



# 2010 Minerals Yearbook

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PERU [ADVANCE RELEASE]

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# THE MINERAL INDUSTRY OF PERU

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In 2010, Peru occupied a leading position in the global production of the following mineral commodities: arsenic trioxide (fourth after China, Chile, and Morocco), bismuth (third after China and Mexico), copper (second after Chile), gold (sixth after China, Australia, South Africa, the United States, and Russia), lead (fourth after China, Australia, and the United States), molybdenum (fourth after China, the United States, and Chile), rhenium (fourth after Chile, Kazakhstan, and the United States), silver (first followed by China and Mexico), tin (third after China and Indonesia), and zinc (second after China). In Latin America, Peru was first in the production of bismuth, gold, lead, silver, tellurium, tin, and zinc, and second in the production of cadmium, copper, molybdenum, and selenium (Brooks, 2011a, b; Carlin, 2011a, b; Edelstein, 2011; George, 2011; Guberman, 2011; Ministerio de Energía y Minas, 2011a, p. 20–21; Polyak, 2011a, b; Tolcin, 2011).

Peru's gross domestic product (GDP) based on purchasing power parity increased to \$275.7 billion in 2010 from \$253.4 billion in 2009. As it recovered from the weak economic cycle of 2009, Peru's GDP grew at a rate of 8.8% compared with 0.9% in 2009. Peru's net monetary international reserves increased to \$44.1 billion compared with \$33.1 billion in 2009. Exports exceeded imports by \$6.8 billion. According to registered statements submitted by companies and investors to ProInversión (as required by Article 19 of Legislative Decree No. 662) Peru's foreign direct investment (FDI) reached \$20.8 billion in 2010 compared with a revised \$19.4 billion in 2009, which represented an increase of 7.2%. This FDI provided Peru with additional benefits, such as technology transfer and management expertise. The main sources of private investment to Peru were Spain (\$4.6 billion), the United States (\$3.0 billion), South Africa (\$2.0 billion), Chile (\$1.6 billion), Brazil (\$1.2 billion), and the United Kingdom (\$1.1 billion), among others. The mining sector received the largest share of FDI (\$4.8 billion, or more than 23.1%). Much of the investment was made in the past 5 years through the implementation of various projects. The major mining companies active in Peru, in terms of amount invested in new mine projects, were Anglo American Quellaveco S.A. (a subsidiary of Anglo American plc. of the United Kingdom); Compañía Minera Antamina S.A. (a subsidiary of BHP Billiton Ltd. of Australia, 33.75%; Xstrata Copper of Switzerland, 33.75%; Teck Cominco Ltd. of Canada, 22.5%; and Mitsubishi Corp. of Japan, 10%); Gold Fields La Cima S.A. (a subsidiary of Gold Fields Ltd. of Australia); Minera Yanacocha S.R.L. (a subsidiary of Newmont Mining Corp. of the United States and Compañía de Minas Buenaventura S.A.A. of Peru); Sociedad Minera Cerro Verde S.A.A. (a subsidiary of Freeport-MacMoran Copper of the United States); Southern Peru Copper Corp. (a subsidiary of Grupo Mexico, S.A. de C.V.); Votorantim Metais Cajamarquilla S.A.; and Xstrata Tintaya S.A. (a subsidiary of Xstrata plc of Switzerland). Investments in the Peruvian mining sector,

of more than \$50 billion, were announced for the coming years (2011 through 2015). In 2010, FDI in the energy sector amounted to \$2.8 billion and that in the hydrocarbons sector was \$0.5 billion whereas the communications and financial sectors received \$3.8 billion and \$3.1 billion, respectively (Banco Central de Reserva del Perú, 2011, p. 17; Luna, 2011, p. 3, 30; Ministerio de Energía y Minas, 2011a, p. 44–47; ProInversión—Private Investment Promotion Agency in Peru, 2011).

In 2010, mining companies committed to invest \$20.7 billion in 23 exploration projects. Among these companies, Jinzhao Mining Perú S.A. (a subsidiary of Nanjinzhaogroup Co. Ltd., Zibo of China) committed to invest \$3.3 billion in the Pampa de Pongo iron project, which is located in the Arequipa Region and was to start operations by 2012; Minmetals/Jiangxi Copper of China (\$2.5 billion) would 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) planned to define the Apurimac iron project, which is located in the Apurimac Region and was to start operations in the near future; and Minera CN S.A.C. (a subsidiary of Metminco Ltd. of Australia) (\$2.2 billion) planned to define the Los Calatos copper-molybdenum project, which is located in the Moquegua Region and was to start operations in the near future (Luna, 2011, p. 40, 42; Ministerio de Energía y Minas, 2011a, p. 48).

The country had 11 mine projects that had approved environmental impact assessments (EIA) and were under construction. A total investment of \$16.6 billion had been committed for these projects. Among the investors, Xstrata Perú S.A. (a subsidiary of Xstrata Copper of Switzerland) had 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 had 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. had 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) had 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 (Luna, 2011, p. 42–43; Ministerio de Energía y Minas, 2011a, p. 47).

