



2012 Minerals Yearbook

INDIA

THE MINERAL INDUSTRY OF INDIA

By Chin S. Kuo

India has significant resources of metallic and industrial minerals. The country's reserves and resources of barite, bauxite, chromium, coal, iron ore, limestone, and manganese ore were all among the 10 largest in the world. The country produced 10 metals, 47 industrial minerals, 23 minor minerals, 4 mineral fuels, and 3 atomic minerals. In terms of output, India was ranked second in the production of barite, graphite, and talc, and third in the production of chromite, coal, rare earths, and zinc (slab) in the world. The country was also among the world's eight leading producers of aluminum, bauxite, iron ore, kyanite, manganese ore, mica (sheet), and steel (Ministry of Mines, 2013, p. 15, 191–194).

For the most part, the State governments own the minerals within their territorial jurisdiction and the national Government owns the minerals in the offshore areas. In India, the per capita consumption of most metals, including aluminum, copper, lead, zinc, and related products, was one of the lowest in the world. In the next 15 years, however, the demand for metals and minerals is likely to increase by four to five times owing to the improvement in living standards. Because these raw materials are vital for infrastructure, capital goods, and basic industries, development of a sustainable mining industry was the Government's top priority.

Minerals in the National Economy

In 2012, the mineral sector's contribution to the gross domestic product was 2.6%, and this percentage was likely to increase to between 3% and 4% in the near future owing to increasing domestic demand for, and therefore production of, metals and minerals. Overall mineral production in terms of tonnage decreased by 5.1% in 2012, and the total value of mineral production decreased by 0.1%. Mineral fuels accounted for 66.9% of the total value; metals, 18.5%; and industrial minerals, 14.7%. In 2011 (the latest year for which data were available), the value of mineral exports increased by 29.14% and that of mineral imports increased by 27.47% compared with those of 2010 (Ministry of Mines, 2013, p. 11–12, 185–186).

Government Policies and Programs

The Government was considering lifting its 25-year ban on issuing new asbestos mine licenses if the mining companies met the country's health and safety standards. The State of Rajasthan held a large deposit of asbestos, but its mines were idle. Only three private asbestos mines were active in the State of Andhra Pradesh, and together they produced a few hundred metric tons per year (t/yr) of chrysotile. Almost all the asbestos used in India was imported from Brazil, Canada, Kazakhstan, Russia, and Zimbabwe. About 90% of asbestos was used in roofing sheet, 5% was used for drinking water pipes, and the rest was used for vehicle brake linings and other products (Verma, 2012).

The Government imposed a 2% tax on imports of cut and polished diamond in 2012. The prices of these items subsequently went up by 2%. There was no effect on exports of cut and polished diamond, as most of the diamond was cut and polished in India. In addition, gold and platinum imports were each subject to a 2% tax. The import duty on silver was set at 6% of its import value (Diamonds.net, 2012).

Production

In 2012, production of such mineral commodities as barite, cement, bituminous coal, gem diamond, pig iron, and silver increased by more than 10% whereas output of cobalt, fire-refined copper, gold, iron ore, and manganese ore and concentrate (and their Mn content) decreased by more than 10%. The decrease (by 38%) in the production of cobalt metal was owing to one of the producers (Rubamin) operating below its capacity. Reduction in iron ore production by 19% was owing to the increase in mining taxes and the court-imposed partial ban and restriction on iron ore mining in the States of Karnataka and Odisha, respectively. In the State of Goa, iron ore production was suspended. Production of silver increased by 62% whereas that of gold was estimated to have decreased by 22%. For the industrial minerals, output levels remained about the same, except for gem diamond, which increased by 125% owing to strong demand in the domestic jewelry industry (table 1).

Structure of the Mineral Industry

India's mineral sector includes mining and mineral processing industries, which are the backbone of the country's industrial production. The mineral sector provides the basic raw materials to the manufacturing sector. India's mining 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). The public sector companies accounted for 67.7% of the total value of mineral production. The number of mines that reported mineral production was 3,108 in 2012 and included 1,976 industrial mines, 559 metal mines, and 573 coal mines. Production from opencast mines accounted for 80% of the total mine output. The number of underground operations decreased to 82. Total employment in the mineral industry was estimated to be more than 500,000 (table 2; Ministry of Mines, 2013, p. 13).

Mineral Trade

The total value of exports of ores and minerals was about \$27.7 billion in 2011 (the latest year for which data were available). Diamond (mostly cut and polished) was the principal item of export, accounting for 76.4% of all mineral and ore

exports; iron ore, 12.7%; granite, 3.6%; and alumina, 0.1%. The total value of imports of fuels, minerals, and ores was about \$160 billion. Crude petroleum was the main component of these imports, accounting for 68.2%; diamond (rough), 14.0%; coal, 8.4%; natural gas, 3.5%; and copper ore and concentrate, 2.8% (Ministry of Mines, 2013, p. 187–190).

