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The Mineral Industry of India

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India has significant mineral resources of metallic and industrial minerals. The country's reserves and resources of barite, bauxite, chromium, coal, iron ore, limestone, and manganese ore were among the 10 largest in the world, and those of bauxite accounted for 6.8% of the world's supply. India's mineral sector includes mineral mining and processing industries, which are the backbone of the country's industrial production. The mineral sector provides the basic raw materials—such as aluminum, coal, copper, industrial minerals, petroleum, and steel—to the manufacturing sector. In terms of production, the country was among the world's eight leading producers of aluminum, barite, bauxite, chromium, coal, iron ore, kyanite, manganese ore, mica (sheet), steel, talc, and zinc (Ministry of Mines, 2011, p. 144–145).

Minerals in the National Economy

The mineral industry was an important segment of the Indian economy. Mining and quarrying accounted for 2.26% of the gross domestic product. Overall mineral production in terms of tonnage increased by 7.4% in 2010, and the total value of mineral production increased by 11.8%. Mineral fuels accounted for 67.4% of the total value; metals, 20.9%; and industrial minerals, 11.7%. The value of mineral exports increased by 17% and that of mineral imports increased by 2% compared with those of 2009 (Ministry of Mines, 2011, p. 9, 146–149).

Government Policies and Programs

The ban on the granting and renewal of asbestos mining leases and the expansion of existing asbestos mines had not been lifted. A study of pollution levels in asbestos mines and processing plants in the State of Rajasthan recommended, however, that, provided that necessary safeguards against pollution in the work environment are put in place, the ban might be lifted. Some stakeholders also suggested that asbestos mining could be permitted with appropriate safeguards, but what these safeguards should be had not been finalized. Despite the ban, asbestos could have been being mined illegally in Rajasthan. Also, although white asbestos mining was banned, its import, export, and use in manufacturing were permitted (Times of India, The, 2010a).

The coal mining lobby, which consisted of coal miners and coal mine owners, opposed foreign investment in the coal mining sector in the State of Meghalaya. The lobby suggested that the State government should not sidetrack the prevailing land tenure system in Meghalaya, where the coal mines were owned by private investors and the operators and owners were not required to obtain a mining lease from the State government. Environmentalists, however, were concerned about land degradation and forest cover depletion owing to the unregulated mining. The State government planned to formulate a mining policy to regulate mining activities and address the health, environment, and labor issues and engaged Coal India Ltd. (CIL) to prepare such a plan for institutional mining in the State. In addition, the State's efforts to develop thermal powerplants [South Garo Hills and West Khasi Hills, which together would have a capacity of 960 megawatts (MW)] were leading it to regulate coal mining activities. The State of Meghalaya is rich in coal, limestone, and uranium. The State had more than 600 million metric tons (Mt) of coal resources and mined 5 million metric tons per year (Mt/yr) of coal. The coal had a low ash content and high sulfur and calorific values (Business Standard, 2010b).

Production

India produced 87 minerals, including 47 industrial minerals, 23 minor minerals, 10 metallic minerals, 4 mineral fuels, and 3 nuclear minerals. Production from opencast mines accounted for 80% of the total mine output. The number of underground operations was in decline. Capacity utilization in general was up. In 2010, production of such mineral commodities as bauxite, cobalt, ilmenite and rutile, and pig iron and crude steel increased by more than 10% whereas output of barite, gem-grade diamond, and silicomanganese decreased by between 7% and 9%. The increased production of bauxite was the result of mine expansions. Commissioning of a new mineral sands operation increased the production of ilmenite and rutile. Strong demand for steel products in the domestic market led to the increased output of pig iron and crude steel. India's diamond reserves and production were diminishing, and exploration for and development of diamond deposits had been intensifying (table 1).

Structure of the Mineral Industry

India's mineral industry was characterized by a large number of small operating mines. Small mines in the private sector continued to be operated either as proprietary or partnership ventures. Public sector undertakings under the Ministry of Mines were Hindustan Copper Ltd. (HCL), Mineral Exploration Corp. Ltd., and National Aluminium Co. Ltd. (Nalco). Two others had been disinvested and management control transferred to strategic partners. The public sector companies accounted for 74% of the total value of mineral production. The number of mines that reported mineral production was 2,628 in 2010 and included 1,446 industrial mines, 608 metal mines, and 574 coal mines. Total employment in the mineral industry was estimated to be more than 500,000, of which the public sector accounted for 82% and the private sector accounted for 18% (table 2).

Mineral Trade

The total value of exports of ores and minerals was about $27.6 billion in 2010. Diamond (mostly cut) was the principal item of export, accounting for 66.2%; iron ore, 22.2%; granite, 3.9%; and alumina, 0.75%. The total value of imports of ores, minerals, and fuels was about $113 billion. Crude petroleum was the main component of imports, accounting for 69.7%; diamond (uncut), 14.2%; coal, 7.5%; copper ore and concentrate, 3.6%; and natural gas, 2.1%. The country continued to be largely self-sufficient in such mineral commodities as bauxite, chromite, ilmenite, iron ore, manganese ore, and rutile among metals; and barite, dolomite, feldspar, limestone, silica minerals, sillimanite, and talc among industrial minerals (Ministry of Mines, 2011, p. 13, 146–149).

Commodity Review

Metals

Bauxite and Alumina.—India was self-sufficient in bauxite with resources estimated to be 3,300 Mt in 841 known deposits. The country's resources ranked seventh in the world and most (55%) of them were located in the State of Orissa. Nalco was expanding the capacity of its bauxite mine in the State of Orissa to 6.3 Mt/yr from 4.8 Mt/yr. The company had a joint-venture project to expand its specialty alumina capacity to 100,000 metric tons per year (t/yr) from 26,400 t/yr. Utkal Alumina International Ltd.'s alumina refinery in the Koraput District was being expanded to 2.1 Mt/yr from 1.5 Mt/yr (Industrial Minerals, 2010a).

The Government rejected the plan by Vedanta Resources plc of the United Kingdom to expand its 1-Mt/yr alumina refinery in the State of Orissa to 6 Mt/yr (at a cost of $9.5 billion) after the Ministry of Environment tightened its environmental rules. In 2010, Vedanta Resources received an environmental clearance to mine bauxite in the State. The Government also withdrew its permission for Vedanta Resources to upgrade the refinery's 75-MW-capacity captive powerplant to 300 MW (Kotoky, 2010).

