CHAPTER 7.2

MINERALS

7.2.1 The development and management of mineral resources plays a major role in the industrial growth of a nation and its people at large. India's per capita mineral consumption is one of the lowest in the world. The growth in cement and energy sector has been faster than growth in the metallic sector. Minor minerals, particularly dimensional and decorative stones, have emerged as a major contributor to mineral output and exports.

7.2.2 Realising the need for a faster pace of industrialisation, the country had pursued an integrated approach to mineral development, attempting to augment the mineral base by establishing giant exploration and exploiting agencies. This resulted in increasing indigenous mineral production from Rs. 58 crore in 1947 to Rs. 30,000 crore during 2000-01 (excluding crude petroleum and natural gas production of Rs. 25,360 crore). Presently the country is comfortably placed in the field of bauxite, iron ore, limestone, dimensional and decorative stones and non-coking coal and a major breakthrough is required for augmenting the reserves of diamond, platinum, base metals, fertiliser and industrial minerals.

7.2.3 In keeping with the spirit of economic liberalisation, the Government has taken a series of initiatives under the overall framework of the National Mineral Policy , 1993 for the growth of the mineral sector. It amended the Mines and Minerals (Regulation and Development) Act, 1957 in 1994 and 1999 and renamed it as the Mines and Minerals (Development and Regulation) Act (MMDR Act). The amendments were aimed at attracting private investment including foreign direct investment (FDI) into the sector.

7.2.4 A review of the mineral exploration and development work indicates that most of the accessible and near-surface deposits are either exhausted or under production. A major portion of the copper, lead and zinc reserves are in the 'possible' category and have not been explored to the level of 'proven' reserves. Besides, the life index of base metals as indicated in Table-1 for copper, lead and zinc is estimated to be ten years, five years and 15 years respectively beyond 1 April 2007. The self-sufficiency acquired in minerals does not fully cater to the future industrial needs of the nation and India is still a net importer of minerals. Only a few significant discoveries have been reported in the Ninth Plan period.

Table. 7.2.1
Life Indices for selected base metals

Ore/ Metal		Recoverable Reserves (mt)		Anticipated demand at the end of the Tenth Plan(9%)	Life index (Proved + probable) beyond 1.4.2007
		Proved & Probable / Demonstrated	Possible		
Lead Zinc	Ore	97.58	59.70		
	Metal	Lead 1.19	0.72	0.178	5 years
		Zinc 6.33	2.73	0.415	15 years
Copper	Ore	328.595	205.24	0.32 mt	10 years
Aluminium	(Bauxite)	1218	1307	8.00	153 years

Source : Report of the Working Group on Mineral Exploration & Development (other than Coal & Lignite) for the Xth Five Year Plan - Vol. II, Planning Commission.

7.2.5 To enhance the indigenous mineral resources, intensive exploration is required. An enabling environment must be created to attract new investments through private sector participation with modern technical and managerial expertise for finding new deposits and develop them sustainably in the Tenth Plan.

INITIATIVES TAKEN IN THE NINTH PLAN

7.2.6 The policy objective of the Ninth Plan for the mining sector (non-fuel) was to make minerals available to the consumers at internationally competitive prices with the domestic mining industry competing with imports. No protection barring what was permitted within the World Trade Organisation (WTO) regime was available. The major thrust in the mining sector was to accelerate the growth rate along with conservation and protection of the environment through inflow of foreign technology and capital. The objective, by and large, has been achieved.

7.2.7 The London Metal Exchange prices of non-ferrous metals fluctuated widely during the Ninth Plan period. Copper, in particular, was the worst affected and its prices have remained depressed, adversely affecting the performance of the public sector Hindustan Copper Limited (HCL). Companies in the aluminium and zinc metals business have, however, been able to absorb the price shocks.

7.2.8 The Foreign Investment Promotion Board (FIPB) cleared about 90 FDI proposals in the mining sector and the expected FDI flow is Rs. 3,963 crore as of February 2002. During 2000-01 alone, the FIPB approved seven proposals involving FDI worth Rs. 230 crore.

7.2.9 Under the indigenous research and development (R&D) programme, emphasis was laid on promoting R&D efforts in hydrometallurgical and bio-leaching processes for the extraction of low-grade ores.

7.2.10 The non-ferrous metals and mining sector have been opened up to the private sector. As such, no physical targets were set for the Ninth Plan. However, indicative physical targets were set for the terminal year of the Plan (2001-02). Annexure-7.2.5 indicates the output of iron ore and non-ferrous metals during 2000-01 as well as likely production in 2001-02 as against the Ninth Plan indicative targets. It can be seen that the production of iron ore, copper and lead are likely to fall short of the indicative targets set for the Ninth Plan (i.e. the terminal year of the Plan). The reasons have been discussed under sub-sectoral profile.

7.2.11 The major initiatives taken in the Ninth

Box 7.2.1
Major Initiatives in the Ninth Plan

The Mines and Minerals (Regulation and Development) Act 1957 was amended and has been renamed as Mines and Minerals (Development and Regulation) Act. More powers have been delegated to the State Governments.

A new clause relating to reconnaissance permit has been added in the Act as a stage distinct from and prior to actual prospecting operations in order to make investment in the state-of-the art technologies in mineral exploration more attractive.

Consequential amendments have also been made to the Mineral Concession Rules, 1960 (MCR) and Mineral Conservation and Development Rules, 1988 (MCDR). The power of approving mining plans for 29 non-metallic and industrial minerals in respect of open cast mines has been given to the State Governments.

A time frame has been set for State Governments for the disposal of mineral concession applications and for approval of mining plans.

State Governments have been delegated powers to grant mineral concession even for areas which are not compact or contiguous.

