-being of the mining sector- measures about improving the state of communities involved, curbing environmental degradation, controlling illegal mining, and increasing India's mineral turnout.

Keywords: Mining in India, National Mineral Policy of 2008 and 2019, Mines and Minerals (Development and Regulation) Amendment Bill of 2023, Socio-economic and Environmental Impact

2. Introduction

As India transitions towards a clean energy economy and aims to achieve net zero carbon emissions by 2070¹, the nation is shifting from traditional hydrocarbon resources to clean energy technologies. India is trying to make technologies such as solar photovoltaic (PV) plants, wind farms, and electric vehicles (EVs) a more visible part of our lives. This requires a resilient supply chain of minerals. However, after the pandemic and with the changing world dynamics, a politicization of transnational supply chains has been observed. This poses a roadblock to India's green growth.

India's 2022-23 exports of minerals amounted to Rs. 2,04,223.11 crores, and only Rs. 15,424.33 crores excluding precious stones.² Notably, India's obvious geological potential (OGP) blocks contain around 1,000,000 sq. km of gold, 3,000,000 sq. km of diamond, 1,600,000 sq. km of base metals, 8,000 sq. km of PGEs, and 5,000 sq. km of iron ores. A rough estimate indicates that less than 2% is mined and less than 10% has been explored.³ Hence, there is plenty of opportunity for India in the mining sector from an economic point of view. **India needs an effective mining policy focusing on mineral discovery and balancing economic development, environmental sustainability, and social well-being.**

¹ [Net Zero Emissions Target- Press Release, 03 August 2023](#)

² [Export of MCDR minerals during 2018-19 and 2022-23- Ministry of Mines](#)

³ [India has significant growth potential in exploration space- Times of India](#)

3. Comparison of Mineral Policy, 2008 and Mineral Policy, 2019

3.1. National Mineral Policy, 2008

The National Mineral Policy, 2008 (NMP 2008) revered minerals as a “valuable natural resource being the vital raw material for infrastructure, capital goods, and basic industries.” It acknowledged the various problems existing in the mining sector and suggested plenty of changes for the same.

3.1.1. Exploration and Expansion

The country is endowed with an ample number of resources. It has immense geological potential. However, only a small portion has been explored, and an even smaller amount has been mined. The policy would ensure comprehensive and systematic exploration across geologically favorable regions across the country using cutting-edge technology in a time-bound manner.

The Geological Survey of India, the principal agency for geological mapping and regional mineral resources assessment of the country shall collaborate with other entities to develop an action-oriented plan. The Mineral Exploration Corporation, Directorates of Mining and Geology of the State Governments, and various Central and State Public Sector Organisations would do detailed exploration on land. While conducting exploration, these agencies would particularly focus on the exploration of strategic minerals.

3.1.2. Technology Improvement

Emphasis would be laid on developing the indigenous manufacturing industry for mining equipment. The incorporation of foreign technology and collaboration for this objective will be actively promoted. Efforts would be made to use equipment and machinery that improve the efficiency, productivity, and economics of mining operations and the safety and health of persons working in the mines and surrounding areas. Import of such machinery and equipment would be freely allowed.

3.1.3. Scientific Methods and Capacity Building

Scientific methods of mining would be encouraged for mine development and mineral conservation. Regulatory agencies such as the Indian Board of Mines (IBM) and the State Directorates would closely interact with the R&D organization, and scientific professional bodies to ensure optimal mining plans. Conditions of mining leases regarding size, shape, disposition concerning geological boundaries, and other mining conditions will be designed to facilitate systematic and comprehensive mineral extraction in the leased areas. The above-stated regulatory agencies would be strengthened through capacity-building measures.

3.1.4. Investment from the Private Sector

Emphasis was laid on the need for private investment to strengthen the mining sector. The regulatory environment would be improved to make it more conducive to investment and technology flows. Capital market structures would be developed to entice risk investment into survey and prospecting ventures. Transparency in the allocation of concessions would be assured. Preference may be given to a value additional industry in the grant of mineral concession. To incentivize and encourage exploration and mining activities, the Government enunciated the National Mineral Policy, 2008 for a non-coal and non-fuel mineral sector which provides for policy measures like assured right to next-stage mineral concession, transferability of mineral concessions and transparency in allotment of concessions to reduce delays which are seen as impediments to investment and technology flow to the mining sector in India. For the grant of mineral concessions, eligibility conditions will be clearly defined and strictly enforced to ensure that the right person is selected. Every concession holder would be assured security of tenure, whereby he can develop the resources optimally.

3.1.5. Biodiversity Conservation and Rehabilitation

It is quite well-known that a significant portion of India's identified reserves are under forest cover. Additionally, mining operations represent an environmental intervention with the potential to disrupt the ecological equilibrium of a region. However, the need for economic development makes the extraction of the nation's mineral resources an imperative. Sustainable development would be given due importance in the policy. A framework would ensure that mineral extraction does not lead to ecological imbalance. Steps would be taken even for the restoration of economic balance. Special care will be taken to protect the interest of host and indigenous (tribal) populations through developing models of stakeholder interest based on international best practices. Project-affected persons would be protected through comprehensive relief and rehabilitation packages in line with the National Rehabilitation and Resettlement Policy.

3.1.6. R&D and Skill Enhancement

It is important not only to promote Research and Development in the mining industry but also to invest in improving human resources. To enable the use of state-of-the-art exploration techniques, scientific mining, and optimal use of minerals through ore dressing and beneficiation technologies, appropriate educational and training facilities would be taken up to improve the productivity and efficiency of human resource development to meet the manpower requirement. A comprehensive institutional framework would be designed for the same. Mining sectoral value addition through beneficiation, calibration, blending, sizing, concentration, pelletization, purification, and

customization would be encouraged. To exploit the country's geological potential it would be ensured that Regional and Detailed Explorations are carried out systematically in the entire geologically conducive mineral-bearing area of the country using state-of-the-art techniques.

