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The Mineral Industry of India

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India is endowed with a variety of mineral resources and the mineral industry constituted an important sector of the Indian economy. The country's gross domestic product (GDP) based on purchasing power parity increased by 8.3% to $3,633 billion in 2005. India's GDP growth was attributed largely to a rise in the service sector (50.8%) that was owing mainly to increased information technology outsourcing. Industry (27.2%) and agriculture (22%) also contributed to the 2005 economic performance. The inflation rate was moderate at 4.2% (International Monetary Fund, 2006§[1]). The mineral industry produced metal and a large amount of industrial minerals and was characterized by many small-scale mining operations. India was the leading producer of mica in the world. The country ranked third in the production of barite, chromite, and coal and lignite. Foreign investment in India was particularly sought after in mining and petroleum exploration and processing, and in such infrastructure projects as ports, power generation, roads, and telecommunications.

Government Policies and Programs

The Government decided that foreign equity holding was allowed up to 100% automatically for all nonfuel and nonuranium minerals, including diamond and precious stones. The Government also introduced a Federal value-added tax (VAT) in April 2005 that replaced a complex web of Indian state sales taxes. The VAT formed the centerpiece of the Government's tax measures to simplify the system and raise revenue for cash-strapped regions. Eight states opposed the tax but a majority of India's 29 states had adopted the tax by the end of 2005 (Wall Street Journal, The, 2005).

The Government decided to ban the import of scrap metal from countries that adjoin war zones worldwide, such as Iran and several Middle East countries, to ensure that military wastes do not get into scrap consignments. A live rocket hidden in iron scrap imported from Iran accidentally went off in the vicinity of Ghaziabad, State of Uttar Pradesh, in 2004. Dozens of live shells were found in consignments meant for Bhushan Steel Co. Ltd. in the Sahibabad industrial district. India was a major importer of metal scrap, including aluminum, iron, and zinc (Metals Place, 2004§).

The Government approved a plan to establish a strategic petroleum reserve of 5 million metric tons (Mt). Of the reserves, 1.5 Mt would be stored at Mangalore, State of Karnataka, 1 Mt at Vizag, State of Andhra Pradesh, and 2.5 Mt at a location yet to be determined. India Strategic Petroleum Reserves was to manage the reserve. Construction of the Mangalore and the Vizag facilities would cost $313 million (Petroleum Economist, 2005c).

[1]References that include a section mark (§) are found in the Internet References Cited section.

Commodity Review

Metals

Aluminum.—Dubai Aluminium Co. was to set up a joint venture with India's Larsen & Toubro Ltd. to build a bauxite mine and an alumina refinery in the State of Orissa. The $1 billion project consisted of a 1.4-million-metric-ton-per-year (Mt/yr) alumina refinery, a bauxite mine, and the development of associated infrastructure, including a captive powerplant, a port facility, a township, and related utilities. The refinery was expected to be commissioned in 2009. Dubai Aluminium Ltd. would hold an equity stake of 74% in the project. During the second phase of the project, a doubling of the alumina refinery's capacity to 2.8 Mt/yr was planned. The second phase also would include the construction of an aluminum smelter. The capacity of the proposed smelter was not decided (ABQ Zawya Ltd., 2005§).

Jindal South West (JSW) Group planned to enter the aluminum sector by building a 1.5-Mt/yr alumina refinery and a 250,000-metric-ton-per-year (t/yr) aluminum smelter near Visakhapatnam, State of Andhra Pradesh. The total investment would be $2 billion. The capacity of the alumina refinery would reach 600,000 t/yr in the first stage. JSW also might construct a 650-megawatt (MW) powerplant. Andhra Pradesh Mineral Development Corp. would supply bauxite to the plant. Reserves in the State totaled 240 Mt. The project could employ 10,000 workers directly and indirectly when it was completed (Metal Bulletin, 2005a).

Vedanta Resources plc approved a $2.1 billion greenfield 500,000-t/yr aluminum smelter project with an associated 1,215-MW captive thermal powerplant at Jharsuguda, State of Orissa. Upon completion, the company's total aluminum smelting capacity would reach 900,000 t/yr. The Jharsuguda project would comprise two potlines, each of which would contain 288 cells. Construction of the first phase of 250,000-t/yr capacity beginning in June 2006 was expected to be completed in mid-2009. The second phase of 250,000-t/yr capacity was expected to be completed by yearend 2010. The associated thermal powerplant would comprise 9 units of 135 MW each. Meanwhile, Vedanta's greenfield 1-Mt/yr to 1.4-Mt/yr alumina refinery in the State of Orissa was scheduled to be commissioned in 2007 (London Stock Exchange, 2005d§).

Copper.—Pebble Creek Resources Ltd. of Canada applied for a mining lease in March for the Askot volcanogenic massive sulfide deposit, which is located in Pithoragarh district in the State of Uttaranchal. Previous work included 9,000 meters (m) of drilling and 1,200 m of exploratory underground workings. The deposit dipped steeply northeast, had a strike length of 550 m, and was open to the northwest. Total mineral resources were estimated to be between 10 Mt and 20 Mt, of which 1.7 Mt were indicated resources at grades of 2.53% copper, 6.07% zinc, and 3.85% lead with some gold and silver. A prefeasibility

study earlier called for a 210,000-t/yr underground mine. The company expected production to begin in 2007 (Pebble Creek Resources Ltd., 2006§).

Iron Ore and Iron and Steel.—India was the world's third ranked supplier of iron ore mainly to China, Europe, Japan, and the Republic of Korea. About two-thirds of the iron ore shipped, or 78 Mt, was exported to China in 2005. India sold about 80% of its iron ore in spot deals and 20% under long-term contracts. The average export price of iron ore was $45 per metric ton free on board at a grade of 64% iron content in 2005 (Reuters, 2005§).

With new investments of $2.2 billion in the iron and steel sector, the State government of Chhattisgarh wanted National Mineral Development Corp. to restrict iron ore exports from the Bailadila Mines to Japan and other countries. The Bailadila Mines had 50% of the iron ore deposits in the State, of which nearly 30% was exported to China and Japan. In addition, several iron and steel plants in the State were facing a shortage of raw material and had imported iron ore from the States of Jharkhand and Orissa (Financial Express, 2005b§).

As part of its expansion plans, Tata Steel Co. Ltd. proposed to acquire some of the coal mines owned by Bharat Coking Coal Ltd., which was the loss-making public sector unit. The Ministry of Coal was willing to lease out unviable mines to the private sector for captive purposes. A company with steel production was eligible for captive mining of coal (Business Standard, 2005§).

