

THE MINERAL INDUSTRY OF

INDIA

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India, a republic consisting of 25 States and 7 union territories, is endowed with a large work force, including persons skilled in all areas of the mineral industry.

Under India's Constitution, the exploration and production of most minerals fall within the jurisdiction of the central Government. Accordingly, the mineral industry of India primarily is owned and administered by the State, either directly or through public-sector endeavors; most mining companies are nationalized.

Historically, mining and metallurgical activities in India can be traced back for about 6,000 years. Mineral resources are extensive and there is a wide variety, ranging from bauxite, copper, bituminous coal, diamond, gold, iron ore, manganese, and zinc, to a host of industrial minerals. The mining sector has had substantial growth over the past 50 years; the annual value of mineral production has risen from a meager \$25 million in the 1950's to almost \$9 billion in the Indian fiscal year 1995-96 ending on March 31, 1996 (Mining Journal, 1996a). Most of the mineral deposits are in the south and central highlands of the country.

India is a major minerals producer, ranking among the world's leading producers of bauxite, bituminous coal, iron ore, and zinc. The main mining industry is the production of steaming coal for power generation. Coal provides about 60% of the country's energy requirements. Including peat and lignite, it accounts for an estimated 40% of the value of all mineral production. Iron ore, primarily from surface operations, accounts for an estimated 40% of the value of all metallic mineral production. Approximately 50% is used domestically for steel production, with the balance exported.

Domestic production of copper, lead, and zinc satisfies less than about 45% of the country's requirements, with imports fulfilling the balance. Aluminum is the only nonferrous metal for which an adequate domestic ore (bauxite) resource is available.

Limestone for steel and cement production remains the leader in the industrial minerals sector, producing an estimated 70% of the total value of industrial minerals.

Mining in India is regulated under the Mines and Minerals (Regulation and Development) Act, 1957, as modified. Under this Act, all minerals are owned by the constituent States, but are administered by the central Government. Mining royalties and taxes, although set and revised by the central Government, are paid directly to the individual States.

The mining industry is administered by the Ministry of Mines, which is responsible for geological surveys, exploration, and administration of the Mines and Minerals Act for all minerals

except mineral fuels. Coal is administered by the Department of Coal within the Ministry of Energy. The Ministry of Petroleum and Natural Gas has responsibility for exploration and production of oil and natural gas, as well as its refining, distribution, and marketing. Nuclear materials are regulated by the Department of Atomic Energy (DAE). The Geological Survey of India, the Indian Bureau of Mines, and the Controller of Mining Leases are subordinate offices within the Ministry of Mines.

The mineral industries of India produce about 70 mineral commodities embracing various ores, metals, industrial minerals, and mineral fuels. An estimated 4,400 mines operate in the country, the vast majority of which are small surface operations using only hand-mining methods and having low output. About 300 underground mines are in production in the nonfuel minerals sector, most of which also are operated manually.

Employment in the mineral industry is estimated to exceed 1 million people, or about 4.5% of the employed labor force, with the public sector employing about 90% of the total.

On October 17, 1996, the coalition Government issued a set of guidelines regarding the granting of prospecting licenses and mining leases aimed at encouraging exploration on a broader or regional scale. Henceforth, if aerial prospecting is involved, the Government will consider requests from the State governments to grant prospecting licenses for areas greater than the previous maximum of 25 square kilometers (km²), to a maximum of 5,000 km² for a single license area. The total aggregate area that may be held by a single company has been increased by 400% to 10,000 km², but there must be a minimum expenditure commitment and the licensee must surrender areas progressively so as to retain up to 25 km² at the end of 3 years (Mining Journal, 1996a).

The Government in October decided that applications for foreign investment in the minerals industry will be given automatic approval up to a limit of 50% equity in a particular project or company. The mineral industries in which 50% automatic clearance will be given are metallic ore mining, including bauxite, chromite, copper, iron ore, lead and zinc, and manganese, but excluding uranium, and the mining of industrial minerals. However, in the case of diamond and other precious stones, and gold and silver, the existing system of considering each application on a case-by-case basis will continue. These cases were to be considered by the Foreign Investment Promotion Board (Mining Journal, 1996b).

India's Supreme Court issued a temporary order prohibiting nonforest activities in forested areas in an effort to protect the

country's forests. The order applies to companies that obtained mining licenses after 1980 that are mining in forested areas.

In an effort to curb gold smuggling, the Government liberalized its gold import policy, effective January 1, 1997, by doubling to 10 kilograms (kg) the amount of gold that may be brought into the country by nonresident Indians.

India has a large, integrated aluminum industry based on domestic bauxite deposits, which are estimated to comprise about 10% of the world's total. Aluminum remains the sole nonferrous metal for which India has an adequate raw material base.

The Government approved near yearend the longstanding plans of the Ministry of Mines to expand the bauxite and alumina production capacity of State-owned National Aluminium Co. (NALCO). The approval is for the expansion of the Panchpatmali bauxite mine to 4.8 million metric tons per year (Mt/yr), double its current level, and the Damanjodi alumina refinery to 1.58 Mt/yr, increasing from 800,000 metric tons per year (t/yr). The expansion of the facilities, at Angul in Orissa State, will take just more than 4 years and cost \$46.39 million. The expansion is to be funded commercially, with no Government funds involved. Although NALCO has its own aluminum smelter, the additional aluminum production will be exported (Mining Journal, 1997).

Indian bauxite miner Saurashtra Calcine Bauxite and Allied Industries Ltd. (SCBL) is planning to invest in raw material processing equipment at two of its sites in a bid to increase output and cost effectiveness. SCBL will install a 36,000-t/yr rotary kiln at its mine site at Jamnager and a 11,640-t/yr grinding and crushing unit at the Gujarat Industrial Development Corp.'s industrial estate at Porbandar. SCBL has the capacity to mine 50,000 t/yr of bauxite and produce about 5,000 t/yr of calcined bauxite. The company's current grinding capacity is only 1,650 t/yr. The demand for calcined bauxite in India is increasing because of a strong refractory demand from the steel industry (Industrial Minerals, 1996).

Hindalco Industries Ltd., India's largest private aluminum company that implemented two expansions at its Renukoot Smelter in Uttar Pradesh in 1995, is implementing another increase that will boost capacity at the 210,000-t/yr facility by 32,000 t/yr. Hindalco also is studying the possibility of constructing a new 250,000 t/yr aluminum smelter in Orissa State (Mining Magazine, 1996a).