Eight operating mines were in the expansion process, and a total investment of \$5.1 billion had been committed for these expansions of existing operations. Among the operating companies involved, Compañía Minera Antamina had 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 had 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 had 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 (Luna, 2011, p. 46; Ministerio de Energía y Minas, 2011a, p. 48).

The stability of the Peruvian judicial framework was fundamental to encouraging investment in the mining sector. The total committed investment in the mining sector for the period 2011 through 2016 was \$42.5 billion, of which the leading countries and investors were China (\$10.4 billion), Switzerland (\$5.7 billion), the United States (\$5.6 billion), Canada (\$5.5 billion), the United Kingdom (\$4.7 billion), Australia (\$4.5 billion), and Mexico (\$2.8 billion), among others (Luna, 2011, p. 42–44; Ministerio de Energía y Minas, 2011a, p. 48–49).

Private investment in Peru continued to increase owing to the country's macroeconomic stability and the involvement of operating companies with the communities where they operate. Also, foreign investment in the mineral sector continued to be strong because the country's legal framework with respect to the mineral industry was investor friendly and because the country continued to have positive economic growth (Ministerio de Energía y Minas, 2011c).

In 2010, investments in the mining sector increased by 47% and amounted to \$3.7 billion. Major capital investments included Xstrata Tintaya's investment in the Antapaccay copper project in Cusco Region; Antamina's investment to increase the installed capacity of its concentrator plant by 20,000 metric tons per day (t/d); Yanacocha's investment in the engineering and design of the Minas Conga project, the expansion of the lixiviation areas in Chaupiloma Sur, and the construction of a central supply warehouse; and Southern Peru's investment to modernize and expand its facilities in Cuajone and Toquepala (table 2; Ministerio de Energía y Minas, 2011a, p. 50–51; 2011c–e; ProInversión—Private Investment Promotion Agency in Peru, 2011).

Petróleos del Perú S.A. (Petroperú), which was a state-owned company, was involved in the transportation, refining, and marketing of refined products and other derivatives of petroleum. Petroperú was excluded from the privatization process but was authorized to participate in the exploration for and production of hydrocarbons under law No. 28244 of June 2, 2004. The state 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 Petroperú must compete with the private sector (Ministerio de Energía y Minas, 2011c, d).

In 2010, Perúpetro attracted investment of about \$3.3 billion to the hydrocarbon sector. The Camisea Natural Gas Project received an investment of \$1.3 billion, and investment in Camisea was expected to increase to \$3.0 billion by 2013. PERU LNG, which was Camisea's liquid natural gas (LNG) project, was a partnership of Hunt Oil Co. of Dallas, Texas (50%), Repsol YPF, S.A. of Spain and SK Energy Co. Ltd. of the Republic of Korea (20% each), and Marubeni Corp. of Japan (10%). Construction of the PERU LNG plant, which would have

the capacity to produce 4.4 million metric tons per year (Mt/yr) of LNG, continued on schedule, with initial delivery of LNG projected for mid-2012. The total project cost was estimated to be about \$3.8 billion, which included financing costs (Camisea Project, 2011; ProInversión—Private Investment Promotion Agency in Peru, 2011).

## Minerals in the National Economy

The combined value of the mining and hydrocarbon sectors decreased by 0.1% in 2010 compared with a small increase of 0.6% in 2009. The decrease reflected the lower rates of extraction of precious metals (gold and silver) and base metals (copper, lead, and zinc), plus tin, although it was partially offset by increased production of iron and molybdenum in response to the growing demand of Asian markets. Consequently, production in the mining sector decreased by 4.9% but was offset by increased production in the hydrocarbon sector of 29.5% compared with an increase of 16.1% in 2009. For the decade 2001 through 2010, annual growth for the two sectors combined averaged 5.3%. The mineral sector employed 135,673 people in 2010 compared with 125,603 in 2009; this did not include the nearly 62,000 active informal miners (table 1; Banco Central de Reserva del Perú, 2011, p. 28–29; Luna, 2011, p. 43; Ministerio de Energía y Minas, 2011a, p. 71–72).

## Government Policies and Programs

Peru's laws with respect to domestic and foreign investors continued to be governed by such constitutional mandates as 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, 2011, p. 97; Luna, 2011, p. 4–5; Ministerio de Energía y Minas, 2011a, p. 44–69; 2011c).

Supreme Decree law No. 014-92-EM of June 1992 (the general mining law) and the Texto Unico Oficial provide guaranteed protections to mining ventures and contracts under the Peruvian Civil Code. Consequently, such ventures and contracts are immune from unilateral changes by any governmental authority in Peru without an appropriate legal or administrative remedy or arbitration by the Convenio Constitutivo del Centro Internacional de Arreglo de Diferencias Relativas a Inversiones [Formal Consent of the International Center for Settlement of Relative Differences on Investments] (Banco Central de Reserva del Perú, 2011, p. 104–105).

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 exploration 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, 2011, p. 104; Ministerio de Energía y Minas, 2011a, p. 78–81).

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 to control the secondary recovery of crude oil, refining, and imports and subsequent resale of petroleum and byproducts. The Peruvian laws have attempted to ensure more-favorable minerals and crude oil and gas exploration and production contract terms for investors (Ministerio de Energía y Minas, 2011a, p. 12–17; 2011d; ProInversión—Private Investment Promotion Agency in Peru, 2011).