State Governments have been empowered to permit the amalgamation of two or more adjoining mining leases.

No separate application for prospecting and mining is now necessary.

The mining sector has been exempted from obtaining a no objection certificate (NOC) from the existing joint venture partners for new ventures, provided it is not for an existing area/ mineral.

Guidelines have been issued for computation of royalty on ad valorem basis.

Revised rates of royalty for major minerals (other than coal, lignite and sand for stowing) have brought 21 rates on ad valorem basis covering 39 specified minerals, which is similar to practice followed in competing countries.

The Government has allowed foreign equity participation up to 100 per cent through the automatic route in the case of exploration and mining of all minerals, except diamonds and precious stones where only 74 per cent FDI is permissible via this route.

The Department of Mines has constituted the Granite Development Council for the development of an internationally competitive granite industry. A Group on Marble Development has also been constituted to look into the various problems related to the marble industry and suggest appropriate measures.

The Government disinvested 51per cent of its equity in Bharat Aluminium Company (Balco) to a strategic partner i.e. Sterlite Industries Ltd.

It also approved disinvestment of HCL and the strategic sale of 26 per cent of its equity in Hindustan Zinc Limited (HZL), .

The Government decided to wind up the sick Bharat Gold Mines Ltd.

After liberalisation, the private sector's share in indigenous copper output has increased to 76 per cent, ending HCL's dominance in the field.

A Fast Track Committee comprising representatives of the State Governments, Central Government and concerned agencies has been set up for monitoring the progress on implementation of major projects.

A major breakthrough has been made in the extraction of nickel and cobalt from the chromite over-burden by developing technology and its techno-economic feasibility is under evaluation.

The Ministry of Environment and Forests has issued the Battery (Management and Handling) Rules, 2001 in order to organise and streamline the collection and recycling of scrap lead batteries in an eco-friendly manner. Many overseas countries have framed similar rules/legislations, thus ensuring a clean environment.

The Ministry of Environment and Forests has set up a Registration Committee through which eco-friendly recycling of lead, zinc, etc. is encouraged by identifying such units. This will also pave the way for the creation of new capacities/units for processing wastes containing lead, zinc, etc. in an environment friendly manner.

The Geological Survey of India (GSI) has published a Seismotectonic Atlas of India that will help researchers and planners in various down stream analysis for monitoring earthquakes.

A Broad Band Observatory has also been set up in Jabalpur and work is in progress for installation of more instruments in other parts of the country.

The exploration and commercial exploitation of Beach Sands (Atomic Minerals), which were hitherto reserved for the public sector, have been opened to the private sector for subject, however, to some guidelines under the Atomic Minerals Act.

Plan are highlighted in Box 7.2.1

THE SUB SECTOR PROFILE

Iron Ore

7.2.12 As against an anticipated production of 100 million tonnes (mt), production of iron ore during 2001-02 is expected to be 79 mt. This shortfall is attributed to the slowdown in the economy during the Plan period. The indicative export target of 32 mt set for 2001-02 is, however, likely to be exceeded by 8 mt primarily because of demand from China,

South Korea, etc.

7.2.13 The Government had approved development of the Bailadilla 10/11A iron ore projects of the National Mineral Development Corporation (NMDC) at an estimated cost of Rs. 430.50 crore in August 1995. The project was to be completed by August 1999. The implementation of the project got delayed because of some technical reasons. Besides, the NMDC board, under powers delegated to it, had approved the setting up of a Tertiary Crushing Plant at Bailadilla deposit-14/11C at an estimated cost of Rs. 11.47 crore. The project is nearing completion.

Non-ferrous Metals

Aluminium

7.2.14 As against the anticipated annual growth rate of 8 per cent in aluminium demand during the Ninth Plan period, the actual apparent consumption of the metal grew at an average annual growth rate of around 4.5 per cent. This was primarily due to the economic slowdown , especially in the major aluminium consuming sectors such as power (transmission), construction, transport and packaging, etc.

7.2.15 Primary aluminium output during 2001-02 is likely to fall short as Indian Aluminium Company's (Indal's) Belgaum Smelter is not likely to be re-energised and nor is the marginal expansion of its Hirakud Smelter likely to materialise, as was anticipated (Annexure 7.2.5).

7.2.16 No greenfield investment was anticipated in the aluminium sector, either in the private sector or in the public sector, during the Ninth Plan period. However, an additional 42,000 tonnes was added to the primary aluminium capacity – 30,000 tonnes by the private sector Hindustan Aluminium Company (Hindalco) and 12,000 tonnes by the public sector National Aluminium Company (NALCO) with the expansion of their smelters.

7.2.17 NALCO's de-bottlenecking project of its alumina refinery and expansion projects of bauxite mines from 2.4 million tonnes per annum (tpa) to 4.8 million tpa and alumina refinery from 0.8 million tpa to 1.575 million tpa have been completed. The expansion of the aluminium smelter capacity from 230,000 to 345,000 million tpa, additions of the seventh and eighth units of 120 MW capacity each to the captive power plant are likely to be completed early in the Tenth Plan period.

7.2.18 The investment in the three large private sector export-oriented alumina refineries in Orissa was deferred due to commercial reasons.

7.2.19 A major development in the primary aluminium market was the taking over of Indal by Hindalco from Canadian firm, Alcan.

Copper

7.2.20 The demand for copper was anticipated to grow at 8 per cent annually during the Ninth Plan period. As against this, the annual growth in copper consumption during the Plan period was a little over 8 per cent. This was due to the spurt in demand for the metal from sectors such as telecommunication, consumer durables, handicrafts, etc., which more than offset the decline in demand for the metal from sectors such as the process industry, transport, construction, defence, mints, etc.