Indian Aluminium Co. Ltd., which is having chronic power shortages at its Belgaum smelter in Karnataka State, entered into an agreement with Coastal Power Co. of the United States, to build a 100-megawatt (MW) captive powerplant on a build-own-operate-transfer basis. The project is based on using naphtha as the main fuel.

More than one-half of India's chrome ore mines are in the Districts of Cuttack, Dhenkanal, and Keonjhar in Orissa State, while the others are distributed relatively evenly among the States of Andhra Pradesh, Bihar, Karnataka, Maharashtra, and Manipur. The major chromite mining companies are Tata Iron and Steel Co. Ltd. (TISCO), Orissa Mining Corp. Ltd. (OMC), Ferro Alloys Corp. Ltd., Mysore Minerals Ltd., and Indian Metals and Ferro Alloys Ltd.

TISCO lost its petition to India's Supreme Court to reverse the decision of Orissa State's High Court that cut TISCO's Sukinda Valley chrome mining lease by more than two-thirds, down to 406 hectares compared with the 1,261 it formerly leased, and awarding the remainder to OMC (Metal Bulletin, 1996b).

India's State-owned Hindustan Copper Ltd. (HCL) produces the majority of the country's mined copper from 10 mines. HCL also operates the country's copper smelters and refineries. Important but smaller mines are operated by Sikkim Mining Corp. and Hutti Gold Mines in Karnataka State. More than 90% of India's copper ore reserves are in the States of Bihar, Madhya Pradesh, and Rajasthan.

HCL anxiously awaited as the year ended for approval from the Government to expand its Khetri copper smelting and refining facility in Rajasthan State. HCL proposes to expand to 100,000 t/yr of copper from the current capacity of 45,000 t/yr. HCL, although it has its own copper mines, will feed the expansion at least partly with imported concentrates. The expansion is expected to take 22 months following Government approval (Mining Journal, 1997).

HCL is planning to close its unprofitable copper mines at Kendadih and Rakha in the Singhbhum District of Bihar State in the east of the country. The two mines were opened in 1924 and are being mined at a depth of 1,230 meters below the surface, making them the second deepest mines in the country, after the Kolar gold mines in Karnataka State. The cost of producing 1 ton of metal in concentrate at the Kendadih and Rakha Mines has risen to \$3,887, compared with \$1,437 at HCL's Malanjhand Complex in Madhya Pradesh State and \$2,028 at the Khetri Complex in Rajasthan (Financial Times, 1996).

Although India is one of the world's largest consumers of gold, domestic production has waned profoundly in recent years, and the country is producing only about 2 to 3 t/yr. About one-half is produced by the activities of numerous small-scale miners, mainly unorganized independent prospectors. More than 80% of the gold used in India is for jewelry.

Government-owned Bharat Gold Mines Ltd. produces gold from a number of mines in the Kolar Goldfields, Karnataka State, one of the oldest gold mining areas in the world. Production from the Kolar Fields began in 1882. A small amount of gold also is produced as a byproduct of copper refining.

India is a major producer of iron ore, which is used to produce steel for domestic use as well as for export by two State-owned enterprises, the National Mineral Development Corp. Ltd. (NMDC) and the Kudremukh Iron Ore Co. Ltd. (KIOCL). The numerous iron ore mines in the country have an estimated combined capacity of 60 Mt/yr.

The country has abundant deposits of hematite and magnetite iron ores. Hematite occurs mostly in the States of Bihar, Goa, Karnataka, Madhya Pradesh, Maharashtra, and Orissa. Magnetite deposits, most of which are metallurgical in grade, occur in Andhra Pradesh, Goa, Karnataka, and Kerala States.

NMDC operates the country's largest mechanized iron mines at Bailadila, Madhya Pradesh State, and at Donimalai,

Karnataka State. Output from the two mines is about 13 Mt/yr, but output is scheduled to increase to 18 Mt/yr by March 1997. KIOCL operates the country's largest single mine, the Kudremukh, 110 kilometers east of the southern port city of Mangalore in Karnataka State. Both KIOCL and NMDC suffered severe shortfalls in iron ore production as a result of the Supreme Court's temporary ruling that prevented nonforest activities in forested areas.

In December, Mineral Sales Private Ltd. became India's first private sector iron ore miner to conduct a direct export shipment since 1962. Previously, all iron ore shipments, with the exception of those from miners in Goa State, were channeled through the State-owned trading house Minerals and Metals Trading Corp. Ltd. Mineral Sales shipped 24,000 metric tons (t) of iron ore fines to China on December 18 from the port of Chennai in Madras State (Metal Bulletin, 1997a).

Sociedade de Fomento Industrial, a major supplier of iron ore in Goa State, and Marubeni Corp., a Japanese trading company, agreed early in December to develop two iron ore mines in the Bellary-Hospet areas of Karnataka State. Mine development is scheduled to begin in June 1997, with annual shipments of about 1.5 million metric tons (Mt) of iron ore, beginning in October 1999, to Japan as well as other Asian countries and the Middle East (The Tex Report, 1996). Fomento and Marubeni will form a 50-50 joint-venture company, Fomar Ltd., to oversee, among other responsibilities, development of the two new mines, called Fosa and Lad. Fosa and Lad are believed to have combined reserves of about 50 Mt of ore.

The country has seven integrated steel plants (ISP) with a capacity of about 24 Mt/yr. The Government's Steel Authority of India Ltd. (SAIL) owns five ISP, namely Bhilai ISP, Madhya Pradesh State; Bokaro ISP, Bihar State; Durgapur ISP, West Bengal State; Rourkela ISP, Orissa State; and Burnpur ISP, West Bengal State, the steelworks operated since 1979 by Indian Iron and Steel Co. Ltd., a wholly owned subsidiary of SAIL. The Visakhapatnam ISP, Andhra Pradesh State, owned and operated by the public-sector corporation Rashtriya Ispat Nigam Ltd. (Vizag), was commissioned near yearend 1989. In addition to the ISP, there are more than 180 electric arc furnaces having a total capacity of 8.5 Mt/yr; however, many are closed or only partially operating owing to power shortages, a paucity of steel scrap, and/or financial problems.