The country continued to be largely self-sufficient in such mineral commodities as bauxite, chromite, ilmenite, iron ore, manganese ore, and rutile, among the metals; and barite, dolomite, feldspar, limestone, silica minerals, sillimanite, and talc, among the industrial minerals (Ministry of Mines, 2013, p. 16).

Commodity Review

Metals

Bauxite and Alumina.—Vedanta Aluminium temporarily shut down its 1-million-metric-ton-per-year (Mt/yr) alumina refinery at Lanjigarh in the State of Odisha in December owing to the unavailability of bauxite ore. To run the refinery at full capacity, the company needed 300,000 metric tons (t) of high-grade bauxite each month and depended on externally sourced bauxite from other States. The Odisha government had committed to providing a total of 150 million metric tons (Mt) of bauxite for the refinery. The closure of the refinery could affect 2,500 workers directly and 4,500 others indirectly. The company's first greenfield aluminum smelter at Jharsuguda in Odisha had a capacity of 500,000 t/yr and produced aluminum using alumina processed at Lanjigarh (Seth, 2012b).

Gold.—Kolar Gold Ltd. announced an update of the gold resource at its Mallapakonda deposit in the Kolar gold belt to 6,070 kilograms (kg) from 1,910 kg (195,000 troy ounces from 61,500 troy ounces) of contained gold. The gold belt is an Archaean greenstone belt located in southern India in the States of Andhra Pradesh, Karnataka, and Tamil Nadu. The gold resource amounted to 3.46 Mt at an average grade of 1.76 grams per metric ton (g/t) gold. The cutoff grade used for resource reporting was 1 g/t gold. The associated silver was at slightly higher values than the gold. Resource drilling was to continue as part of the company's new 160-hole drill program (London Stock Exchange, 2012).

Iron and Steel.—The State government of Goa temporarily suspended all iron ore mining activities owing to some illegalities and irregularities. The mining operations of Sesa Goa Ltd. came to a standstill. The company had a production capacity of 14.5 Mt/yr in Goa. The State of Goa was India's second-ranked producer of iron ore and the leading exporter. The State produced 50 Mt/yr and exported almost all of it. In 2011, the State of Karnataka banned iron ore mining, but later the Supreme Court allowed partial mining. The State of Odisha restricted the iron ore output of 10 mining companies, allowing them to produce only the amount needed for their internal use, which resulted in a production decrease in the State of 27 Mt for the year (Mineweb.com, 2012).

NSL Consolidated Ltd. of Australia produced the first salable beneficiated iron ore from its Kurnool dry separation plant in the State of Andhra Pradesh. The beneficiated ore had a grade of 58% iron. The plant would source its feed from the nearby

Mangal iron ore mine. The company expected to produce 200,000 t/yr of beneficiated ore in the first phase of operations. The company also was scheduled to complete construction of a wet beneficiation plant that could produce grades of between 58% and 62% iron in 2013 (Feary, 2012).

Under a modernization and expansion program, the production capacity of the Bhilai steel plant, which was a unit of Steel Authority of India Ltd. (SAIL), would increase to 7 Mt/yr of crude steel from 4.9 Mt/yr. The existing Dalli Rajhara iron ore mine had a remaining reserve of 80 Mt with increasing silica content in the ore. To sustain the expanded level of production, new mines at Raoghat were being developed with associated facilities and a 95-kilometer (km) railroad was being constructed by Indian Railways from Rajhara to Raoghat (Hindu, The, 2012).

Platinum-Group Metals.—The Geological Survey of India discovered platinum-group metals (PGMs) and chromite reserves in the Dhenkanal District in the State of Odisha. Deposits of chromite were found in numerous small patches of ultramafic and basic rocks occurring within the gneissic rocks. Deposits of PGMs were found within a 1-meter (m)-thick band in the Chander region and in the Bangur region in the Keonjhar District in the Baula-Nuasahi ultramafic belt where a resource of 14.2 Mt was estimated. Four prospects for PGMs were also found in the States of Karnataka (1), Odisha (1), and Tamil Nadu (2) (Das, 2012a).

Industrial Minerals

Barite.—Andhra Pradesh Mineral Development Corp., which was a state-owned mineral exporter, issued a 36,000-t/yr tender for barite powder for 2 years. The material would come from its Mangampet barite project in Andhra Pradesh. In India, the company owned most of the country's barite reserves and produced 77% of the Nation's barite output. The company's production capacity was 1.6 Mt/yr of barite. It also had two granite projects, two limestone quarries, and a ball clay extraction facility (Sharma, 2012).

Cement.—Dalmia Cement (Bharat) Ltd. acquired a 50% stake in Calcom Cement India Ltd. for \$47 million. Calcom Cement operated a 1-Mt/yr clinker plant in the State of Assam. Calcom Cement was in the process of expanding its production capacity to 2.1 Mt/yr and had a presence in markets in northeastern India. Dalmia Cement had the capacity to produce 9 Mt/yr of cement and also held about a 45% interest in OCL India Ltd., which had a production capacity of 5.5 Mt/yr. Dalmia Cement planned to set up two greenfield cement plants in the State of Karnataka with a capacity of 2.5 Mt/yr each (Global Cement News, 2012b).

