



India is a mineral-rich country, with more than 20,000 mineral deposits. The country produces about 90 minerals, which include four fuel, 10 metallic, 50 non-metallic, three atomic and 23 minor minerals. It is the second largest producer of chromite, barytes and talc in the world, and ranks third in production of coal and lignite, and fourth in production of iron ore, kyanite, andalusite and silimanite.

In 2010-11, the number of reporting mines in India was 2,628. Most of the country's mining activities are concentrated in the states of Gujarat, Andhra Pradesh, Jharkhand, Madhya Pradesh, Rajasthan, Karnataka, Odisha, Tamil Nadu, Maharashtra, Chhattisgarh and West Bengal. Together, these 11 states account for 92 per cent of the mines in the country.

Mineral wealth: a primer

Coal: Seven per cent of the world's proven coal reserves are in India. In 2010-11, the country produced 537 million tonnes (MT), an increase of 1 per cent over the previous year. The value of coal produced in 2010-11 stood at Rs 49,012 crore. At present, more than 70 per cent of the coal produced in India is used in the power sector. Chhattisgarh is the largest coal-producing state, with a share of 21 per cent, followed closely by Odisha and Jharkhand with about 20 per cent each.

Bauxite: Bauxite production declined by four per cent to 13.4 MT in 2010-11, from 14 MT in 2009-10. The value of bauxite production in 2010-11 was Rs 503 crore. The aluminium industry accounts for more than 85 per cent of bauxite consumption in the country.

Iron ore: Hematite and magnetite are the most important iron ores in India. The production of iron ore in the country stood at 212.6 MT in 2010-11, with a value of Rs 34,852 crore. Odisha (34 per cent), Karnataka (21 per cent), Goa (15 per cent) and Chhattisgarh (14 per cent) are the leading producers. Close to 98 per cent of iron ore consumed domestically is used by the iron and steel (including sponge iron) industry.

Limestone: Limestone production was 240 MT in 2010-11, with a value of Rs 3,220 crore. Limestone is mainly used in the cement industry. Leading producer states include Andhra Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Tamil Nadu, Chhattisgarh and Karnataka.

Copper: India produced about 3 MT of copper in 2008-09. Rajasthan accounted for half of the production, while the other half was accounted for by Madhya Pradesh and Jharkhand.

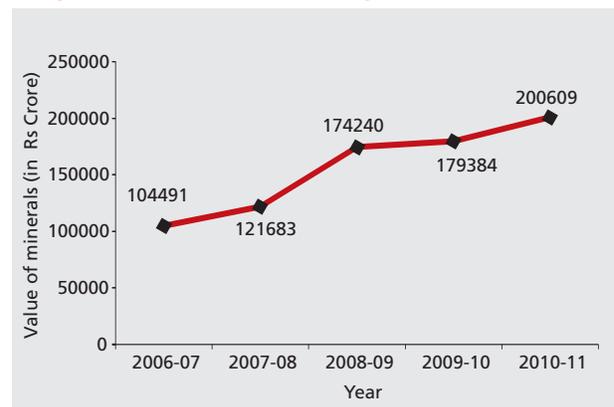
Production and value

India produced 842 minerals in 2010-11, valued at Rs 2,00,609 crore. This is about 12 per cent higher than the value of minerals produced in 2009-10 -- Rs 1,79,384 crore (see Graph 1.1: *Value of mineral production in India*).

Fuel minerals contributed 68 per cent of the total value of minerals produced (see Graph 1.2: *Contribution of minerals to value*).

Metallic minerals contributed about 21 per cent, while minor minerals contributed a little

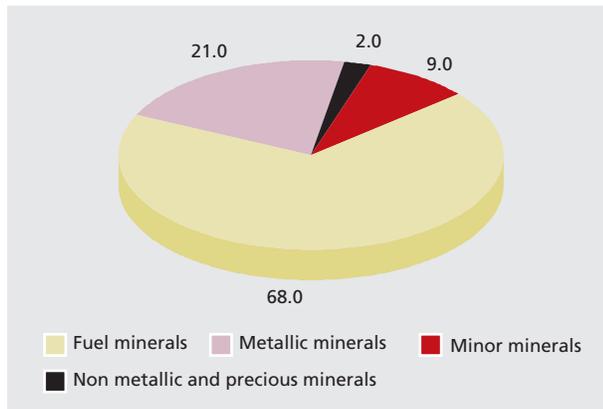
Graph 1.1: Value of mineral production in India



Source: Anon, 2011, *Annual Report 2010-11*, Ministry of Mines, pg. 144.



Graph 1.2: Contribution of minerals to value



Source: Anon, 2011, *Annual Report 2010-11*, Ministry of Mines, pg. 144.

over 9 per cent. Non-metallic and precious minerals together accounted for the rest.

The mining and quarrying sector accounted for 2.26 per cent of the total Gross Domestic Product (GDP) (at constant prices) in 2010-11; the previous year, its contribution had stood at 2.5 per cent.

In India, a miner has to take a Reconnaissance Permit (RP) to carry out regional exploration, a Prospecting Licence (PL) to identify a potential resource and a Mining Lease (ML) for mining of a mineral. In

March 2009, there were about 9,400 MLs in India covering an area of half a million hectare (ha).

The private sector holds 95 per cent of the total number of MLs and 70 per cent area under MLs in the country. In 2010-11, Rajasthan had the maximum leases both in terms of numbers and area. Odisha came in second in terms of area covered, followed by Karnataka and Andhra Pradesh. Limestone had the maximum number of MLs (1,733), followed by quartz (1,434), iron ore (769) and felspar (667).

