



# 2019 Minerals Yearbook

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## INDIA [ADVANCE RELEASE]

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# THE MINERAL INDUSTRY OF INDIA

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In 2019, India ranked 1st in the world in the production of iron oxide pigments; 2d in the production of abrasives, aluminum (metal, primary), barite, cement, feldspar, raw steel, talc and pyrophyllite, and wollastonite; 3d in the production of bentonite, kaolin, kyanite and sillimanite, lime, pig iron, and salt; 4th in the production of alumina, garnet, iron ore (Fe content), and nitrogen (ammonia); 5th in the production of bauxite, bromine, chromium, coal, graphite, and zinc; 6th in the production of lead, rare earths, rutile, and sulfur; 7th in the production of fuller's earth and manganese; 8th in the production of mica (sheet and flake) and vermiculite; 13th in the production of silicon; 16th in the production of gypsum and ilmenite; and 17th in the production of phosphate rock. The country's share of world production for barite in 2019 was 23%; feldspar, 17%; talc and pyrophyllite, 15%; wollastonite, 14%; garnet, 11%; bentonite, iron ore (Fe content), and salt, 10% each; chromium, iron ore (gross weight), kaolin, and nitrogen (ammonia), 9% each; cement, coal, and iron ore (Fe content), 8% each; aluminum, bauxite, pig iron, raw steel, and zinc, 6% each; and alumina, bromine, ilmenite, manganese, and sulfur, 5% each (BP p.l.c., 2020, p. 46; Apodaca, 2021a–d; Bolen, 2021a, b; Bray, 2021a, b; Brioché, 2021a, b; Crangle, 2021; Gambogi, 2021a, b; Hatfield, 2021a–c; Jasinski, 2021a, b; Klochko, 2021; McRae, 2021; Olson, 2021a, b; Sangine, 2021; Schnebele, 2021a–c; Schulte, 2021; Simmons, 2021; Tuck, 2021a, b).

## Minerals in the National Economy

In 2019, India's real gross domestic product (GDP) increased by 4.2% compared with a 6.1% increase in 2018. The nominal GDP in 2019 was \$2.94 trillion. In India's fiscal year 2018 (which ran from April 1, 2017, through March 31, 2018, and was the latest period for which data for the sector's gross value added were available), the mining and quarrying sector accounted for 2.3% of the GDP. In fiscal year 2019 (which ran from April 1, 2018, through March 31, 2019), the manufacturing sector accounted for 16.4% of the GDP (Ministry of Statistics and Programme Implementation, 2019, front page; International Monetary Fund, 2020, p. 145; World Bank, The, 2021).

## Government Policies and Programs

In 2017, the Government approved the National Steel Policy 2017. Under this policy, the country's steel production capacity was planned to reach 300 million metric tons per year (Mt/yr) by 2030. The Government would provide incentives to increase the country's steel consumption to 160 kilograms per capita from 60 kilograms per capita by investing in automobiles, housing, and infrastructure and by making sure that the raw materials and energy supply needed for steelmaking, such as iron ore, coal, and natural gas, were available domestically (Press Information Bureau, 2017; CRISIL Ltd., 2018, p. 2).

In November 2019, the Ministry of Steel announced that the National Steel Policy of 2017 ensured the availability of steel scrap for the steel industry. About 35% to 40% of the 300 Mt/yr of steel production anticipated in 2030 would be produced by electric arc furnace. For the country to achieve self-sufficiency in steel scrap, the new steel scrap policy requires all commercial vehicles that are more than 15 years old and passenger vehicles that are more than 20 years old to be scrapped if they fail the emissions and safety test (S&P Global Platts, 2019; Sharma, 2021).

In 2016, the amended Mines and Minerals (Development and Regulations) Act, 1957 (MMDR) was passed by Parliament. The objectives of the MMDR are to identify illegally obtained mining licenses, make allocation of licenses more transparent and only through auctions, improve the living conditions of communities around mines, and give States the right to award licenses with approval from the central Government. According to the MMDR, the minerals in India are classified as major minerals and minor minerals. Major minerals are bauxite, bentonite, chromite, coal, copper, diamond, fluorite, garnet, gold, graphite, ilmenite, iron ore, kyanite, lead, limestone, magnesite, manganese, marble, natural gas, petroleum, phosphate rock, rutile, salt, selenite, sillimanite, silver, sulfur, tin, uranium, vermiculite, wollastonite, and zinc. Minor minerals are barite, calcite, clay, corundum, diaspore, dolomite, dunite, feldspar, granite, gypsum, kaolin, mica, ochre, quartz, and talc (Times of India, The, 2016; Abhinna Group, 2018; prsindia.org, 2018; Indian Bureau of Mines, 2019f).

## Production

In 2019, the production of elemental bromine increased by 335% (estimated); diamond (gem and industrial), by 55% each (estimated); zirconium (zircon), by 29% (estimated); natural gas (gross), by 27%; semimanufactured steel products, by 23%; gold (smelter, primary), by 22%; crude petroleum, by 17%; zinc (refined, secondary) and wollastonite, by 15% each; fluorspar (metallurgical grade), by 12%; and gold (Au content) and mined tin (concentrate, gross weight), by 11% (table 1).

In 2019, the production of garnet decreased by 81%; smelter copper (secondary) and refined copper (secondary), by 80% each; kyanite, by 74%; vermiculite, by 57%; ferrovandium, by 49%; manganese (mine, Mn content), by 45%; ferromolybdenum, by 42%; ferroaluminum, by 39%; magnesite, by 38%; ferromanganese, by 34%; graphite (crystalline flake), by 30%; copper smelter (primary), by 29%; coal (bituminous) and mined uranium (U content), by 27% each; ferrotitanium and silicomanganese, by 26% each; refined copper (primary), by 22%; mined copper (concentrate, Cu content) and sillimanite, by 17% each; barite, ferrosilicomagnesium, and refined gold (bullion), by 16% each; selenium (Se content), by 14%; and coal (lignite) and finished steel products, by 12% each. Data on mineral production are in table 1.

## Structure of the Mineral Industry

In 2019, National Aluminium Co. Ltd. (NALCO) [51.28% Government owned], which had its headquarters in Bhubaneswar and operations throughout the country, was the leading producer of alumina, aluminum, and bauxite in India. Vedanta Aluminium Ltd.—100% owned by Vedanta Resources Ltd. (Vedanta Resources), which had its headquarters in London and operations throughout India—was the second-ranked producer of alumina and aluminum in India. Besides alumina and aluminum, the company also produced copper and pig iron. Sterlite Industries Ltd.—a subsidiary of Vedanta Ltd. (Vedanta)—produced bauxite through its subsidiary Bharat Aluminum Co. Ltd. (BALCO); BALCO was 51% owned by Sterlite Industries and 49% owned by the Government. Vedanta, which was a subsidiary of Vedanta Resources, had its headquarters in Mumbai. Hindalco Industries Ltd. (which was owned by Aditya Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; and financial institutions, 18%) was involved in the production of alumina, aluminum, bauxite, and copper (metal). Hindustan Zinc Ltd. (64.9% owned by Vedanta and 29.5% owned by the Government) was located in Udaipur in the State of Rajasthan and had the capacity to produce cadmium as a byproduct of lead, phosphate rock, silver, and zinc production. Hindustan Copper Ltd. (HCL) (100% Government owned) was the only mined copper producer in the country; it had a production capacity of about 390,000 metric tons per year (t/yr) and was located in Kolkata in the State of West Bengal. Steel Authority of India Ltd. (100% Government owned) was a producer of iron ore, magnesite, pig iron, and raw steel. In India's fiscal year 2018 (which was the latest period for which data were available), the number of mines (excluding those for nuclear and minor minerals) that reported production was 1,430 compared with 1,616 (revised) in fiscal year 2017. Of the 1,430 operating mines, 638 were metallic mineral mines and 792 were industrial mineral mines. Table 2 is a list of major mineral production facilities operating in India in 2019 (Hindustan Zinc, 2018; Indian Bureau of Mines, 2018, p. 16; Vedanta Ltd., 2018; Vedanta Resources Ltd., 2018; NALCO, 2022).

## Mineral Trade

The total value of India's exports increased to \$347 billion in 2019 from \$309 billion in 2018. The total value of imports increased to \$518 billion in 2019 from \$469 billion in 2018 (International Monetary Fund, 2019, p. 4).

In fiscal year 2019, gold metal exports decreased in amount to 507 kilograms (kg) from 36,927 kg in 2018. The country's main gold export partner was Singapore, which received 99% of India's gold exports. Imports increased to 982,697 kg from 955,366 kg in fiscal year 2018. The country's main gold import partners were Switzerland (which provided 39% of India's gold imports), the United States and Ghana (8% each), and Peru (7%) (Indian Bureau of Mines, 2019d, p. 11–13).

Exports of copper ore and concentrates in 2019 increased in amount by 169% to 86,000 metric tons (t) from 32,000 t in 2018; copper and alloys (scrap), by 120% to 11,000 t from 5,000 t in 2018; and copper alloys (ingots), by 100% to

6,000 t from 3,000 t in 2018. Exports of refined copper in 2019 decreased by 67% to 42,000 t from 127,000 t in 2018; copper and alloys (semifabricated), by 51% to 21,000 t from 43,000 t in 2018; iron ore (Fe content), by 33% to 10 million metric tons (Mt) from 15 Mt in 2018; bauxite, by 17% to 942,000 t from 1.1 Mt in 2018; barite, by 15% to 1.9 Mt from 2.2 Mt in 2018; zinc metal, by 14% to 186,000 t from 216,000 t in 2018; cement, coal, and potassium nitrate, by 13% each—to 5.8 Mt of cement from 6.6 Mt in 2018, to 1.3 Mt of coal from 1.5 Mt in 2018, and to 805,000 t of potassium nitrate from 921,000 t in 2018 (tables 3, 4).

Imports of refined copper in 2019 increased in amount by 68% to 141,000 t from 84,000 t in 2018; iron ore (Fe content), by 46% to 7.9 Mt from 5.4 Mt in 2018; copper and alloys (scrap), by 28% to 249,000 t from 195,000 t in 2018; barite, by 17% to 14.7 Mt from 12.5 Mt in 2018; coal, by 13% to 235 Mt from 208 Mt in 2018; and bauxite, by 10% to 2.1 Mt from 1.9 Mt in 2018. Imports of copper ore and concentrates decreased in amount by 26% to 233,000 t in 2019 from 315,000 t in 2018; copper and alloys (semifabricated), by 19% to 348,000 t from 429,000 t in 2018; potassium nitrate, by 15% to 92,000 t from 108,000 t in 2018; lead metal, by 14% to 113,000 t from 131,000 t in 2018; cement, by 14% to 2.3 Mt from 2.6 Mt in 2018; zinc metal, by 12% to 134,000 t from 153,000 t in 2018; alumina, by 11% to 2.4 Mt from 2.7 Mt in 2018; and potassium fertilizer, by 10% to 4.6 Mt from 5.1 Mt in 2018 (tables 3, 4).

