



# 2011 Minerals Yearbook

---

## INDIA

---

# THE MINERAL INDUSTRY OF INDIA

By Chin S. Kuo

India has significant mineral resources. 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. The country produced 10 metals, 47 industrial minerals, 23 minor minerals, 4 mineral fuels, and 3 atomic minerals. In terms of output, 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, 2012, p. 248–249).

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 advancement of 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 2011, the mineral sector's contribution to the gross domestic product was 2.63%, and this percentage was likely to increase to between 7% and 8% 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 0.75% in 2011, and the total value of mineral production decreased by 1.02%. Mineral fuels accounted for 68.22% of the total value; metals, 19.94%; and industrial minerals, 11.83%. In 2010 (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 2009 (Ministry of Mines, 2012, p. 19, 250–253).

## Government Policies and Programs

The National Mineral Policy of 1993 was initiated to encourage private and foreign investment and to attract state-of-the-art technology in the mineral sector. The new National Mineral Policy of 2008 is designed to encourage large-scale prospecting to promote efficient mining and to attract investment and the latest technology. The Government issues reconnaissance permits, which allow a 3-year period for general studies; prospecting licenses, which allow specified drilling programs for a maximum period of 3 years; and mining leases, which allow operations for extracting minerals for a minimum period of 20 years and a maximum period of 30 years (Mining Journal, 2011a).

The Commission of Indian Ministers approved the draft Mines and Minerals Development and Regulation bill, which would require mining companies to pay 100% of the royalties in mining projects and 26% of the profits in coal projects to people displaced because of land acquisition. The bill would empower

the mining companies to proceed promptly with acquiring land to develop their projects. Analysts said that the bill would serve as a disincentive to the mining sector and would also deter foreign investments. Major steel producers, including Jindal Steel & Power Ltd. and Tata Steel, also opposed the profit-sharing formula (Mineweb.com, 2011b).

The Government approved plans to set up the National Mining Regulatory Authority to investigate, regulate against, and police large-scale illegal mining activity, including illegal mining of bauxite, graphite, iron ore, magnesite, mineral sands, and talc. The move to clamp down on illegal mining could affect the domestic price and availability of these minerals (Lismore, 2011).

## Production

In 2011, production of such mineral commodities as cobalt, mined copper, direct-reduced iron, primary lead, total lead, silver, and steel increased by more than 5% whereas output of cadmium, manganese concentrate, and mined zinc decreased by 2.5%, 11.1%, and 4.1%, respectively. The increase (by 60%) in the production of primary lead was owing to the debottlenecking of Hindustan Zinc Ltd.'s Chanderiya smelter to improve operational efficiency. As a result, output of primary zinc, secondary zinc, and total zinc also was estimated to have increased by 13.1%, 21.6%, and 13.6%, respectively. As for industrial minerals, production of barite, fluorspar concentrate, graded fluorspar, and sulfur was estimated to have increased slightly by a revised 3.9%, 1.2%, 4.3%, and 1.7%, respectively (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 66.5% of the total value of mineral production. The number of mines that reported mineral production was 2,649 in 2011 and included 1,523 industrial mines, 553 metal mines, and 573 coal mines. Production from opencast mines accounted for 80% of the total mine output. The number of underground operations was in decline. Total employment in the mineral industry was estimated to be more than 500,000 (table 2).

## Mineral Trade

The total value of exports of ores and minerals was about \$27.6 billion in 2010 (the latest year for which data were available). Diamond (mostly cut and polished) was the principal item of export, accounting for 71.3% of all mineral and ore exports; iron ore, 13.0%; alumina, 5.6%; and granite, 3.3%. The total value of imports of ores, minerals, and fuels was about \$113 billion. Crude petroleum was the main component of these imports, accounting for 63.0%; diamond (rough), 22.8%; coal, 6.2%; copper ore and concentrate, 3.0%; and natural gas, 2.2% (Ministry of Mines, 2012, p. 250–253).

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, 2012, p. 24).

## Commodity Review

### Metals

**Aluminum and Bauxite and Alumina.**—Vedanta Aluminium Ltd. decided to move ahead with the expansion of its aluminum smelter at Jharsuguda in the State of Odisha (formerly Orissa) to achieve its targeted capacity of 1.75 million metric tons per year (Mt/yr) in 2013 from the current 500,000 metric tons per year (t/yr). Expansion of its 1-Mt/yr alumina refinery at Lanjigarh, which is also located in Odisha, to 5 Mt/yr was on hold, however. The expansion of the alumina refinery was awaiting the clearance of the Ministry of Environment (Economic Times, The, 2011).

Ashapura Minechem Ltd. was India's leading producer of calcined bauxite; it had a production capacity of 100,000 t/yr. The majority of the company's output was consumed by domestic refractory companies, and a portion was sold to the abrasive markets. Gujarat Mineral Development Corp. Ltd. produced 50,000 t/yr of calcined bauxite from its Gadshisha facilities for the abrasive and refractory markets (Roberts, 2011).

**Copper.**—The Government approved HCL's \$375 million investment to develop an underground copper mine at the company's Malanjkhanda copper project in the State of Madhya Pradesh. The project would increase the mine's production capacity to 5 Mt/yr from the current 2 Mt/yr, which was mined by open pit. The open pit extended to a depth of 340 meters (m) and had a remaining life of 7 years. The copper deposit represented 70% of India's copper reserves (Mining Journal, 2011b).

