सत्यमेव जयते

BACKGROUND NOTES

FOR

2ND NATIONAL CONCLAVE

ON MINES AND MINERALS

15th Feb, 2017 at Hotel the Ashok, New Delhi

Mineral Scenario in India

- Mining sector is one of the core sectors of economy. It provides basic raw materials to many important industries.
- Mining sector (including fuel, atomic, major and minor minerals) contributed about 2.4% of GDP in 2014-15 as per the data released by CSO. The non-coal & non-fuel minerals contribute to 0.76 % of GDP.
- The growth in the mining sector in terms of production of minerals has significantly improved in comparison to recent past. It is pertinent to recall that the sector recorded a negative growth of 0.6% for two consecutive years (2011-12 and 2012-13). The mining sector had been hit hard due to the policy paralysis. The mining activities had been stalled owing to court cases, environmental, regulatory and land acquisition issues.
- There has been a notable turn around ever since government has taken initiative for policy reforms. This turnaround is very much visible in terms of growth in Gross Value Added (GVA) in mining and quarrying sector. The sector grew by 5.4%, 2.4% & 4.7 % in 2013-14, 2014-15 & 2015-16 respectively at current prices. During 2016-17, so far the sector has recorded a growth of 1% in comparison to similar period last year.
- The index of Industrial Production for the mining sector (both fuel and non-fuel) in the month of November, 2016 stood at 135.9 with a corresponding growth rate of 3.9 percent as compared to November, 2015. However, the cumulative growth in the sector during April- November 2016-17 has been 0.3 percent over the corresponding period of previous year. Index of Mineral Production for minerals under MCDR for Novmber, 2016 stands at 141.0.

- There is a noticeable surge in mineral production in India in the recent times. It is heartening to note that production of major minerals during 2015-16, has recorded the growth of 9 % in comparison to same period last year. The real contributor to this growth story have been Bauxite (27 %), Chromite (33 %), Copper Conc. (30 %) , Iron ore (21 %) and Lead Conc. (32 %) in the metallic segment.

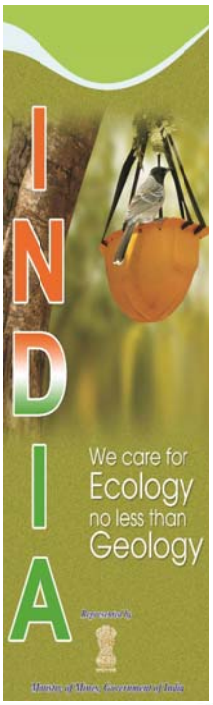
- **Present economic scenario and mineral sector implication**
  - GLOBAL SCENARIO
    - Slowdown in commodity market in being reverced
    - Rebalancing in China
    - Non-economic factors such as geopolitical tension and political discords are generating uncertainty
    - Slowdown in investments and trade.
  - INDIA SCENARIO
    - However, India still remains at a bright spot with, slightly reduced but still strong growth of 7.1% in 2016-17 (AE) and rising real incomes.
    - RBI's latest rounds of forward looking surveys indicate an improvement in the
      - Overall business situation;
      - Public investment in infrastructure sector - especially in roads and railways
      - Likely to have a positive impact on the metals industry and will boost the demand for minerals like Iron, Aluminum, Copper, Zinc, etc.

  - Higher commodity prices make new year more favourable for mining projects
  - **Budget 2017** - ***Allocation for infrastructure stands at a record Rs 3,96,135 crore which is further going to provide fillip to the mining sector***
  - **2015-16: 9% overall growth** of production of metallic and non-metallic minerals.
  - Growth drivers (2015-16) :
    - Iron ore - 21%
    - Bauxite- 27%
    - Chromite - 33%
  - **2016-17 (Up to November): 8.1% overall growth** of production of metallic and non-metallic minerals.
  - Growth drivers (2016-17 Up to November) -
    - Iron Ore – 23.6%
    - Chromite – 15.6%
    - Manganese Ore – 7.1%

- We have a new Mission for turning "Made in India" into a global name. In the coming years, Mining is expected to be a key industry to foster investments, both domestic and foreign, and thereby generating additional employment.
- Vision for the Mining Sector

  "Achieve optimal utilization of India's Mineral Resources through adequate investment in mineral exploration, mining area infrastructure development and development of beneficiation & extraction metallurgy, without causing any adverse impact on the ecology and habitat in order to attain self sufficiency in production of various metals; and support economic growth and emerge as a significant provider of job opportunities for our growing labour force,"

MMDR Act Amendment



- The most significant achievement of the Government was the amendment of the MMDR Act, which governs the mineral sector. The Amendment has been effected from 12th Jan, 2015.
- **MMDR ACT amended in January 2015**
  - Mineral Concessions Grant Through Auctions to bring transparency and remove discretion
  - **DMF**: District Mineral Foundation (DMF) to address the long time grievance of the people affected by mining
  - **NMET**: National Mineral Exploration Trust for incentivizing regional and detailed exploration
  - Mining Leases for 50 years - Existing leases deemed extended
  - Stronger penal provisions for checking illegal mining - Higher penalties up to 5 lacs per hectare of the area and jail term up to 5 years
- The act has been amended again in 2016 for proper definition of lease area and to allow the transfer of captive leases, which have not been acquired through auction.

Mineral Block Auctions

- The necessary rules enabling the auction of mineral blocks under the MMDR Amendment Act, 2015, viz. Mineral (Evidence of Mineral Content) Rules & Mineral (Auction) Rules were notified soon after by the Minstry. **The Ministry also formulated the 'Model' tender documents to facilitate the State Governments to expedite the auction process.** Senior officers from Ministry of Mines were also deputed to different States for facilitating the preparedness of available blocks for auction.
- In order to provide further **hand-holding support for the implementation of auctions of mining leases/PLs-cum-MLs, teams of GSI, IBM, MECL, MSTC, SBICAP & MECON have been deputed to the states to further assist in crucial activities for auctioning** viz. area demarcation by total station & DGPS, transaction advisory, compilation and digitization of GRs, auctioning platform, etc.
- 58 major mineral blocks have been notified by 9 States for auction.
- The auctioning results as on 03.02.2017, which are successfully auctioned:

  - 1 limestone block in Andhra Pradesh concluded on 08.06.2016
  - 2 limestone blocks and 1 gold block in Chhattisgarh concluded on18.02.2016, 19.02.2016 and 26.02.2016 respectively.
  - 2 limestone block and 1 gold block in Jharkhand concluded on 12.02.2016 and 26.10.2016 respectively.
  - 7 iron ore blocks in Karnataka concluded from 01.10.2016 to 06.10.2016.
  - 1 Diamond block- First ever diamond block auctioned in the country in the state of Madhya Pradesh concluded on 05.10.2016.
  - 3 limestone blocks in Rajasthan concluded on 22.09.2016, 05.01.2017 and 06.01.2017 respectively.
  - 1 iron ore block in Odisha concluded on 02.02.2016 and 1 limestone and 1 manganese block each concluded 27.12.2016.

- The summary results of the twenty-one successful mining blocks put to auction across the country show that mineral with estimated value of resources over Rs. 93,190 crores have been disposed of in a transparent manner.
- The total estimated revenue to the state government over the lease period stands at Rs 73,359 crores. Out of this the cumulative Royalty, District Mineral Fund (DMF) and National Mineral Exploration Trust (NMET) contributions works out to be Rs. 15,825 crores (Rs. 14,130 crores, Rs.1,413 crores and Rs.283 crores, respectively).
- The success of e-auctions has not only put a stamp of approval on the auctioning scheme as envisaged by the Ministry, but, more importantly it will harness substantial additional revenues to the states' exchequers far much more than what is being collected through royalty.
- e-auction had to be **annulled** due to insufficient number of applications of initial bids for **37 blocks**
    - **Issues identified**
        - the quantity and grade of ore,
        - quality of the mineralization studies,
        - land ownership pattern,
        - general dull market scenario
        - any end use conditions imposed by the states in the bidding documents
        - The apprehensions raised on average sale price notified by IBM being particularly high in limestone has been countered by the successful auction of limestone block at extremely high percentage of sharing of the value of mineral dispatched up to 60.09 % in one of the blocks of Rajasthan.
- **Auction Blocks in pipeline: 2016-17 & 2017-18**