India Cements planned a brownfield expansion totaling 3 Mt/yr at two of its cement plants (Dalavoi and Sankaridurg) in the State of Tamil Nadu. At Dalavoi, a new line would be added to increase the cement plant's existing 2.16-Mt/yr capacity by 2.55 Mt/yr, and a 40-megawatt (MW)-capacity powerplant (incorporating two 20-MW units) would also be set up. At Sankaridurg, the production capacity of the 700,000-t/yr-capacity cement plant would be doubled to 1.4 Mt/yr of cement (Aggregate Research, 2012c).

Burnpur Cement Ltd. planned to set up an 800-metric-ton-per-day (t/d) integrated cement plant at Patratu in the State of Jharkhand. The State government had allotted the nearby limestone mines at Benti Bagda to the company. The first phase of construction was expected to be completed in March 2013, and production would begin in April. The company had a cement plant at Asansol with a production capacity of 1,000 t/d (Aggregate Research, 2012a).

OCL India Ltd. planned to raise \$40 million from the International Finance Corp. to help invest in the company's new \$102 million 1.35-Mt/yr grinding plant at Medinipur in the State of West Bengal. The plant was expected to be operational by January 2014 and would use clinker from the company's existing plant at Rajgangpur in the State of Odisha (International Cement Research, 2012b).

Associated Cement Cos. Ltd. planned to increase its production capacity to 35 Mt/yr from 10 Mt/yr of cement with an investment of \$650 million. The company planned to set up a 4-Mt/yr cement unit and a 2.8-Mt/yr clinker unit at Jamul in the State of Chhattisgarh. Grinding units were also planned at Sindri in the State of Jharkhand and at Kharagpur in the State of West Bengal (Global Cement News, 2012a).

Lafarge S.A. of France planned to increase its production capacity in India to 8 Mt/yr from 6.5 Mt/yr of cement. The company had four cement plants in the country—at Arasmeta and Sonadih in Chhattisgarh, at Jojobera in Jharkhand, and at Mejia in West Bengal. Production lines at Jojobera and Mejia were commissioned in 2012. The company also had four greenfield cement projects in the States of Himachal Pradesh, Karnataka, Meghalaya, and Rajasthan, respectively (Aggregate Research, 2012d).

JK Lakshmi Cements planned to revive operations at its Udaipur cement plant to increase the production capacity by 1.4 Mt/yr in the next 2 years. The revival of the plant was expected to be completed in September 2014. The company's expansion plan was to increase clinker capacity at its unit in the State of Rajasthan to 4.3 Mt/yr by 0.5 Mt/yr and to construct a 2.7-Mt/yr greenfield cement plant at Durg in the State of Chhattisgarh. The company's total capacity would increase to nearly 10 Mt/yr from the current 5.3 Mt/yr (International Cement Research, 2012a).

Clay and Shale.—A leading Indian kaolin producer, 20 Microns Ltd., expanded production of calcined kaolin at its Bhuj plant to 65,000 t/yr from 40,000 t/yr. The company exported 35% of its output to the Asia and the Pacific region, to the Middle East, and to Western Europe. English India Clays Ltd., which was the leading single producer of kaolin in Asia, had a capacity of 240,000 t/yr from its Veli plant in the State of Kerala and produced 180,000 t/yr of hydrous kaolin and 60,000 t/yr of calcined kaolin. Ashapura Group had mine reserves in Kerala of between 2.5 Mt and 3 Mt at grades of 96% kaolinite and operated a 180,000-t/yr plant that produced both hydrous and calcined kaolin (Ollett, 2012).

Diamond.—Rio Tinto plc of the United Kingdom planned to develop India's second diamond mine at Bundelkhand in the State of Madhya Pradesh. The project at prefeasibility stage covered 954 hectares (ha), and it would take 8 to 10 years to develop the deposit into an operational mine. Data indicated

a field of eight kimberlitic rock pipes containing an estimated 27.4 million carats of diamond. The prefeasibility study of the project was expected to be completed in December 2012. The company planned to mine the Atri deposit first, which was the largest of the kimberlitic pipes. India's first diamond mine was at Majhgawan, Panna District, in Madhya Pradesh (Economic Times, The, 2012).

Feldspar.—Producers of ceramic tiles and sanitaryware asked the Government to ban exports of feldspar and quartz. The industries consumed about 84% of domestic feldspar production. Strong foreign demand for these two minerals resulted in increased exports, which led to a local shortage and price increases. Shortage of these minerals would force domestic industries to rely heavily on imports, which could result in higher costs and more expensive end products (Feytis, 2012a).