3.2. Why did the National Mineral Policy 2008 fail?

The primary focus of the National Mineral Policy 2008 was the influx of Foreign Direct Investment in the sector. However, this extensive focus on the FDI resulted in a crippling impact on the local communities and the environment. The policy should have treated these as an integral part of the industry, which they rightly are, however, they were considered a policy hindrance.

3.2.1. Trust gap between People and Government

The government believed that miners would leave the area in a better ecological position after mineral extraction. The ground reality was starkly different. Mining had destroyed biodiversity and topsoil, there were huge pits in the ground and swathes of waste dumps. The policy had stated that reclamation of land and afforestation must be done, but it had not been made mandatory.

There were also false claims that mining had led to the development of the local areas. 70% of the top 50% of mineral-producing districts were among the 150 most backward districts of the country even after decades of mining.

The mining sector continues to have a poor rehabilitation and resettlement record. Estimates show that only one-fourth of the people displaced by mining have been resettled. The policy, instead of designing a proper framework for resettlement, relied mainly on Corporate Social Responsibility (CSR), and when the measure is voluntary, it usually goes in vain.

All this led to a huge trust gap between the mining industry and the government on one side and the community on the other. The result was that people in mineral-rich areas were not willing to give up their land for mining. This also led to large-scale social unrest in the country's mining belt.

3.2.2. Reliance on Voluntary Mechanisms

To mitigate the environmental and social fallouts, the NMP 2008 relied on the voluntary mechanism of the Sustainable Development Framework (SDF)⁴ and desired mining firms to voluntarily practice CSR.

⁴Under fire for their poor environmental, social and human rights records in developing countries, the world's leading multinational mining companies decided in 2001 to promote an organization, International Council on Mining and Metals (ICMM) to improve their image. With the help of the International Institute for Environment and Development, London, ICMM came out with a social and environmental wish-list, which it wanted its members to comply with voluntarily. SDF is this mechanism.

[Sustainable Development Framework- Indian Bureau of Mines](#)

The SDF mandates an annual report on mines' social and environmental performance to be verified by private auditors. The problem with this mechanism is that its principles are vague and broad. The applicant company itself is entrusted with choosing and paying the consultant who makes the Environmental Impact Assessment (which provides data on the possible negative social and environmental impact of a proposed operation). This same assessment guides the government's decisions to allow an operation, favoring a glaring conflict of interest.

The mining companies in India are supposed to submit annual environmental audit reports and half-yearly progress reports on environment management plans. Even these mandatory systems have failed, hence, it was futile to believe that a voluntary system like the SDF would work.

3.2.3. Benefits Did not Trickle Down to People

Most of India's mineral deposits are in regions that have forests, major river systems, and tribal populations. The major mining districts of the country are not only ecologically devastated and polluted, but they are also the poorest and most backward areas of the country.

The benefit of mining has not flown to the districts where the minerals are being mined from. Besides, mining companies have a poor track record of compensating displaced people. Although some states tried to devise and implement mechanisms in the past to ensure that the mineral wealth flows to the affected communities, they have not produced the desired results. Instead of people becoming 'partners in' mining, they became 'victims of' mining.

3.2.4. Blind Eye to Environmental Concerns

There are a plethora of regulations and regulatory institutions, but most of the regulatory institutions did not have the capacity to regulate mines. The environmental governance in mining, from the granting of lease to the mining operation to the closure of mines, was only a series of paperwork and had no impact on the ground level.

The policy undermines the concept of intergenerational equity. The NMP 2008 stated that mining operations shall not ordinarily be taken up in identified ecologically fragile and biologically rich areas. This means under special circumstances this provision may be circumvented. Besides, the government has not identified ecologically fragile and biologically rich areas to declare them out of bounds for mining.

The policy stated that efforts would be taken up to convert disused mines into forests, but no mechanisms were stated for the same. As a result, the country still has 284 abandoned/discontinued coal mines⁵, this number for all the resources is way higher.

⁵[Details of closed/abandoned/discontinued coal mines-Press Release, 07 February 2022](#)

3.2.5. Conclusion

Mining, in India, is about the tribals, the backward classes, and the poor. It is about the biodiversity impact, water security, and environmental pollution. The top 50 mineral-bearing districts alone account for about one-fifth of the country's forest cover. Some of the most dense and biologically rich forests are in these districts. These districts are also tribal-dominated and among the poorest in the country. Eighty percent of these districts are affected by Naxalism. These districts are where some major rivers originate and flow through. This is where the NMP 2008 failed. In its quest to improve FDI in the sector, it alienated people's interests and the environment.

NMP 2008 was open-ended and equivocal. We ended up with a law that promoted large-scale mining but had no environmental and social impact provisions.

3.3. Other Challenges in the Mining Sector

3.3.1. Challenges in Obtaining Capital

The mining industry has high capital intensity. The operation costs are very high. Further, India has a long way to go in terms of technological advancements. The key factors impeding technology adoption are geotechnical difficulties and higher costs. The shortage of technically skilled labor is the most pressing concern. The problem is exacerbated by poor quality and costly infrastructure in transport, power, road, credit, and telecom. Delays in getting credit sanctioned from banks, tax and duty drawbacks, temporary and permanent registration, clearances for exports, and permission for power and water connections further reduce competitiveness and increase costs.

3.3.2. Low Investment in Exploration

India's expenditure on exploration, particularly for deep-seated minerals like copper, zinc, lead, gold, silver, etc, has been abysmally low. NITI Aayog in its report observed that exploration expenditure per square km in India is \$9, when compared to Australia at \$5,580 and Canada at \$5,310. Further, with respect to the global share of exploration expenditure, Canada tops the list with 14 percent, Australia at 13 percent, China and Latin American countries at 6 percent, African countries at 5 percent, Russia and Europe at 5 percent, whereas in India it is as low as 0.2 percent.

3.3.3. Multitude of Taxes

Mining is amongst the most taxed industries in the country with levies like royalty, Goods & Service Tax (GST), and additional obligations in the form of Green Cess, Contributions to District Mineral Foundations, and National Mineral Exploration Trust. Double taxation in the form of

royalty over royalty worsens the problem. The range for these taxes is very large compared to worldwide figures, positioning India lower.

