



2019 Minerals Yearbook

PERU [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF PERU

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Peru continued to be among the world's leading producers of many nonfuel minerals and base metals. In 2019, the country was estimated to rank second among the world's producers of silver (15% of world production), copper (12%), and zinc (11%); third among world's producers of lead (6%); and fourth among the world's producers of molybdenum (10%) and tin (7%). The country's world rankings for mineral reserves were as follows: first for silver; second for copper (along with Australia) and molybdenum; fourth for lead; fifth for zinc; and seventh for gold (Flanagan, 2020, 2021; George, 2020; Klochko, 2020, 2021; Polyak, 2020, 2021; Sheaffer, 2020, 2021; Tolcin, 2020, 2021; Anderson, 2021; Merrill, 2021).

Peru's real gross domestic product (GDP) growth rate was 2.2% in 2019 compared with 4.0% in 2018. The mineral industry continued to be one of the major contributors to the country's GDP and to the value of total exports, contributing about 13% to the total GDP and accounting for 67% of total exports. The production of metals, such as copper, gold, iron, lead, molybdenum, silver, tin, and zinc, continued to be a key reason for the country's macroeconomic stability, accounting for 9% of Peru's total GDP in 2019 and 70% of the output value of the mineral industry (Banco Central de Reserva del Perú, 2020a, p. 11, 17, 23, 47; 2021).

Minerals in the National Economy

The output value of Peru's mineral industry was about the same as in 2018; a decrease in the production of metals (by 0.8%) was offset by an increase in the production of hydrocarbons (by 4.6%). The decrease in the production of metals was mainly the result of decreases in the production of gold (by 8.4%), silver (7.2%), and zinc (4.8%). The increase in the production of hydrocarbons was mainly owing to increases in the production of crude petroleum and natural gas, by 8.4% and 5.6%, respectively. Peru's mining activity was broadly distributed among 23 of its 25 Regions. Direct employment in the mining sector decreased to 208,716 people in 2019 from 209,449 people in 2018. Of these 208,716 workers, about 15% worked in the Arequipa Region, 10% in the Junin Region, and 7.9% in the Lima Region (Banco Central de Reserva del Perú, 2020a, p. 23; Ministerio de Energía y Minas, 2020a, p. 106–108).

Investments in the country's mining sector increased by 24.5% to about \$6.2 billion in 2019 from \$4.9 billion in 2018. The increase was mainly attributed to major investments in large copper projects, such as the construction of the Quellaveco project by Anglo American Quellaveco S.A., the Mina Justa project by Marcobre S.A.C., and the Toromocho expansion project by Minera Chinalco Peru S.A. (Chinalco) as well as the construction of the Reaprovechamiento de Relaves B2 project (tin) by Minsur S.A. and the Quecher Main project (gold) by Minera Yanacocha S.R.L. (Yanacocha). Anglo American Quellaveco ranked first (invested \$1.3 billion) among the mining companies investing in the country, followed by Marcobre

(\$745 million), and Minera Chinalco Peru (\$413 million). The Moquegua Region received \$1.5 billion of Peru's mining investments, mainly from the Quellaveco project; and the Regions of Ica and Junin received \$1.1 billion and \$589 million, respectively, mainly for the Mina Justa and Toromocho projects (Ministerio de Energía y Minas, 2020a, p. 5, 90, 91, 94, 96–97).

As of September, Peru's 2019 mine construction projects portfolio included 48 major projects at various stages of exploration and (or) development, with a total investment of \$58 billion. About 49% (\$28 billion) of these investments was for projects at the prefeasibility stage, about 28% (\$16 billion) was for projects at the feasibility stage, about 16% (\$9.0 billion) was for projects at the construction stage, and about 7% (\$4.2 billion) was for projects at the evaluation stage. Of the 48 projects, 28 were expected to be open pit mines, 11 were expected to be underground mines, and 5 were expected to be combined open pit and underground mines. Copper projects accounted for about 71% of the total investment, followed by gold (11%) and iron ore (9%). The remaining 9% of the total investment included lithium, phosphate rock, silver, tin, uranium, and zinc projects. The United Kingdom continued to rank first among the countries investing in construction-phase mining projects, accounting for 21% of investments, and was followed by China (17%), Canada (15%), and Mexico and the United States (13% each) (Ministerio de Energía y Minas, 2019, p. 7, 11–12, 14, 17, 18; 2020a, p. 98, 100).

Government Policies and Programs

Peru's mining sector is regulated by Supreme Decree No. 014–92–EM, the Ley General de Minería [General Mining Law]. The Ministerio de Energía y Minas (MEM) is the Government agency responsible for the administration and regulation of the energy and mining sectors. The Instituto Geológico Minero y Metalúrgico [Geological, Mining, and Metallurgical Institute] of the MEM is the authority responsible for all legal matters related to geoscience research and for the management of land and mining concessions. The Dirección General de Minería (DGM) [General Mining Directorate] of the MEM has the responsibility to address all legal matters related to mining sector policy. The Dirección General de Asuntos Ambientales [General Directorate of Environmental Affairs] of the MEM is responsible for addressing environmental issues caused by mining operations and for implementing environmental laws and regulations. The Dirección General de Formalización Minera (DGFM) [General Directorate of Mining Formalization] of the MEM, which was created by Decree No. 025–2013–EM, is responsible for policies regarding the formalization of the artisanal and small-scale mining sector as well as for issuing and implementing related regulations. PERUPETRO S.A. (PERUPETRO), which was created by law No. 26221, Ley Orgánica de Hidrocarburos [Organic Law of Hydrocarbons], was responsible for promoting investments in