**Ferroalloys.**—Glencore International plc of Switzerland planned to buy 24% of Cronimet Alloys India Ltd., which owned a 25,000-t/yr ferrochrome plant in the Srikakulam District in the State of Andhra Pradesh. Cronimet also was building a 165,000-t/yr high-carbon ferrochrome plant at Kolathapangi in the State of Odisha, which contained 98% of India's chrome ore reserves. Orissa Mining Corp. supplied chromite to most ferrochrome producers in the country. The Government sought to ban chromite exports, and the ferrochrome industry campaigned for removal of the 2.5% duty on imports of chromite (Metal Bulletin, 2011).

**Iron Ore and Iron and Steel.**—India exported 100 Mt/yr of iron ore to China, and, along with Australia and Brazil, was one of the world's three leading iron ore exporters. To conserve the iron ore resource for domestic steel producers, the Government sought to curb exports (which went mostly to China) and planned to increase the duty on iron ore fines to 20% from 5% and on iron ore lumps to 20% from 15% (Reuters, 2011).

**Platinum-Group Metals.**—The Geological Survey of India and Orissa Mining discovered a platinum-group metals (PGM) deposit in the Baula-Nuasahi complex near the active chromite mines in the State of Odisha. Orissa Mining produced chromite from mines at Bangur in the Keonjhar District. The deposit had proven reserves of 14.2 million metric tons and contained platinum, palladium, iridium, rhodium, osmium, and ruthenium (Mineweb.com, 2011c).

**Titanium and Zirconium Mineral Concentrates (Mineral Sands).**—Trimex Group's planned \$155 million expansion of its mineral sands mine in the Srikakulam District in the State of Andhra Pradesh was met by opposition from local residents. The company planned to expand the operations to an additional area of 18 square kilometers where there were cashew nut and coconut plantations. The mine had capacities of 200,000 t/yr of ilmenite, 60,000 t/yr of garnet, 50,000 t/yr of sillimanite, 6,000 t/yr of rutile, and 6,000 t/yr of zircon, (Watts, 2011b).

Nalco entered into an agreement with Indian Rare Earths Ltd. to develop the country's first titanium dioxide operations with an investment of \$88 million at Chhatrapur in the State of Odisha. VV Mineral Ltd. agreed to buy Kilburn Chemicals Ltd.'s titanium dioxide plant at Tuticorin in the State of Tamil Nadu. VV Mineral, which was India's leading producer of ilmenite, had a production capacity of 450,000 t/yr (O'Driscoll, 2011b).

### Industrial Minerals

**Barite.**—ICL Ltd. increased its barite production capacity to 300,000 t/yr in anticipation of strong demand. A boom (an 18% increase) in oil and gas exploration globally was expected to increase barite prices. Indian barite remained in strong demand throughout the Middle East and in the United States. The market volume in Saudi Arabia for barite increased to 350,000 t/yr from 120,000 t/yr in 2010 (Elliott, 2011).

**Bromine.**—Chemtura Corp. of the United States planned to establish a strategic alliance with Archean Group in the production of bromine and brominated derivatives. Archean's marine chemical plant in the Rann of Kutch in the State of Gujarat was scheduled to come online in 2012 and would produce bromine, gypsum, and potassium sulfate. The \$250 million plant was expected to produce 100,000 t/yr of potassium sulfate and 2 Mt/yr of salt. Archean was also active in the production of other industrial minerals in India (O'Driscoll, 2011a).

**Cement.**—In the past 3 to 4 years, India added more than 100 Mt/yr of cement production capacity for a total capacity of 300 Mt/yr as of 2010. Cement output was expected to increase to 320 Mt/yr by the end of 2011. Cement consumption was about 80% of production capacity and was projected to increase by between 8% and 9% per year. The housing sector consumed about 65% of the total output (CemWeek, 2011).

India Cements Co. Ltd. started its Mahi cement plant with a production capacity of 1.5 Mt/yr in the State of Rajasthan, thus increasing the company's installed capacity to 16 Mt/yr. The plant would supply cement to the States of Gujarat, Madhya Pradesh, and Rajasthan (International Cement Research, 2011b).

Associated Cement Cos. Ltd.'s (ACC's) total capacity of cement increased to 30 Mt/yr from 22 Mt/yr in 2010 with the \$183 million expansions completed at Wadi [12,500-metric-ton-per-day (t/d) kiln] in the State of Karnataka and at Chanda (7,000-t/d clinker) in the State of Maharashtra. The company was expected to reach 11% of market share in India. Holcim Ltd. of Switzerland increased its stake in ACC to 50.1% through open-market purchases (International Cement Research, 2011a).

Rain Commodities Ltd. acquired Birla Cement Ltd. from the Yash Birla Group. Rain Commodities manufactured and sold cement in the States of Andhra Pradesh, Karnataka, and Tamil Nadu. In addition, the company was involved in the manufacturing and trading of calcined petroleum coke (Aggregate Research, 2011b).