JSW Steel Co. Ltd. was in the process of expanding its steel production capacity to 3.8 Mt/yr from 2.5 Mt/yr. In addition, the company planned to construct a 2.8-Mt/yr blast furnace at its Vijayanagar steel plant in the southern part of the State of Karnataka. Siemens VAI was awarded the construction project. The expected capital cost of the furnace is $1.09 billion. When the new blast furnace is completed in 2008, Vijayanagar's capacity will be increased to 7 Mt/yr. In the second stage of expansion, the steel plant's capacity will increase to 10 Mt/yr in 2011. The company also planned to build a 10-Mt/yr steel plant with an investment of $7.63 billion in Saraikela Kharswan district in the State of Jharkhand (Platts, 2005c§).

The State government of Orissa and Pohang Iron and Steel Co. Ltd. (Posco) of the Republic of Korea reached an agreement in June for Posco to build a $12 billion 13-Mt/yr steel plant at Paradip in the State of Orissa. The plant was scheduled to start producing steel in July 2009. Posco could gain access to as much as 660 Mt of iron ore during the next 30 years beginning in 2009. Posco's partner BHP Billiton plc pulled out of the project after refusing to accept conditions laid down by the State government. In October, Mittal Steel Co. of the Netherlands reached a deal with the State of Jharkhand to set up a 13-Mt/yr steel mill. Tata Steel planned to add 31 Mt/yr of steel capacity to its existing 5.5 Mt/yr at Jamshedpur (Barta and Glader, 2005).

Mittal Steel planned to build a $6.9 billion steel plant and iron ore mine in the State of Jharkhand, which held 23% of India's untapped iron ore reserves. Jharkhand together with the States of Chhattisgarh and Orissa accounted for 55% of India's iron ore reserves and 70% of its coal reserves. Jharkhand currently (2005) supplied iron ore to Tata Steel, which was India's second ranked steelmaker. The plant would produce 10 Mt/yr of crude steel, which would make it the fourth largest steel plant, in terms of annual production, in the world (Bloomberg.com, 2005§).

Jindal Stainless Ltd. commissioned the first phase of its new ferroalloy operation in March. The company constructed a furnace at Duburi in the State of Orissa with a production capacity of 150,000 t/yr of ferrochrome. The second phase would include the installation of a furnace with a production capacity of 40,000 t/yr of ferromanganese and a furnace with a production capacity of 60,000 t/yr of silicomanganese. The company also would build a waste-heat recovery powerplant, which was expected to be completed in 2006 (Metal-Pages, 2005§).

Production of ferroalloy and special steel was brought to a halt at Mukand Ltd.'s Kalwe plant in July owing to floods. Grasim Industries Ltd.'s 900,000-t/yr Vikram Ispat hot-briquetted iron works was operating at 70% of capacity owing to continued disruption to its supply of naphtha and propane gas. Ispat Industries Ltd.'s direct-reduced iron works was yet to return to full production owing to the continued shortage of gas (Metal Bulletin, 2005b).

Platinum.—Platinum Mining Corp. of India plc signed a drilling contract with Mining Associates of India for an initial 5,000-m drilling program to begin in November at the Boula platinum deposit in the district of Keonjhar, State of Orissa. An extensive program of channel sampling also was started. Bureau de Recherches Geologiques et Minieres of France reported an indicated and inferred mineral resource of 14.2 Mt with a combined platinum and palladium grade of 1.5 grams per metric ton (g/t) based on a cutoff grade of 0.5 g/t (London Stock Exchange, 2005b§).

Titanium.—Stork Handelsges mbH of Austria was in talks with State-owned Andhra Pradesh Mineral Development Corp. (APMDC) prior to drafting a memorandum of understanding to set up a titanium project. The project was to be based in Srikakulam district and would involve the mining of beach sand and the commissioning of a mineral separation, titanium slag, and sponge plant. The plant would produce 250,000 t/yr of ilmenite through the third year of operation and 500,000 t/yr from the fourth year onwards. Stork indicated an investment of $150 million in collaboration with JSC Corp., which was a leading Russian titanium producer. An area of 25 square kilometers (km^2) in Bhavanapadu and Kalingapatnum was expected to be alloted to APMDC, which planned to apply for a mining lease in association with Stork (Industrial Minerals, 2005d).

The Government withdrew the export license of Earth Mineral Resources Ltd. which was the producer of ilmenite concentrate sold by WGI Heavy Minerals Inc. As a result, WGI declared force majeure on its 3-year agreement of August 2003 to supply 40,000 t/yr of ilmenite to a major pigment producer. WGI's operations included mining and processing facilities in the States of Andhra Pradesh and Tamil Nadu (Canada NewsWire, 2005).

Zinc.—The $425 million major expansion project at Hindustan Zinc Co. Ltd.'s (Vedanta Resources plc owned 64.9%) zinc facilities at Chanderiya in the State of Rajasthan was completed on schedule, and trial production began. The expansion increased the refined zinc capacity by 170,000 t/yr

to 402,000 t/yr. The project also included the construction of a 154-MW coal-fired captive powerplant and the expansion of mine output to 3.75 Mt/yr from 2.3 Mt/yr. The reserves at the Rampura Agucha Mine also increased by 25% to 51.1 Mt that contains 12.8% zinc and 1.9% lead following a drilling program. The mine life was extended by another 3 years. A second $300 million 170,000-t/yr smelter would be built at Chanderiya in early 2006 to increase total capacity to 572,000 t/yr (London Stock Exchange, 2005a§).

Industrial Minerals

Cement.—The Indian cement industry had approximately 128 large cement plants with a combined capacity of 153 Mt/yr. The capacity utilization levels remained in the range of between 80% and 84%. About 98% of the industry capacity was owned by the private sector. The per capita cement consumption was 110 kilograms in 2005. Infrastructure development, new commercial projects, the housing sector, and capital expenditure were the main sources of demand for cement. In 2005, Holcim-Ambuja acquired India's leading cement company, ACC Ltd., which had a capacity of 18 Mt/yr (World Cement, 2005).

Diamond.—The Ministry of Commerce proposed that the import tax on polished diamond and colored gemstones be reduced to 0% from 5%. Losses of Government revenue from the tax exemption were projected to be $63 million for diamond and $520,000 for colored stones. A cut in the import duty on diamond was among the 100 budget proposals put forward by the Ministry (Antwerp Facets News Service, 2005b§).

Dwyka Diamonds Ltd. began sampling on two permit areas in the States of Karnataka and Madhya Pradesh that cover 4,000 km^2. A limited number of samples contained indicator minerals derived from kimberlites. Intensive geophysical exploration and drill testing were planned for the vicinity of the Chigichera cluster of kimberlites, and the site of several untested targets (London Stock Exchange, 2005c§).