7.2.21 The indigenous primary copper smelting capacity during the terminal year of the Ninth Plan is likely to be around 3,47,500 tpa as against the Ninth Plan anticipated target of 5,00,000 tpa. This is because anticipated additions to the indigenous copper smelting capacity to the tune of 1,52,500 tpa — 52,500 tpa from the expansion of HCL's Khetri smelter and 1,00,000 tpa from a new smelter of Metdist Ltd. — not materialising on commercial considerations. The copper output during 2001-02 is, however, expected to be higher than the indicative Plan target by 60,000 tonnes mainly due to higher production by the private sector smelters (Annexure 7.2.5).

Zinc and Lead

7.2.22 The anticipated annual growth of 6 per cent in the demand for zinc during the Ninth Plan may be exceeded due to a steady growth of the zinc consuming sectors such as the galvanising industry (consuming around 70 per cent of zinc annually),

die-casting, dry-cell batteries, chemicals, etc.

7.2.23 The demand for lead was anticipated to grow at 7 per cent during the Ninth Plan period. This is likely to be realised due to the steady growth of the lead consuming sectors like automobiles, inverters, uninterrupted power supply (UPS) system, etc.

7.2.24 Zinc output during 2001-02 is expected to be higher than the indicative Plan target due to additional capacity coming on stream and efficiency gains. However, lead production will be lower due to the ban imposed on importing lead scrap in the form of whole-drained batteries or battery plate scrap, lead residues or lead dross under the Basel Convention. This resulted in the secondary lead output of the private sector India Lead Ltd. declining to about 50 per cent of its annual capacity apart from the additions to its lead capacity not materialising on commercial considerations. Lead production was also lower because of the closure of the Vizag lead refinery plant by HZL primarily due to environmental reasons (Annexure 7.2.5).

7.2.25 No new greenfield zinc smelter was anticipated to be set up in the public sector or in the private sector during the Ninth Plan period. HZL had planned to expand the capacity of its Vizag and Debari smelters in Andhra Pradesh and Rajasthan respectively by 10,000 tpa during the Ninth Plan period. These projects have since been completed.

7.2.26 For most of the last four years of the Ninth Plan, the secondary zinc producers were not in operation because they were not able to import raw materials such as zinc ash, dross and skimmings, etc., because of the ban imposed by the Government under the Basel Convention. The Planning Commission also considered the matter.After lengthy deliberations, the secondary zinc producers were permitted to import these raw materials under the 'Actual Users Licence', allowing them to resume production.

Externally Aided Projects

7.2.27 The GSI has completed the 'Technical Assistance project for Detailed Exploration of Platinum Group of metals in Orissa'.

7.2.28 The Indian Bureau of Mines (IBM) has completed two projects with the assistance provided by BRGM, France. The two projects were related to environment management of mines and waste recovery at an estimated cost of 16 million French Francs and technical management information system at an estimated cost of 23.4 million French Francs.

7.2.29 The Mineral Exploration Corporation of India Ltd. (MECL) is implementing a project involving around 1.5 million French Francs on the development of cost models included in the United Nations Framework for economic evaluation of mining projects.

Plan Outlay and Expenditure

7.2.30 An outlay of Rs. 7,753.96 crore was approved for the Ninth Plan for the Department of Mines to be financed with budgetary support of Rs. 844.96 crore and internal and extra budgetary resources (IEBR) of Rs. 6,909 crore. As against this, anticipated expenditure during the Ninth Plan period is placed at Rs. 4,907.24 crore, which has been financed through budgetary support of Rs. 866.42 crore. Lower anticipated expenditure during the Plan period has been due to delay in taking up investments such as cold rolling mill project of Balco, de-bottlenecking of HCL, dropping of HCL's expansion programme etc. (Annexures 7.2.1and 7.2.2).

TENTH PLAN OBJECTIVES

7.2.31 One of the major objectives of the Tenth Plan will be the search for minerals in off-shore areas such as the continental shelf and the maritime zone within the territorial water limits along the Indian Peninsula and the islands of the Indian Ocean. The work will also involve delineation of the area, which is likely to extend by more than one million sq. km. The Government is actively considering enactment of suitable legislation for offshore mineral investigations which will ultimately lead to the extraction of minerals from the seabed. The GSI will have to play a major role in this programme.

7.2.32 In the matter of basic exploration, thrust will have to be given on building up of a reserve-

base of those minerals in which reserves are presently low such as base metals, nickel, tin, graphite, noble metals, precious stones, rock phosphate, etc. This will also be done for minerals the present resource-base of which is negligible and India is totally dependent on imports, such as antimony, molybdenum, the platinum group of minerals, tin, tungsten, potash, native sulphur, etc. It is quite likely that the private sector will not invest in the exploration of these minerals because of risk involved, apart from the fact that the private sector is yet to make a mark in the Indian exploration market. The State (both the Central and State Governments), therefore, will have to continue performing a promotional role for the exploration of these minerals.

7.2.33 The GSI will have to be restructured and modernised, including in the areas of instrumentation for both ground and aerial geophysical surveys, state-of-the-art laboratory instrumentation with high precision capabilities, etc. Also, a new research vessel will have to be acquired for carrying out bathymetric and magnetic surveys in off-shore areas for staking claim on the extended continental shelf zone up to 350 nautical miles under III Convention – United Nations Conference on the Laws of the Sea (UNCLOS).

7.2.34 Beneficiation projects will have to be undertaken for upgradation of low-grade minerals. For this, self-sustaining institutions as well as private sector organisations will have to work together and the Government will facilitate the creation of this network.

7.2.35 It will be necessary to adopt U.N. Framework Classification (UNFC) of mineral resources at the earliest and to bring the national mineral inventory in line with this classification. This will present reserves/resources of minerals on a internationally uniform system and will help in attracting more FDI into the mining sector.