Graphite.—India was the second-ranked producer of graphite in the world after China. Its reserves of 11 Mt ranked India as the country with the second largest reserves after China. Graphite deposits of economic importance were found in the States of Andhra Pradesh, Arunachal Pradesh, and Chhattisgarh. Graphite was produced in the States of Jharkhand, Odisha, and Tamil Nadu. Three of the major graphite producers were Agrawal Graphite Industries, Tamil Nadu Minerals Ltd., and Tirupati Carbons and Graphite Pvt. Ltd. Tirupati's new project, which would include an enhanced processing plant, would produce 800 metric tons per month of high-quality flake graphite. Chotanagpur Graphite Industries, in a joint venture with Mega Graphite, was expected to increase the existing production in Jharkhand by 5,000 to 9,000 t/yr of high-quality graphite. Agrawal Graphite Industries was building a new high-purity graphite processing plant with an installed capacity of 2,000 t/yr. The main processing plant at Belpara in Odisha had an installed capacity of 12,000 t/yr of processed graphite (Salwan, 2012).

Rare Earths.—India was the world's third-ranked producer and was home to large deposits of light rare-earth minerals, which are found in the sands of the country's coastlines. The country had reserves of about 3.1 Mt of rare-earth minerals, the most after China, the United States, and the Commonwealth of Independent States. State-owned Indian Rare Earths Ltd. was building a \$25 million rare-earth processing plant with a capacity of 11,000 t/yr in Puri District in the State of Odisha and was expecting operations to begin in September 2012. The plant's production would account for 4% of global rare-earth elements output. The refined product would be separated at the company's Aluva facility (Cordier, 2012; Mukherji and Wright, 2012).

Toyota Tsusho and its Indian subsidiary Toyotsu Rare Earths Orissa Pvt. Ltd. were constructing a processing plant for rare-earth oxides (REOs) in Odisha. Elements to be produced included cerium, lanthanum, and neodymium. Production at the plant would reach 4,000 t/yr of REOs, all for export to Japan, which would meet 14% of Japan's annual consumption (Currie, 2012).

Soda Ash.—Gujarat Heavy Chemicals Ltd., which was one of India's leading soda ash producers, was closed by the Gujarat Pollution Control Board for causing water and air pollution. The company's 850,000-t/yr synthetic soda ash plant was located at Sutrapada in the State of Gujarat (Lismore, 2012).

Sulfur.—India relied on imports of 1.8 Mt/yr of sulfur for its fertilizer industry. The country consumed 3.8 Mt/yr of sulfur, of which 2 Mt/yr was used for fertilizers, and was expected to increase its sulfur consumption by 18% to 4.5 Mt/yr by 2016, of which 2 Mt/yr would be imported. India produced 2.4 Mt/yr of sulfur, including 1.4 Mt/yr from oil refineries and 1 Mt/yr from copper and zinc smelters. The country exported 400,000 t/yr of its domestic sulfur (Feytis, 2012b).

Mineral Fuels and Related Materials

Coal.—Coal India Ltd. (CIL) objected to the supply of discounted coal to domestic aluminum, cement, and steel sectors that sold their end products at free market rates not regulated by the Government. The objection was a sign that raw material costs could rise for the infrastructure sector. Such a move would affect such companies as Grasim Industries Ltd., Hindalco Industries Ltd., and Lafarge India Pvt. Ltd. CIL supplied 312 Mt of coal to the power sector at negotiated prices through long-term agreements and fuel supply pacts; these prices were about one-half the price of coal sold on the international market (Aggregate Research, 2012b).

SAIL was looking for mining contractors to develop its Tasra coking coal deposit in the State of Jharkhand, which had a reserve of 117 Mt. It planned to increase production to 4 Mt/yr with an investment of \$370 million; the expansion would include a coal washery. The company was considering offering washed coal rejects to contract miners in exchange for setting up a powerplant near the mine site. Coking coal accounted for 30% of SAIL's steel production cost. SAIL consumed 14 Mt/yr of coking coal to produce 16 Mt/yr of steel. The company had domestic supplies of 4 Mt/yr of coking coal from its captive mines and from CIL; the balance of the coking coal used was imported (Das, 2012b).

Petroleum.—Essar Oil Ltd. completed a \$1.81 billion expansion of its Vadinar oil refinery and a 7.5-Mt/yr isomerization unit in the State of Gujarat in 2011. The refinery was India's second largest refinery in terms of capacity. The expansion increased the refinery's capacity to 375,000 barrels per day (bbl/d) from the 300,000 bbl/d. Plans were underway in September 2012 to further increase the refinery's capacity to 405,000 bbl/d (Oil & Gas Journal, 2012).

Uranium.—The Governments of Canada and India finalized a deal that would allow a nuclear cooperation agreement to be implemented. The agreement would allow Canadian companies to export and import controlled nuclear equipment, materials, and technology to and from India's facilities for civilian and peaceful applications. Canada had large and high-quality reserves of uranium and produced uranium in the Province of Saskatchewan; it could become a significant supplier to India. In India, uranium reserves were found in the States of Andhra Pradesh and Jharkhand, and Uranium Corp. of India Ltd. (UCIL) mined small amounts of uranium in Andhra Pradesh (World Nuclear News, 2012).