3.3.4. Regulatory Issues

The absence of clear definitions in the Bills leads to ambiguity in understanding the policy framework. There is a lack of coordination and different interpretations of laws by the Central Government and the respective State Government, which results in further delay and confusion. Consequently, companies do not have clarity on their capital investments. Most processes including licenses, clearances (environmental clearance, forest clearance), consent requirements (pollution control board), and approvals, lead to significantly higher than expected time and cost overruns for the mining players.

3.3.5. Disclosure of Information by Private Companies

The auction process raises issues about the leveled playing field and the true competitiveness of the bid. The possibility that companies may not share all the data to enjoy an advantage cannot be discounted.

3.3.6. Absence of Sufficient Baseline Data

Currently, less than 10% of India's total landmass has been geo-scientifically surveyed⁶ for an assessment of the underlying mineral wealth. This proves to be a big deterrent to private exploration companies to invest, there isn't sufficient baseline data to justify risky investments.

3.4. The National Mineral Policy, 2019

While the National Mineral Policy of 2008 was an ambitious one, it failed to leave a mark on the ground level. The mining sector had still been mired with issues of unscientific mining, poor track records of environmental and social performance, and high instances of illegal activities. To counter these problems, the Supreme Court in August 2017, issued a direction that prompted the development of a new mineral policy for India. The Court, therefore, asked the Government of India to revisit the National Mineral Policy of 2008 and “announce a fresh, more effective, meaningful and implementable policy.” After one and a half years, a new mining policy was proposed which is known as the National Mineral Policy, 2019. The policy aimed at making India self-reliant in mineral production and taking forward the Central government's initiative of “Make in India”.

⁶ [Why we need a New Mineral Exploration Policy for National Mineral Security](#)

The key elements of the National Mineral Policy, 2019 include:

3.4.1. Inter-generational Equity

Inter-generational equity refers to the fair distribution of resources across various generations. NMP 2019 follows a conservative approach that distributes minerals fairly to avoid over-exploitation and depletion, favoring the current generations as well as the future generations. This approach opposes the idea that mining is an “unsustainable activity” as the policy highlights that the state is the trustee on behalf of the people to ensure that future generations receive the benefit of inheritance. This brings forth a question- How will we achieve mineral security then? For this, the Mineral Corridors were introduced that will help in reducing the cost of transportation, and pollution and will also provide boost to export revenues. Hence, the policy acknowledges the need for exploration and incentivizing new mineral discoveries to sustain the industry. This implies a recognition of the need for a balance between conservation and resource development.

3.4.2. A business-friendly policy

The National Mineral Policy (NMP), 2019 aims to make the mining sector into an industry, this shows the business-centric approach being tried to inculcate. The new policy is guided by the penchant for “ease of doing business” and aims to attract private- domestic and foreign-investment. Exclusive Mineral Corridors have been introduced for the same. These will help reduce the cost of transportation, and pollution and will also provide a boost to export revenues.

In-principle clearances have been proposed to expedite the commencement of mining operations and minimize delays. These clearances are tied to forest land diversion for non-forestry purposes. As most major mining activities involve such land diversion, this will help to open up huge tracts of forest land to multiple companies and investors for mining in one go.

Making the clearance process simpler and faster has been stated plenty of times in the policy document. It goes to the extent of stating that in case of any delay, there shall be provisions for the project proponent to generate triggers at a higher level in the online portal of clearances. **The environmental clearance (EC) and forest clearance (FC) process over the past five years has been streamlined and simplified (making it a single window) for the convenience of the project proponents.** Mineral blocks would be auctioned via pre-embedded (environmental and forest) clearances.

The NMP 2019 also focuses on the use of coastal waterways and inland shipping for evacuation and transportation of minerals. Most of the minerals in India are in hilly areas or where there is a presence of tribes. Infrastructure development has not taken place to its full potential. District Mineral Funds will be used for the development of these areas. This will act as an

impetus for not just the mining sector but will also help in improving basic amenities like water, healthcare, and transportation for the local communities.

However, there are certain loopholes in this aspect of the policy. Though emphasis has been placed on fastening the clearance procedure, nothing has been done to make it robust and comprehensive. **The process still involves a lot of paperwork and dealing with red tape. The policy lacks measures to strengthen the clearance process and post-clearance monitoring.**

There are also concerns about the proposal's impact on forest ecology, wildlife corridors, and forest-dependent communities. The only exception the Policy makes is for 'critically fragile ecological areas', which it says should be declared as 'no-go' and 'inviolable', to keep out from mining. For all other areas, 'easing development' is the prerogative.

3.4.3. Weak In Controlling Environmental Concerns

Environmental pollution stemming from mining activities poses a significant challenge in many mining regions, primarily due to **unscientific and widespread mining practices, lax pollution standards and monitoring, and inadequate management of mines and mine closures.** The adverse effects on air, water, and soil quality in key mining districts across India have had severe repercussions on the health and livelihoods of local communities. However, the policy hardly provides any effective guidance to improve this.

Notably, there is no specific standard on environmental pollution from mining under our umbrella environmental legislation — the Environment (Protection) Act (1986), the Water Act (1974), and the Air Act (1981). **Among non-coal minerals, pollution standards have only been developed for iron-ore mining under Environment Protection Rules, 2010. Also, baseline pollution monitoring data in most mining areas is nearly non-existent or extremely poor.**

In light of this, the NMP 2019 should have specified standards and stated measures for pollution monitoring, especially for minerals with significant production and higher potential for causing environmental pollution. **However, the policy mentions the use of renewable sources of energy at the mining site to reduce operational costs, pollution, and carbon footprint.**

Another shortcoming of the policy is that **it lacks the guidance for effective mine closure.** A key impediment to proper mine closure in India is that the current financial assurance for this needs to be improved. For instance, per the Mineral Conservation and Development Rules (2017), it is just Rs 3 lakh per hectare for A-category mines and 2 lakh per hectare for category B mines, granted on a non-auction basis. These include most mines that are currently operating. This is very low in global comparison.