Rio Tinto Ltd. of Australia discovered diamondiferous kimberlite pipes at its Bunder prospect in the Chhatarpur district, State of Madhya Pradesh. The kimberlite pipes were found in six drill holes. The 8,687-km^2 Chhatarpur district is adjacent to the Panna district, where a closed diamond mine had been run by the National Mineral Development Council of India (Antwerp Facets News Service, 2005a§).

Mica.—India was the leading producer of natural sheet mica in the world. The State of Andhra Pradesh had one of the world's largest deposits of muscovite mica. Micafab India Pvt. Ltd. in the State of Andhra Pradesh mined ruby sheet muscovite and green muscovite at Sydapuram Mandal in Nellore district. Output was 4,500 t/yr and the main export markets were China, Europe, and the United States. Premier Mica Co., which was located in the State of Andhra Pradesh, mined mica from its Bhavani Shankara Mine at Rjupalem in Nellore district to produce 200 t/yr of mica flakes (Industrial Minerals, 2005b).

Nitrogen.—Rashtriya Chemicals and Fertilizers Ltd. planned to invest $453 million in a new 1-Mt/yr ammonia production line. The expansion project at Thal in the State of Maharashtra was scheduled to be completed in 3 years. The unit was expected to use natural gas as its production feedstock. The project also included two other production lines of ammonia, which had capacities of 445,000 t/yr each, and two urea units, which had capacities of 907,000 t/yr and 852,000 t/yr, respectively (Fertilizer Week, 2005a).

Phosphate Rock.—Oswal Chemicals & Fertilizers Ltd. has come under the spotlight on pollution control issues at its Paradip phosphates operation off-and-on since the plant started up in May 2000. The issues concerned excessive particulate matter emissions from its captive powerplant at Paradip. The company was asked to halt operation of one of the two coal-fired boilers and to undertake repair work on the electrostatic precipitator (the pollution control device) (Fertilizer Week, 2005b).

Refractory Materials.—Vesuvius India Ltd. planned to double the production capacity of refractories in each of its three plants. This was to meet the growing demand from the domestic steel industry. The cost of the expansion was expected to be more than $32 million. At the Kolkata plant, production was being doubled to 1,600 pieces per day of flow control refractories. Production at the Vizag plant was to increase to 5,000 metric tons per month (t/mo) from 3,000 t/mo to serve the iron and steel industry. At Mehsana, capacity would be doubled from 110 t/mo by 2006 to serve the aluminum and foundry sectors (Industrial Minerals, 2005e).

Salt.—Hindustan Salts Ltd. began a feasibility study for the production of caustic soda, chlorine, and salt from rock salt deposits at Mandi in the State of Himachal Pradesh. Production capacity was planned for 60,000 t/yr of caustic soda. The company planned to use solution mining, thermo-compression, and membrane electrolysis for the production of chloralkali and salt derivatives. The cost of power in the State was low compared to the rest of the country. The salt formations in the area were the only known deposits of rock salt in India. The proven salt reserves at Drang were estimated to be 100 Mt and the mines produced 3,000 t/yr of salt in 2005 (Industrial Minerals, 2005a).

Soda Ash.—GHCL Ltd. planned to almost double the 600,000-t/yr capacity of its Sutrapada soda ash plant in Junagadh district, State of Gujarat, in the next 4 years. The first phase would increase capacity by 200,000 t/yr in 15 to 18 months, followed by an expansion of 300,000 t/yr during the next 30 months. The total capacity would be brought to 1.1 Mt/yr of soda ash. The company had captive resources of limestone and salt that could be used to boost the capacity further (Industrial Minerals, 2005c).

Mineral Fuels

Coal.—State-owned Coal India Ltd. (CIL) planned to raise its coal output to 363.8 Mt in 2006 and to 504.1 Mt in 2011. CIL also had an emergency coal production plan for an additional 71.3 Mt from 16 identified opencast projects and mines. Owing to limited reserves of coking coal, imports would be required to fill the gap between demand and supply. Indian coking coal had a high ash content and had to be blended with imported coking coal (Platts, 2005a§).

Natural Gas.—The Government planned to import natural gas by a $7 billion 2,735-kilometer (km) pipeline from Iran via

Pakistan and signed the deal by the end of 2005. Ernst & Young LLP was hired to act as a consultant on the deal. Construction of the pipeline was expected to begin in 2007. India was the world's sixth leading energy consumer and was expected to increase its energy use by 4% per year. Demand for natural gas was projected to more than double by 2025 (Lancaster, 2005). Iran signed a deal with India in June to supply India with 5 Mt/yr of liquefied natural gas for 25 years beginning in 2010 (Iran Daily, 2005).

Petroleum.—The new exploration and licensing policy aimed to stimulate domestic output by openly encouraging foreign companies to bid on upstream projects. In January, the Government initiated the fifth licensing round and offered for bid 8 offshore blocks, which included 6 in deep water, and 12 onshore blocks in the Krishna-Godavari basin and in the States of Rajasthan and Gujarat. The bidding was closed on May 31, 2005. Indian petroleum subsidies were gradually being phased out. Foreign oil companies were allowed 100% cost recovery and could repatriate all their profits in U.S. dollars. There was no mandatory requirement for state participation and no minimum expenditure during the exploration period of a contract (Petroleum Economist, 2005e).

A joint venture between Gas Authority of India Ltd. and Gazprom of Russia (50% each) began drilling in Bengal basin in October. The joint venture invested $13 million in Block 26 and was expected to spend another $30 million to drill the first well. Block 26 is located 100 km southeast of Haldia in the State of West Bengal. Gazprom was the operator of the project (Petroleum Economist, 2005d).

Gujarat State Petroleum Corp. discovered a new oilfield in the onshore Tarapur oil and gas exploration block, which is located in Anand district near Ahmedabad in the State of Gujarat. The oil reserves, which were found at a depth of 1,490 m, were estimated to be between 5 million and 7 million barrels. The company initially teamed up with Hindustan Oil Exploration Co. to carry out more-detailed and deeper geologic and geophysical surveys. The first well was drilled in February and yielded oil at a depth of 1,500 m. The company planned to drill three or four more wells in the near vicinity of the strike in 2005 (Financial Express, 2005a§).

Current (2005) output of 520,000 barrels per day (bbl/d) from Oil and Natural Gas Corp.'s (ONGC) fields could fall sharply in the future and the company planned to double its reserves to 12,000 Mt in 2020 by focusing on new discoveries and better technology. ONGC also was increasingly looking abroad to develop new energy supplies. Nearly 20% of India's estimated oil reserves remained undiscovered. In the past, ONGC had discovered five out of India's six oil-producing basins. India imported 100 Mt/yr of crude oil to supplement the domestic crude oil output of 33.5 Mt/yr. The Government planned to import 20 Mt of coal in 2006 to supplement its energy needs (BBC News, 2005§).