The total value of ores and minerals exported from India in 2008-09 was Rs 1,09,296 crore – this was 13 per cent of the value of all exports from India in that year. Diamonds contributed more than 65 per cent of the export value. These exports were to 193 countries, with the maximum exports to China followed by Hong Kong, the UAE, USA and Belgium.

The total value of imports of minerals and ores in 2008-09 was Rs 5,14,509 crore; this was 37 per cent of the total value of imports in India. Petroleum was the largest import item with more than 65 per cent share in the total value of imports. Minerals were imported from 134 countries with Saudi Arabia at the top, followed by the UAE, Iran, Nigeria, Kuwait and Iraq.

Mining regulation in India

The Mines and Minerals (Development and Regulation) (MMDR) Act, 1948 was the first legal framework for regulation and development of mines in independent India. Enacted in 1957 by the Parliament, two set of rules were made under the Act – the Mineral Concession Rules (MCR) and the Mineral Conservation and Development Rules (MCDR).

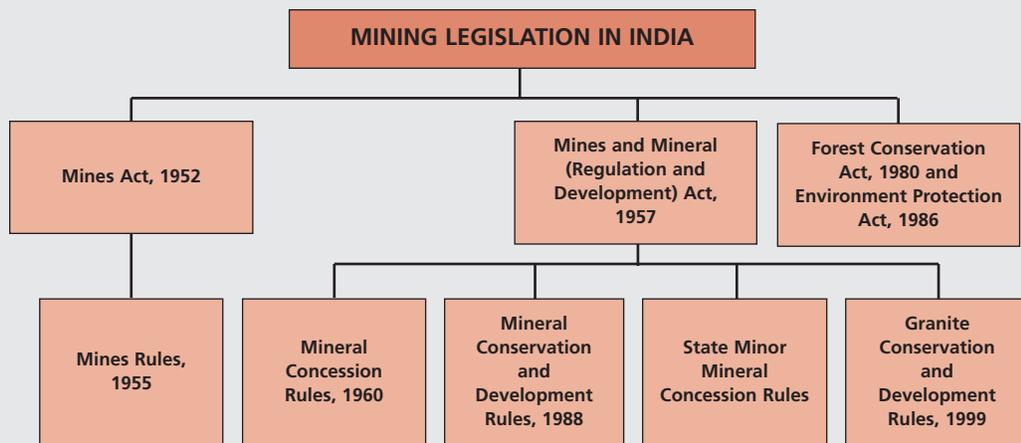
The MMDR Act has been amended four times since 1957. The first amendment came in 1972 which enhanced government control over mining. The second amendment in 1986 further increased the Central government's control on mining and introduced the concept of an approved mining plan. In order to attract investments, the procedure for granting mineral concessions was simplified by another amendment in 1994. This amendment also introduced the concept of a Large Area Prospecting Licence (LAPL).

Another amendment to the MMDR came in 1999 after a committee reviewed the Act. This amendment comprised of a number of changes – introduction of reconnaissance operations prior to prospecting and a Reconnaissance Permit (RP), delegation of powers to the state government, liberalisation of area restrictions, etc.

Following the mid-term appraisal of the 10th Five-year Plan, the Planning Commission constituted a high-level committee under its member Anwarul Hoda to recommend changes in the mining policy and laws to address issues ranging from non-transparency in allocation of mineral resources and illegal mining to addressing the social and environmental impacts of mining.

Mining legislation in India

There are three distinct legislations governing safety, environment and development of minerals



Source: Anon, 2005, *Indian Minerals Yearbook 2005*, Indian Bureau of Mines, Nagpur, pp 11-4

The Hoda Committee report was published in July 2006 with wide-ranging recommendations like institutionalising a Sustainable Development Framework (SDF) to address social, economic and environmental issues arising out of mining (*see box*). Based on the report, the government came out with a new National Mineral Policy (NMP) in 2008. Following this, the Union ministry of mines has framed a new Mines and Minerals (Development & Regulation) Bill to replace the MMDR Act, 1957.

The Hoda report

The committee aims at diluting the environmental clearance process to attract investment

In its mid-term appraisal of the 10th Five-Year Plan, the Planning Commission realised that the National Mineral Policy (NMP), adopted in 1993 “for encouraging the flow of private investment in exploration and mining”, had not lived up to its billing. The reason for believing the NMP had failed was laid out thus: “[S]o far, the Central government has approved as many as 188 reconnaissance permits, involving an area of 2,54,307.303 sq km... and the Foreign Investment Promotion Board has granted 73 approvals for FDI (foreign direct investment) in the mining sector involving an investment of Rs 4,044 crore... *there is no successful case of a reconnaissance permit being converted into a mining lease so far* (emphasis added). ...this is mainly due to procedural delays in various clearances at both the Central and state government levels, especially in the case of mandatory environmental clearance and inadequate infrastructure.”

A ‘high-level committee’ was, therefore, constituted in September 2005 under Anwarul Hoda, member, Planning Commission. The committee’s terms of reference were:

- to review the NMP and the Mines and Minerals (Development and Regulation) Act, 1957 and suggest the changes needed for encouraging investment
- to review existing procedures for granting Reconnaissance Permits (RPs), Prospecting Licences (PLs), and Mining Leases (MLs) and suggest ways for their streamlining and simplification
- to review the procedures for according clearance to mineral exploration and mining projects under the Forest (Conservation) Act, 1980 and Environment (Protection) Act, 1986, and suggest ways for speeding them up
- to prioritise critical infrastructure needs of the Indian mining sector and make recommendations on ways to facilitate investment to meet these needs
- to examine the implications of the policy of mineral-rich states to make value addition within the state a condition for grant of mineral concession and make appropriate recommendations in this regard
- to examine ways of augmenting state revenues from the mineral sector, and
- to examine any other issue relevant for stimulating investment flows and inducting state-of-the-art technology into the sector.

