



2011 Minerals Yearbook

PERU

THE MINERAL INDUSTRY OF PERU

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In 2011, Peru occupied a leading position in the global production of the following mineral commodities, in alphabetical order: copper (second after Chile), gold (sixth after China, Australia, the United States, Russia, and South Africa), lead (fourth after China, Australia, and the United States), molybdenum (fourth after China, the United States, and Chile), silver (second after Mexico), tin (third after China and Indonesia), and zinc (third after China and Australia). In Latin America, Peru was first in the production of gold, lead, tin, and zinc and second in the production of cadmium, copper, mercury, molybdenum, phosphate rock, selenium, and silver (Brooks, 2012; Carlin, 2012; Edelstein, 2012; George, 2012; Guberman, 2012; Ministerio de Energía y Minas, 2012a, p. 19–21; Polyak, 2012; Tolcin, 2012).

Minerals in the National Economy

The Peruvian economy again showed a period of growth in 2011, which was reflected in a gross domestic product (GDP) growth rate of 6.9%. This growth rate was nonetheless lower than the 8.8% rate of growth in 2010. The decrease in the rate of growth appears to have been a result of fears of another downturn in the world economy owing to the debt crisis affecting some countries of the European Union (EU) and the Americas. Peru's GDP amounted to \$305.8 billion in 2011 compared with a revised \$286.1 billion in 2010. The composition of the GDP, by sector was, in order of value, services (54%), industry (38%), and agriculture (8%). Peru's net monetary international reserves increased to \$48.8 billion compared with \$44.1 billion in 2010. Exports exceeded imports by \$9.3 billion compared with \$6.8 billion in 2010 (Banco Central de Reserva del Perú, 2012, p. 17; ProInversión—Private Investment Promotion Agency in Peru, 2012).

Peru's domestic private investment (DPI) of more than \$15.1 billion was sustained mainly by leading projects in the mining and hydrocarbon sectors, \$8.7 billion; manufacturing, \$2 billion; energy, natural gas, and water, \$1.6 billion; construction and infrastructure, \$1.4 billion; services, \$1.2 billion; and other sectors, \$200 million. DPI investment in the energy sector amounted to \$2.9 billion and DPI in the hydrocarbon sector amounted \$600 million, whereas the financial and communications sectors received \$4.1 billion and \$3.8 billion, respectively (Banco Central de Reserva del Perú, 2012, p. 17; Ministerio de Energía y Minas, 2012a, p. 44–47; ProInversión—Private Investment Promotion Agency in Peru, 2012).

According to registered statements submitted by companies and investors to ProInversión—Private Investment Promotion Agency in Peru (as required by Article 19 of Legislative Decree No. 662), Peru's foreign direct investment (FDI) reached more than \$22 billion in 2011 compared with a revised \$21.5 billion in 2010, which represented an increase of 2.3%. This FDI provided Peru with such benefits as technology transfer and

additional management expertise. The main sources of FDI to Peru were Spain and the United Kingdom (\$4.5 billion each), the United States (\$3.2 billion), the Netherlands (\$1.5 billion), Chile (\$1.3 billion), Brazil and Colombia (\$1.0 billion each), and others (\$5 billion). The mining sector received about one quarter of the FDI (about \$5.4 billion, or about 24.5%). DPI and FDI in Peru continued to increase owing to the country's macroeconomic stability, laws that encourage investment, and the involvement of some operating companies with the communities where they operate (Banco Central de Reserva del Perú, 2012, p. 17; Ministerio de Energía y Minas, 2012a, p. 44–47; ProInversión—Private Investment Promotion Agency in Peru, 2012; U.S. Central Intelligence Agency, 2012).

The stability of the Peruvian judicial framework also helped to encourage investment in the mining sector. The leading countries and investors in Peru's mining sector were China (\$10.7 billion), the United States (\$8.9 billion), Canada (\$6.8 billion), Switzerland (\$6.7 billion), Australia (\$4.7 billion), Mexico (\$3.5 billion), and Brazil (\$2.1 billion), among others. The largest mineral commodity investments were in copper (\$35.4 billion), gold (\$6.9 billion), iron ore (\$6.8 billion), copper-zinc (\$2.1 billion), and polymetallic minerals and silver (\$0.6 billion each) (Ministerio de Energía y Minas, 2012a, p. 48–49; 2012b, p. 8; ProInversión—Private Investment Promotion Agency in Peru, 2012).

The combined value of the mining and hydrocarbon sectors decreased by 0.2% in 2011 compared with a decrease of 0.1% in 2010. The decrease reflected the lower rates of extraction of precious metals (gold and silver) and base metals (copper, lead, tin, and zinc), plus tin, although it was partially offset by increased production of iron and molybdenum. The slowdown also reflected the effects of the postponement of new mining projects owing to such factors as economic instability in Europe, economic uncertainty in the United States, and reduced economic growth in China. Consequently, the mineral sector decreased in value by 3.6% in 2011 compared with a revised decrease of 4.8% in 2010, which was offset, however, by increased production in the hydrocarbon sector of 18.1% in 2011 compared with a production increase of 29.5% in 2010. In 2011, Peru's labor force amounted to 15.9 million, and the mineral sector employed 0.8%, or 127,200 people compared with about 135,700 people in 2010; this number did not include the nearly 60,000 active informal miners (table 1; Banco Central de Reserva del Perú, 2012, p. 31–36, 52; Ministerio de Energía y Minas, 2012a, p. 19–21).

Government Policies and Programs

The new tax framework for the mining sector approved by the Executive Branch on September 28, 2011, became effective on October 1, 2011. The laws that established the new regime for mining include the following: (a) Creation of Special Levy on Mining (Law 29790), which applies to mining companies

that have tax stability agreements; (b) Amendment of Mining Royalties (Law 29788), which is a new regime of royalties that applies to companies without existing tax stability agreements. The amendment establishes that the amount payable in royalties may not be less than 1% of sales. If the company has signed a tax stability agreement and is paying royalties, the royalty amounts are deductible from the special levy. The revenues from this levy are distributed among the three levels of Government—national, departmental, and local; (c) Creation of Special Tax on Mining (Law 29789), which also applies to mining companies without existing tax stability agreements. The revenues from this tax are allocated to the national Government (Banco Central de Reserva del Perú, 2012, p. 102; Ministerio de Energía y Minas, 2012d).

The relevant laws governing domestic and foreign investment are Article 19 of Legislative Decree No. 662 (promotion of foreign investment), which allows investors unrestricted access to all economic sectors; Legislative Decree No. 757 (framework for the development of private investment), which pertains to private investment growth; and Legislative Decree law No. 868 of May 1996 (Texto Unico Oficial) as approved by Supreme Decree No. 059–96–PCM, which promotes private investment in public infrastructure and utility works. Within the framework of Decree law No. 708 of November 1991 (promotion of investment in mining), Legislative Decree law No. 818 of April 1996 (incentives for investing in natural resources), and Supreme Decree law No. 162–92–EF of October 1992 (rules guaranteeing foreign investment), more than 250 domestic stability and guarantee contracts had been signed since 1993 (Banco Central de Reserva del Perú, 2012, p. 114; Ministerio de Energía y Minas, 2012d).