Imports from the United States to India in 2019 were valued at about \$34.29 billion compared with \$33.19 billion in 2018. These imports included crude petroleum valued at \$5.61 billion; gem diamond valued at \$4.44 billion; nonmonetary gold, \$1.51 billion; petroleum products, \$905.16 million; natural gas, \$473.75 million; aluminum and alumina, \$339.07 million; copper, \$185.52 million; precious metals, \$156.89 million; nonferrous metals, \$146.08 million; iron and steel products, \$71.51 million; and iron and steel mill products, \$48.66 million (U.S. Census Bureau, 2020a).

In 2019, exports from India to the United States were valued at about \$57.88 billion compared with \$54.25 billion in 2018. These exports included gem diamond valued at \$7.97 billion; petroleum products, \$2.72 billion; stone, sand, and cement, \$638.53 million; gemstones, \$574.82 million; iron and steel products, \$552.15 million; bauxite and aluminum, \$502.64 million; iron and steel, \$319.77 million; iron and steel mill products, \$79.73 million; crude petroleum, \$72.42 million; nonferrous metals, \$27.44 million; other precious metals, \$14.15 million; copper, \$7.24 million; nickel, \$2.46 million; zinc, \$277,000; coal and related materials, \$156,000; tin, \$151,000; and nonmonetary gold, \$59,000 (U.S. Census Bureau, 2020b).

## Commodity Review

### Metals

**Bauxite and Alumina.**—In 2019, India produced 22.3 Mt of bauxite compared with 23.2 Mt in 2018. The production of alumina increased to 6.69 Mt in 2019 from 6.43 Mt in 2018. The State of Odisha was the leading bauxite-producing State, accounting for 65% of the country's total production,

followed by Jharkhand, 10%; Gujarat, 9%; Chhattisgarh and Maharashtra, 6% each; and Madhya Pradesh, 3%. According to Fastmarkets IM, in order to meet demand for anticipated aluminum production, India would need a total supply of 60 Mt/yr of bauxite by 2030 (table 1; Fastmarkets IM, 2019; Indian Bureau of Mines, 2019b, p. 2, 4).

In September, Government-owned Odisha Mining Corp. (OMC) received a stage II forest clearance to develop the Kodingamali Mine in the State of Odisha. The mine, once in operation, was expected to produce 3 Mt/yr of bauxite. Bauxite output from the Kodingamali Mine would be fed to Vedanta Resources Ltd.'s Lanjigarh alumina refinery. In November 2018, a complaint was filed by villages located close to the mine site because of the contamination of agricultural fields. In September 2019, the villagers continued to protest against the mining project. In December, the Odisha High Court ordered a halt to the project (Mohanty, 2017; Krithika, 2020).

In 2019, the Dongria Kondhs community continued to fight against the development of the Niyamgiri Mine by OMC because of the concerns about the potential environmental impacts of the project. The resources of the Niyamgiri Mine, which is located at the top of a hill in the Niyamgiri range of hills, were estimated to be 75 Mt of bauxite. The mine was intended to supply Vedanta Resources's Lanjigarh alumina refinery with bauxite. The Environmental Ministry withdrew OMC's forest clearance license in 2010. The Supreme Court announced that it would reissue the forest clearance to OMC only after hearing the decision of the Gram Sabhas. In 2016, the OMC's attempt to convince the Supreme Court to hold Gram Sabhas was unsuccessful. The Gram Sabha is a primary body of the Panchayat Raj system of local self-governance wherein people from a village discuss local governance and development of the village. The decisions taken by a Gram Sabha, which is the equivalent of a village council, cannot be annulled by any other body. The government of the State of Odisha was considering re-auctioning the mining license for the Niyamgiri Mine and OMC was expected to bid for it. The specific date for the auction was not available (Dash, 2017; Metal Bulletin Magazine, 2017, p. 30; Seetharaman, 2018; Barik, 2019).

Utkal Alumina International Ltd., which was a wholly owned subsidiary of Hindalco Industries, planned to expand the production capacity of alumina at its Koraput refinery in Odisha to 2.0 Mt/yr from 1.5 Mt/yr. The expansion project was expected to be completed by 2020. The bauxite supply to the refinery was sourced from the Baphlimali bauxite deposit located in Odisha (Indian Bureau of Mines, 2019a, p. 1; Mining.com, 2019).

**Copper.**—In 2019, production of mined copper (concentrates, Cu content) decreased by 17% to 29,200 t from 35,300 t (revised) in 2018; total smelted copper, by 30% to 344,000 t from 492,000 t; and total refined copper, by 23% to 426,000 t from 551,000 t. The leading copper ore-producing State was Madhya Pradesh, which accounted for 59% of the country's total production (Cu content), followed by Rajasthan, 36%; and Jharkhand, 5% (table 1; Indian Bureau of Mines, 2019c, p. 5).

In March 2018, the Government decided to shut down the Tuticorin copper smelter operated by Vedanta permanently in 2018 owing to protests concerning the environmental risk of the smelter and the company's plan to increase the smelter's

production capacity to 800,000 t/yr of refined copper. In 2018, Vedanta submitted a renewal request for its Consent to Operate (CTO) certificate, but the request was rejected by the Tamil Nadu Pollution Control Board. The company brought its case before the National Green Tribunal (NGT) in New Delhi. The State government reached out to the Supreme Court, which recommended that the State government bring the issue up to the Madras High Court. As of 2019, the smelter remained closed. The company was awaiting the Madras High Court's decision on the CTO issue (Varadhan, 2018; Narasimhan, 2020).

**Iron Ore and Iron and Steel.**—India produced 126 Mt of iron ore (Fe content) in 2019 compared with 127 Mt in 2018. In 2019, Odisha was the leading producing State, accounting for 55% of India's total production; it was followed by Chhattisgarh, 17%; Karnataka, 14%; Jharkhand, 11%; Madhya Pradesh, 1.3%; Rajasthan, 0.5%. Andhra Pradesh and Maharashtra contributed the remaining 0.3% each (table 1; Indian Bureau of Mines, 2019e, p. 3).

Raw steel production increased to 111 Mt in 2019 from 109 Mt in 2018. The country's steelmaking companies indicated that the steel production goal specified in the National Steel Policy would be possible only if concerns regarding the iron ore supply could be resolved. The companies requested that the Government place a temporary ban on iron ore exports so that the ore would be available for use by the domestic steelmaking companies. The Government increased the tariffs on iron ore and concentrates and on pellets, and all iron ore produced locally would be used for domestic production of raw steel by local steel companies (Press Information Bureau, 2017; CRISIL Ltd., 2018, p. 2; Business Today, 2021).

**Titanium and Zirconium (Mineral Sands).**—In 2019 the production of ilmenite and leucoxene decreased by 4% to 270,000 t from 280,000 t in 2018. The production of rutile and zircon increased to 12,000 t and 18,000 t (estimated), respectively, in 2019 from 11,600 t and 13,951 t, respectively, in 2018. In 2019, the Government issued a ban on the mining of mineral sands by private companies and tried to nationalize the companies to address illegal mineral sand exports, the poor regulatory environment, and the lack of monitoring of illegal mining. According to the Federation of Indian Mineral Industries, this ban may result in increased imports of mineral sands, as Government companies may not be able to meet the previous production levels reached by private companies (table 1; Das, 2019a, b).

In 2019, Trimex Sands Private Ltd. (TSPL), which was part of the Trimex Group, halted its mineral sand development operation because of the ban on beach sand mining by private mining companies. The company was undertaking the development of the mining operations at the Bhavanapadu and Kalingaratnam heavy-mineral-sand projects in the Srikakulam District. In 2016, Trimex Group received approval from the State of Andhra Pradesh to develop the projects. The Bhavanapadu project was expected to be developed by Trimex Heavy Minerals Pvt Ltd. (THMPL), which was a subsidiary of TSPL, and the production capacity was expected to be 10 Mt/yr of heavy-mineral sand. The Kalingaratnam project was expected to be developed by Trimex Ores Pvt Ltd., which was also a subsidiary of TSPL, and the production capacity was



expected to be 4 Mt/yr of heavy-mineral sand, including garnet, ilmenite, rutile, sillimanite, and zircon. The timeframe for the development was not specified (Salwan, 2016a; CRISIL Ltd., 2018, p. 1; Hindu, The, 2020).

As of 2019, V.V. Minerals Ltd. was the leading exporter of garnet, ilmenite, and rutile in India. The company also was engaged in mining mineral sand. The company's production was affected by the Government ban on beach sand mining by private mining companies. The company was not expecting to restart its mining operations in India within the next 2 years. Instead, the company applied for licenses to begin mining rare earth deposits in Kenya and Tanzania (Varadhan, 2019b).

### *Industrial Minerals*

**Diamond.**—In 2019, Essel Mining and Industries Ltd. (a subsidiary of Aditya Birla) won the auction for the Bunder diamond project, which was located in Chhatarpur District, Madhya Pradesh. In 2015, Rio Tinto Ltd. of Australia made progress on the prefeasibility study (which had been started in July 2010) on its wholly owned Bunder diamond project in the State of Madhya Pradesh, which was discovered in 2004. Exploration by Rio Tinto estimated the resources at the deposit to be 44 Mt of kimberlite ore containing about 0.7 carats per metric ton of rough diamond (Rio Tinto Ltd., 2016, p. 222; Kottasova, 2017; Aditya Birla, 2019).

### *Mineral Fuels and Related Materials*

**Coal.**—In 2019, the total proved reserves of lignite coal in India were estimated to be 150 billion metric tons (Gt). India produced 523 Mt of bituminous coal and 40 Mt of lignite coal in 2019 compared with 716 Mt and 46 Mt, respectively, in 2018. In 2019, India remained the world's second-ranked consumer and importer of coal after China. India's imports of coal increased to 235 Mt in 2019 from 208 Mt in 2018. In 2015, the Government had set a goal for State-owned Coal India Ltd. to increase its coal production to 1 billion metric tons per year by 2020. The increased competition from renewable energy sources, flooded coal mines from a heavy monsoon, and labor strikes at coal mines caused a decrease in production in 2019. The labor strikes were against the Foreign Direct Investment Policy issued by the Government that allows 100% of foreign direct investment (FDI) in coal mining in India (tables 1, 4, 5; PricewaterhouseCoopers Private Ltd., 2016, p. 2; Russel, 2019; Varadhan, 2019a; Ministry of Coal, 2020; U.S. Energy Information Administration, 2020, p. 12).

**Uranium.**—In 2019, India's production of mined uranium (U content) decreased to 308 t from 423 t in 2018. Uranium Corporation of India Ltd., which was owned by the Department of Atomic Energy, planned to develop the country's largest uranium deposit at Kanampalli in the State of Andhra Pradesh. The company was expected to invest about \$845 million. The production capacity was anticipated to be 2.0 million metric tons per day of uranium (table 1; Das, 2019c).

