



# 2013 Minerals Yearbook

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PERU [ADVANCE RELEASE]

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# THE MINERAL INDUSTRY OF PERU

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In 2013, Peru ranked third among the world's leading producers of copper, silver, tin, and zinc; fourth among the world's leading producers of molybdenum and lead; and fifth among the world's leading producers of gold. According to the Ministerio de Energía y Minas (MEM), in 2013, Peru was Latin America's leading producer of gold, lead, tin, and zinc; the second-ranked producer of cadmium, copper, molybdenum, selenium, and silver; and the fifth-ranked producer of iron ore. The country's world rankings for reserves of mineral commodities were as follows: second for silver; third for copper and zinc; fourth for lead and molybdenum; and ninth for gold. Peru ranked first in Latin America for reserves of silver, lead, and zinc and second for copper, gold, and molybdenum. In 2013, Peru's real gross domestic product (GDP) increased by 5.8% to about \$168.8 billion<sup>1</sup> compared with \$160.5 billion in 2012. The country's mining and hydrocarbons sectors accounted for about 12% of the total GDP (Banco Central de Reserva del Perú, 2014, p. 253; Brininstool, 2014; George, 2014; Katrivanos, 2014; Ministerio de Energía y Minas, 2014a, p. 26–27; Polyak, 2014; Tolcin, 2014a, b).

## Minerals in the National Economy

In 2013, the value of the contribution of the mining and hydrocarbons sectors to the GDP increased by 5% compared with 3% in 2012. The mining of metals accounted for about 8% of the total GDP and about 64% of the total value of mining and hydrocarbons. The value of the mining of metals increased by 4% in 2013, which was attributed to the increases in the values of molybdenum (8%), copper and lead (7% each), and silver and zinc (6% each). The value of hydrocarbons increased by 7% in 2013, which was attributed to the increase in the value of natural gas liquids (21%) and natural gas (3%; Banco Central de Reserva del Perú, 2014, p. 253, 258).

Peru's mining activity was broadly distributed among 22 of its 25 Regions. As of December, about 575 mining operations were in production and 464 in exploration throughout the country. In 2013, direct employment in the mining sector decreased by 3% to 208,383 compared with 213,991 in 2012. Of these 208,383 workers, about 13% worked in Junin Region; 13% in Arequipa Region; 10% in La Libertad Region; 9% in Pasco Region; 8% in Cajamarca Region; and 7% in Lima Region. In 2012 (the latest year for which data were available), about 99.7% of the workers were locals, and the remaining 0.3% were foreigners (Ministerio de Energía y Minas, 2014a, p. 12–13, 104–107).

As of December, the country's foreign direct investment (FDI) amounted to about \$10 billion compared with \$12 billion in 2012. The mining sector accounted for about 24% of the country's FDI, and petroleum accounted for about 3%. The main sources of FDI to Peru included Spain (20%), the United Kingdom (19%),

the United States (14%), the Netherlands (7%), Chile (6%), and Brazil and Colombia (5% each) (ProInversión, 2015).

According to the MEM, the investment in the mining sector increased by about 14% to \$9.7 billion compared with \$8.5 billion in 2012. Infrastructure investments accounted for about 18% of the total mining investments, followed by beneficiation plant equipment (14%), mining (11%), and exploration and mining equipment (8% each). In 2013, investments in mining equipment increased by 48% to about \$780 million compared with \$525 million in 2012; beneficiation plant equipment increased by 23% to \$1.4 billion compared with \$1.1 billion in 2012; and mining, by 10% to \$1.1 billion compared with \$1.0 billion in 2012. In 2013, exploration and infrastructure investments decreased by 14% to \$774 million and 5% to \$1.7 billion, respectively (Ministerio de Energía y Minas, 2014a, p. 90–97).

According to the MEM, the stability of the Peruvian judicial framework encouraged investment in mining projects, and leading foreign mining companies operating in Peru committed to invest \$60 billion for the next 6 years. Of the \$60 billion, about \$28 billion (47%) was in the exploration phase, about \$21 billion (35%) was for projects with approved environmental impact assessments (EIAs), and about \$9 billion (15%) was for expansion projects. Most of the investment, in order of investment value, was from China (\$14 billion, or 23%), the United States (\$10 billion, or 17%), Canada (\$9 billion, or 15%), Switzerland (\$5 billion, or 9%), the United Kingdom (\$5 billion, or 8%), Australia (\$4 billion, or 6%), Mexico (\$3 billion, or 5%), Brazil (\$2 billion, or 4%), South Africa (\$1 billion, or 2%), and Japan (\$500 million, or 0.8%). Copper projects accounted for about 60% of the total investment followed by gold, 17%, and iron ore, 12% (Ministerio de Energía y Minas, 2014a, p. 99–101).

In 2013, Glencore plc of Switzerland (formerly known as Glencore Xstrata plc) was ranked first among the mining companies investing in the country, investing about \$1.7 billion for the development of the Las Bambas project in Cotabambas, Apurímac Region, and accounted for 18% of the total mining investment, followed by Aluminum Corporation of China (Chinalco), through its subsidiary Minera Chinalco Peru S.A., which invested about \$1.2 billion for the construction of the Toromocho concentrate plant in Yauli, Junin Region. The joint venture among Freeport-McMoRan of the United States (53.6%), Sumitomo Metal Mining Co. Ltd. of Japan (21.0%), and Compañía de Minas Buenaventura S.A.A. (Buenaventura, 19.6%), through its subsidiary Sociedad Minera Cerro Verde S.A.A. (Minera Cerro Verde), ranked third among the mining companies investing in the country. The joint venture invested about \$1.1 billion for the expansion of the Cerro Verde beneficiation plant in Apurímac Region. In 2013, Apurímac Region received 18% of Peru's mining investments, followed by Junin (16%), Arequipa (14%), and Cusco (12%) Regions (Banco Central de Reserva del Perú, 2014, p. 19; Ministerio de Energía y Minas, 2014a, p. 90–97).

<sup>1</sup>Where necessary, values have been converted from Peruvian nuevo sol (PEN) to U.S. dollars (US\$) at annual average exchange rates of PEN2.55=US\$1.00 for 2012 and PEN2.76=US\$1.00 for 2013.

## Government Policies and Programs

The MEM was the Government agency responsible for the administration and the regulation of the energy and mining sector. The Instituto Geológico Minero y Metalúrgico 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) of the MEM has the responsibility to address all legal matters related to mining sector policy. The Dirección General de Asuntos Ambientales of the MEM has the responsibility to address environmental problems that result from energy and mining activities and is mandated to implement environmental laws and regulations (Instituto Geológico Minero y Metalúrgico, 2014; Ministerio de Energía y Minas, 2014c–e).

Perúpetro S.A. is a nonregulatory agency responsible for the promotion of hydrocarbon investments in the country (law No. 26221, Ley Organica de Hidrocarburos). Perúpetro negotiates, signs, and administers hydrocarbon contracts for which Perúpetro must compete with the private sector. Perúpetro was involved in the transportation, refining, and marketing of refined products and other derivatives of petroleum as well (Perúpetro S.A., 2014, p. 13).

In 2013, policies related to mining formalization and illegal mining activities were implemented, including Supreme Decree Nos. 025–2013–EM of July 25 (Dirección General de Formalización Minera [DGFM]) and 0032–2013–EM of August 24. The DGFM was responsible for proposing and evaluating the policy on mining formalization in accordance with sectorial and national policies and in coordination with the DGM. Supreme Decree No. 0032–2013–EM of August 24 also established mechanisms to continue and strengthen the process of formalization of small mining and artisanal mining (Supreme Decree Nos. 1102 and 006–2012–EM). Under Supreme Decree No. 0032–2013–EM, the MEM had until April 19, 2014, to complete the formalization process. As of yearend 2013, a total of 72,787 declaraciones de compromisos [declarations of commitment] were submitted to the MEM, 1,797 of which were canceled after the MEM confirmed the absence and (or) inaccuracy of information in the submitted declarations (Ministerio de Energía y Minas, 2013a, 2014a, p. 17).