Peru enacted Supreme Decree law No. 047–2002–EF of April 2002 (import duties for capital goods) to reduce the duties paid to 7% from 20% and 12% on capital goods to be used in the exploration for and production of certain minerals, such as oil and gas in the Amazon region. Law No. 27623–EF was enacted in January 2002 to eliminate the 18% sales tax on capital goods and services for mineral exploration. Supreme Decree law No. 015–2004–PGM of January 2004 (legal framework for decentralization) was established to use revenues from mineral production to maximize the well-being of the local communities through economic growth, environmental protection, and social development in a sustainable way. Supreme Decree law No. 066–2005–EM of May 2006 (legal framework for creation of the Dirección de Gestión Social) was established to administer the Corporate Social Responsibility program in the mining sector (Banco Central de Reserva del Perú, 2012, p. 104–106; Ministerio de Energía y Minas, 2012d).

The Peruvian Constitution establishes equal protection for domestic and foreign investors who enter into agreements with the Government. Hydrocarbon law No. 26844 of May 1997 eliminated the exclusive rights of state-owned Petroperú S.A to control the secondary recovery of crude oil, refining, and imports and subsequent resale of petroleum and byproducts (Ministerio de Energía y Minas, 2012a, p. 12–17; 2012c, d; ProInversión—Private Investment Promotion Agency in Peru, 2012).

Legal procedures to obtain mining rights were made simpler by the enactment of complementary legislation to Supreme Decree law No. 018 of July 9, 1992. The Government relinquished its exclusive management of exploration, mining, smelting, and refining of metals and fuel minerals. Individuals and private companies are allowed to hold mining permits in Peru. In the legal framework for investment and taxation, no distinction is made among domestic and foreign investors, and consortia, corporations, and joint ventures formed in Peru or abroad. Municipalities and Regional governments in areas where mineral resources (metals and industrial minerals) are exploited receive 50% of the taxes collected to be invested in education and social programs (health, housing, and others) in conformance with the Canon Minero (Ministry Resolution No. 266-2002-EF/15 of May 1, 2002). The remittance of depreciation, dividends, and royalties abroad has no restrictions. Contracts can be signed by investors, and the Government guarantees the stability of legal commitments and taxes. To increase protection of investors' interests, Peru signed agreements with the World Bank's Multilateral Investment Guarantee Agency in April 1991, which was authorized by Legislative Decree law No. 25312, and with the Overseas Private Investment Corporation in December 2002, which was authorized by Legislative Decree law No. 25809 (Ministerio de Energía y Minas, 2012d; ProInversión—Private Investment Promotion Agency in Peru, 2012).

The Dirección General de Asuntos Ambientales (DGAA) of the Ministerio de Energía y Minas (MEM) has the responsibility to address environmental problems that result from energy and mining activities and is mandated to implement environmental laws and regulations, such as Legislative Decree No. 613 of September 1990 (the environmental code) and Supreme Decree No. 016–93–EM of April 28, 1993 (the environmental regulation). The sustainable development model for the mining and energy sectors began in 1993 with regulations and procedures for the gradual reduction of pollution, which include economic development policies and environmental protection. The mining industry must comply by adjusting its ongoing operations to permissible effluent levels and developing its new operations using clean technologies (Ministerio de Energía y Minas, 2012c, d; ProInversión—Private Investment Promotion Agency in Peru, 2012).

The DGAA evaluates and proposes the environmental regulations for the mining and energy sectors, which include the maximum emission levels that are compatible with the internationally accepted limits set by the United Nations and the World Bank, approves environmental impact assessments for new operations and environmental adjustment and management programs for ongoing ones, and administers the national environmental information system. The MEM is authorized to manage environmental affairs in the mineral sector, such as by establishing the environmental protection policy and maximum allowable levels for effluents, signing environmental administrative stability agreements, overseeing the impact of operations, determining responsibilities, and imposing administrative sanctions. The oil companies, in particular, were under pressure because the number of operations in the Amazon Rain Forest—one of the world's most sensitive ecosystems—

was increasing (Ministerio de Energía y Minas, 2012d; ProInversión—Private Investment Promotion Agency in Peru, 2012).

The Government Agency Perúpetro S.A. was created on November 18, 1993 (law No. 26221) to be responsible for promoting investments in the Peruvian hydrocarbon sector. Perúpetro negotiates, signs, and administers hydrocarbon contracts for which Perúpetro must compete with the private sector. Perúpetro was, however, excluded from the privatization process but was authorized to participate in the exploration for and production of hydrocarbons (law No. 28244 of June 2, 2004). Perúpetro was involved in the transportation, refining, and marketing of refined products and other derivatives of petroleum as well. In 2011, Perúpetro attracted investment of more than \$1.8 billion to its hydrocarbon sector (Perúpetro S.A., 2012).

Production

Increases in metal production were led by iron ore (16%), molybdenum (12.8%), and copper (0.1%); decreases in mineral production included gold (2.5%), silver (6.2%), lead (12.1%), zinc (14.6%), and tin (14.7%); significant production decreases in refined products were led by tungsten (23.5%), lead (12.1%), tin (11.4%), and copper (6.6%); and no production was reported for antimony, arsenic, bismuth, and tellurium. These mineral output decreases were expected to be reversed in response to the recovery demand in Asian markets and to metal price increases in the near future. (The rates of metal price increases in 2011 compared with those of 2010 were, for silver, 75.5%; tin, 32.3%; gold, 28.8%; copper, 20.4%; lead, 20%; and zinc, 17.3%.) Increases in industrial minerals were led by feldspar (224.5%), barite (66%), and talc (43.1%). The output of sand decreased by 43.6%, and bentonite, by 37.8%, among others. The hydrocarbon sector's output increased by 18.1%. Production of natural gas increased by 44.1% and crude oil output decreased by 24.8%; this decrease was expected to be reversed in the near future, however, owing to the 62 oil exploration and long-term production contracts signed in 2011 (table 1; Banco Central de Reserva del Perú, 2012, p. 32–38, 279; Ministerio de Energía y Minas, 2012a, p. 20–21; 2012d; U.S. Energy Information Administration, 2012b).

Structure of the Mineral Industry

The major mining companies active in Peru were, in terms of amount invested in new mine projects, Newmont Mining Corp. of the United States in partnership with Compañía Minera de Minas Buenaventura S.A.A.; Freeport-McMoran Copper and Gold Inc. of the United States in partnership with Sociedad Minera Cerro Verde S.A.A. and Compañía Minera de Minas Buenaventura S.A.A.; Anglo American Quellaveco S.A. (a subsidiary of Anglo American plc. of the United Kingdom); Southern Peru Copper Corp. (a subsidiary of Grupo Mexico, S.A. de C.V.); and HudBay Minerals Inc. of Canada, among others (Banco Central de Reserva del Perú, 2012, p. 17; Ministerio de Energía y Minas, 2012a, p. 44–47; ProInversión—Private Investment Promotion Agency in Peru, 2012).

Mining companies committed to invest \$53.4 billion in 52 mining projects, including exploration projects, 49% (\$26.2 billion); in projects with approved environmental impact assessments (EIAs), 35% (\$18.7 billion); and expansion projects, 16% (\$8.5 billion). The leading exploration companies included Minmetals/Jiangxi Copper of China (\$2.5 billion) to operate the Galeno copper project, which is located in the Cajamarca Region and was to start operations by 2014; Apurimac Ferrum S.A. (a subsidiary of Strike Resources of Australia) (\$2.3 billion) to define the Apurimac iron project, which is located in the Apurimac Region and was to start operations in the near future; Minera CN S.A.C. (a subsidiary of Metminco Ltd. of Australia) (\$2.2 billion) to define the Los Calatos copper-molybdenum project, which is located in the Moquegua Region and was to start operations in the near future; and Jinzhao Mining Perú S.A. (a subsidiary of Grupo Zibo Hongda Mining Ltd. of China) (more than \$1.5 billion) in its Pampa de Pongo iron project, which is located in the Arequipa Region (Ministerio de Energía y Minas, 2012a, p. 48; 2012b, p. 1, 4–6; 2012c; ProInversión—Private Investment Promotion Agency in Peru, 2012).

