



2020–2021 Minerals Yearbook

PAKISTAN [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF PAKISTAN

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Note: In this chapter, information for 2020 is followed by information for 2021.

In 2020, Pakistan was the world's third-ranked producer (excluding the United States) of iron oxide pigments. The country was the 10th-ranked producer (excluding the United States) of barite, accounting for an estimated 1.3% of world production, and it had the fourth-largest reserves in the world. The country also produced other mineral commodities, such as cement, chromite, clay, coal, copper, crude petroleum, gypsum, iron ore, lead, limestone, natural gas, refined petroleum products, and zinc (table 1; Brioche, 2022; McRae, 2022).

Minerals in the National Economy

The growth rate of Pakistan's real gross domestic product (GDP) in fiscal year 2020 (FY20), which began on July 1, 2019, and ended on June 30, 2020, was 0.64% compared with 2.5% in FY19. The nominal GDP was \$263 billion¹ in FY20. The growth rate of the industrial sector, which accounted for 18.3% of the GDP, was negative 3.8% in FY20 compared with negative 1.56% in FY19 owing mainly to decreased mining and manufacturing output and the global coronavirus disease 2019 (COVID-19) pandemic. The growth rate of the mining and quarrying sector was negative 8.28% in FY20 compared with positive 1.20% in FY19; the slowdown was mainly the result of decreases in the output of crude petroleum and natural gas owing to a lack of exploration, low demand for energy products during the pandemic, and regulatory restrictions on the production of furnace oil in upstream refineries. The value of mining and quarrying output accounted for 2.5% of the GDP and 13.2% of the total value of industrial sector output. In contrast, the growth rate in the construction sector, which accounted for 2.4% of the GDP, was 5.5% in FY20 compared with negative 15.5% in FY19 (State Bank of Pakistan, 2021a, p. 24, 25; 2022b, p. 8, 9).

Mining in Pakistan is regulated by the Regulation of Mines and Oil-Fields and Mineral Development (Government Control) Act, 1948 (as amended in 1976) at the Federal level, the Mining Concession Rules for the Provinces of Balochistan, Khyber-Pakhtunkhwa, Punjab, and Sindh (each enacted during the period 2002 to 2005), and the National Mineral Policy, 1995 (as amended in 2013) for the Federal and Provincial levels. In November 2019, the government of Khyber-Pakhtunkhwa Province passed the Minerals Sector Governance (Amendment) Act, 2019 as an amendment to the Minerals Sector Governance Act, 2017. This amendment defines the procedures for mining operations and the awarding of mineral titles for newly merged (formerly federally administered) tribal districts in the Province. Beginning in January 2020, the government of

Khyber-Pakhtunkhwa Province started issuing leases according to the Minerals Sector Governance (Amendment) Act, 2019, which, in the lease-awarding process, compels companies to consider the effects of the proposed mine on the local community and includes such details as requiring a switch to mechanical practices from blasting (to protect marble and granite deposits) and more strict law enforcement on illegal mining activities (Express Tribune, The, 2020; Maluka, 2021, p. 158–166).

The total value of exported goods in FY20 was \$21.4 billion, which was a 7.0% decrease compared with that in FY19. In FY20, the value of exported cement, lime, salt, stone, and sulfur was \$414 million, which was an 11% decrease from the value in FY19; copper and articles thereof, \$346 million (a 29% increase); mineral fuels, oils, and their distillation products, \$271 million (a 43% decrease); ores, slag, and ash, \$88 million (a 5% increase); and iron and steel, \$74 million (a 72% increase). The significant decrease in exports of mineral fuels, oils, and their distillation products was owing to lower exports of jet fuel to Afghanistan and lower international oil prices during the COVID-19 pandemic; the lower crude petroleum exports was due to local refineries' increasing use of domestic supplies (State Bank of Pakistan, 2021b, p. 103, 104; 2022d, p. 125, 126).

The total value of imported goods in FY20 decreased by 19% compared with that in FY19 to \$44.6 billion. In FY20, the value of imported mineral fuels, oils, and their distillation products was \$11.8 billion, which was a 27% decrease from that in FY19; iron and steel, \$2.86 billion (a 15% decrease); articles of iron and steel, \$541 million (a 36% decrease); aluminum and articles thereof, \$366 million (a 5% increase); copper and articles thereof, \$144 million (a 30% decrease); and salt, sulfur, lime, and stones, \$123 million (a 13% decrease). The significant decrease in imports of mineral fuels, oils, and their distillation products was owing to lower demand for crude petroleum and liquefied natural gas, the transitioning of energy policy to domestically produced coal and hydropower, and low demand as a result of decreased industry activities (State Bank of Pakistan, 2021b, p. 97, 104; 2022d, p. 125, 126).

The country had more than 5,000 operational mines and approximately 50,000 small- and medium-sized enterprises. Approximately 142,000 people, which was 0.23% of the total employed population in the country, were employed in the mining and quarrying sector in FY18 (the latest year for which comprehensive data were available) (Pakistan Bureau of Statistics, 2018, p. 26; 2022, p. 263; Shah, 2018, p. 3).

Production

In 2020, the production of bentonite clay increased by 118%; pumice, by 92%; bauxite, by 81%; caustic soda, by 44%;

¹Where necessary, values have been converted from Pakistan rupees (PKR) to U.S. dollars (US\$) at the annual average exchange rates of PKR160.0219=US\$1.00 for fiscal year 2021, PKR158.0253=US\$1.00 for fiscal year 2020, and PKR136.0901=US\$1.00 for fiscal year 2019.

lignite, by 30%; mined gypsum, by 27%; bituminous coal, by 25%; iron ore (Fe content), by 23%; barite, by 22%; phosphate rock (P₂O₅ content), by 20%; raw steel, by 15%; and crushed limestone and native sulfur (S content), by 11% each. The production of mined antimony resumed in 2020. The production of quartz decreased by 94%; fuller's earth, by 87%; other petroleum refinery products, by 63%; primary smelter copper, by 56%; emerald and dimension stone (marble), by 51% each; feldspar, by 50%; jet fuel, kaolin, and sea salt, by 44% each; naphtha, by 42%; soapstone, by 26%; lubricants, by 23%; iron oxide pigments (ocher), by 20%; mined lead (Pb content), by 18%; magnesite and kerosene, by 17% each; silica, by 14%; synthetic soda ash, by 13%; and crude petroleum and distillate fuel oil, by 12% each. Data on mineral production are in table 1.