Copper.—Refined copper production in India came from copper ore mined from domestic mines by HCL and copper concentrate imported by Hindalco Industries Ltd. and Sterlite Industries Ltd. (a unit of Vedanta Resources). Domestic copper ore was low grade and the manufacture of refined copper from it was characterized by high energy consumption owing to the small scale of the operations and minimal use of automation. In addition to the three primary copper producers, Jagadia Copper Ltd. also produced about 50,000 t/yr of refined copper. As a result, India was a net exporter of refined copper (Ministry of Mines, 2011, p. 29).

The Indian High Court ordered an immediate closure of Sterlite Industries' copper smelter at Tuticorin in the State of Tamil Nadu because the plant could affect the safety, security, and health of the workers and citizens there. Activities at the plant were likely to result in an increase in pollution levels (Mineweb.com, 2010b).

Iron and Steel.—National Mineral Development Corp. Ltd. (NMDC) stopped iron ore shipments from mines in the Bailadila hills in the State of Chhattisgarh after Maoist rebels damaged rail tracks in December. The damage to the tracks was some 25 kilometers (km) from the mines. Maoist rebels frequently called for strikes in mineral-rich regions of the country. NMDC normally transported 56,000 metric tons per day (t/d) of iron ore and produced 9 Mt/yr from the State for domestic steelmakers (Reuters, 2010).

The State of Karnataka banned the export of its iron ore to China in July 2010. The ban was to control illegal miners who had been selling iron ore without paying taxes. The State of Goa ceased exports of iron ore during the monsoon season; later, however, Goa and the States of Jharkhand and Orissa decided to ramp up supplies to China. Goa, Karnataka, and Orissa were the major contributors to India's iron ore exports of 120 Mt/yr, of which 75% was procured by China (Mineweb.com, 2010a).

Outotec OYJ of Finland signed a contract on the delivery of sintering technology for JSW Steel Ltd.'s new iron ore sinter plant to be built at Toranagallu in the State of Karnataka. The plant was expected to produce 2.3 Mt/yr of iron sinter, which would be used as feed for blast furnaces in steel production. The delivery was part of JSW Steel's expansion to reach a sinter production capacity of 10 Mt/yr. The commissioning for the plant was scheduled for 2011 (Outotec OYJ, 2010).

India's production capacity of crude steel was expected to reach about 110 Mt/yr by December 2012 from the current 72 Mt/yr. The brownfield steel projects could add 36 Mt/yr of capacity whereas a greenfield project could add 3 Mt/yr. In addition, Essar Steel Co. Ltd.'s and Tata Steel Ltd.'s greenfield projects were likely to be delayed after 2012 (Steelguru.com, 2010).

Electrosteel Steels Ltd. was building a $1.7 billion 3-Mt/yr steel plant at Siyaljori under the Chandankyari Block in the State of Jharkhand. The project employed 1,600 Chinese and 5,000 Indian laborers to construct the plant in 18 months, which was expected to begin operations by early 2011. Construction of the coke oven was delayed, however, because it was on disputed forest land. Completion of the project was scheduled for June 2011. Meanwhile, Tata Steel planned to start construction of a 6-Mt/yr Kalinganagar steel plant in the State of Orissa in October 2010 and expected the plant to be operational by 2014. India's demand for steel was growing at a faster pace than its production of 72 Mt/yr, which would need to increase by 12% per year to keep up with consumption (Lakshmi, 2010).

Tata Steel (51%) formed a joint venture with Nippon Steel Corp. of Japan (49%) to produce high-grade cold-rolled flat products at Jamshedpur in the State of Jharkhand and to sell them to the Indian automotive sector. The facility included a continuous annealing and processing plant with a capacity of 600,000 t/yr. Nippon Steel would transfer its technology for producing skin panels and high-tensile steel. The operation was scheduled to start up in 2013 (Metal Bulletin, 2010b).

Manganese.—Manganese Ore India Ltd. completed a 500,000-t/yr manganese ore beneficiation plant at its mine in Balaghat in the State of Madhya Pradesh. The company had mined on average 1 Mt/yr of manganese ore during the past 3 years, of which 60% to 65% was supplied to manganese alloy producers (Metal Bulletin, 2010a).

Titanium.—Trimex Group of the United Arab Emirates started commercial production of its Srikurmam mineral sands

project in the Srikakulam District in the State of Andhra Pradesh with 60,000 t/yr of garnet, 200,000 t/yr of ilmenite, 50,000 t/yr of sillimanite, and 6,000 t/yr each of rutile and zircon. The entire output was for the export market. The company invested $54 million in the initial phase of the project and planned to spend $867 million by 2017 to expand the extraction areas, increase processing capacity, upgrade technology, and boost research and development. The increased production would involve chloride pigment, titanium dioxide pigment, titanium metal, and value-added products. The mining lease covered 7.2 square kilometers (km^2) of coastline for 30 years and was renewable for an additional 30 years. Two other neighboring deposits of beach sands with combined exploitable ilmenite reserves of 18 Mt totaled 48 km^2. The second phase to develop the deposit at Bhavanapadu would begin by yearend 2010 and would run for 30 months to produce 300,000 t/yr of ilmenite and 35,000 t/yr of titanium dioxide pigment (Industrial Minerals, 2010d).

Industrial Minerals

Cement.—India's cement consumption continued to increase at a rate of 10% per year. The country added 50 Mt/yr of cement capacity in 2010 to reach a total of 300 Mt/yr. Capacity utilization was 75%, which was down from the 87% utilization rate in 2009. Shree Cement Ltd. added a 1.8-Mt/yr clinker grinding plant in the Haridwar District of the State of Uttarakhand. GNG Group planned to set up a 1-Mt/yr cement plant in the State of Meghalaya, and commissioning of the plant was scheduled for March 2011 (World Cement, 2010a).

The Associated Cement Cos. Ltd.'s (ACC's) Kudithini cement plant in the Bellary District of the State of Karnataka was inaugurated in January. The grinding plant had a capacity of 1.2 Mt/yr of cement using slag from the district. Clinker also was supplied by ACC's cement plants at Wadi in the Gulbarga District. The green plant, which did not generate waste water, effluent, or solid waste, employed 1,200 people directly and indirectly. ACC was 46% controlled by Holcim Ltd. (ACC Ltd., 2010).

Emami Cement Ltd. planned to set up an integrated cement plant in Chhattisgarh with a production capacity of 3.1 Mt/yr and two grinding plants—one in West Bengal with a capacity of 1.5 Mt/yr and the other in Orissa with a capacity of 0.6 Mt/yr. The construction of the Chhattisgarh plant, which would include a 40-MW powerplant, was started in mid-2010. The plant was expected to be operational by 2012. Lalitha Cement Ltd. planned to build a greenfield cement plant in Hyderabad in the State of Andhra Pradesh with a capacity of 1 Mt/yr of clinker (World Cement, 2009).