The committee submitted its report in June 2006.

Blinkered vision

Between 1993-94 and 2005-06, the mineral sector had been growing at a rate of 10.7 per cent, but had also caused massive environmental damage, economic marginalisation and social unrest. The NMP, which had



emphasised on meeting the environmental and social challenges posed by mining rather than fast-tracking private investment, failed to deliver on these fronts, a fact ignored while finalising the terms of reference for the Hoda committee. The committee's terms concentrated almost exclusively on streamlining procedures to facilitate private investment without recognising the serious environmental and social issues.

This was reflected in the composition of the committee, which consisted solely of government and business representatives. L P Sonkar, adviser (minerals), Planning Commission, and convener of the Hoda committee, put things in perspective with a rhetorical question to *Down To Earth*: "Do you expect us to call tribals to the committee?"

Mine sharks

Hoda committee lays the red carpet for MNCs

In 2006, each of the world's top four mining companies posted net profits of over US \$5 billion – the largest, Australia's BHP Billiton, earned US \$10 billion. When operating in developing countries, these companies are not above exploiting states with lax laws to circumvent environmental and social safety nets.

BHP Billiton operated the OK Tedi mine from 1984-2002 in Papua New Guinea. It had to be hauled up before the International Water Tribunal at The Hague in 1996 to force it to stop dumping 80,000-1,20,000 tonne of waste rock each day into local waters, drowning over 170 sq km of forest, destroying the river's ecology and displacing almost 50,000 people. Three years after reaching an estimated US \$500 million settlement that required BHP to reform its waste disposal practices and compensate local communities, it announced that no waste disposal method could sufficiently mitigate the environmental impacts of the mine.

US-based Newmont Mining Company is being held accountable by the Indonesian government for the pollution of Buyat Bay. Between 1996 and 2004, the Newmont Minahasa Raya gold mine disposed off its tailings into the bay. The tailings had mercury and arsenic levels much higher than the government standards. Newmont reached an out-of-court case settlement of US \$30 million with the Indonesian government in February 2002. The company continues to dump 1,20,000 tonne of waste every day into the Senunu Bay from another Indonesian mine.

Apart from this built-in bias, there was a flawed presumption: the committee said that between conservation and exploitation of forest resources, the government always favoured conservation, with the judiciary's intervention making mining clearance more difficult. But statistics say otherwise: the speed and scale of clearances for mining has, in fact, been increasing over the years. Under the Forest Conservation Act (FCA), 1980, forestry clearance was required from the Union ministry of environment and forests (MoEF). In the 17 years (1980-1997) since FCA came into force, forest clearances were granted on an average to roughly 20 mining projects, diverting 2,030 ha annually. Between 1998 and 2005, MoEF cleared about 125 mining projects diverting 8,650 ha of forest land annually.

Private unlimited

To solve the social-environmental problems, the committee pinned its faith on two mechanisms – the sustainable development framework and Global Reporting Initiative (GRI), a multi-stakeholder group based in Amsterdam which develops reporting guidelines for corporates. Under fire for their poor environmental, social and human rights records in the developing world (see Box: *Mine sharks*), the world's leading multinational mining companies had decided in 2000 to initiate a project to examine the role of the sector in contributing to sustainable development. Nine of these companies contracted the International Institute for Environment and Development to undertake the Mining, Minerals and Sustainable Development Project (MMSD), which came out with a wish list of sustainable development principles.

Meanwhile, in 2001, these mining companies also promoted the International Council on Mining and Metals (ICMM) to improve their image. The MMSD's sustainable development principles were then converted into a framework by ICMM, to be implemented by all its members. It mandated an annual report on social and environment performance to be verified by private auditors under GRI.

The problem with the framework was that it was no different from existing voluntary certification systems. Its principles were so broad and vague – for example, contributing to social, economic and institutional development of communities – that companies could claim they adhered to them without doing much. The reporting and verification process was also farcical: companies could write what they wanted because verifiers were paid by them. In India, mining companies are supposed to submit annual environmental audit reports and half-yearly progress reports on environment management plans. Given that this mandatory system has failed, it is unlikely that a voluntary one will help make mining sustainable. Not surprisingly, the committee believes if the framework is implemented, more forest land can be opened to mining.



Through the thicket

At the core of the Hoda committee's recommendations on forest clearance are proposals to change laws to assure prospectors they will get forest clearance if they find minerals.

Under existing FCA guidelines, permission to survey, explore or prospect for minerals in forest areas does not imply leases will be granted. Before granting leases, detailed impact assessment has been envisaged to protect ecologically sensitive areas.

According to the Hoda committee, however, "such a stipulation militates against the seamless transfer dispensation that the committee would like to promote to attract investment into mining". It wants the government to spell out in advance the conditions to be met during mining so that forest clearance can be granted without a hitch. This recommendation is based on the belief that "the miner eventually leaves the land and can recreate or even improve upon the forest as it existed before commencement of operations". But the 500-odd officially declared abandoned mines (there are thousands of unofficial ones) belie this claim. International experience with mining rehabilitation hasn't been great either.