hydrocarbon exploration and mining in Peru. PERUPETRO was also responsible for negotiating, signing, and monitoring contracts and technical agreements for the exploration and mining of hydrocarbons in the country. *Petróleos del Peru S.A. (PETROPERU)*, which was a state-owned company, was responsible for the transportation, refining, distribution, and sale of fuels and other derivatives of petroleum. PETROPERU owned most of the refineries in the country (Ministerio de Energía y Minas, 2013; 2020a, p. 142; 2020b, c; Instituto Geológico Minero y Metalúrgico, 2020; PERUPETRO S.A., 2022; *Petróleos del Peru S.A.*, 2022).

Production

In 2019, production of bentonite increased to 46,887 metric tons (t) from 2,384 t in 2018 owing to the startup in August of the Mercedes project, which was owned by *Minera Doña Herminia S.A.* The industrial minerals for which output increased by more than 10% were marble (39%), slate (33%), arsenic trioxide and common clay (21% each), sand (19%), and boron (11%). Among mineral fuels and related materials, increases in production included that of liquefied petroleum gas (43%), and gasoline (15%). Metals for which production decreased by more than 10% during the year included bismuth (production decreased by 50%), artisanal gold (22%), other refined copper and estimated selenium (11% each), and smelter copper (10%). Industrial minerals for which production decreased by more than 10% included mica (by 72%), limestone (46%), gypsum (45%), kaolin (42%), onyx (36%), quartzite (35%), travertine (21%), other crushed stone (19%), and salt (16%). Mineral fuels and related materials for which production decreased were led by bituminous coal (decreased by 39%), natural gas liquids (35%), residual fuel oil (27%), and asphalt (13%). Data on mineral production are in table 1.

Structure of the Mineral Industry

The majority of the mining operations in Peru were privately owned. In 2019, the country's leading copper producers included *Compañía Minera Antamina S.A. (Antamina)*, *Minera Las Bambas S.A. (Las Bambas)*, *Sociedad Minera Cerro Verde S.A.A. (Minera Cerro Verde)*, and *Southern Peru Copper Corp. (Southern Copper)*. The country's leading silver producers included *Antamina*, *Compañía de Minas Buenaventura S.A.A. (Buenaventura)*, and *Compañía Minera Ares S.A.C.* The leading lead producers included *Buenaventura*, *Social Minera El Brocal S.A.A.*, *Compañía Minera Chungar S.A.C.*, and *Volcan Compañía Minera S.A.A. (Volcan)*; and the leading zinc producers included *Antamina*, *Nexa Resources Peru S.A.A.*, and *Volcan*. Molybdenum was produced as a byproduct of copper production by *Antamina*, *Cerro Verde*, *Chinalco*, *Hudbay Peru S.A.C.*, *Las Bambas*, and *Southern Copper*. *Shougang Corp. of China*, through its subsidiary *Shougang Hierro Peru S.A.A.*, continued to be the country's leading producer of iron ore. *Minsur S.A.* continued to be the sole producer of tin in the country (Ministerio de Energía y Minas, 2020a, p. 60, 68, 72, 79–80, 84, 98). Table 2 is a list of major mineral industry facilities.

Mineral Trade

In 2019, the value of Peru's total exports amounted to about \$47.7 billion compared with \$49.1 billion in 2018. The value of Peru's mineral exports equaled \$28.7 billion, or 60% of the country's total exports in 2019. Metals, which included copper, gold, iron, lead, molybdenum, silver, tin, zinc, and others, accounted for \$28.1 billion, or 59% of the total exports compared with \$28.9 billion in 2018. Copper continued to be the leading mineral export, accounting for about 49% of Peru's total metal exports, in terms of value, followed by gold (30%) and zinc (7%). The country's leading metal export recipients were, in order of export value, China (which received 40% of Peru's metal exports), Switzerland (8%), Canada (7%), India and the Republic of Korea (6% each), Japan (5%), and the United States (4%) (Ministerio de Energía y Minas, 2020a, p. 53–56).

Peru's exports to the United States were valued at about \$6.1 billion in 2019 compared with about \$7.9 billion in 2018. The decrease in the value of the country's total exports to the United States was attributed mainly to a decrease in the exports of nonmonetary gold, by about 74% (to \$471 million in 2019 from \$1.8 billion in 2018); followed by a 64% (\$168 million) decrease in fuel oil exports, a 51% (\$61 million) decrease in copper exports, and a 43% (\$335 million) decrease in other petroleum products exports. Zinc accounted for about \$154 million of the total exports to the United States in 2019; tin, for about \$155 million; and crude petroleum, for about \$29 million. Imports from the United States were valued at about \$9.7 billion in 2019, which was about the same value as in 2018; of this amount, fuel oil accounted for about \$2.0 billion; other petroleum products, about \$828 million; crude petroleum, about \$607 million; other coal and fuels, about \$92 million; nonmonetary gold, \$65 million; and natural gas liquids, \$56 million (U.S. Census Bureau, 2020a, b).