Legal procedures to obtain mining rights were made easier by the enactment of complementary legislation 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 Corp. in December 2002, which was authorized by Legislative Decree law No. 25809 (Ministerio de Energía y Minas, 2011c; ProInversión—Private Investment Promotion Agency in Peru, 2011).

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 the

laws and regulations of the environmental legal framework, 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 its new operations by using cleaner technologies (Ministerio de Energía y Minas, 2011c; ProInversión—Private Investment Promotion Agency in Peru, 2011).

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 environmental effect 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, 2011c; ProInversión—Private Investment Promotion Agency in Peru, 2011).

## Production

In 2010, increases in mineral production were led by molybdenum (37.9%) and iron (36.7%); decreases in mineral production included lead (13.4%), gold (10.8%), tin (9.7%), silver (7.2%), zinc (2.8%), and copper (1.7%); significant production decreases in refined products were led by silver (65%), lead (13.4%), and copper (7%); and no production was reported for antimony, arsenic, bismuth, indium, and tellurium. These mineral output decreases were expected to be reversed in response to the growing demand of Asian markets and to metal price increases in the near future. Metal prices in 2010 compared with those of 2009 increased for tin (by 50.5%), copper (46.6%), silver (37.5%), zinc (30.8%), gold (25.8%), and lead (25.3%). The hydrocarbon sector's output increased by 29.5% owing to the increased extraction of natural gas mostly at Camisea. Crude oil output increased by 30.2%; it was expected to continue to increase in the near future owing to the 30 new oil exploration and long-term production contracts signed in 2010 (table 1; Banco Central de Reserva del Perú, 2011, p. 28–29; Ministerio de Energía y Minas, 2011b, e).

## Structure of the Mineral Industry

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 are 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 Centromín Perú S.A. in the mineral sector included Anglo American and BHP Billiton plc of the United Kingdom; Sulliden Gold Corp. Ltd. and Teck Cominco Ltd. of Canada; Hunt Oil Co. and Newmont Mining Corp. of the United States; Marubeni Corp., Mitsubishi Corp. and Mitsui & Co., Ltd. of Japan; Shougang Corp. and Zijin Mining Group of China; Peñoles S.A. of Mexico; SK Energy Co. Ltd. of the Republic of Korea; Repsol YPF of Spain; Vale S.A. and Grupo Votorantim Metais S.A. of Brazil, and Xstrata Plc. of Switzerland (table 2; Ministerio de Energía y Minas, 2011a, p. 50–51; 2011c–e).

After 7 consecutive years of expansion, the production of hydrocarbons increased by 29.5% in 2010. This growth resulted primarily from the increased production of natural gas (12.4%), which was associated with the initiation of Pluspetrol's exports of gas from lot 56 in June after the gas was processed in the Melchorita plant, which was operated by Peru LNG (a consortium integrated by Hunt Oil, Repsol YPF, SK Corp., and the Marubeni Co. of Japan). In 2010, this consortium signed an agreement with the Government to build a \$3.8 billion natural gas liquefaction plant 169 km south of Lima to allow exports of Camisea's liquefied natural gas (table 2; Ministerio de Energía y Minas, 2011a, p. 50–51; 2011c–e; ProInversión—Private Investment Promotion Agency in Peru, 2011).

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 energy mix, by source, was hydroelectric (79%), fossil fuel (20%), and others (1%) (Ministerio de Energía y Minas, 2011a, p. 82–83; 2011d, e; U.S. Central Intelligence Agency, 2011).

## Mineral Trade

In 2010, Peru's exports amounted to about \$35.6 billion, which was 31.9% higher than that of 2009, and its imports amounted to more than \$28.8 billion, which was 37.1% higher than that of 2009. The country's total trade balance recorded a surplus of about \$6.8 billion compared with \$5.9 billion in 2009. Peru's mining sector accounted for more than \$21.7 billion of total export revenues in 2010 compared with almost \$16.4 billion of total export revenues in 2009. In 2010, Peru's petroleum and derivatives sector accounted for about 8.7% (\$3.1 billion) of total export revenues compared with about

7.1% (\$1.9 billion) of total export revenues in 2009. In June 2010, Peru started exporting natural gas, which amounted to \$284 million; the leading destinations for the natural gas exports were Spain (\$87 million), the United States (\$57 million), and the Republic of Korea (\$44 million), among others. Peru's imports of crude oil and lubricants amounted to \$2.9 billion in 2010 compared with \$5.2 billion in 2009 (Banco Central de Reserva del Perú, 2011, p. 62–63; Luna, 2011, p. 3; Ministerio de Energía y Minas, 2011a, p. 8–9).