Structure of the Mineral Industry

Provincial governments, along with the Federal Government and domestic and foreign companies, participated in the mining of metallic and industrial minerals, including barite, copper, gold, and iron ore. The Pakistan Government, through the Ministry of Petroleum and Natural Resources and possession of high-percentage shares in public and international companies, was actively engaged in coal and petroleum production. Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Copper and Gold.—In 2020, copper production (Cu content) at the Saindak copper-gold mine increased to 13,200 metric tons (t) from 13,049 t in 2019, or by 1.2%. Production of smelter copper (primary) at the Saindak plant decreased by 56% to 5,700 t owing to a shutdown for 10 months (beginning in November 2019) because of a shortage of employees followed by the outbreak of the COVID-19 pandemic. Both the mine and the smelter were owned by Saindak Metals Ltd., which was a local subsidiary of Metallurgical Corporation of China Ltd. (MCC; 50% interest). In July, the government of Balochistan Province granted Saindak Metals a 15-year extension of its contract to explore the east ore body of the mine following the expiration of its current contract in October 2022. In contrast, the mining lease, which was valid up to 2025, would be considered separately (table 1; Dawn, 2020; Metallurgical Corporation of China Ltd., 2020, p. 31; 2021a, p. 32; Shanghai Metals Market News, 2020).

In 2020, the Pakistan Government had been searching for the best way to respond to the \$5.8 billion penalty imposed by the International Centre for Settlement of Investment Disputes (ICSID) in 2019 for the Government's canceling of the license for the Reko Diq copper-gold project in Balochistan Province. The project was owned by Tethyan Copper Co. (TCC), which was a joint venture of Barrick Gold Corp. of Canada and Antofagasta Minerals S.A. of Chile. The project completed the bankable feasibility study in 2011 and was expected to produce 200,000 metric tons per year of copper and 7,800 kilograms per year of gold during a mine life of 56 years. In November 2020, a Pakistan consortium, including the Arif Habib Group,

Fatima Group, Liberty Group, and Yunus Brothers Group, established National Resources Ltd. with the goals of securing mining rights to Balochistan's mineral resources and acquiring a 50% share of TCC from Barrick Gold (Mangi, 2019; Ahmed and Kurtenbach, 2020; Subohi, 2020).

Iron Ore.—In 2020, Pakistan's production of iron ore increased by 24% to 645,000 t. Bolan Mining Enterprises (BME), which was a 50–50 joint venture between the government of Balochistan Province and Pakistan Petroleum Ltd. (PPL), produced iron ore from the Chigendik and the Pachinko deposits at the Nokkundi Mine, which had estimated reserves of 2.22 and 3.23 million metric tons (Mt) of iron ore, respectively. In February 2019, the Government of Pakistan signed a memorandum of understanding (MOU) for economic cooperation regarding mineral resources with the Government of Saudi Arabia in which Saudi Arabia agreed to provide \$21 billion in investment in Pakistan's mineral industry. In 2020, Pakistan finalized its proposal for constructing the country's first integrated iron ore mining, processing, and steel mill complex, which topped the list of the four potential projects for Saudi investment in Pakistan agreed to in the MOU. The Chiniot-Rajoa project, which was to be completed by the end of 2021, would be the first integrated iron ore and steel mill complex in the country and would have a production capacity of 1 million metric tons per year (Mt/yr). The proposed facility was expected to be supplied with iron ore from the Chiniot iron ore project in Punjab Province by Punjab Mineral Co. (Pvt) Ltd. and from the Chagai iron ore project in Balochistan Province by BME; coal for the project would be supplied domestically by Pakistan Mineral Development Corp. As of the end of 2020, the Chiniot-Rajoa project was under development and had 150 Mt of resources at an average grade of 30.79% Fe and an expected mine life of 50 to 60 years (table 1; Punjab Mineral Co., 2018; Ahmed, 2019; Hanif, 2019; Mirza, 2020).

Industrial Minerals

Cement.—According to the All Pakistan Cement Manufacturer Association, Pakistan had 25 cement plants with 50 production lines. The total installed capacity was 65.9 Mt/yr of clinker and 69.2 Mt/yr of cement as of June 2020 compared with 54.4 Mt/yr and 57.1 Mt/yr, respectively, as of March 2019. Production of cement was 43.4 Mt in 2020 compared with 40.5 Mt in 2019 despite pandemic-related lockdowns during the second quarter of 2020. Shipped volumes of cement for the domestic market and export in 2020 increased to 46.9 Mt (of which 8.4 Mt was for export) from 45.2 Mt (of which 7.3 Mt was for export) in 2019 owing to the growth of the construction sector (table 1; All Pakistan Cement Manufacturer Association, 2019, 2021; Bestway Cement Ltd., 2019a, p. 18; 2019b, p. 3; 2020a, p. 9; 2020b, p. 3; 2021, p. 2).

In 2020, Lucky Cement Ltd. became the leading cement manufacturer in the country with the addition of a new 2.8-Mt/yr production line at the Pezu plant, which brought the company's total production capacity to a 12.1 Mt/yr. Lucky Cement also announced a plan to add an additional 3.15 Mt/yr of capacity, which would give the company a total production capacity of 15.3 Mt/yr by 2022. In January, Pioneer Cement Ltd. completed the construction of a 3.7-Mt/yr integrated

cement plant, including a 36-megawatt (MW) powerplant, that had been under construction since 2017. Power Cement Ltd. started commercial operation of a new 7,700-metric-ton-per-day clinker line at the Nooriabad plant. This resulted in the company increasing production by 263% for clinker (to 1.8 Mt) and 208% for cement (to 1.4 Mt) during the 9-month period from June 2020 to March 2021. In October, the Government granted eight cement plant licenses, all in Punjab Province; the expected investment in the new plants was \$1.83 billion. In December, the government of Punjab Province approved five of the plants worth a total projected investment of \$1.25 billion (Lucky Cement Ltd., 2020, p. 25; 2021, p. 8; Global Cement, 2020a–c; Power Cement Ltd., 2021, p. 2).