The leading investors with approved EIAs and their commitments were as follows (in order of commitment amount): Xstrata Perú S.A. (a subsidiary of Xstrata Copper of Switzerland) committed to invest \$4.2 billion in Las Bambas copper project, which is located in the Apurimac Region and was to start operations by 2014; Minera Yanacocha S.R.L. (a subsidiary of Newmont/Buenaventura of the United States and Peru) committed to invest \$3.5 billion to operate the Minas Conga copper-gold mine, which is located in the Cajamarca Region and was to start operations by 2015; Anglo American Quellaveco S.A. (a subsidiary of Anglo American of the United Kingdom) committed to invest \$3.0 billion to operate the Quellaveco copper mine, which is located in the Moquegua Region and was to start operations by 2014; and Minera Chinalco Perú S.A. (a subsidiary of Chinalco-Aluminum Corp. of China) committed to invest \$2.2 billion to operate the Toromocho copper mine, which is located in the Junin Region and was to start operations by 2013 (Ministerio de Energía y Minas, 2012a, p. 47; 2012b, p. 1, 3–4; ProInversión—Private Investment Promotion Agency in Peru 2012).

The leading investors with expansion projects and their commitments were as follows (in order of commitment amount): Compañía Minera Antamina S.A. (a subsidiary of BHP Billiton plc of the United Kingdom, 33.75%; Xstrata Copper of Switzerland, 33.75%; Teck Cominco Ltd. of Canada, 22.5%; and Mitsubishi Corp. of Japan, 10%) committed to invest \$1.1 billion to expand the Antamina copper-zinc mine, which is located in the Ancash Region and was to start expanded operations by early 2012; Shougang Corp. of China committed to invest \$1.0 billion to expand the Marcona iron mine, which is located in the Ica Region and was to start expanded operations by early 2012; and Sociedad Minera Cerro Verde (a subsidiary of Freeport-McMoran Copper of the United States) committed to invest \$1.0 billion to expand the Cerro Verde Mine, which is located in the Arequipa Region and was to start expanded operations by 2012 (Ministerio de Energía y Minas, 2012a, p. 48;

2012b, p. 1–2; ProInversión—Private Investment Promotion Agency in Peru, 2012).

The structure of the Peruvian mineral industry continued to change owing to the establishment of consortia in such deregulated industries as petroleum and natural gas and of joint ventures in energy and mining projects. Increased numbers of domestic and foreign companies were participating in prospecting, exploration, production, and trade of minerals, natural gas, and petroleum. Foreign companies contracting with Perúpetro in the energy sector and with the state agency Centromin Perú S.A. in the mineral sector included Vale S.A. and Grupo Votorantim Metais S.A. of Brazil; Dia Bras Exploration Inc. and Teck Cominco Ltd. of Canada; Shougang Corp. and Zijin Mining Group of China; Marubeni Corp., Mitsubishi Corp. and Mitsui & Co., Ltd. of Japan; SK Energy Co. Ltd. of the Republic of Korea; Peñoles S.A. of Mexico; Repsol YPF of Spain, and Xstrata plc of Switzerland; Anglo American, BHP Billiton, Gold Fields Ltd., and Inkoa Holdings Ltd. of the United Kingdom; and Hunt Oil Co. and Newmont Mining Corp. of the United States, among others (table 2; Ministerio de Energía y Minas, 2012a, p. 50–51; 2012b, p. 10–15; 2012c; ProInversión—Private Investment Promotion Agency in Peru, 2012; Perúpetro S.A., 2012).

Private domestic interests owned most of the medium- and small-sized mining operations. More than 300 foreign mining companies had been established in Peru since 1990. Crude oil was transported through the country's 1,754 kilometers (km) of pipeline; natural gas and natural gas liquids, through 983 km of dual pipeline; and refined products, through 13 km of pipeline. Ports that were important to the mineral industry included Callao, Chimbote, Ilo, Matarani, Paita, Puerto Maldonado, Salaverry, San Martín, San Nicolás, and Talara on the Pacific Ocean, and Iquitos Pucallpa and Yurimaguas on the Amazon River and its tributaries. Peru had an installed electricity-generating capacity of 5,050 megawatts (MW), about 90% of which was in hydroelectric plants. The country's energy mix, by source, was hydroelectric (79%), fossil fuel (20%), and others (1%) (Ministerio de Energía y Minas, 2012a, p. 82–83; 2012c; U.S. Central Intelligence Agency, 2012).

Mineral Trade

In 2011, Peru's exports amounted to about \$46.3 billion, which was 30.1% higher than the value of exports in 2010, and its imports amounted to more than \$37.0 billion, which was 28.3% higher than the value of imports in 2010. The country's total trade balance recorded a surplus of about \$9.3 billion compared with a surplus of \$6.8 billion in 2010. Peru's mining sector accounted for about \$27.4 billion of total export revenues in 2011 compared with almost \$21.7 billion of total export revenues in 2010. In 2011, Peru's petroleum and derivatives sector accounted for more than \$4.7 billion of total export revenues compared with \$3.1 billion of total export revenues in 2010. Crude oil and derivatives exports amounted to about \$3.4 billion, and natural gas exports accounted for about \$1.3 billion. Peru's imports of crude oil and lubricants amounted to more than \$5.7 billion in 2011 compared with about \$4.1 billion in 2010 (Banco Central de Reserva del Perú, 2012, p. 279–281; Ministerio de Energía y Minas, 2012a, p. 8–9).

China and the United States continued to be Peru's leading trading partners. The destination markets of Peruvian exports as a percentage of total exports were China (15.2%), the United States (13.2%), Switzerland (12.8%), Canada (9.1%), Japan (4.7%), Chile (4.3%), Germany (4.1%), and the Republic of Korea and Spain (3.7% each), among others. Peru's leading import partners were the United States (19.3%), China (16.4%), Brazil (6.4%), Ecuador (5.1%), Argentina (5%), Chile and the Republic of Korea (3.8 each %), and Japan (3.3%), among others. The United States, China, Brazil, Japan, and Chile, in order of the value of the commodities imported, were the main importers of gold, copper, and molybdenum. Peru sold about 11.3% of its exports to other members of the Mercado Común Andino (ANCOM), the members of which were Bolivia, Colombia, Ecuador, Peru, and Venezuela; about 3.3% to the Mercado Común del Cono Sur (MERCOSUR) member countries of Argentina, Brazil, Paraguay, and Uruguay and associate member countries Bolivia and Chile; and 18.6% to other Latin American countries (Banco Central de Reserva del Perú, 2012, p. 71; Ministerio de Energía y Minas, 2012a, p. 9–10).

Commodity Review

Metals

Copper.—Peru produced 1.1 million metric tons (Mt) of copper (Cu content) in 2011, which was almost the same amount as in 2010. With this level of production, the country remained the world's second ranked producer (after Chile), accounting for almost 8% of world production. The country's copper metal exports in 2011 totaled about 1.26 Mt and were valued at more than \$10.7 billion compared with 1.25 Mt valued at more than \$8.9 billion in 2010. This more than 20% increase in value compared with that of 2010 was owing to the increase in the price of copper to \$3.87 per pound in 2011 from \$3.21 per pound in 2010 (Banco Central de Reserva del Perú, 2012, p. 76, 279; Ministerio de Energía y Minas, 2012a, p. 21–22, 56).