In 2010, the United States and China continued to be Peru's leading trading partners. The destination markets of Peruvian exports as a percentage of total exports were the United States (16.9%), China (15.4%), Switzerland (10.9%), Canada (9.4%), Japan (5.1%), Germany (4.3%), Chile (3.9%), and Spain (3.4%), among others. Peru's leading import partners were the United States (19.2%), China (16.7%), Brazil (7.3%), Ecuador (5.0%), Chile (3.9%), and Colombia and Japan (4.5% each), 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% of its exports to other members of the Mercado Común Andino (ANCOM), whose members were Bolivia, Colombia, Ecuador, Peru, and Venezuela; about 3.1% to the Mercado Común del Cono Sur (MERCOSUR) countries of Argentina, Brazil, Paraguay, and Uruguay and associate members Bolivia and Chile; and 14.3% to other Latin American countries (Banco Central de Reserva del Perú, 2011, p. 63–64; Ministerio de Energía y Minas, 2011a, p. 9–10).

## Commodity Review

### Metals

**Copper.**—In 2010, the price of copper increased as a result of the recovery of global economic activity. The average price of copper increased by 46.6% compared with that of 2009 to \$3.4 per pound after reaching a record of \$4.4 per pound in December. This price increase was associated with growing tightness in the copper market owing to the increased demand by emerging economies and also to supply constraints in some producing countries. Peru produced 1.1 million metric tons (Mt) of copper (Cu content) in 2010, which was almost the same amount as in 2009. With this level of production, the country remained the world's second ranked producer (behind Chile), accounting for almost 8% of world production. The country's copper metal exports in 2010 totaled about 1.25 Mt and were valued at about \$8.9 billion compared with 1.24 Mt valued at more than \$5.9 billion in 2009; this nearly 51% increase in value compared with that of 2009 was owing to the increase in the price of copper to \$3.21 per pound in 2010 from \$2.16 per pound in 2009 (Banco Central de Reserva del Perú, 2011, p. 29, 31, 251; Ministerio de Energía y Minas, 2011a, p. 21–22, 35; 2011b).

Owing to China's increased demand for copper, the Chinese firm Aluminium Corp. of China (Chinalco) was planning to develop the Toromocho 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. Consorcio Xiamen

Zijin Tongguan Investment Development Co. Ltd. (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 25 Mt/yr of copper ore by 2015 (Luna, 2011, p. 29, 43, 48; Ministerio de Energía y Minas, 2011a, p. 50).

In 2010, Peru's planned investments of about \$42.5 billion included mineral projects with advanced exploration, feasibility studies, and expansion work. More than 66.5% (\$28.2 billion) of the planned investments were for copper projects, such as Las Bambas (\$4.2 billion) and Los Chancas (\$1.2 billion) copper deposits, which are located in the Department of Apurímac and were owned by Xstrata and Southern Copper, respectively. Other investments in copper deposits included the partnership of China Minmetals Corp. and Jiangxi Copper Co., Ltd. of China, which had acquired 93.9% interest in Northern Perú S.A.'s Galeno copper project in Celendin, Department of Cajamarca. The estimated investment in the Galeno copper project (which has reserves of 803 Mt at a grade of 0.63% copper equivalent) was \$2.5 billion to produce copper metal by 2014. Southern Copper was planning to invest \$600 million in additional exploration and to improve efficiencies at the Cuajone and the Toquepala copper mines by 2012 and to invest \$950 million in its Tia María copper project, which is located in the Department of Arequipa, to produce 120,000 t/yr of copper metal by 2015. Other investments included an investment of almost \$15 billion to explore 13 copper deposits located in the Departments of Ancash, Arequipa, Apurímac, Cajamarca, Cusco, Huancavelica, La Libertad, Lambayeque, and Moquegua between 2011 and 2016; Xstrata Copper's investment of \$1.5 billion in the Antapaccay copper deposit in Cusco; and Rio Tinto's investment of \$1.0 billion in La Granja copper deposit in Cajamarca (Banco Central de Reserva del Perú, 2011, p. 29, 31, 251; Luna, 2011, p. 41, 43, 48; Ministerio de Energía y Minas, 2011a, p. 51).

**Gold.**—In 2010, gold output was about 164.1 metric tons (t) compared with almost 184 t in 2009, which was a decrease of about 10.8%. This decrease was owing to the decrease in grades of ore at Minera Yanacocha and by decreased production by Barrick Gold Corp. of Canada, also owing to the lower production in its units at Alto Chicama and Pierina. The former unit had declining production because the mine's reserves were nearly depleted. Peru's gold exports in 2010 totaled about 196 t (6.3 million troy ounces) valued at about \$7.8 billion compared with about 218 t (7.0 million troy ounces) valued at about \$6.8 billion in 2009, which was an increase in value of more than 14.7%. In 2010, Peru's planned investments of about \$5.8 billion were expected to include mineral projects with advanced exploration and environmental assessment work for gold, such as Minera Yanacocha's Pita cyanuration plant at Yanacocha Mine (\$270 million), its project at Chaquicocha (\$400 million), and its Minas Conga project (\$3.5 billion) in the Department of Cajamarca, which was expected to be completed by 2015; Buenaventura's Tantahuatay gold deposit (\$56 million) in the Department of Cajamarca, which was expected to be completed by 2012; and Barrick's Lagunas Norte gold deposit (\$400 million) in the Department of La Libertad,

which was expected to be completed by 2012 (Banco Central de Reserva del Perú, 2011, p. 29–30, 251; Luna, 2011, 41, 43, 45; Ministerio de Energía y Minas, 2011a, p. 23–24).