UCIL commissioned a \$208 million uranium processing plant at its Tummalapalle underground mine in Andhra Pradesh, which was estimated to have one of the world's largest uranium reserves (150,000 t U). A second uranium processing plant was also planned. The plant would treat dolomite/limestone-based uraniferous ore

using an alkali leaching processing method. In the first phase, it would process 3,000 t/d of ore, which would be increased to 4,500 t/d in the second phase. India's first uranium mine was located at Jaduguda in the State of Jharkhand (Seth, 2012a).

Reserves and Resources

The country's mineral resources include large deposits of barite, bauxite, chromium, coal, iron ore, limestone, manganese, and uranium. Barite deposits occur in the State of Andhra Pradesh. Bauxite resources are found in the States of Andhra Pradesh, Chhattisgarh, Gujarat, and Odisha. Iron ore deposits in the form of hematite and magnetite occur in the States of Bihar, Karnataka, Madhya Pradesh, Odisha, and Tamil Nadu. India's coal resources amounted to 277 billion metric tons (Gt) and are located in the States of Andhra Pradesh, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, 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 the minerals and metals that constitute the primary raw materials for its various industries. The Government's lifting of the ban on new asbestos mining is expected to increase asbestos production. Production of alumina and aluminum is expected to increase slightly when Vedanta Aluminium secures the sources for bauxite ore from Odisha and other States in 2013. Owing to the suspension, ban, and restriction of iron ore mining in several States, India is expected to produce less iron ore and to reduce iron ore exports in the near future. Cement consumption in India is expected to increase and so is the country's total production capacity. Several cement companies are expected to expand their production capacities by a total of 20 Mt/yr by 2014. Production of rare earths in India is expected to increase because of the addition of two rare-earth processing plants. The country is, by and large, self-sufficient in coal and lignite. By 2015, India's consumption of natural gas is expected to exceed its domestic production. Imports of liquefied natural gas (LNG) are expected to increase gradually as development of the LNG terminals and the pipeline infrastructure progresses.

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TABLE 1
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2008	2009	2010	2011	2012	
METALS						
Aluminum:						
Bauxite, gross weight	thousand metric tons	21,210 ^{r,4}	16,000 ^r	18,000 ^r	19,000 ^r	19,000
Alumina, Al ₂ O ₃ equivalent	do.	3,820	3,900	3,640	3,880	3,900
Metal, primary	do.	1,402 ⁴	1,598 ⁴	1,607 ⁴	1,667 ⁴	1,700
Cadmium metal		599 ⁴	627 ⁴	632 ⁴	616 ⁴	620
Chromium, chromite, gross weight	thousand metric tons	3,900 ⁴	3,760 ⁴	3,800	3,850	3,900
Cobalt metal ⁴		858	1,001	1,187 ^r	1,299 ^r	800
Copper:						
Mine output, Cu content ⁴		30,600	29,500	35,500	37,700	34,000
Metal, primary:						
Smelter		651,000 ⁴	705,100 ⁴	748,800 ⁴	670,000 ^{r,4}	680,000
Refinery:						
Electrolytic, cathode ⁴		654,200	705,100	654,900	671,100	670,000
Fire refined		15,000	10,000	9,000	2,000	1,000
Total		669,000	715,000	664,000	673,000	671,000
Gold metal, smelter	kilograms	2,700 ⁴	2,800	2,700	2,300	1,800
Iron and steel:						
Iron ore and concentrate:						
Gross weight	thousand metric tons	213,000 ^r	217,000 ^r	210,000 ^r	177,000 ^r	144,000
Fe content	do.	136,000 ^r	139,000 ^r	134,000 ^r	113,000 ^r	92,000
Metal:						
Pig iron ⁴	do.	29,000	34,000	38,685	43,600 ^r	48,000
Direct-reduced iron ⁴	do.	20,900 ^r	23,400 ^r	24,800 ^r	21,300 ^r	19,700
Ferroalloys:						
Ferrosilicon		92,000	101,337 ⁴	101,000	105,000	108,000
Silicomanganese ⁴		848,700 ^r	875,500 ^r	1,000,000 ^r	1,433,600 ^r	1,522,600
Other		9,000	10,000 ^r	9,000	10,000 ^r	9,000
Steel, crude ⁴	thousand metric tons	57,800	63,500	68,300	73,500 ^r	77,600
Semimanufactures ⁵	do.	49,000	50,000	51,000	53,000	52,000
Lead:						
Mine output, Pb content		87,300 ⁴	92,000	97,000	115,000	118,000
Metal, refined: ⁴						
Primary		62,000	61,700	75,000	120,000	122,000
Secondary		232,000	275,000	305,000	306,000	310,000
Total		294,000	336,700	380,000	426,000	432,000
Manganese:						
Ore and concentrate, gross weight ⁴	thousand metric tons	2,293	2,374	2,858	2,542	2,225
Mn content ⁴	do.	826 ^r	845 ^r	1,013 ^r	895 ^r	800
Selenium	kilograms	14,000	15,000	15,000	16,000	16,000
Silver, mine and smelter output ⁴	do.	96,000	138,100	165,100	203,500	330,000
Titanium mineral concentrates, gross weight:						
Ilmenite		610,000	700,000	540,000	550,000	560,000
Rutile		21,000	21,000	24,000	25,000	26,000
Zinc:						
Mine output, concentrate:						
Gross weight		1,120,000	1,260,000	1,400,000	1,350,000	1,400,000
Zn content ⁴		613,600	695,000	740,000	710,000	750,000

See footnotes at end of table.