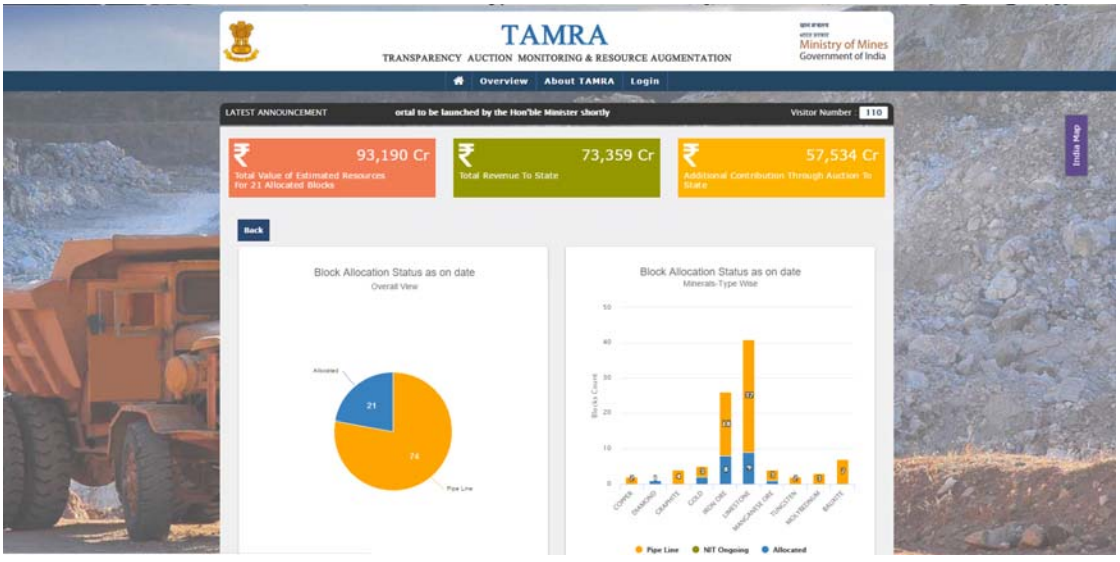
State	Ongoing (2016-17)	In pipeline (2017-18)				
		Lapsed applications under section 10A(2)(c) (not having court cases) **	Exploration being done by State DMG	Exploration being done by GSI	Exploration being done by MECL	Total
Andhra Pradesh	3	2	4	2	-	**11**
Chhattisgarh	3	13	7	4	-	**27**
Gujarat	8	-	5	1	-	**14**
Jharkhand	1	22*	13	2	1	**39**
Karnataka	10	15*	-	-	32	**57**
Maharashtra	9	25*	-	-	-	**34**
Madhya Pradesh	-	2*	6	-	-	**8**
Odisha	2	32*	8	4	-	**46**

Rajasthan	-		2	6	-	**8**
Tamil Nadu	-	-	16	1	-	**17**
Telangana	-	3	16	-	-	**19**
Total	**36**	**114***	**77**	**20**	**33**	**280**

* - The number of available section 10A(2)(c) cases which will be available for auction require additional study to be done by the State Governments into the level of available exploration and its feasibility for auctioning

** - There are about 83 more lapsed applications which may become available for auction in which the applicants have gone to the courts.

- **Handholding Post Auction –** An Inter-ministerial group (IMG) of key stakeholder government organizations has been formed to facilitate the successful bidder to expedite the clearances and approvals required to start mining. The IMG formed - Post Auction Mining and Approvals Facilitator (PAMCAF) has been rechristened into **Transparency, Auction Monitoring & Resource Augmentation (TAMRA)**
    - To facilitate and expedite various clearances/ approvals required after the mineral block is allocated through e-auction an inter-ministerial group i.e. Post Auction Mining and Approvals Facilitator (PAMCAF) has been constituted.
    - 2 meetings have already been conducted.
    - An online system of monitoring and facilitating of clearances under PAMCAF has been developed. The online system will also be working on the mobile platform and would enable effective monitoring of the clearances and approvals.



Online Portal: TAMRA - Clearances & Approvals Monitoring

- Success of auction procedure is dependent of host of factors including demand and supply configuration of the ore in the vicinity, the quantity and grade of ore, its consumption pattern, quality of the mineralization studies, land ownership pattern, coastline environment restrictions wherever applicable, general dull market scenario and any end use conditions imposed by the states in the bidding documents.

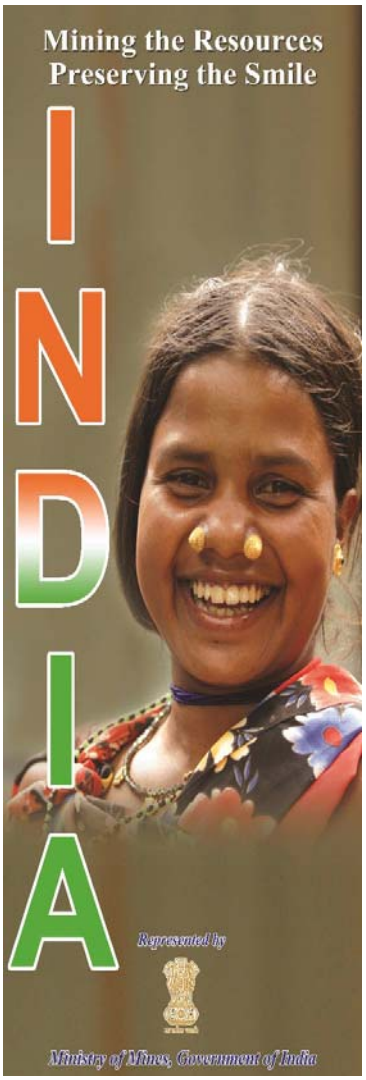
Review the regulatory framework of the mining and mineral sector

The MCDR (Mineral Conservation & Development Rules) are the basic rules for regulating the mining related activities in the country. It is being revised to align it with the amended Mines & Minerals (Development & Regulation) (MMDR) Act, changed legal scenario, and incorporate the modern IT systems into the mineral regulation. It would also entail timelines on part of the Government. The revision of MCDR is being done to enable the following tenets laid down by the MMDR Amendment 2015. The stakeholder comments have already been solicited and the MCDR have been finalised. The notified MCDR will help the mineral industry to better adapt to the legislative transition.

Review of the legislative framework- atomic minerals

Atomic mineral rules have been formulated giving greater participation of the government in exploration and mining of the Atomic Minerals, which are strategic minerals from the point of view of defense, power and self sustainability in development of modern technologies. It prescribes threshold values of atomic mineral contents, above which the responsibility of exploration and mining will only be in the hands of Government and its bodies. The ambit of atomic minerals have been widened to include minerals which are found necessarily associated with the existing atomic minerals i.e. beach sand minerals.

DMF : Socio-economic Benefit Sharing



- DMF is meant to address the long standing demand of the local people in mining areas for inclusive growth. The funds for DMF will be met from additional contributions of 30 % of royalty by existing miners and 10% by miners granted mines after the MMDR Amendment w.e.f. 12.1.2015. The Annual budget of DMFs for major mineral States would be about 6000 Cr.
- The Government has formulated Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY) to be implemented by the DMFs of the respective districts. It has been issued as a directive under Section 20A of the Act by the Central government on 16.09.2015.
- The PMKKKY has mandated **60% of the funds to be utilized in a for High Priority Areas**, such as Drinking water / Environment preservation and pollution control / Health care / Education / Skill development / Welfare of women, children, aged and disabled people / Sanitation and
- **40% of the funds to be utilized for Infrastructure** - Roads & physical infrastructure / Irrigation / Watershed development. The projects implemented under PMKKKY will help create a congenial mining environment, ameliorate the condition of the affected persons and create a win-win situation for the stakeholders.
- It is in the interest of the State Governments to expedite the setting up of DMF so that these funds being accrued, may start getting utilized for the welfare and development of these areas as laid down by the PMKKKY scheme. Such welfare activities are bound to create goodwill for the mining industry amongst local population.
- The State Governments also have been empowered to constitute DMF for Minor Minerals under the newly inserted section 15A in the MMDR Act.
- **Till Jan, 2017** – of the 12 mineral rich states – all except TN, all have framed Rules and established DMFs. TN yet to start collecting funds.
- So far, total 287 districts in 11 mineral rich states are covered under PMKKKY.