Kishan Group was to increase its cement output capacity by investing \$63 million to set up a new 900,000-t/yr cement plant, which was expected to be commissioned in December 2011. The company operated a mini cement plant with a capacity of 200,000 t/yr. The market area focused on the States of Gujarat, Maharashtra, and Rajasthan (Global Cement Weekly, 2011).

Prism Cement Ltd. was granted 405 hectares (ha) of land by the State government of Andhra Pradesh to build a 9.3-Mt/yr cement plant in the Kumool District. The project was expected to be completed in two phases within the next 3 years. The company held a mining lease of 243 ha of limestone reserves. The State had rich limestone reserves and an installed cement production capacity of 40 Mt/yr, but consumed only 20 Mt/yr of cement. The company operated a 3-Mt/yr cement plant at Satna in the State of Madhya Pradesh and planned to expand its production capacity (Aggregate Research, 2011a).

Ultra Tech Cement Ltd. planned to set up a cement plant at Dankuni in the Hoogly District in the State of West Bengal with a capacity of 2 Mt/yr. The plant would produce 6,000 t/d of portland cement and procure the clinker from the company's other plants to grind and blend with fly ash and gypsum. The plant was expected to consume 4,000 to 4,500 t/d of clinker, 1,350 to 1,900 t/d of fly ash, and 280 to 350 t/d of gypsum. The company was expected to reach a total capacity of 9 Mt/yr of cement with clinker plants and grinding units in 2014 (Aggregate Research, 2011c).

**Diamond.**—The slowdown in demand for diamond from Belgium, the United Arab Emirates, and the United States had not affected the diamond trade in Surat in the State of Gujarat, which was Asia's leading diamond polishing hub. These two markets still accounted for a large quantity of the diamond (cut and polished) exports from India. The Asian market increased its contribution to the diamond trade and received more than 25% of exports. Hong Kong accounted for the highest export volume of India's cut and polished diamond, followed by Thailand, Japan, Singapore, the Republic of Korea, Malaysia, and Nepal (Business Standard, 2011a).

**Limestone.**—Bisra Stone Lime Co. Ltd. stopped production of limestone and dolomite at Birmitrapur in the Sundargarh

District in the State of Odisha owing to environmental concerns from the State Pollution Control Board. The environmental clearance for the 18,000-metric-ton-per-month mining operation expired in March without being renewed. As a result, the company had difficulties in supplying raw materials to Steel Authority of India Ltd. and Neelachal Ispat Nigam Ltd. Operations of limestone were halted at some quarries in Piduguralla in the neighboring State of Andhra Pradesh (Feytis, 2011).

**Lithium.**—Rockwood Holdings Inc.'s subsidiary Chemetall Lithium India Pvt. Ltd. opened a new plant in the Dahei Special Economic Zone in the State of Gujarat to produce the lithium derivative butyllithium and supply lithium products to India and the other South Asian markets. Butyllithium was used as an initiator for anionic polymerization and as a base in organic, pharmaceutical, and agrochemical syntheses. Chemetall Lithium produced lithium raw materials from its brine operation at Salar de Atacama in Chile (Watts, 2011a).

**Refractory Materials.**—Tata Steel sold a 51% stake in Tata Refractories Ltd. to Krosaki Harima Corp. (in which Nippon Steel Corp. of Japan owned a 42.9% interest) and still retained a 26.46% interest. Tata Refractories was India's leading refractories manufacturer; it had a production capacity of 340,000 t/yr and was located at Belpahar in the State of Odisha. The company met the requirements of such industries as cement, glass, nonferrous metals, petrochemicals, and steel producers. Krosaki Harima was a leading global refractories maker (Business Standard, 2011b).

**Wollastonite.**—Wolkem India Ltd., which was India's leading wollastonite producer, planned to increase its total wollastonite production from a deposit near Ajmer in the State of Rajasthan by 30,000 t/yr to meet demand expected in fiscal year 2014. Domestic markets for wollastonite increased owing to growing demand in ceramic, friction, and plastic applications. The company also produced wollastonite from the Sirohi District in the State of Rajasthan from a mine with a capacity of 175,000 t/yr (Industrial Minerals, 2011).

### *Mineral Fuels and Related Materials*

**Coal.**—A total of 58 coal blocks with more than 18.6 billion metric tons (Gt) of reserves was put on auction in the first round of competitive bidding in October 2011. The blocks were in the coal belt that spans seven States. Some large blocks included the Deocha-Pachami in the State of West Bengal (with reserves of 2 Gt), the Tentuloi in the State of Odisha (1.2 Gt), the Badam Dip Side and the Dip Side of Rhone-Rautpara in the State of Jharkhand (1 to 1.5 Gt each) (Singh, 2011).

NTPC Ltd. planned to start coal production from its Pakri Barwadih coal mining project in 2012, and the rate of production would be 15 Mt/yr after completion of the project. Coal produced from the mine would be transported for a distance of 13 kilometers (km) to a coal and rail yard at Banadag in the Hazaribagh District in the State of Jharkhand through an elevated conveyer system. Coal would be fed to various thermal power projects operated by the company (PSU India, 2011).