Ipitata Sponge Iron Ltd. is doubling the capacity, to 240,000 t/yr, of its coal-based sponge iron plant at Kendujhar in Orissa State. Ipitata also is studying downstream investment in a 250,000 t/yr stainless steel plant and a 150,000 t/yr specialty steel plant (Metal Bulletin, 1996a).

KIOCL, in joint venture with another public sector corporation, Metallurgical and Engineering Consultants (India) Ltd., is establishing a 230,000-t/yr pig iron plant at the port of Mangalore. The facility also will produce ductile iron spun pipes.

The Russian engineering firm Tyazhpromexport will lead the revitalization of Indian Iron and Steel Co. Ltd.'s Burnpur steel plant in West Bengal by acquiring a 39% equity stake in the company. The Burnpur plant produces about 300,000 t/yr of structural steels, pig iron, and other products, although its

nominal capacity is more than 1 Mt/yr. The plant is regarded as technically obsolete, needing extensive modernization (Metal Bulletin, 1997b).

Substantial quantities of lead and zinc were produced from the same mines in the State of Rajasthan by Hindustan Zinc Ltd. (HZL), the country's sole producer of both metals. HZL also mined lead without zinc in the States of Andhra Pradesh and Orissa. HZL operated the country's three primary lead and three of the four primary zinc smelter-refinery complexes; the remaining primary smelter-refinery was operated by Binani Zinc Ltd., producing zinc from imported concentrates.

To overcome chronic power shortages, HZL is planning a 100-MW powerplant near Udaipur for its Debrari zinc smelter in Rajasthan State, at a cost of \$92 million. HZL also is proposing to build a \$160 million, 60,000-t/yr zinc smelter, possibly to use the increased output that will result from the expansion of its Rampura-Agucha Mine from 900,000 t/yr to 1.3 Mt/yr.

The private-sector Indian Lead Pvt. Ltd. produced secondary lead from indigenous and imported lead scrap and lead concentrates at plants at Phane, Maharashtra State, and Kalipara, West Bengal State.

India has the world's fourth largest cement industry and is entirely self-sufficient in meeting its cement demand; it does not normally import either clinker or cement. Since the liberalization of the country's economy began in mid-1991, output from India's cement factories has risen steadily. Cement currently is produced in 106 large plants, each with capacities of more than 0.2 Mt/yr, managed by 54 cement companies with an installed capacity of almost 77 Mt/yr, as well numerous mini-cement plants; total installed capacity of the country's cement industry is about 83 Mt/yr (World Cement, 1996). Most of the capacity, about 88%, is owned by the private sector, with the public sector accounting for only about 9.5 Mt/yr of production capacity (Global Cement Report, 1996).

The NMDC produces most of the country's modest diamond output from its diamondiferous kimberlite mines at Wajrakarur, Andhra Pradesh. A small quantity of diamond also is produced in Orissa State. India's diamond industry, the world's largest in terms of employment, quantity, and value, primarily is dependent on imported materials for processing and reexport. India processes an estimated 65% of the world's rough diamonds and has about 45% of the world trade in finished diamonds, mainly small stones for use in lower priced jewelry. The majority of the cutting and polishing plants are in Mumbai (formerly Bombay), Maharashtra State, and Surat, Gujarat State, receiving their imported material predominantly from De Beers' Central Selling Organization in the United Kingdom.

Bituminous coal is India's principal source of commercial energy, producing 60% of the country's requirements, almost all of which is produced domestically (Coal Age, 1996b). India is the world's third largest coal producer. The Government-owned Coal India Ltd. (CIL) is the country's largest producer, with about 90% of output, and also is responsible for administering all coal exploration and distribution programs. The bulk of production is from opencast mines; underground mines provide for less than 30% of production, but account for more than 65%

of CIL personnel involved in mining. However, the coking properties of Indian coals are poor because of a very high ash content and low calorific value; therefore, metallurgical-grade coals are imported, primarily from Australia. India's coal industry is the third largest in the world; in 1996, India overtook Russia to become the third largest consumer of coal after China and the United States (Mining Magazine, 1996b).

Until early 1996, coal mining in the private sector was permitted only for captive consumption by iron and steel producers. In liberalizing its rules governing the coal industry, the Government is allowing cement producers also to mine coal for their own use, with the stipulation that the cement firm has at least a 26% equity stake in the coal mining company.

Indian coals are ranked as either bituminous or lignite, the country having no anthracite deposits. The main bituminous coalfields are in the central and eastern States of Bihar, Madhya Pradesh, Orissa, and West Bengal. The lignite deposits are predominantly in the southern part of the country. About 80% of the country's known lignite occurs in Tamil Nadu State, with deposits also known in the States of Gujarat, Kerala, Rajasthan, and Jammu and Kashmir. The central Government-owned Neyveli Lignite Corp. (NLC) is the country's sole producer. In addition to its two mines, the NLC integrated complex consists of two thermal power stations, a fertilizer plant, and a briquetting and carbonization plant.

The Union Ministry of Environment and Forests mandated in September that all thermal powerplants in India use coal with less than 30% ash content by July 2000, though plants commissioned after July 1, 1996, will be granted a 4-year grace period to reduce their ash content (Coal Age, 1996a).

The central Government administered the petroleum and natural gas industry of the country from exploration to the marketing of refined petroleum products until 1994 when the industry began to open up as part of the country's economic reforms initiated in 1991. Two State-owned companies, Oil and Natural Gas Corp. and Oil India Ltd., conducted exploration for hydrocarbons and developed suitable discoveries for production until the Indian Cabinet in 1995 cleared the way for foreign companies to conduct joint oil and gas exploration programs, both onshore and offshore, with the two Government enterprises. Six fundamentally Government-owned companies operate the country's petroleum refineries; they were all wholly owned Government entities until joint ventures were allowed to forge in 1994. Imports and exports of crude oil and refined petroleum products are managed by Indian Oil Corp., the largest of the refining companies. Crude petroleum provides about 30% of the country's energy needs, with about 60% of this derived from imported stocks.

The Atomic Minerals Div. (AMD) within the DAE is responsible for conducting radiometric and geological surveys and for the exploration and development of various mineral resources necessary for the country's nuclear power program. The AMD located uranium deposits containing significant concentrations (0.55% uranium oxide) in the northern parts of the Cuddapah Basin in Andhra Pradesh.