7.2.36 Despite the progress made during the Ninth Plan period, particularly in the expansion of the private sector as well as in attracting FDI to the mining sector, there are some areas of concern having policy implications. These have been highlighted in Box 7.2.2.

Box 7.2.2
Major Areas of Concern

Indian spending on exploration, on an average, has been around less than 1 per cent of the global spending despite India being among the few mineral rich countries in the world.

The time taken in the disposal of various applications, including those for mineral concessions, transfer of surface rights and environment clearances, have been perceived to be unduly long.

Presently, one cannot mine a deposit which lies in a declared forest area. There are many excellent mineral deposits available in such forest areas. A way out must be found for commercially exploiting such deposits for the benefit of the economy even while maintaining the requisite forest cover and eco-balance.

The taxation regime pertaining to the mineral sector is not perceived as being on par with that in competing countries. This is considered one of the reasons affecting private sector investment, including FDI, in the mining sector.

Inadequacy and high cost of infrastructure continues to be a big constraint on the growth of the mineral sector, including exports.

Various State Governments have laid down conditions and demands such as requesting mining companies to put up their processing plants within the respective States. Such conditionalities are contrary to the present policy dispensation.

The practice of State Governments reserving large mining areas for exploitation by the public sector is also inconsistent with the present policy framework.

Qualitative and quantitative restrictions imposed by the Government on the export of high-grade iron ore particularly from Bailadilla in Chhattisgarh) and Bellary-Hospet in Karnataka (both lumps and fines), manganese and chrome

ores, go against the present policy regime.

Also inconsistent is the canalisation of the export of high-grade iron ore from Bailadilla and Bellary-Hospet areas and chromite and manganese ores through the Minerals and Metals Trading Corporation (MMTC).

The present multiplicity of legislation — such as laws related to forests, environment, mining and labour – with a bearing on mining operations are not considered conducive to the speedier growth of private sector investment in the sector.

There is a need for restructuring and modernisation of the GSI as well as strengthening its research capabilities, particularly in offshore areas for which procurement of a new research vessel is also necessary.

7.2.37 India continues to import metals such as magnesium, vanadium, molybdenum, antimony, tin, tungsten, nickel, cobalt, etc. It is also not a major player in the world market in minerals such as iron ore, bauxite (i.e. alumina).

7.2.38 The known copper resources are characterised by low volume, narrow width, low grade and poor precious metal content. With the exception of the Malanjkhand deposit in Madhya Pradesh, no deposit is amenable to low-cost surface mining and high degree of modernisation.

7.2.39 Except for thermal coal, iron ore, cement-grade limestone, barites, mica and metallurgical grade bauxite in which the inventory is good, fertiliser minerals, base-metals, refractory minerals (including refractory grade bauxite), strategic minerals, noble metals, rare metals, etc., fall under the deficit category. India has large deposits of lean-grade ores such as in base metals, fertiliser minerals, etc., which can be explored and exploited with appropriate technologies.

7.2.40 One of the major factors for low FDI inflows during the Ninth Plan has been that the investment was limited to exploration only – in which initial investment is low. Procedural delays at the level of State Governments was the other major factor. State Governments, by and large, do not have a regulatory mechanism in position to ensure timely disposal of cases, which is essential for the rapid growth of private sector investment. This constraint will have to be removed.

7.2.41 While addressing these areas of concern, the Tenth Plan objective of faster development of an internationally competitive mining sector must revolve around cost-effective mineral exploration and development with the state-of-the-art exploration technologies through promoting private investment in both mineral exploration and creating new mining capacities. The major thrust will have to be on accelerating growth along with conservation and the protection of environment, for which both foreign capital and technology will have to be encouraged.

TENTH PLAN STRATEGY

7.2.42 The GSI and the State Directorates of Geology and Mining will have to continue working for the assessment and augmentation of mineral resources, particularly for the generation of basic geological data, understanding the process of ore genesis, regional surveys, specialised and focused geological studies, etc. including search for minerals in the off-shore areas, continental shelf and maritime zone. At the same time, private sector investment, including FDI, will have to be encouraged for detailed exploration.

7.2.43 With the advancement in the frontiers of science, there is an emerging demand for hi-tech minerals, which will have to be met. This will call for earth scientists anticipating demand and exploring and extracting these minerals with cost-effective and environment-friendly extraction technologies. Agencies of both of the Central and State Governments will have to play an important promotional role in the exploration of these minerals.

7.2.44 The mineral surveys and exploration programmes to be carried out by the Central and State agencies will also have to be targetted to take up concept-oriented studies integrating geological, geo-physical (both air-borne and ground) and geo-chemical surveys appropriately linked up with laboratory studies/analysis involving state-of-the-art technologies. Deeper probing of known deposits,

intensive and extensive belt-wise mineral exploration including covering areas out of the traditional mineral belts and even basement rocks will also have to be undertaken.

7.2.45 Concerted action plans need to be drawn up by the concerned organisations to acquire higher capability in all fields of mineral exploration and development. This will call for technology upgradation for field data acquisition, state-of-the-art laboratory back up and development of expertise. Focus areas will include air-borne surveys, ground geo-physical surveys, exploratory drilling, marine survey, shifting to digital equipments for surveys, etc.

7.2.46 There have been rapid advances in information technology (IT) and IT can be used for cutting costs in mineral exploration and in making advances to the exploration technology. Intensive applications of IT and computers in mineral exploration, particularly by the State agencies will have to be given due attention in the Tenth Plan. This will, inter alia, include customised information packages and databases, conversion of all available data from print media to digital format, extensive utilisation of geo-spatial technologies, etc.