Mineral Fuels

Coal.—Coal production, including bituminous and lignite coal, increased by approximately 28% to 7.74 Mt in 2020 from 6.06 Mt (revised) in 2019. In December, the Government announced that it would no longer approve the construction of any more coal plants in the country and instead pivot toward renewable energy. To that end, Pakistan canceled the plan for two coal-fired powerplants that would have used imported coal at Muzaffargarh and Rahim Yar Khan, which were both part of the China-Pakistan Economic Corridor (CPEC). Plants already under construction were not affected by this declaration. These included the 660-MW powerplant at Port Qasim by Lucky Electric Power Co. Ltd., which was scheduled to achieve commercial operation by March 2021, and three powerplants with a combined capacity of 1,980 MW in the Thar desert in Sindh Province that were planned to be in operation by June 2022. Two projects had been given permits but had not yet begun construction—a 300-MW powerplant at Gwadar Port in Balochistan Province by China Communication Construction Group of China, and a 330-MW powerplant in the Thar Block II in Sindh Province by Siddiqsons Group and Harbin Electric International Company of China; no clarification was given in the announcement as to the future status of these two projects (Siddiqsons Energy Ltd., 2015, p. 3; Dawn, 2017; Climate Home News, 2020).

MINERAL INDUSTRY HIGHLIGHTS IN 2021

The growth rate of Pakistan's real GDP during FY21 was 3.9%, and the nominal GDP was \$298 billion. The growth rate of the industrial sector, which accounted for 18.1% of the GDP, was 3.6% in FY21 compared with negative 3.8% in FY20; this growth was mainly owing to temporary fiscal and monetary relief packages introduced by the Government to aid in economic recovery following the COVID-19 pandemic. In FY21, the growth rate in the mining and quarrying sector was negative 6.49% and the mining and quarrying sector accounted for 2.2% of the GDP and 12.4% of the industrial sector. In contrast, the construction sector, which accounted for 2.5% of the GDP in FY21, had a growth rate of 8.34%, which was due to Government relief packages aimed at homebuyers, sellers, and real estate developers, as well as increased spending in the private sector on construction activities (State Bank of Pakistan, 2022a, p. 13, 28, 29; 2022b, p. 8, 9).

The total value of exported goods in FY21 was \$25.3 billion, which was an 18% increase compared with that in FY20. In FY21, the value of exported copper and articles thereof was \$637 million, which was an 84% increase compared with that in FY20; salt, sulfur, lime, and stone, \$458 million (a 10% increase); mineral fuels, oils, and their distillation products, \$174 million (a 36% decrease); ores, slag, and ash, \$114 million (a 30% increase); and iron and steel, \$113 million (a 53% increase). Major factors that contributed to this overall growth were generous Government monetary and fiscal policies, Government efforts to revitalize industrial activity and the export sector following the COVID-19 pandemic, and the resumption of deferred orders from the previous fiscal year (State Bank of Pakistan, 2022c, p. 135; 2022d, p. 125, 126).

The total value of imported goods in FY21 was \$56.4 billion, which was a 27% increase compared with the value in FY20. In FY21, the value of imported mineral fuels, oils, and their distillation products was \$13.0 billion, which was a 10% increase compared with that in FY20; iron and steel, \$3.66 billion (a 28% increase); articles of iron and steel, \$472 million (a 13% decrease); aluminum and articles thereof, \$344 million (a 6.0% decrease); copper and articles thereof, \$233 million (a 62% increase); and salt, sulfur, lime, and stones, \$152 million (a 24% increase). The major factor that contributed to the overall growth of imports was the revival of industrial activity in China and other advanced countries. Owing to changes in the price of petroleum worldwide, the value of imported mineral fuels, oils, and their distillation products decreased in the 9-month period from July 2019 to March 2020 before increasing during the 3-month period from March 2020 to June 2020 at a rate that more than offset the decrease earlier in the fiscal year. Within the mineral fuels, oils, and their distillation products category, the increase in the value of crude petroleum imports was smaller in magnitude than for other commodities in the category because the Government directed refineries to upgrade their facilities in line with European diesel and petroleum standards, which disrupted imports of crude petroleum in the 3-month period from October to December 2019 (State Bank of Pakistan, 2022c, p. 140, 144; 2022d, 125, 126).

In 2021, the production of mined antimony (Sb content) increased by 288%; quartz, by 174% (estimated); primary smelter copper, by 118%; phosphate rock (P₂O₅ content), by 107% (estimated); fuller's earth, by 93% (estimated); soapstone, by 70% (estimated); kaolin, by 51% (estimated); mined copper (Cu content), by 42%; raw steel, by 40%; feldspar, by 39% (estimated); pumice, by 31% (estimated); jet fuel, by 28% (estimated); crushed dolomite (estimated), fluorspar (estimated), and lubricants (estimated), by 25% each; iron ore (Fe content), by 23% (estimated); caustic soda, naphtha, and synthetic soda ash, by 21% each (estimated); gasoline, by 17% (estimated); chromite (Cr₂O₃ content) and dimension stone (marble), by 16% each (estimated); hydraulic cement, iron and steel products, and liquefied petroleum gas, by 14% each (estimated); and distillate fuel oil and kerosene, by 13% each (estimated). The production of bentonite decreased by 57% (estimated); magnesite, by 50%; bauxite, 42% (estimated); other petroleum refinery products, by 36% (estimated); rock salt, by 18% (estimated); and crushed limestone, by 15% (estimated).

As of 2021, the Saindak copper-gold mine was estimated to have 358 Mt of reserves at an average grade of 0.36% copper in its east ore body, and the mine's reserves were expected to allow for stable operation for 20 years. Copper production (Cu content) at the mine was 18,806 t in 2021, which was a 42% increase compared with that in 2020. The Saindak smelter was shut down during the first half of 2021 because of COVID-19 precautions and technical issues in the smelter, but overhauling of the smelter was completed before the end of June, and production resumed in July; the smelter produced a total of 12,400 t in 2021 (table 1; Metallurgical Corporation of China Ltd., 2021b, p. 37; 2022, p. 30; Daily Quetta Voice, 2021).