Production of oil and gas by ONGC in the State of Assam was affected owing to disruption caused by the All Assam Students Union. ONGC shut down the producing wells in the Geleki, the Lakwa, and the Rudrasagar fields in May. These wells might not be revived when operations resume. ONGC was the biggest employer in terms of revenues in the State of Assam and planned to invest $442 million during a 4-year period beginning in 2005 to revive and rejuvenate its fields in the State of Assam (Rigzone.com, 2005§).

ONGC began work on the G1-GS15 oil and gas development in the offshore Krishna Godavari basin. The fields were expected to come onstream in 2006 and to produce 1 Mt of low-sulfur crude oil and 6 billion cubic meters of gas during 15 years. Clough Engineering Ltd. of Australia was awarded the $215 million contract for the development project (Petroleum Economist, 2005a).

ONGC also planned to build a 3-Mt/yr refinery in the State of Rajasthan to process crude oil from Cairn Energy plc of the United Kingdom's discoveries in the region. The refinery was expected to cost $1.13 billion and was designed for future expansion to 5 Mt/yr. ONGC had the right to take a 30% stake in all Cairn Energy's discoveries in the State of Rajasthan (Petroleum Economist, 2005a).

The Government looked into expanding the capacity of Hindustan Petroleum's Visakhapatnam refinery and the proposed Indian Oil Corp.'s refinery at Paradip. Indian Oil was to set up a refinery in Barmer district, State of Rajasthan, where Cairn Energy found oil at its N-V field to be between 250 million and 350 million barrels (Petroleum Economist, 2005b).

Indian Oil commissioned a hydrocracker as part of the $950 million expansion project to double the production capacity of its Panipat refinery in the State of Haryana to 12 Mt/yr. At Panipat, a hydrogen generation unit and a diesel hydrotreater were commissioned in 2005. The expansion project would be completed by March 2006. Indian Oil had two other hydrocrackers; one was at the Koyali refinery in the State of Gujarat, and the other, at the Methura refinery in the State of Uttar Pradesh (Platts, 2005b§).

Infrastructure

In 2005, the State of Maharashtra experienced severe power shortages. The almost-completed $2.9 billion Dabhol power project, which is located 177 km south of Mumbai and was once owned by Enron Corp. of the United States, received support for plans to resurrect the facility. Bechtel Group Inc. and General Electric Co., which together had acquired Enron's 65% stake in the project in 2004, and other lenders were negotiating to sell their investment to a group of Indian financial institutions. If revived, the powerplant could produce 2,184 MW of electricity when operating at full capacity (Larkin, 2005).

Reliance Energy Ltd. planned to build an $11 billion 12,000-MW coal-fired powerplant in the State of Orissa and a $2.53 billion powerplant in the State of Uttar Pradesh. Its parent company, Reliance Industries Ltd., agreed to supply natural gas to the latter project from the massive deposits discovered by Reliance Industries off India's east coast (Larkin and Bellman, 2005).

Outlook

India's current steel capacity was between 40 Mt/yr and 50 Mt/yr. With favorable regulatory and investment conditions, planned expansions by JSW Steel Co. Ltd., Mittal Steel, Posco,

Tata Steel, and others are expected to add a combined 80 Mt/yr to the country's steel production capacity in the future. India is expected to become one of the major steel producers in the world. Indian steel consumption is forecasted to increase to between 80 Mt and 100 Mt by 2015 and to 110 Mt in 2020. With the completion of the Dabhol power project and Reliance Energy's planned powerplants, India's power generation capacity is expected to reach 254,000 MW by 2015. However, the power requirement is going to remain a constraint on the development of the country's aluminum industry in the near future.

References Cited

Barta, Patrick, and Glader, Paul, 2005, Steel plans for India stir fears: The Wall Street Journal, November 1, p. A14.

Canada NewsWire, 2005, WGI Heavy Minerals declares force majeure on an ilmenite supply agreement: Canada NewsWire, March 6, 1 p.

Fertilizer Week, 2005a, In brief: Fertilizer Week, January 13, p. 2.

Fertilizer Week, 2005b, Phosphates: Fertilizer Week, January 19, p. 4.

Industrial Minerals, 2005a, Indian salt scene: Industrial Minerals, no. 458, November, p. 75.

Industrial Minerals, 2005b, Mica—A glittering prize: Industrial Minerals, no. 452, May, p. 32.

Industrial Minerals, 2005c, Soda ash expansions: Industrial Minerals, no. 458, November, p. 14.

Industrial Minerals, 2005d, Stork to set up Indian titanium project: Industrial Minerals, no. 456, September, p. 27.

Industrial Minerals, 2005e, Vesuvius to double refractory capacity: Industrial Minerals, no. 459, December, p. 24.

Iran Daily, 2005, India assured 25-year LNG supply; Iran Daily, no. 2456, December 21, p. 1.

Lancaster, John, 2005, India to proceed with natural gas pipeline: The Washington Post, September 27, p. D5.

Larkin, John, 2005, India strives to resurrect Dabhol power project: The Wall Street Journal, May 17, p. A11.

Larkin, John, and Bellman, Eric, 2005, Reliance project could help fill India energy void: The Wall Street Journal, June 9, p. A12.

Metal Bulletin, 2005a, India's Jindal Group to diversify with 250,000 tpy smelter plan: Metal Bulletin, no. 8901, July 11, p. 10.

Metal Bulletin, 2005b, Mumbai starts to recover: Metal Bulletin, no. 8906, August 15, p. 34.

Petroleum Economist, 2005a, News in brief: Petroleum Economist, v. 72, no. 1, January, p. 46.

Petroleum Economist, 2005b, News in brief: Petroleum Economist, v. 72, no. 5, May, p. 46.

Petroleum Economist, 2005c, News in brief: Petroleum Economist, v. 72, no. 6, June, p. 46.

Petroleum Economist, 2005d, News in brief: Petroleum Economist, v. 72, no. 10, October, p. 46.

Petroleum Economist, 2005e, Picking through the crumbs: Petroleum Economist, v. 72, no. 4, April, p. 33.

Wall Street Journal, The, 2005, India introduces a value-added tax: The Wall Street Journal, April 4, p. A12.

World Cement, 2005, An expanding economy: World Cement, v. 36, no. 11, November, p. 29.

Internet References Cited

ABQ Zawya Ltd., 2005 (April 5), Dubai in Dh3.67b India venture, accessed April 5, 2005, at URL http://www.zawya.com/story.cfm?id=159493&section=markets&pa.

Antwerp Facets News Service, 2005a (September 20), Rio Tinto finds diamondiferous kimberlite in Madhya Pradesh, accessed October 28, 2005, via URL http://www.antwerpfacets.com.