7.2.47 In view of the fast changes that have taken place in the frontiers of exploration technology and the emerging competition in the mineral markets, it has become necessary to maintain dynamism in the development of skills through appropriate programmes for human resource development. Accordingly, scientific and technical professionals must be exposed to emerging developments in various domains of mineral exploration and exploitation. The training would have to cover what is available within the country as well as abroad.

7.2.48 Collaborative programmes for upgradation of expertise such as geo-chemical exploration with China, mineral exploration techniques for identifying concealed deposits with Australia, off-shore diamond exploration with South Africa and technological upgradation with BRGM, France is contemplated.

7.2.49 Realising the need for a quantum jump in R&D efforts, particularly in the case of scarce and high priority materials, emphasis must be laid on creating an effective and efficient industry–laboratory–academia linkage under the R&D programmes.

7.2.50 The growth of the mineral sector could also be fuelled with increasing exports particularly of iron ore, chromite, barites, granite, marble, decorative stones, bentonite, mica, titanium minerals in which India is well placed in terms of reserves. An important reason why India has not been able to become a major player in the export of these minerals has been lack of competitiveness. Thrust, therefore, will have to be given for increasing exports of these minerals through internationally competitive capacity expansion, mostly in the private sector.

7.2.51 A special thrust will have to be given to the mineral exploration and development in the northeastern region, given the potential of minerals and the need to tap this potential for faster economic development of the region. While the States of the region will have to play a major role in this, the Central Government will facilitate it with specific intervention.

THE SUB-SECTOR PROFILE

Iron Ore

7.2.52 It is likely that the production of iron ore during the terminal year of the Tenth Plan (2006-07) will touch 110 mt. Around 40 mt is likely to be exported annually during the Plan period.

7.2.53 Hitherto, export of high-grade iron ore has been canalised through the Minerals and Metals Trading Corporation Ltd. (MMTC) apart from quantitative restrictions being imposed by the Government to ensure that only the surplus quantity is exported after indigenous demand is met. This policy is perceived to be inconsistent with the present policy dispensation. It is likely that there will be a shift in the policy relating to canalisation as well as quantitative restrictions for high-grade iron ore. In case the high-grade iron ore export is to be discouraged, it can best be done through tariff

mechanism.

Non-Ferrous Metals

7.2.54 With gross domestic product (GDP) targetted to grow at 8 per cent, the aluminium and copper sectors are both anticipated to grow at 8 per cent, zinc at 6.5 per cent and lead at 6 per cent during the Tenth Plan period.

7.2.55 The demand is expected to be met with additions to the present indigenous smelting capacity by way of brown-field expansion. The expansion will be entirely in the private sector, since Nalco, the only public sector company left in the aluminium sector at the beginning of the Tenth Plan, is likely to be disinvested early in the Plan period. It is quite likely that the indigenous aluminium smelting capacity will increase from 7,14,000 tonnes to one million tonnes by the end of the Tenth Plan, all in the private sector. No new greenfield smelter is likely to come up in the Tenth Plan period.

7.2.56 The export-oriented alumina refineries, which were planned to be taken up in the Ninth Plan by the private sector but were dropped due to commercial considerations, are likely to be taken up for implementation.

7.2.57 Recycling of aluminium is gaining momentum the world over for its low cost of energy. Secondary aluminium production in India continues to be in the unorganised sector and is to the tune of around 50,000 tpa. It is expected that the industry will become organised and production will increase to meet around 30 per cent of the demand by the end of Tenth Plan period.

7.2.58 In the aluminium downstream sector, particularly semis, sheets, extrusions, rolled products, foils and castings, expansion of output is required for meeting the growing domestic demand. Thrust is required to be given to improving productivity and quality with appropriate R&D inputs. The private sector as well as the Jawahar Lal Aluminium Research and Development Centre at Nagpur will have to jointly play a major role in this regard.

Copper

7.2.59 Primary copper production is expected to increase to around 500,000 tonnes from the present level of around 300,000 tonnes. The additions to the copper production capacity will be with imported concentrates in the private sector since HCL – the only copper producer in the public sector – is likely to be disinvested. The demand is expected to touch a level of around 460,000 tonnes during the terminal year of the Plan.

Lead and Zinc

7.2.60 The production capacity of zinc is likely to increase during the Tenth Plan with both HZL and private sector Binani Zinc Ltd expanding their capacities, which also will include a new smelter to be set up by HZL in Rajasthan.

7.2.61 Additions to lead capacity are likely to be through the secondary route since the country has very poor primary lead resources and no viable lead deposit is expected to come up for commercial exploitation.

7.2.62 Even after the likely expansion in the production capacities of zinc and lead, both in the primary and secondary sectors, there will be a supply gap in both the metals which will be bridged with imports.

7.2.63 In the case of all non-ferrous metals, the consumers, however, will decide whether to buy indigenously produced or imported metals and this will depend on the international competitiveness of the indigenous output. The indigenous output will be decided by the market forces. Hence, no output targets are suggested.

Externally Aided Projects

7.2.64 GSI, IBM and MECL are likely to get assistance from BRGM, France for on-going and new projects in the Tenth Plan.

Research and Development

7.2.65 The focus of R&D in the mineral sector will have to be on developing beneficiation as well as bio-leaching technologies for commercial exploitation of low-grade ores such as copper,

fertiliser minerals, etc. and on improving upon mining technologies for enhancing productivity in order to stay internationally competitive. Presently, R&D spending in the mining sector is very low when compared with competing countries. The mining companies, therefore, will have to increase R&D spending. The Government (both Central and the States) will have to facilitate investment in R&D through appropriate support to its institutions.