In 2010, Jaypee Cement Ltd. had a production capacity of 25 Mt/yr and planned to increase it to 34 Mt/yr by 2012. As part of this expansion, the company planned to buy a controlling stake in Zawar Cement Pvt. Ltd.'s defunct 0.6-Mt/yr-capacity grinding unit at Wadi, Gulbarga District, Karnataka State and to set up a 2.5-Mt/yr operation there. The area had limestone reserves of 180 Mt and the plan for the plant, which was commissioned in 2010, had originally been to expand the capacity to 5 Mt/yr, including installation of a 50-MW thermal powerplant. Jaypee Cement's Himachal cement grinding and blending plant at Bagheri in the State of Himachal Pradesh was commissioned in January with a capacity of 1.75 Mt/yr; it employed 500 people. Jaypee Cement's Solan plant, which was also located in Himachal Pradesh, had a cement and clinker-grinding capacity of 4.5 Mt/yr. The company planned to set up a 3-Mt/yr cement plant at Wanakbori in the Kheda District of the State of Gujarat (Sakar, 2010).

Lafarge Umiam Mining Pvt. Ltd., which was a wholly owned subsidiary of Lafarge Surma Cement Ltd., had a mining operation at Shella in the East Khasi Hills in the State of Meghalaya. The company exported limestone and shale to the cement plant in Bangladesh, transporting it by way of a 17-km-long conveyer belt with a capacity of 6,000 t/d. The project was at a standstill, however, pending a decision by India's Supreme Court in 2010 (Bouissou, 2010).

The production capacity of JK Lakshmi Cement Ltd.'s cement plant at Sirohi in the State of Rajasthan and its grinding plant near Ahmadabad in the State of Gujarat stood at 4.7 Mt/yr. The company planned to set up a 0.6-Mt/yr grinding plant in the State of Haryana and a 2.7-Mt/yr cement plant in the State of Chhattisgarh by October 2012. These investments would increase its total capacity to 8 Mt/yr (World Cement, 2010b).

Vicat SA of France acquired a 51% stake in Bharathi Cement Co. Ltd. in a deal worth $500 million. Bharathi Cement had a 2.5-Mt/yr-capacity cement plant in the Kadapa District in the State of Andhra Pradesh and planned to increase production capacity to 5 Mt/yr by the end of 2010. A joint venture of Vicat and Sagar Cements Ltd. (VicatSagar Cement Ltd.) planned to set up a 2.7-Mt/yr-capacity cement plant in the Gulbarga District in the State of Karnataka to be operational in 2012. The first phase of the project also involved the construction of a 40-MW captive powerplant, a waste-heat recovery unit, and necessary infrastructure. The second phase would be a doubling of the plant's capacity (Times of India, The, 2010b).

Dalmia Bharat Enterprises Ltd. planned to set up two greenfield cement plants in the States of Karnataka and Meghalaya each would have a capacity of 2.5 Mt/yr. Both plants were expected to be commissioned in 24 months. The company's existing capacity was 14 Mt/yr and it operated cement plants at Dalmiapuram (4 Mt/yr) and at Ariyalur (2.5 Mt/yr) in the State of Tamil Nadu and at Kadapa (2.5 Mt/yr) in the State of Andhra Pradesh. The company also held a 45% stake in OCL India Ltd., which had a capacity of 5 Mt/yr (Balaji, 2010).

My Home Industries Ltd. planned to expand the cement production capacity at its Visakhapatnam plant in the State of Andhra Pradesh to 2.5 Mt/yr by adding 1 Mt/yr of capacity. The company's total capacity was targeted to be 10 Mt/yr from the current 4.6 Mt/yr. The company operated three cement plants at Mellacheruvu near Hyderabad, in addition to the one at Visakhapatnam. The company was also setting up a 60-MW captive powerplant at Mellacheruvu, which would be operational by 2011. My Home Industries was a joint venture between My Home Group and CRH plc, both of Ireland (Hindu Business Line, The, 2010).

Clay and Shale.—Ashapura Minechem Ltd. started operating a kaolin plant with an installed capacity of 180,000 t/yr at Trivandrum in the State of Kerala, where clay deposits

contained 96% kaolinite content and were ranked among the best in the world. The company also had access to large reserves of kaolin in the State of Gujarat. English Indian Clays Ltd. mined the clay deposits in the same area with a capacity of 150,000 t/yr of hydrous clay and 30,000 t/yr of calcined clay (Industrial Minerals, 2010b).

Diamond.—Rio Tinto plc of the United Kingdom signed a state support agreement with the State government of Madhya Pradesh to proceed with its Bunder diamond project, which is located 500 km southeast of New Delhi. Total investment was estimated to be $500 million, and the feasibility study identified an inferred resource of 27.4 million carats (Antwerp Facets, 2010).

India was the world's leader in the export of cut and polished diamond, with annual exports valued at $28 billion. The Government launched a diamond exchange (the Bharat Diamond Bourse) in Mumbai, which would be the largest diamond hub in the world. The exchange had 900 trade members and 1,400 provisional members. The country's diamond industry could grow by 10% to 15% per year in the next 5 years. The United States was the leading diamond customer, accounting for 40% of the market; India accounted for 7% of the market and China accounted for 4% (Miningmx.com, 2010).

Graphite.—Agrawal Graphite Industries planned to double its production by 2013 by acquiring two or three more graphite deposits near its existing operations in the State of Orissa. The company currently produced 500 metric tons per month of graphite. The plant had a capacity of 10,000 t/yr of processed graphite from five mines—Beharamunda, Deharmunda, Dudkamal, Gandabhali, and Temrimal—all of which are located in the Belpara District in Orissa (Industrial Minerals, 2010c).

Mineral Fuels and Related Materials

Coal.—India's coal shortage was expected to be 104 Mt in 2011. Output growth was hampered by difficulties in land acquisition, social and environmental hurdles, and low investments. Expansion of mines and the search for assets overseas would keep coal availability up. Imports of coal were increasing at a fast pace and accounted for 10% of domestic coal consumption. In 2010, power generation used 388 Mt of coal from local production of 572 Mt and imports of 84 Mt. CIL was expected to produce 486 Mt in 2011 (Moneycontrol.com, 2010).

The Government threatened to cancel the coal block allocations of four companies, including Binani Cement Ltd., CIL, Jharkhand State Mineral Development Corp. (JSMDC), and National Thermal Power Corp. (NTPC), for failure to develop the allotted blocks. CIL and NTPC had been jointly allotted blocks of Brahmini and Chichro Patsimal in the State of Orissa. NTPC also was allotted eight coal blocks in the country. JSMDC was to develop the Patartu and the Robodih coal blocks in Orissa. Binani Cement had the Nimbri Chandavadan lignite block in the State of Rajasthan. The guidelines require an opencast mine to become operational within 36 months of block awarding and an underground mine within 48 months. An additional 6 months is allowed if a block lies in a forest area (Business Standard, 2010a).

