



2005 Minerals Yearbook

PERU

THE MINERAL INDUSTRY OF PERU

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In Latin America in 2005, Peru was the leading producer of, in terms of value, gold, zinc, silver, lead, tin, and tellurium and the second ranked producer of copper and molybdenum (after Chile) and bismuth (after Mexico). In the world, Peru was the third ranked producer of arsenic trioxide (after China and Chile), bismuth (after China and Mexico), silver (after China and Mexico), tin (after China and Indonesia), and zinc (after China and Australia); the fourth ranked producer of copper (after Chile, the United States, and Indonesia), lead (after China, Australia, and the United States), and rhenium (after Chile, Kazakhstan, and the United States); and the fifth ranked producer of gold (after South Africa, Australia, the United States, and China) and molybdenum (after the United States, Chile, China, and Canada) (Brooks, 2006a, b; Carlin, 2006a, b; Edelstein, 2006; Gabby, 2006a, b; George, 2006; Magyar, 2006a, b; Ministerio de Energía y Minas, 2006a, p. 66).

In 2005, with an area of about 1.3 million square kilometers and a population of almost 28 million, Peru had a gross domestic product (GDP) of \$167.2 billion¹ based on purchasing power parity. Peru's real GDP growth was 6.4% compared with 5.2% in 2004. The annual inflation rate in 2005 was 1.5% compared with 3.5% in 2004 (Banco Central de Reserva del Perú, 2006a§,² b§; International Monetary Fund, 2006a§, b§; U.S. Central Intelligence Agency, 2006§). The mining and fuel sectors contributed a total of 8.1% of Peru's real GDP compared with 5.2% in 2004. In 2005, Peru's economy benefited from higher prices for its mineral exports and increased demand for base metals used in construction and manufacturing in, in order of importance, the United States, China, and South Asia. The higher prices for Peru's major mineral exports were, in order of price increase, silver, which increased to \$7.30 per troy ounce from \$6.70 per troy ounce in 2004 (or by 9%); lead, to \$0.690 per pound from \$0.627 per pound (10%); gold, to \$449.80 per troy ounce from \$407.10 per troy ounce (10.5%); copper to \$1.549 per pound from \$1.196 per pound (29.5%); and zinc, to \$0.335 per pound from \$0.253 per pound (32.4%). Higher prices for exported precious and base metals more than offset the effect of higher prices for imported crude oil, which increased to \$47.0 per barrel from \$32.3 per barrel in 2004 (a 45.5% increase). Peru's foreign debt amounted to about \$26.3 billion, and its net international reserves increased by \$1.4 billion to \$14.1 billion from \$12.7 billion in 2004 (Banco Central de Reserva del Perú, 2006b§; Ministerio de Energía y Minas, 2006a§).

Foreign investors have invested in Peru because it has an open market economy and because the Government guarantees property ownership, investments, free remittance of profits, and capital repatriation, and provides equal treatment with domestic investors. The Government continued to reduce subsidies and tariffs, freed foreign exchange and interest rates,

¹Where necessary, values have been converted from Peruvian new soles (S/) to U.S. dollars (US\$) at the rate of S/3.215=US\$1.00.

²References that include a section mark (§) are found in the Internet References Cited section.

liberalized international investment rules, simplified the tax code, and established concessions for construction and operation of public infrastructure, such as, in order of magnitude, telecommunications, roads, ports, and airports. The Government continued its policy of fiscal austerity and increased investment in social development to establish better relationships with the local communities. The Government continued to maintain its role as regulator, promoter, and overseer, thus minimizing interferences with the private sector (Banco Central de Reserva del Perú, 2006b§; Ministerio de Energía y Minas, 2006a§, c§).

In 2005, foreign direct investment (FDI) inflows into Latin America and the Caribbean increased to \$68.0 billion, or by 10.6%, compared with \$61.5 billion in 2004. FDI inflows into South America also increased to \$44.5 billion, or by 18.0%, compared with \$37.7 billion in 2004. In the Andean Community (whose members were Bolivia, Colombia, Ecuador, Peru, and Venezuela), FDI amounted to \$16.9 billion, which was an increase of 119.5% compared with \$7.7 billion in 2004. This healthy increase mainly reflected the high international prices of such commodities as, in order of value, petroleum, copper, and gold. In 2005, Peru's hydrocarbon sector received \$1.8 billion compared with \$1.4 billion in 2003 (Economic Commission for Latin America and the Caribbean, 2006§; ProInversión—Foreign Direct Investment in Peru, 2006b§).