7.2.66 It will be necessary that an effective and efficient industry-institutional-government linkage is created for better synergy in R&D efforts in the mining sector. Getting this linkage in position will have to be facilitated by the Government. FDI is also likely to help in a great measure in improving upon technologies both in exploration and mining.

Environment and Natural Hazards

7.2.67 Sustainable development has become a global agenda. Like other development-related activities, mineral exploration and exploitation also adversely affect the environment. For sustainable development, the key issue is managing natural resources including minerals optimally without disturbing the ecological balance and containing natural hazards.

7.2.68 The role of earth scientists has, therefore, become important, especially since environment problems cannot be resolved in isolation through engineering solutions only or even through legal and administrative actions. In the domain of environment and earth system studies, one of the goals will have to be continued updating of the geo-scientific database.

7.2.69 Notifying new national parks or extending the existing ones has created problems for some of the existing mines such as of Kudremukh Iron Ore Company Ltd. in Karnataka. Since many mineral deposits which are considered commercially exploitable are located in and around these parks, it has become necessary to consider this issue in the larger interest of the economy. Any mining zone around national parks/zoos/sanctuaries will have to be decided after due consideration to the technologies likely to be used for extraction of minerals.

7.2.70 To ensure better coordination between the Ministry of Environment and the Department of Mines, as well as the State Departments of Mining and Geology, the National Forest Advisory Committee and the Regional Advisory Committees will have to be strengthened with representatives from the IBM and the State Departments of Mining and Geology.

7.2.71 Further, a suitable strengthening of the State Pollution Control Boards is considered necessary for effective public hearing and evaluation of environment management plan (EMP)/environment impact assessment (EIA). Regional environmental studies will also have to be undertaken for small clusters of mines for facilitating the preparation of EMP/EIA.

7.2.72 Mitigation of natural hazards, including landslides, is one area where geo-scientists can play an effective role. For this, gathering of base-line geological data and related information, its critical analysis and monitoring will be the key to understanding the basic physical processes which cause the phenomenon, its area of influence and the magnitude of impact. The GSI and other agencies involved in basic geo-scientific work will have a major role to play in the area of managing natural hazards.

Strengthening of Institutional Mechanism

7.2.73 One of the major reasons for low private, especially foreign, investment in the mining sector has been procedural delays at the state level, and the lack of regulatory mechanisms for ensuring timely disposal of cases. Many State Governments are not perceived to be geared up sufficiently to take up this responsibility. Central Government institutions such as GSI and IBM have also been slow to change in order to meet the challenges posed by the new liberalised economic environment. There is, therefore, a need to restructure, modernise and strengthen these institutions. The State Directorates of Geology and Mining will have to be made more effective and efficient.The mindset will have to change in order to make it easy for investors to invest in mineral exploration and mining by framing rules, procedures and administrative

actions at par with those in competing countries. The costs involved in delivering data will have to be recovered through an appropriate pricing mechanism.

7.2.74 The Central Geological Programming Board as well as the State Geological Programming Boards will also need to be strengthened with representation from the private sector, including some leading foreign investors, consultants and other individuals concerned with the mineral industry.

7.2.75 For the private sector to develop fully, there is a case for setting up a regulatory authority which can be established by appropriate restructuring and strengthening of one of the existing institutions.. Such an agency will also provide technical guidance and other assistance to the State Governments for conservation and systematic development of mineral resources, review and prescribe the criteria of statistical and technical data and the threshold values of minerals from time-to-time for its optimum utilisation, regulate mining operations including size of the operations, tackle royalty issues, etc. While considering this, it may be necessary to study such structures and practices in the competing countries.

Mineral Development in the States

7.2.76 The States will have to provide adequate resources for promoting mineral development and reform their policies for attracting private investment in the mining sector.They will have to implement the amended Mineral Concession Rules – both in letter and spirit — for ensuring various approvals within the stipulated time frames.

THE PATH AHEAD

7.2.77 The following action points are proposed for addressing the areas of major concern relating to the minerals sector:

7.2.78 The Central Government, in exercise of the power conferred by Section 13 of the MMDRAct amended the Mineral Concession Rules, setting time frames for various clearances — i.e. six months from the date of receipt of complete application for reconnaissance permit, nine months for prospecting licence and 12 months for mining lease. The Department of Mines should pursue the matter with the States. The Planning Commission will also rigorously monitor this through its Annual Plan and quarterly performance review meetings.

7.2.79 The mining industry is constrained in a major way by inadequate and poor quality infrastructure. The transaction costs of handling minerals for domestic consumption as well as for exports are very high compared to competing countries. While removing the infrastructure constraints in the economy will be one of the main objectives of the Tenth Plan and the State will play a major role in this, the Department of Mines should coordinate issues relating to infrastructure for the mining sector. It should identify projects which need to be taken up for implementation in consultation with the State Governments and the mining industry. The projects may include roads connecting mineral deposits to the national highways and ports, dedicated railway lines, power units, deepening of ports, creating additional dedicated port capacity, handling technology at ports, etc.

7.2.80 One of the projects already identified is the 155 km Daitari-Keonjhar-Banspani (DKB) railway line project. This link will reduce the rail distance between the mineral-rich region of north Orissa/ Jharkhand and Paradip port by around 335 km and the rail link to Vizag port in Andhra Pradesh will also be reduced by about 170 km. This project is included in the Plan and needs to be completed expeditiously. The Ministry of Railways should implement this project without further delay. The Planning Commission is already monitoring this project and it will continue to be done till the project is implemented.