And as was stated above, in-principle leases are being given top priority. This will lead to reckless forest clearance, which will be a major contributor to greenhouse gas emissions.

3.4.4. Community Concerns Addressed

To ensure the welfare of mining-affected people, the policy has articulated three key measures- relief and rehabilitation of displaced and affected persons, devolution of mining benefits to project-affected persons through the District Mineral Fund (DMF), and ensuring the welfare of tribal communities. The NMP 2019 underscores implementing all the provisions of rehabilitation and resettlement as outlined in the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013.

3.5. Comparison of NMP 2008 and NMP 2019

Parameters	NMP 2008	NMP 2019
Objective	<ul style="list-style-type: none"> Facilitate sustainable development of the sector Ensure the conservation of minerals Minimize the adverse impact on the environment Promote research and development 	<ul style="list-style-type: none"> Enhance exploration and production of minerals Attract private investment Encourage sustainable mining practices Promote transparency and accountability in mineral allocations
Mineral Exploration	<ul style="list-style-type: none"> Encouraged exploration through public and private participation Emphasised the role of Geographical Survey of India 	<ul style="list-style-type: none"> Aims to increase private sector participation Promotes the use of modern technology for same
Mining Lease Method	<ul style="list-style-type: none"> Used the First Come, First Serve basis for lease allocation 	<ul style="list-style-type: none"> Use of Auction for lease allocation(amendment made in 2015)
Mining Lease Period	<ul style="list-style-type: none"> Lease granted for 30 years, extendable for another 20 years 	<ul style="list-style-type: none"> Lease granted for 50 years, extendable for another 20 years
Environment Clearance	<ul style="list-style-type: none"> Emphasis on the need for environmental clearances before starting mining operations 	<ul style="list-style-type: none"> Continues to prioritize environmental clearances for mining projects Focus on sustainable and

		eco-friendly mining practices
Community and Tribal Rights	<ul style="list-style-type: none"> Recognized the rights of local communities and tribes Emphasized the need for benefit-sharing 	<ul style="list-style-type: none"> Stresses on the importance of the well-being of local communities Advocates for the involvement of local communities in the decision-making process Introduction of District Mineral Foundation to mitigate the adverse impacts in mining districts

4. The Need for Mines and Minerals (Development and Regulation) Amendment Bill, 2023

India aims to secure resilient mineral supply chains and is ambitious about its use of clean energy technologies. To achieve this, the Mines and Minerals (Development and Regulation) Amendment Bill, 2023 enables the collaboration of public and private stakeholders to unlock India’s mineral potential. The primary objective is to encourage private participation in the exploration of essential and deep-seated minerals. It shows the shift from the ‘revenue- maximization’ model to the ‘exploration investment incentivizing’ model. The bill identifies six minerals- lithium, beryllium, niobium, titanium, tantalum, and zirconium- as critical and strategic. This Bill shall play a crucial role in controlling India’s import bills.

4.1. Challenges addressed by Mines and Minerals (Development and Regulation) Amendment Bill, 2023

4.1.1. Mining and exploration limited to the government sector

India has promising geological conditions and its geological potential is analogous to that of Western Australia and Eastern Africa. However, exploration has been carried out in only 10% of the Obvious Geological Potential and only 2% is mined. There has been a scarcity of substantial mineral discoveries in the past few decades because most exploration activities are carried out by governmental bodies, such as the Geological Survey of India and Mineral Exploration Corporation Limited (MECL).

4.1.2. Auctioning restrictive for the private sector

The government introduced plenty of provisions in the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR) to make the mining sector more inclusive for the private players. Some of the provisions were First Come First Served (FCFS) and Prospecting Licenses (PLs), Mining Leases (ML), or Reconnaissance Permits (RPs). The Evidence of Mineral Content (EMT) rule which intended to ensure fairness ended up limiting private sector participation by only allowing the auction of projects with prior government exploration. This created barriers for private firms to enter early-stage exploration.

4.2. Major Reforms For The Same

4.2.1. The omission of 6 minerals from the list of 12 atomic minerals specified in Part B of the First Schedule of the Act

The minerals specified in Part B of the First Schedule of the Act have non-atomic uses that outweigh the atomic uses. However, the exploration of these minerals is restricted to the PSUs only. Hence, they are limited.

These minerals are technology and energy-critical having use in the space industry, electronics, technology and communications, the energy sector, and electric batteries, and are critical in India's net zero emission commitment. **Hence, there is a need for rigorous exploration for which the Mines and Minerals (Development and Regulation) Amendment Bill, 2023 proposes to remove them from the list of atomic minerals. This will help in meeting India's growing demand.**

In 2020-21, India imported lithium worth Rs. 173 crore and lithium-ion worth Rs. 8811 crore.⁷ In the coming years, the demand for lithium and lithium-ion batteries is poised to surge as the world transitions towards clean energy. Lithium, along with the other five minerals, holds significant economic importance and faces considerable supply risks because of geopolitical uncertainties.

The Mines and Minerals (Development and Regulation) Amendment Bill will remove lithium, beryllium, niobium, titanium, tantalum, and zirconium from the list of atomic minerals. This will open doors for private exploration of these minerals.

4.2.2. Empowering the Central Government to exclusively auction mineral concessions for certain critical minerals

Out of the 107 mineral blocks allocated to different State Governments, only 19, including graphite, nickel, and phosphate, have been auctioned so far. Given the significant role these

⁷ [Total import of lithium and lithium production- Press Release, 21 March 2022](#)

minerals play in driving economic growth, giving the Central government the sole authority of their auctioning and licensing would enhance the pace of exploration and mineral processing.

Hence, the Act empowers the Central Government to exclusively auction mining leases and composite licenses for certain critical minerals viz. molybdenum, rhenium, tungsten, cadmium, indium, gallium, graphite, vanadium, tellurium, selenium, nickel, cobalt, tin, platinum group of elements, minerals of “rare earth” group (not containing Uranium and Thorium); fertilizer minerals such as potash, glauconite and phosphate (without uranium) and minerals being removed from the list of atomic minerals.