According to the Banco Central de Reserva del Perú, Comisión Nacional de Inversiones y Tecnologías Extranjeras (CONITE), and Agencia de Promoción de la Inversión Privada (ProInversión), the flow of private investment into Peru's economy, which had increased since its 1993 level of \$14.6 billion, continued to increase to \$15.9 billion in 2005 from \$13.3 billion in 2004, and \$12.9 billion in 2003. These increases were in part owing to the country's stability on the economic front; its natural resources, mainly base and precious metals, and oil and gas; and the positive effect of the global commodity price increases. National and international corporations have been very active in the country's minerals sector (Banco Central de Reserva del Perú, 2006b§; Comisión Nacional de Inversión y Tecnología, 2006§; Economic Commission for Latin America and the Caribbean, 2006§).

Considering China's increasing consumption of metals and minerals, such as copper, which was expected to increase to 6 million metric tons (Mt) by 2010 from 4 Mt in 2004, two Chinese companies—Aluminum Corporation of China Limited (Chalco) and Baosteel Co., Ltd. (Baosteel)—were planning to establish joint ventures with Latin America's leading copper mining companies, such as Companhia Vale do Rio Doce (CVRD) of Brazil, Corporación Nacional del Cobre (Codelco) of Chile, and Sociedad Minera Cerro Verde S.A.A. of Peru. China Minmetals Company planned to invest in metals and minerals mainly in Brazil, Chile, and Peru. In Peru, additional investments of \$4.1 billion were expected in projects with advanced exploration and environmental assessment work, such as Las Bambas (\$1.5 billion), which has copper reserves

of 500 Mt, and Los Chancas copper deposits (Department of Apurimac) owned by Xstrata Plc. of Switzerland and Southern Perú Copper Corporation Sucursal del Perú (SPCC) (a subsidiary of Grupo Mexico S.A. de C.V.), respectively (M.A.Yepez, Mineral Economist, U.S. Embassy, Lima, Peru, Economic Section, written commun., August 23, 2005; ProInversión—Foreign Direct Investment in Peru, 2006b§).

Other investments in copper deposits included Centromín's Rio Blanco (\$800 million to produce copper by 2008) and Tambogrande (\$526 million, 17 years copper mine life), Perú Copper Syndicate Co.'s Toromocho (\$1.2 billion, reserves 1.6 billion metric tons), SPCC was planning to invest \$600 million in additional exploration and to improve efficiencies in Cuajone and Toquepala, and Cerro Verde was planning to increase its copper output to 300,000 t/yr from 100,000 t/yr with an investment of \$850 million by 2006. Other prospects included the San Gregorio zinc project of Sociedad Minera El Brocal S.A.A. in the Department of Cerro de Pasco, the Minas Carachugo gold-and-silver mineralization of Minera Yanacocha S.R.L. (MYS) [Newmont Mining Corp. of the United States (51.35%), Compañía de Minas Buenaventura S.A.A. (43.65%), and the World Bank's International Finance Corporation (5%)] in the Department of Cajamarca, and the Magistral copper-molybdenum-silver deposit of Minera Ancash Cobre S.A. in the Department of Ancash. Magistral is located in the same geologic trend as that of Compañía Minera Antamina S.A.'s (CMA) Antamina base-metal mine (M.A.Yepez, Mineral Economist, U.S. Embassy, Lima, Peru, Economic Section, written commun., August 8, 2005; ProInversión—Foreign Direct Investment in Peru, 2006b§).