Owing to China's demand for copper, Minera Chinalco Perú S.A. [a subsidiary of Aluminium Corp. of China (Chinalco)] was planning to develop the Toromocho copper deposit, which contains 1.4 billion metric tons (Gt) of proven and probable reserves at a grade of 0.71% copper equivalent, and to produce 275,000 metric tons per year (t/yr) of copper metal by 2013. Rio Blanco Copper S.A. (a subsidiary of Zijin Mining Group of China) was also planning to develop the Rio Blanco copper project, which is located in the Department of Piura and contains 1.3 Gt of proven and probable reserves at a grade of 0.57% copper equivalent, to produce 200,000 t/yr of copper metal by 2019 (Ministerio de Energía y Minas, 2012b, p. 50).

Planned investments in Peru of about \$53.8 billion included mineral projects with advanced exploration, feasibility studies, and expansion work. Almost 77% (\$41.3 billion) of the planned investments were for leading copper projects. Of these projects, those with feasibility studies included Minas Conga (\$4.8 billion), which is located in the Department of Cajamarca and owned by Minera Yanacocha S.R.L. of the United States, and Las Bambas (\$4.2 billion), which is located in the Department of Apurímac and owned by Xstrata Peru. Expansion projects

included that of the Cerro Verde mine (\$3.6 billion), which is located in the Department of Arequipa and owned by Sociedad Minera Cerro Verde S.A.A of the United States. Exploration projects included Haquira (\$2.8 billion), which is located in the Department of Apurimac and owned by Minera Antares Peru S.A.C. of Canada; Galeno (\$2.5 billion), which is located in the Department of Cajamarca and owned by Lumina Copper S.A.C. of China; and Los Calatos (\$2.2 billion), which is located in the Department of Moquegua and owned by Minera CN S.A.C. of Australia (Banco Central de Reserva del Perú, 2012, p. 31–33; Ministerio de Energía y Minas, 2012a, p. 78–80).

Gold.—The country produced 164 metric tons (t) of gold, which was almost the same amount as in 2010. Of this total gold output, large-, medium-, and small-scale producers reported about 141.5 t in 2011 compared with 145.1 t in 2010, which was a decrease of about 2.5%. An unknown number of gold placers and informal individual miners reported about 22.5 t in 2011 compared with almost 19 t in 2010, which was an increase of about 18.5%. Gold placers in Madre de Dios produced about 3.1 t in 2011 compared with 2.2 t in 2010. The decrease of formal gold producers was owing to lower metal content produced by Minera Yanacocha and Barrick Misquichilca. Peru's gold exports in 2011 totaled almost 200 t (6.4 million troy ounces) valued at more than \$10.1 billion compared with about 196 t (6.3 million troy ounces) valued at about \$7.8 billion in 2010; the increase in the export value was owing mainly to the increase in the price of gold to \$1,570 per troy ounce in 2011 from \$1,222 per troy ounce in 2010 (Banco Central de Reserva del Perú, 2012, p. 76, 279; Ministerio de Energía y Minas, 2012a, p. 21–22, 56).

Peru's planned investments of about \$3 billion were expected to include mineral projects with advanced exploration and environmental assessment work for gold, including the expansion at Lagunas Norte (\$400 million), which is located in the Department of La Libertad and owned by Minera Barrick Misquichilca S.A. of Canada; and the exploration projects at Minas Chucapapa (\$1.2 billion), which is located in the Department of Moquegua and owned by Canteras del Hallazgo S.A.C. of Australia, and Minas Chaquicocha (\$400 million), which is located in the Department of Cajamarca and owned by Minera Yanacocha S.R.L. of the United States, among others (Banco Central de Reserva del Perú, 2012, p. 31–33; Ministerio de Energía y Minas, 2012a, p. 78–80).

Iron Ore.—Shougang Hierro Perú S.A.A. (a subsidiary of China's Shougang Corp.) continued to be Peru's sole iron ore producer (output was exclusively from the Marcona iron ore mine in the Department of Ica). Mine output increased to more than 7.1 Mt of iron content in 2011 from more than 6.1 Mt in 2010, or by 16.4%, owing to increased imports by China. In 2011, iron ore exports increased to 9.2 Mt valued at \$1.02 billion in 2011 from 7.7 Mt valued at \$523 million in 2010, which was an increase in value of more than 95.6%. This increase in the value of iron ore was in response to higher prices (\$111.3 per metric ton in 2011 compared with \$67.6 per metric ton in 2010). In 2011, Peru's planned investments of about \$6.8 billion were expected to include such projects as Shougang's Marcona Mine expansion (\$1.2 billion) in the Department of Ica, which was to be initiated in 2012, and the following exploration projects: Pampa de Pongo (\$3.3 billion),

which is located in the Department of Arequipa and owned by Jinzhao Mining Peru S.A. of China and which was expected to be completed by 2015, and Hierro Apurimac (\$2.3 billion), which is located in the Department of Apurimac and owned by Apurimac Ferrum S.A. of Australia, and for which operations were planned to start by 2015 (Banco Central de Reserva del Perú, 2012, p. 35; Ministerio de Energía y Minas, 2012a, p. 78–80).

Lead, Silver, and Zinc.—The production of lead decreased by 12.1% to 230,172 t of contained lead in 2011 from a revised 261,990 t in 2010, mainly as a result of decreased production in El Brocal and the Volcan lead mines. Exports of metal lead amounted to 986,000 t valued at more than \$2.4 billion in 2011 compared with 770,000 t valued at about \$1.6 billion in 2010; prices increased to \$1.13 per pound in 2011 from \$0.930 per pound in 2010. The production of silver content in 2011 decreased by 6.2% to 3,414 t from 3,640 t in 2010. The export value of silver amounted to \$219 million in 2011 compared with \$118 million in 2010; prices increased to \$33.7 per troy ounce in 2011 from \$19.2 per troy ounce in 2010. Peru's zinc industry produced about 1.26 Mt of zinc in concentrates in 2011 compared with about 1.47 Mt in 2010, which was a decrease of 14.6%. The decrease was owing to lower ore grades and decreased output at the Antamina, the Brocal, the Caudalosa, and the Volcan zinc mines. The value of exports of zinc amounted to more than \$1.5 billion in 2011 compared with almost \$1.7 billion in 2010; prices increased to \$0.686 per pound in 2011 from \$0.585 per pound in 2010 (Banco Central de Reserva del Perú, 2012, p. 34–35, 76, 279; Ministerio de Energía y Minas, 2012a, p. 21, 30–38; 55–56).

Tin.—Production of tin from Minsur's San Rafael Mine, which is located in the Mariategui Region, was 28,882 t in concentrate in 2011 compared with 33,848 t in 2010. Minsur's tin smelting and refining operations, which were located in Pisco, south of Lima, produced 32,290 t of metal in 2010 compared with a revised 36,451 t in 2010. Production was continuing to decrease because of depleting reserves. Peru exported 28,800 t valued at \$755 million in 2011 compared with 33,500 t valued at \$663 million in 2010; prices increased to \$11.877 per pound in 2011 from \$8.977 per pound in 2010 (Banco Central de Reserva del Perú, 2012, p. 32, 76, 279; Ministerio de Energía y Minas, 2012a, p. 42, 55–56).