The Peruvian Constitution of 1993 provides for regulations to guarantee a favorable legal framework to domestic and foreign investors who enter into agreements with the Government. The relevant laws governing domestic and foreign investment are Legislative Decree Nos. 662 and 757 and Supreme Decree No. 162–92–EF. Peru's tax framework for the mineral sector became effective on October 1, 2011, and included an amendment to the mining royalties act (law No. 29788), which applies to holders of mining concessions and concessionaires that undertake the exploitation of metallic and nonmetallic mineral resources (mining companies pay royalties of 1% to 12% based on operating profits); the special mining tax (law No. 29789), which applies to holders of mining concessions and assignees that undertake the exploitation of mineral resources (the special tax was determined and paid based on a progressive cumulative scale of operating margins with marginal rates ranging from 2% to 8.4%); and the special mining encumbrance (law No. 29790), which applies to mining companies that have tax stability

agreements that cannot be affected by changes in the legislation regarding the special mining tax and mining royalties (the special mining encumbrance was determined and paid every quarter for each contract with marginal rates ranging from 4% to 13.12% (EY Perú, 2014, p. 132–135; ProInversión, 2014).

Peru was a compliant country of the Extractive Industries Transparency Initiative (EITI), meeting all the requirements in the EITI standard. EITI is a global coalition of governments, companies, and civil society working together to improve transparency and responsible management of revenues from natural resources, including gas, oil, metals, and minerals (Extractive Industries Transparency Initiative, 2014a, b; EY Perú, 2014, p. 79).

## Production

In 2013, copper smelter production increased by 42% to 412,966 metric tons (t) from 290,088 t in 2012; placer gold, by 35% to 15,398 kilograms (kg) from 11,412 kg; electrolytic copper, by 29% to 271,792 t from 210,119 t; natural gas liquids, by 21% to 38.2 million barrels (Mbbbl) from 31.6 Mbbbl; steel hot-rolled products, by 13% to 1.4 million metric tons (Mt) from 1.2 Mt; and residual fuel oil, by 10% to 7.8 Mbbbl from 7.1 Mbbbl. Increases in output of industrial minerals were led by onyx (232%), slate (188%), boron (116%), bentonite (108%), travertine (65%), crude phosphate (43%), construction stone (35%), diatomite (33%), common clay (18%), and cement (11%). Marble production decreased by 99% to 225 t in 2013 from 16,335 t in 2012; tungsten metal, by 90% to 28 t from 276 t; barite, by 34% to 52,491 t from 79,451 t; sand, by 31% to 891,000 t from 1.3 Mt; anthracite, by 28% to 88,985 t from 123,771 t; crude gypsum, by 24% to 297,527 t from 390,705 t; feldspar, by 14% to 22,695 t from 26,359 t; electrowon copper, by 11% to 89,658 t from 101,174 t; and liquefied petroleum gas, by 10% to 2.0 Mbbbl from 2.2 Mbbbl. Data on mineral production are listed in table 1.

## Structure of the Mineral Industry

Peru's leading copper companies included Compañía Minera Antamina S.A. (Antamina), which was a joint venture among BHP Billiton plc of the United Kingdom (33.75% interest), Glencore (33.75%), Teck Cominco Ltd. of Canada (22.5%), and Mitsubishi Corp. of Japan (10%); Minera Cerro Verde; and Southern Copper Corp., owned by Grupo Mexico S.A.B. de C.V. (82.3%). Molybdenum was produced as a byproduct of copper production by Antamina, Minera Cerro Verde, and Southern Copper. Minsur S.A. was the only producer of tin in the country with a production capacity of about 30,000 metric tons per year (t/yr). Table 2 lists the structure of the Peruvian mineral industry by principal commodities and major operating companies (Ministerio de Energía y Minas, 2014a, p. 41, 80, 82).

In 2013, cement was produced by Caliza Cementos Inca S.A., Cementos Pacasmayo S.A.A., Cementos Selva S.A., Cementos Sur S.A., Union Andina de Cementos S.A.A. (UNACEM), and Yura S.A. These companies had a combined cement production capacity of about 14.7 million metric tons per year (Mt/yr). UNACEM was created in 2012, after the merger between Cemento Andino S.A. and Cementos Lima S.A.A.

UNACEM operated the Atocongo plant, which was located in Villa Maria del Triunfo, Lima Region, and had a production capacity of about 5.5 Mt/yr, and the Condorcocha plant, which was located in Tarma, Junin Region, and had a production capacity of about 2.1 Mt/yr (Union Andina de Cementos S.A.A., 2012, p. 24; Asociacion de Productores de Cemento, 2014).

The largest oil refinery in the country continued to be La Pampilla, which had an installed capacity of 102,000 barrels per day (bbl/d) and was located in El Callao Province, Lima Region. Repsol YPF of Spain, through its subsidiary Repsol Peru B.V., held a 51.03% interest in La Pampilla, which accounted for about 50% of the country's refinery capacity. Petroperú S.A. owned the Talara oil refinery, which was located in Piura Region and had an installed capacity of 65,000 bbl/d; the Conchan oil refinery, which was located in Lima Region and had an installed capacity of 15,500 bbl/d; the Iquitos oil refinery, which was located in Loreto Region and had an installed capacity of 12,000 bbl/d; the Pucallpa oil refinery (operated by Maple Energy plc) which was located in Ucayali Region and had an installed capacity of 3,300 bbl/d; and the El Milagro oil refinery, which was located in Amazonas Region and had an installed capacity of 2,000 bbl/d (Navarro, 2012; Repsol Peru B.V., 2014, p. 31).

## Mineral Trade

In 2013, Peru's total exports amounted to about \$41.8 billion compared with \$45.6 billion, which was 8% lower than the value of exports in 2012. Peru's mining sector, which included mining products, nonmetallic minerals, and iron and steel, accounted for about \$25 billion or 60% of total export revenues in 2013 compared with almost \$28 billion or about 61% of the total export revenues in 2012. The country's leading mining export partners, in order of value, were China (which received 26% of Peru's mining exports), Switzerland (13%), the United States (12%), Canada (11%), Japan (6%), the Republic of Korea (5%), and Brazil (4%). In 2013, the country's mining products, which included copper, gold, iron, lead, molybdenum, silver, tin, zinc and others, accounted for about \$23 billion or 55% of the total exports and the petroleum and natural gas sector accounted for about \$5.1 billion or 12%. Copper and gold made up about 43% and 34%, respectively, of the total of Peru's mining products exports (Ministerio de Energía y Minas, 2014a, p. 31–33).

Copper exports in 2013 totaled 1.4 Mt and were valued at about \$9.8 billion compared with 1.4 Mt valued at about \$10.7 billion in 2012; this was a decrease in value of 8.6% compared with that of 2012 owing to the decrease in price of copper to \$3.18 per pound in 2013 from \$3.46 per pound in 2012. Leading copper export partners, in order of value, were China (which received about 20% of the country's copper exports), Japan (12%), Brazil and Germany (6% each), and the Republic of Korea and Italy (5% each; Ministerio de Energía y Minas, 2014a, p. 33–35, 43).

The country's gold exports amounted to about 173,000 kg valued at \$7.8 billion compared with about 178,000 kg valued at about \$9.6 billion; the decrease in the export value was owing mainly to lower gold output and a decrease in the price of gold to \$1,412 per troy ounce in 2013 from \$1,670 per troy ounce in 2012. Peru's gold exports leading partners, in order of value,

were Switzerland (which received about 38% of the country's gold exports), the United States (26%), and Canada (25%; Ministerio de Energía y Minas, 2014a, p. 33–35, 51).