Reliance Power Ltd. planned to produce 91 Mt/yr of coal by 2015. The company had 1,800 Mt of domestic coal reserves and 1,800 Mt of coal reserves in Indonesia. The company's plan was part of its larger objective to have an electricity-generating capacity of 35,000 MW from coal-fired powerplants by 2017. Reliance Power would have a generating capacity of 25,000 MW by 2015. The company also planned to have 2,000 MW of coalbed methane-based power (Mining Engineering, 2010).

Natural Gas.—Oil and Natural Gas Corp. (ONGC) formulated a comprehensive pilot program for extracting shale gas and spudded its first well near Durgapur in the Burdwan District in the State of West Bengal to assess the gas potential from a 700-meter (m)-thick shale bed of Permian age. The company planned to drill three more shale gas wells in the Damodar basin in the States of Bihar and West Bengal. ONGC identified the basins based on depth considerations, gas content, geochemical parameters, and logistics (Oil & Gas Journal, 2010c).

Petroleum.—Reliance Industries Ltd. made a 5th oil discovery in an exploration block located in the Cambay basin in the State of Gujarat. The well was drilled to a total depth of 1,957 m in Part A of the block and encountered a hydrocarbon-bearing zone at a depth of between 1,376 m and 1,386 m. The well flowed at a rate of 255 barrels per day (bbl/d) of oil. The block covered an area of 635 km^2 in two parts, and Reliance Industries, which had a 100% participating interest, was the operator of the block (Alexander's Gas & Oil Connections, 2010).

Cairn Energy plc of the United Kingdom and ONGC started pumping oil from the Mangala field through the Barmer-Bhogat pipeline. The 590-km Barmer-Salaya section of the pipeline was operational and oil was supplied to privately owned refineries from the delivery point of Salaya. The field's production averaged 60,000 bbl/d (Petroleum Economist, 2010a).

Vedanta Resources planned to spend $8.5 billion to buy a 32% control of Cairn India Ltd., which was the local unit of Cairn Energy (62.4%). The agreement needed Government approval because it covered production-sharing contracts Cairn India held in the State of Rajasthan. ONGC owned a 30% stake in one of Cairn India's blocks. Cairn India would retain majority control of its operation in the State. The sale would be closed by yearend (Petroleum Economist, 2010b).

Indian Oil Corp. Ltd. awarded a contract to Essar Projects Ltd. to work on its 300,000 bbl/d refinery at Paradip in the State of Orissa. Essar Projects would conduct residual process design, detailed engineering, procurement, construction, commissioning, and performance testing of core processing units. The full-conversion refinery would process all heavy crudes and was expected to be commissioned in March 2012. Indian Oil also commissioned the expansion of its Panipat refinery in the State of Haryana to 300,000 bbl/d from 240,000 bbl/d. The company operated eight refineries in the country that had a combined capacity of 1.29 million barrels per day (Oil & Gas Journal, 2010b).

Essar Energy plc of the United Kingdom expanded and upgraded its 300,000-bbl/d oil refinery at Vadinar to 375,000 bbl/d; completion of the project was scheduled for March 2011. Only the delayed coker and the vacuum gas

oil hydrotreater were behind schedule. The company was considering a second expansion to increase its refining capacity to 750,000 bbl/d that would make the refinery one of the world's largest (Oil & Gas Journal, 2010a).

Uranium.—India expected to import 300 metric tons (t) of uranium from Kazakhstan and 210 t from Russia in fiscal year 2010-11 (April-March). In the previous fiscal year, the country had received 478 t of uranium from France and Russia. In addition, Uranium Corp. of India initiated the process for developing new uranium mines and processing plants at Lambapur-Peddagattu in the Nalgonda District of Andhra Pradesh and at Kylleng Pyndengsohiong Mawthabah in the West Khasi Hills District of Meghalaya. Uranium supplies from the Turamdih mill in the State of Jharkhand were doubled (Sasi, 2010).

Reserves and Resources

The country's mineral resources include large deposits of barite, bauxite, chromium, coal, iron ore, limestone, and manganese. Barite deposits occur in the State of Andhra Pradesh. Bauxite resources are found in the States of Andhra Pradesh, Chhattisgarh, Gujarat, and Orissa. Iron ore deposits in the form of hematite and magnetite occur in the States of Bihar, Karnataka, Madhya Pradesh, Orissa, and Tamil Nadu. India's coal resources amounted to 267 billion metric tons (Gt) and are located in the States of Andhra Pradesh, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Orissa, and West Bengal. Its lignite reserves totaled 39 Gt and are found in the States of Gujarat, Jammu and Kashmir, Kerala, Rajasthan, and Tamil Nadu (table 3).

Outlook

India is expected to continue to be largely self-sufficient in minerals that constitute primary raw materials to various industries. The country is, by and large, self-sufficient in coal and lignite. Production of bauxite and alumina is expected to increase owing to a mine expansion by Nalco and a refinery expansion by Utkal, respectively. Many brownfield and greenfield steel projects underway are expected to increase the country's production capacity of crude steel in the next few years. Several planned cement plants and grinding plants are expected to increase India's cement production capacity to meet its growing demand. To meet the increasing demand by the domestic cutting and polishing industry, India is expected to continue to import uncut diamond, emerald, and other precious and semiprecious stones for its value-added reexports. Demand for gems and jewelry from the United States and Europe is expected to spur growth in the value of exports from India by 25% in 2010 and beyond. Expansions of coal mines are hampered by low investments in the energy sector and speculation and regulatory issues. The country's coal output cannot keep up with its increasing demand for coal in power generation; as a result, imports of coal are expected to increase at a faster pace than in previous years. Expansions and upgrades of oil refineries are expected to increase India's refining capacity to process light and heavy crude oil.