The Uranium Corp. of India Ltd. (UCIL) within the DAE operates uranium mines at Jaduguda and Bhatin; a uranium mill

at Jaduguda; and uranium recovery plants at Mosaboni, Rakha, and Surda, all in Bihar State. UCIL also has the capability of recovering other metals and minerals as byproducts, such as copper, magnetite, and molybdenite.

The Nuclear Power Corp. of India Ltd., under the auspices of the DAE, operates nuclear power stations at five sites within India, as follows: Tarapur Atomic Power Station Units I and II, each having the capacity of generating 160 MW, at Tarapur, Maharashtra State; Rajasthan Atomic Power Station Unit I having a capacity of 100 MW and Unit II with a capacity 200 MW, at Rawatbhata, near Kota in Rajasthan State; Madras Atomic Power Station Units I and II, each having the capacity of generating 220 MW, at Kalpakkam near Madras in Tamil Nadu State; Narora Atomic Power Station Units I and II, each having the capacity of generating 220 MW, at Narora in Uttar Pradesh State; and Kakrapar Atomic Power Station Unit I and II, each having a capacity of 220 MW, at Kakrapar in Gujarat State.

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TABLE 1
INDIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/ METALS	1992	1993	1994	1995	1996 e/
Aluminum:					
Bauxite, gross weight thousand tons	4,898	5,227	4,809	5,163 r/	5,100
Alumina, Al ₂ O ₃ equivalent do.	1,484 r/	1,490 r/	1,456 r/	1,650 r/	1,700
Metal, primary	496,300	466,423	472,000	528,000 r/	501,800 3/
Cadmium metal	313	255	216	254 r/	269 3/
Chromium: Chromite, gross weight	1,151,661 r/	1,000,073 r/	909,076 r/	1,536,386 r/	1,363,205 3/
Copper:					
Mine output, Cu content	49,036	49,416	45,944	46,975 r/	35,800 3/
Metal, primary:					
Smelter	47,712	37,372	51,232	39,496 r/	28,286 3/
Refinery					
Electrolytic (cathode)	38,300	30,100	40,100	33,900 r/	29,100 3/
Fire refined	8,500	6,700	8,900	7,300	6,500 3/
Total	46,800	36,800	49,000	41,200 r/	35,600 3/
Gold metal, smelter kilograms	1,762	2,003	2,244	2,205 r/	2,500
Iron and steel:					
Iron ore and concentrate:					
Gross weight thousand tons	54,870	57,375	60,473 r/	66,751 r/	67,000
Fe content do.	35,117	36,720	37,368	42,720 r/	42,900
Metal:					
Pig iron do.	15,126	15,674	17,808	18,626 3/	20,000
Direct-reduced iron do.	1,437	2,208	3,122	4,280 3/	4,500
Ferroalloys:					
Ferrochromium (including charge chrome)	246,147 r/	234,500	251,459	300,567 r/	261,666 3/
Ferrochromiumsilicon e/	9,000	8,000	8,000	9,000	9,000
Ferromanganese e/	198,000	137,291 3/	150,000	150,000	150,000
Ferrosilicon	90,000	67,600	85,000 e/	85,000 e/	85,000
Silicomanganese e/	93,000	85,000 3/	140,000	120,000	120,000
Other e/	6,500	8,600	8,500	8,500	8,500
Steel, crude thousand tons	18,117	18,155	19,285	20,291 3/	20,000
Semimanufactures e/ 4/ do.	12,000	9,000	11,000	11,000	11,000
Lead:					
Mine output, Pb content	30,500	26,000	30,500	28,600 r/	31,000 3/
Metal, refined:					
Primary e/	40,800	32,500	38,600	34,000 r/	32,500
Secondary e/	22,900	18,200	21,700	28,000 r/	27,000
Total	63,700	50,700	60,300	62,000 r/	59,500
Manganese:					
Ore and concentrate, gross weight thousand tons	1,810	1,655	1,632	1,764 r/	1,735
Mn content e/ do.	687	628	620	670 r/	659
Rare-earth metals: Monazite concentrate, gross weight e/	4,000	4,600	4,600	5,000	5,000
Selenium e/ kilograms	9,628 r/	11,116 r/	11,582 r/	11,449 r/	11,500
Silver, mine and smelter output do.	47,371	51,228	50,207 r/	38,064 r/	45,000
Titanium concentrates, gross weight:					
Ilmenite e/	300,000	320,000	300,000	300,000	300,000
Rutile e/	10,000	13,900	14,000	14,000	14,000
Tungsten, mine output, W content	2	1	2	2	2
Zinc:					
Mine output, concentrate:					
Gross weight	300,140	300,736	270,382	297,300	285,200
Zn content	152,800	156,300	147,300	154,500	148,200 3/
Metal:					
Primary	128,100	141,700	156,400	146,500	143,600 3/
Secondary e/	200	200	500	500	500
Total e/	128,300	141,900	156,900	147,000	144,100
Zirconium concentrate: Zircon, gross weight e/	18,000	17,000	18,000	18,000	18,000
INDUSTRIAL MINERALS					
Abrasives, natural, n.e.s.:					
Corundum, natural	22	15	14 r/	14 r/	15
Garnet	16,573	47,785	56,196 r/	54,484 r/	55,000
Jasper	4,422	5,627	4,577	5,000	5,000

See footnotes at end of table.