Iron ore exports increased to 10.4 Mt valued at \$857 million from 10.0 Mt valued at \$856 million in 2012 despite the price decrease to \$83.00 per metric ton in 2013 from \$88.00 per metric ton in 2012. In 2013, China was the leading export partner (Ministerio de Energía y Minas, 2014a, p. 33–35, 78).

Exports of lead amounted to 847,000 t valued at more than \$1.7 billion in 2013 compared with 1.2 Mt valued at about \$2.6 billion in 2012; the decrease was attributed to the decrease in the price of lead to \$0.94 per pound in 2013 from \$1.00 per pound in 2012. Leading lead export partners, in order of value, were the Republic of Korea (which received about 25% of the country's lead exports), China (22%), Canada (21%), Belgium (9%), Japan (8%), and the United States (6%; Ministerio de Energía y Minas, 2014a, p. 33–35, 75).

Exports of molybdenum amounted to 18,000 t valued at more than \$358 million in 2013 compared with 18,000 t valued at about \$431 million in 2012; the decrease was attributed to the decrease in the price of molybdenum to \$8.81 per pound in 2013 from \$10.91 per pound in 2012 (Ministerio de Energía y Minas, 2014a, p. 33–35).

Exports of silver amounted to about 659 t (reported as 21.2 million troy ounces) valued at \$479 million in 2012 compared with about 218 t (7.0 million troy ounces) valued at about \$210 million in 2012; despite a price decrease to \$23.00 per troy ounce in 2013 from \$30.00 per troy ounce in 2012. Leading silver export partners, in order of value, were the United States (which received about 71% of the country's silver exports), Brazil (17%), and Canada (9%) (Ministerio de Energía y Minas, 2014a, p. 33–35, 59).

The country's tin exports in 2013 totaled more than 22,000 t and were valued at almost \$496 million compared with 26,000 t valued at more than \$541 million in 2012; this was about an 8.3% decrease in value compared with that of 2012, despite tin prices increasing to \$10.10 per pound in 2013 from \$9.48 per pound in 2012. In 2013, the United States received about 42% of the country's tin exports, followed by the Netherlands, 28%; and Japan, 12% (Ministerio de Energía y Minas, 2014a, p. 33–35, 80).

Zinc exports in 2013 totaled to 1.1 Mt and were valued at about \$1.4 billion compared with 1.0 Mt with about the same value in 2012; prices decreased to \$0.59 per pound in 2013 from \$0.60 per pound in 2012. Peru's zinc exports partners, in order of value, were China (which received about 22% of the country's zinc exports), Spain and the Republic of Korea (16% each), Brazil (10%), Japan and Belgium (7% each), and the United States (6%). In 2013, crude petroleum and derivatives exports totaled about 38.7 Mbbbl compared with 35.6 Mbbbl in 2012 and natural gas exports totaled about 9.6 million cubic meters compared with about 8.7 million cubic meters in 2012 (Banco Central de Reserva del Perú, 2014, p. 279; Ministerio de Energía y Minas, 2014a, p. 33–35, 67).

Peru's exports to the United States were valued at about \$8.1 billion in 2013 compared with about \$6.4 billion in 2012. Of this amount, nonmonetary gold accounted for about \$2.6 billion (or 32% of the country's total exports to the United States by value), petroleum products accounted for

about \$992 million, crude oil accounted for about \$384 million, tin accounted for about \$252 million, zinc accounted for about \$148 million, and copper accounted for about \$89 million. In 2013, imports from the United States were valued at about \$10.1 billion compared with about \$9.3 billion in 2012; these included about \$2.2 billion in fuel oil, about \$754 million in petroleum products, and about \$458 million in excavating machinery (U.S. Census Bureau, 2014a, b).

## Commodity Review

### Metals

**Copper.**—In 2013, the country remained the world's third-ranked producer of copper and accounted for about 7.3% of world production. In 2012 (the latest year for which data were available), proven and probable reserves were reported as 68.4 Mt of copper. In 2013, Ancash Region was ranked first among the country's copper producing regions, accounting for about 34% of the amount produced, followed by Arequipa (19%), Moquegua (13%), Cusco (11%), and Tacna (10%) Regions. Peru's leading copper companies, in order of output, were Antamina (which accounted for about 34% of the country's total copper production), Southern Copper (22%), and Minera Cerro Verde (19%; table 3; Ministerio de Energía y Minas, 2014a, p. 38–42).

In 2013, about \$35.8 billion of the planned investments was for copper projects. Of these projects, those under construction included Las Bambas (\$5.2 billion), which is located in Apurímac Region and is owned by Glencore (100%); Minas Conga (\$4.8 billion), which is located in Cajamarca Region and is owned by Minera Yanacocha S.R.L. [a joint venture among Newmont Mining Corp. of the United States (51.3%), Buenaventura (43.7%), and International Finance Corp. (5.0%)]; Quellaveco (\$3.3 billion), which is located in Moquegua Region and is a joint venture between Anglo American plc. of the United Kingdom (81.9%) and Mitsubishi Corp. of Japan (18.1%); and Constancia (\$1.8 billion), which is located in Cusco Region and is owned by Hudbay Minerals Inc. of Canada (100%). Expansion projects included Toquepala (\$600 million), which is located in Tacna Region and is owned by Southern Copper, and Cerro Verde (\$4.4 billion), which is located in Arequipa Region and is owned by Minera Cerro Verde.

Exploration projects included Haquira (\$2.8 billion), which is located in Apurímac Region and is owned by Antares Minerals Inc. of Canada, through its subsidiary Minera Antares Peru S.A.C.; Galeno (\$2.5 billion), which is located in Cajamarca Region and is owned by Lumina Copper S.A.C.; Los Chancas (\$1.6 billion), which is located in Apurímac Region and is owned by Southern Copper; Rio Blanco (\$1.5 billion), which is located in Piura Region and is owned by Zijin Mining Group Co. Ltd. of China, through its subsidiary Rio Blanco Copper S.A.; and Los Calatos (\$1.3 billion), which is located in Moquegua Region and is owned by Mentminco Ltd. of Australia, through its subsidiary Minera Hampton Perú S.A.C. (Ministerio de Energía y Minas, 2014a, p. 100–102).

The Constancia project had the potential to be developed as an open pit mine and had the capacity to produce 82,000 t/yr of copper during a mine life of 22 years. Hudbay expected to

begin initial production in late 2014 and commercial production by mid-2015. As of September 30, 2013, measured mineral resources at Constancia were reported as 68 Mt at an average grade of 0.22% copper, 0.0059% [reported as 59 grams per metric ton (g/t)] molybdenum, 0.036 g/t gold, and 2.17 g/t silver. Indicated mineral resources were estimated to be 293 Mt at an average grade of 0.20% copper, 0.0058% (or 58 g/t) molybdenum, 0.033 g/t gold, and 1.96 g/t silver, and inferred resources were estimated to be 200 Mt at an average grade of 0.19% copper, 51 g/t molybdenum, 0.031 g/t gold, and 1.86 g/t silver (Hudbay Minerals Inc., 2014a, p. 3, 7; 2014b).

In July, Glencore announced that it would sell 100% of its stakes in Las Bambas project, in accordance with the merger remedy commitments made to the Ministry of Commerce of China for the Xstrata acquisition. The Las Bambas project had the potential to be developed as an open pit mine and the potential to produce about 400,000 t/yr of copper and 5,000 t/yr of molybdenum (Glencore Xstrata plc, 2014, p. 159; Ministerio de Energía y Minas, 2014b, p. 26).

In December, Chinalco began operations in the Toromocho open pit mine. The company held 100% interest in the project, which was located in the Morococha District, Junín Region, and had the capacity to produce 1.0 Mt/yr of copper concentrate, 10,000 t/yr of molybdenum, and 113 t/yr of silver oxide. The company planned to invest an additional \$1.3 billion to further expand capacity at the Toromocho. Reserves at the Toromocho were reported to be about 1,526 Mt at an average grade of 0.48% copper, 0.019% molybdenum, and 6.88 g/t silver (Emery, 2013; Gestión, 2013; Minera Chinalco Peru S.A., 2014a, b).