**Natural Gas.**—India's annual natural gas production was projected to increase to 65 billion cubic meters by 2015 from

50 billion cubic meters in 2011, and annual consumption was projected to reach 85 billion cubic meters by 2015. For supply and consumption to expand rapidly, the Government planned to shift to market pricing to encourage domestic production, extend pipeline infrastructure to southern India, and build more liquefied natural gas (LNG) terminals. The increase in natural gas use was expected to displace 100,000 barrels per day (bbl/d) of naphtha demand and would have a significant effect on coal use in the country. Naphtha was used mainly by the fertilizer and power industries (Oil & Gas Journal, 2011c).

The State government of Gujarat approved the construction of a \$1 billion 5-Mt/yr LNG import terminal at Munda. The project was a joint venture between Gujarat State Petroleum Corp. and Adani Group (Petroleum Economist, 2011).

Oil and Natural Gas Corp. discovered shale gas near Durgapur in the State of West Bengal. Gas flowed out from the Barren Measure shale at a depth of 1,700 m in the well of RNSG-1 in January 2011. India was the first country outside the United States and Canada to find gas in shale (Rigzone.com, 2011).

**Petroleum.**—Construction was underway and was expected to be completed in the first quarter of 2013 on the 300,000-bbl/d oil refinery to be operated by Indian Oil Corp. at Paradip in the State of Odisha. The company controlled 10 of India's 20 oil refineries. The major refineries, in terms of capacity, were at Mathura in the State of Uttar Pradesh and at Panipat in the State of Haryana (Oil & Gas Journal, 2011b).

Commissioning of the 180,000-bbl/d Guru Gobind Singh oil refinery at Bathinda in the State of Punjab was delayed until 2012. Hindustan Petroleum Corp. Ltd. built the refinery in a joint venture with Mittal Energy Investment Pte. Ltd. of Singapore. The refinery's crude distillation and vacuum distillation units and a single-point mooring system and terminal at Mundra in the State of Gujarat were completed. A 1,014-km pipeline to carry crude oil from Mundra to Bathinda was operational (Oil & Gas Journal, 2011a).

**Uranium.**—India's Department of Atomic Energy confirmed the presence of 49,000 metric tons (t) of uranium in the mines of Tummalapalle in the Cuddapah District of Andhra Pradesh State. The mines were operated by Uranium Corp. of India Ltd. Reserves were estimated to be as large as 150,000 t. The country had total reserves of 175,000 t of uranium and an operating mine at Jaduguda in the State of Jharkhand. Yet, India still imported uranium to meet the demand of its nuclear program. The country imported 300 t of uranium from France in 2010 and entered into a pact with Russia for the supply of 2,000 t of uranium and with Kazakhstan for 2,100 t in 2011. India had 20 nuclear powerplants with a total capacity of 4,780 megawatts (MW) in operation and 7 more with a combined capacity of 5,300 MW under construction (Mineweb.com, 2011a).

## 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 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 267 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 minerals and metals that constitute the primary raw materials for its various industries. The Government's approval of the Mines and Minerals Development and Regulation bill is expected to facilitate the process of land acquisition for mining projects. Production of alumina and aluminum is expected to increase when Vedanta's expanded alumina refinery and new aluminum smelter are completed in 2013. Despite the increase in export duties, India is expected to continue to export iron ore to China but in lesser amounts. Strong demand for barite in the global oil and gas industry is expected to lead to increased production in India to supply barite to the Middle East and the United States. Cement consumption in India is expected to increase and so is the country's total production capacity. 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 LNG are expected to gradually increase as development of the LNG terminals and the pipeline infrastructure progresses.

## References Cited

- Aggregate Research, 2011a, Prism Cement to construct 9.3 million tonne plant in Andhra Pradesh, India: Aggregate Research, November 3. (Accessed November 16, 2011, at <http://www.aggregateresearch.com/article.aspx?id=23697>.)
- Aggregate Research, 2011b, Rain Commodities takes over Birla Cement: Aggregate Research, February 14. (Accessed February 28, 2011, at <http://www.aggregateresearch.com/article.aspx?id=21490>.)
- Aggregate Research, 2011c, Ultra Tech to set up 2 mtpa plant in Dankuni: Aggregate Research, November 22. (Accessed November 23, 2011, at <http://www.aggregateresearch.com/article.aspx?id=23845>.)
- Business Standard, 2011a, Diverse market insulates diamond industry from slowdown: Business Standard, October 12. (Accessed October 12, 2011, at <http://www.business-standard.com/india/news/148574/on>.)
- Business Standard, 2011b, Tata Steel sells 51% in TRL to Nippon Steel arm: Business Standard, May 31. (Accessed June 1, 2011, at <http://www.business-standard.com/runup/news/137082>.)
- CemWeek, 2011, South Asia regional report: CemWeek, May/June/July, p. 24.
- Economic Times, The, 2011, Vedanta to focus on Jharsuguda smelter plant expansion: The Economic Times, September 4. (Accessed September 5, 2011, at [http://articles.economicstimes.indiatimes.com/2011-09-04/news/30112756\\_1](http://articles.economicstimes.indiatimes.com/2011-09-04/news/30112756_1).)
- Elliott, Jack, 2011, India's ICL to up barites capacity to 300,000 tpa: Industrial Minerals, November 11. (Accessed November 14, 2011, at <http://www.indmin.com/print.aspx?articleid=2933506>.)
- Feytis, Alex, 2011, BSCL's Orissa, India limestone production halted: Industrial Minerals, November 22. (Accessed December 1, 2011, at <http://www.indmin.com/print.aspx?articleid=2938739>.)
- Global Cement Weekly, 2011, Kishan plant to be running by December 2011: Global Cement Weekly, issue 16, September 21, p. 1.
- Industrial Minerals, 2011, Wolkem plans 30,000 tpa wollastonite expansion in India: Industrial Minerals, April 13. (Accessed April 13, 2011, at <http://www.indmin.com/print.aspx?articleid=2806921>.)
- International Cement Research, 2011a, ACC market outlook: International Cement Research, May, p. 18.
- International Cement Research, 2011b, Initiating plant startups: International Cement Research, January, p. 40.