Commodity Review

Metals

Copper.—In 2019, Peru's leading copper companies were, in order of output, *Cerro Verde* (which accounted for about 20% of the country's total copper production), *Antamina* (19%), *Southern Copper* (17%), and *Las Bambas* (16%). The *Arequipa Region* continued to rank first among the country's copper-producing regions in 2019, accounting for about 20% of the amount produced, followed by the *Ancash* (19%), *Apurímac* (16%), and *Cusco* (13%) Regions. In 2019, copper production in the country increased by nearly 1% to 2.4 million metric tons (Mt). The increase in total copper production was attributed to *Southern Copper*, which increased its production by about 25% owing to the completion of the *Toquepala expansion project* in 2018 (table 1; Ministerio de Energía y Minas, 2019, p. 58–61).

Chinalco, which was owned by *Aluminum Corp. of China Overseas Holding Ltd.*, continued with its expansion project at the *Toromocho mining unit* located in *Junin Region*. Construction work at *Toromocho's plant* began in 2018 and was expected to be completed by 2021. The project would increase the plant's processing capacity to 170,000 metric tons per day (t/d) of copper ore from 140,640 t/d, which would

in turn increase Toromocho's copper production capacity by 75,000 metric tons per year (t/yr). Proven and probable mineral reserves at Toromocho were reported to be about 1.5 billion metric tons (Gt) at average grades of 0.469% copper, 0.019% molybdenum, and 6.89 grams per metric ton (g/t) silver (Ministerio de Energía y Minas, 2019, p. 8, 35; Minera Chinalco Perú S.A., 2020, p. 1–5).

Anglo American Quellaveco, which was a joint venture between Anglo American plc (60%) and Mitsubishi Corp. (40%), continued with the development of the Quellaveco project located in the Moquegua Region. The project, which was expected to begin copper production by 2022 and to reach full production by 2023, would have the capacity to produce an average of 300,000 t/yr of copper during the first 10 years of operation. Total proven and probable mineral reserves at Quellaveco were reported to be 1.3 Gt at average grades of 0.57% copper and 0.022% molybdenum (Ministerio de Energía y Minas, 2019, p. 8, 67; Anglo American plc, 2020a, p. 24; 2020b).

Marcobre, which was a joint venture between Minsur (60%) and Alexar International S.A. de C.V. of Chile, also continued with the development of the Mina Justa project. The project, located in Ica Region, was expected to produce about 102,000 t/yr of copper concentrate and 57,000 t/yr of copper cathode. Mina Justa had an estimated mine life of 16 years and was expected to be begin commercial production by 2021 (International Mining, 2018; Ministerio de Energía y Minas, 2019, p. 8, 60; Minsur S.A., 2019, p. 10, 13).

Gold and Silver.—Peru's leading gold producers were, in terms of output, Yanacocha, which accounted for about 13% of the country's gold production, Compañía Minera Poderosas S.A. (7%), and Compañía Minera Ares S.A.C. (5%). Gold production from the Cajamarca Region accounted for about 25% of the country's total gold production, followed by the La Libertad (24%), the Arequipa (15%), and the Ayacucho (9%) Regions. In 2019, total gold production decreased by about 8% to 128,413 kg, which was attributed to a significant decrease in the production of gold from artisanal mining [to 14,645 kilograms (kg) in 2019 from 18,875 kg in 2018]. In 2019, production of gold from large- and medium-scale operations accounted for about 78% of total gold production, followed by artisanal mining (11%) and small-scale operations (10%) (table 1; Ministerio de Energía y Minas, 2020a, p. 62–64).

In the fourth quarter of 2019, Yanacocha, which was a joint venture among Newmont Mining Corp. (51.35%), Buenaventura (43.65%), and Sumitomo Corp. (5%), began commercial production at its Quecher Main project, which would add oxide production to Yanacocha and extend the mine life to 2027. The project included the Quecher Main pit, two small oxide deposits, and a heap leach pad. Yanacocha expected to produce an average of about 6,200 kilograms per year between 2020 and 2024 (Business Wire, 2019; Ministerio de Energía y Minas, 2020a, p. 62).

Barrick Gold Corp. of Canada, through its subsidiary Minera Barrick Misquichilca S.A., owned and operated the Lagunas Norte Mine in La Libertad Region. Gold production at Lagunas Norte had been decreasing over the years owing to lower ore tonnage processed and lower recoveries. At the end of the third quarter in 2019, the company placed its Lagunas Norte

operations on care-and-maintenance status while it was focused on drilling for oxide and sulfide resources. As of December, measured mineral resources at Laguna Norte were reported to be 1.4 Mt at an average grade of 0.94 g/t gold and indicated mineral resources were reported to be 57 Mt at an average grade of 2.31 g/t gold (Barrick Gold Corp., 2020, p. 18, 38, 142; Ministerio de Energía y Minas, 2020a, p. 5, 63–64).

Antamina continued to rank first among the country's silver producers in 2019, accounting for about 13% of the total production, followed by Buenaventura (12%), Compañía Minera Ares (11%), and Volcan (6%). The Junin Region accounted for about 17% of the country's total silver production, followed by the Pasco and Ancash (17% each) Regions, the Lima Region (14%), and the Ayacucho (13%) Region. Production of silver decreased by about 7% in 2019, which was mainly attributed to decreases in production by the country's leading silver producers, including Buenaventura (by 29%), Compañía Minera Ares (by 19%), Antamina (by 9%), and Volcan (11%). Production of lead by large- and medium-scale producers accounted for about 97% of Peru's total silver production (Ministerio de Energía y Minas, 2020a, p. 70–73).