TABLE 1--Continued
INDIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1992	1993	1994	1995	1996 e/	
INDUSTRIAL MINERALS--Continued						
Asbestos	43,683	44,080	29,824 r/	24,984 r/	30,000	
Barite	458,436	547,875	497,971 r/	420,704 r/	500,000	
Bromine, elemental e/	1,300	1,400	1,400	1,500	1,500	
Cement, hydraulic e/	thousand tons	50,000	53,812 3/	60,000 r/	70,000 r/	80,000
Chalk	104,833	98,966	139,300 r/	136,090 r/	137,000	
Clays:						
Ball clay	227,585	336,880	347,741 r/	408,308 r/	400,000	
Diaspore	10,393	12,197	9,463	10,086 r/	10,000	
Fireclay	458,674	439,950	397,435	407,673 r/	400,000	
Kaolin:						
Salable crude	thousand tons	514	519	548	552 r/	550
Processed	do.	124	129	134	160 r/	160
Total	do.	638	648	682	712 r/	710
Other	do.	42	40	50	73 r/	70
Diamond:						
Gem e/	thousand carats	15	13	15	14 r/	21
Industrial e/	do.	3	7	3	8 r/	11
Total	do.	18	20	18	22 r/	32 3/
Feldspar	67,743	66,792	64,693 r/	98,683 r/	90,000	
Fluorspar:						
Concentrates:						
Acid-grade	7,062	7,798	6,231 r/	4,895 r/	6,000	
Metallurgical-grade	13,572	13,846	16,360 r/	17,604 r/	17,000	
Total	20,634	21,644	22,591 r/	22,499 r/	23,000	
Other fluorspar materials, graded	2,666	4,782	3,415 r/	4,909 r/	5,000	
Gemstones excluding diamond:						
Agate including chalcedony pebble	674	680	639 r/	518 r/	550	
Garnet	kilograms	616	1,058	533	519 r/	550
Graphite 5/	72,996	82,398	93,597 r/	114,959 r/	120,000	
Gypsum	1,300,868	1,804,661	1,729,775 r/	1,739,210 r/	1,700,000	
Kyanite and related materials:						
Kyanite	10,101	11,600	6,265 r/	6,705 r/	7,000	
Sillimanite	18,837	15,563	10,378 r/	9,705 r/	10,000	
Lime e/	850,000	860,000	860,000	900,000	900,000	
Magnesite	602,506	408,971	336,735 r/	334,710 r/	335,000	
Mica: 6/						
Crude	2,742	2,082	2,055 r/	1,721 r/	2,000	
Scrap and waste	1,522	1,187	719 r/	767 r/	750	
Total	4,264	3,269	2,774 r/	2,488 r/	2,750	
Nitrogen, N content of ammonia	thousand tons	7,452	7,176	7,334	7,713	7,800
Phosphate rock including apatite	487,824	969,385	1,300,493 r/	1,235,914 r/	1,200,000	
Pigments, mineral: Natural: Ocher	142,478	138,210	170,761 r/	234,098 r/	225,000	
Pyrites, gross weight	134,522	116,930	117,033	134,754 r/	135,000	
Salt: e/						
Rock salt	thousand tons	3 3/	3 3/	3	3	3
Other	do.	9,500	9,500	9,500	9,500	9,500
Total	do.	9,503	9,503	9,503	9,503	9,503
Sodium carbonate e/	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	
Stone, sand and gravel:						
Calcite	67,185	69,804	67,631 r/	69,111 r/	70,000	
Dolomite	thousand tons	2,905	3,498	3,123 r/	3,570 r/	35,000
Limestone	do.	75,173	82,095	8,576 r/	91,793 r/	90,000
Quartz and quartzite	do.	290	248	222 r/	257 r/	260
Sand:						
Calcareous	do.	71	272	183	228 r/	225
Silica	do.	1,316	1,148	1,252 r/	1,220 r/	1,250
Other	do.	1,316	1,540	1,700	1,654 r/	1,700
Slate	15,282	12,134	7,004 r/	5,471 r/	6,000	
Sulfur:						
Content of pyrites e/	30,000	36,000	38,000	40,000	40,000	
Byproduct:						
From metallurgical plants e/	116,000	123,000	177,000	200,000	200,000	
From oil refineries	26,000	31,000	36,000 e/	35,000 e/	25,000	
Total e/	172,000	190,000	251,000	275,000 e/	265,000	

See footnotes at end of table.

TABLE 1--Continued
INDIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1992	1993	1994	1995	1996 e/	
INDUSTRIAL MINERALS--Continued						
Talc and related materials:						
Pyrophyllite	79,197	82,269	85,335 r/	131,137 r/	130,000	
Steatite (soapstone)	368,003	385,121	398,006 r/	439,509 r/	450,000	
Vermiculite	1,609	1,485	1,903 r/	1,688 r/	1,750	
Wollastonite	57,998	80,748	68,269 r/	90,128 r/	90,000	
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand tons	233,883	246,041	254,050	264,216 r/	265,000
Lignite	do.	16,114	17,086	19,197 r/	22,108 r/	20,000
Total	do.	249,997	263,127	273,247 r/	286,324 r/	285,000
Coke: e/						
Coke oven and beehive	do.	13,000	13,000	14,000	14,000	14,000
Gashouse	do.	100	100	100	100	100
Other, soft	do.	200	200	200	200	200
Total	do.	13,300	13,300	14,300	14,300	14,300
Gas, natural:						
Gross	million cubic meters	15,917	16,283	14,685 r/	19,612 r/	18,000
Marketable e/ 7/	do.	7,500	10,900	11,000	14,700 r/	13,500
Petroleum:						
Crude	thousand 42-gallon barrels	208,400	201,461	234,536 r/	263,013 r/	265,000
Refinery products: e/						
Liquefied petroleum gas	do.	20,000	31,800	32,040 r/	32,000 r/	32,000
Gasoline	do.	23,000	30,300	34,560 r/	35,000 r/	35,000
Kerosene and jet fuel	do.	53,000	55,100	55,080 r/	55,000 r/	55,000
Distillate fuel oil	do.	122,000	136,150	144,720 r/	145,000 r/	145,000
Residual fuel oil	do.	56,000	74,800	71,280 r/	71,000 r/	71,000
Other	do.	71,000 r/	88,300 r/	92,880 r/	93,000 r/	93,000
Total	do.	345,000	416,450	430,560 r/	431,000 r/	431,000

e/ Estimated. r/ Revised.

1/ Table includes data available through June 19, 1997.

2/ In addition to commodities listed, other clays (bentonite, common clays, and fuller's earth), other gemstones (aquamarine, emerald, ruby, and spinel), and uranium are produced but output is not reported, and available information is inadequate to make reliable estimates of output levels.

3/ Reported figure.

4/ Excludes production from steel miniplants.

5/ India's marketable production is 10% to 20% of mine production.

6/ The disparity between amounts of mica produced versus amounts exported is based on (a) stockpile, (b) illicit mines, and (c) occasional mining by others seeking additions to income nominally derived from other sources.

7/ Includes reinjected gas.