### **Reserves and Resources**

Table 5 is a list of mineral reserves in India.

### **Outlook**

The International Monetary Fund projected that real GDP would decrease by 10.3% in 2020. In recent years, the Government has continued its efforts to increase the country's mineral production and to attract foreign investment into its mineral industry. The development of India's mineral industry will be highly dependent on a variety of factors, such as how the country overcomes challenges faced by the industry, the pace of the implementation of relevant reforms and policies, the pace of growth of domestic demand, progress in nationalization of some mining sites, bans on exports of iron ore, environmental protests at some major projects, and the ongoing effects of the coronavirus disease 2019 (COVID-19) pandemic. In the future, the production capacity of iron ore is expected to continue to increase. Production of coal is expected to increase to 1 Gt by 2024; however, owing to competition from renewable energies, the target might be delayed to 2025 or 2026. The production of steel is expected to continue to increase, as steel companies move to increase their raw steel capacity to meet the National Steel Policy production target of 300 Mt/yr by 2030, which is thought to be possible if the lack of raw material and capital are addressed. Salt production is expected to increase given Dev Salt Pvt. Ltd.'s plans to increase the production of salt by more than 50 Mt by 2025. Uranium production is expected to increase once the Kanampalli uranium deposit is developed in the future. As a result of the Tutocaring smelter shutdown, imports of copper concentrates will likely decrease, as will the production of smelted and refined copper. Production of mineral sand is expected to decrease owing to the implementation of the beach sand mining ban by the Government in 2019 (Wong, 2017; Varadhan, 2018; Financial Express, 2019; Sengupta, 2019; International Monetary Fund, 2020, p. 145).

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

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2015	2016	2017	2018	2019
<b>METALS</b>					
<b>Aluminum:</b>					
Bauxite thousand metric tons	27,757	23,886	22,803	23,229	22,307
Alumina, Al <sub>2</sub> O <sub>3</sub> equivalent do.	5,512	6,028	6,055	6,430	6,690
Metal, primary do.	2,355	2,723	3,269	3,675	3,640
Cadmium, refinery, primary	130	21	61	-- <sup>r</sup>	-- <sup>e</sup>
Chromium, mine, chromite thousand metric tons	2,666	3,329	3,478	4,076	4,139
Cobalt, refinery, metal and salts, Co content	150	100	100	100	NA <sup>e</sup>
<b>Copper:</b>					
Mine, concentrates, Cu content	29,900	29,600 <sup>e</sup>	30,300 <sup>e</sup>	35,300 <sup>r</sup>	29,200
<b>Smelter:</b>					
Primary	792,600	769,800	813,100	481,500	342,300
Secondary	--	3,500	10,000	10,000	2,000
Total	793,000	773,000	823,000	492,000	344,000
<b>Refinery:</b>					
Primary	791,900	769,300	819,000	541,000 <sup>r</sup>	424,200
Secondary	--	3,500	10,000	10,000 <sup>e</sup>	2,000
Total	792,000	773,000	829,000	551,000	426,000
<b>Ferroalloys:</b>					
Ferroaluminum	3,010	4,140	4,337	3,221	1,962
Ferroboration	42	--	--	--	--
Ferromanganese	616,000 <sup>r</sup>	599,000 <sup>r</sup>	697,000 <sup>r</sup>	720,000 <sup>r</sup>	474,000
Ferromolybdenum	1,281	1,614	1,315	1,086	631
Ferrosilicomagnesium	21,887	21,140	16,724	18,436	15,445
Ferrosilicon	92,000	90,000	90,000	90,000	93,000 <sup>e</sup>
Ferrotitanium	204	231	389	125	92
Ferrovandium	879	1,266	1,318	1,150	587
Silicomanganese	1,832,000	1,768,000	2,038,000	2,133,000 <sup>r</sup>	1,588,000
Total	2,570,000 <sup>r</sup>	2,490,000 <sup>r</sup>	2,850,000 <sup>r</sup>	2,970,000 <sup>r</sup>	2,170,000
<b>Gold:</b>					
<b>Mine, ore:</b>					
Gross weight kilograms	469,336	631,815	536,240	562,681	594,858
Au content do.	1,300	1,930	1,810	1,600	1,780
Smelter, primary do.	1,375	1,555	1,502	1,554	1,896
Refinery, bullion do.	10,255	10,299	11,907	12,274	10,286
<b>Iron ore, mine:</b>					
Gross weight thousand metric tons	142,399	184,501	201,815	204,091	203,052
Fe content <sup>e</sup> do.	88,000	114,000	125,000	127,000	126,000
<b>Iron and steel:</b>					
Direct-reduced iron do.	22,644	26,982	29,505	34,213 <sup>r</sup>	36,858
Pig iron do.	58,393	63,714	66,808	72,641 <sup>r</sup>	74,099
Raw steel do.	89,026	95,477	101,455	109,272 <sup>r</sup>	111,246
<b>Products:</b>					
Finished do.	99,650	104,931	114,812	127,094	112,236
Semimanufactured do.	45,266	38,391	37,733	88,857	109,631
<b>Lead:</b>					
Mine, Pb content	136,000	147,000	175,000	192,496	200,000 <sup>e</sup>
<b>Smelter:</b>					
Primary	143,000	134,000	165,122	195,055	184,901
Secondary	358,000	555,000 <sup>r</sup>	647,000 <sup>r</sup>	688,000 <sup>r</sup>	737,000
Total	501,000	689,000 <sup>r</sup>	812,000 <sup>r</sup>	883,000 <sup>r</sup>	922,000
<b>Manganese, mine, ore and concentrate:</b>					
Gross weight thousand metric tons	2,300	2,100	2,100	4,661 <sup>r</sup>	2,615
Mn content do.	810	745	734	1,453 <sup>r</sup>	801
<b>Rare earths, monazite concentrate:</b>					
Gross weight	3,000	2,500	3,000	5,000	5,000
Rare-earth oxide equivalent	1,700 <sup>e</sup>	1,500	1,800 <sup>e</sup>	2,900	2,900 <sup>e</sup>
Selenium, Se content kilograms	17,000	17,000 <sup>e</sup>	17,000 <sup>e</sup>	17,000 <sup>e</sup>	14,600

See footnotes at end of table.



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

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2015	2016	2017	2018	2019
METALS—Continued					
Silver:					
Smelter kilograms	383,479	445,367	526,604	648,600	633,176
Refinery	453	509	596	730	703
Tin:					
Mine, concentrate	17	13	15	18	20
Smelter:					
Primary	17	9	15 <sup>r</sup>	18 <sup>r</sup>	19
Secondary	3,800 <sup>e</sup>	3,800 <sup>e</sup>	3,000 <sup>e</sup>	--	--
Titanium, mineral concentrate: <sup>c</sup>					
Ilmenite and leucoxene	552,000 <sup>r</sup>	618,000	517,000	280,000 <sup>r</sup>	270,000
Rutile	16,400 <sup>r</sup>	16,200	14,100	11,600 <sup>r</sup>	12,000
Zinc:					
Mine, Zn content	821,617	658,000 <sup>e</sup>	830,000 <sup>e</sup>	750,000 <sup>e</sup>	720,000 <sup>e</sup>
Refinery:					
Primary	821,617	611,814	799,877	727,693	691,030
Secondary, remelt	16,383	16,816	18,100 <sup>r</sup>	18,300	21,000
Total	838,000	629,000	818,000 <sup>r</sup>	746,000	712,000
Zirconium, zircon	18,891	18,437	30,351	13,951	18,000 <sup>e</sup>
INDUSTRIAL MINERALS					
Abrasives:					
Diaspore, natural	15,000	NA	NA	NA	NA
Garnet thousand metric tons	76	81	142	162	31
Barite	1,225,006 <sup>r</sup>	1,246,371 <sup>r</sup>	2,038,915 <sup>r</sup>	2,390,000 <sup>e</sup>	2,000,000 <sup>e</sup>
Bromine, elemental <sup>c</sup>	2,400	2,700	2,400	2,300	10,000
Cement, hydraulic <sup>c</sup> thousand metric tons	283,000 <sup>r</sup>	284,000 <sup>r</sup>	308,000 <sup>r</sup>	310,000 <sup>r</sup>	338,000
Clay:					
Ball clay <sup>c</sup> do.	1,970	3,620 <sup>r</sup>	3,780 <sup>r</sup>	3,900 <sup>r</sup>	3,900
Bentonite <sup>c</sup> do.	870 <sup>r</sup>	3,110 <sup>r</sup>	3,460 <sup>r</sup>	3,500 <sup>r</sup>	3,500
Fire clay <sup>c</sup> do.	765	636 <sup>r</sup>	702 <sup>r</sup>	700 <sup>r</sup>	700
Fuller's earth <sup>c</sup>	--	558,000 <sup>r</sup>	734,000 <sup>r</sup>	730,000 <sup>r</sup>	730,000
Kaolin, marketable:					
Crude thousand metric tons	4,040 <sup>e</sup>	7,880 <sup>r</sup>	7,640 <sup>r</sup>	7,600 <sup>r</sup>	7,600 <sup>e</sup>
Processed <sup>c</sup> do.	74	31	74	74	74
Diamond: <sup>c</sup>					
Gem thousand carats	9	9	11	11	17
Industrial do.	25	24	30	29	45
Feldspar <sup>c</sup>	4,120,000	5,890,000	3,430,000 <sup>r</sup>	3,400,000 <sup>r</sup>	3,400,000
Fluorspar, metallurgical grade	2,270	1,920	1,120	1,270 <sup>r</sup>	1,424
Gemstones, unspecified	90,330	--	--	--	--
Graphite:					
Amorphous <sup>c</sup>	2,700	3,000	3,500	3,500	3,500
Crystalline flake	24,200 <sup>e</sup>	27,000 <sup>e</sup>	31,500 <sup>e</sup>	44,207	30,837
Gypsum, mine <sup>c</sup> thousand metric tons	2,640	1,880 <sup>r</sup>	1,540 <sup>r</sup>	1,500 <sup>r</sup>	1,500
Iron oxide pigments, mineral, natural, ocher	2,203,708	1,980,000 <sup>r</sup>	2,400,000 <sup>r</sup>	2,365,850 <sup>r</sup>	2,500,000 <sup>e</sup>
Kyanite and related minerals:					
Kyanite	2,300	2,932	7,094	5,827	1,520
Sillimanite	65,243	64,923	81,044	84,215	70,000 <sup>e</sup>
Lime <sup>c</sup> thousand metric tons	16,000	16,000	16,000	16,000	16,000
Magnesite	251,737	317,084	187,974	172,947	106,379
Mica: <sup>c</sup>					
Crude thousand metric tons	1	1	1	1	1
Scrap and waste do.	14	13	14	15 <sup>r</sup>	15
Total do.	15	14	15	16 <sup>r</sup>	16
Nitrogen, ammonia, N content do.	11,309	11,574	11,405	11,900 <sup>r</sup>	12,200

See footnotes at end of table.