As of yearend 2021, arbitration regarding the Reko Diq copper-gold project by TCC against the Government of Pakistan under ICSID rules and against the government of Balochistan Province under the International Chambers of Commerce rules were ongoing. In December, however, there were discussions over a proposed deal for an out-of-court settlement between the parties. Although a resolution was expected soon, major obstacles in the negotiations involved resolving the penalty imposed by ICSID. A proposed possible solution would be Barrick Gold resuming the project under different terms, where the government of Balochistan Province and the Government would each have profit shares of 25% (Iqbal, 2021; Malik, 2021).

In December, PPL was granted a large-scale mining lease for lead and zinc for an area of more than 30 square kilometers in Khuzdar District in Balochistan Province. The lease was valid for 30 years, and the mine was to be operated by BME. The project would involve open pit mining with an ore beneficiation and processing plant; a positive cashflow was expected beginning in the third year of mine operation and thereafter for an estimated project life of 32 years (Business Recorder, 2021).

Five of the cement manufacturers in Punjab and Khyber-Pakhtunkhwa Provinces [D.G. Khan Cement Co. Ltd., Fauji Cement Co. Ltd. (FCCL), Kohat Cement Co. Ltd., Lucky Cement Ltd., and Maple Leaf Cement Factory Ltd. (MLCF)] planned to increase the total cement production capacity in these two Provinces by an annual average of 12% from a collective total 54.1 Mt/yr in 2021 to 73.6 Mt/yr in 2024, owing to the robust cement demand in these Provinces. The government of Punjab Province was offering incentives for the companies to expedite their expansion plans by issuing 22 no-objection certificates (NOCs) for the establishment of new cement factories. It also warned that the NOCs could be canceled if the manufacturers failed to implement the plans as soon as possible. Major projects included the 3.15-Mt/yr expansion of the Pezu plant by Lucky Cement Ltd., which was in its final phase of completion and expected to be commissioned at the end of December 2022. Additionally, the amalgamation of Askari Cement Ltd. (ACL; which had an annual capacity of 2.8 Mt/yr) by FCCL (annual capacity of 3.43 Mt/yr), which was ongoing as of yearend 2021, when combined with FCCL's 2.05-Mt/yr expansion project in Dera Ghazi Khan, Punjab Province, and a 2-Mt/yr expansion project by ACL, would make FCCL the third-largest cement manufacturer in the country, in terms of capacity (Kohat Cement Co. Ltd., 2021; THECEMENT, 2021a–c; Lucky Cement Co. Ltd., 2022, p. 9).

Although the Government had announced that it would no longer approve the construction of any more coal-fired powerplants in the country, those already under construction were allowed to proceed. These projects included the following: (1) the Port Qasim coal-fired powerplant project by Lucky Electric Power Co. Ltd., the commissioning date of which was delayed to January 2022; (2) the Thar Block I project, which consisted of a 7.8-Mt/yr open pit coal mine and 1,320-MW coal-fired powerplant and for which the mining lease rights were owned by Sino Sindh Resources Ltd.; this project was reported to be almost 40% complete as of February 2021 and had a planned commissioning date of May 2022; and (3) two other coal-fired powerplants in the Thar desert (with capacities of 330 MW each) that were scheduled for commissioning by March 2022 and June 2022, respectively. The projects that had permits but that had not yet begun construction were still approved for further development. These included the Gwadar Port and the Thar Block II coal-fired powerplant projects, which were scheduled for commissioning by June 2023 (National Transmission and Despatch Company Ltd., 2021, p. 79–81; News International, The, 2021; Siddiqui, 2021).

Outlook

In 2022, Pakistan's GDP is forecasted to increase by 6.0% following the ongoing recovery from global disruptions caused by the COVID-19 pandemic. The GDP is expected increase at a moderate rate of 3.5% in 2023 as a result of the ongoing tightening of fiscal and monetary policies in response to inflation. The resolution of the Reko Diq legal case is expected to happen in 2022, which is likely to entail the involvement of Barrick Gold in the development of the copper-gold mine; production is likely to start in 2027 or 2028 under such a scenario. The cement industry, particularly in the northern Provinces of Punjab and Khyber-Pakhtunkhwa, is expected to show sustained growth for the short and medium terms, brought about in part by Government- and private-sector-driven efforts toward alternative sources of energy and by robust cement demand in these Provinces. In addition, the consolidation among cement manufacturers, such as the merger of ACL and FCCL, is expected to be a positive factor in the growth of the cement industry in the country. Despite announcements by the Government that no new coal-fired powerplant projects would be approved, the provision did not apply to ongoing projects, and the policy change is unlikely to have a significant effect on coal production and use in the country in the short-term because significant coal-fired powerplant capacities are under construction and will be commissioned in the coming years (National Transmission and Despatch Company Ltd., 2021, p. 79–81, 83; Asian Development Bank, 2022, p. 29, 142; Barrick Gold Corp., 2022; THECEMENT, 2022).