- Rs.5817 Crores has been collected as on 31.12.2106.
- The details of DMF collections for major minerals, as reported by the States is

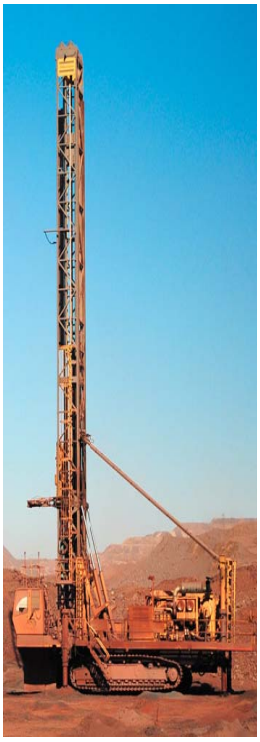
DMF Figures as on 31.12.2016

S.No	State	Whether rules for DMF notified		Total Districts	Total Number of districts in which DMF has been set up	Date of setting up of DMF		Total Amount Collected (figures are in Rs. crores)
		For Major Minerals	For Minor Minerals			For Major Minerals	For Minor Minerals	
1	Goa	Yes	No	2	2	15.01.2016	N/A	63.24
2	Karnataka	Yes	Yes	30	30	11.01.2016	12.08.2016	*209.09*
3	Chhattisgarh	Yes	Yes	27	27	02.01.2016	02.01.2016	940.52
4	Odisha	Yes	No	30	30	18.08.2015	N/A	1781.83
5	Madhya Pradesh	Yes	Yes	51	51	15.05.2015	N/A	859.77
6	Jharkhand	Yes	No	24	24	22.03.2016	N/A	*983.37*
7	Rajasthan	Yes	Yes	33	33	31.05.2016	31.05.2016	527.12
8	Telangana	Yes	Yes	10	10	21.06.2016	N/A	*91.62*
9	Andhra Pradesh	Yes	No	13	13	14.03.2016	14.03.2016	127.6
10	Gujarat	Yes	Yes	33	32	01.04.2016	01.04.2016	116.96
11	Maharashtra	Yes	Yes	36	35	01.09.2016	01.09.2016	*116.31*
12	Tamilnadu	No	No	32	0	------	------	0
Total				**321**	**287**			**5817.43**

Impetus on Exploration

It is stated that India is largely unexplored as far as mineral wealth is concerned. Therefore, thrust gear up the public sector agency i.e. Geological Survey of India to speed up the exploration work on scientific lines. Recognising that the task is daunting, sincere efforts are being made to encourage the Private Sector to take up this challenge. The thinking of the Government is reflected in the key initiatives of NMET, NMEP policy and engagement of agencies for being qualified for taking up the exploration work.

The adoption of auctions for grant of mineral concessions has greatly shifted the burden of doing exploration on the Government. A **National Mineral Exploration Trust** was created through the MMDR Amendment Act, 2015, of contributions of a sum equivalent to additional 2% of the royalty from the mining lease holders for undertaking exploration in the country. 21 exploration projects, costing around Rs.43.38 crore, have been arranged in the States of Odisha (3), Madhya Pradesh (4), Chhattisgarh (4), Maharashtra, Rajasthan (5), Andhra Pradesh (2) (2) and Karnataka (1).

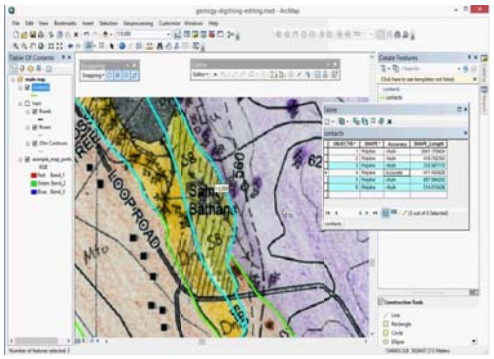


Further, there is a progressive decline in the availability of non-bulk surface deposits, on account of exploitation of all known deposits, which have sustained the human civilization over several millenniums, it has become imperative world over to look for deep seated mineral resources and also intensifying exploration in the country for meeting the ever growing need of the industry. The experience in other countries shows that reserves can increase significantly with additional exploration and beneficiation drives by state-of-the-art technology, e.g. Australia's known iron ore reserves increased hundred fold in 40 years from 400 million tonnes in 1966 to 40 billion tonnes in 2005, whereas India's resource base of Iron ore rose from 5000 million tonnes in 1955 to 25,249 million tonnes in 2005. GSI has identified an OGP (Obvious Geological Potential) Area of 5.71 lakh sq. km and GSI would be focusing more now on the deep seated minerals and identify the anomaly area of the OGP.

Traditionally India's exploration spend has been low compared to other mining economies. India accounts for only 0.4 per cent of the world exploration budget. Further, only 11 companies have planned exploration activity in India. India needs to increase its exploration spend to keep reserve development in line with

The twin otter Airborne Survey System of GSI carrying out

production. The government has worked towards making a National Mineral Exploration Policy, to address the issues in mineral exploration.



The available geological reports of GSI are being converted in digitized format and being made available in public domain to aid the development and research of minerals and help in exploration efforts.

Simplification of procedures for exploration

Online Core Business Integrated System (OCBIS)

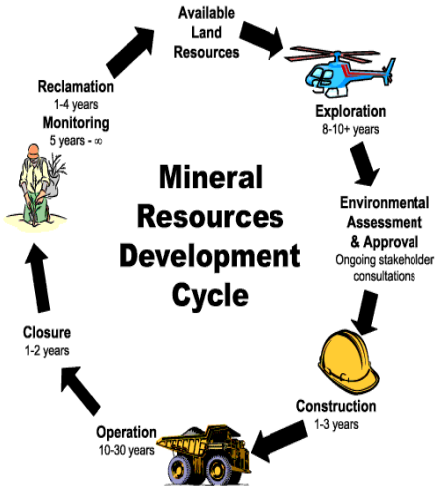
- "State-of-the-Art" IT enabled platform integrating core activities of GSI
- Real-time collaboration and interaction with stakeholders
- Sharing all baseline geosciences data in a geospatial platform in public domain

The efforts are underway to simplify the procedures for taking up exploration projects, which will be essential to boost exploration. The following steps have been made in this direction -

- Ministry of Defence (MoD) has agreed for relaxation of restrictions imposed on sharing baseline geoscientific data in public domain.
- Directorate General of Civil Aviation (DGCA) requested to facilitate expeditious accordance of survey/flight related approvals.
- MoEFCC requested to relax provisions for requisite forest clearances for carrying out mineral exploration.

National Mineral Exploration Policy (NMEP)

A **National Mineral Exploration Policy** is has been notified after being approved by the cabinet on 29th June, 2016, to provide a framework for fostering exploration activities by private sector companies, primarily to attract private exploration companies. The Salient features of NMEP**:-**



- Attracting private agencies through revenue sharing model.
- Generation and dissemination of baseline geoscientific data by the govt. as public good.

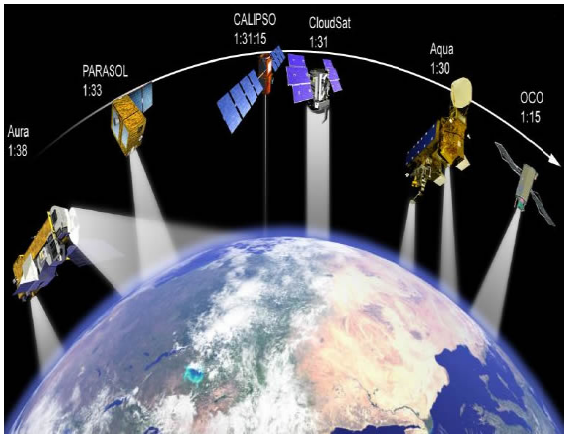
- Aerogeophysical survey of the whole country.
- Creation of a National Geoscience Data Repository

GSI has already identified 100 blocks for detailed exploration for implementing such schemes. SBICAP has been engaged as a transaction advisor to formulate the revenue sharing mechanism. The tentative distribution of 100 blocks being planned is -

- PSUs are being given 19 blocks
- GSI & MECL will be taking 30 each out of the available budget and NMET fund
- 21 blocks may be given to private explorers under incentive scheme

A National Aero-Geophysical Mapping Programme (NAGMP) is being undertaken by GSI of Rs.351 crore for the OGP area which is being funded through NMET.