- Lismore, Siobhan, 2011, Indian Government pledges to stamp out illegal mining: *Industrial Minerals*, July 18. (Accessed July 18, 2011, at <http://www.indmin.com/print.aspx?articleid=2867248>.)
- Metal Bulletin, 2011, Indian sector fights its corner: *Metal Bulletin*, no. 9226, November 14, p. 33.
- Mineweb.com, 2011a, India makes massive uranium discovery: *Mineweb.com*, July 19. (Accessed July 20, 2011, at <http://www.mineweb.com/mineweb/view/mineweb/en/page72103?oid=131821&sn=detail&pid=92730>.)
- Mineweb.com, 2011b, Indian mining stocks fall on draft mine bill: *Mineweb.com*, July 8. (Accessed July 11, 2011, at <http://www.mineweb.com/mineweb/view/mineweb/en/page72068?oid=131054&sn=detail&pid=92730>.)
- Mineweb.com, 2011c, Rich platinum deposits found in India: *Mineweb.com*, August 17. (Accessed August 18, 2011, at <http://www.mineweb.com/mineweb/view/mineweb/en/page35?oid=133641&sn=detail&pid=92730>.)
- Mining Journal, 2011a, Exploring India: *Mining Journal*, September 9, p. 12.
- Mining Journal, 2011b, Malanjkhand underground expansion OK: *Mining Journal*, October 7, p. 3.
- Ministry of Mines, 2012, Annual report 2011-12: New Delhi, India, Ministry of Mines, August, 300 p.
- O'Driscoll, Mike, 2011a, Chemtura secures Indian bromine supply with Archeon Group: *Industrial Minerals*, May 27. (Accessed May 31, 2011, at <http://www.indmin.com/print.aspx?articleid=2838516>.)
- O'Driscoll, Mike, 2011b, Pigment pragmatism: *Industrial Minerals*, no. 530, November, p. 30.
- Oil & Gas Journal, 2011a, Commissioning of Punjab refinery delayed: *Oil & Gas Journal*, November 2. (Accessed November 2, 2011, at <http://www.ogj.com/articles/2011/11.html?cmpid=enldaily november22011>.)
- Oil & Gas Journal, 2011b, Completion of Paradip refinery due in 2013: *Oil & Gas Journal*, August 12. (Accessed August 12, 2011, at <http://www.ogj.com/articles/2011/08.html?cmpid=enldaily august122011>.)
- Oil & Gas Journal, 2011c, India's gas use could displace 100,000 b/d of naphtha: *Oil & Gas Journal*, August 2. (Accessed August 3, 2011, at <http://www.ogj.com/articles/2011/08.html?cmpid=enldaily august22011>.)
- Petroleum Economist, 2011, News in brief: *Petroleum Economist*, v. 78, no. 7, September, p. 64.
- PSU India, 2011, NTPC to start production from Pakri Barwadih project next year: *Public Sector Undertakings of India*, April 12. (Accessed April 13, 2011, at <http://www.psuindia.in/psu-news/4857>.)
- Reuters, 2011, India ups iron ore export duty, China hardest hit: *Reuters*, February 28. (Accessed February 28, 2011, at <http://in.reuters.com/article/2011/02/28/india-ironore-idINSGE71R05Q21000228>.)
- Rigzone.com, 2011, ONGC discovers first shale gas in Asia: *Rigzone.com*, January 27. (Accessed January 28, 2011, at [http://www.rigzone.com/news/article.asp?hpf=1&a\\_id=103526](http://www.rigzone.com/news/article.asp?hpf=1&a_id=103526).)
- Roberts, Jessica, 2011, Abrasive bauxite weathers rough markets: *Industrial Minerals*, no. 526, July, p. 22.
- Singh, S.C., 2011, Coal Ministry to put 58 mines on the block in next six months: *The Economic Times*, April 5. (Accessed April 5, 2011, at [http://www.hellenicshippingnews.com/index.php?option=com\\_content&view=article&id=1](http://www.hellenicshippingnews.com/index.php?option=com_content&view=article&id=1).)
- Watts, Mark, 2011a, Rockwood opens Chemetall lithium chemicals plant in India: *Industrial Minerals*, November 10. (Accessed November 10, 2011, at <http://www.indmin.com/print.aspx?articleid=2932639>.)
- Watts, Mark, 2011b, Trimex minsands expansion met by local opposition: *Industrial Minerals*, August 10. (Accessed August 10, 2011, at <http://www.indmin.com/print.aspx?articleid=2881514>.)