Of the total gold output in 2010, large-, medium-, and small-scale producers reported production of about 145.1 t of gold, and an unknown number of gold placers and informal individual miners reported production of almost 19 t of gold. Placers accounted for about 11.6% of the gold produced in the country. The southeastern Andes had well-known gold placers on the Inambari River and its tributaries. Placer gold was produced mostly in the Inca and the Mariategui Regions and from rivers and streams throughout the jungle (Banco Central de Reserva del Perú, 2011, p. 29–30; Ministerio de Energía y Minas, 2011a, p. 24, 51).

**Iron Ore.**—Shougang Hierro Perú S.A.A. (a subsidiary of China's Shougang Corp.) continued to be Peru's sole iron ore producer (exclusively from the Marcona iron ore mine in the Department of Ica). Mine output increased to more than 6.1 Mt of iron content in 2010 from almost 4.5 Mt in 2009, or a 36.7% increase owing to increased demand from China. In 2010, iron ore exports increased to 7.7 Mt in 2010 from 7 Mt in 2009 at a value of \$623 million compared with \$299 million in 2009, or an increase in value of more than 108%. This increase in the value of iron ore was in response to higher prices (\$67.6 per metric ton in 2010 and \$42.6 per metric ton in 2009). In 2010, Peru's planned investments of about \$6.6 billion were expected to include mineral projects with advanced exploration and environmental assessment work and expansion for iron, such as Shougang's Marcona Mine expansion (\$1.0 billion) in the Department of Ica, which was completed in 2011; China's Nanjinzhaoh Group Pampa de Pongo iron project (\$3.3 billion) in the Department of Arequipa, which was expected to be completed by 2012; Strike Resources Inc. of Australia's exploration of the Apurímac iron ore deposit (\$2.3 billion), with plans to start operations by 2015; and Cuervo Resources Inc. of Canada's exploration of the Cerro Ccopane and the Huillque iron ore deposits, which are located in the Department of Cusco (Banco Central de Reserva del Perú, 2011, p. 34, 251; Luna, 2011, p. 45, 47, 48; Ministerio de Energía y Minas, 2011a, p. 29, 51).

**Lead, Silver, and Zinc.**—The production of lead content decreased to 261,978 t in 2010 from 302,459 t in 2009, or a decrease of 13.4%, mainly as a result of lower production in El Brocal and the Volcan lead mines. Exports of lead amounted to 770,000 t valued at \$1.58 billion in 2010 compared with 681,400 t valued at \$1.12 billion in 2009; prices increased to \$0.930 per pound in 2010 from \$0.743 per pound in 2009. The production of silver content in 2010 decreased to 3,640 t from 3,923 t in 2009, or a decrease of 7.2%. Despite this decrease, Peru was the world's leading producer of silver, accounting for 16.7% of world production. Peru surpassed Mexico's and China's silver output of 3,500 t and 3,000 t, respectively, in 2010. The export value of silver amounted to \$118 million in 2010 compared with \$214 million in 2009; prices increased to \$19.2 per troy ounce in 2010 from \$13.2 per troy ounce in 2009. The Peruvian zinc industry produced about 1.47 Mt of zinc in concentrates in 2010 compared with about 1.51 Mt in 2009, or a decrease of 2.8%. The value of exports of zinc amounted to about \$1.7 billion in 2010 compared with almost \$1.2 billion

in 2009; prices increased to \$0.585 per pound in 2010 from \$0.408 per pound in 2009 (Banco Central de Reserva del Perú, 2011, p. 29–32, 251; Ministerio de Energía y Minas, 2010a, p. 25–29, 35, 51).

**Tin.**—Production from Minsur’s San Rafael Mine, which is located in the Mariategui Region, was 33,848 t in concentrate in 2010 compared with 37,503 t in 2009. Minsur’s tin smelting and refining operations, which are located in Pisco, south of Lima, produced 36,451 t of metal in 2010 compared with a revised 34,388 t in 2009. Peru continued to be the leading tin producer in Latin America followed by Bolivia and Brazil. Minsur, which was the only fully integrated tin supplier in Peru, produced more than 14% of the world’s output and exported 33,500 t valued at \$663 million in 2010 compared with 38,000 t valued at \$479 million in 2009; prices increased to \$8.977 per pound in 2010 from \$5.715 per pound in 2009 (Banco Central de Reserva del Perú, 2011, p. 29, 251; Ministerio de Energía y Minas, 2011a, 29, 35).

### *Industrial Minerals*

**Phosphate Rock.**—Vale S.A. (Vale) of Brazil was planning an expansion of its Bayovar open pit in Sechura (\$300 million) in the Department of Piura, which was to be completed in 2012. In 2010, Vale changed the Empresa Minera Regional Grau Bayóvar S.A.’s name to Cía. Minera Miski Mayo S.A.C. (CMM). In 2010, CMM’s phosphate deposits (Bayovar project) produced about 48,500 t of phosphate rock, which was almost 28% more than in 2009. The 90,000-t/yr fertilizer plant that was operated by CMM produced an estimated 21,800 t of phosphate ( $P_2O_5$ ) in 2010. CMM’s Bayovar open pit contained a reserve base of 240 Mt of phosphate with a production capacity of 4 Mt/yr of phosphate concentrate with a minimum grade of 30%  $P_2O_5$ , which would be used to produce fertilizers. In 2010, Vale started exporting phosphate rock to Brazil, India, Mexico, and the United States (Luna, 2011, p. 45; Ministerio de Energía y Minas, 2011a, p. 30; Vale S.A., 2011).