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TABLE 1

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

(Metric tons unless otherwise specified)

Commodity[3]		2006	2007	2008	2009	2010
METALS						
Aluminum:						
Bauxite, gross weight	thousand metric tons	13,940 [4]	20,343 [4]	21,210 [4]	16,000 [r]	18,000
Alumina, Al_2O_3 equivalent	do.	2,800	2,900	3,000	3,700 [r]	4,000
Metal, primary		1,105,100 [4]	1,221,800 [4]	1,307,500 [4]	1,400,000	1,450,000
Cadmium metal		457 [4]	580 [4]	599 [4]	610	620
Chromium, chromite, gross weight		3,600,400 [4]	3,320,000 [4]	3,900,000 [4]	3,760,000 [r, 4]	3,800,000
Cobalt metal		1,184 [4]	980 [4]	858 [4]	1,001 [4]	1,187 [4]
Copper:						
Mine output, Cu content		27,400 [4]	33,900 [4]	30,600 [4]	29,500 [r, 4]	33,000
Metal, primary:						
Smelter		610,000 [4]	700,000 [r, 4]	651,000 [r, 4]	705,100 [r, 4]	656,000
Refinery:						
Electrolytic, cathode		614,000 [4]	698,600 [4]	654,200 [4]	705,100 [r, 4]	656,000
Fire refined		15,000	15,000	15,000	10,000 [r]	9,000
Total		629,000	714,000	669,000	715,000 [r]	665,000
Gold metal, smelter	kilograms	2,400 [4]	3,000 [4]	2,700 [4]	2,800	2,700
Iron and steel:						
Iron ore and concentrate:						
Gross weight	thousand metric tons	177,000 [4]	207,000 [4]	215,000 [r, 4]	225,000 [r, 4]	230,000
Fe content	do.	113,000 [4]	126,000 [4]	138,000 [r, 4]	144,000 [r, 4]	147,000
Metal:						
Pig iron	do.	28,300 [4]	28,800 [4]	29,000 [4]	34,000 [r, 4]	38,685 [4]
Direct-reduced iron	do.	14,740 [4]	19,060 [r, 4]	21,200 [r, 4]	22,030 [r, 4]	23,420 [4]
Ferroalloys:						
Ferrochromium, including charge chrome		634,200 [4]	820,000 [4]	750,000 [4]	873,385 [4]	850,000
Ferrochromiumsilicon		10,000	10,000	10,000	10,000	10,000
Ferromanganese		296,726 [r, 4]	391,210 [r, 4]	384,577 [r, 4]	389,465 [r, 4]	413,000
Ferrosilicon		68,000	80,000	92,000	101,337 [4]	101,000
Silicomanganese		782,962 [r, 4]	911,402 [r, 4]	891,458 [r, 4]	1,099,838 [r, 4]	1,170,000
Other		9,000	9,000	9,000	9,000	9,000
Steel, crude	thousand metric tons	49,500 [4]	53,500 [r, 4]	57,800 [r, 4]	63,500 [r, 4]	68,300 [4]
Semimanufactures[5]	do.	45,000	47,000	49,000	50,000	51,000
Lead:						
Mine output, Pb content		69,200 [4]	77,500 [4]	87,300 [4]	92,000	95,000
Metal, refined:						
Primary		49,600 [4]	53,800 [4]	62,000 [4]	65,000	67,000
Secondary		55,600 [4]	70,000 [4]	76,000 [4]	78,000	79,000
Total		105,200 [4]	123,800 [4]	138,000 [4]	143,000	146,000
Manganese:						
Ore and concentrate, gross weight	thousand metric tons	2,084 [4]	2,300	2,400	2,500	2,600
Mn content	do.	844 [4]	900	960	980	1,000
Selenium	kilograms	13,000	14,000	14,000	15,000	15,000
Silver, mine and smelter output	do.	30,900 [4]	82,300 [4]	96,000 [4]	95,000	92,000
Titanium mineral concentrates, gross weight:						
Ilmenite		690,000	700,000	610,000	700,000	540,000
Rutile		21,000	21,000	21,000	21,000	24,000
Zinc:						
Mine output, concentrate:						
Gross weight		501,700 [4]	538,900 [4]	613,600 [4]	695,000 [r, 4]	700,000
Zn content		294,000	314,000	337,000	382,000 [r]	385,000

See footnotes at end of table.

TABLE 1—Continued

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

(Metric tons unless otherwise specified)

Commodity[3]		2006	2007	2008	2009	2010
METALS—Continued						
Zinc—Continued:						
Metal:						
Primary		420,900 [4]	430,800 [4]	545,800 [4]	560,000	580,000
Secondary		23,000	23,000	22,000	22,000	21,000
Total		444,000	454,000	568,000	582,000	603,000
Zirconium concentrate, zircon, gross weight		28,000	29,000	30,000	37,000	38,000
INDUSTRIAL MINERALS						
Abrasives, natural, n.e.s.:[6]						
Corundum, natural	kilograms	1,000	1,000	1,000	1,000	1,000
Garnet		115,000	120,000	125,000	127,000	130,000
Jasper		8,800	9,000	8,900	8,700	8,800
Asbestos		20,000	21,000	20,000	19,000	20,000
Barite		950,000	1,000,000	1,100,000	1,200,000	1,100,000
Bromine, elemental		1,500	1,500	1,500	1,500	1,500
Cement, hydraulic	thousand metric tons	160,000	170,000	185,000 [r]	205,000 [r]	220,000
Chalk		120,000	125,000	125,000	125,000	130,000
Clays:						
Ball clay		420,000	430,000	430,000	440,000	440,000
Diaspore		10,000	10,000	10,000	10,000	10,000
Fire clay		375,000	380,000	390,000	395,000	400,000
Kaolin:						
Salable crude	thousand metric tons	560	570	570	580	580
Processed	do.	200	200	210	210	220
Total	do.	760	770	780	790	800
Other	do.	80	85	85	85	90
Diamond:						
Gem	thousand carats	15	15	15	14	13
Industrial	do.	40	40	38	38	37
Total	do.	55	55	53	52	50
Feldspar		466,422 [r, 4]	486,272 [r, 4]	385,436 [r, 4]	390,000 [r]	400,000
Fluorspar:						
Concentrates, metallurgical grade		5,800	5,000	5,500	5,600	5,800
Other fluorspar materials, graded		500	1,000	1,500	1,600	1,800
Gemstones, excluding diamond:						
Agate, including chalcedony pebble		180	170	160	160	150
Garnet	kilograms	800	800	800	800	800
Graphite[7]		120,000	130,000	140,000	130,000	140,000
Gypsum		2,450,000	2,500,000	2,550,000	2,600,000	2,650,000
Kyanite and related materials:						
Kyanite		7,000	7,300	7,500	7,700	7,800
Sillimanite		15,000	15,200	16,000	16,500	16,800
Lime	thousand metric tons	12,000 [r]	12,000 [r]	13,000 [r]	13,000 [r]	14,000
Magnesite		370,000	360,000	350,000	340,000	345,000
Mica:						
Crude		1,587 [r, 4]	3,786 [r, 4]	2,049 [r, 4]	2,000 [r]	2,100
Scrap and waste		3,566 [r, 4]	3,421 [r, 4]	4,470 [r, 4]	4,500 [r]	4,700
Total		5,153 [r, 4]	7,207 [r, 4]	6,519 [r, 4]	6,500 [r]	6,800
Nitrogen, N content of ammonia	thousand metric tons	10,900	11,000	11,100	11,200	11,500
Phosphate rock, including apatite		1,200,000	1,210,000	1,220,000	1,230,000	1,240,000
Pigments, mineral, natural, ocher		370,000	375,000	380,000	385,000	390,000
Pyrites, gross weight		125,000	120,000	120,000	115,000	115,000

See footnotes at end of table.