Iron Ore.—In 2019, production of iron (metal) increased by 6% to 10.1 Mt from 9.5 Mt in 2018. The increase was mainly attributed to the completion of Shougang's Marcona expansion project in 2018. During the year, Shougang produced about 96% of the country's total iron output from its Marcona open pit mine located in the Ica Region. The remaining 5% was from the Marcona tailings recovery project, which began operations in 2017. The project was operated by Minera Shouxin Peru S.A., which was a joint venture between Baiyin Nonferrous Group Co. (51%) and Shougang (49%) (table 2; Ministerio de Energía y Minas, 2020a, p. 78–79, 99).

Jinzhao Mining Peru S.A., which was a joint venture between Jiangtong Group of China (51%) and Zhongrong Xinda Group Co. Ltd. of China (49%), continued with its plans to develop the Pampa de Pongo project at an investment cost of \$2.2 billion. Pampa de Pongo, which is located in Caraveli Province, Arequipa Region, was expected to produce about 28.2 million metric tons per year (Mt/yr) during a mine life of about 24 years. Jinzhao Mining Peru expected to begin the construction of the Pampa de Pongo Mine by 2021 and to begin production by 2024. Total proven and probable mineral reserves at Pampa de Pongo were reported to be 910.5 Mt at average grades of 38.6% iron, 0.1% copper, and 0.06 g/t gold (Ministerio de Energía y Minas, 2019, p. 63; 2020a, p. 78–79, 99).

Molybdenum.—Peru's leading molybdenum producers were, in terms of output, Cerro Verde, which accounted for about 43% of the country's total molybdenum production; Southern Copper, 35%; and Antamina, 12%. Molybdenum production increased by about 9% to 30,441 t in 2019 from 28,034 t in 2018; this was the country's largest increase in molybdenum production of the past 10 years. Between 2010 and 2019, Peru's total molybdenum output increased by 80%, which was mainly attributed to increases in production capacity by Antamina, Cerro Verde, and Southern Copper at their respective mining operations as well as at new mining operations, such as Chinalco, Hudbay Peru, and Las Bambas. Las Bambas and Hubday Peru (located in the Apurimac Region and the Cusco Region, respectively) began

commercial production in 2015, and Chinalco (located in the Junin Region) began operations in 2016 (Ministerio de Energía y Minas, 2020a, p. 82–84).

Lead and Zinc.—The country's leading lead producers were, in terms of output, Buenaventura and Social Minera El Brocal, which accounted for about 9% each of the country's total lead production in 2019, followed by Compania Minera Chungar (8%), and Volcan (7%). The Pasco Region accounted for about 33% of the country's total lead production followed by the Lima (17%), the Junin (15%), and the Ancash (9%) Regions. In 2016, production of lead by large- and medium-scale producers accounted for about 98% of Peru's total lead production. The production of lead increased by about 7% in 2019, which was mainly attributed to increased production at Social Minera El Brocal (by about 12%) and Volcan (by 5%) (Ministerio de Energía y Minas, 2020a, p. 74–77).

In 2019, Antamina continued to be the leading zinc producer in the country, accounting for about 26% of the country's total zinc production, followed by Volcan (10%) and Nexa Resources (9%). The leading zinc-producing Regions were, in order of output, Ancash (which produced about 30%), Junin, (20%), Pasco (17%), Lima (12%), and Ica (11%). In 2019, production of zinc by large- and medium-scale producers accounted for about 99% of Peru's total zinc production. Peru's production of zinc decreased by about 5% in 2019, which was mainly attributed to decreased production at Nexa Resources (by 4%) and Volcan (by 3%). Smelted zinc output, however, increased by 7%, which was attributed to an increase in the production of smelted zinc at the Cajamarquilla refinery in the Lima Region and operated by Nexa Resources (table 2; Ministerio de Energía y Minas, 2020a, p. 66–69).

Tin.—Minsur completed the construction of its Reaprovechamiento de Relaves B2 project, which consisted of the recovery of tin from the San Rafael tailings (containing 7.6 Mt of tailings at an average grade of 1.05% tin). The project, which would have the capacity to produce between 4,500 and 5,000 t/yr during a mine life of about 9 years, was expected to begin commercial production in January 2020 (Minsur S.A., 2019, p. 28–29; Ministerio de Energía y Minas, 2020a, p. 80).

Industrial Minerals

Phosphate Rock.—Fosfatos del Pacifico S.A. (a joint venture between FOSSAL S.A.A., 70%, and Mitsubishi Corp., 30%) continued with its plans to invest about \$831 million in the development of the Bayovar 9 concession located in Sechura Province, Piura Region. Total proven and probable mineral reserves at Bayovar 9 were reported to be 108.1 Mt of phosphate rock at an average grade of 17.8% P₂O₅. The company reported that Bayovar 9 was expected to have the capacity to produce 2.5 Mt/yr of phosphate rock concentrate with a content of about 30% of P₂O₅. No further details as to when the company expected to begin the construction were available, however (Ministerio de Energía y Minas, 2019, p. 99; Fosfatos del Pacifico S.A., 2020; FOSSAL S.A.A., 2020, p. 4–5).

Reserves and Resources

Table 3 lists Peru's reserves of major minerals.