TABLE 1—Continued
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2008	2009	2010	2011	2012
METALS—Continued					
Zinc—Continued:					
Metal:					
Primary	545,800 ⁴	584,100 ⁴	663,300 ⁴	750,000	755,000
Secondary	22,000	30,000	37,000	45,000	45,000
Total	568,000	614,000	700,000	795,000	800,000
Zirconium concentrate, zircon, gross weight	30,000	37,000	38,000	39,000	40,000
INDUSTRIAL MINERALS					
Abrasives, natural, n.e.s.: ⁶					
Garnet	125,000	127,000	130,000	133,000	135,000
Jasper	8,900	8,700	8,800	8,900	8,800
Asbestos ⁴	304 ^r	261 ^r	254 ^r	250 ^r	245
Barite thousand metric tons	1,100	1,200	1,300	1,350	1,700
Bromine, elemental	1,500	1,500	1,600 ^r	1,600 ^r	1,700
Cement, hydraulic thousand metric tons	185,000	205,000	220,000	240,000 ^r	270,000
Chalk	125,000	125,000	130,000	130,000	132,000
Clays:					
Ball	430,000	440,000	440,000	450,000	460,000
Fire	390,000	395,000	400,000	410,000	415,000
Kaolin:					
Salable crude thousand metric tons	570	580	580	600	600
Processed do.	210	210	220	220	230
Total do.	780	790	800	820	830
Other do.	85	85	90	90	90
Diamond:					
Gem thousand carats	15	14	13	12	27
Industrial do.	38	38	37	36	35
Total do.	53	52	50	48	62
Feldspar	385,436 ⁴	390,000	400,000	420,000	430,000
Fluorspar:					
Concentrates, metallurgical grade	6,814 ^{r,4}	8,786 ^{r,4}	8,400	8,500	8,600
Other fluorspar materials, acid grade	3,176 ^{r,4}	4,996 ^{r,4}	4,600	4,800	5,000
Gemstones, excluding diamond:					
Agate, including chalcedony pebble	160	160	150	150	140
Graphite ⁷	140,000	130,000	140,000	150,000	160,000
Gypsum thousand metric tons	3,760 ^r	3,500 ^r	4,530 ^r	3,620 ^r	3,600
Kyanite and related materials:					
Kyanite	4,982 ^{r,4}	4,839 ^{r,4}	5,513 ^{r,4}	5,500 ^r	5,600
Sillimanite	38,469 ^{r,4}	33,699 ^{r,4}	37,183 ^{r,4}	37,000 ^r	38,000
Lime thousand metric tons	13,000	13,000	14,000	15,000	15,000
Magnesite	350,000	340,000	345,000	350,000	355,000
Mica:					
Crude	2,241 ^{r,4}	1,161 ^{r,4}	1,265 ^{r,4}	1,689 ^{r,4}	1,700
Scrap and waste	5,140 ^{r,4}	7,495 ^{r,4}	7,508 ^{r,4}	12,095 ^{r,4}	12,000
Total	7,381 ^{r,4}	8,656 ^{r,4}	8,773 ^{r,4}	13,784 ^{r,4}	13,700
Nitrogen, N content of ammonia thousand metric tons	11,100	11,200	11,500	11,800	12,000
Phosphate rock, including apatite do.	1,220	1,230	1,240	1,250	1,260
Pigments, mineral, natural, ocher	1,117 ^{r,4}	890 ^{r,4}	1,237 ^{r,4}	1,100 ^r	1,200
Pyrites, gross weight	120,000	115,000	115,000	110,000	110,000

See footnotes at end of table.