4.2.3. Introducing Exploration License For Deep-Seated And Critical Minerals

100% Foreign Direct Investment (FDI) is permitted in the mining and exploration sector. However, it has not been able to attract a significant FDI. For this, the Act proposes the grant of a new mineral concession, namely, Exploration Licence (EL). **The exploration license, obtained through auction, will authorize the licensee to conduct reconnaissance and prospecting activities for critical and deep-seated minerals outlined in the newly proposed Seventh Schedule to the Act.** The minerals copper, gold, silver, diamond, lithium, cobalt, molybdenum, lead, zinc, cadmium, rare earth elements, graphite, vanadium, nickel, tin, tellurium, selenium, indium, rock phosphate, apatite, potash, rhenium, tungsten, platinum group elements, and other minerals are suggested for removal from the atomic minerals list. The selection of the preferred bidder for the exploration license will be determined through reverse bidding based on the share in the auction premium payable by the mining lease (ML) holder. **The bidder quoting the lowest percentage bid will be designated as the preferred bidder for the exploration license. The government has also removed end-use restrictions for future auctions to encourage the participation of more bidders in the auction and facilitate the increased pace of the auction.** This amendment is anticipated to establish a favorable legal framework, fostering Foreign Direct Investment (FDI), encouraging the participation of junior mining companies in the country, and achieving 100% OGP.

All pending cases under section 10A(2)(b) of the Act have been resolved. The existence of these cases was anachronistic and antagonistic to the auction regime. The closure of the pending cases facilitated the Government to put to auction a larger number of minerals blocks resulting in early operationalization of such blocks and additional revenue to the State Governments. To ensure ease of doing business, restrictions on the transfer of mineral concessions mines have been removed.

4.3. Concerns regarding Mines and Minerals (Development and Regulation) Amendment Bill, 2023

4.3.1. Revenue Generation Mechanism

There is a lack of clarity on revenue prospects during the exploration. The private explorers do not have a clear understanding of the revenue they will receive until the premium from a successful mine auction becomes known. This might discourage the participation of the private sector.

Another issue is the time difference between auction licenses and mineral discovery. Private companies generate revenue by receiving a portion of the premium paid by mining entities. However, the actual realization of this revenue is dependent on successfully discovering a mine and subsequently auctioning it. The 2023 Amendment Bill requires mining lease auctions to take place within six months if mineral resources are proven after exploration. This timeframe may not align with historical trends, potentially causing delays or even preventing auctions from happening due to clearance timelines and complexities related to deposits. For example, the Ghorabhurani-Sagasahi Iron Ore Mine's auction in 2016 took nearly six years to commence production due to clearances, illustrating the possible time-consuming nature of the auction process.

4.3.2. Challenges with auction-based allocation

Conducting auctions becomes more practical when dealing with resources of established value, like already-discovered mineral deposits. Auctioning unexplored resources is complex due to the inherent unpredictability in estimating the value of undiscovered mineral resources.

4.3.3. Capital Investment Assurance

In 2012, the Supreme Court emphasized that companies are more likely to invest in exploration and mining contracts when assured of efficiently utilizing discovered resources. However, the Act restricts the private explorers from directly selling their findings and opting for government auctioning instead. They are entitled to only a share of the premium that too at an unspecified stage.

5. Extent of State Control on Mines and Minerals⁸

The Central government regulates the mining and mineral development while the State government grants concessions, and collects royalty and other fees for mines located in its jurisdiction. The concessionary rights are granted through an auction. The private party who has

⁸ [Chapter XII Mines and Minerals- Inter-State Council Secretariat](#)

the mining lease for particular minerals has full title, though with permitted end-use stipulations as may be applicable over these minerals.

In 2013, the Supreme Court conferred rights to mineral wealth on owners of surface rights rather than vesting them in the state, which has been upheld in recent judgments as well. **However, the Supreme Court is yet to rule on certain aspects of ownership of minerals such as the liability of private owners to pay royalties to the state.**

As per the recent reforms, a landowner who wants to grant a prospecting license or mining lease to a third party can do so only with state government authorization. In cases of such private mining leases, the mining lessee must comply with the central government mining regulations as well as provide the state government with a security deposit to ensure compliance with the mine closure plan.

6. The Best Mining Policies

6.1. In India-Rajasthan

All the Indian states have mining policies that guide the mining practices and grievance address systems. Currently, **Rajasthan's mining policy is the most inclusive one. It covers the dimensions of mineral exploration, the environmental impact of mining, the impact of mining on the tribal communities, and meeting the state's mining with world standards. Its focus is on clarity of procedures, transparency, and accountability.**

The Mining Policy of Rajasthan regards natural resources as wealth of the people. It highlights that minerals are a means of achieving industrial development. The policy emphasizes widespread job creation from mining, especially for workers drawn from scheduled castes and backward communities. It aims to increase revenue for the Government from mining. Measures have been stated for the same, such as emphasis on introducing cutting-edge technology in exploitation. The state also wishes to increase the role of the private sector.

The Mining Policy is also focused on environmental sustainability. Importance has been given to minimizing waste by waste recycling. Adequate marketing of policies was also done by Rajasthan. For the same reason, there is a large number of private-sector mining operators in the state.

Rajasthan's mining policy is quite an ambitious one. It is one suitable for attracting investments from private entities. **However, little attention was paid to dealing with environmental concerns and the impact on tribals. There are instances of illegal mining, exploitation of workers, and displacement without compensation among many others, which are the only downturn in the policy.**

6.2. Across the World-Australia

Australia is a major global exporter of minerals. It contributes significantly to the global supply chain. In 2021, Australia was the second-largest producer of gold and lead; the third-largest producer of black coal, cobalt, manganese ore, and zinc; the fourth-largest producer of antimony, rare earth, and uranium; and the fifth-largest producer of magnesite, nickel, silver, and tantalum.⁹

Australia has a variety of mineral resources. This provides a solid foundation for the country's mining industry and makes it a leading global supplier of various minerals. However, it is a stable and transparent regulatory framework that provides a favorable business environment, fostering investor confidence and long-term planning. The integration of advanced technologies, such as automation, robotics, and data analytics, has enhanced efficiency, safety, and environmental sustainability in mining operations.