Outlook

Peru's economy is likely to be significantly affected by the coronavirus disease 2019 (COVID-19) pandemic in 2020. The Government is expected to implement strict measures to contain the spread of the COVID-19 disease; these measures are likely to affect the country's major contributors to development and economic growth, including the mineral industry. As a result, Peru's real GDP is expected to decrease by 11% in 2020 compared with an increase of 2.2% in 2019. The mineral industry is expected to continue to contribute more than 10% to Peru's total GDP in 2020 and to account for more than 60% of the country's total exports. However, Peru's metals output is expected to decrease by about 13% in 2020 owing to a temporary suspension of mining operations to be implemented to prevent the spread of COVID-19. The projected decrease is likely to be driven by expected decreases in the production of gold and silver (by about 30% each), lead (by about 20%), copper and iron (by about 10% each). Mineral exports are likely to continue to represent a major part of Peru's total exports; and copper is likely to continue to be the leading mineral export, accounting for about 50% of the country's exports, followed by gold (30%). Main investment projects in the mining sector between 2020 and 2021 are likely to include Quellaveco, Mina Justa, and the expansion of the Toromocho Mine. Peru's 2020 mine construction projects portfolio is likely to include 46 major projects at various stages of exploration and (or) development, with a total investment of \$51.1 billion. Copper projects are expected to account for nearly 70% of the total investment, followed by gold (14%) and iron ore (9%). The remaining 10% of the total investment is expected to include lithium, phosphate rock, silver, uranium, and zinc projects (Banco Central de Reserva del Perú, 2020b, p. 8, 40, 42–44; Ministerio de Energía y Minas, 2020d, p. 5, 7, 20–21).

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TABLE 1
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019	
METALS						
Bismuth, mine	--	188	123	145	73	
Cadmium, refinery, primary	757	820	797	765	772	
Copper:						
Mine, Cu content	1,627,727	2,280,005	2,383,163	2,370,693	2,389,145	
Smelter, primary	327,909	309,469	316,882	327,821	294,315	
Refinery, primary:						
Electrowon	73,091	73,854	62,421	66,257	66,295	
Other	279,869	257,470	272,996	270,541	241,567	
Total	352,960	331,324	335,417	336,798	307,862	
Gold, mine, Au content:						
Mine	kilograms	134,647	127,921	131,269	121,336 ^r	113,768
Artisanal	do.	12,175	25,069	20,695	18,875	14,645
Total	do.	146,822	152,990	151,964 ^r	140,211 ^r	128,413
Indium, refinery, primary ^c	do.	10,000	10,000	10,000	11,000	12,000
Iron ore, mine:						
Gross weight	thousand metric tons	10,908	11,418	13,100 ^{r,c}	14,200 ^e	15,100 ^e
Fe content	do.	7,321	7,663	8,806	9,534	10,120
Iron and steel:³						
Direct-reduced iron	do.	72	11	--	--	--
Steel:						
Raw steel	do.	1,082	1,168	1,207	1,217	1,230
Products, hot rolled	do.	1,335	1,417	1,517	1,505 ^r	1,500 ^e
Lead:						
Mine, Pb content		315,525	314,422	306,794	289,195	308,116
Refinery, primary		1,494	--	--	--	--
Mercury, Hg content ^{e,4}		35	40	40	40	40
Molybdenum, mine, Mo content		20,153	25,757	28,141	28,034	30,441
Selenium, refinery	kilograms	40,000	45,000	45,000	45,000	40,000
Silver:						
Mine, Ag content	do.	4,101,568	4,375,337	4,303,541	4,160,162 ^r	3,860,306
Refinery, primary		190	183	183	175	163
Tin:						
Mine, Sn content		19,511	18,789	17,790	18,601	19,853
Smelter, primary		20,396	19,390	17,906	18,255	19,555
Tungsten, mine, concentrate, W content		110	--	--	--	--
Zinc:						
Mine, Zn content		1,421,218	1,337,081	1,473,037	1,474,674	1,404,382
Smelter, primary		335,422	341,518	312,339	333,667	356,925
INDUSTRIAL MINERALS						
Arsenic trioxide		--	33,000	32,000	29,000	35,000
Barite		28,407	7,953	9,182	15,621	16,373
Boron, ulexite		662,709 ^r	33,792	--	100,522	111,108
Cement, hydraulic	thousand metric tons	10,410	10,094	9,980	10,049	10,574
Clay:						
Bentonite		21,341	19,200 ^e	756	2,384	46,887
Common clay		1,419,778	1,368,114	1,382,743	1,139,282 ^r	1,377,765
Kaolin		43,251	19,098 ^r	17,700	16,004	9,208
Diatomite		120,672	107,265	96,590 ^r	96,532 ^r	91,103
Feldspar		16,979	16,629	14,929	31,588	29,134
Gypsum, mine		438,025	257,423 ^r	286,657	458,479 ^r	254,382
Kyanite and related minerals, andalusite ^{e,5}		35,000	45,000	35,000	40,000	40,000
Lime ^c		240,000	250,000	250,000	250,000	250,000
Mica		115	111	234	183	52
Nitrogen, ammonia, N content		5,000	5,000 ^e	--	--	--

See footnotes at end of table.