Cosmetic change

The core of the committee's recommendations for speeding up the forest clearance process is outsourcing the responsibility of divisional forest officers (DFOs) and attenuating the MoEF's role. It has also proposed a coordination-cum-empowered committee (CCEC) at the Centre and in states to act as a single-window clearance outpost. It has recommended that mine lease, forestry and environmental clearance should be parallel rather than sequential processes. No major change has, however, been proposed at the Central level; the committee has recommended that MoEF's internal processes remain unchanged – its decisions will be binding on the CCEC. The problem is that the committee has taken a blinkered view of restructuring systems to minimise delays in granting of leases. Take the case of renewing leases. The Hoda committee wants the clearance process for renewals to be a mere formality, unless there are serious adverse effects on the forest and wildlife or environment in an area or violations of stipulated conditions. But it has not specified a mechanism through which 'serious adverse effects' can be identified and monitored.

The need for renewals arises to assess damage from actual mining operations and to then decide on a future course of action. Industry cannot complain as cases of large mines being denied renewals on ecological or environmental grounds are almost non-existent. Mines like the Sukinda chromite mines in Jajpur, Orissa, should not have been granted renewals because of the extensive damage they caused; they still got the green signal because regulators often reasoned that since the damage had already been done, mining should continue!

So, while the Hoda committee's proposals on renewals might not materially change the situation, what should be put in place is a system in which ecological and environmental performance of mines are periodically assessed and renewals granted on the basis of ground reports.

Public limited

The Hoda committee wants public hearings to be dispensed with for mining leases for areas less than 50 ha and for renewals of any leases. It also wants them to be limited to issues arising out of environmental impact assessment (EIA) reports and to people, legislators or NGOs of areas concerned – complete outsiders should not participate. Though the last suggestion is part of the new EIA clearance process, the implications of the first two are disastrous. To say that 50-ha mining does not need public hearings is to imply it has no environmental impacts. However, the number of people a 50-ha mine can affect and the environmental degradation it can cause has been witnessed across the land. The recommendation of the committee to dump public hearings for renewals does not take into account the fact that these are the only forums in which affected communities can express their opinions.

Another damaging recommendation, which, if accepted, could multiply environmental and social problems many times relates to size. The Hoda committee wants the upper limit for a single mine lease to go up from the existing 10 sq km (there are a few exceptions in the public sector) to 50-100 sq km to develop "world-class ore bodies". What it does not tell is how to deal with massive displacement, especially given that the government can't even deal with the current levels of displacement.

Clearly, for mining to remain a viable economic activity, a 'social licence to operate' must be enshrined in future legislation. People will voluntarily accept change if they perceive an overall benefit. But if impoverishment is the anticipated consequence of mining, people will resist. If people do not want mining, then it can only happen with the help of the coercive power of the State, which will be accompanied by large-scale human rights violations and social and economic dislocation. Hoda's report comes to the aid of this process of coercion.



Pollution standards for mining

Lax and minimal

Ambient air standards: An important environmental consequence of mining is dust pollution. The ambient air quality standard applicable to the mining industry is similar to the national ambient air quality standards (see Table 1: *Standards – national ambient air quality*).

TABLE 1: Standards – national ambient air quality

Pollutants	Time-weighted average	Concentration in ambient air		
		Industrial areas	Residential, rural and other areas	Sensitive areas
Sulphur dioxide (SO ₂)	Annual average*	80 µg/m ³	60 µg/m ³	15 µg/m ³
	24 hours**	120 µg/m ³	80 µg/m ³	30 µg/m ³
Oxides of nitrogen (NO _x)	Annual average*	80 µg/m ³	60 µg/m ³	15 µg/m ³
	24 hours**	120 µg/m ³	80 µg/m ³	30 µg/m ³
Suspended particulate matter (SPM)	Annual average*	360 µg/m ³	140 µg/m ³	70 µg/m ³
	24 hours**	500 µg/m ³	200 µg/m ³	100 µg/m ³
Respirable particulate matter (RPM) (size less than 10 micron)	Annual average*	120 µg/m ³	60 µg/m ³	50 µg/m ³
	24 hours**	150 µg/m ³	100 µg/m ³	75 µg/m ³
Carbon monoxide (CO)	8 hours**	5.0 mg/m ³	2.0 mg/m ³	1.0 mg/m ³
	1 hour	10.0 mg/m ³	4.0 mg/m ³	2.0 mg/m ³

Notes: *Annual arithmetic mean of minimum 104 measurements in a year taken twice a week; 24 hourly at uniform intervals. **24 hourly/8 hourly values should be met 98 per cent of the time in a year. They may exceed 2 per cent of the time, but not on two consecutive days; µg/m³: microgram per cubic metre; mg/m³: milligram per cubic metre
Source: <http://www.cpcb.nic.in/as.htm>, as viewed on April 4, 2007

In the case of coal mines, different standards have been formulated based on the age of the mine (see Table 2: *Standards – air quality for coal mining*). Older mines have been leniently dealt with: the average annual standard fixed for them is 1.4 times higher than that for new mines. The justification for this is that “old mines such as Jharia, Bokaro and Raniganj already have high dust concentrations and therefore, would not be able to meet the stringent standards set for the new mines”. The new ‘stringent’ standard is nothing but a replica of the standard for all types of industries.