**Gold.**—In 2013, the country's total gold production was 151,486 kg compared with 161,544 kg in 2012. The decrease in production was attributed to a decrease in gold production from the leading producers of the country, which included Minera Yanacocha (which accounted for about 21% of the country's total gold production), Minera Barrick Misquichilca S.A. (14%), and Buenaventura (5%). In 2013, gold production from Minera Yanacocha decreased by 24% owing to the shutdown of the Chaupiloma Este and Chaupiloma Doce units and the decrease in production at Chaupiloma Sur. Gold production from Minera Barrick Misquichilca and Buenaventura decreased by 19% and 9%, respectively. Gold production from La Libertad Region accounted for about 31% of the country's total gold production, followed by Cajamarca (30%) and Madre de Dios (11%) Regions (Ministerio de Energía y Minas, 2014a, p. 46–50).

In January, Minsur S.A. began operation at the Pucamarca open pit gold mine, which was located in Cerro Checocollo, Tacna Region. In 2013, the company produced 4,919 kg of dore at an average grade of 73.77% gold and 18.60% silver. During the year, Minsur began a drilling exploration program in the surrounding areas of the open pit and expected to have results by the first quarter of 2014. In August, Barrick Gold Corp. of Canada initiated closure activities at the Pierina open pit mine, stating that these were in line with the disciplined capital allocation framework announced in 2012. Pierina, which was located in the Andean Cordillera, Ancash Region, produced about 2,750 kg of gold in 2013. As of 2012, proven and probable mineral reserves at Pierina were estimated to be 50 Mt

at an average grade of 0.3 g/t gold (Barrick Gold Corp., 2014, p. 20, 23, 56, 150; Minsur S.A., 2014, p. 41–42).

In 2013, about \$9.8 billion of planned investments was for gold projects. The development projects included the Inmaculada property (\$370 million), which is located in Ayacucho Region and owned by Minera Suyamarca S.A.C. (Hochschild Mining plc of the United Kingdom, 100%), and the Ollachea property (\$170 million), which is located in Puno Region and owned by Minera Kuri Kullu S.A. (Minera IRL Ltd., 100%). The exploration projects would include the Minas Chucapapa project (\$1.2 billion), which is located in Moquegua Region and owned by Canteras del Hallazgo S.A.C. (Gold Fields Ltd. of South Africa, 51%, and Buenaventura, 49%), and the Anama project (\$40 million), which is located in Apurimac Region and owned by Anabi S.A.C. (Grupo Minero Aruntani, 100%), among others (Ministerio de Energía y Minas, 2014a, p. 100–102).

**Iron Ore.**—Shougang Corp. of China, through its subsidiary Shougang Hierro Perú S.A.A., continued to be Peru's sole iron ore producer. Shougang's \$1.5 billion expansion project at the Marcona iron ore mine was underway and was expected to be completed by 2016. The company expected to increase production capacity to 20 Mt/yr. As of 2013, proven and probable reserves at the Marcona Mine, which was located in the Marcona District, Ica Region, were estimated to be more than 1.7 billion metric tons of iron (Banco Central de Reserva del Perú, 2014, p. 35; Ministerio de Energía y Minas, 2014a, p. 102; 2014b, p. 4, 10; Shougang Hierro Perú S.A.A., 2014, p. 5).

In 2013, about 11.9% (\$7.1 billion) of planned investments for iron ore projects included the exploration projects at Pampa de Pongo (\$3.3 billion), which is located in Arequipa Region and is owned by Jinzhao Mining Peru S.A. (Chinese companies Nanjinzha Group Co. Ltd. and Zibo Hongda Mining Co. Ltd.), and Hierro Apurimac (\$2.3 billion), which is located in Apurimac Region and is owned by Apurimac Ferrum S.A. (Strike Resources of Australia). Pampa de Pongo was expected to have a production capacity of about 15 Mt/yr and to be completed by 2016, and Hierro Apurimac was expected to begin operations by 2020 and to have a production capacity of about 20 Mt/yr (Grabski, 2013; Ministerio de Energía y Minas, 2014a, p. 78–79, 100–102; 2014b, p. 35, 38).

**Lead, Silver, and Zinc.**—The production of lead increased by 7% to 266,263 t in 2013 from 248,659 t in 2012. The increase was attributed to an increase in the production of the Compañía Minera Milpo S.A. (Milpo), which increased production by 67% to 29,646 t in 2013 from 17,780 t in 2012; Empresa Administradora Chungar S.A.C., which increased production by 15% to 28,637 t in 2013 from 24,903 t in 2012; and Buenaventura, which increased production by 13% to 21,572 t in 2013 from 19,152 t in 2012. The increase in production by Milpo was attributed to an expansion of the installed capacity at Cerro Lindo to about 14,990 metric tons per day in 2012. In 2013, the Pasco Region was ranked first among the country's lead producer regions and accounted for about 34% of the tonnage produced followed by Junin and Lima Regions, which accounted for about 17% each (Ministerio de Energía y Minas, 2014a, p. 70–73).

In 2013, silver production increased by 5% to 3,407 t from 3,245 t in 2012; the increase was mainly owing to increases in the production of 26% by Antamina and 16% by Buenaventura. Peru's leading silver producers, in terms of output, were Antamina and Buenaventura, each of which produced about 14% of the country's total silver production, and Volcan Compañía Minera S.A.A. (Volcan), 9%. Pasco Region was ranked first among the country's silver producer regions and accounted for about 26% of the amount produced, followed by Ancash (18%) and Junin (14%) Regions (Ministerio de Energía y Minas, 2014a, p. 54–57).

Zinc production increased by about 5% in 2013 compared with that of 2012; the increase was attributed to increases in production of 21% by Milpo and 17% by Antamina. The country's leading zinc producers, by tonnage of output, were Antamina (which produced about 23% of the country's total zinc production), Milpo (17%), and Volcan (12%). Leading producer regions, in order of output, were Ancash (which produced about 28% of the country's zinc production), Pasco (21%), Junin (18%), Lima (13%), and Ica (12%) Regions (Ministerio de Energía y Minas, 2014a, p. 62–65).

In 2013, investments for silver and zinc projects were valued at \$1.6 billion. Investments for silver included the development of the Corani silver, lead, and zinc project (\$600 million), which was wholly owned by Bear Creek Mining Corp. of Canada. In September, the MEM approved the company's environmental and social impact assessment for Corani, which was located in Puno Region. In 2011, a feasibility study reported that the project had the potential to be developed as an open pit mine and to produce about 380 t of silver during the first 5 years. The company expected to update its feasibility study by 2015. As of November 2011, measured and indicated resources at Corani were estimated to be 134.5 Mt at an average grade of 20.5 g/t silver, 0.38% lead, and 0.29% zinc, and inferred resources, 49.8 Mt at an average grade of 30 g/t silver, 0.46% lead, and 0.28% zinc. Proven and probable reserves were estimated to be 156.1 Mt at an average grade of 53.8 g/t silver, 0.90% lead, and 0.49% zinc. Investments for zinc included the exploration project at Hilarion (\$470 million), which is located in the Huallanca District, Ancash Region, and is owned by Milpo (Bear Creek Mining Corp., 2014a, p. 6, 8; 2014b, p. 4–6; Ministerio de Energía y Minas, 2014a, p. 100–102).

**Molybdenum.**—Molybdenum production increased by 8% to 18,140 t in 2013 from 16,790 t in 2012. The increase was attributed to production increases of 46% by Minera Cerro Verde and 6% by Southern Peru Copper. In 2013, Minera Cerro Verde accounted for about 43% of the total molybdenum production, and Southern Copper, for about 25% (Banco Central de Reserva del Perú, 2014, p. 35; Ministerio de Energía y Minas, 2014a, p. 82).