Industrial Minerals

Phosphate Rock.—In 2011, Vale inaugurated its fertilizer operation in Bayovar, Peru, which is located on one of the biggest phosphate rock deposits in South America. Cia. Minera Miski Mayo S.R.L. (CMM) of Brazil was planning a \$566 million expansion of its Bayovar open pit in Secura in the Department of Piura, which was to be completed in 2014. In 2011, CMM's phosphate deposits at the Bayovar project produced about 38,000 t of phosphate rock, which was about the same level as that of 2010. The 90,000-metric-ton-per-year (t/yr) fertilizer plant that was operated by CMM produced an estimated 17,100 t of phosphate rock (P₂O₅) in 2011. CMM's Bayovar open pit contained a reserve base of 240 Mt of phosphate rock and has a production capacity of 3.9 Mt/yr of

phosphate concentrate with a minimum grade of 30% P₂O₅, which would be used to produce fertilizers. In 2011, Vale continued exporting phosphate rock to Brazil, India, Mexico, and the United States (Ministerio de Energía y Minas, 2012a, p. 30; Vale S.A., 2012).

Mineral Fuels

Coal.—Peru's largest coal deposits are located at Alto Chicama in La Libertad Department. Other known coal deposits occur in the Cuenca del Santa in the Marañon Region and the coal basins of Goyllarisquiza and Hatun Huasi in the Caceres Region of central Peru. In 2011, Peru's recoverable coal reserves were estimated to be 1.1 billion metric tons (Gt), and coal production was 182,481 t compared with revised 120,952 t in 2010. The estimated consumption of coal was more than 1.3 million metric tons per year (Mt/yr) and imports were about 1.2 Mt/yr and came mostly from Colombia (tables 1, 3; Ministerio de Energía y Minas, 2012a, p. 30–31; U.S. Energy Information Administration, 2012b).

Natural Gas and Petroleum.—Peru's liquefied natural gas (LNG) project contained the most important resources of the country's future energy strategy. The Peruvian firm Perú LNG, S.R.L. and Hunt Oil operated the Camisea LNG Project, which was the largest infrastructure project in the country's history and which could position Peru as one of the world's leading producers of LNG. Hunt Oil was the majority partner and principal operator for the \$3.8 billion LNG project, and \$2.25 billion had been secured by Hunt Oil under its subsidiary Hunt Oil Peru S.A. (50%) and partners Repsol YPF, S.A. of Spain and SK Energy Co. Ltd. of the Republic of Korea (20% each), and Marubeni Corp. of Japan (10%). The project included the construction of an LNG plant located about 170 kilometers (km) south of Lima, along with a 408-km pipeline over the Andean Mountains and a marine terminal located in Pampa Melchorita near Ica City. The LNG plant had the capacity to process about 19.2 billion cubic meters (677,000 million cubic feet) per day and to produce about 4.5 Mt/yr of LNG. Perú LNG contracted Repsol Comercializador de Gas S.A. to export LNG to North America and other markets worldwide (Hunt Oil Co., 2012; Perú LNG, S.R.L., 2012; ProInversión—Private Investment Promotion Agency in Peru, 2012).

In 2011, Peru's recoverable (proven and probable) and possible resources of crude oil were estimated to be 3.1 billion barrels (Gbb); of LNG, 1.6 Gbb; and of natural gas, 823 billion cubic meters. The gasfields with the largest reserves were the Aguaytia, which is located about 41 km west-northwest of Pucallpa, Ucayali Department, and had proven reserves of 8.5 billion cubic meters of gas and 9 Mbb of natural gas liquids (NGL) and the Camisea gasfields in the Ucayali Basin, Cusco Department, which had proven reserves of 250 billion cubic meters of gas and 411 Mbb of NGL. Natural gas production increased to 10,429 million cubic meters in 2011 from a revised 7,235 million cubic meters in 2010. Pluspetrol S.A. of Argentina remained the leading producer in Peru, accounting for 77.7% of the domestic production, followed by Aguaytia S.A. of Peru (11.0%), Petróleo Brasileiro S.A. (Petrobrás) of Brazil (5.5%),

and others (5.8%) (Ministerio de Energía y Minas, 2012c; U.S. Energy Information Administration, 2012a, b).

The Camisea Project, which is located in the Ucayali Basin in the Department of Cusco, is divided into three segments—the Upstream segment, the Transportation segment, and the Distribution segment. Pluspetrol was planning to invest about \$3 billion in Camisea's natural gas project by 2013 (Ministerio de Energía y Minas, 2012c).

Peru's crude oil production decreased to about 69,600 barrels per day (bbl/d) from about 92,500 bbl/d in 2010. Production of petroleum derivatives decreased to about 202,810 bbl/d from a revised 204,440 bbl/d in 2010. Peru imported an average of 99,500 bbl/d of crude oil and petroleum products to satisfy its internal consumption of 157,000 bbl/d. Peru's total crude oil production of 25.4 Mbb in 2011 came from Pluspetrol (42%), Petrobrás (19%), Petrotech (16%), and others (25%) (table 1; Banco Central de Reserva del Perú, 2012, p. 34–36; Ministerio de Energía y Minas, 2012c; U.S. Energy Information Administration, 2012a, b).

The largest oil refinery in Peru continued to be La Pampilla, which had a designed capacity of about 110,000 bbl/d. The oil refinery with the second largest capacity was Talara, which had a designed capacity of about 62,000 bbl/d. The country's other refineries had the following designed capacities: Conchan, 15,500 bbl/d; Iquitos, 10,500 bbl/d; Pucallpa, 3,300 bbl/d; and El Milagro, 1,700 bbl/d. Pluspetrol was planning to build the 5,200-bbl/d-capacity Shiviayacu petroleum refinery, which would be located in the Department of Loreto, by 2013. In 2011, refinery production came from La Pampilla (43.3%), Talara (35.2%), Conchan (15.0%), Iquitos (4.6%), Pucallpa (1.0%), and Milagro (0.9%) (Ministerio de Energía y Minas, 2012c).

Reserves and Resources

Table 3 lists Peru's reserves of major minerals, such as copper, gold, iron ore, lead, molybdenum, silver, and zinc, as of about January 1, 2012. Data are shown in terms of metal contained in ore for the base and precious metals or recoverable quantities of other mineral commodities, which included industrial minerals and mineral fuels. These mineral reserves represent “proven” (measured) and “probable” (indicated) categories and exclude quantities reported as “possible” (inferred). Reserves were defined as being well delineated and economically recoverable volumes of crude oil and natural gas from wells and minable ore from mines committed to production (U.S. Bureau of Mines and U.S. Geological Survey, 1980; Ministerio de Energía y Minas, 2012a, p. 48).

Outlook

Despite such external factors as economic uncertainty in Europe and the Americas, and reduced growth in China have led to a global economic slowdown. Peru, however, according to ProInversión, 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. In 2011, in response to a more favorable international environment

and a domestic market driven by private investors' optimistic expectations, the mineral sector's contribution to the GDP of Peru was significant. The mineral sector (metals, industrial minerals, and fuels) is expected to continue to attract capital flows (2012 through 2016). Increased demand for copper, gold, iron ore, and silver, and increased metal prices are likely to encourage mining companies to invest in expanding and modernizing their operations. Camisea's LNG exports to China, the member countries of the MERCOSUR, and the signatories to the North America Free Trade Agreement (Canada, Mexico, and the United States), as well as to other markets are expected to lead to increased mineral commodity exports. Thus, Peru's LNG industry and the income that it is expected to generate could provide for development and growth of the country's economy for decades to come (Ministerio de Energía y Minas, 2012a, p. 51, 2012d; ProInversión—Private Investment Promotion Agency in Peru, 2012). According to the Anuario Minero 2011, most of the companies operating in Peru are from Australia, Brazil, Canada, China, the European Union, Mexico, Switzerland, and the United States. Peru's legal framework is expected to continue to be favorable to foreign investments in the fields of energy, mining, and related industries. The inflow of long-term private capital to the mineral sector, which amounted to nearly \$53.4 billion in 2011, is projected to increase to \$60 billion during 2012 and 2013 (Banco Central de Reserva del Perú, 2012, p. 34–35; Ministerio de Energía y Minas, 2012a, p. 78–80; ProInversión—Private Investment Promotion Agency in Peru, 2012).