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TABLE 1
PAKISTAN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2017	2018	2019	2020	2021	
METALS						
Antimony, mine, Sb content	15	--	--	17	66	
Bauxite	103,412	121,438	58,079 ^r	104,932	60,700 ^e	
Chromium, mine, chromite:						
Gross weight	88,781	111,586	120,698 ^r	121,435	140,126	
Cr ₂ O ₃ content	47,000	59,000	64,000 ^r	64,000	74,000 ^e	
Copper:						
Mine, concentrates, Cu content	10,052	12,538	13,049	13,200	18,806	
Smelter, primary	10,000 ^e	12,500 ^e	13,000 ^{r, e}	5,700	12,400	
Iron ore, mine:						
Gross weight	thousand metric tons	616	685	522 ^r	645	794 ^e
Fe content	do.	197	219	167 ^r	206	254 ^e
Iron and steel:						
Raw steel	do.	4,966	4,719	3,304 ^r	3,803	5,320
Products ^e	do.	9,440	8,850	8,040	7,820	8,950
Lead:						
Mine, concentrates:						
Gross weight	5,079	8,036	13,481	11,100 ^e	11,200 ^e	
Pb content	3,250 ^e	5,140 ^e	8,630 ^e	7,094	7,277	
Refinery, secondary	5,000	18,000	32,000 ^r	32,000	32,000	
Zinc, mine, concentrates:						
Gross weight	38,913	53,957	74,729	70,100 ^e	70,800 ^e	
Zn content	19,500 ^e	27,000 ^e	37,400 ^e	35,054	35,391	
INDUSTRIAL MINERALS						
Barite	105,554	99,286	85,992 ^r	105,009	104,000 ^e	
Cement, hydraulic	thousand metric tons	38,900	40,800	40,500 ^r	43,400	49,600 ^e
Clay:						
Bentonite	79,417	42,932	48,332 ^r	105,528	45,600 ^e	
Fire clay	754,701	774,839	924,248 ^r	858,654	803,000 ^e	
Fuller's earth	9,162	13,592	11,323 ^r	1,475	2,840 ^e	
Kaolin	20,666	16,887	20,756 ^r	11,557	17,400 ^e	
Feldspar	253,185	224,383	365,807 ^r	182,907	255,000 ^e	
Fluorspar ^e	21,000 ^r	25,000 ^r	50,000 ^r	52,000	65,000	
Gemstones, emerald	carats	11,890	25,420	23,325	11,345	12,300 ^e
Gypsum, mine	thousand metric tons	2,178	2,679	1,582 ^r	2,002	1,820 ^e
Iron oxide pigments, mineral, natural, ocher	71,779	90,619	120,097 ^r	96,165	105,000 ^e	
Magnesite	21,481	41,017	21,073 ^r	17,402	8,710	
Nitrogen, ammonia, N content	thousand metric tons	3,100	3,100 ^r	3,300 ^r	3,500	3,400 ^e
Phosphate rock:						
Gross weight	65,000 ^e	76,000 ^e	56,196 ^r	67,211	139,000 ^e	
P ₂ O ₅ content ^e	16,000	19,000	14,000 ^r	16,800	34,800	
Pumice	3,200 ^e	2,700 ^e	1,568 ^r	3,012	3,960 ^e	
Quartz	118,715	120,959	109,493 ^r	6,909	18,900 ^e	
Salt:						
Rock salt	thousand metric tons	3,493	3,959	3,277 ^r	3,482	2,860 ^e
Sea salt	do.	222 ^e	212 ^e	243 ^r	136	133 ^e
Sand and gravel, industrial, silica	315,000	683,000	693,000 ^r	593,000	540,000 ^e	
Sodium compounds:						
Caustic soda	thousand metric tons	241	277	228 ^r	328	398 ^e
Soda ash, synthetic	do.	476	546	606 ^r	526	638 ^e
Stone:						
Crushed:						
Dolomite	do.	332	537	227 ^r	214	268 ^e
Limestone	do.	60,765	76,540	56,735 ^r	63,212	53,900 ^e
Dimension, marble	do.	7,118	8,198	8,500 ^r	4,193	4,860 ^e

See footnotes at end of table.

TABLE 1—Continued
PAKISTAN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2017	2018	2019	2020	2021	
INDUSTRIAL MINERALS—Continued						
Sulfur, native, S content	22,787	23,758	17,549 ^r	19,537	17,900 ^e	
Talc and related materials, soapstone	177,345	132,272	184,477 ^r	136,800	232,000 ^e	
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	2,982	2,856	2,840 ^r	3,550	3,670 ^e
Lignite	do.	1,221	1,428	3,221 ^r	4,190	3,990 ^e
Natural gas, marketable	million cubic meters	41,474	40,934	39,122 ^r	36,432	36,523
Petroleum:						
Crude	thousand 42-gallon barrels	32,799	32,630	30,965 ^r	27,118	28,189
Refinery:						
Distillate fuel oil	do.	56,421	59,141	51,692 ^r	45,510	51,600 ^e
Gasoline	do.	16,743	19,930	18,553 ^r	18,535	21,600 ^e
Jet fuel	do.	7,024	6,866	6,203 ^r	3,452	4,420 ^e
Kerosene	do.	986	844	832 ^r	692	784 ^e
Liquefied petroleum gas	do.	3,700	5,318	5,143 ^r	4,936	5,630 ^e
Lubricants	do.	1,238	1,361	1,226 ^r	950	1,190 ^e
Naphtha	do.	6,864	5,264	4,984 ^r	2,886	3,490 ^e
Other	do.	217	291	294 ^r	110	70 ^e
Total	do.	93,200	99,000	88,900 ^r	77,100	88,800 ^e