TABLE 2: Standards – air quality for coal mining

Pollutants	Time-weighted averages	Concentration in ambient air		
		New coal mines (after December 1998)	Existing coalfields/mines	Old coal mines (Jharia, Raniganj, Bokaro)
SPM	Annual average*	360 µg/m ³	430 µg/m ³	500 µg/m ³
	24 hours**	500 µg/m ³	600 µg/m ³	700 µg/m ³
RPM	Annual average*	180 µg/m ³	215 µg/m ³	250 µg/m ³
	24 hours**	250 µg/m ³	300 µg/m ³	300 µg/m ³
SO ₂	Annual average*	80 µg/m ³	80 µg/m ³	80 µg/m ³
	24 hours**	120 µg/m ³	120 µg/m ³	120 µg/m ³
NO _x	Annual average*	80 µg/m ³	80 µg/m ³	80 µg/m ³
	24 hours**	120 µg/m ³	120 µg/m ³	120 µg/m ³

Notes: *24 hourly at uniform intervals; **24 hourly/8 hourly values should be met 98 per cent of the time in a year. They may exceed 2 per cent of the time, but not on two consecutive days; SO₂: sulphur dioxide; NO_x: oxides of nitrogen; SPM: suspended particulate matter; RPM: respirable particulate matter; µg/m³: microgram per cubic metre;

Source: <http://www.cpcb.nic.in>, as viewed on March 4, 2007



TABLE 3: Standards – effluents from coal mines

Parameters	Limit
pH	5.5 to 9.0
Total suspended solids	100 mg/l 200 mg/l*
Oil and grease	10 mg/l
Nitrogen as nitrates	10 mg/l

Notes: *: Standard for effluents discharged as irrigation water on land; mg/l: milligram per litre
Source: Central Pollution Control Board, Union ministry of environment and forests, New Delhi

TABLE 4: Standards – wastewater discharge by industry

Parameters	Inland surface water	Land for irrigation
Suspended solids	100	200
pH	5.5 to 9.0	5.5 to 9.0
Oil and grease	10	10
Biochemical oxygen demand (3 days at 27°C)	30	100
Chemical oxygen demand	250	-
Arsenic (as As)	0.2	0.2
Mercury (as Hg)	0.01	-
Lead (as Pb)	0.1	-
Cadmium (as Cd)	2.0	-
Hexavalent chromium (as Cr ⁺⁶)	0.1	-
Copper (as Cu)	3.0	-
Zinc (as Zn)	5.0	-
Nickel (as Ni)	3.0	-
Cyanide (as CN)	0.2	0.2
Manganese	2	-
Iron (as Fe)	3	-

Note: All values, except pH, are in milligram per litre (mg/l)
Source: <http://www.cpcb.nic.in/standard32.htm>, as viewed on March 4, 2007

Standards for work environment dust levels:

The dust level at workplace has been specified under the Metalliferous Mines Regulations (MMR), 1961 and the Coal Mine Regulations, 1957. Respirable dust concentration in the workplace should not exceed five milligram per cubic metre for manganese; for all other types of mines, including coal, it should not exceed the value which is arrived at by dividing the figure of 15 with the percentage of free respirable silica present in the sample. The MMR, 1961 has specifically dealt with asbestos and states that respirable asbestos fibres should not exceed two fibres per millilitre of air sampled by an open membrane filter.

Effluent standards:

In the case of effluents too, there is a separate set of standards for coal mines (see Table 3: *Standards – effluents from coal mines*), while all other mines follow the general wastewater discharge standard for discharge in inland surface water and on land (see Table 4: *Standards – wastewater discharge by industry*). The separate coal standards are not very specific and fail to address key parameters such as heavy metals. The effluent standards are concentration based and fails to take into account the large volume of run-off discharge from mines during rainy season.

Standards for vibrations during blasting:

The Directorate General of Mines Safety has specified standards for vibration levels during blasting (see Table 5: *Standards – vibrations due to blasting*). These standards take into account a number of parameters – type of structures in the vicinity of the mines (*kuchcha* or *pucca* structures will respond differently to blasting), and frequency of blasting being the prominent amongst them.

TABLE 5: Standards – vibrations due to blasting

Type of structure	Dominant excitation frequency (Hz)		
	<8	8-25	>25
I. Buildings/structures not belonging to the owner			
a. Domestic houses/structures (<i>kuchcha</i> , brick, cement)	5	10	15
b. Industrial buildings (RCC and framed structures)	10	20	25
c. Objects of historical importance and sensitive structures	2	5	10
II. Buildings belonging to owner with limited span of life			
a. Domestic houses/structures (<i>kuchcha</i> , brick, cement)	10	15	25
b. Industrial buildings (RCC and framed structures)	15	25	50

Notes: The values under dominant excitation frequency (as in 5 for a dominant excitation frequency of <8 in the case of domestic houses/structures) denote peak particle velocity (ppv) in metre per second.

Source: Directorate General of Mines Safety (Tech) (S&T) Circular No 7 of 1997 Dhanbad, August 29, 1997



The ministry had put out a draft of the Bill in the public domain in June 2010. A Group of Ministers (GoM) was constituted under Pranab Mukherjee, the then minister of finance, to consider the draft Bill and give recommendations on various issues -- including one on sharing profits from mining with the local community. The GoM recommendations were included in a new draft in 2011 (*see attached note on the new draft*). The Bill has not yet progressed from its draft stage.

Mineral Concession Rules, 1960: The Mineral Concession Rules (MCR) outline the procedures and conditions for obtaining a prospecting license and mining lease. These rules also stipulate that a 'mining plan' shall incorporate, among others, a plan of the area indicating water sources, limits of forest areas, density of trees, impact of mining activity on forest, land surface and environment including air and water pollution; scheme for restoration of the area by afforestation, adoption of pollution control devices and such measures as may be directed by concerned Central and state government agencies. Environmental management plans, it follows, are part of the mining plans.

Mineral Conservation and Development Rules, 1988: The Mineral Conservation and Development Rules (MCDR) lay down guidelines for ensuring mining on a scientific basis, while conserving the environment at the same time. The MCDR also govern the specifications in terms of submission and reporting in case of reconnaissance operations, prospecting or applying for a mining plan. These rules also specify the operation and working of open-cast and underground mines, procedures to follow in case of abandonment or temporary closure of mines, and beneficiation studies.