Antwerp Facets News Service, 2005b (February 1), Zero import tax proposed for polished diamonds and gemstones in India, accessed February 7, 2005, via URL http://www.antwerpfacets.com.

BBC News, 2005 (November 28), Concerns over Indian oil output, accessed November 28, 2005, at URL http://news.bbc.co.uk/2/hi/business/4477676.stm.

Bloomberg.com, 2005 (June 7), Mittal may spend $6.9 billion on India steel mill, accessed June 8, 2005, at URL http://www.bloomberg.com/apps/news?pid=71000001&refer=&sid=atVsYJbI1HmY.

Business Standard, 2005 (August 31), Tata seeks nod to buy Bharat coke mines, accessed August 31, 2005, at URL http://www.business-standard.com/common/storypage.php?chklogin.

Financial Express, 2005a (March 5), GSPC finds new oilfield in onshore Tarapur block, accessed May 12, 2005, at URL http://www.financialexpress.com/fe_full_story.php?content_id=84425.

Financial Express, 2005b (April 8), No more iron ore to Japan from Bailadila mines, accessed May 12, 2005, at URL http://www.financialexpress.com/fe_full_story.php?content_id=87332.

International Monetary Fund, 2006 (April), India, World Economic Outlook Database, accessed May 31, 2006, via URL http://www.imf.org/external/pubs/ft/weo/2006/01/data/index.htm.

London Stock Exchange, 2005a (May 31), Completion of major zinc expansion project and extension of mine life, accessed May 31, 2005, via URL http://www.londonstockexchange.com.

London Stock Exchange, 2005b (October 31), Drilling program to start at Boula and results of sampling of pre-mined ore, accessed November 1, 2005, via URL http://www.londonstockexchange.com.

London Stock Exchange, 2005c (April 28), Dwyka Diamonds Ltd. third quarter results, accessed April 28, 2005, via URL http://www.londonstockexchange.com.

London Stock Exchange, 2005d (December 16), Vedanta Resources announces 500,000 tpa aluminum project, accessed December 16, 2005, via URL http://www.londonstockexchange.com.

Metal-Pages, 2005 (January 6), Jindal plans Q1 commission, accessed January 10, 2005, via URL http://www.metal-pages.com.

Metals Place, 2004 (October 7), India to ban scrap imports from war zones, accessed March 25, 2005, at URL http://metalsplace.com/metalsnews/?a=658.

Pebble Creek Resources Ltd., 2006 (February 20), Askot project program, accessed March 9, 2006, at URL http://www.pebcreek.com/projects.asp?p=askot-program.

Platts, 2005a (November 25), Coal India raises FY07 coal target, accessed November 25, 2005, at URL http://www.platts.com/coal/news/8179563.xml?s=n.

Platts, 2005b (December 30), Indian Oil commissions 1.7-mil mt/year hydrocracker at Panipat, accessed January 4, 2006, at URL http://www.platts.com/ClientServices/subnotes.jsp.

Platts, 2005c (November 11), JSW to build 2.8-mil mt/year steel blast furnace. accessed November 17, 2005, at URL http://www.platts.com/metals/news/157173.xml?s=n.

Reuters, 2005 (July 19), India iron ore exports seen steady at 78 million tonnes, accessed July 19, 2005, via URL http://in.today.reuters.com.

Rigzone.com, 2005 (May 18), Agitation disrupts ONGC's oil and gas production in Assam, accessed May 19, 2005, at URL http://www.rigzone.com/news/article.asp?a_id=22596.

Major Sources of Information

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Major Publications

Balkrishna Binani: Minerals and Metals Review, monthly.
Mining Engineers' Association of India: Indian Mining and Engineering Journal, monthly.
Ministry of Mines, Indian Bureau of Mines:
Monthly Statistics of Mineral Production.
Indian Minerals Yearbook.

TABLE 1
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES[1, 2]

(Metric tons unless otherwise specified)

Commodity[3]		2001	2002	2003	2004	2005
METALS						
Aluminum:						
Bauxite, gross weight	thousand metric tons	7,864 [4]	9,647 [4]	10,414 [4]	11,275 [4]	11,957 [4]
Alumina, Al_2O_3 equivalent	do.	2,400	2,800	2,500	2,600	2,700
Metal, primary		624,000 [4]	671,200 [4]	798,800 [4]	861,800 [4]	898,100 [4]
Cadmium metal		436 [4]	466 [4]	477 [4]	489 [4]	407 [4]
Chromium, chromite, gross weight		1,677,924 [4]	2,698,577 [4]	2,210,000 [4]	2,948,944 [4]	3,255,162 [4]
Cobalt metal		250 [4]	270 [4]	255 [4]	545 [4]	1,220 [4]
Copper:						
Mine output, Cu content		32,400 [4]	31,500 [4]	28,500 [4]	29,500 [r, 4]	26,900 [4]
Metal, primary:						
Smelter		293,000 [4]	251,400 [4]	252,000 [4]	252,000 [4]	255,000
Refinery						
Electrolytic, cathode		310,000 [4]	353,700 [4]	375,000 [4]	399,000 [r, 4]	497,000 [4]
Fire refined		18,000	20,000	19,000	20,000	20,000
Total		328,000	374,000	394,000	419,000 [r]	517,000
Gold metal, smelter	kilograms	3,700 [4]	3,800 [4]	3,200 [4]	3,700 [r, 4]	3,200 [4]
Iron and steel:						
Iron ore and concentrate:						
Gross weight	thousand metric tons	79,200 [4]	86,400 [4]	99,100 [4]	120,600 [r, 4]	140,000
Fe content	do.	50,700 [4]	55,300 [4]	63,400 [4]	77,200 [r, 4]	90,000
Metal:						
Pig iron	do.	21,900 [4]	24,315 [4]	24,000	25,000	25,500
Direct-reduced iron	do.	5,590 [4]	5,731 [4]	5,800	5,800	5,900
Ferroalloys:						
Ferrochromium, including charge chrome		267,395 [4]	311,927 [4]	468,677 [4]	527,100 [4]	611,373 [4]
Ferrochromiumsilicon		10,000	10,000	10,000	10,000	10,000
Ferromanganese		165,000	165,000	165,000	170,000	170,000
Ferrosilicon		50,000	52,000	54,000	55,000	56,000
Silicomanganese		150,000	150,000	160,000	160,000	170,000
Other		9,000	9,000	9,000	9,000	9,000
Steel, crude	thousand metric tons	27,291 [4]	28,814 [4]	31,779 [4]	32,000	34,000
Semimanufactures[5]	do.	13,000	13,500	14,000	14,000	15,000
Lead:						
Mine output, Pb content		25,600 [4]	28,600 [4]	34,400 [4]	39,800 [4]	42,000 [4]
Metal, refined:						
Primary		74,400 [4]	74,200 [4]	77,500 [4]	51,000 [r, 4]	43,700 [4]
Secondary		22,000 [4]	35,000 [4]	41,000 [4]	25,000 [4]	25,000 [4]
Total		96,400 [4]	109,200 [4]	118,500 [4]	76,000 [r, 4]	68,700 [4]
Manganese:						
Ore and concentrate, gross weight	thousand metric tons	1,600	1,700	1,650	1,700	1,750
Mn content	do.	600	630	620	630	640
Rare-earth metals, monazite concentrate, gross weight		5,000	5,000	5,000	5,000	5,000
Selenium	kilograms	11,500	11,500	12,000	12,000	13,000
Silver, mine and smelter output	do.	49,500 [4]	52,100 [4]	51,200 [4]	14,500 [r, 4]	31,900 [4]
Titanium concentrates, gross weight:						
Ilmenite		430,000	460,000	500,000	520,000	550,000
Rutile		19,000	18,000	18,000	19,000	19,000
Zinc:						
Mine output, concentrate:						
Gross weight		222,000 [r, 4]	234,300 [4]	294,200 [4]	327,700 [4]	360,000 [4]
Zn content		125,000 [r]	129,000	162,000	184,000	200,000