TABLE 2
INDIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity e/
Alumina	Indian Aluminium Co. Ltd. Indian interests, 60.4% and Alcan Aluminium Ltd. (Canada), 39.6%	Belgaum Refinery, Karnataka	220
Do.	National Aluminium Co. Ltd., Indian Government, 100%	Dhamanjodi Refinery, Orissa	800
Do.	Bharat Aluminium Co. Ltd., Indian Government, 100%	Korba Refinery, Madhya Pradesh	200
Do.	Madras Aluminium Co. Ltd. Alumix SpA (Italian Government), 27%; R. Prabhu and Associates, 24%; Tamil Nadu Industrial Investment Corp., 11%, and others, 38%	Mettur Refinery, Tamil Nadu	60
Do.	Indian Aluminium Co. Ltd. Indian interests, 60.4% and Alcan Aluminium Ltd. (Canada), 39.6%	Muri Refinery, Bihar	72
Do.	Hindalco Industries Ltd. Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; and financial institutions, 18%	Renukoot Refinery, Uttar Pradesh	350
Aluminum	Indian Aluminium Co. Ltd. Indian interests, 60.4% and Alcan Aluminium Ltd. (Canada), 39.6%	Alupuram Smelter, Kerala	20
Do.	National Aluminium Co. Ltd., Indian Government, 100%	Angul Smelter, Orissa	218
Do.	Indian Aluminium Co. Ltd. Indian interests, 60.4% and Alcan Aluminium Ltd. (Canada), 39.6%	Belgaum Smelter, Karnataka	70
Do.	do.	Hirakud Smelter, Orissa	30

See footnotes at end of table.

TABLE 2--Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity e/
Aluminum--Continued:	Bharat Aluminium Co. Ltd., Indian Government, 100%	Korba Smelter, Madhya Pradesh	100
Do.	Madras Aluminium Co. Ltd. Alumix SpA (Italian Government), 27%; R. Prabhu and Associates, 24%; Tamil Nadu Industrial Investment Corp., 11%; and others, 38%	Mettur Smelter, Tamil Nadu	25
Do.	Hindalco Industries Ltd. Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; and financial institutions, 18%	Renukoot Smelter, Uttar Pradesh	210
Bauxite	Bharat Aluminium Co. Ltd., Indian Government, 100%	Amarkantak Mine, Madhya Pradesh	200
Do.	Indian Aluminium Co. Ltd. Indian interests, 60.4% and Alcan Aluminium Ltd. (Canada), 39.6%	Kolhapur District mines, Maharashtra	600
Do.	Gujarat Mineral Development Corp., Gujarat State Government, 100%	Kutch and Saurashtra Mines, Gujarat	500
Do.	Hindalco Industries Ltd. Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; and financial institutions, 18%	Lohardaga District mines, Bihar	750
Do.	Indian Aluminium Co. Ltd. Indian interests, 60.4% and Alcan Aluminium Ltd. (Canada), 39.6%	do.	200
Do.	National Aluminium Co. Ltd., Indian Government, 100%	Panchpatmali Hills, Koraput District mines, Orissa	2,400
Do.	Minerals & Minerals Ltd., Indian Government, 100%	Richuguta, Palamu District mines, Bihar	200
Barite	Andhra Pradesh Mineral Development Corp. Ltd. Andhra Pradesh State Government, 100%	Cuddapah District mines, Andhra Pradesh	350
Do.	Associated Mineral Corp., 100%	do.	75
Do.	Pragathi Minerals, 100%	do.	50
Do.	Shri C. M. Ram nath Reddy, 100%	do.	75
Do.	Vijaylaxmi Minerals Trading Co., 100%	do.	50
Cement	Larsen and Toubro Ltd., 100%	Awarpur Plant, Maharashtra	2,300
Do.	Century Cement. Century Textiles and Industries Ltd., a subsidiary of the Birla Group, 100%	Baikunth Plant, Madhya Pradesh	1,120
Do.	Coromandel Fertilizers Ltd. Chevron Chemical Co. (United States), 23.55%; International Minerals and Chemical Co., 20.89%; Parry and Co., 10.64%; E.I.D. Parry (India) Ltd., 6.65%; and others, 38.27%	Chilamkur Plant, Andhra Pradesh	1,000
Do.	The Associated Cement Cos. Ltd. Indian Government, 34.86% and private shareholders, 65.14%	Gagal Plant, Himachal Pradesh	1,830
Do.	Raymond Cement Works, a division of Raymond Woolen Mills Ltd. JK Singhania, principal shareholder	Gopalnagar Plant, Madhya Pradesh	1,250
Do.	Narmada Cement Co. Ltd. Chowgule and Co. Ltd., 34%; Gujarat State Government, 17.33%; and others, 48.67%	Jafrabad Plant, Gujarat	1,000
Do.	Rajashree Cement, a division of Indian Rayon and Industries Ltd., 100%	Khor Plant, Karnataka	1,020
Do.	The Associated Cement Cos. Ltd. Indian Government, 34.86% and private shareholders, 65.14%	Kymore Plant, Madhya Pradesh	1,500
Do.	Mangalam Cement Ltd., 100%	Morak Plant, Rajasthan	1,000
Do.	Mysore Cements Ltd. Government institutions and banks, 41.13%; Corporate Trust holdings, 21.70%; and others, 37.17%	Narasingarh Plant, Madhya Pradesh	1,089
Do.	Cement Corp. of India Ltd., Indian Government, 100%	Nayagaon Plant, Madhya Pradesh	1,330
Do.	J.K. Cement Works, a division of JK Synthetics Ltd., 100%	Nimbahera Plant, Rajasthan	1,462
Do.	The India Cement Co. Ltd. Indian Government, 26%; Life Insurance Corp. of India, 24%; and others, 50%	Sankarnagar Plant, Tamil Nadu	1,000
Do.	Maihar Cement. Century Textiles and Industries Ltd., a subsidiary of the Birla Group, 100%	Satna Plant, Madhya Pradesh	1,800
Do.	Shree Digvijay Cement Co. Ltd., 100%	Shreeiniwas Plant, Maharashtra	1,060
Do.	Lakshmi Cement, a division of Straw Products Ltd. JK Singhania, principal shareholder	Sirohi Plant, Rajasthan	1,400
Do.	Manikgarh Cement. Century Textiles and Industries Ltd., a subsidiary of the Birla Group, 100%	Tehsil Rajura Plant, Maharashtra	1,000
Do.	Vasavadatta Cement. Kesoram Industries Ltd., 100%	Vasavadatta Plant, Karnataka	1,000
Do.	Vikram Cement. Grasim Industries Ltd., a subsidiary of the Birla Group, 100%	Vikram Plant, Madhya Pradesh	1,000
Do.	Raasi Cement Ltd. Andhra Pradesh Government, 50% and Development Co. Ltd., 50%	Vishnupuram Plant, Andhra Pradesh	1,000
Do.	The Associated Cement Cos. Ltd. Indian Government, 34.86% and private shareholders, 65.14%	Wadi Plant, Karnataka	2,180

See footnotes at end of table.