TABLE 1—Continued
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019
INDUSTRIAL MINERALS—Continued					
Phosphate rock:					
Gross weight thousand metric tons	3,881 ⁶	3,853 ⁶	3,040	4,100 ^{r,7}	4,000 ⁷
P ₂ O ₅ content do.	1,180 ⁶	1,156 ⁶	922 ^e	1,200 ^e	1,190 ^e
Salt, all types	1,471,131	1,450,415	1,481,398	1,509,564	1,266,347
Stone, sand and gravel, construction:					
Sand and gravel, sand thousand metric tons	1,874	1,699	1,502	1,619 ^r	1,922
Stone:					
Crushed:					
Limestone do.	24,662	18,819	20,273	30,516 ^r	16,386
Quartzite	84,854	74,634	73,022	67,758 ^r	43,853
Other, unspecified thousand metric tons	9,392	7,238	8,357	9,790	7,881
Dimension:					
Marble	707	304	220	223	310
Onyx	158	271	562	372	238
Slate	65,593	65,553	51,436	23,731	31,459
Travertine	567,686	149,294	129,906	144,454	113,568
Talc and related minerals:					
Pyrophyllite	26,209	17,872	22,760	26,675	25,039
Talc	26,781 ^r	11,507	19,363	20,634	18,935
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite	143,208	147,993	186,305	103,142	111,614
Bituminous	108,580	118,215	114,745	113,439	69,395
Natural gas:					
Gross million cubic meters	12,494	14,001	12,942	12,720	13,430
Marketable ⁸ do.	12,500	14,000	12,900 ^r	12,400 ^r	12,500
Petroleum:					
Crude thousand 42-gallon barrels	21,173	14,773	15,900	17,840	19,340
Natural gas liquids do.	33,360	49,445	49,034	49,036	31,660
Refinery:					
Asphalt do.	1,480	1,610	1,685	1,785	1,560
Distillate fuel oil do.	24,100	23,754	8,750	20,270	19,100
Gasoline do.	9,754	12,085	10,930	10,630	12,200
Jet fuel do.	4,840	4,402	4,850	4,950	5,400
Liquefied petroleum gas do.	2,190	2,551	2,714	1,780	2,550
Lubricants do.	260	193	226	166	164
Residual fuel oil do.	10,680	24,032	18,297	16,100	11,800
Total do.	53,300	68,600	47,500	55,700	52,800

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

¹Table includes data available through July 23, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Source: Ministerio de Energía y Minas del Peru.

³Source: World Steel Association.

⁴Byproduct mercury.

⁵Estimated based on export data.

⁶Source: Vale S.A.

⁷Source: The Mosaic Co.

⁸Source: Organization of the Petroleum Exporting Countries (OPEC).

TABLE 2
PERU: 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 ^c	
Andalusite	Andalucita S.A.	Mine at Paita, Piura Region	60	
Barite	Compañía Minera Agregados Calcareos S.A.	Mine at Tarma, Junin Region	NA	
Bentonite	do.	Mine at Cerro Blanco, Piura Region	2	
Do.	Minera Doña Herminia S.A.	Mine at Chupaca, Junin Region	50	
Boron, ulexite	Inkabor S.A.C.	Mine at Arequipa, Arequipa Region	NA	
Bismuth	Nexa Resources Atacocha S.A.A. (Nexa Resources S.A., 66.62%)	Mine at Atacocha, Pasco Region	60	
Do.	Lincuna Compañía Minera S.A.	Mine at Huancapeti, Ancash Region	20	
Cadmium	Nexa Resources Camarquilla S.A. (Nexa Resources S.A., 99.99%)	Cajamarquilla refinery, Lima Region	800	
Cement	Cal & Cemento Sur S.A. (Consorcio Cementero del Sur S.A., 93.79%)	Cesur plant, Puno Region		
Do.	Cementos Pacasmayo S.A.A.	Pacasmayo plant, La Libertad Region; Piura plant, Piura Region; and Rioja plant, San Martin Region	5,000	
Do.	Union Andina de Cementos S.A.A.	Atocongo plant, Lima Region	5,500	
Do.	do.	Condorcocha plant, Junin Region	2,100	
Do.	Yura S.A. (Consorcio Cementero del Sur S.A., 92.75%)	Yura plant, Arequipa Region	3,000	
Coal, anthracite	La Estrella Trading y Logistica S.A.C.	Mines at Otuzco and Gran Chimú, La Libertad Region	30	
Do.	Minera Santa Mercedes E.I.R.L.	Mine at Oyon, Lima Region	20	
Do.	San Roque F.M. S.A.C.	Mine at Yungay, Ancash Region	40	
Coal, bituminous	Obras Civiles y Mineras S.A.C.	Mine at Oyon, Lima Region	100	
Copper	Compañía Minera Antamina S.A. (BHP Billiton plc, 33.75%; Glencore plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Ancash Region	500	
Do.	Compañía Minera Antapaccay S.A. (Glencore plc, 100%)	Antapaccay Mine, Cusco Region	220	
Do.	HudBay Peru S.A.C. (Hudbay Minerals Inc., 100%)	Constancia Mine, Cusco Region	130	
Do.	Minera Chinalco Perú S.A. (Aluminum Corporation of China Overseas Holding Ltd., 100%)	Toromocho Mine, Morococha District, Junin Region	250	
Do.	Minera Las Bambas S.A. (Minerals Metals Group Ltd., 62.5%; GUOXIN International Investment Corp. Ltd., 22.5%; CITIC Metal Co., Ltd., 15%)	Las Bambas Mine, Cotabambas, Apurimac Region	460	
Do.	Minera Shouxin Peru S.A. (Baiyin Nonferrous Group Co., 51%, and Shougang Hierro Perú S.A.A., 49%)	Marcona tailings project, Ica Region	23	
Do.	Southern Copper Corp. (Grupo Mexico S.A.B. de C.V., 88.9%)	Cuajone Mine, Moquegua Region	200	
Do.	do.	Toquepala Mine, Tacna Region	260	
Do.	do.	Ilo smelter, Moquegua Region	360	
Do.	do.	Ilo refinery, Moquegua Region	280	
Do.	Sociedad Minera Cerro Verde S.A.A. (Freeport-McMoRan Inc., 53.56%; Sumitomo Metal Mining Co. Ltd., 21%; Compañía de Minas Buenaventura S.A.A., 19.58%; others, 5.86%)	Cerro Verde Mine, Arequipa Region	500	
Gold	kilograms	Compañía de Minas Buenaventura S.A.A.	Julcani, Huancavelica Region, and Orcopampa and Tambomayo Mines, Arequipa	8,500
Do.	do.	Compañía Minera Ares S.A.C. (Holchschild Minig plc, 100%)	Arcata Mine, Arequipa Region; ¹ Inmaculada and Pallancata Mines, Ayacucho Region	6,500
Do.	do.	Compañía Minera Poderosa S.A.	Poderosa Mine, La Libertad Region	9,000
Do.	do.	Minera Barrick Misquichilca S.A. (Barrick Gold Corp., 100%)	Lagunas Norte Mine, La Libertad ³ Region	10,000