See footnotes at end of table.

TABLE 1—Continued
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES[1, 2]

(Metric tons unless otherwise specified)

Commodity[3]		2001	2002	2003	2004	2005
METALS—Continued						
Zinc—Continued:						
Metal:						
Primary		207,000 [4]	231,400 [4]	253,900 [4]	238,400 [4]	270,000
Secondary		25,000	24,000	24,000	24,000	23,000
Total		232,000	255,000	278,000	262,000	293,000
Zirconium concentrate, zircon, gross weight		19,000	19,000	20,000	20,000	20,000
INDUSTRIAL MINERALS						
Abrasives, natural, n.e.s.:						
Corundum, natural	kilograms	1,200	1,200	1,150	1,100	1,100
Garnet		125,000	120,000	120,000	125,000	120,000
Jasper		8,000	8,000	8,500	8,500	8,700
Asbestos		21,000	18,000	19,000	18,000	19,000
Barite		850,000	916,000	675,000	723,000	1,000,000
Bromine, elemental		1,500	1,500	1,500	1,500	1,500
Cement, hydraulic	thousand metric tons	105,000	115,000	123,000	125,000	130,000
Chalk		110,000	110,000	115,000	115,000	120,000
Clays:						
Ball clay		370,000	400,000	390,000	400,000	420,000
Diaspore		13,000	12,000	12,000	11,000	11,000
Fireclay		350,000	355,000	360,000	365,000	370,000
Kaolin:						
Salable crude	thousand metric tons	540	540	550	550	560
Processed	do.	170	170	180	180	190
Total	do.	710	710	730	730	750
Other	do.	70	70	75	75	80
Diamond:						
Gem	thousand carats	17	17	16	16	16
Industrial	do.	43	45	44	43	42
Total	do.	60	62	60	59	58
Feldspar		110,000	110,000	150,000	150,000	150,000
Fluorspar:						
Concentrates, metallurgical-grade		13,866 [4]	6,296 [4]	6,300	6,400	6,500
Other fluorspar materials, graded		6,900 [4]	4,188 [4]	4,200	4,300	4,400
Gemstones, excluding diamond:						
Agate, including chalcedony pebble		250	200	200	200	180
Garnet	kilograms	900	700	800	850	850
Graphite[6]		140,000	130,000	110,000	120,000	130,000
Gypsum		2,250,000	2,300,000	2,300,000	2,350,000	2,400,000
Kyanite and related materials:						
Kyanite		5,500	6,000	6,000	6,200	6,800
Sillimanite		13,000	14,000	14,000	14,500	15,000
Lime		910,000	900,000	900,000	900,000	920,000
Magnesite		370,000	380,000	380,000	370,000	380,000
Mica:						
Crude		1,300	1,500	1,600	1,600	1,600
Scrap and waste		1,100	2,000	2,000	2,100	2,100
Total		2,400	3,500	3,600	3,700	3,700
Nitrogen, N content of ammonia	thousand metric tons	10,081 [4]	9,827 [4]	10,048 [4]	10,718 [4]	10,800
Phosphate rock, including apatite		1,200,000	1,250,000	1,175,000 [4]	1,180,000	1,200,000
Pigments, mineral, natural, ocher		355,000	360,000	365,000	360,000	360,000
Pyrites, gross weight		110,000	115,000	115,000	120,000	130,000

See footnotes at end of table.

TABLE 1—Continued
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES[1, 2]

(Metric tons unless otherwise specified)

Commodity[3]		2001	2002	2003	2004	2005
INDUSTRIAL MINERALS—Continued						
Salt:						
Rock salt	thousand metric tons	3	3	3	3	3
Other	do.	14,500	14,500	15,000	15,000	15,500
Total	do.	14,500	14,500	15,000	15,000	15,500
Sand:						
Calcareous	do.	245	250	250	255	260
Silica	do.	1,400	1,400	1,500	1,500	1,600
Other	do.	2,900	2,800	2,900	3,000	3,100
Slate		11,000	10,000	10,500	11,000	12,000
Soda ash		1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Stone, sand and gravel:						
Calcite		51,000	51,000	52,000	52,000	53,000
Dolomite	thousand metric tons	2,800	2,900	2,900	3,000	3,000
Limestone	do.	110,000	115,000	120,000	125,000	120,000
Quartz and quartzite	do.	270	250	250	260	270
Sulfur, byproduct from fertilizer plants		11,000	11,500	11,500	12,000	13,000
Talc and related materials:						
Pyrophyllite		86,000	85,000	86,000	86,000	85,000
Steatite, soapstone		546,000	550,000	552,000	550,000	545,000
Vermiculite		4,300	4,300	4,400	4,400	4,500
Wollastonite		100,000	105,000	120,000	115,000	120,000
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	320,500 [4]	325,000	328,000	330,000	333,000
Liginte	do.	23,000	24,000	25,000	25,000	27,000
Total	do.	343,500 [4]	349,000	353,000	355,000	360,000
Gas, natural:						
Gross	million cubic meters	25,519 [4]	26,000	27,000	28,000	29,000
Marketable	do.	24,000	25,000	25,000	26,000	27,000
Petroleum:						
Crude	thousand 42-gallon barrels	239,292 [4]	240,000	241,000	244,000	248,000
Refinery products:						
Liquefied petroleum gas	do.	42,000	43,000	44,000	44,000	45,000
Gasoline	do.	41,000	42,000	42,000	43,000	43,000
Kerosene and jet fuel	do.	58,000	60,000	59,000	60,000	60,000
Distillate fuel oil	do.	170,000	172,000	171,000	172,000	173,000
Residual fuel oil	do.	67,000	69,000	70,000	71,000	71,000
Other	do.	92,000	94,000	93,000	93,000	94,000
Total	do.	470,000	480,000	479,000	483,000	486,000

[r]Revised.