The mining companies there are known for their efficiency in extraction and processing operations. They have adopted best practices in mining methodologies, equipment utilization, and project management, contributing to cost-effectiveness and productivity. Australia's mining sector has shown commitment to sustainable and responsible mining practices. Environmental regulations and industry standards promote rehabilitation of mined areas, biodiversity conservation, and effective waste management.

Community engagement and social responsibility are prioritized. Collaboration with local communities, consultation processes, and programs for social and economic development help in maintaining a social license to operate. Workforce development initiatives are undertaken to upskill the workers. Training programs and partnerships with educational institutions have been undertaken.

Emphasis has always been laid on research and development initiatives. Government, private companies, and research institutions collaborate to constantly improve mining practices.

Australia's leadership in the global mining sector is the result of a combination of factors- an abundance of mineral resources, a transparent regulatory environment, innovation, and efficient mining practices.

⁹ [World Rankings- Geoscience Australia](#)

7. Socio-Economic Impact of Mining

7.1. Economy, Income, and Security

The mining sector is supposed to have a positive impact on the local and national economy. It gives stimulus to the local economy by increasing the incomes of the residents. It supports the national economy as the extracted minerals aid the industries nationwide and are exported for high value. Moreover, many allied services are required for the mining sector. Hence, the growth and development of the mining sector give stimulus to the allied services.

However, these benefits were stalled due to mismanagement and corruption. The Central Empowered Committee (CEC) in 2014 said that at least 2,131 lakh tonnes of iron ore and 24 lakh tonnes of manganese ore had been mined either without environmental clearance (EC) or beyond the permitted areas of the mining leases in Odisha between 2000-01 and 2010-11. The nationwide figures are, of course, way bigger. This led to a loss of around Rs. 17,500 crores for the country.¹⁰

The richest states in terms of minerals are India's poorest states. For instance, Bihar has a population below the poverty line at 41.4%; in Chattisgarh, it is 40.9%; Jharkhand has 40.3%; Orissa has 46.4%.¹¹

Mining poses a threat to the livelihoods of women, especially the ones who are dependent on forest resources and agriculture. Their economic dependence increases. The workers in illegal mines are paid lower than the minimum wages, with some reports stating to be between Rs. 80 and 250 per day¹². This has led to a lack of confidence in the people in the private entities. They believe that the companies would exploit them to an even greater extent, hence, they do not want them to come into play.

7.2. Employment and Education

The mining sector leads to employment generation and skill development in the sector of allied services. However, a peculiar trend has been observed in the Indian states. Workers from other states migrate to work in mines, leaving the workers of their home states out of jobs. This somewhat lowers public confidence in government policies. Besides, skill development programs exist, but they are for a minimal number of workers. Hence, there is no value addition to the existing talent of the people. There are a plethora of instances of child-, forced-, and compulsory

¹⁰ [Odisha Govt at Fault for Allowing Illegal Mining, Says CEC Report- The New Indian Express, 18 October 2014](#)

¹¹ [State-Wise Percentage of Population Below Poverty Line by Social Groups, 2004-05](#)

¹² [All that glitters: Labour exploitation in India's mica industry- IEMA](#)

labor. In Rajasthan and Karnataka, 7 percent of child labor is in mining. Increased unemployment has been observed due to increased mechanization of mining operations.

7.3. Land Use and Territorial Aspects

Land competition can arise when mining projects are developed. This can endanger the well-being of local communities and lead to their impoverishment. The expropriation of mining has often led to displacement and resettlement of the local communities, including tribes. According to a report by the Centre for Science and Environment(CSE), between 1950 and 1991, mining displaced about 2.6 million people -- not even 25 percent of these displaced have been rehabilitated. About 52 percent of these displaced were tribals; For every 1 percent that mining contributes to India's GDP, it displaces 3-4 times more people than all the development projects put together.¹³

Mining has often led to limited access to land for rural people, leaving little land for agriculture and causing food insecurity. This problem is common in the Indian states of Chhattisgarh, Jharkhand, and Odisha where farmers lost their agricultural plots to coal mines.

7.4. Health and Safety

The mining sector endangers the health and safety of the local communities. It can have a direct impact in the sense that it increases the risk of high blood pressure, heat exhaustion, myocardial infarction, and nervous system disorders. Cases of tuberculosis, silicosis, and other lung diseases are widespread. Workers in coal, granite, and rock mining face the added risk of dust inhalation. Coal mines lead to premature deaths, ranging from 80,000 to 1,15,000 deaths, every year.¹⁴

Mining also has an indirect impact on the local communities as it can lead to reduced water supply and contamination. There is no prevention, compensation, or monitoring system of any kind in the mining sector.

7.5. Human Rights

Violations of human rights have been observed in various forms. These include discrimination against vulnerable groups, lack of stakeholder inclusion, and respect for indigenous populations. Local communities have been displaced without proper compensation, employment, and rehabilitation. They are left to survive on their own. There are instances of sexual harassment of women on mining sites. The Human Development Indicators(HDIs) are stagnating in the mine-dominated areas, compared to the national average.¹⁵

¹³ [CSE's study on mining, people, and environment- Centre for Science and Environment, India](#)

¹⁴ [Not moving away from coal is killing 1 lakh a year in India](#)

¹⁵ [Inequality-adjusted Human Development Index for India's States](#)

8. Environmental Impact of Mining

8.1. Water Use

Water is needed at many stages of the mining process such as dust mitigation, removing soluble particles, sieving and separation processes, and creating tailings dams for waste management hence, mining has high water footprints. The water used in mining operations becomes saline and therefore, cannot be used by other industries or domestically. High water use in mining operations can lead to reduced access for local people to uncontaminated freshwater supplies and can result in a local area suffering from water stress.

The impacted floodplains due to the mining waste house a substantial population of about 23.48 million people, in addition to sustaining a significant livestock population of 5.72 million. Moreover, these regions cover an expansive area exceeding 65,000 square kilometers of irrigated land.