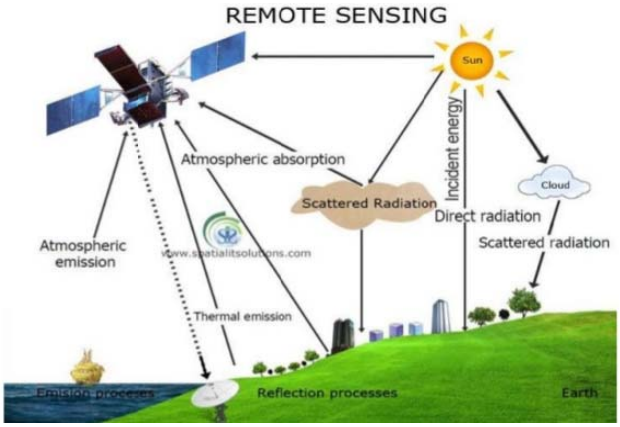
Use of Space Technology for curbing illegal mining issues



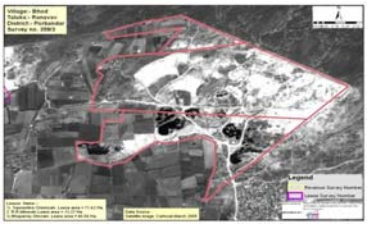
Indian Bureau of Mines (IBM) has signed a MoU with National Remote Sensing Centre (NRSC), ISRO on 21.01.2016 to undertake a pilot project on "monitoring of mining activities using satellite imagery and capacity building of IBM officers for three years including technical support for setting up of remote sensing laboratory in IBM".

The in principle approval and expenditure sanction of 2.03 Cr has already been accorded by the Ministry for setup of remote sensing laboratory in IBM at Hyderabad.

The project with NRSC is *progressing well. The ultimate objective of adopting this technology would be able to use for the* ***volumetric estimation of mining excavations*** *which form a key parameter of monitoring mining broadly and is laid down specifically in the mining plan. The setting up of Remote Sensing Cell in IBM at Hyderabad is also being expedited.*



Mining Surveillance System (MSS) - 'Eyes watching from the Sky'



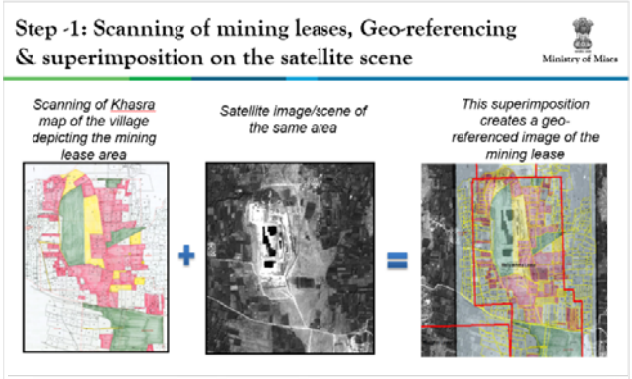
The latest satellite image is juxtaposed on Geo-referenced mining lease maps to check any illegal mining in the vicinity. It has an online portal & user-friendly mobile app for official reporting and also to enable public participation.

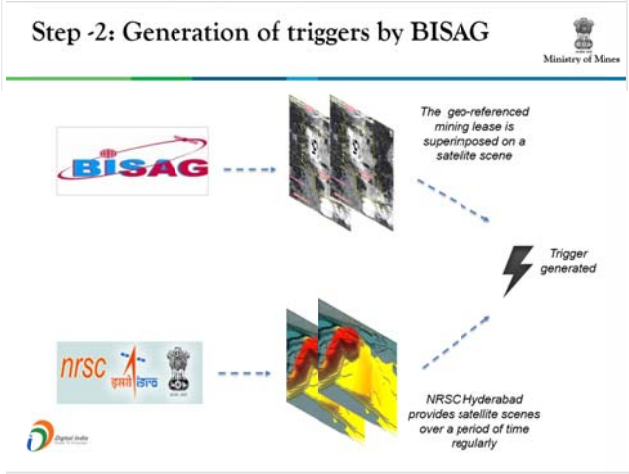
Mining Surveillance System (MSS) is a satellite-based monitoring system which aims to establish a regime of responsive mineral administration by curbing instances of illegal mining activity through automatic remote sensing detection technology. Ministry of Mines & Indian Bureau of Mines (IBM), have developed the MSS, with assistance from Bhaskaracharya Institute for Space Applications and Geo-informatics (BISAG), Gandhinagar and Ministry of Electronics and Information Technology (MEITY). The latest Satellite Image juxtaposed on Geo-referenced mining lease maps to check any illegal mining in the vicinity. It has an online portal & user-friendly mobile app for official reporting and also to enable public participation. MSS is one of the first such surveillance systems developed in the world using space technology.

Up-till now, the monitoring and curbing of illegal mining activity was based upon random checks, local complaints and unconfirmed information. There was no robust mechanism to ensure action and monitor complaints, and thus was being done in a non-transparent manner and was prone to biases.

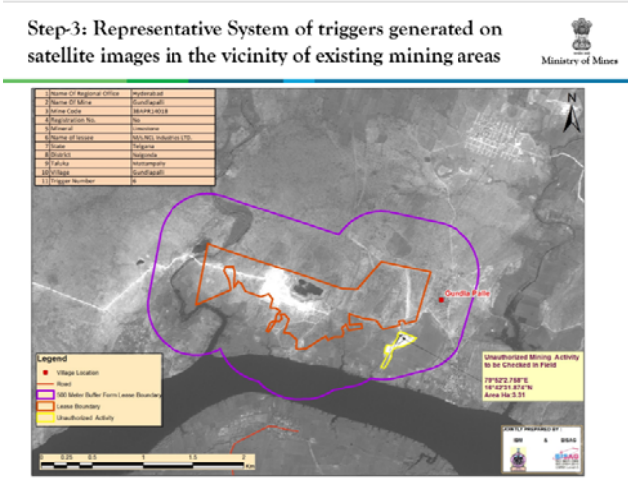
Hon'ble Prime Minister of India, Shri Narendra Modi, in his address at the National Meet on Promoting Space Technology based Tools and Applications in Governance and Development at New Delhi on 7th September, 2015, emphasized on the role of space science in achieving good governance and asked all departments to explore the effective use of space technology. Following the vision given by Hon'ble Prime Minister, MSS was conceptualized after several discussions and deliberations with the State Mining Departments, and was finalised in the Central Coordination cum Empowered Committee meeting of the Ministry of Mines held on 15th December, 2015 with the Mining Departments of the major mineral rich States.

The mining leases were required to be digitised for which Khasra/Cadastral maps of mining leases (major minerals) were scanned, then geo-referenced and digitized by the IBM with the help of BISAG. These digitised maps were throughly validated by the IBM officials. These digitised maps are superimposed on the latest available satellite remote sensing scenes obtained from National Remote Sensing Centre (NRSC).

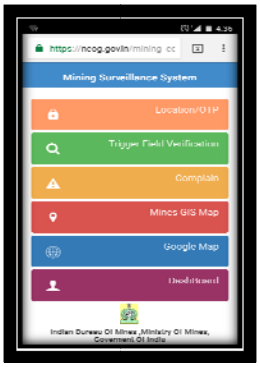




The system works on the basic premise that most minerals occur in continuity and their occurrence is not limited to the lease area but is likely to extend in the vicinity. The MSS checks a region of 500 meters around the existing mining lease boundary to search for any unusual activity which is likely to be illegal mining. Any discrepancy if found is flagged-off as a trigger.



A Remote Sensing Control Centre of IBM has been set-up and being expanded with the help of NRSC, which will study the triggers and then transmit them to the district level mining officials for field verification.



A check for illegality in operation in conducted and reported back using a mobile app.

A user-friendly mobile app has been created which will be used by these officials to submit compliance reports of their inspections. This mobile app also aims to establish a participative monitoring system where the citizens also can use this app and report unusual mining activity.

An executive dashboard facilitating the decision support system, by which the officials can track the current status of mapping of the mining leases, reasons for triggers, the status of inspections on the triggers, the penalty levied etc. for all major mineral mining leases across the country. It is placed on

https://www.ncog.gov.in/mining

The MSS is a transparent & bias-free system, having a quicker response time and capability of effective follow-up. The **Deterrence Effect** of '***Eyes Watching from the Sky***' would be extremely fruitful in curbing instances of illegal mining.

The system has been tested on a pilot basis. IBM officials were deputed to conduct the field verification of 13 sample triggers generated by MSS. The system yielded in successful detection of mining activity in 10 out of 13 cases, out of which unauthorized activity was found to be in 3 cases.