TABLE 2--Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity e/
Chromite		Ferro Alloys Corp. Ltd., 100%	Cuttack District, Orissa	100
Do.		The Orissa Mining Corp. Ltd., Orissa State Government, 100%	do.	200
Do.		Tata Iron & Steel Co. Ltd., 100%	do.	100
Do.		Ferro Alloys Corp. Ltd., 100%	Dhenkanal District, Orissa	75
Do.		The Orissa Mining Corp. Ltd., Orissa State Government, 100%	do.	200
Do.		Mysore Minerals Ltd., 100%	Hassan District, Karnataka	125
Do.		Ferro Alloys Corp. Ltd., 100%	Kendujhar District, Orissa	75
Do.		The Orissa Mining Corp. Ltd., Orissa State Government, 100%	do.	100
Do.		Ferro Alloys Corp. Ltd., 100%	Khammam District, Andhra Pradesh	100
Coal, bituminous	million tons	Bharat Coking Coal Ltd., a subsidiary of Coal India Ltd., Indian Government, 100%	Bihar and West Bengal	26
Do.	do.	Central Coalfields Ltd., a subsidiary of Coal India Ltd., Indian Government, 100%	Bihar	27
Do.	do.	Eastern Coalfields Ltd., a subsidiary of Coal India Ltd., Indian Government, 100%	Bihar and West Bengal	21
Do.	do.	Mahanadi Coalfields Ltd., a subsidiary of Coal India Ltd., Indian Government, 100%	Orissa	21
Do.		North Eastern Coalfields Ltd., a subsidiary of Coal India Ltd., Indian Government, 100%	Assam	640
Do.	million tons	Northern Coalfields Ltd., a subsidiary of Coal India Ltd., Indian Government, 100%	Madhya Pradesh and Uttar Pradesh	24
Do.	do.	Singareni Collieries Co. Ltd., Andhra Pradesh State Government, 50% and Indian Government, 50%	Andhra Pradesh	18
Do.	do.	South Eastern Coalfields Ltd., a subsidiary of Coal India Ltd., Indian Government, 100%	Madhya Pradesh	36
Do.	do.	Western Coalfields Ltd., a subsidiary of Coal India Ltd., Indian Government, 100%	Madhya Pradesh and Maharashtra	18
Coal, lignite	do.	Neyveli Lignite Corp. Ltd., Indian Government, 100%	Tamil Nadu	17
Copper		Hindustan Copper Ltd., Indian Government, 100%	Indian Copper Complex mines, Ghatsila District, Bihar	31
Do.		do.	Indian Copper Complex smelter-refinery, Ghatsila District, Bihar	16
Do.		do.	Khetri Copper Complex mines, Khetrinagar Rajasthan	15
Do.		do.	Khetri Copper Complex smelter-refinery, Khetrinagar District, Rajasthan	45
Do.		do.	Malanjkhand Copper Complex mines, Balaghar District, Madhya Pradesh	22
Ilmenite-rutile ore		Kerala Minerals and Metals Ltd., Kerala State Government, 100%	Chavara, Kerala	100
Do.		Indian Rare Earths Ltd., Indian Government, 100%	do.	200
Do.		do.	Ganjam, Orissa	220
Do.		do.	Manavalakurichi, Tamil Nadu	65
Iron and steel:				
Crude steel		Steel Authority of India Ltd., Indian Government, 100%	Bhilai steel plant, Madhya Pradesh	4,000
Do.		do.	Bokaro steel plant, Bihar	4,000
Do.		Indian Iron and Steel Co. Ltd., wholly owned subsidiary of Steel Authority of India Ltd., Indian Government, 100%	Burnpur steel plant, West Bengal	1,500
Do.		Steel Authority of India Ltd., Indian Government, 100%	Durgapur steel plant, West Bengal	1,600
Do.		Tata Iron and Steel Co. Ltd., 100%	Jamshedpur steel plant, Bihar	3,200
Do.		Steel Authority of India Ltd., Indian Government, 100%	Rourkela steel plant, Orissa	1,800
Do.		Rashtriya Ispat Nigam Ltd., 100%	Visakhapatnam steel plant, Andhra Pradesh	3,200
Do.		Ministeel plants, privately owned	Located throughout India, approximately 160	4,700
Iron ore		National Mineral Development Corp. Ltd., Indian Government, 100%	Bailadila, Madhya Pradesh	6,500
Do.		Steel Authority of India Ltd., Indian Government, 100%	Bastar and Durg District, Madhya Pradesh	7,000
Do.		Kudremukh Iron Ore Co. Ltd., Indian Government, 100%	Chikmagalur District, Karnataka	7,500
Do.		National Mineral Development Corp. Ltd., Indian Government, 100%	Donimalai, Karnataka	6,500
Do.		Chowgule & Co. Pvt. Ltd., 100%	Goa	2,500
Do.		Dempo Mining Corp. Ltd., 100%	Goa	2,500
Do.		V.M. Salgaocar & Bros. Pvt. Ltd., 100%	Goa	2,500
Do.		Steel Authority of India Ltd., Indian Government, 100%	Kendujhar District, Orissa	3,000
Do.		Tata Iron and Steel Co. Ltd., 100%	do.	2,000
Do.		Indian Iron and Steel Co. Ltd., wholly owned subsidiary of Steel Authority of India Ltd., Indian Government, 100%	Singhbhum District, Bihar	2,500
Do.		Steel Authority of India Ltd., Indian Government, 100%	do.	3,500
Do.		Tata Iron and Steel Co. Ltd., 100%	do.	3,500

See footnotes at end of table.