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

(Metric tons, gross weight, unless otherwise specified)

Commodity <sup>2</sup>	2015	2016	2017	2018	2019	
<b>INDUSTRIAL MINERALS—Continued</b>						
Phosphate rock, including apatite:						
Gross weight	thousand metric tons	1,959	825	1,588	1,423	1,484
P <sub>2</sub> O <sub>5</sub> content, 25% P <sub>2</sub> O <sub>5</sub>	do.	490	210	400 <sup>r</sup>	360	370
Salt	do.	24,241	27,500 <sup>e</sup>	28,000 <sup>e</sup>	29,000 <sup>e</sup>	29,000 <sup>e</sup>
Sand and gravel, industrial: <sup>e</sup>						
Sand	do.	3,000	3,200	3,400	3,400	3,400
Quartz and quartzite	do.	4,000	4,530	4,500	4,500	4,500
Unspecified	do.	4,000	4,000	4,000	4,000	4,000
Soda ash, synthetic <sup>e</sup>	do.	2,500	2,400	2,500	2,500	2,500
Stone:						
Crushed:						
Calcite <sup>e</sup>		92,000	109,000 <sup>r</sup>	95,000 <sup>r</sup>	109,000	109,000
Chalk <sup>e</sup>		107,000	308,000	296,000	118,000	120,000
Dolomite	thousand metric tons	6,485	4,250 <sup>r,e</sup>	4,250 <sup>r,e</sup>	4,300 <sup>r,e</sup>	4,300 <sup>e</sup>
Limestone	do.	294,621	312,644	327,846	371,377	366,596
Size and shape unspecified, dunite		72,500	76,000	80,000	80,000	80,000
Sulfur, byproduct, S content:						
Metallurgy <sup>e</sup>	thousand metric tons	1,200	1,200	1,200	1,200	1,200
Petroleum and fertilizer		428,000 <sup>e</sup>	508,998	726,639	892,821	875,579
Talc and related minerals: <sup>e</sup>						
Pyrophyllite		167,000	170,000	170,000	170,000	170,000
Soapstone and steatite		803,000	1,360,000 <sup>r</sup>	1,400,000 <sup>r</sup>	1,600,000 <sup>r</sup>	1,600,000
Vermiculite		13,250	8,058	5,315	5,159	2,232
Wollastonite		181,720	166,554	156,096	148,379	170,401
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Coal:						
Bituminous	thousand metric tons	631,085	647,344	667,362	716,051	523,484
Lignite	do.	44,453	45,049	47,026	46,032	40,279
Total	do.	676,000	692,000	714,000	762,000	564,000
Natural gas:						
Gross	million cubic meters	26,517	30,391	31,855	31,776	40,205
Marketable	do.	28,100 <sup>e</sup>	26,600	27,700	27,500	26,900
Petroleum:						
Crude	thousand 42-gallon barrels	289,400	280,100	263,100	254,200	297,100
Refinery: <sup>e</sup>						
Distillate fuel oil	do.	100,000	150,000	149,000 <sup>r</sup>	150,000 <sup>r</sup>	150,000
Gasoline	do.	226,000	315,000	323,000 <sup>r</sup>	320,000 <sup>r</sup>	320,000
Kerosene, including jet fuel	do.	55,000	44,000	26,000 <sup>r</sup>	30,000 <sup>r</sup>	30,000
Liquefied petroleum gas	do.	125,000	134,000	145,000 <sup>r</sup>	150,000 <sup>r</sup>	150,000
Residual fuel oil	do.	47,300	63,400	61,000 <sup>r</sup>	61,000 <sup>r</sup>	61,000
Other	do.	860,000	303,000	320,000	320,000	320,000
Total	do.	1,410,000	1,010,000	1,020,000 <sup>r</sup>	1,030,000 <sup>r</sup>	1,030,000
Uranium, mine, U content		323	385	421	423	308

<sup>e</sup>Estimated. <sup>r</sup>Revised. do. Ditto. NA Not available. -- Zero.

<sup>1</sup>Table includes data available through January 6, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to three significant digits; may not add to totals shown.

<sup>2</sup>In addition to the commodities listed, boron, corundum, and other gemstones (aquamarine, emerald, ruby, and spinel) may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
Alumina	Bharat Aluminium Co. Ltd. (Government, 49%, and Vedanta Aluminum Ltd., 51%)	Korba smelter, Chhattisgarh	200
Do.	Hindalco Industries Ltd. (Aditya Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Belagavi smelter, Karnataka	350
Do.	do.	Muri smelter, Jharkhand	450
Do.	do.	Renukoot smelter, Uttar Pradesh	700
Do.	Madras Aluminium Co. Ltd. (MALCO) [Vedanta Group, 80%, and others, 20%]	Mettur smelter, Tamil Nadu	85
Do.	National Aluminium Co. Ltd. (NALCO) [Government, 51.28%]	Dhmanjodi smelter, Odisha	2,300
Do.	Utkal Alumina International Ltd. (Hindalco Industries Ltd., 100%)	Koraput refinery, Odisha	1,500
Do.	Vedanta Aluminium Ltd. (Vedanta Resources plc, 100%)	Lanjigarh smelter, Odisha	1,000
Aluminum	Hindalco Industries Ltd. (Aditya Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Aditya smelter, Sambalpu, Odisha	360
Do.	do.	Alupuram smelter, Kerala	8
Do.	do.	Hirakud smelter, Odisha	220
Do.	do.	Mahan smelter, Bargawan, Madhya Pradesh	360
Do.	do.	Renukoot smelter, Uttar Pradesh	350
Do.	Madras Aluminium Co. Ltd. (MALCO) [Vedanta Group, 80%, and others, 20%]	Mettur smelter, Tamil Nadu	40
Do.	National Aluminium Co. Ltd. (NALCO) (Government, 51.28%)	Angul smelter, Odisha	460
Do.	Vedanta Aluminium Ltd. (Vedanta Resource Ltd., 100%)	Jharsuguda I and II smelters, Odisha	1,750
Barite	Andhra Pradesh Mineral Development Corp. Ltd. (Andhra Pradesh State government, 100%)	Mines in Kadapa District mines, Andhra Pradesh	3,000
Do.	IBC Ltd. (Government, 100%)	do.	NA
Do.	Ramadas Minerals Pvt. Ltd.	Two mines in Nellore District, Andhra Pradesh	NA
Do.	Sudarsan Barytes Co.	One mine in Nellore District, Andhra Pradesh	NA
Do.	Viswabharati Mining Corp. Ltd.	Mines in Khammam District, Telangana	NA
Bauxite	Ashapura Minechem Ltd. (100%)	Jamnagar and Rata-Talab Mines, Gujarat	NA
Do.	do.	Raigarh Mine, Maharashtra	NA
Do.	Bharat Aluminium Co. Ltd. [Sterlite Industries (India) Ltd., 51%, and Government, 49%]	Bodai Daldali (Kawardha) Mine, Chhattisgarh	1,250
Do.	do.	Mainpat Mine, Chhattisgarh	750
Do.	Bombay Minerals Ltd.	Asota Mewasa Mine, Gujarat	NA
Do.	Gujarat Mineral Development Corp. (Gujarat State government, 75%, and public and institutional investors, 25%)	Roha-Kotada; Mothala-Balochod; Naredi-II Ratadai-Nagreacha, Naredi, Wandh-I, Nana-Goniyasar; Badan-Wamoti; and Mevasa Mines in Gujarat	17,600
Do.	Hindalco Industries Co. Ltd. (Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Gulma and Latehar Mines, in Lohardaga District, Jharkhand	750
Do.	do.	Mine in Surgudja District, Chhattisgarh	NA
Do.	National Aluminium Co. Ltd. (NALCO) (Government, 51.28%)	Mines in Panchpatmali Hills, Damanjodi, Koraput District, Odisha	6,800
Do.	Madras Aluminium Co. (100%)	Shevaroy Mine, Tamil Nadu	NA
Do.	Minerals & Minerals Ltd. (Government, 100%)	Mines in Richuguta, Palamau District, Jharkhand	200
Do.	M/S Orient Abrasive Ltd.	Avariya-I; Varada-IV; and Rata-Talab Mines, Gujarat	NA
Do.	Odisha Mining Corp. Ltd. (Government of Odisha and Federal)	Kodingamali Mine, Koraput, Odisha	300
Do.	Panditrao Mines and Minerals Pvt. Ltd.	Minche Budrak Mine, Kolhapur, Maharashtra	NA
Do.	Prabhudas Vithaldas	Virpur and Kenedy Mines, Gujarat	840
Do.	Utkal Alumina International Ltd.	Baphilimali Mine, Rayagada District, Odisha	8,500
Boron	Borax Morarji Ltd.	Ambarnath refinery, Maharashtra	24
Bromine metric tons	Satyesh Brinechem Pvt. Ltd.	Greater Rann, Kutch, Gujarat	15

See footnotes at end of table.

TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>	
Cadmium	metric tons	Binani Zinc Ltd.	Binanipuram District, Kerala <sup>1</sup>	80
Do.	do.	Hindustan Zinc Ltd. (Vedanta Ltd., 64.9%, and Government, 29.5%)	Chanderiya zinc smelter, Rajasthan <sup>2</sup>	468
Do.	do.	do.	Debari zinc smelter, Rajasthan	250
Cement	ACC Ltd. (LafargeHolcim Group, 67%)	Bargarh plant, Odisha; Gagal I & II plants, Himachal Pradesh; Madukkarai plant, Tamil Nadu; Wadi and Wadi New plants, Karnataka	8,510	
Do.	Ambuja Cements Ltd. (LafargeHolcim Group, 14.8%)	Plants in 10 States	21,000	
Do.	Andhra Cements Ltd., (Jaypee Group 100%)	Vizag and Nadikude-Durga, Andhra Pradesh	1,420	
Do.	Birla Corp. Ltd. (M.P. Birla Group)	Chanderiya plant, Rajasthan; Durgapur plant, West Bengal; Raebareli plant, Uttar Pradesh; Satna plant, Madhya Pradesh	5,500	
Do.	Binani Cement Ltd.	Binani plant, Sikar, Rajasthan	1,400	
Do.	C.C.I. Ltd. (Government, 100%)	Bokajan plant, Assam; Rajban plant, Himachal Pradesh; Tandur plant, Telangana	1,450	
Do.	Cement Manufacturing Co. Ltd.	Cement plant in Kolkata, West Bengal	1,270	
Do.	Chettinad Cement Corp. Ltd.	Puliyur, Karikkali, and Ariyalur plants, Tamil Nadu	14,200	
Do.	Century Cement [Century Textiles and Industries Ltd. (Birla Group, 100%)]	Baikunth plant, Madhya Pradesh	12,900	
Do.	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.	2 plants in Tamil Nadu; 1 plant in Meghalaya; 1 plant in Karnataka; one plant in Andhra Pradesh; 1 plant in Assam	16,100	
Do.	HeidelbergCement India Ltd., 100%	Narasingarh plant, Haryana	5,210	
Do.	India Cements Co. Ltd. (Government, 26%; Life Insurance Corp. of India, 24%; others, 50%)	Sankarnagar plant and other 2 plants, Tamil Nadu; 4 plants, Andhra Pradesh; Mani plant, Rajasthan	20,000	
Do.	Jaypee Cement Ltd.	Ten plants in Madhya Pradesh and Uttar Pradesh	NA	
Do.	Jaiprakash Associates Ltd.	Sewagram plant, Gujarat	2,400	
Do.	JK Lakshmi Cement Ltd. (a division of Straw Products Ltd., JK Singhania, principal shareholder)	Sirohi plant, Rajasthan and Ahmadabad	15,000	
Do.	J.K. Cement Works (a division of JK Synthetics Ltd., 100%)	Gujarat Nimbahera; Gotan, and Mangrol plants Rajasthan; Muddapur plants, Karnataka; Jharli plant, Haryana	10,800	
Do.	JSW Cement	Nandyal Works, Andhra Pradesh; Vijaynagar Works, Karnataka; Dolvi Works, Maharashtra	10,400	
Do.	KCP Ltd.	KCP Ltd-Macherla plant, Maktyala	2,350	
Do.	Kesoram Industries Ltd.	Kesoram plant, Telangana; Vasvadatta plant, Karnataka	11,000	
Do.	Lafarge S.A.	Arasmeta and Sonadih plants, Chhattisgarh; Jojobera plant, Jharkhand; and Mejia plant, West Bengal	11,650	
Do.	Malabar Cements Ltd.	Cherthala and Walayar plants, Kerala	860	
Do.	Mangalam Cement Ltd.	Mangalam I and II plants, Rajasthan; Aligarh plant, Uttar Pradesh	2,000	
Do.	Manikgarh Cement [Century Textiles and Industries Ltd. (Birla Group, 100%)]	Tehsil Rajura plant, Maharashtra	1,000	
Do.	Mehta Group	Suarashtra plant, Gujarat; Gujarat Sidhee plant, Gujarat	4,260	
Do.	My Home Industries Ltd. (joint venture of My Home Group and CRH plc)	Mellacheruvu plant, Telangana, and Visakhapatnam plant, Andhra Pradesh	6,800	
Do.	OCL India Ltd.	Kapilas and Rajgangpur plants, Odisha	6,700	

See footnotes at end of table.



TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(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	Orient Papers & Industries	Chittapur plant, Karnataka; Devapur plant, Telangana; Jalgaon plant, Maharashtra	10,000
Do.	Penna Cement Industries Ltd.	Penna Tandur; Penna Ganeshphad plants, Telangana; Penna-Boyareddypalli and Talaricheruvu plants, Andhra Pradesh	7,400
Do.	Prism Cement Ltd.	Prism Cement-I and II plant, Madhya Pradesh	6,600
Do.	Raasi Cement Ltd. (Andhra Pradesh State government, 50%, and Development Co. Ltd., 50%)	Vishnupuram plant, Andhra Pradesh	1,000
Do.	Rain Cement Ltd.	Nalgona plant, Telangana; Kurnool plant, Andhra Pradesh	4,270
Do.	Rajashree Cement (a division of Indian Rayon and Industries Ltd., 100%)	Khor plant, Karnataka	1,020
Do.	Ramco Cement Ltd.	Ramasamyraja Nagar, Alathiyur Works I and II, and Salem plants, Tamil Nadu; Jayantipuram plant, Andhra Pradesh	16,500
Do.	Raymond Cement Works (a division of Raymond Woolen Mills Ltd., JK Singhania, principal shareholder)	Gopalnagar plant, West Bengal	1,250
Do.	Sagar Cement Ltd.	BMM plant, Andhra Pradesh	3,200
Do.	Shree Cement Ltd.	Roorkee plant, Uttarakhand	1,500
Do.	Shree Digvijay Cement Co. Ltd.	Shree Digvijay-Sikka plant, Chhattisgarh	1,200
Do.	do.	Shreeniwas plant, Maharashtra	1,200
Do.	Tamil Nadu Cements Corp. Ltd.	Alangulam and Ariyalur plants, Virundhunagar District, Tamil Nadu	330
Do.	Ultratech Cement Ltd.	12 integrated plants and 12 grinding units	96,100
Do.	Vikram Cement [Grasim Industries Ltd. (Birla Group, 100%)]	Vikram plant, Madhya Pradesh	1,000
Do.	Zuari Cement Ltd.	Zuari plant, Kerala; Sri Vishnu plant, Hyderabad	7,300
Chromite	Balasure Alloys Ltd.	Kaliapani, Sukinda Valley, Jajpur, Odisha	95
Do.	Ferro Alloys Corp. Ltd.	Khathpal, Andhra Pradesh; Ostapal, Odisha; Kalarangiatta, Odisha	NA
Do.	Indian Metal & Ferro Alloys Corp. Ltd.	Sukinda valley; Mahagiri, Nuasahi; Chinagudip Bangur; Choudwar; Therubali, Odisha	847
Do.	Jindal Stainless Ltd.	Kaliapani, Jajpur, Odisha	100
Do.	Karnataka State Minerals Corp. Ltd. (state-owned)	Aladahalli Mines, Karnataka	37
Do.	do.	Bhakhthara Halli Mines, Karnataka	24
Do.	do.	Byrapura Mines, Karnataka	15
Do.	do.	Tagadur Mines, Karnataka	12
Do.	do.	Mines in Hassan District, Karnataka	12
Do.	do.	Jambur Mines, Karnataka	5
Do.	Misrilal Mines Pvt. Ltd. (100%)	Saruabil village, Jajpur, Orissa	NA
Do.	Orissa Mining Corp. Ltd. (Orissa Industries Ltd., 100%)	Sukrangi and South Kaliapani, Odisha	86
Do.	do.	Chrome beneficiation plant, Odisha	35
Do.	Tata Steel Ltd.	Randia plant, Bhadrak, Cuttack District, Odisha	351
Do.	do.	Kamarda, Saruabil, and Sukinda mines, Odisha	200
Clay:			
Bentonite	Ashapura Minechem Ltd. (AMCOL Int. Corp.)	Kutch Mine, Gujarat	350
Do.	do.	Bhuji and Dharur Mines, Gujarat	72
Do.	Ashapura International Ltd.	NA	NA
Do.	Gimpex Ltd.	Mine in Chennai	NA
Do.	Gujarat Mineral Development Corp. Ltd.	Surkha Mine, Gujarat	750
Do.	Vijaylaxmi Group of Industries	Mine in West Rajasthan	NA
Ball clay	Bikaner Ceramics	Kolayat, Rajasthan	75
Do.	Sampat Lal Daga	Bikaner, Rajasthan	NA
Fire clay	Mshabhi Ismaibhai Kalidia	Surendranagar, Gujarat	NA
Do.	Parijat Mining Industries (India) Pvt. Ltd.	Latehar, Jharkhand	10
Do.	Sampat Lal Daga	Kotri, Bikaner, Rajasthan	35
Do.	Sunder Lal Daga	Golari, Bikaner, Rajasthan	30
Do.	Shri Motilal Bajaj	Tikariya, Madhya Pradesh	2

See footnotes at end of table.

TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>	
Clay:—Continued				
Kaolin	Gopalbhai Savanghai Dangar	Dagala, Gujarat	115	
Do.	Manoj P. Solanki	Nadapa, Gujarat	600	
Coal	million metric tons	Bharat Coking Coal Ltd. [Coal India Ltd. (Government, 100%)]	Jharia and Raniganj Mines, Bihar and West Ber	27
Do.	do.	Central Coalfields Ltd. [Coal India Ltd. (Government, 100%)]	Mines in Bihar	61
Do.	do.	Eastern Coalfields Ltd. [Coal India Ltd. (Government, 100%)]	Mines in Bihar and West Bengal	50
Do.	do.	Mahanadi Coalfields Ltd. [Coal India Ltd. (Government, 100%)]	Mines in Odisha	89
Do.	do.	Neyveli Lignite Corp. Ltd. (NLC) (Government, 100%)	Mines in Tamil Nadu	242
Do.	do.	Northern Coalfields Ltd. [Coal India Ltd. (Government, 100%)]	Mines in Madhya Pradesh and Uttar Pradesh	108
Do.	do.	North Eastern Coalfields Ltd. [Coal India Ltd. (Government, 100%)]	Mines in Assam	486
Do.	do.	Singareni Collieries Co. Ltd. (Andhra Pradesh State government, 50%, and Government, 50%)	Mines in Andhra Pradesh and Maharashtra	64
Do.	do.	South Eastern Coalfields Ltd. [Coal India Ltd. (Government, 100%)]	Mines in Chhattisgarh	145
Do.	do.	Western Coalfields Ltd. [a subsidiary of Coal India Ltd. (Government, 100%)]	Mines in Madhya Pradesh and Maharashtra	108
Copper:				
Mine output	Hindustan Copper Ltd. (HCL) (Government, 100%)	Indian Copper Complex Mines, Ghatsila District, Jharkhand	362	
Do.	do.	Khetri Copper Complex Mines, Khetrinagar, Rajasthan	11	
Do.	do.	Malanjkhand Copper Complex Mines, Balaghat District, Madhya Pradesh	17	
Do.	do.	Surda Mine, Jharkhand	8	
Metal	Hindalco Industries Ltd. (Birla Group, 33%; foreign investors, 26%; private Indian investors, 23%; financial institutions, 18%)	Birla Copper Complex smelter, Dahej, Gujarat	321	
Do.	Hindustan Copper Ltd. (HCL) (Government, 100%)	Khetri Copper Complex smelter-refinery, Khetrinagar District, Rajasthan	31	
Do.	do.	Indian Copper Complex smelter-refinery, Ghatsila District, Jharkhand	19	
Do.	do.	Taloja copper project, Maharashtra	60	
Do.	Vedanta Ltd.	Tuticorin smelter, Tamil Nadu <sup>3</sup>	400	
Do.	do.	Silvassa refinery, Gujarat	300	
Diamond	thousand carats	National Mineral Development Corp. Ltd. (NMDC) (Government, 100%)	Mahjawan Mine, Panna, Madhya Pradesh	84
Ferroalloys:				
Ferromanganese	Steel Authority of India Ltd. (Government, 100%)	Chandrapur Ferro Alloy Plant, Maharashtra	90	
Silicomanganese	do.	do.	70	
Ferrochrome and manganese	Tata Steel Ltd. (Tata Group, 100%)	Joda, Odisha	1,100	
Fluorite	Maharashtra State Mining Corp. Ltd.	Dongargaon, Maharashtra, Chandrapur	1	
Garnet	Indian Rare Earths Ltd.	Manavalakurichi, Kanniyakumari, Tamil Nadu	10	
Do.	do.	Orrisa Sands Complex, Ganjam, Odisha	20	
Do.	Trimex Sands Pvt. Ltd. (Trimex Group)	Sirkurman deposit, Srikakulam, Andhra Pradesh	60	
Do.	do.	Bhavanapadu mineral sands, Andhra Pradesh	50	
Do.	V. V. Mineral Ltd.	Thoothukudi, Tamil Nadu <sup>4,5</sup>	NA	
Gold:				
Mine output	kilograms	Hutti Gold Mines Co.	Hutti Mine, Karnataka	560
Do.	do.	do.	Hira-Buddini Mine, Karnataka	33
Do.	do.	Mahmohan Minera Industries (Pvt) Ltd.	Kunderkocha Mine, Jharkhand	NA
Metal	metric tons	ABANS Jewells Pvt. Ltd.	Refinery in Rudrapur, Uttarakhand	NA
Do.	do.	AJ Gold & Silver Refinery Inc.	Refinery in Hamirpur, Himachal Pradesh	150
Do.	do.	Altin Metals Pvt. Ltd.	Refinery in Udham Singh Nagar, Uttarakhand	26
Do.	do.	Augmont Enterprises Pvt. Ltd.	Refinery in Rudrapur, Uttarakhand	NA
Do.	do.	Bangalore Refinery Pvt. Ltd.	Refinery in Bangalore, Karnataka	30

See footnotes at end of table.

TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Gold:—Continued				
Metal— Continued	metric tons	Chemmanur Gold Refinery (P) Ltd.	Refinery in Ernakulam, Kerala	30
Do.	do.	Diamond Forever International	Refinery in Udham Singh Nagar	35
Do.	do.	Edelweiss Metals Ltd. (Edelweiss Financial Services Inc.)	Refinery in Ahmedabad, Gujarat	70
Do.	do.	Emerald Jewl Industry India Ltd.	Refinery in Coimbatore, Tamil Nadu	40
Do.	do.	CGR Metalloys Private Ltd.	Refinery in Ernakulam, Kerala	NA
Do.	do.	do.	Refinery in MG Road Dist, Ernakulam District, Kerala	NA
Do.	do.	do.	Refinery in Kalanassery, Ernakulam District, Kerala	NA
Do.	do.	Golden Star Trading Pvt. Ltd.	Refinery in Chennai, Tamil Nadu	NA
Do.	do.	Gujarat Gold Centre (GGC) Pvt Ltd.	Refinery in Ahmedabad, Gujarat	30
Do.	do.	Indian Government Mint (unit of Security of Printing and Mining Corporation India Ltd.)	Refinery in Aliporte, Kolkata	NA
Do.	do.	do.	Refinery in Mumbai, Maharashtra	NA
Do.	do.	do.	Refinery in Telangana, Hyderabad	40
Do.	do.	do.	Refinery in Nodia, Uttar Pradesh	NA
Do.	do.	Infinium Precious Resources Private Ltd.	Refinery in Mumbai, Maharahta	NA
Do.	do.	Jalan and Company	Refinery in Chandni Chowk, New Delhi	30
Do.	do.	JBL Refineries Shyampur Milling Industries Refinery	Refinery in Rudrapur, Uttarakhand	NA
Do.	do.	Khandwala Finstock Pvt. Ltd	do.	40
Do.	do.	Kundan Care Products Ltd.	Refinery in Hareswar, Uttarakhand	30
Do.	do.	M.D. Overseas Ltd.	Refinery in Rudrapur, Uttarakhand	30
Do.	do.	MMTC-PAMP India PVT Ltd. (joint venture MMTC Ltd. and PAMP SA)	Refinery in Mewat, Haryana	150
Do.	do.	Narrondass Manordass Precious Metals Refinery	Refinery in Mumbai, Maharahta	NA
Do.	do.	National India Bullion Refinery	do.	30
Do.	do.	National Refinery Pvt.Ltd.	do.	30
Do.	do.	OMGL Refinery LLP	Refinery in Rudrapur, Uttarakhand	NA
Do.	do.	Orelia Refineries Pvt. Ltd.	Refinery in Solan, Himachal Pradesh	40
Do.	do.	Paraj Exim	Refinery in Rudrapur, Uttarakhand	NA
Do.	do.	Parekh Platinum Ltd.	Refinery in Mumbai, Maharahta	30
Do.	do.	Rajesh Exports Ltd.	Refinery in Rudrapur, Uttarakhand	NA
Do.	do.	RG Refineries Pvt. Ltd.	do.	NA
Do.	do.	Salasar Synthetics Pvt. Ltd.	Refinery in Sidcul, Uttarakhand	NA
Do.	do.	Shirpur Gold Refinery Ltd. (Zee Gold DMCC)	Refinery in Shirpur, Dhule, Maharashtra	217
Do.	do.	Siddheshwar Refinery	Refinery in Mumbai, Maharahta	NA
Do.	do.	Sonigara Jewellers Pvt. Ltd.	Refinery in Pume, Maharahta	NA
Do.	do.	Titan Company Ltd.	Refinery in Krishnagiri, Tamil Nadu	NA
Do.	do.	Zaveri & Co. Pvt. Ltd.	Refinery in Rudrapur, Uttarakhand	30
Do.	do.	do.	Refinery in Ahmedabad, Gujarat	30
Graphite		Agrawal Graphite Industries Ltd.	Belpara District, Odisha	15
Do.		Tamil Nadu Minerals Ltd.	Pudupatti, Kumariipatti and Senthidayanathapu villages of Sivaganga taluk, Sivagangai District, Tamil Nadu	NA
Do.		do.	Senthi Udayanathapuram Village, Sivagangai District, Tamil Nadu	7
Gypsum		FCI Aravali Gypsum and Minerals India Ltd.	Mohangarh group of Mines, Bikaner group of mines; Suratgarh group of mines, Rainsinghpur group of mines, Kishanpura A and B Rajasthan	1,000
Iron ore		Aryan Mining & Trading Corp. (P) Ltd.	Narayanposhi Mine, Odisha	NA
Do.		Bonai Industrial Co. Ltd.	Nadidih Mine, Odisha	3,300
Do.		Essel mining and Industries Ltd. (Aditya Birla Group, 100%)	Koira Mine, Odisha	2,500
Do.		Freegrade & Co. (P) Ltd.	Nadidih Mine, Odisha	1,800

See footnotes at end of table.

TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Iron ore—Continued	Jindal Steel and Power Ltd. (Jindal Group, 60.41%; foreign investors, 23.18%; and others, 16.41%)	Tensa Mine, Odisha	2,000
Do.	M.S.P.L. Ltd. (Baldota Group, 100%)	Vyasanakere Mine, Hospet, Karnataka	570
Do.	do.	Nadavallur Mines, Kerala	NA
Do.	do.	Cheruppa Mines, Kerala	NA
Do.	do.	Alampara Mines, Kerala	NA
Do.	do.	Patikonda Mines, Kerala	NA
Do.	do.	Iyli and Gurunath Mines, Kerala	NA
Do.	National Mineral Development Corp. Ltd. (NMDC) (Government, 100%)	Bailadila Mines, Bachel Complex, Chhattisgarh	2,400
Do.	do.	Donimalai Mines, Karnataka	18,000
Do.	Odisha Mining Corporation Ltd. (joint venture state and federal)	Gandhamardan and Kurmitar Mines, Odisha	1,800
Do.	do.	Daitari Mines, Odisha and Jaipur	1,900
Do.	PATNAIK MINERAL PVT LTD. (100%)	Jaribahal Mine, Odisha	630
Do.	Rungta Sons (P) Ltd (100%)	Sanindpur Mine, Odisha	2,800
Do.	Serajuddin & Co. (100%)	Balda Mines, Odisha	9,500
Do.	Sesa Iron Ore (Vedanta Group, 100%)	Mines in Goa	800
Do.	do.	Mines in Karnataka	2,800
Do.	Shri Ramesh Prasad Sao (100%)	Guali Mine, Odisha	1,100
Do.	Steel Authority of India Ltd. (Government, 100%)	Kiriburu, Gua, Meghahatuburu, and Manoharpur Mines, Jharkhand	17,000
Do.	do.	Barsua-Taldih-Kalta and Bolani Mines, Odisha	12,000
Do.	Tata Steel Ltd. (Tata Group, 100%)	Noamundi Mine, Jharkhand	17,000
Do.	do.	Joda East Mine, Khandbond, and Katamati	32,000
Do.	Usha Martin Ltd. (100%)	Mines, Odisha; Vijay-II Mine, Jharkhand	1,600
Iron and steel:			
Raw steel	JSW Steel Co. Ltd.	Salem Special Steel plant, Karnataka	180
Do.	Steel Authority of India Ltd. (Government, 100%)	Rourkela steel plant, Odisha	4,200
Do.	do.	Durgapur steel plant, West Bengal	2,200
Do.	do.	Bhilai Steel Plant, 40 km west of Raipur	7,000
Do.	do.	IISCO Steel Plant in Burnpur	2,500
Do.	do.	Alloy Steel Plant, West Bengal	480
Do.	do.	Visvesvaraya Iron and Steel Plant, Karnataka	330
Do.	Tata Steel Ltd. (Tata Group, 100%)	Jamshedpur steel plant, Jharkhand	12,000
Do.	do.	Bokaro steel plant, Jharkhand	4,600
Direct-reduced iron	Action Ispat & Power Pvt. Ltd.	Plants in Marakuta and Pandaripathar Jharsuguda, Odisha	2,500
Do.	Adhunik Metaliks Ltd.	Chandrihariharpur, Sundargarh, Odisha	1,800
Do.	Alliance Integrated Metallics Ltd.	Bemta, Raipur, Chhattisgarh	5,000
Do.	Anjani Steel Ltd.	Ujalpur, Raigarh, Chhattisgarh	1,000
Do.	Anindita Steels Ltd.	Rabodh, Jharkhand	1,460
Do.	API Ispat Powertech Pvt. Ltd.	IGC Siltara, Raipur, Chhattisgarh	1,100
Do.	Beekay Steel & Power Ltd.	Uliburu, Barbil, Odisha	1,100
Do.	Bihar Sponge Iron Ltd. (Umesh Modi Group, 100%)	Umesh Nagar, Chandil, Jharkhand	150
Do.	Essar Steel Ltd.	Plant in Hazira, Gujarat	6,800
Do.	JSW Steel Ltd.	Plant in Salav, Raigad, Maharashtra	900
Do.	do.	Plant in Geetapuram, Dolvi, Maharashtra	1,600
Do.	Tata Steel BLS	Meranamdali, Dhenkanal, Odisha	2,800
Pig iron	Adhunik Metaliks Ltd.	Plant in Sundargarh, Odisha	214
Do.	Aparant Iron & Steel Pvt. Ltd.	Plant in Sanguem, Goa	160
Do.	Electrosteel Castings Ltd.	Plant in Khardah, West Bengal	360
Do.	IDCOL Kalinga Iron Works Ltd.	Plant in Barbil, Odisha	345
Do.	Jai Balaji Industries Ltd.	Plant in Durgapur, West Bengal	510
Do.	Jindal Saw Pipes Ltd.	Plant in Mundra, Gujarat	360
Do.	Jandal Steel and Power Co.	Plant in Raigarh, Chhattisgarh	2,000
Do.	Jayaswal NECO Industries Ltd.	Plant in Raipur, Chhattisgarh	650
Do.	JSW Steel Ltd.	Vijayanagar and Dolvi works, and Salem, Karnataka	18,000

See footnotes at end of table.



TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Iron and steel:—Continued			
Pig iron:—Continued			
	Kajaria Iron Castings Ltd.	Plant in Durgapur, West Bengal	110
Do.	Kalyani Steels Ltd.	Plant in Hospet, Karnataka	290
Do.	KIC Metaliks Ltd.	Plant in Durgapur, West Bengal	165
Do.	KIOCL Ltd.	Plant in Mangaluru, Karnataka	216
Do.	Kirloskar Ferrous Industries Ltd.	Plant in Koppal, Karnataka	360
Do.	do.	Plant in Hospet, Karnataka	360
Do.	MESCO Steel Ltd.	Plant in Kalinganagar, Odisha	450
Do.	Monnet Ispat Ltd.	Plant in Raigarh, Chhattisgarh	700
Do.	Neelachal Ispat Nigam Ltd.	Plant in Kalinganagar, Odisha	1,100
Do.	New Metaliks Ltd.	Plant in Durgapur, West Bengal	175
Do.	Ramsarup Loha Udyog	Plant in Kharagpur, West Bengal	300
Do.	Rashmai Metaliks Ltd.	do.	175
Do.	Rashtriya Ispat Nigam Ltd. (Steel Authority of India Ltd.)	Visakhapatnam Steel Plant, Andhra Pradesh	6,500
Do.	Sathavahana Ispat Ltd.	Plant in Haresamudram, Andhra Pradesh	210
Do.	SLR Steels Ltd.	Plant in Hospet, Karnataka	210
Do.	Sona Alloys Pvt. Ltd.	Plant in Satara, Maharashtra	314
Do.	Steel Authority of India Ltd. (Government, 100%)	Bhilai; Bokaro; Durgapur; Burnpur; Roukela; and Bhadravati	23,500
Do.	do.	IISCO Steel Plant, West Bengal	250
Do.	Srikalahasthi Pipes Ltd.	Plant in Chittoor, Andhra Pradesh	275
Do.	Tata Metaliks Ltd.	Plant in Redi, Maharashtra	316
Do.	do.	Plant in Kharagpur, West Bengal	345
Do.	Usha Martin Ltd. (Tata Steel Ltd., 100%)	Plant in Jamshedpur, Jharhand	600
Do.	Vedanta Ltd.	Plant in Amona, Goa	740
Do.	VSL Steels Ltd.	Plant in Hiriyur, Karnataka	360
Do.	VISA Industries Ltd.	Plant in Kalinganagar, Odisha	175
Steel products			
	JSW Steel Co. Ltd.	Vijayanagar works, Karnataka	950
Do.	do.	Dolvi works, Maharashtra	3,000
Do.	Rashtriya Ispat Nigam Ltd. (Steel Authority of India Ltd.)	Visakhapatnam Steel Plant, Andhra Pradesh	6,300
Do.	Steel Authority of India Ltd. (Government, 100%)	IISCO Steel Plant, West Bengal	430
Do.	do.	Rourkela steel plant, Odisha	1,700
Do.	do.	Durgapur steel plant, West Bengal	2,100
Do.	do.	Bhilai Steel Plant, 40 km west of Raipur	3,100
Do.	do.	Salem Steel Plant, Tamil Nadu	340
Do.	Usha Martin Ltd. (Tata Steel Ltd., 100%)	Steel Plant in West Bengal	1,000
Kyanite			
	Associated Mining Co.	Bhandara District, Maharashtra	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
Do.	Maharashtra Mineral Corp. Ltd.	do.	10
Lead-zinc ore, gross weight			
	Hindustan Zinc Ltd. (Vedanta Ltd., 64.9%, and Government, 29.5%)	Rampura-Agucha Mine, Rajasthan	6,500
Do.	do.	Rajpura-Dariba Mine, Rajasthan	23
Do.	do.	Kayad, Rajasthan	350
Do.	do.	Sindesar-Khurda, Rajasthan	160
Do.	do.	Zawar, Rajasthan	1,200
Lead refined:			
Primary	do.	Dariba Smelting Complex, Rajasthan	120
Do.	do.	Chanderiya smelter, Rajasthan	85
Secondary	Indian Lead Co.	Thane refinery, Mumbai, Maharashtra	12
Do.	do.	Refinery in Kolkata	12
Magnesite			
	Dalmia Magnesite Corp.	do.	72
Do.	Steel Authority of India Ltd. (Government, 100%)	Salem, Tamil Nadu	150
Do.	Tamil Nadu Magnesite Ltd. (Tamil Nadu State government, 100%)	do.	150

See footnotes at end of table.

TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(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, gross weight	Aryan Mining & Trading Corp.	Sundargarh Mine, Odisha	NA	
Do.	do.	Chikla Mine, Maharashtra	150	
Do.	do.	Ukwa Mine, Madhya Pradesh	55	
Do.	do.	Munsar Mine, Maharashtra	55	
Do.	do.	Gumgaon, Maharashtra	60	
Do.	Eastern Mining Co.	North Kanara, Karnataka	NA	
Do.	Falechand Marsingdas	Mine in Andhra Pradesh	NA	
Do.	J.A. Trivedi Bros.	do.	NA	
Do.	Mysore Minerals Ltd.	do.	NA	
Do.	do.	Shimoga Mine, Karnataka	NA	
Do.	Mangilall, Rungta (Pvt.) Ltd.	Keonjhar Mine, Odisha	NA	
Do.	MOIL Ltd. (Government, 100%)	Balaghat Mine, Madhya Pradesh	310	
Do.	Orissa Mining Corp. Ltd.	do.	NA	
Do.	do.	do.	NA	
Do.	Orissa Mineral Development Co. Ltd.	Koraput Mine, Odisha	NA	
Do.	Orissa Manganese & Minerals (Pvt.) Ltd.	do.	NA	
Do.	Radhika Metals & Minerals Pvt. Ltd.	NA	NA	
Do.	R.B.S. Shreeram Durga Prasad and Falechand Marsingdas	Vizianagaram, Andhra Pradesh	NA	
Do.	Rungta Mines (Pvt.) Ltd.	do.	NA	
Do.	Sandur Manganese and Iron Ores Ltd.	Bellary, Karnataka	NA	
Do.	S. Lall & Co.	do.	NA	
Do.	Tata Steel Ltd.	Ferro Manganese Plant, Odisha	NA	
Do.	do.	Keonjhar, Odisha	NA	
Do.	do.	do.	NA	
Mica	metric tons	Premier Mica Co.	Rjupalem Mine, Andhra Pradesh	200
Do.		Micafab India Pvt. Ltd.	Sydapuram Mandal, Andhra Pradesh	1
Do.		Privately owned	Nellore and 4 other Mines, Andhra Pradesh	NA
Petroleum, refined	42-gallon barrels per day	Bharat Petroleum Corp. Ltd. (Oil and Natural Gas Corp., 67%, and private interests, 33%)	Mahul refinery, Mumbai, Maharashtra	135,000
Do.	do.	Essar Oil Ltd.	Vadinar refinery, Gujarat	245,000
Do.	do.	do.	Visakhapatnam refinery, Andhra Pradesh	90,000
Do.	do.	Hindustan Petroleum Corp. Ltd. (Oil and Natural Gas Corp., 51%, and private interests, 49%)	do.	110,000
Do.	do.	Indian Oil Corp. (Oil and Natural Gas Corp., 91%, and private interests, 9%)	Mathura refinery, Uttar Pradesh	240,000
Do.	do.	do.	Mathura refinery, Uttar Pradesh	156,000
Do.	do.	Reliance Industries Ltd.	Koyali refinery, Gujarat	185,000
Do.	do.	do.	Jamnagar refinery, Gujarat	668,000
Do.	do.	Madras Refineries Ltd. (Oil and Natural Gas Corp., 52%, and private interests, 48%)	Madras refinery, Tamil Nadu	131,000
Do.	do.	Kochi Refineries Ltd. (Oil and Natural Gas Corp., 55%, and private interests, 45%)	Ambalamugal refinery, Kerala	67,000
Do.	do.	do.	Haldia refinery, West Bengal	61,000
Phosphate rock, gross weight		Hindustan Zinc Ltd. (Vedanta Ltd., 64.9%, and Government, 29.5%)	Maton Mine, Rajasthan	NA
Do.		Madhya Pradesh State Mining Corp. Ltd. (Madhya Pradesh State government, 100%)	Hirapur (Maddeora) and Khatamba Mines, Madhya Pradesh	NA
Do.		do.	Hirapur Mine (Tigoda), Madhya Pradesh	NA
Do.		do.	Jhabua Mine, Madhya Pradesh	NA
Do.		Pyrites Phosphates and Chemicals Ltd.	Durmala and Maldeota underground mines, Uttar Pradesh	NA
Do.		Rajasthan State Mineral Development Corp. Ltd. (Rajasthan State government, 100%)	Jamarkotra; Badgaon; Dakankotra; Kanpur; Kharbaria-ka-Guda; and Sallopat Mines, Rajasthan	1,500
Rare earths, monazite	metric tons	Indian Rare Earths Ltd. (IREL) [Government, 100%, (Department of Atomic Energy)]	Manavalakurichi Mine, Tamil Nadu	6,000
Do.	do.	do.	Chavara Mine, Kollam District, Kerala	211
Do.	do.	Kerala Minerals and Metals Ltd.	Kollam Mine, Kerala	240

See footnotes at end of table.