See footnotes at end of table.

TABLE 2—Continued
PERU: 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 ^c
Gold—Continued	kilograms	Minera Yanacocha S.R.L. (Newmont Mining Corp., 51.35%; Compañía de Minas Buenaventura S.A.A., 43.65%; Sumitomo Corp., 5%)	Yanacocha Mine, Cajamarca Region	8,000
Do.	do.	Shahuindo S.A.C. (Tahoe Resources Inc., 100%)	Shahuindo Mine, Cajamarca Region	2,200
Iron ore		Shougang Hierro Perú S.A.A. (Shougang Corp., 98.52%)	Marcona Mine, Ica Region	10,000
Do.		Minera Shouxin Peru S.A. (Baiyin Nonferrous Group Co., 51%, and Shougang Hierro Perú S.A.A., 49%)	Marcona tailings project, Ica Region	450
Lead		Compañía de Minas Buenaventura S.A.A.	Julcani Mine, Huancavelica Region; Mally and Uchucchacua Mines, Lima Region; and Tambomayo Mine, Arequipa	40
Do.		Compañía Minera Raura S.A.	Raura Mine, Lima Region	25
Do.		Compañía Minera Chungar S.A.C. (Volcan Compañía Minera S.A.A., 100%)	Chungar Mine, Pasco Region, and Alparmarca Mine, Junin Region	30
Do.		Sociedad Minera El Brocal S.A.A. (Compañía de Minas Buenaventura S.A.A., 61.43%)	Tajo Norte Mine (Colquijirca), Pasco Region	20
Do.		Volcan Compañía Minera S.A.A.	Cerro de Pasco Mine, Pasco Region, ² and Yauli Mines, Junin Region	40
Molybdenum		Compañía Minera Antamina S.A. (BHP Billiton plc, 33.75%; Glencore plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Region	7
Do.		HudBay Peru S.A.C. (Hudbay Minerals Inc., 100%)	Constancia Mine, Cusco Region	1
Do.	metric tons	Minera Chinalco Perú S.A. (Aluminum Corporation of China Overseas Holding Ltd., 100%)	Toromocho Mine, Morococha District, Junin Region	300
Do.		Minera Las Bambas S.A. (Minerals Metals Group Ltd., 62.5%; GUOXIN International Investment Corp. Ltd., 22.5%; CITIC Metal Co., Ltd., 15%)	Las Bambas Mine, Cotabambas, Apurimac Region	5
Do.		Sociedad Minera Cerro Verde S.A.A. (Freeport-McMoRan Copper and Gold Inc., 53.56%; Sumitomo Metal Mining Co. Ltd., 21%; Compañía de Minas Buenaventura S.A.A., 19.58%; others, 5.86%)	Cerro Verde Mine, Arequipa Region	13
Do.		Southern Copper Corp. (Grupo Mexico S.A.B. de C.V., 88.9%)	Cuajone Mine, Moquegua Region and Toquepala Mine, Tacna Region	11
Natural gas	thousand cubic meters per day	Pluspetrol Peru Corp. (Pluspetrol S.A., 27%; Hunt Oil Co, 25%; SK Innovation Co., Ltd., 18%; Repsol YPF, 10%; Sonatrach, 10%; Tecpetrol S.A., 10%)	Onshore, Blocks 56 and 88, Ucayali Basin	30,000
Do.	do.	Repsol YPF, 53.84%, and China National Petroleum Corp., 46.16%	Onshore, Block 57, Ucayali-Madre de Dios Basin	5,000
Petroleum, crude	42-gallon barrels per day	China National Petroleum Corp., 100%	Onshore, Block X, Talara Basin	13,000
Do.	do.	Pacific Stratus Energy del Peru S.A.	Onshore, Block 192, Northern Marañon Basin	8,600
Do.	do.	Pluspetrol Norte S.A. (Pluspetrol S.A., 100%)	Onshore, Block 8, Marañon Basin	7,000
Do.	do.	Savia Peru S.A., 100%	Onshore, Block Z-2B, Punta Laguna	8,000
Petroleum products	do.	Refinería La Pampilla S.A.A. (Repsol YPF, 82.38%)	La Pampilla refinery, Lima Region	117,000
Do.	do.	Petroperú S.A.	Talara refinery, Piura Region	65,000
Do.	do.	do.	Conchan refinery, Lima Region	15,500
Do.	do.	do.	Iquitos refinery, Loreto Region	12,000
Do.	do.	do.	Pucallpa refinery, Ucayali Region	3,300
Do.	do.	do.	El Milagro refinery, Amazonas Region	2,000
Do.	do.	Pluspetrol S.A.	Shiviyacu refinery, Loreto Region	5,000
Phosphate rock		Compañía Minera Miski Mayo S.R.L. (Mosaic Co., 75%, and Mitsui & Co., Ltd., 25%)	Bayovar Mine, Piura Region	4,000