**Tin.**—Minsur owned the San Rafael underground mine, which is located in the Antauta District, Puno Region. Production of tin concentrate was 23,688 t in 2013 compared with 26,105 t in 2012. In 2013, Minsur continued with its exploration and development program at San Rafael. By yearend, the company reported that measured and indicated mineral resources were estimated to be 4.4 Mt at an average grade of 3.98% tin, and inferred mineral resources were

estimated to be 1.3 Mt at an average grade of 3.09% tin. Proven and probable reserves were estimated to be 4.5 Mt at an average grade of 2.24% tin. Concentrates from San Rafael were processed by Minsur's tin smelting and refining operations located in Pisco, Ica Region (Minsur S.A., 2014, p. 29, 31).

### **Industrial Minerals**

**Phosphate Rock.**—Vale S.A. of Brazil held a 40% interest in Compañía Minera Miski Mayo S.A.C. in joint venture with Mosaic Co. of the United States (35% interest) and Mitsui & Co., Ltd. of Japan (25% interest). Compañía Minera Miski Mayo operated the Bayovar open pit mine, which was located in Sechura, Piura Region, and had the capacity to produce about 3.9 Mt/yr. Expansion plans are underway at Bayovar to increase the production capacity of the mine to 5.8 Mt/yr at an investment cost of about \$520 million. The expansion program was expected to be completed in 2014. In 2013, total proven and probable reserves at Bayovar were estimated to be about 415.9 Mt at an average grade of 15.5% of phosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>) compared with 225.4 Mt at an average grade of 17.2% P<sub>2</sub>O<sub>5</sub> in 2012. The increase in reserves was attributed to the inclusion of two new phosphate seams in the mining plan and a new mining strategy that uses a higher dilution in order to maximize recovery (Horizonte Minero, 2013; Ministerio de Energía y Minas, 2014a, p. 100, 102; Vale S.A., 2014, p. 49, 68).

In September, Focus Ventures Ltd. of Canada, through its subsidiary Agrifos Peru S.A.C, signed a binding letter of intent with Juan Paulo Quay S.A.C. (JPQ) for the exploration and acquisition of the Bayovar 12 phosphate mining concession, which is located adjacent to Vale's Bayovar Mine. JPQ was owned by Grupo Romero and Mamut Andino C.A. of Ecuador. The agreement included the option to acquire a 70% interest in Bayovar 12 by investing about \$15 million in exploration and the completion of a prefeasibility study, which was expected to be completed in 2014. After the prefeasibility study results, Focus Ventures would have the option to acquire or refuse the purchase of the remaining 30% interest from JPQ. The Bayovar 12 concession is located in Sechura Province, Piura Region, in northwestern Peru (Focus Ventures Ltd., 2013).

### **Mineral Fuels**

**Natural Gas and Petroleum.**—In 2013, gross natural gas production increased by 3% to 12,192 million cubic meters from 11,859 million cubic meters in 2012. Pluspetrol S.A. of Argentina remained the leading natural gas producer in Peru, accounting for 97% of the domestic production, followed by Aguaytia Energy del Peru S.R.L. (1%) and Petróleo Brasileiro S.A. (Petrobras) of Brazil (0.6%). In 2013, natural gas liquids production increased by 21% to 38.2 Mbbbl from 31.6 Mbbbl; Pluspetrol accounted for about 96% of the domestic natural gas liquids production. As of December 31, Peru's natural gas reserves (proven, probable, and possible) were estimated to be 762.2 billion cubic meters, and natural gas liquids reserves (proven, probable, and possible) were estimated to be 1.5 billion barrels (Gbbbl; Ministerio de Energía y Minas, 2013b, p. 17, 23; Perúpetro S.A., 2013b, p. 12, 14).

In 2013, Peru's total crude oil production decreased by about 6% to about 23 Mbbbl from 24.4 Mbbbl in 2012. As of December 31, Peru's proven, probable, and possible mineral reserves of crude oil totaled 1.5 Gbbbl. Daily petroleum consumption in the country averaged 171,000 barrels (bbl) in 2013 compared with 172,000 bbl in 2012. The country's leading petroleum producers, in order of volume, were Pluspetrol Norte S.A. (owned by Pluspetrol), which operated Blocks 8 and 1-AB and accounted for about 39% (8.9 Mbbbl) of domestic production; Petrobras, which operated Block X and accounted for about 18% (4.2 Mbbbl) of domestic production; and SAVIA Peru S.A., which operated Blocks Z-2B and Z-6 and accounted for about 16% (3.7 Mbbbl) of domestic production (Ministerio de Energía y Minas, 2013b, p. 11; Perúpetro S.A., 2013b, p. 12; U.S. Energy Information Administration, 2014).

In November, Petrobras signed the documents for the sale (100% shares) of its wholly owned subsidiary Petrobras Energía Peru to China National Petroleum Corp. at a cost of about \$2.6 billion. The sale included a 100% stake in Block X, which is located in the Talara Basin; a 100% stake in exploration Block 58, which is located in Cusco Region; and a 46.2% stake in exploration Block 57, which was a joint venture among Repsol Exploracion Peru S.A. and Sucursal del Peru. The completion of the sale would be subject to the approval of the Chinese and Peruvian Governments. As of December 31, proven, probable, and possible mineral reserves at Block X were estimated to be 128 Mbbbl, 30.5 Mbbbl, and 11.3 Mbbbl, respectively (Cespedes and Wade, 2013; Petróleo Brasileiro S.A., 2013a, p. 56; 2014b; Perúpetro S.A., 2013b, p. 12, 16; 2014, p. 16-17).

Perenco Group of the United Kingdom, through its subsidiary Perenco Peru Petroleum Ltd., held a 50% interest in Block 67, which is located in the Marañon Basin. In December, Perenco began operations in the block at an investment cost of about \$712 million. By yearend 2013, the block produced about 14,363 bbl of petroleum, which was valued at about \$1.7 million. The company expected to increase daily production to about 6,000 bbl in 2014 and 12,000 bbl by 2015. Proven reserves at the Block 67 were estimated to be 100 Mbbbl of heavy oil (Perúpetro S.A., 2013a, b, p. 12, 16; 2014, p. 16-17).

Production of refinery products decreased by 6% to 56 Mbbbl in 2013 from 59 Mbbbl in 2012. Repsol invested about \$61.3 million in 2013 to fund the development of a new diesel desulfurization plant, which was expected to begin operation by 2016, the expansion of its asphalt plant, and other projects, such as the use of natural gas to substitute liquids fuels (Banco Central de Reserva del Perú, 2014, p. 20; Repsol Peru B.V., 2014, p. 25, 89).

### **Reserves and Resources**

Table 3 lists Peru's reserves of major minerals. According to the MEM, the country accounted for about 17% of the world's silver reserves, about 10% each of copper and zinc reserves, about 8% of molybdenum reserves, and about 4% each of gold and lead reserves (Ministerio de Energía y Minas, 2014a, p. 26).

## Outlook

Peru's GDP was expected to increase by 3.6% in 2014. Peru continues to be on a path of economic growth owing to the country's macroeconomic stability and laws that encourage investment by way of new joint ventures and consortia, privatizations, and direct acquisitions, which are expected to continue to generate additional investments. Peru's legal framework and EITI compliance are expected to continue to be favorable to foreign investments in the fields of energy, mining, and related industries. The mining sector is expected to continue to be a major source of taxes and employment in the country. The Government's plans to establish policies related to mining formalization and illegal mining activities are likely to add revenues and to strengthen the mineral sector. In the long run, new projects and expansion projects in the nonfuel mineral sector, including copper, gold, iron, silver, and phosphate, are likely to attract investment, to increase interest in mineral prospecting, and to encourage mining companies to invest in expanding and modernizing their operations. Mining exports (copper, gold, lead, molybdenum iron, silver, tin, and zinc) are likely to increase in 2014 to \$23.1 billion (International Monetary Fund, 2014, p. 58; EY Perú, 2014, p. 69).