TABLE 1—Continued

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

(Metric tons unless otherwise specified)

Commodity[3]		2006	2007	2008	2009	2010
INDUSTRIAL MINERALS—Continued						
Rare-earth metals, monazite concentrate, gross weight		5,000	5,000	5,000	5,000	5,200
Salt:						
Rock salt	thousand metric tons	3	3	3	3	3
Other	do.	15,500	16,000	16,000	16,500	17,000
Total	do.	15,500	16,000	16,000	16,500	17,000
Sand:						
Calcareous	do.	265	270	275	280	285
Silica	do.	1,600	1,600	1,700	1,700	1,800
Other	do.	3,200	3,100	3,200	3,300	3,400
Slate		12,500	13,000	13,500	14,000	14,500
Soda ash		1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Stone, sand and gravel:						
Calcite		54,000	54,000	55,000	55,000	56,000
Dolomite	thousand metric tons	3,000	3,100	3,100	3,100	3,200
Limestone	do.	123,000	125,000	127,000	130,000	132,000
Quartz and quartzite	do.	270	280	280	280	290
Sulfur, byproduct from fertilizer plants		14,000	15,000	14,000	15,000	14,000
Talc and related materials:						
Pyrophyllite		86,000	87,000	87,000	88,000	90,000
Steatite, soapstone		560,000	555,000	560,000	550,000	550,000
Vermiculite		10,539 [r, 4]	9,639 [r, 4]	11,742 [r, 4]	12,000 [r]	12,000
Wollastonite		125,000	120,000	125,000	135,000 [r]	145,000
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	350,000	380,000	420,000	450,000	480,000
Lignite	do.	26,000	25,000	26,000	25,000	27,000
Total	do.	376,000	405,000	446,000	475,000	507,000
Gas, natural:						
Gross	million cubic meters	30,000	32,407 [4]	33,061 [4]	35,000	37,000
Marketable	do.	28,000	27,069 [4]	27,457 [4]	30,000	32,000
Petroleum:						
Crude	thousand 42-gallon barrels	250,000	254,000 [4]	253,000 [4]	255,000	260,000
Refinery products:						
Liquefied petroleum gas	do.	45,000	49,000 [4]	53,000 [4]	55,000	58,000
Gasoline	do.	85,000	101,000 [4]	119,000 [4]	125,000	130,000
Kerosene and jet fuel	do.	120,000	127,000 [4]	122,000 [4]	120,000	125,000
Distillate fuel oil	do.	400,000	432,000 [4]	468,000 [4]	480,000	490,000
Residual fuel oil	do.	100,000	117,000 [4]	130,000 [4]	140,000	145,000
Other	do.	340,000	330,000 [4]	319,000 [4]	315,000	310,000
Total	do.	1,090,000	1,156,000 [4]	1,211,000 [4]	1,240,000	1,260,000

[r]Revised. do. Ditto.

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

[2]Table includes data available through October 3, 2011.

[3]In addition to the 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.

[4]Reported figure.

[5]Excludes production from steel miniplants.

[6]Not elsewhere specified.

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

TABLE 2
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(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., 39.6%)	Belgaum refinery, Karnataka	280
Do.	National Aluminium Co. Ltd. (Government, 100%)	Dhamanjodi refinery, Orissa	1,580
Do.	Bharat Aluminium Co. Ltd. [Government, 49%, and Sterlite Industries (India) Ltd., 51%]	Korba refinery, Chhattisgarh	200
Do.	Utkal Alumina International Ltd. (Hindalco Industries Ltd., 100%)	Koraput refinery, Orissa	1,500
Do.	Madras Aluminium Co. Ltd. [Sterlite Industries (India) Ltd., 80%, and others, 20%]	Mettur refinery, Tamil Nadu	80
Do.	Indian Aluminium Co. Ltd. (Indian interests, 60.4%, and Alcan Aluminium Ltd., 39.6%)	Muri refinery, Jharkhand	88
Do.	Hindalco Industries 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., 39.6%)	Alupuram smelter, Kerala	20
Do.	National Aluminium Co. Ltd. (Government, 100%)	Angul smelter, Orissa	345
Do.	Indian Aluminium Co. Ltd. (Indian interests, 60.4%, and Alcan Aluminium Ltd., 39.6%)	Belgaum smelter, Karnataka	70
Do.	Hindalco Industries Ltd. (Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Hirakud smelter, Orissa	100
Do.	Bharat Aluminium Co. Ltd. [Government, 49%, and Sterlite Industries (India) Ltd., 51%]	Korba smelter, Chhattisgarh	350
Do.	Madras Aluminium Co. Ltd. [Sterlite Industries (India) Ltd., 80%, and others, 20%]	Mettur smelter, Tamil Nadu	40
Do.	Hindalco Industries 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.	Vijayalaxmi Minerals Trading Co.	do.	50
Bauxite	Bharat Aluminium Co. Ltd. [Government, 49%, and Sterlite Industries (India) Ltd., 51%]	Amarkantak Mine, Madhya Pradesh	200
Do.	Indian Aluminium Co. Ltd. (Indian interests, 60.4%, and Alcan Aluminium Ltd., 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%)	Mines in Lohardaga District, Jharkhand	750
Do.	Indian Aluminium Co. Ltd. (Indian interests, 60.4%, and Alcan Aluminium Ltd., 39.6%)	do.	200
Do.	National Aluminium Co. Ltd. (Government, 100%)	Mines in Panchpatmali Hills, Koraput District, Orissa	4,800
Do.	Minerals & Minerals Ltd. (Government, 100%)	Mines in Richuguta, Palamau District, Jharkhand	200
Boron	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
Do.	Ambuja Cements Ltd. (Holcim Group, 14.8%)	Plants in 7 States	14,000