TABLE 2--Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity e/
Kyanite	Associated Mining Co., 100%	Bhandara District, Maharashtra	10
Do.	Maharashtra Mineral Corp. Ltd., 100%	do.	10
Do.	Bihar State Mineral Development Corp. Ltd., Bihar State Government, 100%	Singhbhum District, Bihar	10
Do.	Hindustan Copper Ltd., Indian Government, 100%	do.	22
Lead ore	Hindustan Zinc Ltd., Indian Government, 100%	Agnigundala Mine, Andhra Pradesh	72
Do.	do.	Sargipalli Mine, Orissa	150
Lead, primary	do.	Tundoo Smelter, Bihar	8
Do.	do.	Visakhapatnam (Vizag) Smelter, Andhra Pradesh	22
Lead-zinc ore	do.	Rajpura-Dariba Mine, Rajasthan	900
Do.	do.	Zawar mine group, Rajasthan	1,200
Magnesite	Burn Standard Co. Ltd., Indian Government, 100%	Salem, Tamil Nadu	150
Do.	Dalmia Magnesite Corp., 100%	do.	150
Do.	Tamil Nadu Magnesite Ltd., Tamil Nadu State Government, 100%	do.	150
Manganese ore 1/	Manganese Ore (India) Ltd., Indian Government, 100%	Adilabad, Andhra Pradesh	NA
Do.	Falechand Marsingdas, 100%	Andhra Pradesh	NA
Do.	Manganese Ore (India) Ltd., Indian Government, 100%	Balaghat, Madhya Pradesh	NA
Do.	J.A. Trivedi Bros., 100%	do.	NA
Do.	Sandur Manganese & Iron Ores Ltd., 100%	Bellary, Karnataka	NA
Do.	Manganese Ore (India) Ltd., Indian Government, 100%	Bhandara, Maharashtra	NA
Do.	Eastern Mining Co., 100%	North Kanara, Karnataka	NA
Do.	Mysore Minerals Ltd., 100%	do.	NA
Do.	Manganese Ore (India) Ltd., Indian Government, 100%	Keonjhar, Orissa	NA
Do.	Mangilah, Rungta (Pvt.) Ltd., 100%	do.	NA
Do.	Orissa Mining Corp. Ltd., 100%	do.	NA
Do.	Rungta Mines (Pvt.) Ltd., 100%	do.	NA
Do.	Serajuddin & Co., 100%	do.	NA
Do.	S. Lall & Co., 100%	do.	NA
Do.	Tata Iron and Steel Co. Ltd., 100%	do.	NA
Do.	Orissa Mineral Development Co. Ltd., 100%	Koraput, Orissa	NA
Do.	Orissa Mining Corp. Ltd., 100%	do.	NA
Do.	Mysore Minerals Ltd., 100%	Shimoga, Karnataka	NA
Do.	Aryan Mining & Trading Corp., 100%	Sundargarh, Orissa	NA
Do.	Orissa Manganese & Minerals (Pvt.) Ltd., 100%	do.	NA
Do.	Tata Iron and Steel Co. Ltd., 100%	do.	NA
Do.	R.B.S. Shreeram Durga Prasad and Falechand Marsingdas, 100%	Vizianagaram, Andhra Pradesh	NA
Petroleum thousand 42-gallon barrels per day	Cochin Refineries Ltd., a subsidiary of Oil and Natural Gas Corp., Indian Government, 55% and private interests, 45%	Ambalamugal Refinery, Kerala	93,400
do.	Indian Oil Corp., a subsidiary of Oil and Natural Gas Corp., Indian Government, 91% and private interests, 9%	Barauni Refinery, Bihar	65,800
do.	Bongaigaon Refinery and Petrochemicals Ltd., a subsidiary of Oil and Natural Gas Corp., Indian Government, 100%	Bongaigaon Refinery, Assam	27,110
do.	Indian Oil Corp., a subsidiary of Oil and Natural Gas Corp., Indian Government, 91% and private interests, 9%	Digboi Refinery, Assam	11,700
do.	do.	Guwahati Refinery, Assam	19,920
do.	do.	Haldai Refinery, West Bengal	61,000
do.	do.	Koyali Refinery, Gujarat	185,100
do.	Madras Refineries Ltd., a subsidiary of Oil and Natural Gas Corp., Indian Government, 52% and private interests, 48%	Madras Refinery, Tamil Nadu	130,660
do.	Bharat Petroleum Corp. Ltd., a subsidiary of Oil and Natural Gas Corp., Indian Government, 67%, and private interests, 33%	Mahul Refinery, Mumbai (Bombay), Maharashtra	134,860
do.	Industan Petroleum Corp. Ltd., a subsidiary of Oil and Natural Gas Corp., Indian Government, 51% and private interests, 49%	do.	110,452
do.	do.	Vizag Refinery, Andhra Pradesh	90,369
do.	Indian Oil Corp., a subsidiary of Oil and Natural Gas Corp., Indian Government, 91% and private interests, 9%	Mathura Refinery, Uttar Pradesh	156,000
Phosphate rock 2/	Rajasthan State Mineral Development Corp. Ltd., Rajasthan State Government, 100%	Badgaon, Dakankotra, Kanpur, Kharbaria-ka-Guda, and Sallopat Mines, Rajasthan	NA
Do.	Pyrites Phosphates and Chemicals Ltd., 100%	Durmala and Maldeota underground mines, Uttar Pradesh	NA
Do.	Madhya Pradesh State Mining Corp. Ltd., Pradesh State Government, 100%	Hirapur and Khatamba Mines, Madhya Pradesh	NA

See footnotes at end of table.

TABLE 2--Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity e/
Phosphate rock 2/--Continued:	Rajasthan State Mines and Minerals Ltd., Rajasthan State Government, 100%	Jhamarkotra Mine, Rajasthan	NA
Do.	Hindustan Zinc Ltd., Indian Government, 100%	Maton Mine, Rajasthan	NA
Zinc	Cominco Binani Zinc Ltd., 100%	Binanipuram Smelter, Kerala	20
Do.	Hindustan Zinc Ltd., Indian Government, 100%	Debari Smelter, Rajasthan	49
Do.	do.	Visakhapatnam (Vizag) Smelter, Andhra Pradesh	30

e/ Estimated. NA Not available.

1/ Capacity of clusters of surface mines varies extremely, depending on demand. Estimated total annual capacity is 1.5 million metric tons.

2/ Estimated total annual phosphate rock capacity is 800,000 metric tons.