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TABLE 1
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011 ^P
METALS					
Antimony, metal	590	531	145	--	--
Arsenic, white ²	4,321	4,822	301	--	--
Bismuth, metal	1,114	1,061	423	--	--
Cadmium, metal	347	371	289	357	572
Copper:					
Mine output, Cu content	1,018,155	1,107,789	1,113,454	1,094,123 ^r	1,094,971
Metal:					
Smelter	236,809	306,584	325,788	312,968	299,004
Refined, primary:					
Electrowon	172,118	160,078	162,795	153,022 ^r	140,341
Electrolytic	237,719	303,855	260,618	240,616 ^r	227,320
Total	409,837	463,933	423,413	393,638 ^r	367,661
Gold: ³					
Mines kilograms	153,863	163,162	166,780	145,109	141,519
Placers do.	16,373	16,708	17,215	18,975	22,490
Total do.	170,236	179,870	183,995	164,084	164,009
Indium do.	5,000	6,000	2,000	--	2,000
Iron and steel:					
Iron ore and concentrate:					
Gross weight thousand metric tons	7,614	7,823	6,698	9,160 ^r	10,626
Fe content do.	5,186	5,244	4,490	6,140 ^r	7,123
Metal: ^e					
Pig iron do.	330	330	330	330	330
Sponge iron do.	80	80	80	80	80
Ferrosilicon	600	600	600	600	600
Steel:					
Crude	750,000	750,000	750,000	750,000	750,000
Ingots and castings thousand metric tons	510	510	510	510	510
Semimanufactures	250	250	250	250	250
Lead:					
Mine output, Pb content	329,165	345,109	302,459	261,990 ^r	230,172
Metal	116,774	114,259	26,599	23,040 ^r	20,242
Manganese, mine output, Mn content ^e	200	200	200	200	200
Molybdenum, mine output, Mo content	16,787	16,721	12,297	16,963	19,141
Selenium, metal, refined kilograms	60,000	60,000 ^e	61,000	59,000	54,000
Silver:					
Mine output, Ag content	3,501	3,686	3,923	3,640	3,414
Metal, refined	1,203	1,190	445	156	171
Tellurium, metal kilograms	35,000	28,000	7,000	--	--
Tin:					
Mine output, Sn content	39,019	39,037	37,503	33,848	28,882
Metal ^d	36,004	38,865	34,388	36,451	32,290
Tungsten, metal ⁵	366	456	634	716	548
Zinc:					
Mine output, Zn content	1,444,381	1,602,597	1,512,931	1,470,450	1,256,383
Metal	162,375	190,324	149,494	223,112	313,714
INDUSTRIAL MINERALS					
Barite	27,368	45,199	27,881	52,275 ^r	86,790
Boron materials, crude (borates)	233,991	349,891	187,221	292,855 ^r	--
Cement, hydraulic thousand metric tons	6,208	6,862	8,100	8,100	8,100
Chalk	334,688	463,134 ^r	321,012	325,000	322,000

See footnotes at end of table.

TABLE 1—Continued
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011 ^P
INDUSTRIAL MINERALS—Continued					
Clays:					
Bentonite	21,451	31,557	119,452	44,266 ^r	27,534
Fire clay ^c	6,000	6,000	6,000	6,000	6,000
Kaolin	4,772	13,215	9,655	16,678 ^r	18,169
Common clay	2,183,804	1,720,894 ^r	2,048,130 ^r	1,120,043 ^r	1,021,502
Diatomite	21,603	12,206	9,946	10,500	10,100
Feldspar	15,450	13,333	5,154	3,589 ^r	11,645
Gypsum, crude	334,688	335,000 ^e	335,000	321,012	331,000
Lime ^c	216,000	216,000	216,000	216,000	216,000
Nitrogen, N content of ammonia ^c	5,000	5,000	5,000	5,000	5,000
Phosphate rock:^c					
Crude, gross weight	38,000	38,000	38,000	38,000	38,000
P ₂ O ₅ content	17,100	17,100	17,100	17,100	17,100
Salt, all types	1,185,273	1,276,271	1,567,279	1,570,000	1,565,000
Stone, sand and gravel:					
Stone:^c					
Dolomite	645	645	645	645	645
Flagstone	300,000	300,000	300,000	300,000	300,000
Granite	2,000	2,000	2,000	2,000	2,000
Limestone ⁶	thousand metric tons	9,610	10,365 ^r	10,304	11,528 ^r
Marbel ⁶		24,513	596 ^r	338	--
Onyx		150	150	150	150
Quartz and quartzite (crushed)		40,000	123,542	124,000 ^e	124,000
Shell, marl		4,000	6,210	6,200	6,200
Slate		10,844	42,436	16,440	16,500 ^e
Travertine ⁶		284,755	231,924 ^r	97,937 ^r	105,392 ^r
Sand and gravel:					
Stone (construction)	thousand metric tons	2,659	5,827 ^r	5,541 ^r	4,613 ^r
Sand	do.	2,248	2,892 ^r	2,908 ^r	1,909 ^r
Sulfur, elemental:^c					
Native		100	100	100	100
Byproduct of metallurgy		204,000	204,000	204,000	204,000
Sulfuric acid, gross weight		623,000	623,000	623,000	623,000
Talc		23,096	18,003 ^r	13,359	19,767 ^r
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite, run-of-mine		227,088	65,038	66,244	63,381 ^r
Bituminous, run-of-mine		52,050	65,649	75,845	57,571 ^r
Total		279,138	130,687	142,089	120,952 ^r
Coke, all types ^c		10,000	10,000	10,000	10,000
Natural gas:					
Gross	million cubic meters	2,676	3,387	3,545 ^r	7,235 ^r
Marketed	do.	1,512	1,750	2,003	2,251
Natural gas liquids	thousand 42-gallon barrels	14,391 ^r	16,671 ^r	27,550 ^r	30,963

See footnotes at end of table.

TABLE 1—Continued
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011 ^P	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude	thousand 42-gallon barrels	28,146	28,027	25,927	33,759	25,387
Refinery products:						
Liquefied petroleum gas	do.	2,363	2,468	2,177 ^r	2,424	2,221
Gasoline, motor	do.	13,948	13,355	14,713 ^r	15,185	14,037
Jet fuel	do.	4,144	4,416	4,703 ^r	5,290	5,200
Kerosene	do.	818	598	338 ^r	80	64
Distillate fuel oil	do.	19,018	19,519	25,819 ^r	24,606	30,979
Lubricants	do.	406	326	331 ^r	315	281
Residual fuel oil	do.	14,669	13,874	10,263 ^r	10,124	9,207
Asphalt	do.	930	1,113	1,663 ^r	1,841	1,436
Other ⁷	do.	6,701	7,532	9,689 ^r	14,755	10,601
Total	do.	62,997	63,201	69,696 ^r	74,620	74,026

⁶Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^PPreliminary. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through November 30, 2012.

²Output reported by Doe Run Resources Corp.

³Peru's placer gold production was reported.

⁴Output reported by Minsur S.A.'s smelter.

⁵Reported figure. Source: Malaga Inc.

⁶Reported figure. Source: Ministerio de Energía y Minas del Perú.

⁷Includes refinery fuel and losses.