In the initial phase, a total of 296 triggers covering a total area of 3994.87 hectares, have been generated in the MSS software across the country in October, 2017. The field verication of these triggers will be done by the district/regional mining officials of the State Government. Inspired by its success, the States are coming forward to implement this system for minor minerals.

Outcomes: Impact/ benefits of MSS

The Mining Surveillance System (MSS) aims to curb instances of illegal mining through automatic remote sensing detection technology.

The main advantages of MSS are as under -

1. **Transparency** : Public provided access to the system
2. **Participatory** : The citizens also can use this app and report unusual mining activity
3. **Bias-free**: The system has no human interference
4. **Deterrence Effect** : 'Eyes watching from the sky'
5. **Quicker Response and Action**: The mining areas will be monitored regularly. Sensitive areas will be monitored more frequently.

6. **Effective Follow-up:** The action taken on triggers will be followed-up at various levels like DMG, State Mining Secretary, State Office and Headquarters Office of IBM and Ministry of Mines, GoI.

In the initial phase, a total of 296 triggers across the country covering a total area of 3994.87 hectares, have been generated in the MSS in October, 2016. The status of field verication of these triggers by the district/regional mining officials of the State Government is as under -

- Total triggers reports submitted – 164
- Number of confirmed unauthorized mine cases detected – 24
- Number of other mining activities detected, viz minor mineral etc. – 93
- Number of excavation / Dumps of other than mining activities – 34
- No of other than mining activities cases - 13

It can be seen the effectiveness of the MSS in detecting the mining activity is more than 90 % and out of which 15% cases were confirmed to be of unauthorized mining after the field inspections.

Before the development of MSS, the monitoring and curbing of illegal mining activity was based upon random checks, local complaints and unconfirmed information. There was no robust mechanism to ensure action and monitor complaints, and thus was being done in a non-transparent manner and was prone to biases.

The illegal mining has been an endemeic problem in many mineral rich areas. The FIRs being registered in illegal mining cases of major minerals has reached a level of 700 in 2015-16 from the level of 400 in the previous year. While the situation in minor minerals is becoming far worse, where more than 5300 FIRs were filed in 2015-16 compared to 3900 level in the preceeding year. The increase in the illegal miing cases showed that the systems in place for checking the same were inadequate. The interests involved and easily manipulable system resulted in collusion of the beneficiaries & it failed to check illegal mining.

The MSS is a transparent & bias-free system, having a quicker response time and capability of effective follow-up. The deterrence effect of '*Eyes Watching from the Sky*' would be extremely fruitful in curbing instances of illegal mining.

The initial results of the MSS have been encouraging. Total 296 triggers were generated initially, which have successfully detected the mining activity in more than 90 % cases and after the field inspections, unauthorized mining was found in 15% of these. Inspired by its success, the States are coming forward to implement this system for minor minerals.

Sustainable Mining Initiatives: Star Rating of Mines

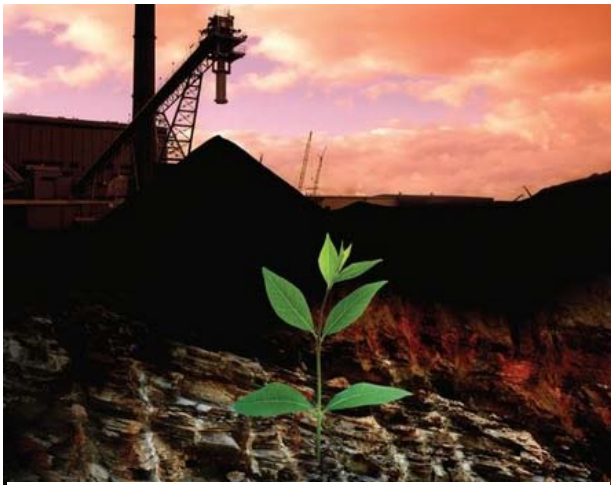
Hon'ble Prime Minister, Shri Narendra Modi addressed the UN General Assembly, addressing about 150 world leaders at the United Nations Sustainable Development Summit on 26 Sep, 2015 said "The principle of common but differentiated responsibilities is the bedrock of our enterprise for a sustainable world." Taking the vision of Hon'ble PM forward, the Ministry of Mines, in its endeavour for taking up exhaustive and universal implementation of the Sustainable Development Framework (SDF) in mining, has evolved a system of **Star Rating of Mines**.

India has witnessed increased activity in the field of mining to support the rapid economic development. The exploitation of natural resources and its impact on environment and ecology have become far more significant. There has been concerns on the adverse impact of mining on ecology, environment such as pollution of water, air and land affecting adversely the local communities as well as displacements of people. There was an urgent need to balance mining activities vis a vis protection of environment.

The Ministry of Mines had formulated National Mineral Policy in 2008 which emphasized that all mining shall be undertaken within the parameters of a comprehensive SDF which will be based on the guiding principle that a miner shall restore the mined out area and eventually hand over the mining area to the community in a better ecological condition than he received it.

The Ministry of Mines then instituted the Sustainable Development Framework (SDF) for taking up mining activity, encompassing inclusive growth, without adversely affecting the social, economic and environmental well-being, at present and also in future generation. The Ministry of Mines developed a credible system of evaluation of mining footprints and the first pilot rollout of SDF was launched in the Sukinda Chromite mine of M/s. Tata Steel in Odisha by Sri Balvinder Kumar, Secretary (Mines) on 7.1.2016. Thereon, several other mines have been brought under the framework of SDF.

The Star Rating is to be implemented through the Indian Bureau of Mines (IBM), a subordinate office of the Ministry of Mines. It has been instituted as a two tier system providing self-evaluation templates to be filled in by the mine operator followed by validation through Indian Bureau of Mines.



The draft evaluation template for Star Rating of Mines was formulated after being widely circulated and hosted on the website of the Ministry for comments & suggestions from stake holders. Subsequently a stake-holders consultative workshop was also held on 19th April, 2016 at New Delhi. Then a committee was constituted to review all suggestions received in the consultative meeting and finalize the SDF Evaluation Template. The Committee was chaired by Shri A K Srivastava, Retired Additional Director General of Forests in Ministry of Environment, Forest & Climate Change comprising of members functioning in key areas viz. Shri Prithul Kumar - Director, Ministry of Mines, Shri P S Upadhyaya -retired Director, NMDC, Shri P N Sharma – RCOM, Indian Bureau of Mines, and representatives from Federation of Indian Mineral Industries (FIMI). The Committee finalized the evaluation template for Star Rating of mines, after reviewing each of the suggestions made during the Workshop. The evaluation template for Star Rating was notified vide notification dated 23.05.2016.

Economic Environmental and Social Benefits of enhancing Sustainability in Mining by Star Rating System

The evaluation has been based on the following parameters:

- Scientific and systematic mining to mitigate environmental impact
- Addressing social impacts of resettlement and rehabilitation of mining affected people.
- Local community engagements and welfare programmes for socio-economic development of local community.

- Progressive and final mine closure to ensure for restoration of mined out land in better conditions then original.
- Adoption of international standards for mining operations and reporting.

Based on the performance of the mining leases, 1 to 5 star rating would be given to the mines which have been operational for more than 180 days in the reporting period. The Star Rating will be done initially for mines of major minerals. The positive impact of getting higher Star Rating will drive miners to quickly adopt sustainable mining practices. Initially Star Rating on Pilot basis was done manually and 19 mines were awarded with 4 & 5 Stars at the first National Conclave on Mines & Minerals held at Raipur, 4-5 July, 2016. The Star Rating is being considered to be included as statutory provision in the MCDR for time-bound achieving of minimum 4 stars.

A web enabled online system for evaluation of measures has been developed and launched on 18th August, as a vital step for ensuring compliance of environmental protection and social responsibility by the mining sector.

Outcomes: Impact/ benefits of Star Rating System

An innovative system of Star Rating of Mines has the following key benefits:

- Comprehensive mitigation of environmental impacts on land, air and water by the mining activities.
- The online star rating system leveraging information technology will more responsive, transparent and efficient. This online system will also be integrated to the Mining Tenement System and the existing online returns system. It will entail collection of various technical, environmental and social data on the mining sector at one platform by IBM, which would be utilised to enable better management and monitoring of

the compliance. The earlier system was very limited only to the technical aspects of monitoring.