[1]Estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Table includes data available through August 2, 2006.

[3]In addition to commodities listed, 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.

[4]Reported figure.

[5]Excludes production from steel miniplants.

[6]India's marketable production is 10% to 20% of mine production.

TABLE 2
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(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	280
Do.	National Aluminium Co. Ltd. (Indian Government, 100%)	Dhamanjodi Refinery, Orissa	1,580
Do.	Bharat Aluminium Co. Ltd. (Indian Government, 49%, and Sterlite Industries Ltd., 51%)	Korba Refinery, Chhattisgarh	200
Do.	Utkal Alumina International Ltd. [Norsk Hydro A/S (Norway), 45%; Alcan Aluminium Ltd. (Canada), 35%; Hindalco Industries Ltd., 20%]	Koraput Refinery, Orissa	1,000 [1]
Do.	Madras Aluminium Co. Ltd. [Alumix SpA (Italian Government), 27%; R. Prabhu and Associates, 24%; Tamil Nadu Industrial Investment Corp., 11%; 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, Jharkhand	88
Do.	Hindalco Aluminium Co. Ltd. (Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Renukoot Refinery, Uttar Pradesh	450
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	345
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
Do.	Bharat Aluminium Co. Ltd. (Indian Government, 49%, and Sterlite Industries Ltd., 51%)	Korba Smelter, Chhattisgarh	100
Do.	Madras Aluminium Co. Ltd. [Alumix SpA (Italian Government), 27%; R. Prabhu and Associates, 24%; Tamil Nadu Industrial Investment Corp., 11%; others, 38%]	Mettur Smelter, Tamil Nadu	25
Do.	Hindalco Aluminium Co. Ltd. (Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Renukoot Smelter, Uttar Pradesh	275
Barite	Andhra Pradesh Mineral Development Corp. Ltd. (Andhra Pradesh State government, 100%)	Cuddapah District mines, Andhra Pradesh	350
Do.	Associated Mineral Corp.	do.	75
Do.	Pragathi Minerals	do.	50
Do.	Shri C.M. Ram nath Reddy	do.	75
Do.	Vijaylaxmi Minerals Trading Co.	do.	50
Bauxite	Bharat Aluminium Co. Ltd. (Indian Government, 49%, and Sterlite Industries Ltd., 51%)	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 Aluminium Co. Ltd. (Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Lohardarga district mines, Jharkhand	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	4,800
Do.	Minerals & Minerals Ltd. (Indian Government, 100%)	Richuguta, Palamau district mines, Jharkhand	200
Borax	Borax Morarji Ltd.	Ambernath, Maharashtra	17
Cement	Larsen and Toubro Ltd.	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

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Cement—Continued:		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%; 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%; 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.	Morak Plant, Rajasthan	1,000
Do.		Mysore Cements Ltd. (Government institutions and banks, 41.13%; Corporate Trust Holdings, 21.70%; 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.		JK 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%; 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.	Shreeniwas Plant, Maharashtra	1,060
Do.		Lakshmi Cement (a division of Straw Products Ltd., JK Singhania, principal shareholder)	Sirohi Plant, Rajasthan	1,400
Do.		Manikgarth 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
Chromite		Ferro Alloys Corp. Ltd.	Cuttack district, Orissa	120
Do.		Orissa Mining Corp. Ltd. (Orissa Industries Ltd., 100%)	do.	300
Do.		Tata Iron and Steel Co. Ltd.	do.	100
Do.		Ferro Alloys Corp. Ltd.	Dhenkanal district, Orissa	75
Do.		Orissa Mining Corp. Ltd. (Orissa Industries Ltd., 100%)	do.	200
Do.		Mysore Minerals Ltd.	Hassan district, Karnataka	125
Do.		Ferro Alloys Corp. Ltd.	Kendujhar district, Orissa	75
Do.		Orissa Mining Corp. Ltd. (Orissa Industries Ltd., 100%)	do.	100
Do.		Ferro Alloys Corp. Ltd.	Khammam District, Andhra Pradesh	100
Coal, bituminous	million metric 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.	do.	North Eastern Coalfields Ltd. (a subsidiary of Coal India Ltd., Indian Government, 100%)	Assam	640

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Coal, bituminous— Continued:	million metric 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, mine		Hindustan Copper Co. Ltd. (Indian Government, 100%)	Indian Copper Complex mines, Ghatsila District, Bihar	31
Do.		do.	Khetri Copper Complex mines, Khetrinagar Rajasthan	15
Do.		do.	Malanjkhand Copper Complex mines, Balaghar district, Madhya Pradesh	22
Copper, metal		Birla Copper	Birla Copper Complex smelter, Dahej, Gujarat	150
Do.		Hindustan Copper Co. Ltd. (Indian Government, 100%)	Indian Copper Complex smelter-refinery, Ghatsila district, Bihar	20
Do.		do.	Khetri Copper Complex smelter-refinery, Khetrinagar district, Rajasthan	45
Do.		Sterlite Industries Ltd.	Tuticorin Smelter, Tamil Nadu	180
Do.		do.	Silvassa Refinery, Gujarat	180
Diamond	carats	Indian Government	Mahjgawan Mine	25,000
Gold	kilograms	Hutti Gold Mines Co.	Hutti Mine, Karnataka	3,000
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
Do.		VV Minerals Ltd.	Kanyakumari, Tamil Nadu	130
Iron and steel, crude steel		Visvesvaraya Iron and Steel Ltd. (Karnataka State, 60%, and Steel Authority of India Ltd., Indian Government, 40%)	Bhadravati steel plant, Karnataka	180
Do.		Steel Authority of India Ltd. (Indian Government, 100%)	Bhilai steel plant, Madhya Pradesh	4,930
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.	Jamshedpur steel plant, Bihar	4,000
Do.		Steel Authority of India Ltd. (Indian Government, 100%)	Rourkela steel plant, Orissa	1,800
Do.		Rashtriya Ispat Nigam Ltd.	Visakhapatnam steel plant, Andhra Pradesh	3,200
Do.		JSW Steel Co. Ltd.	Vijayanagar, Karnataka	2,500
Do.		Ministeel plants (privately owned)	About 180 plants located throughout India	4,700
Iron ore		National Mineral Development Corp. Ltd. (Indian Government, 100%)	Bailadila, Madhya Pradesh	9,000
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%)	Kudremukh, Chikmagalur district, Karnataka	10,300
Do.		National Mineral Development Corp. Ltd. (Indian Government, 100%)	Donimalai, Karnataka	9,000
Do.		Chowgule and Co. Ltd.	Goa	2,500