### *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 Goyllarisquizga and Hatun Huasi in the Caceres Region of central Peru. In 2010, Peru’s recoverable coal reserves were estimated to be 1.1 Gt, and coal production was 91,960 t compared with 142,089 t in 2009; the estimated consumption of coal was more than 1.3 Mt/yr and imports were about 1.2 Mt/yr and came mostly from Colombia (tables 1, 3; Ministerio de Energía y Minas, 2011a, p. 30–31; U.S. Energy Information Administration, 2011).

**Natural Gas and Petroleum.**—In 2010, Peru’s recoverable (proven and probable) and possible resources of crude oil were estimated to be 6,000 million barrels (Mbbbl); of liquefied natural gas (LNG), 1,337 Mbbbl; and of natural gas, 881 billion cubic meters. The leading gasfields 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 Mbbbl 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 Mbbbl of NGL. Natural gas production increased to 3,904 million cubic meters in 2010 from 3,474 million cubic meters in 2009. Pluspetrol S.A. of Argentina remained the major producer, 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%) (Camisea Project, 2011; Ministerio de Energía y Minas, 2011e; U.S. Energy Information Administration, 2011).

The Camisea Project encompasses three segments—Upstream, Transportation, and Distribution of natural gas from the Camisea field—and is located in the Ucayali Basin in the Department of Cusco. Peru had received an investment of \$1.1 billion to implement the three segments in 2009. Pluspetrol was planning to invest about \$3.0 billion in Camisea’s natural gas project by 2013 (Camisea Project, 2011; Ministerio de Energía y Minas, 2011e).

In 2010, crude oil production increased to about 92,500 barrels per day (bbl/d) from about 71,000 bbl/d in 2009. Production of petroleum derivatives increased to about 204,400 bbl/d from a revised 190,950 bbl/d in 2009. 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 33.8 Mbbbl in 2010 came from Pluspetrol (42%), Petrobrás (19%), Petrotech (16%), and others (25%) (table 1; Banco Central de Reserva del Perú, 2011, p. 34–36; Ministerio de Energía y Minas, 2011e; U.S. Energy Information Administration, 2011).

In 2010, the largest oil refinery in Peru continued to be La Pampilla, which had a designed capacity of about 110,000 bbl/d. The second largest oil refinery was Talara, which had a designed capacity of about 62,000 bbl/d. 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 Shivyacu petroleum refinery, which would be located in the Department of Loreto, by 2013. In 2010, 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, 2011e).

### **Reserves and Resources**

Table 3 lists the Peruvian reserves of major minerals, such as copper, gold, iron ore, lead, molybdenum, silver, and zinc, as of about January 1, 2011. 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 are 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, 2011e).



## Outlook

According to ProInversión, Peru continues to be on a path of steady economic growth, which seems to be sustainable. The international scenario in 2010 was marked by economic recovery in most countries, as well as by the beginning of a significant increase in commodity prices and increased international liquidity. In 2010, 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 a record 8.8%. The mineral (metals, industrial minerals, and fuels) sector is expected to continue to attract capital flows (2011 through 2015) by way of new joint ventures and consortia, privatizations, and direct acquisitions. Increased demand for copper, gold, iron ore, and silver, and high metal prices are likely to encourage mining companies to invest in expanding and modernizing their operations. The liquefaction of Camisea's natural gas for export to China, MERCOSUR, and the North America Free Trade Agreement (Canada, Mexico, and the United States), and to other markets and trading partners is expected to increase Peru's mineral commodity exports further (Camisea Project, 2011; Ministerio de Energía y Minas, 2011a, p. 51, 2011e; ProInversión—Private Investment Promotion Agency in Peru, 2011; U.S. Department of State, 2011).

According to the Anuario Minero 2010, Peru's economy is committed to trade integration through about 100 mining companies and investors, most of them from Australia, Brazil, Canada, China, the European Union, Mexico, Switzerland, the United States, and others. Peru's legal framework is expected to continue to be favorable to foreign investments in the fields of energy, mining, and related industries. Continued privatization in the mineral sector and investment in every sector of the Peruvian economy, particularly in the mineral and energy sectors, are expected to generate additional investments. The inflow of long-term private capital to the mineral sector, which amounted to nearly \$42.5 billion in 2010, is projected to increase to \$52.2 billion in 2011 as increased funds are oriented to finance investment projects (Banco Central de Reserva del Perú, 2011, p. 34–35; Camisea Project, 2011; Ministerio de Energía y Minas, 2011a, p. 51; ProInversión—Private Investment Promotion Agency in Peru, 2011).