- Availability of information on mining & conservation activities in public domain will enable greater transparency and participation of stakeholders leading to speedy resolution of conflicts
- Intensive monitoring of restoration of the mined out areas and eventually hand over the mining area to the community in a better ecological condition than he received
- Encourage adoption of highest standards and sharing good practices.
- The spurt of growth in Indian economy in the recent years has simultaneously witnessed increased activity in the field of mining to support the rapid economic development. The exploitation of natural resources and its impact on environment and ecology have become far more significant. There has been concerns on the adverse impact of mining on ecology, environment such as pollution of water, air and land affecting adversely the local communities as well as displacements of people. The incidence of illegal mining has further enhanced the ill-effects on ecology & constraints on the available infrastructure and forced us to take an entirely different approach towards mining activity. The society has become more and more sensitive towards the mining activity and a debate between economic benefits of mining activity and the amount of exploitation putting constraint on our natural resources, ecology, etc., has become very prominent.
- The innovative system of Star Rating of Mines evolved by Ministry of Mines in its endeavour for exhaustive and universal implementation of Sustainable Development Framework in mining, which would besides other benefits lead to a self-driven mechanism of the compliance of statutory mining stipulations and adoption of best practices. This would substantially address the ill ecological impacts associated with mining activities. Moreover, the intensive monitoring of progressive restoration of the mined out areas by the star rating system, will eventually result in ensuring the handing over of mining area to the community in a better ecological condition.

The Online Star Rating portal was launched on 18th August, 2016. A total of 758 mines of major minerals which were operational for more than 6 months in 2015-16 are eligible for star rating. Most star ratings have ben filed online, and IBM has also completed the inspections and awarded star rating in 560 mines. The star rating wise break up is as under –

Star Rating	No of Mines as per online returns	No of mines validated by IBM
5 Star	71	31
4 Star	162	42
3 Star	224	28
2 Star	55	2
1 Star	48	
Total	560	103

ABANDONED MINES

- An Abandoned Mines Initiative (AMI) taken up to assess and remediate the abandoned mines in the country in a time bound manner. A workshop has already been held on 19th Dec, 2016 in collaboration with TERI and IBM. An MoU is likely to be signed between them to draw up an action plan to address the remediation of abandoned mines and mined out areas.

RECLAMATION OF RED MUD

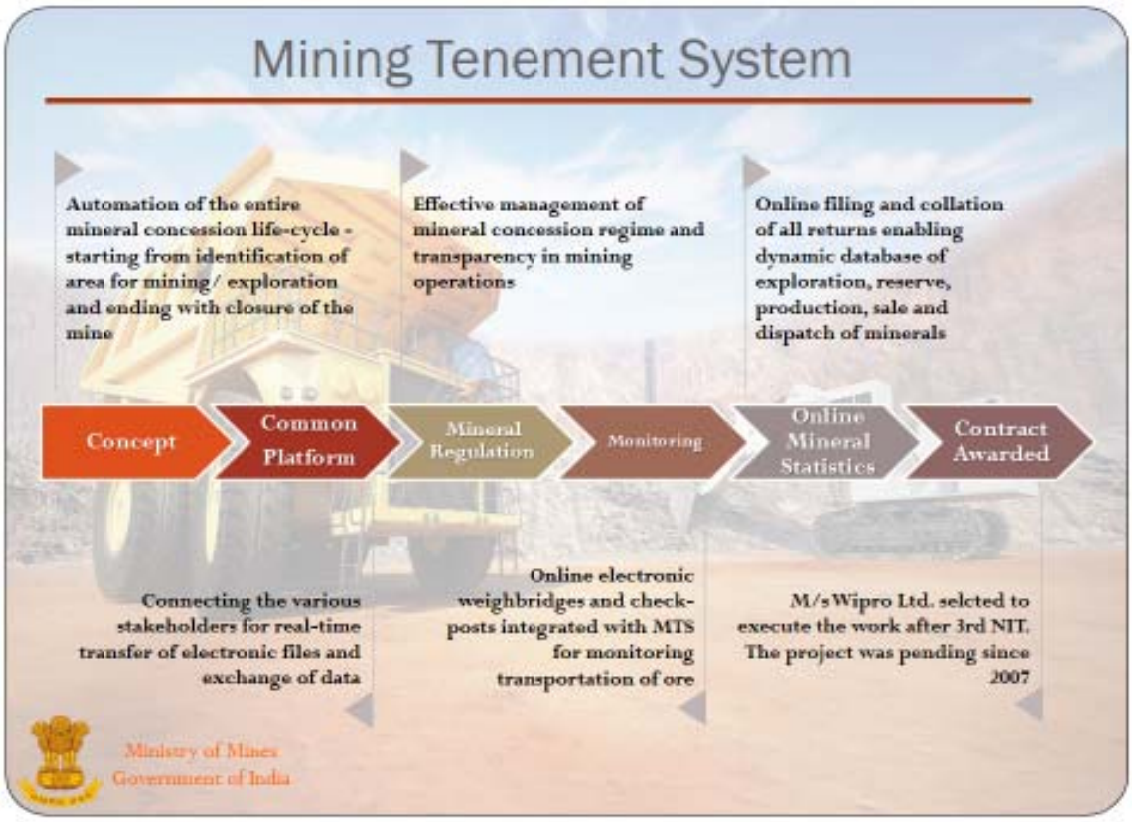
- Ambitious 3 years project taken up with TERI for remediation of Red Mud Dumps of NALCO. An MoU is likely to be signed between TERI & NALCO to draw up an action plan to address the remediation of red mud dumps and the mined out areas.

Use of Information Technology

The induction of Information Technology for improvement in governmental capacity of mineral administration. Some states have gone ahead and already introduced IT in their spheres of mineral administration, viz. Odisha, Rajasthan, MP, etc.

The Union Ministry is committed to establishing a Mining Tenement System (MTS), which would primarily involve automating the entire mineral concession life-cycle, starting from identification of area and ending with closure of the mine; and connecting the various stakeholders for real-time transfer of electronic files and exchange of data. This shall enable effective management of mineral concession regime and transparency in mining operations, transportation of ore with the help of online electronic weighbridges and check-posts. The Mining Tenement System tender is under finalization to select the Implementation Agency.

The tender for selection of implementation agency for Mining Tenement System has already been finalized and the Contract Agreement with M/s Wipro is executed by IBM in November, 2016 as the Implementation Agency.



Expediting the pending mining lease cases saved under section 10A(2)(c) having the timelines of 11.1.2017

- The mining lease applications saved under Section 10A (2) (c) (prior approval granted in cases for mineral listed in 1st Schedule of the Act or LOI issued in cases for other major minerals) need to be granted subject to fulfilment of the conditions of the previous approval or of the letter of intent within a period of two years from the date of commencement of the said Act, which is up to 11.01.2017. It had come to notice of the Ministry that some of such applications are still pending for the execution of mining lease.

EFFORTS MADE, OUTCOME AND WAY FORWARD IN SECTION 10A(2)(c) APPLICATIONS

I) Efforts made by the Ministry of Mines for expediting the cases of mining lease applications saved under section 10A(2)(c) of the MMDR Act inserted amendment with effect from 12th Jan, 2015

- The Mining Lease (ML) applications which have been saved under Section 10A(2)(c) of the Mines & Minerals (Development & Regulation) (MMDR) Act 2015, if not granted before 11.01.2017, would suo motu lapse.
- The Ministry of Mines had made serious efforts to expedite all such cases where the mining plan was sanctioned but cases were pending because of procedural delays in getting statutory clearances like forest clearances, environment clearances etc. Their expeditious processing was important as these mining leases, which are under process of acquiring clearances, if granted, would contribute in enhancing the mineral production in the immediate future for accelerating the development process in the country and increasing the national wealth. ***These efforts to facilitate the stakeholders in getting clearances and approvals, highlight the initiatives taken for good, citizen centric and responsible governance.***
- The Ministry of Mines in its endeavour to expedite such cases of Mining Leases, has organised several rounds of discussions with the State Governments, concerned Central Government ministries & departments and also with the project proponents. The Ministry of Mines has coordinated with the Ministry of Environment, Forest & Climate Change (MoEF&CC), Ministry of Tribal Affairs (MoTA), Ministry of Law & Justice (MoL&J), Indian Bureau of Mines (IBM) and other concerned departments, to facilitate the State Governments to be able to grant the lease expeditiously in such cases pending because of EC, FC and settlement of forest rights.