TABLE 1  
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	2007	2008	2009	2010	2011	
METALS						
Aluminum:						
Bauxite, gross weight <sup>4</sup>	thousand metric tons	8,300 <sup>r</sup>	10,100 <sup>r</sup>	10,300 <sup>r</sup>	9,900 <sup>r</sup>	10,300
Alumina, Al <sub>2</sub> O <sub>3</sub> equivalent	do.	3,000 <sup>r</sup>	3,820 <sup>r</sup>	3,900 <sup>r</sup>	3,640 <sup>r</sup>	3,880
Metal, primary <sup>4</sup>		1,028,000 <sup>r</sup>	1,402,000 <sup>r</sup>	1,598,000 <sup>r</sup>	1,607,000 <sup>r</sup>	1,667,000
Cadmium metal <sup>4</sup>		580	599	627 <sup>r</sup>	632 <sup>r</sup>	616
Chromium, chromite, gross weight		3,320,000 <sup>4</sup>	3,900,000 <sup>4</sup>	3,760,000 <sup>4</sup>	3,800,000	3,850,000
Cobalt metal <sup>4</sup>		980	858	1,001	670 <sup>r</sup>	720
Copper:						
Mine output, Cu content <sup>4</sup>		33,900	30,600	29,500	35,500 <sup>r</sup>	37,700
Metal, primary:						
Smelter		700,000 <sup>4</sup>	651,000 <sup>4</sup>	705,100 <sup>4</sup>	748,800 <sup>r,4</sup>	750,000
Refinery:						
Electrolytic, cathode <sup>4</sup>		698,600	654,200	705,100	654,900 <sup>r</sup>	671,100
Fire refined		15,000	15,000	10,000	9,000	2,000
Total		714,000	669,000	715,000	664,000 <sup>r</sup>	673,000
Gold metal, smelter	kilograms	3,000 <sup>4</sup>	2,700 <sup>4</sup>	2,800	2,700	2,300
Iron and steel:						
Iron ore and concentrate:						
Gross weight	thousand metric tons	207,000 <sup>4</sup>	215,000 <sup>4</sup>	225,000 <sup>4</sup>	230,000	240,000
Fe content	do.	126,000 <sup>4</sup>	138,000 <sup>4</sup>	144,000 <sup>4</sup>	147,000	154,000
Metal:						
Pig iron <sup>4</sup>	do.	28,800	29,000	34,000	38,685	38,900
Direct-reduced iron <sup>4</sup>	do.	19,060	21,200	22,030	23,420	27,560
Ferroalloys:						
Ferrochromium, including charge chrome		820,000 <sup>4</sup>	750,000 <sup>4</sup>	873,385 <sup>4</sup>	850,000	830,000
Ferrosilicon		10,000	10,000	10,000	10,000	10,000
Ferromanganese		391,210 <sup>4</sup>	384,577 <sup>4</sup>	389,465 <sup>4</sup>	413,000	420,000
Ferrosilicon		80,000	92,000	101,337 <sup>4</sup>	101,000	105,000
Silicomanganese		911,402 <sup>4</sup>	891,458 <sup>4</sup>	1,099,838 <sup>4</sup>	1,170,000	1,200,000
Other		9,000	9,000	9,000	9,000	9,000
Steel, crude <sup>4</sup>	thousand metric tons	53,500	57,800	63,500	68,300	72,200
Semimanufactures <sup>5</sup>	do.	47,000	49,000	50,000	51,000	53,000
Lead:						
Mine output, Pb content		77,500 <sup>4</sup>	87,300 <sup>4</sup>	92,000	97,000 <sup>r</sup>	115,000
Metal, refined: <sup>4</sup>						
Primary		53,800	62,000	61,700 <sup>r</sup>	75,000 <sup>r</sup>	120,000
Secondary		205,000 <sup>r</sup>	232,000 <sup>r</sup>	275,000 <sup>r</sup>	305,000 <sup>r</sup>	306,000
Total		258,800 <sup>r</sup>	294,000 <sup>r</sup>	336,700 <sup>r</sup>	380,000 <sup>r</sup>	426,000
Manganese:						
Ore and concentrate, gross weight <sup>4</sup>	thousand metric tons	2,016 <sup>r</sup>	2,293 <sup>r</sup>	2,374 <sup>r</sup>	2,858 <sup>r</sup>	2,542
Mn content	do.	810 <sup>r</sup>	920 <sup>r</sup>	950 <sup>r</sup>	1,140 <sup>r</sup>	1,020
Selenium	kilograms	14,000	14,000	15,000	15,000	16,000
Silver, mine and smelter output <sup>4</sup>	do.	82,300	96,000	138,100 <sup>r</sup>	165,100 <sup>r</sup>	203,500
Titanium mineral concentrates, gross weight:						
Ilmenite		700,000	610,000	700,000	540,000	550,000
Rutile		21,000	21,000	21,000	24,000	25,000
Zinc:						
Mine output, concentrate:						
Gross weight		925,000 <sup>r</sup>	1,120,000 <sup>r</sup>	1,260,000 <sup>r</sup>	1,400,000 <sup>r</sup>	1,350,000
Zn content <sup>4</sup>		538,900 <sup>r</sup>	613,600 <sup>r</sup>	695,000 <sup>r</sup>	740,000 <sup>r</sup>	710,000

See footnotes at end of table.