See footnotes at end of table.

TABLE 2—Continued
PERU: 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 ^c
Silver	kilograms	Compañía de Minas Buenaventura S.A.A.	Julcani, Huancavelica Region Uchucchacua, Lima Region, and Orcopampa and Tambomayo Mines, Arequipa Region	700,000
Do.	do.	Compañía Minera Antamina S.A. (BHP Billiton plc, 33.75%; Glencore plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Region	600,000
Do.	do.	Compañía Minera Ares S.A.C. (Holchschild Mining plc, 100%)	Arcata Mine, Arequipa Region; ¹ Inmaculada and Pallancata Mines, Ayacucho Region	500,000
Do.	do.	Compañía Minera Chungar S.A.C. (Volcan Compañía Minera S.A.A., 100%)	Chungar Mine, Pasco Region, and Alpamarca Mine, Junin Region	200,000
Do.	do.	Volcan Compañía Minera S.A.A.	Cerro de Pasco Mine, Pasco Region, ² and Yauli Mines, Junin Region	400,000
Do.	do.	Southern Copper Corp. (Grupo Mexico S.A.B. de C.V., 88.9%)	Ilo smelter and refinery, Moquegua Region	150,000
Do.	do.	Shahuindo S.A.C. (Tahoe Resources Inc., 100%)	Shahuindo Mine, Cajamarca Region	3,300
Do.	do.	Nexa Resources Camarquilla S.A. (Nexa Resources S.A., 99.99%)	Cajamarquilla Refinery, Lima Region	55,000
Steel		Acero Arequipa S.A.	Plant at Pisco, Ica Region	360
Do.		Empresa Siderurgica del Peru S.A.A. (Gerdau S.A.)	Plant at Chimbote, Ancash Region	650
Tin, mine	metric tons.	Minsur S.A. (private 100%)	San Rafael Mine and plant, Puno Region	30,000
Do.	do.	do.	Reaprovechamiento de Relaves B2, Puno Region	5,000
Do.	do.	do.	Pisco smelter and refinery, Ica Region	45,000
Zinc		Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc, 33.75%; Glencore plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Ancash Region	450
Do.		Compañía Minera Raura S.A.	Raura Mine, Lima Region	45
Do.		Compañía Minera Chungar S.A.C. (Volcan Compañía Minera S.A.A., 100%)	Chungar Mine, Pasco Region, and Alpamarca Mine, Junin Region	120
Do.		Minera Shouxin Peru S.A. (Shougang Hierro Perú S.A.A. and Baiyin Nonferrous Group Co., 51%)	Marcona tailings project, Ica Region	15
Do.		Nexa Resources Peru S.A.A. (Nexa Resources S.A., 80.23%)	Atacocha and El Porvenir Mines, Pasco Region, and Cerro Lindo, Ica Region	300
Do.		Nexa Resources Camarquilla S.A. (Nexa Resources S.A., 99.99%)	Cajamarquilla Refinery, Lima Region	330
Do.		Sociedad Minera El Brocal S.A.A. (Compañía de Minas Buenaventura S.A.A., 61.43%)	Tajo Norte Mine (Colquijirca), Pasco Region	70
Do.		Volcan Compañía Minera S.A.A.	Cerro de Pasco Mine, Pasco Region, ² and Yauli Mines, Junin Region	220

^cEstimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

¹Arcata Mine was on care-and-maintenance status since 2018.

²Operations at Cerro de Pasco Mine were suspended in 2018 and continued to be suspended in 2019.

³Lagunas Norte operations were placed on care-and-maintenance status in 2019.

TABLE 3
PERU: RESERVES OF MAJOR MINERALS IN 2019¹

(Thousand metric tons unless otherwise specified)

Commodity	Reserves ²
Copper	91,721
Gold	metric tons 2,694
Iron ore	1,475,217
Lead	6,085
Molybdenum	2,701
Natural gas	trillion cubic meters 350 ³
Natural gas liquids	million barrels 610 ³
Petroleum crude	million barrels 420 ³
Phosphate rock	210,000 ⁴
Silver	metric tons 91,148
Tin	140
Zinc	20,264

⁰Estimated; estimated data are rounded to no more than three significant digits.

¹ Proven and probable reserves.

²Source: Ministerio de Energía y Minas del Perú: Anuario Minero, 2019. Proven and probable reserves in 2018 (the latest year for which data were available).

³Source: Ministerio de Energía y Minas del Perú: Libro Anual de Reservas de Hidrocarburos, 2018 (the latest year for which data were available).

⁴Source: U.S. Geological Survey Mineral Commodity Summaries 2020.