Government Policies and Programs

According to the Ministerio de Energía y Minas, the country's current metal and oil and gas reserves and resources offer attractive investment opportunities (table 3; Ministerio de Energía y Minas, 2005§; ProInversión—Private Investment in Peru, 2006a§). The privatization of state-owned firms and the formation of joint ventures and consortia in the mining and fuels industries provided a continuous committed capital flow of about \$10 billion total between 1992 and 2007 (Ministerio de Energía y Minas, 2005§). In Peru, privatizations and concessions generated \$58.9 million with a committed investment of \$2.3 billion by such mining companies as Rio Tinto Limited, which acquired La Granja copper project for \$22 million and had committed an investment of \$760 million, and Companhia Vale do Rio Doce bought the Bayovar phosphate project for \$3 million with a committed capital of \$300 million. The Ministerio de Energía y Minas reported that, of the committed investment in 2005, Peru received for the minerals sector—mining, \$1.1 billion; gas, \$1 billion; and petroleum, \$200 million compared with a committed investment of \$3.5 billion in 2004 (Banco Central de Reserva del Perú, 2006a§, b§; Ministerio de Energía y Minas, 2006a§, c§).

Peru offers a legal framework favorable to national and foreign investors by means of such Constitutional Mandates as Legislative Decree No. 662 (promotion of foreign investment), which provides unrestricted access to all economic sectors;

Legislative Decree No. 757 (framework for the development of private investment), which pertains to the private investment growth; and Texto Unico Oficial (TUO) 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 No. 818 of April 1996 (incentives for investing in natural resources), and Supreme Decree No. 162-92-EF of October 1992 (rules guaranteeing foreign investment), more than 250 domestic stability and guarantee contracts have been signed since 1993 (Banco Central de Reserva del Perú, 2006b§; Comisión Nacional de Inversión y Tecnología, 2006§; ProInversión—Private Investment in Peru, 2006a§).

CONITE reported that since July 19, 1991, when the privatization program began, the Peruvian Government has privatized more than 235 state-owned corporations and netted almost \$11 billion, and domestic and foreign investors have committed new annual investments of about \$10 billion for the period 2005-07. By yearend 2005, the Government had privatized most of its assets in the following sectors: mining, 96%; manufacturing, 95%; electricity and hydrocarbons, 90% each; and agriculture, 40% (Banco Central de Reserva del Perú, 2006b§; Comisión Nacional de Inversión y Tecnología, 2006§; Ministerio de Energía y Minas, 2006a§).

Supreme Decree No. 014-92-EM of June 1992 (the general mining law) and Legislative Decree No. 868 of May 1996 (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 (Comisión Nacional de Inversión y Tecnología, 2006§; ProInversión—Private Investment in Peru, 2006a§).

Additionally, Peru enacted Supreme Decree 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. Supreme Decree No. 135-2002-EF of April 2002 was enacted to reduce duties paid to 4% from 7% on certain capital goods linked to agricultural exports under the Andean Trade Preferences and Drug Eradication Act. The capital, goods, and services linked to minerals exploration benefited from the elimination of the 18% sales tax when law No. 27623-EF was enacted in January 2002. Supreme Decree 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 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, 2006b§; Comisión Nacional de Inversión y Tecnología, 2006§; Ministerio de Energía y Minas, 2006a§, b§; ProInversión—Private Investment in Peru, 2006a§). Hydrocarbon law No. 26844 of 1997 of

May 1997 eliminated the exclusive rights of the state-owned *Petróleos del Perú S.A.* to control the secondary recovery of crude oil, refining, and imports and subsequent resale of petroleum and byproducts.

All these laws provide a legal system that guarantees that the basic rules and regulations—such as no discriminatory treatment for domestic or foreign investors, free availability and remittance of foreign currency, and an income tax system that is applicable to dividends—are not changed. The Peruvian Constitution establishes equal protection for domestic and foreign investors who may enter into agreements with the Government and guarantees free access to, possession of, and disposal of foreign currency.

The Peruvian laws have attempted to ensure more-favorable contract terms for investors in minerals and crude oil and gas exploration and production. Owing to these favorable terms, an increased number of domestic and foreign companies have expressed interest in participating in prospecting, exploration, production, and distribution of natural gas and petroleum contracts with *Perupetro S.A.* and of mineral properties with *Centromín* (table 2).