TABLE 1—Continued  
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	2007	2008	2009	2010	2011
METALS—Continued					
Zinc—Continued:					
Metal:					
Primary	430,800 <sup>4</sup>	545,800 <sup>4</sup>	584,100 <sup>r,4</sup>	663,300 <sup>r,4</sup>	750,000
Secondary	23,000	22,000	30,000 <sup>r</sup>	37,000 <sup>r</sup>	45,000
Total	454,000	568,000	614,000 <sup>r</sup>	700,000 <sup>r</sup>	795,000
Zirconium concentrate, zircon, gross weight	29,000	30,000	37,000	38,000	39,000
INDUSTRIAL MINERALS					
Abrasives, natural, n.e.s.: <sup>6</sup>					
Corundum, natural kilograms	1,000	1,000	1,000	1,000	1,000
Garnet	120,000	125,000	127,000	130,000	133,000
Jasper	9,000	8,900	8,700	8,800	8,900
Asbestos	21,000	20,000	19,000	20,000	19,000
Barite	1,000,000	1,100,000	1,200,000	1,300,000 <sup>r</sup>	1,350,000
Bromine, elemental	1,500	1,500	1,500	1,500	1,500
Cement, hydraulic thousand metric tons	170,000	185,000	205,000	220,000	270,000
Chalk	125,000	125,000	125,000	130,000	130,000
Clays:					
Ball clay	430,000	430,000	440,000	440,000	450,000
Diaspore	10,000	10,000	10,000	10,000	10,000
Fire clay	380,000	390,000	395,000	400,000	410,000
Kaolin:					
Salable crude thousand metric tons	570	570	580	580	600
Processed do.	200	210	210	220	220
Total do.	770	780	790	800	820
Other do.	85	85	85	90	90
Diamond:					
Gem thousand carats	15	15	14	13	12
Industrial do.	40	38	38	37	36
Total do.	55	53	52	50	48
Feldspar	486,272 <sup>4</sup>	385,436 <sup>4</sup>	390,000	400,000	420,000
Fluorspar:					
Concentrates, metallurgical grade	5,000	6,059 <sup>r,4</sup>	8,293 <sup>r,4</sup>	8,400 <sup>r</sup>	8,500
Other fluorspar materials, graded	1,000	3,375 <sup>r,4</sup>	4,541 <sup>r,4</sup>	4,600 <sup>r</sup>	4,800
Gemstones, excluding diamond:					
Agate, including chalcedony pebble	170	160	160	150	150
Garnet kilograms	800	800	800	800	800
Graphite <sup>7</sup>	130,000	140,000	130,000	140,000	150,000
Gypsum	2,500,000	2,550,000	2,600,000	2,650,000	2,700,000
Kyanite and related materials:					
Kyanite	7,300	7,500	7,700	7,800	8,000
Sillimanite	15,200	16,000	16,500	16,800	17,000
Lime thousand metric tons	12,000	13,000	13,000	14,000	15,000
Magnesite	360,000	350,000	340,000	345,000	350,000
Mica:					
Crude	3,786 <sup>4</sup>	2,049 <sup>4</sup>	2,000	2,100	2,400
Scrap and waste	3,421 <sup>4</sup>	4,470 <sup>4</sup>	4,500	4,700	4,900
Total	7,207 <sup>4</sup>	6,519 <sup>4</sup>	6,500	6,800	7,300
Nitrogen, N content of ammonia thousand metric tons	11,000	11,100	11,200	11,500	11,800
Phosphate rock, including apatite	1,210,000	1,220,000	1,230,000	1,240,000	1,250,000
Pigments, mineral, natural, ocher	375,000	380,000	385,000	390,000	395,000
Pyrites, gross weight	120,000	120,000	115,000	115,000	110,000

See footnotes at end of table.