^eEstimated. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through September 28, 2022. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the commodities listed, secondary aluminum, gold, graphite, sulfur as a byproduct of natural gas, and uranium may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^c
Aluminum:				
Smelter, secondary	metric tons	Aluminum Co. of Pakistan Industries (Pvt.) Ltd. (ALCOP)	Smelters in Karachi, Sindh Province, and Lahore, Punjab Province	2,700
Do.	do.	Japan Metal Industries	Smelter in Karachi, Sindh Province	1,500
Do.	do.	Khan Aluminum Industries	do.	2,700
Do.	do.	Lucky Aluminum (Pvt.) Ltd.	do.	1,200
Do.	do.	Sun Metal Industries (Pvt.) Ltd.	do.	14,400
Products	do.	Pakistan Cables Ltd.	Plant in Karachi, Sindh Province	2,500
Do.	do.	Pakistan Metal Industries (Pvt.) Ltd.	do.	4,000
Antimony	do.	MTEQ Pakistan (Pvt.) Ltd.	Mines in Vashouk and Dalbandin, Balochistan Province	100
Barite		Bolan Mining Enterprises (BME) (Government of Balochistan, 50%, and Pakistan Petroleum Ltd., 50%)	Mine and grinding plant, Gunga, Khuzdar, Balochistan Province	200
Do.		Razvi Mining (Pvt.) Ltd.	Mines in Gandori, Kalan, and Retri, Khyber-Pakhtunkhwa Province	30
Barite-lead-zinc		Bolan Mining Enterprises (BME) (Government of Balochistan, 50%, and Pakistan Petroleum Ltd., 50%)	Mine and processing plant in Khuzdar, Balochistan Province	NA
Bauxite		Hussain Turab Mines Pakistan (Pvt.) Ltd.	Mine in Lahore District, Punjab Province	NA
Cement		Askari Cement Co. Ltd. (Fauji Group, 100%)	Plant in Nizampur, Nowshera, Khyber-Pakhtunkhwa Province	1,700
Do.		do.	Plant in Wah, Rawalpindi, Punjab Province	1,100
Do.		Attock Cement Pakistan Ltd. (Pharaon Group)	Plant in Hub, Lasbela, Balochistan Province	3,000
Do.		Bestway Cement Ltd.	Plant in Farooqia, Haripur, Khyber-Pakhtunkhwa Province	3,100
Do.		do.	Plant in Hattar, Haripur, Khyber-Pakhtunkhwa Province	1,270
Do.		do.	Plant in Kallar Kahar, Chakwal, Punjab Province	2,500
Do.		do.	Plant in Tatal, Chakwal, Punjab Province	3,600
Do.		Cherat Cement Co. Ltd. (Ghulam Faruque Group)	Plant in Lakrai, Nowshera, Khyber-Pakhtunkhwa Province	4,400
Do.		Dandot Cement Co. Ltd. [Three Stars Cement (Pvt.) Ltd., 49.5%; Rasheed Family, 31.6%; others, 18.9%]	Plant in Dandot, Chakwal, Punjab Province	500
Do.		Dewan Cement Ltd. (A Yousuf Dewan Co.)	Plant in Deh Dhand, Malir, Sindh Province	1,700
Do.		do.	Plant in Kamilpur, Haripur, Khyber-Pakhtunkhwa Province	1,150
Do.		D.G. Khan Cement Co. Ltd.	Plant in Dera Ghazi Khan, Punjab Province	2,110
Do.		do.	Plant in Hub, Lasbela, Balochistan Province	2,840
Do.		do.	Plant in Khairpur, Chakwal, Punjab Province	2,110
Do.		Fauji Cement Co. Ltd. (Fauji Group, 100%)	Plant in Pateh Jang, Attock, Punjab Province	3,430
Do.		Fecto Cement Ltd.	Plant in Hattar, Haripur, Khyber-Pakhtunkhwa Province	900
Do.		Flying Cement Co. Ltd.	Plant in Mangowal, Khushab, Punjab Province	1,300
Do.		Gharibwal Cement Ltd.	Plant in Pind Dadan Khan, Chakwal, Punjab Province	2,000
Do.		Kohat Cement Co. Ltd. [ANS Capital (Pvt.) Ltd., 55%]	Plant in Kohat, Khyber-Pakhtunkhwa Province	5,300
Do.		Lucky Cement Ltd.	Plant in Lakki Marwat District, Karachi, Sindh Province	5,460
Do.		do.	Plant in Pezu District, Khyber-Pakhtunkhwa Province	6,640
Do.		Maple Leaf Cement Factory Ltd. (Kohinoor Maple Leaf Group)	Plant in Daudkhel, Mianwali, Punjab Province	5,590
Do.		Pioneer Cement Ltd.	Plant in Chenki, Khushab, Punjab Province	5,200
Do.		Popular Cement (Popular Group)	Plant in Kalu Kohar, Dadu, Sindh Province	700

See footnotes at end of table.

TABLE 2—Continued
 PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^c
Cement—Continued	Power Cement Ltd. (Arif Habib Group)	Plant in Nooriabad, Jamshoroo, Sindh Province	3,370
Do.	Thatta Cement Co. Ltd. (Arif Habib Group)	Plant in Makli, Thatta, Sindh Province	693
Chromite	MTEQ Pakistan (Pvt.) Ltd.	Mines in Dargai, Malakand, Khyber-Pakhtunkhwa Province	150
Coal	Lakhra Coal Development Co. Ltd. (Pakistan Mineral Development Corp., 50%; Government of Sindh, 25%; Water and Power Development Authority, Government of Pakistan, 25%)	Coalfield in Latifabad, Hyderabad, Sindh Province, and powerplant at Khanote, Jamshoro, Sindh Province	330
Do.	Pakistan Mineral Development Corp. (Ministry of Petroleum and Natural Resources, Government of Pakistan, 100%)	Degari coalfield, Mastung, Balochistan Province	17
Do.	do.	Shahrig-Khost-Harnai coalfield, Sibi, Balochistan Province	270
Do.	do.	Sor-Range coalfield, Quetta, Balochistan Province	70
Do.	Sindh Engro Coal Mining Co. (Government of Sindh, 51%, and Engro Energy Ltd. and others, 49%)	Thar coalfield, Block II, Tharparkar, Sindh Province	3,800
Copper:			
Mine, Cu content	MTEQ Pakistan (Pvt.) Ltd.	NA	NA
Do.	Saindak Metals Ltd. [Metallurgical Corporation of China Ltd. (MCC), 50%; Government of Balochistan, 35%; Government of Pakistan, 15%]	Saindak Mine, Chagai, Balochistan Province	15
Smelter, primary	do.	Smelter in Saindak, Balochistan Province	20
Feldspar	Pakistan Minerals Co.	Mine in Karachi, Sindh Province	400
Fertilizer	Engro Fertilizers Ltd. (Engro Corp., 56.3%; financial institutes, 14.5%; public, 13.1%; others, 16.1%)	Plant in Daharki, Ghotki, Sindh Province	2,280
Do.	Fatima Fertilizer Co. Ltd. (Directors and affiliates, 27.3%; Fatima Holding Ltd., 22.9%; Arif Habib Group, 17.8%; others, 32%)	Calcium ammonium nitrate plant, integrated complex in Sadiqabad, Rahim Yar Khan, Punjab Province	420
Do.	do.	Nitrophosphate plant, integrated complex in Sadiqabad, Rahim Yar Khan, Punjab Province	360
Do.	do.	Urea plant, Integrated complex in Sadiqabad, Rahim Yar Khan, Punjab Province	500
Do.	Fauji Fertilizer Bin Qasim Ltd. (Fauji Fertilizer Co., 49.9%; Fauji Foundation, 18.3%; others, 31.8%)	Urea plant, Bin Qasim Eastern Industrial Zone, Karachi, Sindh Province	551
Do.	do.	Diammonium phosphate plant, Bin Qasim Eastern Industrial Zone, Karachi, Sindh Province	800
Do.	Pakarab Fertilizer Ltd. (Fatima Group)	Calcium ammonium nitrate plant, Multan City, Punjab Province	450
Do.	do.	Nitrophosphate plant, Multan City, Punjab Province	305
Do.	do.	Urea plant, Multan City, Punjab Province	100
Fluorspar	Mughne Group	Mines in Abbottabad and Parachinar, Khyber-Pakhtunkhwa Province	NA
Do.	Pakistan Minerals Co.	Mine in Karachi, Sindh Province	NA
Gemstone	Azad Kashmir Mineral Industrial Development Corp.	Mine in Chitta Katha and Nungi Mali, Neelum Valley	NA
Gold, mine	Saindak Metals Ltd. [Metallurgical Corporation of China Ltd. (MCC), 50%; government of Balochistan Province, 35%; Government of Pakistan, 15%]	Saindak Mine, Chagai, Balochistan Province	NA
Gypsum	United Gypsum (Pvt.) Ltd.	Gypsum plant in Karachi, Sindh Province	100