7.2.81 Other projects include: a rail link between Hubli-Ankola, Karnataka; a mechanical ore handling facility at Mormugoa port, Goa; a 55 km rail link between Kottur-Harihar , Karnataka; 47 km gauge conversion between Arsekere-Hassan , Karnataka; a deep water port at Tadri/Belekeri/Karwar with a minimum draft of 16-18 m, Karnataka, with mechanical ore handling facilities. Other planned projects are: improvement and strengthening of the ore handling facilities at Chennai port; deepening

the draft at Marmugao up to 16.5 m and installing facilities for mechanical handling for rail-borne iron ore from Bellary-Hospet to Goa port; developing a dedicated iron ore berth at Ennore Port since Chennai port is likely to be closed for export of iron ore from 2005; strengthening of the communications and infrastructure facilities in and around mining belts for reducing the time between granting of lease and starting of operations. The Ministries of Steel, Coal and Mines, Department of Mines should facilitate the implementation of these projects. The Planning Commission will also monitor implementation of these projects.

7.2.82 Further, the Central and State Governments will have to invest in basic exploration in order to expand the geological database and improve upon the national mineral inventory. The Planning Commission will monitor programmes that will be taken up by the GSI and IBM and the State agencies in this regard.

7.2.83 The issue concerning carrying out mineral exploration as well as opening up of new mines in the declared forest areas has been debated extensively both at the Central and State level as well as at the industry level and at various seminars and symposia. Some action points in this regard will include updating of revenue and forest land records of the mineral-bearing areas by the Forest and Revenue Departments of the State Governments and the IBM speeding up the process of generating the remaining 270-odd maps with forest overlays, etc. This is a Plan project and is monitored by the Planning Commission. Updating of revenue and forest land records by the State Governments is one of the Plan objectives and it will continue to be monitored by the Planning Commission.

7.2.84 IBM should also study, deposit-wise, the impact of exploration and mining on flora and fauna and other damages including on human settlements in forests with mineral resources. The next logical step would be to suggest the manner in which the impact will be minimised, which may include afforestation, taking care to replicate the flora and fauna, measures for rehabilitation including time-bound and satisfactory re-location of human settlements, etc. Practices followed in other countries in this regard can also be studied in order to evolve workable guidelines and this can also be done by the IBM. The Planning Commission will facilitate this study and monitor its implementation.

7.2.85 For compulsory afforestation including of declared forest areas, if these are opened up for commercial exploitation of mineral deposits, it is necessary to clearly demarcate areas to be afforested. This may include land with sparse or with no green cover, area covering barren, wastelands, ravines, etc. The user agencies should be spared from the requirement of finding land for compulsory afforestation. The Department of Mines and the Ministry of Environment and Forests need to coordinate their efforts in this regard. The Planning Commission will facilitate this coordination, particularly with the Ministry of Environment and Forests and the State Governments, and monitor progress through the quarterly performance reviews as well as the Annual Plan meetings.

7.2.86 Conditions laid down by the various State Governments include asking mining companies applying for mining leases to set up their plants in the States, compelling investors to set up joint venture mining companies with State public enterprises, setting up mineral-based unit in the State itself for exploiting the mineral deposit for which lease will be granted, etc. Some States have demanded extra royalty. The Department of Mines should take up this issue with the State Governments and get these extraneous conditions removed, as a matter of reform. The Planning Commission will also identify these conditions, State-wise, and facilitate their removal through its Annual Plan process.

7.2.87 Similarly, reservation of mining areas for the public sector by the State Governments should also end. The Department of Mines should take this matter up with the State Governments and the Planning Commission will monitor this.

7.2.88 Quantitative restrictions on the export of high-grade iron ore, particularly from Bailadilla and Bellary-Hospet, manganese and chrome ores must be abandoned. In case the Government wants to discourage export of these high-grade ores for safeguarding the interest of the domestic steel industry, this can be done through tariffs. Export of

high-grade iron ore as well as chrome and manganese ores also needs to be de-canalised forthwith. The Ministries of Steel and Commerce and Industry should take action on these issues forthwith. The Planning Commission will facilitate the policy change.

7.2.89 The multiplicity of legislation related to forests, environment, mining and labour need to be harmonised for speedier growth of private sector investment in the mining sector. The Department of Mines and the Ministries of Environment and Forests and Labour should initiate a discussion with other concerned agencies, particularly for identifying problem areas in these legislations and identify areas for amendments/ supplementary additions. The Department of Mines, being the administrative department, should coordinate in this exercise. The Planning Commission will monitor this.

7.2.90 The GSI needs to be restructured and modernised. This should be done quickly by the Department of Mines. The Planning Commission will monitor the programme.

Plan Outlay

7.2.91 An outlay of Rs. 9458 crore has been allocated for the Tenth Plan of which Rs 8187 crore is to be financed through IEBR and remaining Rs 1271 crore will be the gross budgetary support. The schemewise break-up of the Tenth Plan outlay is given in the Appendix.

Annexure-7.2.1

(Rs. in CRORE)

(Actual Expenditure in the IXth Plan (1997-2000) - MINES

DEPARTMENT OF MINES

	9th Plan (1997-2002) Approved Outlay		Annual Plan 1997-98 Actual Exp.		Annual Plan 1998-99 Actual Exp.		Annual Plan 1999-00 Actual Exp.		Annual Plan 2000-01 Actual Exp.		Annual Plan 2001-02 RE	
Mines	Outlay	BS	Outlay	BS	Outlay	BS	Outlay	BS	Outlay	BS	Outlay	BS
	7753.96	**844.96**	**400.49**	**140.44**	**478.11**	**146.11**	**1176.21**	**159.84**	**1463.22**	**234.48**	**1445.95**	**242.45**

Organisation/company - wise actual expenditure in the IXth plan(1997-2002) - Mines

(Rs. in CRORE)