TABLE 2—Continued  
INDIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
Salt		Dev Salt Pvt. Ltd.	Morbi Mine, Gujarat	28,000
Do.		Hindustan Salt Ltd.	Mine at Mandi District, Himachal Pradesh	4,800
Sillimanite		Indian Rare Earths Ltd.	Manavalakurichi, Kanniyakumari, Tamil Nadu	9
Do.		do.	Chavara, Kollam District, Kerala	10
Do.		do.	Orrisa Sands Complex, Ganjam, Odisha	13
Do.		Kerala Minerals and Metals Ltd. (Kerala State government, 100%)	Chavara, Kollam District, Kerala	66
Do.		Trimex Sands Pvt. Ltd. (Trimex Group)	Sirkurman deposit, Srikakulam, Andhra Pradesh	50
Do.		do.	Bhavanapadu mineral sands, Andhra Pradesh	50
Do.		V. V. Minerals Ltd.	Thoothukudi, Tamil Nadu <sup>4,5</sup>	NA
Silver:				
Mine output	kilograms	Hindustan Zinc Ltd. (Vedanta Ltd., 64.9%, and Government, 29.5%)	Chavara Mine, Kerala	600,000
Do.	do.	Hutti Gold Mines Co.	Hutti Mine, Karnataka	560
Do.	do.	do.	Hira-Buddini Mine, Karnataka	33
Metal	do.	do.	Chanderiya smelter, Rajasthan	168
Titanium, ilmenite-rutile ore		Beach Minerals Co. Pvt. Ltd.	Kuttam, Chennai, Tamil Nadu	150
Do.		Indian Rare Earths Ltd.	Manavalakurichi, Kanniyakumari, Tamil Nadu	94
Do.		do.	Chavara, Kollam District, Kerala	211
Do.		do.	Orrisa Sands Complex, Ganjam, Odisha	230
Do.		Kerala Minerals and Metals Ltd. (Kerala State government, 100%)	Chavara, Kollam District, Kerala	66
Do.		Trimex Sands Pvt. Ltd. (Trimex Group)	Bhavanapadu Mineral Sands, Andhra Pradesh	308
Do.		do.	Sirkurman deposit, Srikakulam, Andhra Pradesh	206
Do.		V.V. Titanium Pigments Pvt. Ltd.	Thoothukudi District, Tamil Nadu	18
Do.		V. V. Minerals Ltd.	do. <sup>4,5</sup>	500
Uranium, ore, U content	metric tons	Uranium Corp. of India [Government 100%, (Department of Atomic Energy)]	Jaduguda, Jharkhand, Tummalpalle Mines, Andhra Pradesh	500
Zinc:				
Mine output, Zn content		Hindustan Zinc Ltd. (Vedanta Ltd., 64.9%, and Government, 29.5%)	Rampura-Agucha Mine, Rajasthan	450
Do.		do.	Rajpura-Dariba, Rajasthan	66
Do.		do.	Kayad, Rajasthan	65
Do.		do.	Sindesar-Khurd, Rajasthan	205
Do.		do.	Zawar, Rajasthan	102
Metal		do.	Dariba Smelting Complex, Rajasthan	240
Do.		do.	Zinc Smelter Debari, Rajasthan	88
Do.		do.	Chanderiya smelter, Rajasthan	558
Do.		Edayar Zinc Ltd. (Binani Industries Ltd., 89.9%)	Binanipuram smelter, Kerala	38
Zircon		Indian Rare Earths Ltd.	Manavalakurichi, Kanniyakumari, Tamil Nadu	10
Do.		do.	Chavara, Kollam District, Kerala	18
Do.		do.	Orrisa Sands Complex, Ganjam, Odisha	5
Do.		Kerala Minerals and Metals Ltd. (Kerala State government, 100%)	Chavara, Kollam District, Kerala	66
Do.		Trimex Sands Pvt. Ltd. (Trimex Group)	Sirkurman deposit, Srikakulam, Andhra Pradesh	6,000
Do.		do.	Bhavanapadu mineral sands, Andhra Pradesh	50
Do.		V. V. Minerals Ltd.	Thoothukudi, Tamil Nadu <sup>4,5</sup>	NA

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

<sup>1</sup>Plant operations had been suspended starting in April 2014 and remained closed throughout 2019.

<sup>2</sup>The production of cadmium is generally reported as a byproduct of zinc smelting to the State of Rajasthan; however, no production was reported during 2018 and 2019.

<sup>3</sup>The smelter remained closed throughout 2019.

<sup>4</sup>The company filed for bankruptcy in 2019.

<sup>5</sup>The company suspended operations owing to the beach sand mining ban.

TABLE 3  
INDIA: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	2015	2016	2017	2018	2019	
<b>METALS</b>						
<b>Aluminum:</b>						
Alumina	1,367	1,437	1,358	1,418	1,420	
Bauxite	7,491	2,929	1,694	1,132	942	
<b>Copper:</b>						
Ore and concentrates	--	10	14	32	86	
Blister and anode	--	2	--	--	--	
Refined copper	341	305	395	127	42	
Copper alloy, ingots	2	2	6	3	6	
Copper and alloys, semifabricated	33	33	47	43	21	
Copper and alloys, scrap	5	4	5	5	11	
Gold, metal <sup>1</sup>	kilograms	70,796	135,275	133,032	36,927	507
<b>Iron ore:</b>						
Gross weight		4,211	21,697	28,057	24,200	16,200
Fe content <sup>c</sup>		2,600	13,500	17,400	15,000	10,000
<b>Iron and steel:</b>						
Direct-reduced iron		132	262	500	658	658
Pig iron		542	556	655	322	322
<b>Steel:</b>						
Semifinished and finished steel products		7,563	10,325	16,335	11,101	13,356
Ingots and semis		769	1,766	2,786	2,452	2 717
Long products		766	1,051 <sup>r</sup>	1,848	1,501	1,540
Flat products		4,373	5,791	9,749	5,513	7,541
Tabular products		1,215	1,345	1,602	1,251	1,226
Lead, metal		54	64	77	NA	NA
Zinc, metal		225	232	203	216	186
<b>INDUSTRIAL MINERALS</b>						
Barite		524 <sup>r</sup>	1,057 <sup>r</sup>	1,417	2,244	1,903
Cement <sup>1</sup>		6,288	6,222	6,851	6,664	5,824
Diamond	thousand carats	34,256	38,485	45,609	39,395	28,934
Graphite, natural	metric tons	302	400	1,068	450	459
Gypsum	do.	56,023	95,391	75,738	150,050	163,471
Potassic fertilizer	do.	39	31	32	41	41
Potassium nitrate		1,063	1,130	886	921	805
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Coal <sup>1</sup>		1,237	1,576	1,772	1,500	1,300
Liquefied natural gas		5	5	NA	NA	NA
Petroleum, crude	million 42-gallon barrels	1,050	NA	NA	350	350

<sup>r</sup>Revised. do. Ditto. NA Not available.

<sup>1</sup>Data are based on fiscal year ending on March 13 of the year stated.

Sources: Indian Minerals Yearbook 2015–2019; World Steel Association, 2019; International Copper Study Group, 2019; United Nations Comtrade database, 2015–2019; Kimberlite Process Rough Diamond Statistics web page, 2015–2019.



TABLE 4  
INDIA: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	2015	2016	2017	2018	2019
<b>METALS</b>					
<b>Aluminum:</b>					
Alumina	874	1,310	2,056	2,694	2,407
Bauxite	1,337 <sup>r</sup>	1,510 <sup>r</sup>	1,628	1,887	2,079
<b>Copper:</b>					
Ore and concentrates	687 <sup>r</sup>	672	440	315	233
Blister and anode	83	149	142	130	125
Refined copper	40	36	36	84	141
Copper alloy, ingots	3	3	3	3	3
Copper and alloys, semifabricated	260 <sup>r</sup>	296	311	429	348
Copper and alloys, scrap	174	180	175	195	249
Gold metal <sup>1</sup>	kilograms 915,473	968,075	778,449	955,366	982,697
<b>Iron ore:</b>					
Gross weight	9,515	3,597	5,362	8,700	12,800
Fe content <sup>c</sup>	5,900	2,200	3,300	5,400	7,900
<b>Iron and steel:</b>					
Direct-reduced iron	38	22	90	53	53 <sup>c</sup>
Pig iron	35	38	27	20	20 <sup>c</sup>
Scrap	6,710	6,380	5,365	6,330	6,330 <sup>c</sup>
<b>Steel:</b>					
Semifinished and finished	13,284	9,904	8,882	9,026	8,921
Ingots and semis	765	577	555	598	377
Long products	2,015	1,423	1,062	1,198	1,112
Flat products	9,829	7,119	6,573	6,259	6,470
Tabular products	643	752	658	916	915
Lead, metal	109	121	121	131	113
Zinc, metal	105 <sup>r</sup>	236 <sup>r</sup>	141	153	134
<b>INDUSTRIAL MINERALS</b>					
Barite	metric tons 10,145 <sup>r</sup>	7,414	10,131	12,508	14,657
Cement <sup>1</sup>	7,165	1,359	2,038	2,620	2,260
Diamond	thousand carats 130,110	149,319	195,004	170,008	158,627
Graphite, natural	metric tons 29,292	33,523	39,986	42,863	45,003
Gypsum	do. 3,850	4,451	4,960	5,974	5,497
Potassic fertilizer	do. 3,722	3,828	4,570	5,114	4,580
Potassium nitrate	do. 286	191	266	108	92
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal <sup>1</sup>	212,103	204,000	191,014	208,000	235,000
Liquefied natural gas	20,000	24,300	26,100	30,600	32,900
Petroleum, crude	million 42-gallon barrels 1,400	1,500	1,700	1,590	1,560

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

<sup>1</sup>Data are based on fiscal year ending on March 13 of the year stated.

Sources: Indian Minerals Yearbook 2015–2019; World Steel Association, 2019; International Copper Study Group, 2019; United Nations Comtrade database, 2015–2019; Kimberlite Process Rough Diamond Statistics web page, 2015–2019.

TABLE 5  
INDIA: ESTIMATED RESERVES OF MAJOR MINERAL COMMODITIES IN 2019<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Apatite	30
Asbestos (all grades)	30
Barite (all grades)	51,000
Bauxite	660,000
Calcite	3,400
Chalk	5,100
Chromite ore (all grades)	100,000
Clay:	
Ball clay	50,000
Bentonite	15,000
Fireclay	27,000
Fuller's earth	3,900
Kaolin	230,000
Coal, lignite	150,000,000
Copper:	
Crude ore	210,000
Cu content	2,700
Corundum	metric tons 200
Diamond	thousand carats 960
Diaspore	7,900
Dolomite	680,000
Dunite	13,000
Feldspar (all grades)	320,000
Fluorite	290
Garnet	13,000
Gold:	
Crude ore	17,000
Au content	kilograms 70,000
Graphite	8,000
Gypsum	37,000
Iron ore:	
Crude ore	5,400,000
Iron content	3,400,000
Iron oxide pigmetites, ochre	37,000
Kyanite and related minerals:	
Kyanite	690
Sillimanite	6,500
Lead and zinc ore	110,000
Lead, Pb content	2,500
Limestone	16,000,000
Magnesite	82,000
Manganese ore	93,000
Mica	140
Monazite	13,000
Phosphate rock	46,000
Quartzite	83,000
Silica	650,000
Salt (rock)	16,000,000
Silver:	
Crude ore	150,000
Ag content	7,200
Talc	110,000
Tin:	
Ore	4
Sn content	metric tons 150
Titanium minerals:	
Ilmenite	690,000
Rutile	34,000

See footnotes at end of table.

TABLE 5—Continued  
INDIA: ESTIMATED RESERVES OF MAJOR MINERAL COMMODITIES IN 2019<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Vermiculite	1,600
Wollastonite	2,200
Zinc, Zn content	10,000
Zircon	3,400

<sup>1</sup>The total reserves of major mineral commodities include proven and probable reserves.

<sup>2</sup>Data have been rounded to no more than two significant digits.

Source: Indian Bureau of Mines, 2019.