8.2. Mining Pollution

Instances of mining pollution have been reported, which are often caused by leakages of mining tailings. Tailings consist of valuable minerals such as cyanide, mercury, or arsenic which are radioactive, toxic, or acidic. Besides, mining operations also lead to air pollution. During the mineral extraction process, which includes excavation, blasting, and transportation of minerals, harmful aerosols are generated. Vehicles and heavy equipment used during mining also produce exhaust emissions that contribute to these pollution levels.

8.3. Land Degradation

Drilling and excavating open pit mines leads to severe land degradation. Environmental problems are also associated with the surrounding infrastructure. This includes camps to provide accommodation for the miners as well as the railways and roads needed to transport the mined materials. The infrastructure created by mining operations in remote, untouched landscapes can lead to improved access to these regions but may result in human-caused disturbance in the local ecological ecosystems.

8.4. Biodiversity Damage

Illegal mining is prevalent in almost all Indian states. This has been causing damage to the local ecosystem. An estimated 1.64 lakh hectares of forest land has already been diverted for mining in the country. For instance, the forests in Bardhaman have been decimated by mining. Moreover, there are discrepancies in the e-auctions and leasing. In 2020, a lease was given to operate in the

Dehing Patkai Wildlife Sanctuary in Assam. A similar instance was observed in Gujarat where a lease was given for mining & quarrying in eco-sensitive zones of Girnar sanctuary.

8.5. Greenhouse Gas Emissions

The destruction of vegetation and soils when land is cleared for mining results in the release of carbon dioxide and other greenhouse gases. The creation of products from mined materials uses high amounts of energy throughout the different stages of the production chain and most of this energy is currently sourced from the burning of fossil fuels. Smelting releases a variety of toxins such as lead, nitrogen, sulfur, mercury, sulphur dioxide, zinc, cadmium, and uranium. Smelting also releases large amounts of greenhouse gases into the atmosphere, which has severe and long-lasting impacts.

9. Illegal Mining in India

Mining is considered illegal when it is done without a license and when more than a permissible amount is extracted. According to estimates, the exchequer lost Rs 18,000 to Rs 20,000 crore to illegal mining¹⁶. Besides, the workers in these mines are paid below the minimum wage and the working conditions are abysmal. Large-scale illegal mining fills individual pockets instead of supporting a strong state apparatus.

Illegal mining is carried out in all the resource-rich states by mining mafias who hold power and money and what follows is the exploitation of human resources and degradation of the environment.

9.1. How do Mining Mafias Operate?

Powerful mining mafias, who carry out illegal mining operations, have entrenched themselves in cahoots with local administrations and government authorities. Even the highest authorities are found involved in these illicit activities. The modus operandi is to extend the operations beyond the government-sanctioned land. Besides, private companies often form cartels to make the lowest bid possible for auctions.

The mafias exploit the locals and intimidate the activists. A tax, rightly called the “goonda tax” is levied on villagers and tribals. They avail services of the locals and take a tax from them. Non-compliance with this results in threats and intimidation. Furthermore, activists are bribed and intimidated. Activists who lodge their complaints are ignored and frequently harassed, including

¹⁶ [Illegal mining: Govt incurring Rs 18-20k cr loss- Deccan Herald](#)

by the authorities. Several locals, activists, and government officials have died in connection to these illegal mines.

The miners are supposed to pay royalties for the mineral extracted. Illegal operations help them sidestep the need for royalties on extracted minerals thereby maximizing personal profits. This has made business entrepreneurs, politicians, and goons only richer.

With large sums of money involved in these illegal operations, most political parties and government leaders do not bother about implementing the ban on such practices and sitting MLAs, and in certain cases, even the Chief Ministers of states and their associates are found involved in these practices.

One of the major contributors to illegal mining is the difficulty in getting clearances. Legal sites need environmental clearances, which can take up more than a year to get processed. However, this cannot be accepted as an excuse for the inefficiency of the system.

9.2. Mining Scams in India

The primary concern regarding illegal mining in various Indian states is that even the highest government authorities are involved in these practices. The ongoing case of Jharkhand is an example of this. Chief Minister Shri Hemant Soren's press advisor Abhishek Prasad was summoned recently. Among the others summoned were Sahebganj deputy commissioner Ramniwas Yadav and Ranchi-based architect Binod Singh. Cash and 21 cartridges of different calibers from the premises of Sahibganj DC.

This links up to another major problem- enforcement agencies are not equipped with the resources to protect themselves and deal with the well-armed mafia. The fact that senior officials are not provided with even a service revolver shows the lack of government will to rein in these unruly elements.

As large sums of money are involved in these illegal operations, most political parties and government leaders do not bother about implementing the ban on such practices. In its quest to control illegal sand mining, the current Punjab government ended up trying three mining ministers, but the effort was in vain.

10. Recommendations

10.1. Collaborations and Partnerships

The mining sector can collaborate with corporations, academia, and foreign institutes to improve mining procedures and enhance revenue generation mechanisms. Annual "Mining Summit/Fair" may be organized by the Ministry of Mines inviting mining equipment firms and mining firms to

exhibit their best practices and cleaner technologies. At the same summit, research institutes may be invited to discuss their developments in the sector and analyze their feasibility in India. A joint group may be formed with the industry leaders, domestically and globally, that works on making India globally competent in the industry, extending the value chain, and improving the supply chains.

10.2. Consent from Local Communities

The primary owners of the land, the locals, may be included in deciding whether a concession may be granted or not. Gram Sabhas may issue a public notification before granting a concession and accept objections for at least 30 days thereafter. Special provisions can be included for the Scheduled Areas to avoid undermining the Panchayat Extension to Scheduled Areas Act (PESA) structure of governance. Tribes Advisory Council may be made an important stakeholder in the decision-making process.

In addition to this, affected communities may be given a 26% share of the net profit of mining companies, with clear mechanisms of redistribution and ownership under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, in short, referred to as the Forest Rights Act (FRA). The rights of local communities are to be respected, and mining cooperatives may be given importance and even made mandatory in PESA areas.