Environmental legislation: Environmental legislation has to cover many areas, including comprehensive environmental impact analysis to ensure that projects that are ecologically destructive are not allowed, identification of 'no-go' areas, effective forest and wildlife acts to protect biodiversity, and regulations governing mine closure and mine restoration. There are five main environmental acts that impact the mining industry in India:

- The Water (Prevention and Control of Pollution) Act, 1974 (amended in 1988)
- The Air (Prevention and Control of Pollution) Act, 1981 (amended in 1988)
- The Environment (Protection) Act, 1986 (with rules 1986 and 1987) (EPA)
- The Forest (Conservation) Act, 1980 (amended in 1988)
- The Wildlife (Protection) Act, 1972 (amended in 1991)

Impacts of mining

Almost all of India's minerals are located in regions that also hold most of its forests, tribal population and major river systems (*see map*). Forest land has constantly been getting diverted for the purpose of mining and for other developmental projects. The average forest cover of the 50 major mineral-producing districts in the country stands at 28 per cent. During 1980-2005, close to 0.1 million ha of land was diverted across India to make way for 1,200 mines. This diversion has destroyed ecosystems as well as livelihoods.

Most of India's iron ore reserves are along the courses and watersheds of rivers like Indravati, Baitarani, Tungabhadra and Mandovi. Most of the coal reserves of the country are also located within river basins – Damodar, Godavari, Son, Kanhan and Mahanadi-Brahmani. The mining sector gobbles up a lot of water, largely because of the huge amounts of minerals that are extracted. In addition to using massive quantities of water, mining also depletes groundwater. Mines release the pumped out water into nearby water-courses, causing flooding and water pollution.

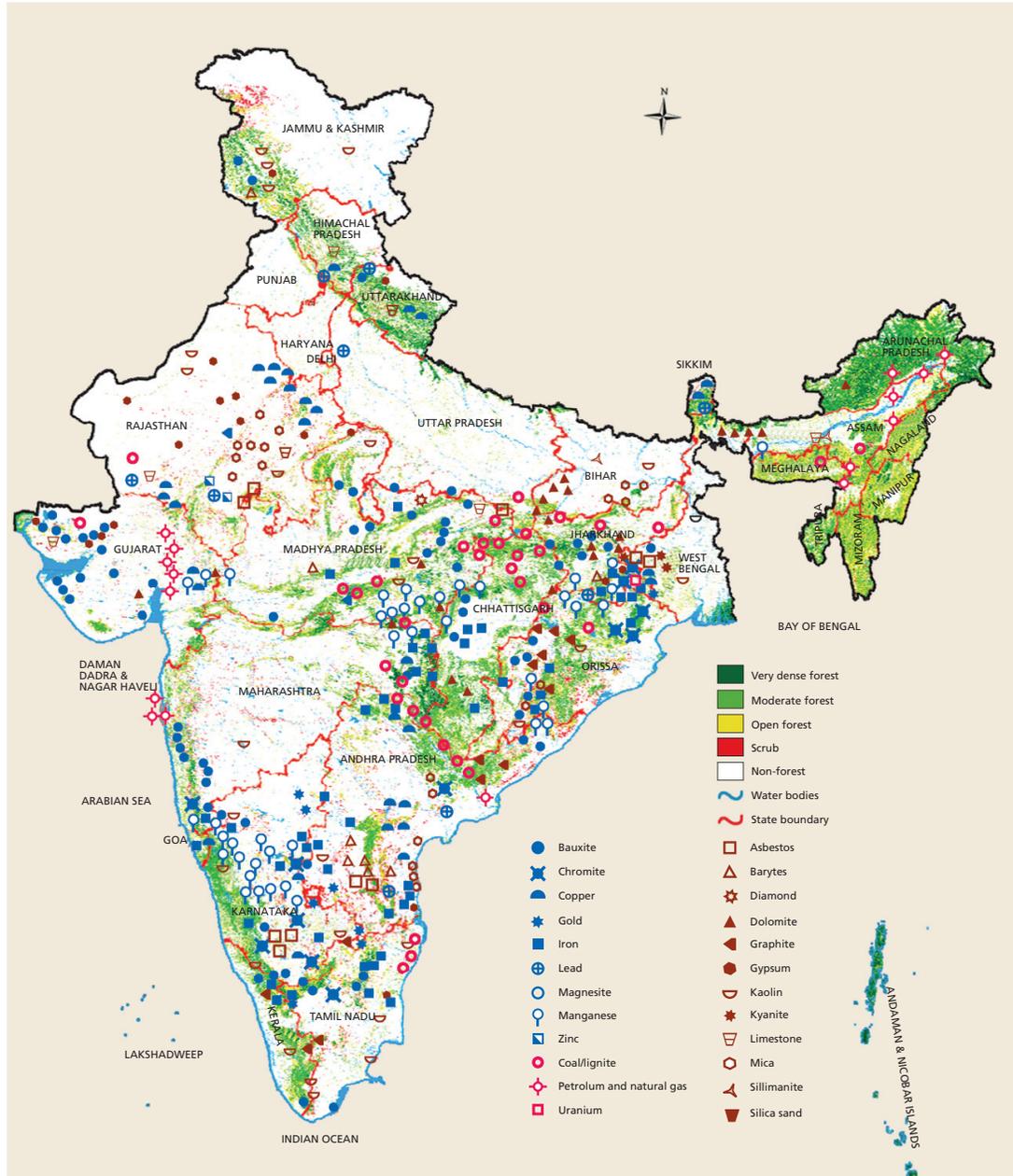
Mine waste can cause multiple pollution problems such as acid mine drainage, heavy metal pollution, pollution from processing chemicals and erosion and sedimentation. Tailings generated during beneficiation and processing are toxic; in summers, these become air-borne while during monsoons, they could leach into water bodies. Mining of some minerals like marble also generates specific wastes like marble slurry which if dumped on land, adversely affects productivity. Mines, waste dumps and mineral transportation generate a lot of fugitive dust – mining dust can lead to health problems like silicosis, asbestosis, cataract and pneumoconiosis. Mine workers are also prone to hearing impairment, skin and eye diseases, metal and radiation poisoning, etc.