DEPARTMENT OF MINES

ORGn.	9th Plan (1997-2002) Approved Outlay		Annual Plan 1997-98 Actual Exp.		Annual Plan 1998-99 Actual Exp.		Annual Plan 1999-00 Actual Exp.		Annual Plan 2000-01 Actual Exp.		Annual Plan 2001-02 RE	
	Outlay	BS	Outlay	BS	Outlay	BS	Outlay	BS	Outlay	BS	Outlay	BS
BALCO	839.15	0.00	26.42	0.00	42.90	0.00	162.64	0.00	76.46	0.00	Since Disinvested	
NALCO	3559.10	0.00	172.67	0.00	236.27	0.00	777.43	0.00	871.49	0.00	1100.00	0.00
HCL	1280.00	80.00	12.37	12.35	20.00	20.00	28.00	28.00	27.00	27.00	110.00	110.00
HZL	1250.00	0.00	57.29	0.00	48.47	0.00	73.25	0.00	342.37	65.08	100.00	0.00
MECL	80.00	35.00	6.00	6.00	7.00	7.00	10.00	10.00	11.96	11.96	7.00	7.00
BGML	12.00	12.00	5.90	5.90	4.50	4.50	5.00	5.00	0.00	0.00	0.00	0.00
SMC	3.25	3.00	0.16	0. 16	0.50	0.50	0.38	0.38	0.65	0.65	Transferred to NER	
GSI	585.46	585.46$	85.64	85.64	80.30	80.30	87.42	87.42	94.60	94.60	94.53	94.53
IBM	80.00	80.00$$	18.49	18.49	18.31	18.31	17.47	17.47	21.98	21.98	19.00	19.00
S & T	25.00	9.50	7.05	3.40	7.06	2.70	8.42	5.37	8.34	4.84	8.00	4.50
CONSTn.	40.00	40.00	8.50	8.50	12.80	12.80	6.20	6.20	8.37	8.37	7.42	7.42
TOTAL	**7753.96**	**844.96**	**400.49**	**140.44**	**478.11**	**146.11**	**1176.21**	**159.84**	**1463.22**	**234.48**	**1445.95**	**242.45**

$Includes Rs.138.91crores of aid through budget
$$Includes Rs.20.00 crores of aid through budget

Annexure-7.2.3

(Rs. in Crore)

Approved Outlay for the Xth Plan (2002-07) - MINES

Ministry/Department	Ninth Plan (1997-02)	Tenth plan period (2002-07)			
Outlay	Outlay	Outlay	GBS	NBS	IEBR
	7753.96	9458.00	1271.00	1021.00	8187.00

Annexure-7.2.4

(Rs. in Crore)

Tenth Plan 2002-2007 (DEPARTMENT OF MINES)
Organisation/Company-wise approved outlay for Xth Plan - Mines

ORGn.	OUTLAY	IR	EBR	G.B.S.	N.B.S.
BALCO			**Since Disinvested**		
NALCO	7056.00	954.20**	6101.80	0.00	0.00
HCL	50.00	0.00	0.00	50.00	50.00
HZL	1113.50	913.17	200.33	0.00	0.00
MECL					
a) Promotional	45.00	0.00	0.00	45.00	45.00
b) Capital	5.00	0.00	0.00	5.00	5.00
c) Grants for VRS	^^^	0.00	0.00	^^^	^^^
BGML			**Since Closed**		
GSI	1000.00	0.00	0.00	1000.00 #	800.00
IBM	103.00	0.00	0.00	103.00 # #	53.00
S & T	57.50	13.75	3.75	40.00	40.00
CONSTn.					
a) GSI	25.00	0.00	0.00	25.00	25.00
b) IBM	3.00	0.00	0.00	3.00	3.00
TOTAL	**9458.00**	**1881.12**	**6305.88**	**1271.00**	**1021.00**

Includes Rs. 200.00 Crore aid through budget.
Includes Rs. 50.00 Crore aid through budget.
** Figure does not include Rs. 12.09 crore as retained balance
^^^ Funds for VRS not included

Annexure – 7.2.5

Physical Performance during the terminal year of the Ninth Plan – 2001-02 — vis-à-vis indicative Plan targets

S.No.	Item	Unit	2001-02		Ninth Plan Target
			Plan Target	Actual*	
1.	Iron Ore	mt	80.00	78.00	100.00@
2.	Aluminium (Primary)	Tho. Tonnes	650.00	631.00	750.00@@
3.	Copper (Cathodes - primary)	Tho. Tonnes	240.00# (43.00)$	300.00 (35.80)	425.00@@@
4.	Zinc (Primary)	Tho. Tonnes	178.00##	205.20	161.00
5.	Lead	Tho. Tonnes	45.00	38.50	78.50@@@@

*	Estimate (Actual April 2001 – February 2002 and likely for March 2002).
#	Including production from the private sector companies i.e. Sterlite Industries Ltd., Indo Gulf Copper Ltd. (Birla Copper) and the public sector Hindustan Copper Ltd. .
@	Market will not be as buoyant as was anticipated.
@@	Indal's Belgaum Smelter not likely to be re-energised and a marginal expansion programme of its Hirakud smelter will also not materialise, as was anticipated. Besides, Indal's Alwaye, Kerala, smelter capacity has also declined by around 7,000 tonnes due to some technical reasons.
@@@	Additional capacity from SWIL and Metdist is not likely to materialise, Khetri Smelter expansion also not coming up.
@@@@	Vizag Lead Smelter of HZL remained closed in 2001-02 and secondary capacity with India Lead Ltd. utilised to the tune of producing only 357 tonnes of lead during April 2001 – February 2002 and both its smelters located at Thane (Maharashtra) and Kolkata (West Bengal) were closed down as the company is before the BIFR.
$	Indicative Plan target for HCL.
##	Higher output through additional capacity coming on stream and efficiency gain as against indicative Ninth Plan target.