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(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., 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.		Dalmia Bharat Enterprises Ltd.	Dalmiapuram and Ariyalur, Tamil Nadu; and Kadapa, Andhra Pradesh	9,000
Do.		The Associated Cement Cos. (ACC) Ltd. (Government, 34.86%; Holcim Ltd., 46%; and private shareholders, 19.14%)	Gagal plant, Himachal Pradesh	1,830
Do.		Raymond Cement Works (a division of Raymond Woolen Mills Ltd., JK Singhania, principal shareholder)	Gopalnagar plant, West Bengal	1,250
Do.		Shree Cement Ltd.	Haridwar plant, Uttarakhand	1,800
Do.		Rajashree Cement (a division of Indian Rayon and Industries Ltd., 100%)	Khor plant, Karnataka	1,020
Do.		The Associated Cement Cos. (ACC) Ltd. (Government, 34.86%; Holcim Ltd., 46%; and private shareholders, 19.14%)	Kymore plant, Madhya Pradesh	1,500
Do.		My Home Industries Ltd. (joint venture of My Home Group and CRH plc)	Mellacheruvu and Visakhapatnam in Andhra Pradesh	4,600
Do.		Mysore Cements Ltd. (Government institutions and banks, 41.13%; Corporate Trust Holdings, 21.70%; others, 37.17%)	Narasingarh plant, Haryana	1,090
Do.		Cement Corp. of India Ltd. (Government, 100%)	Nayagaon plant, Madhya Pradesh	1,330
Do.		JK Cement Works (a division of JK Synthetics Ltd.), 100%	Nimbahera plant, Rajasthan	1,460
Do.		OCL India Ltd.	Orissa	1,850
Do.		The India Cement Co. Ltd. (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.		Jaiprakash Associates Ltd.	Sewagram, Gujarat	2,400
Do.		Shree Digvijay Cement Co. Ltd.	Shreeniwas plant, Maharashtra	1,070
Do.		JK Lakshmi Cement Ltd. (a division of Straw Products Ltd., JK Singhania, principal shareholder)	Sirohi plant, Rajasthan and Ahmadabad, Gujarat	4,700
Do.		Lafarge S.A.	Sonadih, Chhattisgarh	1,400
Do.		Manikgarth Cement [Century Textiles and Industries Ltd. (a subsidiary of the Birla Group, 100%)]	Tehsil Rajura plant, Maharashtra	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 State government, 50%, and Development Co. Ltd., 50%)	Vishnupuram plant, Andhra Pradesh	1,000
Do.		The Associated Cement Cos. (ACC) Ltd. (Government, 34.86%; Holcim Ltd., 46%; and private shareholders, 19.14%)	Wadi plant, Karnataka	2,180
Chromium		Ferro Alloys Corp. Ltd.	Cuttack District, Orissa	120
Do.		Orissa Mining Corp. Ltd. (Orissa Industries Ltd., 100%)	do.	300
Do.		Tata Steel	do.	100
Do.		Ferro Alloys Corp. Ltd.	Dhenkanal and Kendujhar District, Orissa	150
Do.		Orissa Mining Corp. Ltd. (Orissa Industries Ltd., 100%)	do.	200
Do.		Mysore Minerals Ltd.	Hassan District, Karnataka	125
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 Government-owned Coal India Ltd., 100%)	Bihar and West Bengal	26
Do.	do.	Central Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Bihar	27
Do.	do.	Eastern Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Bihar and West Bengal	21

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(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	Mahanadi Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Orissa	21
Do.	do.	North Eastern Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Assam	640
Do.	do.	Northern Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Madhya Pradesh and Uttar Pradesh	24
Do.	do.	Singareni Collieries Co. Ltd. (Andhra Pradesh State government, 50%, and Government, 50%)	Andhra Pradesh	18
Do.	do.	South Eastern Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Madhya Pradesh	36
Do.	do.	Western Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Madhya Pradesh and Maharashtra	18
Coal, lignite	do.	Neyveli Lignite Corp. Ltd. (NLC) (Government, 100%)	Tamil Nadu	17
Copper, mine		Hindustan Copper Ltd. (HCL) (Government, 100%)	Indian Copper Complex Mines, Ghatsila District, Jharkhand	31
Do.		do.	Khetri Copper Complex Mines, Khetrinagar Rajasthan	15
Do.		do.	Malanjkhand Copper Complex Mines, Balaghar District, Madhya Pradesh	22
Copper, metal		Hindalco Industries Ltd. (Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Birla Copper Complex smelter, Dahej, Gujarat	70
Do.		Hindustan Copper Ltd. (HCL) (Government, 100%)	Indian Copper Complex smelter-refinery, Ghatsila District, Jharkhand	20
Do.		do.	Khetri Copper Complex smelter-refinery, Khetrinagar District, Rajasthan	45
Do.		Sterlite Industries (India) Ltd.	Tuticorin smelter, Tamil Nadu	400
Do.		do.	Silvassa refinery, Gujarat	300
Do.		Jhagadis Copper Ltd.	Jhagadia, Gujarat	50
Diamond	carats	National Mineral Development Corp. Ltd. (NMDC) (Government, 100%)	Mahjgawan Mine	25,000
Gold	kilograms	Hutti Gold Mines Co.	Hutti Mine, Karnataka	3,000
Graphite		Agrawal Graphite Industries Ltd.	Belpara District, Orissa	10
Iron and steel, crude steel		Visvesvaraya Iron and Steel Ltd. (Karnataka State government, 60%, and Government-owned Steel Authority of India Ltd., 40%)	Bhadravati steel plant, Karnataka	180
Do.		Steel Authority of India Ltd. (Government, 100%)	Bhilai steel plant, Jharkhand	4,930
Do.		do.	Bokaro steel plant, Jharkhand	4,600
Do.		Indian Iron and Steel Co. Ltd. (a wholly owned subsidiary of Government-owned Steel Authority of India Ltd.), 100%	Burnpur steel plant, West Bengal	1,500
Do.		Ispat Industries Ltd.	Dolvi, Maharashtra	3,000
Do.		Steel Authority of India Ltd. (Government, 100%)	Durgapur steel plant, West Bengal	1,600
Do.		Tata Steel Ltd.	Jamshedpur steel plant, Jharkhand	6,800
Do.		do.	Jagdalpur, Chattisgarh	2,000
Do.		do.	Duburi, Orissa	3,000
Do.		Steel Authority of India Ltd. (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	7,800
Do.		Ministeel plants (privately owned)	180 plants located throughout India	4,700
Do.		Essar Steel Co. Ltd.	Hazira, Gujarat	3,000
Do.		Lloyds Steel Industries Ltd.	Wardha, Maharashtra	500
Do.		MSP Steel and Power Ltd.	Raipur, Chhattisgarh	750