TABLE 1—Continued
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2008	2009	2010	2011	2012	
INDUSTRIAL MINERALS—Continued						
Rare-earth metals, monazite concentrate, gross weight	5,000	5,000	5,200	5,200	5,400	
Salt:						
Rock	thousand metric tons	3	3	3	2	2
Other	do.	16,000	16,500	17,000	16,000	17,000
Total	do.	16,000	16,500	17,000	16,000	17,000
Sand:						
Calcareous	do.	275	280	285	290	295
Silica	do.	1,700	1,700	1,800	1,800	1,900
Other	do.	3,200	3,300	3,400	3,500	3,600
Slate		13,500	14,000	14,500	15,000	15,500
Soda ash	thousand metric tons	1,500	1,400 ^r	1,500	1,400 ^r	1,500
Stone, sand and gravel:						
Calcite		55,000	55,000	56,000	56,000	57,000
Dolomite	thousand metric tons	3,100	3,100	3,200	3,200	3,300
Limestone	do.	127,000	130,000	132,000	135,000	138,000
Quartz and quartzite	do.	280	280	290	290	300
Sulfur:						
Byproduct from metallurgy	do.	1,000	1,000	1,000	1,000	1,000
Byproduct from petroleum	do.	1,400	1,400	1,400	1,400	1,400
Talc and related materials:						
Pyrophyllite		87,000	88,000	90,000	90,000	92,000
Steatite, soapstone		560,000	550,000	550,000	560,000	570,000
Vermiculite		11,742 ⁴	12,000	12,000	13,000	13,000
Wollastonite		125,000	135,000	145,000	150,000	155,000
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	420,000	450,000	480,000	500,000	550,000
Lignite	do.	26,000	25,000	27,000	28,000	30,000
Total	do.	446,000	475,000	507,000	528,000	580,000
Gas, natural:						
Gross	million cubic meters	33,061 ⁴	35,000	37,000	38,000	40,000
Marketable	do.	27,457 ⁴	30,000	32,000	33,000	35,000
Petroleum:						
Crude	thousand 42-gallon barrels	253,000 ⁴	255,000	260,000	265,000	270,000
Refinery products:						
Liquefied petroleum gas	do.	53,000 ⁴	55,000	58,000	60,000	62,000
Gasoline	do.	119,000 ⁴	125,000	130,000	135,000	137,000
Kerosene and jet fuel	do.	122,000 ⁴	120,000	125,000	130,000	133,000
Distillate fuel oil	do.	468,000 ⁴	480,000	490,000	500,000	520,000
Residual fuel oil	do.	130,000 ⁴	140,000	145,000	150,000	152,000
Other	do.	319,000 ⁴	315,000	310,000	300,000	280,000
Total	do.	1,211,000 ⁴	1,240,000	1,260,000	1,280,000 ^r	1,280,000

^rRevised. do. Ditto.

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

²Table includes data available through October 17, 2013.

³In addition to the commodities listed, boron, corundum, diaspore, other gemstones (aquamarine, emerald, garnet, ruby, and spinel), and uranium are produced, but output is not reported, and available information is inadequate to make reliable estimates of output.

⁴Reported figure.

⁵Excludes production from steel miniplants.

⁶Not elsewhere specified.

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

TABLE 2
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(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, Odisha	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, Odisha	1,500 ¹
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
Aluminium	Indian Aluminium Co. Ltd. (Indian interests, 60.4%, and Alcan Aluminium Ltd., 39.6%)	Alupuram smelter, Kerala	20
Do.	Vedanta Aluminium Ltd. (Vedanta Resources plc, 100%)	Jharsuguda, Odisha	500
Do.	National Aluminium Co. Ltd. (Government, 100%)	Angul smelter, Odisha	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, Odisha	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	1,600
Do.	ICL Ltd.	do.	300
Do.	Associated Mineral Corp.	do.	75
Do.	Pragathi Minerals	do.	50
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, Odisha	4,800
Do.	Minerals & Minerals Ltd. (Government, 100%)	Mines in Richuguta, Palamau District, Jharkhand	200
Boron	Borax Morarji Ltd.	Ambernath, Maharashtra	17
Cement	Ultratech Cement Ltd.	11 integrated plants and 15 grinding units	45,000
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	25,000

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(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 Cement (Bharat) Ltd.	Dalmiapuram and Ariyalur, Tamil Nadu; and Kadapa, Andhra Pradesh	9,000	
Do.	Associated Cement Cos. Ltd. (ACC) (Government, 34.86%; Holcim Ltd., 46%; and private shareholders, 19.14%)	Gagal plant, Himachal Pradesh	1,830	
Do.	do.	Chanda plant, Maharashtra	2,520	
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.	OCL India Ltd.	Kapilas and Rajgangpur, Odisha	5,500	
Do.	Rajashree Cement (a division of Indian Rayon and Industries Ltd., 100%)	Khor plant, Karnataka	1,020	
Do.	Associated Cement Cos. Ltd. (ACC) (Government, 34.86%; Holcim Ltd., 50.1%; and private shareholders, 15.04%)	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.	HeidelbergCement India Ltd.	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.	India Cements Co. Ltd. (Government, 26%; Life Insurance Corp. of India, 24%; others, 50%)	Sankarnagar plant and 2 plants, Tamil Nadu; 4 plants, Andhra Pradesh; Mahi plant, Rajasthan	16,000	
Do.	Prism Cement Ltd.	Satna plant, Madhya Pradesh	3,000	
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.	Arasmeta and Sonadih, Chhattisgarh; Jojobera, Jharkhand; and Mejia, West Bengal	1,400	
Do.	Manikgarh 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.	Associated Cement Cos. Ltd. (ACC) (Government, 34.86%; Holcim Ltd., 46%; and private shareholders, 19.14%)	Wadi plant, Karnataka	6,680	
Chromium	Ferro Alloys Corp. Ltd.	Bhadrak, Cuttack District, Odisha	120	
Do.	Orissa Mining Corp. Ltd. (Orissa Industries Ltd., 100%)	do.	300	
Do.	Tata Steel Ltd.	do.	100	
Do.	Ferro Alloys Corp. Ltd.	Dhenkanal and Kendujhar District, Odisha	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	Bharat Coking Coal Ltd. [a subsidiary of Coal India Ltd. (Government, 100%)]	Bihar and West Bengal	26	
Do.	do.	Central Coalfields Ltd. [a subsidiary of Coal India Ltd. (Government, 100%)]	Bihar	27