Deaths and accidents occur during mining because of fire, blasting, drilling, flooding and land subsidence. In underground mining, carbon monoxide (CO) poisoning is also a reason for a number of fatalities.



MAP: India – forests vs minerals

India's mineral deposits are largely beneath its remaining forests



Source: Anon, 2001, *Environmental Atlas of India*, Central Pollution Control Board, New Delhi

In India's richest lands live its poorest people. Most of the major mining districts in India also feature in the list of 150 most backward districts of the country. While royalties exist for the industry, communities affected by the mining do not get anything. In fact, the most common problem associated with mining activities is that of involuntary displacement. Between 1950 and 1991, mining is estimated to have displaced close to two million people in the country – not even one-fourth of these displaced people have been resettled. The number, though, is a gross under-estimation as it only includes the number of people who have been moved out of their lands, not the ones that depended on the land for their livelihoods or those whose lands were destroyed due to waste dumping etc.



The findings of the Shah Commission

The final report of the MB Shah Commission and the Action Taken Report by the Ministry of Mines:

1. Nature of illegalities – mining without a licence, mining outside lease area, raising of minerals without paying royalty, mining in contravention to the mining plan, transporting minerals illegally, etc.
2. Measures suggested for the above-
 - a. to place lease information on department websites (for which the Commission has suggested a detailed format)
 - b. regular inspection of mines by IBM and mines department
 - c. change in procedure for grant of lease/renewal
3. Violation of a number of laws – Wildlife (Protection) Act 1972, Water (Prevention and Control of Pollution) Act 1974, Air (Prevention and Control of Pollution) Act 1981, Forest (Conservation) Act 1980, Environment (Protection) Act 1986, etc.
4. Problems in procedure of renewal – misuse of Rule 24A of MCR 1960 which states that the renewal application is to be made to the state government a year before expiry of the mining lease (with prior Central approval in certain cases). The report states that the pattern followed in the renewal process amounts to favouring certain companies. In many cases central approvals were not taken even when they should have been.
5. Section 38 of the MCR 1960 was also violated. This section states that amalgamation of two adjoining mine leases maybe approved with prior central approval (in certain cases) and also when the mining period remains unaffected (is co-terminus).
 - The Commission visited the area and held a public meeting on September 17, 2011. In the course of the meeting the dominant view was that 'illegal mining should be allowed to continue' and 'illegal mining should be regularised'. The reasons given were: illegal mining serving as livelihood source for a number of families, also serving as a livelihood source for a large number of truck owners and mining being the mainstay of economy especially in terms of providing employment.
 - The report refers to the Bombay High Court order dated July 18, 2003 directing that no new place for dumping overburden, waste, etc, to be obtained without permission/approval as under the MCDR, 1988. The order also directed that a permission under the Goa Irrigation Act, 1973 is also to be obtained. It further laid down a condition that the permission is to be granted keeping in mind that there should be a minimum distance between the mine rejects and canals under the Irrigation Act. The report mentions that there has been blatant violation of this order. The Ministry of Mines has advised state government of Goa to ensure proper accounting of dumps and to ensure that transit passes are issued only to people registered with IBM. Also, ministry recommends that for dump handling prior EC should be a prerequisite.
 - **The Commission states that the Director General of Mines (DGM) has not inspected since the last five years the mines as per the MMDR Act 1957 (Section 24).** Barring some cases where they inspected a mine after receiving a complaint from locals.
 - **The Commission states that there is lack of harmony between the Department of Mines and the Goa State Pollution Control Board.** An example is where in one of the reports filed by these departments individually states that a particular mine is working while the other department report says it is not. **These discrepancies are due to lack of any actual field visit.** In such a case a mine lease holder may take undue advantage of law in the absence of correct information available. These discrepancies are more visible for lessees like Sesa Goa, Damodar, Dempo, Salgaonkar, Timblo, Chowgule, etc. Out of a list of 28 such mine leases, the mines department has said that 13 leases are working and 15 are not-working. For the same list, the figures submitted by the GSPCB are the opposite. Ministry of Mines (MoM) states that IBM will reconcile the list of working and non working mines with the state directorate within 3 months.