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Iron ore	National Mineral Development Corp. Ltd. (NMDC) (Government, 100%)	Bailadila, Chhattisgarh	9,000
Do.	Steel Authority of India Ltd. (Government, 100%)	Bastar and Durg District, Chhattisgarh	7,000
Do.	Kudremukh Iron Ore Co. Ltd. (Government, 100%)	Kudremukh, Chikmagalur District, Karnataka	10,300
Do.	National Mineral Development Corp. Ltd. (NMDC) (Government, 100%)	Donimalai, Karnataka	9,000
Do.	Chowgule and Co. Ltd.	Goa	2,500
Do.	Dempo Mining Corp. Ltd.	do.	2,500
Do.	V.M. Salgaocar & Bros. Pvt. Ltd.	do.	2,500
Do.	Sesa Goa Ltd. (Vedanta Resources plc, 51%)	Codli and Sonshi, Goa	NA
Do.	Steel Authority of India Ltd. (Government, 100%)	Kendujhar District, Orissa	3,000
Do.	Tata Steel	do.	2,000
Do.	Indian Iron and Steel Co. Ltd. (a wholly owned subsidiary of Government-owned Steel Authority of India Ltd.), 100%	Singhbhum District, Bihar	2,500
Do.	Steel Authority of India Ltd. (Government, 100%)	do.	3,500
Do.	Tata Steel	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 Ltd. (HCL) (Government, 100%)	do.	22
Lead:			
Primary	Hindustan Zinc Ltd. (HZL) (Sterlite Opportunities and Ventures Ltd., 64.9%, and Government, 29.5%)	Chanderiya smelters, Rajasthan	85
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. (HZL) (Sterlite Opportunities and Ventures Ltd., 64.9%, and Government, 29.5%)	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. (Government, 100%)	Salem, Tamil Nadu	150
Do.	Dalmia Magnesite Corp.	do.	72
Do.	Tamil Nadu Magnesite Ltd. (Tamil Nadu State government, 100%)	do.	150
Manganese ore[2]	Manganese Ore India Ltd. (Government, 100%)	Adilabad, Andhra Pradesh	NA
Do.	Falechand Marsingdas	Andhra Pradesh	NA
Do.	Manganese Ore India Ltd. (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. (Government, 100%)	Bhandara, Maharashtra	NA
Do.	Eastern Mining Co.	North Kanara, Karnataka	NA
Do.	Mysore Minerals Ltd.	do.	NA
Do.	Manganese Ore India Ltd. (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

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Manganese ore[2]—Continued		Tata Steel	Keonjhar, Orissa	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 Steel	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
Petroleum, refined products	thousand 42-gallon barrels per day	Cochin Refineries Ltd. (Oil and Natural Gas Corp., 55%, and private interests, 45%)	Ambalamugal refinery, Kerala	93
Do.	do.	Indian Oil Corp. (Oil and Natural Gas Corp., 91%, and private interests, 9%)	Barauni refinery, Bihar	66
Do.	do.	Bongaigaon Refinery and Petrochemicals Ltd. (a subsidiary of Government-owned Oil and Natural Gas Corp.), 100%	Bongaigaon refinery, Assam	27
Do.	do.	Indian Oil Corp. (Oil and Natural Gas Corp., 91%, and private interests, 9%)	Digboi refinery, Assam	12
Do.	do.	do.	Guwahati refinery, Assam	20
Do.	do.	do.	Haldia refinery, West Bengal	61
Do.	do.	Reliance Industries Ltd.	Jamnagar refinery, Gujarat	1,240
Do.	do.	do.	Koyali refinery, Gujarat	185
Do.	do.	Madras Refineries Ltd. (Oil and Natural Gas Corp., 52%, and private interests, 48%)	Madras refinery, Tamil Nadu	131
Do.	do.	Bharat Petroleum Corp. Ltd. (Oil and Natural Gas Corp., 67%, and private interests, 33%)	Mahul refinery, Mumbai, Maharashtra	135
Do.	do.	Hindustan Petroleum Corp. Ltd. (Oil and Natural Gas Corp., 51%, and private interests, 49%)	do.	110
Do.	do.	Essar Oil Ltd.	Vadinar refinery, Gujarat	300
Do.	do.	do.	Visakhapatnam refinery, Andhra Pradesh	90
Do.	do.	Indian Oil Corp. (Oil and Natural Gas Corp., 91%, and private interests, 9%)	Mathura refinery, Uttar Pradesh	156
Do.	do.	do.	Panipat refinery, Haryana	240
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, Jharkhand	NA
Do.		Rajasthan State Mines and Minerals Ltd. (Rajasthan State government, 100%)	Jhamarkotra Mine, Rajasthan	NA
Do.		Hindustan Zinc Ltd. (HZL) (Sterlite Opportunities and Ventures Ltd., 64.9%, and Government, 29.5%)	Maton Mine, Rajasthan	NA
Titanium, ilmenite-rutile ore		Kerala Minerals and Metals Ltd. (Kerala State government, 100%)	Chavara, Kerala	100
Do.		Indian Rare Earths Ltd. (IREL) (Government, 100%)	do.	250
Do.		do.	Ganjam, Orissa	220
Do.		do.	Manavalakurichi, Tamil Nadu	65
Do.		Trimex Industries Ltd.	Chennai, Andhra Pradesh	200
Do.		VV Minerals Ltd.	Kanyakumari, Tamil Nadu	130

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity[e]
Zinc	Binani Zinc Ltd.	Binanipuram smelter, Kerala	38
Do.	Hindustan Zinc Ltd. (HZL) (Sterlite Opportunities and Ventures Ltd., 64.9%, and Government, 29.5%)	Chanderiya smelter, Rajasthan	340
Do.	do.	Debari smelter, Rajasthan	78
Do.	do.	Visakhapatnam (Vizag) smelter, Andhra Pradesh	54

[e]Estimated. Do., do. Ditto. NA Not available.

[1]Scheduled startup is delayed to 2011.

[2]Capacity of clusters of surface mines varies extremely, depending on demand. Estimated total capacity is 1.8 million metric tons per year (Mt/yr).

[3]Estimated total phosphate rock capacity is 1.2 Mt/yr.

TABLE 3
INDIA: ESTIMATED RESERVES OF MAJOR MINERAL COMMODITIES IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Reserves
Barite		34,000
Bauxite		539,000
Chromite ore		54,000
Coal:		
Bituminous		106,000,000
Lignite		39,000,000
Copper ore		394,000
Gold, in metal	kilograms	67,000
Graphite		5,200
Ilmenite and rutile		193,000
Iron ore		8,120,000
Kyanite and sillimanite		1,380
Lead and zinc ore		63,000
Limestone		7,500,000
Magnesite		70,000
Manganese ore		77,000
Phosphate rock		34,800
Talc and pyrophyllite		74,600
Zircon		1,350

Source: Indian Minerals Yearbook 2009, Indian Bureau of Mines.