TABLE 2
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Antimony	metric tons	Doe Run Resources Corp. (private, 100%)	Smelter at La Oroya, Junin Department	700
Barite		Barmine S.A. (private, 100%)	Santa Cruz de Cocachacra, Huarochiri, Lima Department	NA
Bentonite		Minerales Andinos S.A. (NL Industries Co., 90%)	Vichayal Mine, Piura Department	9
Bismuth	metric tons	Doe Run Resources Corp. (private, 100%)	Refinery at La Oroya, Junin Department	1,000
Cement		Cementos Lima S.A. (private, 100%)	Atocongo Plant, Lima Department	3,500
Do.		Cementos Pacasmayo S.A.A. (private, 100%)	Pacasmayo Plant, La Libertad Department	1,000
Do.		Cemento Andino S.A. (private, 100%)	East Lima Plant, Lima Department	800
Do.		Cementos Yura S.A. (private, 100%)	Yura Plant, Arequipa Department	300
Do.		Cementos Sur S.A. (private, 100%)	Arequipa Plant, Arequipa Department	200
Copper		Southern Copper Corp. (SPCC) (Grupo Mexico, S.A. de C.V., 54.2%; Marmon Corp., 14.2%; Phelps Dodge Overseas Capital Corp., 14%; others, 17.6%)	Cuajone Mine, Moquegua Department	200
Do.		do.	Toquepala Mine, Tacna Department	170
Do.		do.	Cocotea, Simarrona, and Totoral Mines—electrowon, Tacna Department	60
Do.		do.	Smelter at Ilo, Moquegua Department	320
Do.		do.	Refinery at Ilo, Moquegua Department	300
Do.		Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc, 33.75%; Xstrata Copper, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Department	350
Do.		do.	Antamina concentrator, Ancash Department	1,500
Do.		Doe Run Peru S.R. Ltda. (private, 100%)	Cobriza, Huancavelica Department	70
Do.		do.	Smelter at La Oroya, Junin Department	65
Do.		do.	Refinery at La Oroya, Junin Department	60
Do.		Compañía Minera Atacocha S.A. (private, 100%)	Yanacancha Mine, Junin Department	30
Do.		Compañía Minera Condestable S.A. (private, 100%)	Condestable Mine, Junin Department	20
Do.		Glencore International AG (private, 100%)	Casapalca, Lima Department	60
Do.		Volcan Compañía Minera S.A.A. (private, 100%)	San Cristobal, Mahr Tunnel, and Andaychagua, Junin Department	60
Do.		Cía. Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	60
Do.		Xstrata Tintaya S.A. (Xstrata plc, 100%)	Tintaya Mine, Cusco Department	120
Do.		Sociedad Minera Cerro Verde S.A.A. (Freeport-McMoRan Copper and Gold Inc., 53.6%; Sumitomo Corp. and Sumitomo Metal Mining Co. Ltd., 21%; Compañía de Minas Buenaventura S.A.A., 18.5%; others, 6.9%)	Cerro Verde, Arequipa Department	270
Do.		do.	Electrowon plant at Cerro Verde, Arequipa Department	90
Dolomite		Minera Baribent S.A. (private, 100%)	Esperanza, Ancash Department	25
Gold	kilograms	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, La Quinua, and Maqui-Maqui Mines, Cajamarca Department	110,000
Do.	do.	Minera Barrick Misquichilca S.A. (Barrick Gold Corp., 100%)	Pierina, Cajamarca Department	40,000
Do.	do.	Compañía Minera Poderosa S.A. (private, 100%)	Poderosa, La Libertad Department	2,000
Do.	do.	Compañía de Minas Buenaventura S.A.A. (private, 100%)	Oropampa, Arequipa Department	5,000
Do.	do.	Minas Arirahua S.A. (private, 100%)	Arirahua, La Libertad Department	2,000
Do.	do.	Asesoría Contable Minera S.A. (private, 100%)	Ocoña, Santa Clarita, Explorator, and Molino de Oro, Arequipa Department	1,000

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold— Continued	kilograms	Cía. Aurífera Río Inambari S.A. (Cía. Minera del Sur S.A., 84%, and Aurífera Claudia, 16%)	Río Caichive, Madre de Dios Department	200
Do.	do.	Minera Aurífera Retamas S.A. (private, 100%)	Retamas, La Libertad Department	5,500
Do.	do.	Consortio Minero Horizonte S.A. (private, 100%)	Parcoy, La Libertad Department	4,000
Do.	do.	Compañía Minera Sipán S.A.C. (private, 100%)	Sipan, Inca, La Libertad Department	4,800
Do.	do.	Compañía Minera Ares S.A.C. (private, 100%)	Ares, La Libertad Department	6,500
Do.	do.	Cía. Minera Aurífera Santa Rosa S.A. (private, 100%)	Santa Rosa, Puno Department	5,000
Do.	do.	Aruntani S.A.C (private, 100%)	Florencia and Santa Rosa Mines, Moquegua Department	6,500
Iron ore		Shougang Hierro Perú S.A.A. (Shougang Corp., 100%)	Marcona, Ica Department	13,000
Lead		Doe Run Peru S.R. Ltda. (private, 100%)	Smelter at La Oroya, Junin Department	150
Do.	do.	do.	Refinery at La Oroya, Junin Department	125
Do.		Empresa Minera Los Quenuales S.A.	Izcaycruz, Lima Department	10
Do.	do.	do.	Yauliyacu, Lima Department	15
Do.		Volcan Compañía Minera S.A.A. (private, 100%)	San Cristobal, Mahr Tunel, and Andaychagua, Junin Department	70
Do.	do.	do.	Paragsha, Cerro de Pasco Department	85
Do.		Compañía Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	5
Do.		Compañía Minera Atacocha S.A. (private, 100%)	Yanacancha Mine, Junin Department	40
Do.		Compañía Minera Milpo S.A. (private, 100%)	El Porvenir Mine, Cerro de Pasco Department	25
Do.		Compañía Minera Santa Luisa S.A. (private, 100%)	Huanzala Mine, Junin Department	40
Do.		Sociedad Minera El Brocal S.A.A. (private, 100%)	Colquijirca Mines, Cerro de Pasco Department	30
Do.		Corp. Minera Nor Perú S.A. (Pan American Silver Corp., 100%)	Quiruvilca, La Libertad Department	10
Molybdenum		Southern Copper Corp. (SPCC) (Grupo Mexico, S.A. de C.V., 54.2%; Marmon Corp., 14.2%; Phelps Dodge Overseas Capital Corp., 14%; others, 17.6%)	Cuajone, Moquegua Department and Toquepala, Tacna Department	NA
Do.		Sociedad Minera Cerro Verde S.A.A. (Freeport-McMoRan Copper and Gold Inc., 53.6%; Sumitomo Corp. and Sumitomo Metal Mining Co. Ltd., 21%; Compañía de Minas Buenaventura S.A.A., 18.5%; others, 6.9%)	Cerro Verde, Arequipa Department	2
Natural gas	million cubic meters per day	Pluspetrol Perú Corp. S.A. (Pluspetrol S.A., 36%; Hunt Oil Co., 36%; SK Corp., 18%; Tecpetrol del Perú S.A.C., 10%)	Camisea gas deposit, Cusco Department	NA
Do.	do.	Petrotech del Perú S.A. (Petroperú S.A., 100%)	Pucallpa, Loreto Department	120
Do.	do.	Aguaytia S.A. (Petroperú S.A., 100%)	Aguaytia gas deposit, Ucayali Department	80
Do.	do.	Pluspetrol S.A. (private, 100%)	Pucallpa, Loreto Department	60
Petroleum, crude	42-gallon barrels per day	Petrotech del Perú S.A. (Perupetro, 100%)	Onshore Piura Department; northeast and central jungle areas, Loreto Department	68,000
Do.	do.	Petróleo Brasileiro S.A. (Perupetro, 100%)	Pacific Coast, offshore Piura Department	30,000
Do.	do.	Pluspetrol S.A. (private, 100%)	Northeastern jungle, Loreto Department	90,000
Do.	do.	Occidental Petroleum Corp. (private, 100%)	Block 1–AB, northern jungle, Loreto Department	28,000
Petroleum products	do.	Refinería La Pampilla S.A. (RELAPASA)	La Pampilla refinery, Lima Department	110,000
Do.	do.	Petroperú S.A.	Talara refineries, Piura Department	62,000
Do.	do.	do.	Conchan refinery, Lima Department	15,500
Do.	do.	do.	Iquitos refinery, Loreto Department	10,500
Do.	do.	do.	Pucallpa refinery, Ucayali Department	3,300
Do.	do.	do.	El Milagro refinery, Amazonas Department	1,700
Do.	do.	Pluspetrol Norte S.A.	Shiviyacu refinery, Loreto Department	5,200