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

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2009	2010	2011	2012	2013
<b>METALS</b>					
Antimony, metal	145	--	--	--	--
Arsenic, white <sup>3</sup>	301	--	--	--	--
Bismuth, metal	423	--	--	--	--
Cadmium, metal	289	357	572	684	695
Copper:					
Mine output, Cu content	1,113,454	1,094,123	1,094,971	1,197,560 <sup>r</sup>	1,285,982
Metal:					
Smelter	325,788	312,968	299,004	290,088	412,966
Refined, primary:					
Electrowon	162,795	153,022	140,341	101,174 <sup>r</sup>	89,658
Electrolytic	260,618	240,616	227,320	210,119	271,792
Total	423,413	393,638	367,661	311,293 <sup>r</sup>	361,450
Gold:					
Mine kilograms	166,780	145,109	143,697	150,132 <sup>r</sup>	136,088
Placer do.	17,215	18,975	22,490	11,412	15,398
Total do.	183,995	164,084	166,187	161,544 <sup>r</sup>	151,486
Indium do.	1,629 <sup>r</sup>	-- <sup>r</sup>	2,499 <sup>r</sup>	11,080 <sup>r</sup>	11,000
Iron and steel:					
Iron ore and concentrate:					
Gross weight thousand metric tons	6,698	9,160	10,626	10,132	10,126
Fe content do.	4,490	6,140	7,123	6,792	6,788
Metal: <sup>4</sup>					
Direct reduced iron	100	100	94 <sup>r</sup>	98	93
Steel:					
Crude thousand metric tons	718	880	877	981	1,069
Hot-rolled products do.	876	1,076	926	1,211	1,367

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2009	2010	2011	2012	2013
METALS—Continued					
Lead:					
Mine output, Pb content	302,459	261,990	230,199	248,659	266,263
Metal	26,599	--	--	--	467
Molybdenum, mine output, Mo content	12,297	16,963	19,141	16,790	18,140
Selenium, metal, refined kilograms	61,000	59,000	54,000	50,000 <sup>r, e</sup>	50,000 <sup>e</sup>
Silver:					
Mine output, Ag content	3,923	3,640	3,419	3,245 <sup>r</sup>	3,407
Metal, refined	445	156	171	159	163
Tellurium, metal kilograms	7,000	--	--	--	--
Tin:					
Mine output, Sn content	37,503	33,848	28,882	26,105	23,688
Metal	34,388	36,451	32,290	24,811	24,181
Tungsten, metal <sup>5</sup>	502 <sup>r</sup>	571 <sup>r</sup>	439 <sup>r</sup>	276 <sup>r</sup>	28
Zinc:					
Mine output, Zn content	1,512,931	1,470,450	1,256,383	1,280,949 <sup>r</sup>	1,350,874
Metal	149,494	223,112	313,714	319,280	346,362
INDUSTRIAL MINERALS					
Barite	27,881	52,275	87,848 <sup>r</sup>	79,451 <sup>r</sup>	52,491
Boron materials, crude (borates)	187,221	292,855	-- <sup>r</sup>	104,072	224,454
Cement, hydraulic <sup>e</sup> thousand metric tons	8,100	8,300 <sup>r</sup>	8,500 <sup>r</sup>	9,500 <sup>r</sup>	10,527 <sup>6</sup>
Chalk	321,012	325,000	322,000	321,711	322,000 <sup>e</sup>
Clays:					
Bentonite	119,452	44,266	27,534	22,977	47,743
Kaolin	9,655	16,678	18,169	34,585 <sup>r</sup>	32,249
Common clay	2,048,130	1,120,043	1,021,502	1,098,267	1,291,939
Diatomite	9,946	10,500	10,100	93,996	124,917
Feldspar	5,154	3,589	11,645	26,359	22,695
Gypsum, crude	321,012 <sup>r</sup>	313,025 <sup>r</sup>	481,770 <sup>r</sup>	390,705 <sup>r</sup>	297,527
Phosphate rock:					
Crude, gross weight thousand metric tons	--	1,134 <sup>r</sup>	8,889 <sup>r</sup>	10,346 <sup>r</sup>	14,842
P <sub>2</sub> O <sub>5</sub> content do.	--	741 <sup>r</sup>	762 <sup>r</sup>	768 <sup>r</sup>	774
Salt, all types	1,567,279	1,570,000	1,565,000	1,199,585	1,205,435
Stone and sand and gravel:					
Stone:					
Limestone thousand metric tons	10,304	11,528	11,594 <sup>r</sup>	16,306	16,650
Marble	338	--	--	16,335	225
Onyx	2,983 <sup>r</sup>	823 <sup>r</sup>	14,455 <sup>r</sup>	3,578	11,873
Quartz and quartzite, crushed <sup>e</sup>	124,000	124,000	124,000	87,481 <sup>7</sup>	87,500
Slate	16,447 <sup>r</sup>	315 <sup>r</sup>	18,165 <sup>r</sup>	33,948 <sup>r</sup>	97,630
Travertine	97,937	105,392	126,200 <sup>r</sup>	149,202 <sup>r</sup>	245,875
Sand and gravel:					
Stone, construction thousand metric tons	5,541	4,613	4,374 <sup>r</sup>	5,343	7,227
Sand do.	2,908	1,909	1,070 <sup>r</sup>	1,292 <sup>r</sup>	891
Talc	13,359	19,767	28,296	31,559	32,899
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite, run-of-mine	66,244	63,381	76,928	123,771	88,985
Bituminous, run-of-mine	75,845	57,571	105,553	102,587	99,606
Total	142,089	120,952	182,481	226,358	188,591
Natural gas:					
Gross <sup>7</sup> million cubic meters	3,474	7,238 <sup>r</sup>	11,360	11,859	12,192
Marketed do.	2,003	2,251	3,523	3,678	3,800 <sup>e</sup>
Natural gas liquids <sup>8</sup> thousand 42-gallon barrels	27,100	30,832	30,354	31,596	38,187

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>		2009	2010	2011	2012	2013
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude <sup>8</sup>	thousand 42-gallon barrels	25,927	26,531	25,387	24,396	22,956
Refinery products: <sup>7</sup>						
Liquefied petroleum gas	do.	2,177	2,424	2,221	2,196	1,983
Gasoline, motor	do.	14,713	15,185	14,037	13,773	12,580
Jet fuel	do.	4,703	5,290	5,200	5,851	5,408
Kerosene	do.	338	80	64	-- <sup>r</sup>	--
Distillate fuel oil	do.	25,819	24,606	30,979	28,798 <sup>r</sup>	26,414
Lubricants	do.	331	315	281	250	253
Residual fuel oil	do.	10,263	10,124	9,207	7,104 <sup>r</sup>	7,836
Asphalt	do.	1,663	1,841	1,436	1,504	1,424
Total	do.	60,007 <sup>r</sup>	59,865 <sup>r</sup>	63,425 <sup>r</sup>	59,476 <sup>r</sup>	55,898

<sup>6</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>p</sup>Preliminary. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through November 25, 2014.

<sup>2</sup>Source: Ministerio de Energía y Minas del Perú, Anuario Minero, 2013.

<sup>3</sup>Output reported by Doe Run Perú S.R.L.

<sup>4</sup>Source: World Steel Association, Steel Statistical Yearbook 2014.

<sup>5</sup>Source: Malaga Inc., 2009–2012.

<sup>6</sup>Reported figure.

<sup>7</sup>Source: Ministerio de Energía y Minas del Perú, Anuario Estadístico de Hidrocarburos, 2013.

<sup>8</sup>Source: Banco Central de Reserva del Perú, Memoria, 2013.