10.3. Improving Vigilance on Environmental Impact

A ceiling may be proposed for the annual excavation of ores by the Environmental Impact Assessment (EIA). Lease-holders may contribute a certain portion, say 10%, of their sale proceeds towards a public fund directed towards sustainable mining. Each state undertaking major mining activity may set up a Mining Development Fund (MDF) by earmarking 15% of the annual royalty collection for the Fund. The GoI may also make a matching contribution to the MDF of each state of an equal amount from the Plan funds, every year. This fund may also be used for sustainable mining- governments and mining companies can conduct cumulative and strategic assessments to formulate plans and policies.

10.4. Removing Ambiguity from Definitions

The terms “affected persons” and “adequate compensation” may be clearly defined to negate the chances of ambiguity. The definition of “affected persons” may be defined in a way that captures the social, cultural, and environmental impacts of the project. It should not only include people displaced by a mine but also those whose livelihood is otherwise affected. For “adequate compensation”, the bill guarantees that a certain amount would be given to the affected persons,

but the authority to set that amount is given to various State governments. The exact amount may be clarified in the bill. The Bill may define a minimal amount for compensation, linked to a dynamic index such as the Consumer Price Index.

10.5. Clearly Defining Parties to SDF

The Sustainable Development Framework (SDF), the government's guidelines for environmental and social sustainability, can rely on clear indicators that capture the social and environmental impact of an industry. The NMP 2019 Bill may clarify which parties are responsible for implementing the SDF, monitoring it, and enforcing that no mining takes place outside of its purviews. Similarly, Environmental Impact Assessments may be made more transparent, and include provisions ensuring the cancellation of environmental clearances and even banning mining for some time where impacts on communities and the environment are intolerable. The Bill may also mandate disclosure and impose dissuasive penalties for violations. The coordination between different agencies regulating the sector is to be strengthened. The role of National and State Mining Regulatory Authorities may be better defined, and policymakers may ensure that these bodies do not overlap with the National Committees.

10.6. Rationalizing Royalty Rates

The number of rates imposed on the mining sector may be brought down and ad valorem royalty may be extended to more minerals to improve the competitiveness of India's industries. In considering raising the ad valorem rates, the Australian markets may be considered as a benchmark for determining the competitiveness of royalty rates. Besides, the royalties on base metals, noble metals, and precious stones may be a low level to incentivize exploration in these minerals in which the country is grossly deficient. The rates of dead rent may be rationalized so that they act as an effective deterrent against a mine owner who does not undertake mining as per the approved mining plan and prefers to keep large areas idle and keep the mineral resources undeveloped. In other words, an escalating scale of dead rent can be worked out. This can be stringently applied to captive miners and PSUs as well.

10.7. Encouraging Exploration by Private Players

To encourage exploration, which is a pre-mining activity, the current restriction of four years for allowing the deduction of expenditure on exploration and development from the income tax may be eliminated. All expenditure on exploration and development in the preceding ten years before the commencement of commercial production can be allowed for deduction in mining operations. Further, the mining companies can be given the option to claim a deduction either in

the first ten years of commercial production or during the useful life of the mine. Reconnaissance may be made non-exclusive to attract more players and may be recognized as an independent activity with full transferability of concessions.

To increase exploration in India and make the functioning faster, the National Mineral Exploration Trust (NMET) may be made an autonomous body. This will also help to accomplish our Obvious Geological Potential and meet international standards in exploration.

10.8. Provision for Non-Payment of Royalty

The penalty for non-payment of royalty is cancellation of the concession. A moratorium or another suitable structure may be introduced for deferment of royalty payment to support investment in deserving cases, to be spelled out clearly in the MCR, and could also be permitted in deserving cases. When the mining license of a prospected area is transferred for a premium by a prospecting firm in favor of a mining firm or if the firm itself is taken over or acquired by a mining firm for consideration, a transfer fee as a percentage of the premium or consideration may be levied.

10.9. Single Window and Time-Bound Environment and Forest Clearances

The PARIVESH platform may specify whether underground mining or open-cast mining would be permitted in forest areas. All statutory approvals may be granted within 180 days of application for exploration and mining of minerals. Local forest officers may be empowered to grant permission under the FC Act, 1980 for exploration in forest areas.

10.10. Boosting Minor Minerals through a Relaxed Licensing Regime

Landowners/farmers/tribals may be given mining rights for minor minerals on their land, to enable them to mine either on their own or by outsourcing it, without auction or payment of an additional 30 percent of the royalty to the DMF. However, if the landowner does not intend to undertake the mining of minor minerals on her land, these mining leases can be allocated through the auction route.

10.11. Regulation of Unutilized Mines

The huge mineral-bearing areas reserved for state agencies that have not been utilized for more than 2 years can be de-reserved and allocated to the end user industry/ auctioned.

10.12. Introducing “Surficial Minerals”

A new group of minerals called the Surficial/Surface Minerals may be formed. This group can consist of Limestone, Iron Ore, Bauxite, and Coal and Lignite. For this set of minerals, the exploration norms are to be rationalized by bringing the requirements down to G3 level for Mining Lease and G4 level for Composite Lease, making the auction regime easier and facilitating more blocks into the auction.

10.13. Developing a Transparent Mineral Index

Transparency in estimating the mineral index of non-fuel minerals such as that for coal would lead to an efficient allocation of resources with adequate returns to the exchequer. The prices have to be determined in the open market and computed as rigorously as for the coal index.

11. Conclusion

The mining policies of India have evolved over the years, making attempts to increase production to an extent that not only meets domestic demand but also makes India sufficient to export. These moves are aimed at controlling India’s import bills and also earning by exporting. In addition to this, as the global supply chains have become even more uncertain, India’s mineral atmanirbharta is the key to the country’s growth.

Despite the progress in improving the policy framework, the mining sector is marred by the challenges of corruption and illegal mining. There are also environmental concerns. This paper suggests measures for the same. Four key principles are to be kept in mind that serve the interests of local communities, and the environment, while also taking into account economic considerations that must serve the public by large, and not just certain groups. These include the international principles of sustainable development, the precautionary principle, the polluter pays principle, and intergenerational equity.

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