Follow up with State Governments

- The efforts made for expediting saved cases under section 10A(2)(c) by way of follow up with State Governments and IBM included several rounds of meetings with the States to reconcile the cases, meeting with the project proponents, raising the issue in CCEC meeting and Ministers meetings, regular follow up letters to the State Governments, etc. by way of persistent engagement with the State Governments for expediting the process of grant of cases saved under section 10A(2)(c).

Pending Forest Clearances & Forest Rights Act (FRA) Clearances in such cases

- Regarding the cases pending for forest clearance (FC), MoEF&CC Ministry of Environment Forest & Climate Change (MoEFCC), vide their guidelines no.8-31/2016-FC, dated 17th Nov, 2016, had agreed to process the grant of Forest Clearance (FC) under section 2(iii) of Forest Conservation Act (FCA),1980 in the eligible cases, so that project proponents can get the grant of lease. While mandating, that the mining activity could commence only after obtaining FC under section 2(ii) of FCA for diversion of the forest land i.e. after obtaining FC Stage - (I) and (II).
- However, while issuing FC under section 2(iii) of FCA in these cases, MoEFCC sought to put a condition of settlement of forest rights under the Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA) as it was not administered by MoTA. After consultation with Ministry of Tribal Affairs (MoTA), the orders were issued (available on the website of Ministry of Mines) to incorporate certain stringent conditions as vetted by MOTA in the lease deed, so that the lease can be granted immediately after obtaining FC under section 2(iii), but the forest rights would need be settled prior to commencement of any mining activity.

Pending Environmental Clearances in such cases

- Further, in respect of cases pending because of environmental clearance (EC), after taking legal opinion with concurrence of MoL&J and MoEFCC, we have issued notification dated 4.1.2017 (available on the website of Ministry of Mines), under the powers conferred by sub section 1 of section 24 of MMDR Amendment Act, 2015 enabling the State Governments to grant the lease in case of the pending applications without necessitating to obtain the EC, even if the same has been put as a condition in the LoI. This was admissible as the Environment Protection Act (EPA), 1986 and the

notifications issued under it, only mandate the EC to be obtained before the start of mining activity and not necessarily before grant of lease.

- In this way, such pending cases, where mining plan was sanctioned but cases were pending because of EC, FC and settlement of forest rights, the States have been facilitated by the Central Government to be able to grant the lease expeditiously. Now it is up to the States how promptly they grant the lease in respect of these saved cases.
- Apart from these, there are certain cases pending for action / decision with the State Government mostly with Mining Dept. and some with Revenue Dept. These cases pending with the Directorate of Mining and Geology or Forest Department or State Pollution Control Board, and other departments of your State also need to be expedited before the prescribed time limit.

II) Outcome

- At the time of amendment of MMDR Act in 2015, total 333 such cases were saved. During the intervening period of 2 years, nearly mining leases of 102 cases have been granted, which means 231 cases have stand lapsed on 12th Jan., 2017.

- The outcome of saved cases under section 10A(2)(c) of MMDR, 2015 is compiled from the data received from the States and is –

States			Andhra Pradesh	Chhattisgarh	Goa	Gujarat	Jharkhand	Karnataka	Madhya Pradesh	Maharashtra	Odisha	Rajasthan	Tamil Nadu	Telangana	Total
A. Status as on 12.01.2015	Total number of cases in the State as on 12.01.2015, which were saved under Section 10A(2)(c)		14	32	3	16	35	59	22	36	62	34	15	5	333
	No action by Project Proponent (PP) (List 1)		1	8			21			12	13			4	59
	Total No. of Cases where MP was not available		7	10			21		4	12	16		8	5	83
	Decision of State Govt. (Mining Department, District Adm., etc.) (List 2)		5	1	2		14			11	49		15	5	102
	Cases where EC was required for grant of lease	Total	11	32			35			36	12		7	5	138
		Cases where EC was available	6	1			1			5			8		21
		Cases where EC was under process	1	5	1		2			31				1	41
	Cases where FC was required for grant of lease	Total	2	14			24			8	39				87
		Cases where FC was available		1			1								2
		Cases where FC was under process		13			6			8	26				53
B. Status as on 12.01.2017	Cases where lease was executed and registered		2	13		13	2		12	8	16	20	14	2	102
	Cases where lease was executed but not registered		4											3	7
	cases where grant order where issued under rule 8(2) of M(OTAHEM) CR, 2016		6	18	1	15	3	10	12	11	18	24	14	5	137
	cases where all conditions of LoI/ Prior Approval were fulfilled by the Project Proponent		6	7			2	1		11	18		14	5	64
	Cases where PP has still not initiated any action for getting clearances		3	3			21	22		12	13		1		75
	Total number of left over cases pending for processing or under process with the State Government		2*	5			33	1		11		12			62
	Total number of left over cases u/s 10A(2)(c) in the States		3	8			33			11	44				99
	Cases where EC was obtained	Cases where EC was obtained from 12.01.2015 to 04.01.2017	6	6			1			5	1		5	1	25
		No. of cases where Difficulty Order for EC was utilised	3	7			1			13	4			4	32
	Cases where FC was obtained	Cases where FC was obtained from 12.01.2015 to 11.01.2017 u/s 2(ii) of FCA		1			1								2
		Cases where FC was obtained from 12.01.2015 to 11.01.2017 u/s 2(iii) of FCA		5							12 (only 8 executed)				17
		Cases in which FRA relaxation was utilised for execution of lease where FC was under section 2(iii)		All cases having prior FRA							2 (Out of executed leases- 24.57)				2
		Cases which could not be executd due to pending FC		7			6	21	6	8	15	2			65
	Court Cases	Total no. of applicants saved u/s 10A(2)(c), filed court cases		5			8	4		10	11		2		40
		Total No. of applicants file court case against the timeline of 2 years		5			8			10					23
		No. of applicants filed court against the provision of Rule 8 of M(OTAHEM) CR, 2016		2			8			10	11				31
	Cases in which could not be executed		12	19	3	3	33	59	10	28	46	14	1	3	231
	Cases in which even the grant order was not made		8	14	2	1	32	49	10	25	44	10	1	0	196

- The efforts put in by the Ministry of Mines has yielded very encouraging results, ultimately facilitating the saved applications in possible ways within the ambit of the prescribed Act & Rules. The following key points are evident from the statistics compiled for the 12 major mineral States -

    a. The efforts of the Ministry of Mines mobilised the execution of 102 mining leases in the States out of the total 333 such cases which were covered under section 10A(2)(c). These efforts to facilitate the stakeholders in getting clearances and approvals, highlight the initiatives taken for good, citizen centric and responsible governance.

    b. There were 35 additional cases which reached the stage of grant order under rule 8(2)of the new MCR, 2016

    c. EC could be obtained in 25 cases in 2 year period

    d. Difficulty order issued dated 4.1.2017 enabling the State Governments to grant the lease in case of the pending applications without necessitating to obtain the EC, even if the same has been put as a condition in the LoI, helped in 32 cases

    e. Normal 2 Stage FC (under section 2(ii) of FCA) could only be granted in 2 cases in the 2 year period, where as FC under section 2(iii) of FCA could be obtained in 17 cases out of which 13 cases got executed.

    f. Since, while issuing FC under section 2(iii) of FCA, MoEF&CC sought FRA compliance, to which additional conditions were put in the lease deed without necessitating FRA compliance for lease execution, but the forest rights would need be settled prior to commencement of any mining activity. The order dated 5.1.2017 also helped in saving 2 cases.

    g. There would be about 231 of these blocks available (with advance stage preparation for Mining) which could not be executed for putting up on auction by the States. Although about 40 applicants have already gone for court cases primarily against the requirement of lease execution as grant, but the 196 blocks where grant order had also not been made, would be immediately available for putting up on auction by the States.

III) Way Forward

- The respective States will now put mineral blocks related to these cases on auction where the 10A(2)(c) applications have lapsed. Ministry of Mines has directed the States to take expeditious action to put all these blocks of

auction in next 1-year time. Some of the States, which have maximum number of such cases, are Karnataka (59), Odisha (46), Jharkhand (33), Madhya Pradesh (28) and Chhattisgarh (19). The resource value of these mining leases would be in the tune of lakhs of crores, because so far, the total resource value of 21 leases which have been auctioned in recent times by the States with hand holding support of Central Govt. is to the tune of Rs 93,190 crore. With this rough estimation, the coming year will be very significant as mineral blocks of nearly 10 times more value will be available to the States for auction. This will in turn, give huge boost to mineral sector.