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

(Metric tons unless otherwise specified)

Commodity	2006	2007	2008	2009	2010 <sup>p</sup>
<b>METALS</b>					
Antimony, metal	691	590	531	145	--
Arsenic, white <sup>2</sup>	4,399	4,321	4,822	301 <sup>r</sup>	--
Bismuth, metal	1,081	1,114	1,061	423	--
Cadmium, metal	416	347	371	289	357
Copper:					
Mine output, Cu content	874,602	1,018,155	1,107,789	1,113,454 <sup>r</sup>	1,094,162
Metal:					
Smelter	322,188	236,809	306,584	325,788	312,968
Refined, primary:					
Electrowon	173,871	172,118	160,078	162,795	153,022
Electrolytic	333,839	237,719	303,855	260,618	240,616
Total	507,710	409,837	463,933	423,413	393,638
Gold: <sup>3</sup>					
Mines kilograms	187,026	153,863	163,162	166,780	145,085
Placers do.	15,800	16,373	16,708	17,215	18,975
Total do.	202,826	170,236	179,870	183,995	164,060
Indium do.	6,000	5,000	6,000	2,000	--
Iron and steel:					
Iron ore and concentrate:					
Gross weight thousand metric tons	7,138	7,614	7,823	6,698	9,160
Fe content do.	4,939	5,186	5,244	4,490	6,140
Metal: <sup>e</sup>					
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	313,332	329,165	345,109	302,459	261,978
Metal	120,311	116,774	114,259	26,599	23,039
Manganese, mine output, Mn content <sup>e</sup>	200	200	200	200	200
Molybdenum, mine output, Mo content	17,209	16,787	16,721	12,297	16,963
Selenium, metal, refined kilograms	75,390	60,000	60,000 <sup>e</sup>	61,000	59,000
Silver:					
Mine output, Ag content	3,471	3,501	3,686	3,923	3,640
Metal, refined	1,296	1,203	1,190	445	156
Tellurium, metal kilograms	37,000	35,000	28,000	7,000	--
Tin:					
Mine output, Sn content	38,470	39,019	39,037	37,503	33,848
Metal <sup>4</sup>	40,495	36,004	38,865	34,388 <sup>r</sup>	36,451
Tungsten, metal <sup>5</sup>	128	366	456	634 <sup>r</sup>	716
Zinc:					
Mine output, Zn content	1,203,364	1,444,381	1,602,597	1,512,931 <sup>r</sup>	1,470,450
Metal	175,250	162,375	190,324	149,494	223,112
<b>INDUSTRIAL MINERALS</b>					
Barite	1,499	27,368	45,199	27,881 <sup>r</sup>	27,875
Boron materials, crude (borates)	--	233,991	349,891	187,221	187,200
Cement, hydraulic thousand metric tons	5,782	6,208	6,862	8,100	8,100
Chalk	201,000	334,688	463,134 <sup>r</sup>	321,012 <sup>r</sup>	325,000
Clays:					
Bentonite	27,106	21,451	31,557	119,452 <sup>r</sup>	119,495
Fire clay <sup>e</sup>	6,000	6,000	6,000	6,000	6,000

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	2006	2007	2008	2009	2010 <sup>2</sup>
<b>INDUSTRIAL MINERALS—Continued</b>					
Clays—Continued:					
Kaolin	5,049	4,772	13,215	9,655 <sup>r</sup>	9,347
Common clay	948,617	2,183,804	1,720,838	2,020,623 <sup>r</sup>	1,983,771
Diatomite	35,100	21,603	12,206	9,946	10,500
Feldspar	9,280	15,450	13,333	5,154 <sup>r</sup>	5,006
Gypsum, crude	151,000	334,688	335,000 <sup>e</sup>	335,000	321,012
Lime <sup>e</sup>	215,500 <sup>6</sup>	216,000	216,000	216,000	216,000
Nitrogen, N content of ammonia <sup>e</sup>	5,000	5,000	5,000	5,000	5,000
Phosphate rock: <sup>e</sup>					
Crude, gross weight	38,000	38,000	38,000	38,000	38,000
P <sub>2</sub> O <sub>5</sub> content	17,075 <sup>6</sup>	17,100	17,100	17,100	17,100
Salt, all types	922,000	1,185,273	1,276,271	1,567,279	1,570,000
Stone, sand and gravel:					
Stone: <sup>e</sup>					
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	8,425 <sup>6</sup>	9,610 <sup>6</sup>	10,227 <sup>6</sup>	10,304 <sup>6</sup>	10,500
Marble	8,842 <sup>6</sup>	24,513 <sup>6</sup>	595 <sup>6</sup>	338 <sup>6</sup>	340
Onyx	150	150	150	150	150
Quartz and quartzite (crushed)	40,000	40,000	123,542 <sup>3</sup>	124,000	124,000
Shell, marl	4,000	4,000	6,210	6,200	6,200
Slate	30,110 <sup>6</sup>	10,844 <sup>6</sup>	42,436 <sup>6</sup>	16,440 <sup>6</sup>	16,500
Travertine <sup>6</sup>	129,805	284,755	231,887	97,852	97,586
Sand and gravel:					
Stone (Construction)	1,773	2,659	5,798	5,504 <sup>r</sup>	5,562
Sand	2,042	2,248	2,802	2,891 <sup>r</sup>	3,522
Sulfur, elemental: <sup>e</sup>					
Native	100	100	100	100	100
Byproduct of metallurgy	204,000	204,000	204,000	204,000	204,000
Sulfuric acid, gross weight	623,000	623,000	623,000	623,000	623,000
Talc	20,700	23,096	17,984	13,359 <sup>r</sup>	13,296
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal:					
Anthracite, run-of-mine	26,717	227,088	65,038 <sup>r</sup>	66,244 <sup>r</sup>	63,382
Bituminous, run-of-mine	2,818	52,050	65,649 <sup>r</sup>	75,845 <sup>r</sup>	28,578
Total	29,535	279,138	130,687 <sup>r</sup>	142,089 <sup>r</sup>	91,960
Coke, all types <sup>e</sup>	10,000	10,000	10,000	10,000	10,000
Natural gas:					
Gross	1,775	2,676	3,387	3,474	3,904
Marketed	1,003	1,512	1,750	2,003	2,251
Natural gas liquids	14,640 <sup>r</sup>	14,391 <sup>r</sup>	16,671 <sup>r</sup>	27,550 <sup>r</sup>	30,963
Petroleum:					
Crude	28,314	28,146	28,027	25,927	33,759
Refinery products:					
Liquefied petroleum gas	2,286	2,363	2,468	2,177 <sup>r</sup>	2,424
Gasoline, motor	12,777	13,948	13,355	14,713 <sup>r</sup>	15,185
Jet fuel	3,722	4,144	4,416	4,703 <sup>r</sup>	5,290
Kerosene	960	818	598	338 <sup>r</sup>	80
Distillate fuel oil	17,598	19,018	19,519	25,819 <sup>r</sup>	24,606
Lubricants	423	406	326	331 <sup>r</sup>	315
Residual fuel oil	14,713	14,669	13,874	10,263 <sup>r</sup>	10,124
Asphalt	838	930	1,113	1,663 <sup>r</sup>	1,841
Other <sup>7</sup>	6,988	6,701	7,532	9,689 <sup>r</sup>	14,755
Total	60,305	62,997	63,201	69,696 <sup>r</sup>	74,620