- From 2008 onwards, the Commission found large quantity difference between production permitted and that actually produced (with the later being way higher). This extra has been referred to as "ore retrieved from the old dumps". **The Commission states that this excess production is being extracted on proxy from the running mines but portrayed as dump handling.** This shows lack of inspection and monitoring.
- Non-compliance of EC conditions, mining laws and lease agreements are other visible issues. **The Commission states that there is air and water pollution beyond tolerance limits especially in areas where mine clusters are present.**
- Report refers to the 2009-10 Special Task Force of IBM inspection in the state. It states that this report was not proper and the exercise was a mere eye-wash. **Number of complaints received about illegal mining but no action taken.** Report suggests that action should be initiated against officers responsible for their misconduct and dereliction of duties under Conduct Rules.
- **Suggested procedure for grant/renewal of lease:** a committee consisting of secretaries of mines, revenue, forest and environment department is to be formed. Also, leasehold rights for mining should be granted by public auction.
- **Encroachment:** This is a major problem mainly because mining is being carried out by people who do not actually have the mine lease in their name. There is encroachment on main rivers/nallahs, etc., as these are used for transportation of ores. **On analysing with google maps, the Commission has found a large extent of encroachment.** For this purpose, any area which did not have the mine lease has been defined as encroachment. As is the agricultural land where mining is happening but revenue records have not been regularised as "for non-agricultural use". GPS handsets were used to mark out all the boundary pillars for the leases. **Total encroachment identified is 2796.24 ha out of which 578.42 ha is used for illegally extracting mineral (Table on Pg. 5 of Chapter 1A).** During survey it was observed that most lease holders have not erected boundary pillars or these are wooden instead of permanent. Also, at many places miners have extracted minerals from outside lease area (**502.21 ha and an estimated amount of 127.2574 tonnes and a loss of Rs349359.288 million**). Forest area of **76.21 ha** has also been encroached by unknown people without any mine lease. Mining from this 578 ha of area is to be considered as theft of iron ore. **The Commission recommends deterrent punishment by filing criminal cases against the lessees for their criminal misconduct. Recommendation is also made to take action against the concerned officials of the Mines and Forest Department.**
- The Commission recommends that **the State Government should take immediate action to recover market cost of the iron ore illegally extracted after having proven estimation from outside the leased areas with exemplary penalty along with criminal cases to be filed against the lessees and department officials. The cost incurred due to estimation should be recovered from the extractors.**
- The Commission refers to a communication dated February 5, 2002 from MoEF to Chief Wildlife Warden, Goa. In this communication, the MoEF requested the State Government to list out such areas and furnish detailed proposal for their notification as eco-sensitive areas under the Environment (Protection) Act, 1986. This has not been done till date which has allowed mines to operate. The MoEF sent many reminders after that for the same purpose.
- The Commission refers to a Supreme Court order dated December 4, 2006 to not allow any Temporary Working Permits for mining in Goa without compliance with the environmental laws, in particular, the permission under the Forest (Conservation) Act, 1980. **Also, the MoEF was directed to refer to the Standing Committee of the National Board for Wild Life, under Sections 5 (b) and 5 (c) (ii) of the Wild Life (Protection) Act, the cases where environment clearance has already been granted where activities are within 10 km. Zone.** In February 2007, MoEF has asked states for such mine leases granted clearance since January 2004 which fall under this condition. Based on responses received, a list of 74 mine leases should have been placed before the NBWL but the MoEF has not taken any decision on this matter which remains pending even today. After the 2006 order, 98 EC approvals have been granted in Goa out of which 5 are for expansion. 61 EC approvals out of these need to be referred to the NBWL Standing Committee but since this was not done, **Commission recommends that the production should be brought down equivalent to the year 2000 to 2001 to mitigate the impact of cluster mining on the protected area. Also, these mines are to stop operation and their**



clearance is to be kept in abeyance till the time the necessary approval is received. In 6 EC approvals it is alleged that NBWL approval is present. But records state no such approvals of NBWL is taken in any of the mining lease. It is suggested that action be taken against such lessees and concerned officials.

- The Commission has observed that Rule 10 of the MCDR, 1988 has been misused. This rule allows for a revision in the mining plan subject to certain conditions. The mining plan is to lay down the limit of annual production of the mineral. The conditions laid down are: in the interest of scientific mining, conservation of minerals or for protection of environment. **In Goa, most of the revisions by IBM has been to increase production ignoring the conditions. For 69 mine leases, production limit was increased from 19.916 million tonnes to 37.742 million tonnes based on such revisions. This has resulted in production of about 65.692 million tonnes from Goa . The commission states that nobody has assessed impact on environment by increasing production.** Thus, the concerned authorities have totally failed in discharge of their duties. If mining is allowed at this rate, the Commission stipulates reserve in Goa would last for 9 years only. If 30 million tones is taken as average production per year, the iron ore would last for 20 years only. **The Commission recommends planning and conservation of iron ore for at least 50 years is required to be undertaken for the State of Goa. This can be achieved only by lowering the permission and extraction should not exceed more than 12.5 million tones per year for quality grades.** The MoM calls the cap introduced by the Commission as 'impracticable' for various reasons – incomplete geological information, unpredictable market forces, change in anticipated mining depth during operation, etc. The revision issue has also not gone down well with MoM which states that with successive mining, useable resources maybe discovered which requires a revision on the mining plan. The revision may also be necessary in case there is a change in the method of mining, reduction in production due to reduced demand, etc.
- All those mine leases which are working under deemed extension without any justification for the delay in either filing for renewal, not granting of renewal within the stipulated time, etc., are to be declared void and state government is to take action on the same. **The iron ore extracted and dispatched from these mining leases should be considered as illegal/irregular and unlawful and amount at market/export rate thereof should be recovered. Penal action should be initiated against all responsible in this act of hatching conspiracy for approval of leases.** The Commission recommends that all such leases which are presently working and if felt necessary to continue, should be canceled and then auctioned.

The mines, which are not yet effectively started or have not still reached at the stage of actual extraction of minerals should be kept reserved at least for 15 to 20 years for future.

The crux of the report is that no regard to environment and forest clearance procedures and conditions have been meted out by miners and state authorities in Goa. The grant of clearances and mining permissions have been arbitrary with an aim to favour certain companies/individuals. Mineral rules and laws have also been disregarded in the state.

Notes:

1. Assuming in situ specific gravity of Goan iron ore = 2.2, average working depth = 10 meters, and export cost @US \$ 60 per tonne of iron ore with a conversion rate of Rs 47.
2. For other leases, production limit has remained 27.95 million tonnes.

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