TABLE 2  
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
Andalusite	Andalucita S.A. (private, 100%)	Paita, Piura Region	60
Antimony	metric tons Doe Run Perú S.R.L. (Doe Run Co., 100%)	Smelter at La Oroya, Junin Region	700
Bentonite	Minera Doña Herminia S.A.	Amatape, Piura Region	NA
Bismuth	metric tons Doe Run Perú S.R.L. (Doe Run Co., 100%)	Refinery at La Oroya, Junin Region	1,000
Cadmium	Votorantim Metais - Cajamarquilla S.A. (Grupo Votorantim Metais S.A., 99%, and employees, 1%)	Refinery at Cajamarquilla, Lima Region	700
Cement	Caliza Cementos Inca S.A. (private, 100%)	Cajamarquilla plant, Lima Region	400
Do.	Cementos Pacasmayo S.A.A. (private, 100%)	Pacasmayo plant, La Libertad Region	2,900
Do.	Cementos Selva S.A. (Cementos Pacasmayo S.A.A.)	Rioja plant, San Martin Region	440
Do.	Cementos Sur S.A. (private, 100%)	Arequipa plant, Arequipa Region	340
Do.	Union Andina de Cementos S.A.A. (private, 100%)	Atocongo plant, Lima Region	5,500
Do.	do.	Condorcocha plant, Junin Region	2,100
Do.	Yura S.A. (private, 100%)	Yura plant, Arequipa Region	3,000
Copper	Compañía Minera Antamina S.A. (BHP Billiton plc, 33.75%; Glencore Xstrata plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Ancash Region	500
Do.	Compañía Minera Condestable S.A. (Southern Peaks Mining LP, 98.7%)	Condestable Mine, Lima Region	25
Do.	Compañía Minera Milpo S.A. (Votorantim Metais - Cajamarquilla S.A., 49.89%)	El Porvenir Mine, Pasco Region; Cerro Lindo Mine, Ica Region	40
Do.	Doe Run Peru S.R.L. (Doe Run Co., 100%)	Cobrizo Mine, Huancavelica Region	20
Do.	do.	Smelter at La Oroya, Junin Region	70
Do.	do.	Refinery at La Oroya, Junin Region	80

See footnotes at end of table.

TABLE 2—Continued  
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Copper—Continued	Empresa Minera Los Quenuales S.A. (Glencore Xstrata plc, 97.6%)	Iscaycruz and Yauliyacu Mines, Lima Region	7
Do.	Glencore Xstrata plc, 100%	Tintaya Mine, Cusco Region	90
Do.	Gold Fields La Cima S.A. (Gold Fields Ltd., 99.53%)	Cerro Corona Mine, Cajamarca Region	40
Do.	Southern Copper Corp. (Grupo Mexico S.A.B. de C.V., 82.3%)	Cuajone Mine, Moquegua Region; Toquepala Mine, Tacna Region	200
Do.	do.	Smelter at Ilo, Moquegua Region	360
Do.	do.	Refinery at Ilo, Moquegua Region	360
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	300
Do.	Sociedad Minera El Brocal S.A.A. (private, 100%)	Tajo Norte Mine, Pasco Region	30
Gold	kilograms Arasi S.A.C. (private 100%)	La Rescatada Mine, Lampa, Puno Region	3,000
Do.	do. Aruntani S.A.C. (private, 100%)	Tucari Mine, Moquegua Region	5,000
Do.	do. Compañía de Minas Buenaventura S.A.A. (private, 100%)	Orcopampa Mine, Arequipa Region; Breapampa Mine, Ayacucho Region	8,500
Do.	do. Compañía Minera Aurífera Santa Rosa S.A. (private, 100%)	Santa Rosa, Arequipa Region	5,000
Do.	do. Compañía Minera Caraveli S.A., 100%	Caraveli, Arequipa Region	1,100
Do.	do. Compañía Minera Coimolache S.A. (Compañía de Minas Buenaventura S.A.A., 40%; Southern Copper Corp, 44%; ESPRO SAC, 16%)	Tantahuatay Mine, Hualgayoc, Carajamarca Region	4,000
Do.	do. Compañía Minera Poderosa S.A. (private, 100%)	Poderosa, La Libertad Region	4,000
Do.	do. Consorcio Minero Horizonte S.A. (private, 100%)	Parcoy, La Libertad Region	6,000
Do.	do. Gold Fields La Cima S.A. (Gold Fields Ltd., 99.53%)	Cerro Corona, Cajamarca Region	6,000
Do.	do. La Arena S.A. (Rio Alto Mining Ltd., 100%)	La Arena Mine, Sanchez Carrion, La Libertad Region	6,200
Do.	do. Minera Aurífera Retamas S.A. (private, 100%)	Retamas Mine, La Libertad Region	5,000
Do.	do. Minera Barrick Misquichilca S.A. (Barrick Gold Corp., 100%)	Pierina Mine, Ancash Region; Laguna Norte Mine, La Libertad Region	36,000 <sup>1</sup>
Do.	do. Minera La Zanja S.R.L. (Compañía de Minas Buenaventura S.A.A., 53.06%, and Newmont Mining Corp., 46.94%)	La Zanja Mine, Cajamarca Region	4,000
Do.	do. Minera Yanacocha S.R.L. (Newmont Mining Corp., 51.35%; Compañía de Minas Buenaventura S.A.A., 43.65%; The World Bank's International Finance Corp., 5%)	Yanacocha Mine, Cajamarca Region	130,000
Iron ore	Shougang Hierro Perú S.A.A. (Shougang Corp., 100%)	Marcona, Ica Region	10,000
Lead	Compañía de Minas Buenaventura S.A.A. (private, 100%)	Julcani Mine, Huancavelica Region; Mallay and Uchucchacua Mines, Lima Region	50
Do.	Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc, 33.75%; Glencore Xstrata plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Ancash Region	5
Do.	Compañía Minera Atacocha S.A. (Grupo Milpo, 88.19%)	Atacocha Mine, Pasco Region	15
	Compañía Minera Casapalca S.A. (private, 100%)	Huarochi, Lima Region	6
Do.	Compañía Minera Milpo S.A. (Votorantim Metais - Cajamarquilla S.A., 49.89%)	El Porvenir Mine, Pasco Region; Cerro Lindo Mine, Ica Region	33
Do.	Compañía Minera Raura S.A. (private, 100%)	Raura, Lima Region	15
Do.	Compañía Minera San Ignacio de Morococha S.A. (private, 100%)	San Vicente Mine, Junin Region	4
Do.	Compañía Minera Santa Luisa S.A. (private, 100%)	Huanzalá Mine, Junin Region	9
Do.	Doe Run Peru S.R.L. (Doe Run Co., 100%)	Smelter at La Oroya, Junin Region	150
Do.	do.	Refinery at La Oroya, Junin Region	125
Do.	Empresa Administradora Chungar S.A.C. (Volcan Compañía Minera S.A.A., 100%)	Animon Mine, Pasco Region	30

See footnotes at end of table.