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Iron ore—Continued:	Dempo Mining Corp. Ltd.	Goa	2,500
Do.	V.M. Salgaocar & Bros. Pvt. Ltd.	do.	2,500
Do.	Sesa Goa Ltd.	Codli and Sonshi, Goa	NA
Do.	Steel Authority of India Ltd. (Indian Government, 100%)	Kendujhar district, Orissa	3,000
Do.	Tata Iron and Steel Co. Ltd.	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.	do.	3,500
Kyanite	Associated Mining Co.	Bhandara district, Maharashtra	10
Do.	Maharashtra Mineral Corp. Ltd.	do.	10
Do.	Bihar State Mineral Development Corp. Ltd. (Bihar State government, 100%)	Singhbhum district, Bihar	10
Do.	Hindustan Copper Co. Ltd. (Indian Government, 100%)	do.	22
Lead:			
Primary	Hindustan Zinc Ltd. (Indian Government, 100%)	Chanderiya Smelter, Rajasthan	35
Do.	do.	Tundoo Smelter, Bihar	8
Secondary	Indian Lead Co.	Thane Refinery, Mumbai, Maharashtra	25
Do.	do.	Wada, Mumbai, Maharashtra	40
Lead ore	Hindustan Zinc Ltd. (Indian Government, 100%)	Agnigundala Mine, Andhra Pradesh	72
Do.	do.	Sargipalli Mine, Orissa	150
Lead-zinc ore	do.	Rampura-Agucha Mine, Rajasthan	1,300
Do.	do.	Zawar mine group, Rajasthan	1,200
Magnesite	Burn Standard Co. Ltd. (Indian Government, 100%)	Salem, Tamil Nadu	150
Do.	Dalmia Magnesite Corp.	do.	150
Do.	Tamil Nadu Magnesite Ltd. (Tamil Nadu State government, 100%)	do.	150
Manganese ore[2]	Manganese Ore India Ltd. (Indian Government, 100%)	Adilabad, Andhra Pradesh	NA
Do.	Falechand Marsingdas	Andhra Pradesh	NA
Do.	Manganese Ore India Ltd. (Indian Government, 100%)	Balaghat, Madhya Pradesh	NA
Do.	J.A. Trivedi Bros.	do.	NA
Do.	Sandur Manganese and Iron Ores Ltd.	Bellary, Karnataka	NA
Do.	Manganese Ore India Ltd. (Indian Government, 100%)	Bhandara, Maharashtra	NA
Do.	Eastern Mining Co.	North Kanara, Karnataka	NA
Do.	Mysore Minerals Ltd.	do.	NA
Do.	Manganese Ore India Ltd. (Indian Government, 100%)	Keonjhar, Orissa	NA
Do.	Mangilah, Rungta (Pvt.) Ltd.	do.	NA
Do.	Orissa Mining Corp. Ltd.	do.	NA
Do.	Rungta Mines (Pvt.) Ltd.	do.	NA
Do.	Serajuddin & Co.	do.	NA
Do.	S. Lall & Co.	do.	NA
Do.	Tata Iron and Steel Co. Ltd.	do.	NA
Do.	Orissa Mineral Development Co. Ltd.	Koraput, Orissa	NA
Do.	Orissa Mining Corp. Ltd.	do.	NA
Do.	Mysore Minerals Ltd.	Shimoga, Karnataka	NA
Do.	Aryan Mining & Trading Corp.	Sundargarh, Orissa	NA
Do.	Orissa Manganese & Minerals (Pvt.) Ltd.	do.	NA
Do.	Tata Iron and Steel Co. Ltd.	do.	NA
Do.	R.B.S. Shreeram Durga Prasad and Falechand Marsingdas	Vizianagaram, Andhra Pradesh	NA
Mica metric tons	Micafab India Pvt. Ltd.	Sydapuram Mandal, Andhra Pradesh	4,500
Do. do.	Premier Mica Co.	Rjupalem, Andhra Pradesh	200

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Petroleum, refined products	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	93,000
Do.	do.	Indian Oil Corp. (a subsidiary of Oil and Natural Gas Corp., Indian Government, 91%, and private interests, 9%)	Barauni Refinery, Bihar	66,000
Do.	do.	Bongaigaon Refinery and Petrochemicals Ltd. (a subsidiary of Oil and Natural Gas Corp., Indian Government, 100%)	Bongaigaon Refinery, Assam	27,000
Do.	do.	Indian Oil Corp. (a subsidiary of Oil and Natural Gas Corp., Indian Government, 91%, and private interests, 9%)	Digboi Refinery, Assam	12,000
Do.	do.	do.	Guwahati Refinery, Assam	20,000
Do.	do.	do.	Haldai Refinery, West Bengal	61,000
Do.	do.	do.	Koyali Refinery, Gujarat	185,000
Do.	do.	Madras Refineries Ltd. (a subsidiary of Oil and Natural Gas Corp., Indian Government, 52%, and private interests, 48%)	Madras Refinery, Tamil Nadu	131,000
Do.	do.	Bharat Petroleum Corp. Ltd. (a subsidiary of Oil and Natural Gas Corp., Indian Government, 67%, and private interests, 33%)	Mahul Refinery, Mumbai, Maharashtra	135,000
Do.	do.	Industan Petroleum Corp. Ltd. (a subsidiary of Oil and Natural Gas Corp., Indian Government, 51%, and private interests, 49%)	do.	110,000
Do.	do.	do.	Visakhapatnam Refinery, Andhra Pradesh	90,000
Do.	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
Do.	do.	do.	Panipat Refinery, Haryana	120,000
Phosphate rock[3]		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.	Durmala and Maldeota underground mines, Uttar Pradesh	NA
Do.		Madhya Pradesh State Mining Corp. Ltd. (Madhya Pradesh State government, 100%)	Hirapur and Khatamba Mines, Madhya Pradesh	NA
Do.		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		Binani Zinc Ltd.	Binanipuram Smelter, Kerala	38
Do.		Hindustan Zinc Ltd. (Indian Government, 100%)	Chanderiya Smelter, Rajasthan	100
Do.		do.	Debari Smelter, Rajasthan	78
Do.		do.	Visakhapatnam (Vizag) Smelter, Andhra Pradesh	54

[e]Estimated. NA Not available.
[1]Scheduled for startup in 2005.
[2]Capacity of clusters of surface mines varies extremely, depending on demand. Estimated total capacity is 1.5 million metric tons per year.
[3]Estimated total phosphate rock capacity is 800,000 metric tons per year.