See footnotes at end of table.

TABLE 2—Continued
PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^c
Iron ore		Bolan Mining Enterprises (BME) (Government of Balochistan Province, 50%, and Pakistan Petroleum Ltd., 50%)	Chigendik and Pachinko deposits, Nokkundi Mine, Chagai, Balochistan Province	1,000
Do.		Various companies	Small-scale local mines	400
Lead and zinc, ore		MCC Huaye Duddar Mining Co. (MHD) [Metallurgical Corporation of China Ltd. (MCC), 75%, and Pakistan Mineral Development Corp. (PMDC) and Government of Balochistan, 25%]	Duddar lead-zinc mine, Lasbela, Balochistan Province	500
Natural gas	million cubic meters	Eni Pakistan Ltd.	3 gasfields in Sindh Province	1,500
Do.	do.	Mari Petroleum Co. Ltd. (MPCL) (Fauji Foundation, 40%, and Oil & Gas Development Co. Ltd., 20%)	5 gasfields in Sindh Province; 3 gasfields in Punjab Province; 1 gasfield in Balochistan Province	7,700
Do.	do.	MOL Pakistan Oil and Gas Co. (MOL Group)	9 gasfields in Khyber-Pakhtunkhwa Province	3,400
Do.	do.	Ocean Pakistan Ltd. (OPL) (Hashoo Group)	3 gasfields in Punjab Province	30
Do.	do.	Oil and Gas Development Co. Ltd. (OGDCL) (Government of Pakistan, 74.97%, and private investors, 25.03%)	44 gasfields in Sindh Province; 13 gasfields in Punjab Province; 6 gasfields in Khyber-Pakhtunkhwa Province; 3 gasfields in Balochistan Province	11,400
Do.	do.	Pakistan Oilfields Ltd. (POL)	8 gasfields in Punjab Province	150
Do.	do.	Pakistan Petroleum Ltd. (PPL) (Government of Pakistan, 68%; PPL Employees Empowerment Trust, 7%; private investors, 25%)	12 gasfields in Sindh Province; 2 gasfields in Punjab Province; 1 gasfield in Balochistan Province	7,500
Do.	do.	United Energy Group Ltd.	9 gasfields in Sindh Province	1,550
Do.	do.	United Energy Pakistan Ltd. (United Energy Group Ltd.)	99 gasfields in Sindh Province	5,000
Nitrogen, ammonia		Fatima Fertilizer Co. Ltd. (Directors and affiliates, 27.3%; Fatima Group, 22.9%; Arif Habib Group, 17.8%; others, 32%)	Ammonia plant, Integrated complex in Sadiqabad, Rahim Yar Khan, Punjab Province	500
Do.		Pakarab Fertilizer Ltd. (Fatima Group)	Ammonia plant in Multan City, Punjab Province	290
Petroleum:				
Crude, including condensate	thousand 42-gallon barrels	Eni Pakistan Ltd.	3 oilfields in Sindh Province	60
Do.	do.	Mari Petroleum Co. Ltd. (MPCL) (Fauji Foundation, 40%, and Oil & Gas Development Co. Ltd., 20%)	5 oilfields in Punjab Province; 4 oilfields in Sindh Province; 1 oilfield in Balochistan Province	680
Do.	do.	MOL Pakistan Oil and Gas Co. (MOL Group)	9 oilfields in Khyber-Pakhtunkhwa Province	7,600
Do.	do.	Ocean Pakistan Ltd. (OPL) (Hashoo group)	3 oilfields in Punjab Province	50
Do.	do.	Oil and Gas Development Co. Ltd. (OGDCL) (Government of Pakistan, 74.97%, and private investors, 25.03%)	39 oilfields in Sindh Province; 11 oilfields in Punjab Province; 3 oilfields in Khyber-Pakhtunkhwa Province; 1 oilfield in Balochistan Province	14,100
Do.	do.	Pakistan Oilfields Ltd. (POL)	12 oilfields in Punjab Province	680
Do.	do.	Pakistan Petroleum Ltd. (PPL) (Government of Pakistan, 68%; PPL Employees Empowerment Trust, 7%; private investors, 25%)	11 oilfields in Sindh Province; 2 oilfields in Punjab Province; 1 oilfield in Balochistan Province	3,700
Do.	do.	United Energy Group Ltd.	5 oilfields in Sindh Province	150
Do.	do.	United Energy Pakistan Ltd. (United Energy Group Ltd.)	81 oilfields in Sindh Province	2,500
Refined	do.	Attock Refinery Ltd. (Attock Group, 63%)	Refinery in Rawalpindi, Punjab Province	18,700
Do.	do.	Cnergyco Pk. Ltd.	Refinery in Mouza Kund, Tehsil Gadani, Lasbela District, Balochistan Province	51,500
Do.	do.	National Refinery Ltd. (Attock Group)	Refinery in Korangi Industrial Area, Karachi, Sindh Province	24,600
Do.	do.	Pak-Arab Refinery Co. Ltd. (PARCO, joint venture of the Governments of Pakistan and the Emirate of Abu Dhabi)	Mid-Country Refinery (MCR), Mahmood Kot, Punjab Province	43,800

See footnotes at end of table.