TABLE 2—Continued  
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
Lead—Continued		Empresa Minera Los Quenuales S.A. (Glencore Xstrata plc, 97.6%)	Iscaycruz and Yauliyacu Mines, Lima Region	13
Do.		Sociedad Minera Corona S.A. (Sierra Metals Inc., 82%)	Yauricocha Mine, Yauyos, Lima Region	20
Do.		Sociedad Minera El Brocal S.A.A. (Compañía de Minas Buenaventura S.A.A., 54.07%)	Tajo Norte Mine, Pasco Region	22
Do.		Volcan Compañía Minera S.A.A. (private, 100%)	Cerro de Pasco Mine, Pasco Region; Andaychagua, Carahuacra, San Cristobal, and Ticlio Mines, Junin Region	48
Molybdenum		Compañía Minera Antamina S.A. (BHP Billiton plc, 33.75%; Glencore-Xstrata plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Region	7
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	6
Do.		Southern Copper Corp. (Grupo Mexico S.A.B. de C.V., 82.3%)	Cuajone Mine, Moquegua Region; Toquepala Mine, Tacna Region	12
Natural gas	thousand cubic meters per day	Aguaytia Energy del Peru S.R.L., 100%	Block 31–C, Ucayali Region	410
Do.	do.	GMP S.A. (Grupo Graña y Montero, 100%)	Block 1, Talara Basin	160
Do.	do.	Pluspetrol Peru Corp. (Pluspetrol S.A.)	Blocks 56 and 88, Ucayali Basin	32,300
Do.	do.	Petróleo Brasileiro S.A.	Block X, Talara Basin	190
Petroleum, crude	42-gallon barrels per day	Petróleo Brasileiro S.A.	Block X, Talara Basin	11,600
Do.	do.	Perenco Peru Petroleum Ltd. (Perenco Group, 50%)	Block 67, Marañon Basin	6,000
Do.	do.	Pluspetrol Norte S.A. (Pluspetrol S.A., 100%)	Block 8, Marañon Basin	10,000
Do.	do.	Pluspetrol Norte S.A. (Pluspetrol S.A., 60%)	Block 1–AB, Marañon Basin	15,000
Do.	do.	Savia Peru S.A., 100%	Block Z–2B, Punta Laguna	10,000
Petroleum products	do.	Refinería La Pampilla S.A. (Repsol YPF, 51.03%)	La Pampilla refinery, Lima Region	102,000
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.	Petroperú S.A.	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.A.C. (Vale S.A., 40%, Mosaic Co., 35%, Mitsui & Co., Ltd., 25%)	Bayovar Mine, Piura Region	3,900
Silver	metric tons	Empresa Minera Los Quenuales S.A. (Glencore Xstrata plc, 97.6%)	Izcaycruz and Yauliyacu Mines, Lima Region	100
Do.	do.	Empresa Administradora Chungar S.A.C. (Volcan Compañía Minera S.A.A., 100%)	Animon Mine, Pasco Region	200
Do.	do.	Compañía Minera Ares S.A.C. (Hochschild Mining Plc, 100%)	Arcata Mine, Arequipa Region; Pallancata Mine, Ayacucho Region	200
Do.	do.	Compañía de Minas Buenaventura S.A.A. (private, 100%)	Julcani Mine, Huancavelica Region; Mallay and Uchucchacua Mines, Lima Region; Breapampa Mine, Ayacucho Region; Orcopampa Mine, Arequipa Region	500
Do.	do.	Volcan Compañía Minera S.A.A. (private, 100%)	Cerro de Pasco Mine, Pasco Region; Andaychagua, Carahuacra, San Cristobal, and Ticlio Mines, Junin Region	300
Do.	do.	Compañía Minera Milpo S.A. (Votorantim Metais - Cajamarquilla S.A., 49.89%)	El Porvenir Mine, Pasco Region; Cerro Lindo Mine, Ica Region	150
Do.	do.	Compañía Minera Antamina S.A. (BHP Billiton plc, 33.75%; Glencore Xstrata plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Region	500

See footnotes at end of table.

TABLE 2—Continued  
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
Silver—Continued	metric tons	Pan American Silver Corp., 100%	Huaron Mine, Pasco Region	100
Do.	do.	Pan American Silver Corp., 92.3%	Morococha Mine, Junin Region	100
Do.	do.	Doe Run Perú S.R.L. (Doe Run Co., 100%)	Refinery at La Oroya, Junin Region	1,100
Do.	do.	Southern Copper Corp. (SPCC) (Grupo Mexico S.A.B. de C.V., 82.3%)	Ilo smelting and refining, Moquegua Region	150
Steel		Empresa Siderurgica del Peru S.A.A. (Gerdau S.A.)	Chimbote, Ancash Region	650
Do.		Empresa Laminadora del Pacífico S.A. (Acero Arequipa S.A., 100%)	Pisco, Ica Region	360
Tellurium	metric tons	Doe Run Perú S.R.L. (Doe Run Co., 100%)	Refinery at La Oroya	12
Tin	do.	Minsur S.A. (private 100%)	San Rafael Mine and plant, Puno Region	30,000
Do.	do.	do.	Pisco smelting and refining, Ica Region	45,000
Tungsten	do.	Malaga Inc.	Pasto Bueno, Ancash Region	NA <sup>2</sup>
Zinc		Compañía de Minas Buenaventura S.A.A. (private, 100%)	Mallay and Uchucchacua Mines, Lima Region	25
Do.		Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc, 33.75%; Glencore Xstrata plc, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Ancash Region	300
Do.		Compañía Minera Atacocha S.A. (Grupo Milpo, 88.19%)	Atacocha Mine, Pasco Region	50
Do.		Compañía Minera Casapalca S.A. (private, 100%)	Huarochi, Lima Region	40
Do.		Compañía Minera Milpo S.A. (Votorantim Metais - Cajamarquilla S.A., 49.89%)	El Porvenir Mine, Pasco Region; Cerro Lindo Mine, Ica Region	210
Do.		Compañía Minera Raura S.A. (private, 100%)	Raura, Lima Region	25
Do.		Compañía Minera San Ignacio de Morococha S.A. (private, 100%)	San Vicente Mine, Junin Region	40
Do.		Compañía Minera Santa Luisa S.A. (private, 100%)	Huanzalá Mine, Junin Region	35
Do.		Doe Run Perú S.R.L. (Doe Run Co., 100%)	Refinery at La Oroya	80
Do.		Empresa Administradora Chungar S.A.C. (Volcan Compañía Minera S.A.A., 100%)	Animon Mine, Pasco Region	112
Do.		Empresa Minera Los Quenuales S.A. (Glencore Xstrata plc, 97.6%)	Izcaycruz and Yauliyacu Mines, Lima Region	120
Do.		Sociedad Minera El Brocal S.A.A. (Compañía de Minas Buenaventura S.A.A., 54.07%)	Tajo Norte Mine, Pasco Region	90
Do.		Sociedad Minera Corona S.A. (Sierra Metals Inc., 81.80%)	Yauricocha Mine, Lima Region	25
Do.		Volcan Compañía Minera S.A.A. (private, 100%)	Cerro de Pasco Mine, Pasco Region; Andaychagua, Carahuacra, San Cristobal, Cristobal, and Ticlio Mines, Junin Region	225
Do.		Votorantim Metais - Cajamarquilla S.A. (Grupo Votorantim Metais S.A., 99%, and employees, 1%)	Refinery at Cajamarquilla, Lima Region	320

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

<sup>1</sup>Barrick Gold Corp. initiate closure activities at the Pierina Mine in August 2013.

<sup>2</sup>Placed on care-and-maintenance status.

TABLE 3  
PERU: RESERVES OF MAJOR MINERALS IN 2013<sup>1,2</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Coal, all types	1,250,000 <sup>e</sup>
Copper	68,404
Gold	metric tons 2,110 <sup>3</sup>
Iron ore	1,427,004
Lead	7,038
Molybdenum	3,055
Natural gas	trillion cubic meters 610
Natural gas liquids	million barrels 1,226
Petroleum crude	million barrels 1,104
Phosphate rock	820,000
Salt	100,000 <sup>e</sup>
Silver	metric tons 98,869
Sulfur	150,000 <sup>e</sup>
Tin	80
Uranium	100 <sup>e,4</sup>
Zinc	29,046

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits.

<sup>1</sup>Proven and probable.

<sup>2</sup>Sources: Ministerio de Energía y Minas del Perú: Anuario Minero, 2013 and Libro Annual de Reservas de Hidrocarburos, 2013.

<sup>3</sup>Excludes metal in placer deposits.

<sup>4</sup>Recoverable at prices of \$100 or less per kilogram of uranium.