- Ministry had made serious efforts to expedite all the cases where the mining plan was sanctioned but cases were pending because of procedural delays in getting statutory clearances like forest and environment clearances and settlement of forest rights. Their expeditious processing was important as the lapsing of these mining lease applications, which are under process of acquiring clearances, would contribute in enhancing the mineral production in the immediate future for accelerating the development process in the country and increasing the national wealth.

Revision of rates of royalty

- The rates of royalty and dead rent for major minerals (other than coal, lignite and sand for stowing) have been revised with effect from 1st September 2014, which has been published in the Gazette of India vide Notification No. 630(E) and 631(E) dated 1st September, 2014.
- As a result of the revision of rates of royalty, the revenue from royalty from non-coal minerals to the State Government was projected to increase by about 40%.

Notification of 31 minerals as minor minerals:

- 31 minerals have been notified as minor mineral vide notification dated 10.02.2015. With this inclusion presently 55 minerals are classified as minor minerals under the administrative control of the respective State Governments.

Kick-start Offshore Mining

- The Offshore Mining activity has not taken off in country. To kick-start the same, the Ministry is in the process of amending the legislative framework for allotment of offshore blocks. The SBICAPS has been

engaged as a transaction advisor to formulate the amendment in the act and rules.

Minor mineral rules

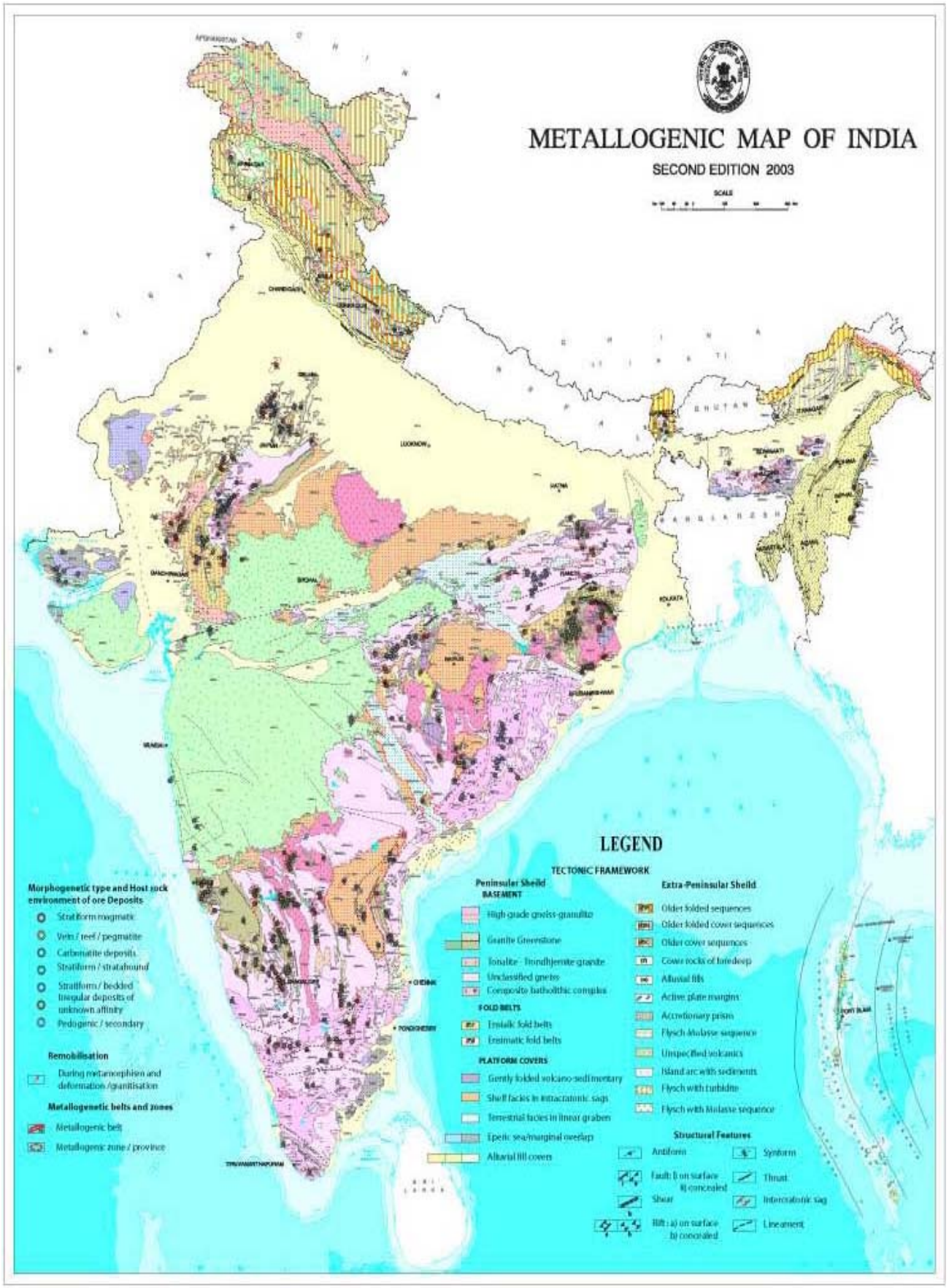
- Pursuant to the Supreme Court judgment dated 27/02/2012 in Deepak Kumar's Case (OA No. 12-13 of 2011 in Special Leave Petition (C) No. 19628-19629 of 2009), a clearance under the Environment Protection Act, 1986, was made mandatory in respect of all minor minerals irrespective of the area of the mining lease. The Ministry of Mines has prepared draft guidelines for mining of minor minerals which was circulated to the state governments. The action had to be taken by the States in response to the directive issued by the Ministry under 20A to implement transparent systems for giving minor mineral concessions, especially in the light of Minister of Mines DO letter no 16/119/2015-M.VI/220 dt. 24.11.2015 to the Chief Minister of the States.

Skill Plan of the Ministry of Mines

- A Skill Plan of the Ministry of Mines has been prepared, which was released in the 1st National Conclave on 4-5 July, 2016 at Raipur.
- Skill Plan has been formulated keeping in mind that is should enable the workforce development and resources for catering the growing needs of the Indian mining industry in times to come. The key points are as under -
    - Job profiling and assessment to establish the current Essential Skills levels of employees, and identifying further training that is needed to meet the mining industry goals
    - Design and set-up of training centers for workers
    - Developing capabilities for Mentorship-on-the-job workshops to improve communication and onsite training for workers, supervisors and companies
    - Design and on-site delivery of workforce development programs that increase success in technical training and on-the job performance
    - Skills training to be tailored for workplace success

Way ahead

- The steps which are being initiated by the Ministry will facilitate greater participation of private sector
- Will enable conducive climate for carrying out mining in India.
- The new regime of reforms will bring about various required transformational changes in the mining sector.


METALLOGENIC MAP OF INDIA
SECOND EDITION 2003
SCALE
LEGEND
TECTONIC FRAMEWORK
Peninsular Shield
BASEMENT
High grade gneiss-granulite
Granite Greenstone
Tonalite - Trondhjemite granite
Unclassified gneiss
Composite batholithic complex
FOLD BELTS
Erstalic fold belts
Erstmatic fold belts
PLATFORM COVERS
Gently folded volcano-sedimentary
Shelf facies in intracratonic sags
Terrestrial facies in linear grabens
Epeiric sea/marginal overlap
Alluvial fill covers
Extra-Peninsular Shield
Older folded sequences
Older folded cover sequences
Older cover sequences
Cover rocks of foredeep
Alluvial fills
Active plate margins
Accretionary prism
Flysch-Molasse sequence
Unspecified volcanics
Island arc with sediments
Flysch with turbidite
Flysch with Molasse sequence
Structural Features
Antiform
Synform
Fault: i) on surface ii) concealed
Thrust
Shear
Intercratonic sag
Rift : a) on surface b) concealed
Lineament
Morphogenetic type and Host rock environment of ore Deposits
Stratiform magmatic
Vein / reef / pegmatite
Carbonatite deposits
Stratiform / stratabound
Stratiform / bedded lenticular deposits of unknown affinity
Pedogenic / secondary
Remobilisation
During metamorphism and deformation /granitisation
Metallogenetic belts and zones
Metallogenic belt
Metallogenic zone / province
BHUTAN
BANGLADESH
LUCKNOW
KOLKATA
CHENNAI
PONDICHERRY
PORT BLAIR