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Phosphate rock	metric tons	Cía. Minera Miski Mayo S.A.C. (CMM) (Vale S.A., 100%)	Bayovar phosphate mine, Piura Department	90
Silica sand		Minera Baribent S.A. (private, 100%)	Maria and Martin Mines, Junin Department	27
Silver	kilograms	Empresa Minera Los Quenuales S.A.	Yauliyacu, Lima Department	150,000
Do.	do.	do.	Izcaycruz, Lima Department	20,000
Do.	do.	Doe Run Peru S.R.Ltda. (private, 100%)	Refinery at La Oroya	1,100,000
Do.	do.	Co. Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	46,500
Do.	do.	Compañía de Minas Buenaventura S.A.A. (private, 83%, and Centromin Perú S.A., 17%)	Julcani and Huachocolpa Mines, Huancavelica Department, and Uchucchacua Mine, Lima Department	350,000
Do.	do.	Compañía de Minas Buenaventura S.A.A. (private, 100%)	Orcopampa Mine, Arequipa Department	161,000
Do.	do.	Volcan Compañía Minera S.A.A. (private, 100%)	San Cristobal, Mahr Tunel, and Andaychagua, Junin Department	350,000
Do.	do.	Sociedad Minera Corona S.A. (private, 100%)	Hualgayoc, Cajamarca Department	175,000
Do.	do.	Compañía Minas Arcata S.A. (private, 100%)	Arcata, Arequipa Department	170,000
Do.	do.	Southern Copper Corp. (SPCC) (Grupo Mexico, S.A. de C.V., 54.2%; Marmon Corp., 14.2%; Phelps Dodge Overseas Capital Corp., 14%; others, 17.6%)	Ilo smelting and refining, Moquegua Department	150,000
Do.	do.	Compañía Minera Santa Luisa S.A. (private, 100%)	Huanzala Mine, Junin Department	53,000
Do.	do.	Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc, 33.75%; Noranda Inc., 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Department	340,000
Do.	do.	Aruntani S.A.C (private, 100%)	Florencia and Santa Rosa Mines, Moquegua Department	14,500
Do.	do.	Compañía Minera Raura S.A. (private, 100%)	Raura, Lima Department	54,000
Do.	do.	Compañía Minera Milpo S.A. (private, 100%)	Yanacancha, Cerro de Pasco Department	110,000
Do.	do.	Compañía Minera Atacocha S.A. (private, 100%)	Yanacancha Mine, Junin Department	130,000
Do.	do.	Sociedad Minera El Brocal S.A.A. (private, 100%)	San Gregorio Mine, Cerro de Pasco Department	110,000
Do.	do.	Corp. Minera Nor Perú S.A. (Pan American Silver Corp., 100%)	Quiruvilca, La Libertad Department	125,000
Steel		Sider Corp. S.A. (Acerco S.A., 49.4%; Grupo Wiese, 49.4%; others, 1.2%)	Chimbote, Ancash Department	550
Do.		Empresa Laminadora del Pacifico S.A. (Acero Arequipa S.A., 100%)	Pisco, Ica Department	180
Tellurium	metric tons	Doe Run Peru S.R. Ltda. (private, 100%)	Refinery at La Oroya	12
Tin	do.	Minsur S.A. (private 100%)	San Rafael Mine and plant, Puno Department	50,000
Do.	do.	do.	Pisco smelting and refining, Ica Department	45,000
Tungsten	do.	Minera Regina S.A. (private, 100%)	Palca XI, Puno Department	1,400
Do.	do.	Fermin Málaga Santolalla S.A. (private, 100%)	Pasto Bueno, Ancash Department	1,000
Zinc		Volcan Compañía Minera S.A.A. (private, 100%)	Cerro de Pasco, Cerro de Pasco Department; San Cristobal, Mahr Tunel, and Andaychagua, Junin Department	320
Do.		Compañía Minera Antamina S.A. (CMA) (BHP Billiton plc, 33.75%; Xstrata Copper, 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Department	325
Do.	do.	do.	Antamina concentrator, Ancash Department	1,500
Do.		Empresa Minera Los Quenuales S.A.	Pachangara, Lima Department	200
Do.	do.	do.	Izcaycruz, Lima Department	40

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Zinc—Continued	Compañía Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	80
Do.	do.	San Vicente Mine, Junin Department	70
Do.	Doe Run Peru S.R. Ltda. (private, 100%)	Refinery at La Oroya	70
Do.	Votorantim Metais - Cajamarquilla S.A. (Grupo Votorantim Metais S.A., 99%, and employees, 1%)	Refinery at Cajamarquilla, Lima Department	130
Do.	Compañía Minera Atacocha S.A. (private, 100%)	Yanacancha Mine, Junin Department	60
Do.	Compañía Minera Raura S.A. (private, 100%)	Raura, Lima Department	45
Do.	Corp. Minera Nor Perú S.A. (Pan American Silver Corp., 100%)	Quiruvilca, La Libertad Department	25
Do.	Compañía Minera Santa Luisa S.A. (private, 100%)	Huanzalá Mine, Junin Department	50
Do.	Compañía Minera Milpo S.A. (private, 100%)	Yanacancha, Cerro de Pasco Department	80
Do.	Sociedad Minera El Brocal S.A.A. (private, 100%)	Colquijirca Mines, Cerro de Pasco Department	60
Do.	Empresa Administradora Chungar S.A.C. (private, 100%)	Animon Mine, Cerro de Pasco Department	60

Do., do. Ditto. NA Not available.

TABLE 3
PERU: RESERVES OF MAJOR MINERALS IN 2011¹

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Coal, all types	1,100,000
Copper	90,000
Gold	metric tons 2,762 ²
Iron ore	10,853
Lead	9,106
Molybdenum	450 ^e
Natural gas	billion cubic meters 823
Natural gas liquids	million barrels 1,550
Petroleum crude	billion barrels 3,055
Phosphate rock	820
Salt	100,000 ^e
Silver	metric tons 120,000
Sulfur	150,000 ^e
Tin	160
Uranium	100 ³
Zinc	25,137

^eEstimated; estimated data are rounded to no more than three significant digits.

¹Proven reserves.

²Excludes metal in placer deposits.

³Recoverable at prices of \$100 or less per kilogram of uranium.

Sources:

2011 and 2012 “Anuario de la Minería del Perú” Ministerio de Energía y Minas, BP Statistical Review of World Energy, June 2012; Perúpetro S.A., 2012; U.S. Energy Information Administration, 2012.