TABLE 1—Continued  
INDIA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity <sup>3</sup>	2007	2008	2009	2010	2011
INDUSTRIAL MINERALS—Continued					
Rare-earth metals, monazite concentrate, gross weight	5,000	5,000	5,000	5,200	5,200
Salt:					
Rock salt	thousand metric tons	3	3	3	2
Other	do.	16,000	16,000	16,500	17,000
Total	do.	16,000	16,000	16,500	17,000
Sand:					
Calcareous	do.	270	275	280	285
Silica	do.	1,600	1,700	1,700	1,800
Other	do.	3,100	3,200	3,300	3,400
Slate		13,000	13,500	14,000	14,500
Soda ash		1,500,000	1,500,000	1,500,000	1,500,000
Stone, sand and gravel:					
Calcite		54,000	55,000	55,000	56,000
Dolomite	thousand metric tons	3,100	3,100	3,100	3,200
Limestone	do.	125,000	127,000	130,000	132,000
Quartz and quartzite	do.	280	280	280	290
Sulfur, byproduct from fertilizer plants	do.	590 <sup>r</sup>	600 <sup>r</sup>	590 <sup>r</sup>	600 <sup>r</sup>
Talc and related materials:					
Pyrophyllite		87,000	87,000	88,000	90,000
Steatite, soapstone		555,000	560,000	550,000	550,000
Vermiculite		9,639 <sup>4</sup>	11,742 <sup>4</sup>	12,000	12,000
Wollastonite		120,000	125,000	135,000	145,000
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Bituminous	thousand metric tons	380,000	420,000	450,000	480,000
Lignite	do.	25,000	26,000	25,000	27,000
Total	do.	405,000	446,000	475,000	507,000
Gas, natural:					
Gross	million cubic meters	32,407 <sup>4</sup>	33,061 <sup>4</sup>	35,000	37,000
Marketable	do.	27,069 <sup>4</sup>	27,457 <sup>4</sup>	30,000	32,000
Petroleum:					
Crude	thousand 42-gallon barrels	254,000 <sup>4</sup>	253,000 <sup>4</sup>	255,000	260,000
Refinery products:					
Liquefied petroleum gas	do.	49,000 <sup>4</sup>	53,000 <sup>4</sup>	55,000	58,000
Gasoline	do.	101,000 <sup>4</sup>	119,000 <sup>4</sup>	125,000	130,000
Kerosene and jet fuel	do.	127,000 <sup>4</sup>	122,000 <sup>4</sup>	120,000	125,000
Distillate fuel oil	do.	432,000 <sup>4</sup>	468,000 <sup>4</sup>	480,000	490,000
Residual fuel oil	do.	117,000 <sup>4</sup>	130,000 <sup>4</sup>	140,000	145,000
Other	do.	330,000 <sup>4</sup>	319,000 <sup>4</sup>	315,000	310,000
Total	do.	1,156,000 <sup>4</sup>	1,211,000 <sup>4</sup>	1,240,000	1,260,000

<sup>r</sup>Revised. do. Ditto.

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

<sup>2</sup>Table includes data available through October 15, 2012.

<sup>3</sup>In addition to the commodities listed, boron, 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.

<sup>4</sup>Reported figure.

<sup>5</sup>Excludes production from steel miniplants.

<sup>6</sup>Not elsewhere specified.

<sup>7</sup>India's marketable production is 10% to 20% of mine production.

TABLE 2  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>6</sup>
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 <sup>1</sup>	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 <sup>1</sup>	1,500 <sup>2</sup>
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.	Vedanta Aluminium Ltd.	Jharsuguda, Odisha <sup>1</sup>	500
Do.	National Aluminium Co. Ltd. (Government, 100%)	Angul smelter, Odisha <sup>1</sup>	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 <sup>1</sup>	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.	ICL Ltd.	do.	300
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, Odisha <sup>1</sup>	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	25,000

See footnotes at end of table.

TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
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.	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.	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.	OCL India Ltd.	Odisha <sup>1</sup>	1,850
Do.	India Cements Co. Ltd. (Government, 26%; Life Insurance Corp. of India, 24%; others, 50%)	Sankarnagar plant and 2 plants, Tamil Nadu; four 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.	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.	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.	Cuttack District, Odisha <sup>1</sup>	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, Odisha <sup>1</sup>	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%)	26
Do.	do.	Central Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	27

See footnotes at end of table.

TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
Coal, bituminous— Continued	million metric tons	Eastern Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Bihar and West Bengal	21
Do.	do.	Mahanadi Coalfields Ltd. (a subsidiary of Government-owned Coal India Ltd.), 100%	Odisha <sup>1</sup>	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	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%)	Mahjagan Mine	25,000
Gold	kilograms	Hutti Gold Mines Co.	Hutti Mine, Karnataka	3,000
Graphite		Agrawal Graphite Industries Ltd.	Belpara District, Odisha <sup>1</sup>	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.		Jagdarpur, Chattisgarh	2,000
Do.	do.		Duburi, Odisha <sup>1</sup>	3,000
Do.		Steel Authority of India Ltd. (Government, 100%)	Rourkela steel plant, Odisha <sup>1</sup>	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 2011

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
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, Odisha <sup>1</sup>	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. (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 <sup>1</sup>	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 <sup>3</sup>	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 <sup>1</sup>	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 2011

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Manganese ore <sup>3</sup> —Continued	Tata Steel	Keonjhar, Odisha <sup>1</sup>	NA
Do.	Orissa Mineral Development Co. Ltd.	Koraput, Odisha <sup>1</sup>	NA
Do.	Orissa Mining Corp. Ltd.	do.	NA
Do.	Mysore Minerals Ltd.	Shimoga, Karnataka	NA
Do.	Aryan Mining & Trading Corp.	Sundargarh, Odisha <sup>1</sup>	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	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 <sup>4</sup>	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 <sup>1</sup>	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 2011

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
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

<sup>c</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>Formerly Orissa.

<sup>2</sup>Scheduled startup is delayed to 2012.

<sup>3</sup>Capacity of clusters of surface mines varies extremely, depending on demand. Estimated total capacity is 3.0 million metric tons per year (Mt/yr).

<sup>4</sup>Estimated total phosphate rock capacity is 1.5 Mt/yr.

TABLE 3  
INDIA: ESTIMATED RESERVES OF MAJOR MINERAL COMMODITIES IN 2011

(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	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
Zircon	1,350

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