See footnotes at end of table.

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

<sup>5</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>6</sup>Preliminary. <sup>7</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through November 30, 2011.

<sup>2</sup>Output reported by Doe Run Resources Corp.

<sup>3</sup>Peru's placer gold production was reported.

<sup>4</sup>Output reported by Minsur S.A.'s smelter.

<sup>5</sup>Reported figure. Source: Malaga Inc. (Pasto Bueno tungsten mine).

<sup>6</sup>Reported figure. Source: Ministerio de Energía y Minas del Perú.

<sup>7</sup>Includes refinery fuel and losses.

TABLE 2  
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(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

See footnotes at end of table.

TABLE 2—Continued  
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
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, Explorador, and Molino de Oro, Arequipa Department	1,000
Do.	do.	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.	Consorcio 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 Tunnel, 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%)	Quirivilca, 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

See footnotes at end of table.



TABLE 2—Continued  
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
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)	Refinery La Pampilla, Lima Department	110,000
Do.	do.	Petroperú S.A.	Refineries Talara, Piura Department	62,000
Do.	do.	do.	Refinery Conchan, Lima Department	15,500
Do.	do.	do.	Refinery Iquitos, Loreto Department	10,500
Do.	do.	do.	Refinery Pucallpa Ucayali Department	3,300
Do.	do.	do.	Refinery El Milagro, Amazonas Department	1,700
Do.	do.	Pluspetrol Norte S.A.	Refinery Shiviayacu, Loreto Department Moquegua Department	5,200
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 Centromín 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 Tunnel, 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 Pacífico 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

See footnotes at end of table.

TABLE 2—Continued  
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Tin	metric tons	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.	Fermín 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 Tunnel, 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.	Antamina concentrator, Ancash Department	1,500
Do.		Empresa Minera Los Quenuales S.A.	Pachangara, Lima Department	200
Do.		do.	Izcaycruz, Lima Department	40
Do.		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 2010<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Coal, all types	1,100,000
Copper	63,886 <sup>r</sup>
Gold	metric tons 2,206 <sup>r,2</sup>
Iron ore	12,482
Lead	7,863
Molybdenum	450 <sup>e</sup>
Natural gas	billion cubic meters 881
Natural gas liquids	million barrels 1,337
Petroleum crude	billion barrels 1,200
Phosphate rock	820
Salt	100,000 <sup>e</sup>
Silver	metric tons 67,760 <sup>r</sup>
Sulfur	150,000 <sup>e</sup>
Tin	307
Uranium	100 <sup>3</sup>
Zinc	19,984 <sup>r</sup>

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

<sup>r</sup>Revised.

<sup>1</sup>Proven reserves.

<sup>2</sup>Excludes metal in placer deposits.

<sup>3</sup>Recoverable at prices of \$100 or less per kilogram of uranium.

Sources: 2010 and 2011 "Anuario de la Minería del Perú" Ministerio de Energía y Minas, except for natural gas and petroleum crude; U.S. Energy Information Administration, 2011; Perúpetro S.A., 2011; BP Statistical Review of World Energy, June 2011.