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(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	Eastern Coalfields Ltd. [a subsidiary of Coal India Ltd. (Government, 100%)]	Bihar and West Bengal	21
Do.	do.	Mahanadi Coalfields Ltd. [a subsidiary of Coal India Ltd. (Government, 100%)]	Odisha	21
Do.	do.	North Eastern Coalfields Ltd. [a subsidiary of Coal India Ltd. (Government, 100%)]	Assam	640
Do.	do.	Northern Coalfields Ltd. [a subsidiary of Coal India Ltd. (Government, 100%)]	Madhya Pradesh and Uttar Pradesh	24
Do.	do.	Singareni Collieries Co. Ltd. (Andhra Pradesh State government, 50%, and Government, 50%)	Andhra Pradesh and Maharashtra	18
Do.	do.	South Eastern Coalfields Ltd. [a subsidiary of Coal India Ltd. (Government, 100%)]	Chhattisgarh	36
Do.	do.	Western Coalfields Ltd. [a subsidiary of Coal India Ltd. (Government, 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	2,000
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, Odisha	12
Do.		Tamil Nadu Minerals Ltd.	Sivaganga District, Tamil Nadu	NA
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.	Jagdulpur, Chhattisgarh	2,000
Do.		do.	Duburi, Odisha	3,000
Do.		Steel Authority of India Ltd. (Government, 100%)	Rourkela steel plant, Odisha	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 2012

(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; Bolani, Odisha; and Chiria, Jharkhand	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, Odisha	3,000
Do.	Tata Steel Ltd.	do.	2,000
Do.	NSL Consolidated Ltd. (China Metallurgical Group Corp., 10%)	Mangal, Andhra Pradesh	200
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 Ltd.	do.	3,500
Kaolin	20 Microns Ltd.	Bhuj, Gujarat	65
Do.	English India Clays Ltd.	Veli, Kerala	240
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. (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. (Sterlite Opportunities and Ventures Ltd., 64.9%, and Government, 29.5%)	Agnigundala Mine, Andhra Pradesh	72
Do.	do.	Sargipalli Mine, Odisha	150
Lead-zinc ore	do.	Rampura-Agucha Mine, Rajasthan	1,300
Do.	do.	Zawar Mine group, Rajasthan	1,200
Magnesite	Steel Authority of India 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, Odisha	NA
Do.	Mangilah, Rungta (Pvt.) Ltd.	do.	NA
Do.	Orissa Mining Corp. Ltd.	do.	NA
Do.	Rungta Mines (Pvt.) Ltd.	do.	NA
Do.	S. Lall & Co.	do.	NA

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(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 Ltd.	Keonjhar, Odisha	NA
Do.	Orissa Mineral Development Co. Ltd.	Koraput, Odisha	NA
Do.	Orissa Mining Corp. Ltd.	do.	NA
Do.	Mysore Minerals Ltd.	Shimoga, Karnataka	NA
Do.	Aryan Mining & Trading Corp.	Sundargarh, Odisha	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	540
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	375
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, Odisha	220
Do.	do.	Manavalakurichi, Tamil Nadu	65
Do.	Trimex Group	Chennai, Andhra Pradesh	200
Do.	VV Mineral Ltd.	Kanyakumari, Tamil Nadu	450

See footnotes at end of table.

TABLE 2—Continued
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Uranium ore	Uranium Corp. of India	Jaduguda, Jharkhand	2,190
Do.	do.	Tummalapalle, Andhra Pradesh	3,000
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

^eEstimated. Do., do. Ditto. NA Not available.

¹Scheduled startup was delayed to 2013.

²Capacity of clusters of surface mines varies extremely, depending on demand. Estimated total capacity is 3.0 million metric tons per year (Mt/yr).

³Estimated total phosphate rock capacity is 1.5 Mt/yr.

TABLE 3
INDIA: ESTIMATED RESERVES OF MAJOR MINERAL COMMODITIES IN 2012

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Barite	34,000
Bauxite	539,000
Chromite ore	54,000
Coal:	
Bituminous	110,000,000
Lignite	39,000,000
Copper ore	394,000
Gold, in metal	kilograms 67,000
Graphite	11,000
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	49,000
Phosphate rock	34,800
Talc and pyrophyllite	74,600
Uranium	150
Zircon	1,350

Source: Indian Minerals Yearbook 2010, Indian Bureau of Mines.