TABLE 2—Continued
PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e	
Petroleum:—Continued				
Refined— Continued	thousand 42-gallon barrels	Pakistan Refinery Ltd. (Shell Petroleum Co. Ltd., 32.1%; Pakistan State Oil Co. Ltd., 24.1%; public, 20.1%; Hascol Petroleum Ltd., 14.7%; others, 9.0%)	Refinery in Korangi Creek, Karachi District, Sindh Province	17,000
Phosphate rock		Pakistan Mining Co. Ltd. (PMCL) (Fatima Group)	NA	150
Salt		Al-Muhandus Corp. (Ghani Group)	Salt mine in Quaidabad, Khushab, Punjab Province	NA
Do.		Hub-Pak Salt Refinery	Lake salterns in Ankerio and Mokhai, Sindh Province, and refinery in Hub Industrial Trading Estate, Karachi, Sindh Province	730
Do.		Ghani Mines (Pvt.) Ltd. (Ghani Group)	Salt mine in Quaidabad, Khushab, Punjab Province	NA
Do.		Pakistan Mineral Development Corp. (Ministry of Petroleum and Natural Resources, Government of Pakistan, 100%)	Jatta salt mines in Khyber-Pakhtunkhwa Province	100
Do.	do.		Kalabagh salt mines, Mianwali, Punjab Province	190
Do.	do.		Khewra salt mine, Salt Ranges, Jhelum, Punjab Province	350
Do.	do.		Makrach salt mine, 160 km south of Islamabad	85
Do.	do.		Warcha salt mines, Mianwali, Punjab Province	630
Silica sand		Ghani Mines (Pvt.) Ltd. (Ghani Group)	NA	NA
Do.		MTEQ Pakistan (Pvt.) Ltd.	NA	120
Soda ash, synthetic		ICI Pakistan Ltd. (Lucky Cement Ltd., 55%)	Plant in Khewra, Punjab Province	425
Steel:				
Raw steel		Agha Steel Industries Ltd.	Plant in Port Qasim Authority, Karachi, Sindh Province	450
Do.		Amreli Steels (Pvt.) Ltd.	Plant in Karachi, Sindh Province	400
Do.		Frontier Foundry Steel (Pvt.) Ltd.	Unit 1 in Lahore, Punjab Province, and unit 2 in Hayatabad Industrial Estate, Peshawar, Khyber-Pakhtunkhwa Province	120
Do.		Ittefaq Iron Industries Ltd. (Al-Shafi Group)	Plant in Manga-Raiwind area, Punjab Province	110
Do.		Mughal Iron & Steel Industries Ltd. (MISIL)	Plant in Lahore, Punjab Province	300
Do.		Pakistan Steel Mills Corp. (Pvt.) Ltd. (Ministry of Industries and Production, Government of Pakistan)	Plant in Bin Qasim, Karachi, Sindh Province	1,200
Products		Abbas Steel Group (ASG)	Plants in Karachi, Sindh Province and Lahore, Punjab Province	200
Do.		Agha Steel Industries Ltd.	Plant in Port Qasim Authority, Karachi, Sindh Province	250
Do.		Aisha Steel Mills Ltd. (Arif Habib Group, 45.7%; Mr. Arif Habib, 19.6%; others, 34.7%)	Plant in Bin Qasim, Karachi, Sindh Province	700
Do.		Amreli Steels (Pvt.) Ltd.	Plant in Karachi, Sindh Province	400
Do.		Fazal Steel (Pvt.) Ltd.	Plant in Islamabad	130
Do.		International Steels Ltd. (International Industries Ltd., 56.33%, and Sumitomo Corp., 9.08%)	Plant in Landhi, Karachi, Sindh Province	1,000
Do.		Ittefaq Iron Industries Ltd. (Al-Shafi Group)	Plant in Manga-Raiwind area, Punjab Province	140
Do.		Kamran Steel Re-rolling Mills (Pvt.) Ltd. (Kamran Steel)	Plant in Ferozwala, Sheikhpura, Punjab Province	150
Do.		Mughal Iron & Steel Industries Ltd. (MISIL)	Plant in Lahore, Punjab Province	150
Do.		Pakistan Steel Re-Rolling Mills (SGI Steel)	Plant in Hattar Industrial Estate, Khyber-Pakhtunkhwa Province	180
Do.		Pak Steel Re-Rolling Mills	Plant in Islamabad	300
Do.		Peoples Steel Mills Ltd.	Plant in Karachi, Sindh Province	70
Do.		Punjab Concast Steel Mill (Pvt.) Ltd. (Kamran Steel)	Plant in Sheikhpura, Punjab Province	180
Do.		TA Corporation (Pvt.) Ltd. (Kamran Steel)	Plant in Lahore, Punjab Province	NA

See footnotes at end of table.

TABLE 2—Continued
 PAKISTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2021

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^c
Stone:			
Marble	Azeem Marble & Onyx Industries	Quarry in Karachi, Sindh Province	NA
Travertine	Nasrullah Marble & Granite	Quarry in Loralai, Balochistan Province	NA
Sulfur, natural gas byproduct	Oil and Gas Development Co. Ltd. (OGDCL) Government of Pakistan, 74.97%, and private investors, 25.03%	Dakhni gasfield, Punjab Province	20
Do.	Pakistan Oilfields Ltd. (POL)	20 oilfields and gasfields in Punjab Province	500
Talc	Capricorn Minerals	Mine in Bandi Sadique, Mansehra, Khyber-Pakhtunkhwa Province	960
Do.	Mughne Group	Mines in Abbottabad and Parachinar, Khyber-Pakhtunkhwa Province	120

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