Legal procedures to obtain mining rights were made easier by the enactment of Supreme Decree No. 018 of July 9, 1992. The Government relinquished exclusive control 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, corporations, joint ventures, and consortia formed in Peru or abroad. Municipalities and Regional governments in areas where mineral resources (metals and industrial minerals) are exploited will 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 dividends, depreciation, 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 No. 25312 and with the Overseas Private Investment Corporation in December 2002, which was authorized by Legislative Decree No. 25809 (*Comisión de Promoción de la Inversión Privada*, 2005, p. 6; *ProInversión—Private Investment in Peru*, 2006a§).

Petroperú S.A. managed energy-related activities for the Government. In principle, all mineral and geothermal resources belong to the State, which grants concessions for use by the private companies and individuals. The administration and management of all mining legal processes and concessions rested with the executive branch.

Environmental Issues

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. It is also 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) (*ProInversión—Private Investment in Peru*, 2006a§).

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. 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. The DGAA also 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 handle environmental affairs in the minerals 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 mining and oil companies are increasing their efforts to protect the environment. Oil companies, in particular, are under pressure because the number of operations in the Amazon Rain Forest, which is one of the world's most sensitive ecosystems, is increasing (*Ministerio de Energía y Minas*, 2006b§; *ProInversión—Private Investment in Peru*, 2006a§).

The Rio Blanco and the Tambogrande projects were the target of protestors who were demonstrating against their development in 2005. *MYS's* Cerro Quilish prospect and development of the gold deposit at the Yanacocha Mine were stalled by the city government of Cajamarca, which wanted to protect the city's major watershed by issuing Municipal Ordinance 012, which declared that the Cerro Quilish area was a "protected area" in 2003. As result, Newmont was unable to proceed with the Cerro Quilish project. In 2005, the acquisition of Las Bambas by Xstrata for \$121 million was strongly opposed during the auction process. About \$46 million of that total was a social contribution to the community, and the proactive stand of Xstrata and Las Bambas community relations strategy was remarkable and successful in overcoming opposition to the projects (*M.A. Yepez*, Mineral Economist, U.S. Embassy, Lima, Peru, Economic Section, written commun., May 18, 2005).

Oxfam America continued to support communities affected by mining in Peru and said "mining should demonstrate greater respect for the human rights of such communities." The local *CONACAMI* indicated, "it has the right to participate [in] and be consulted on mineral polices that involve communities affected by mining operations" (*M.A. Yepez*, Mineral Economist, U.S. Embassy, Lima, Peru, Economic Section, written commun., May 18, 2005). Their position could, however, affect future flows of mineral investments into Peru.

Production

In 2005, the production value of Peruvian minerals (metals, industrial minerals, and fuels) amounted to \$5.1 billion, compared with \$4.8 billion in 2004. Mining and fuel production increased by 8.1% as a result of higher values of metals (7%) and fuel output (23.4%). The increase of mineral output (content) was mainly led by natural gas (76.5%), molybdenum (21.6%), gold (20%), crude oil (17.9%), and iron (7.5%) and, to a lesser extent, by silver (4.4%) and lead (4.3%) compared with those of 2004.

In 2005, metal prices were also driven upwards because of the higher consumption associated with increased world economic activity, such as in, in order of importance, China, the United States, and other Asian countries. Metal production growth was mainly led by increased output of gold, iron, lead, molybdenum, and silver, which offset the decreased output of copper and zinc. The hydrocarbon sector's output also increased owing to the increased extraction of natural gas at Camisea and Aguaytia, and crude oil output increased because 15 new oil exploration and production contracts were signed in 2005; 14 contracts were signed in 2001 (table 1; Ministerio de Energía y Minas, 2006a, p. 2-3, 18-24; 2006a§; Banco Central de Reserva del Perú, 2006b§).

Trade

Peru's mining industry, which has consistently been the country's major foreign exchange generator since 1997, accounted for about 56.6% (\$9.8 billion) of total export revenues of more than \$17.3 billion in 2005 compared with 55.5% (\$7.1 billion) of total export revenues of about \$12.8 billion in 2004. In 2005, Peru's total trade balance recorded a surplus of about \$5.3 billion compared with \$3 billion in 2004, which was an increase of 6.6% compared with a 4.3% increase in 2004. Mineral and petroleum and derivatives exports in 2005 (which were valued at about \$11.3 billion) increased by almost 45.0% compared with those of 2004 (which were valued at almost \$7.8 billion) (Banco Central de Reserva del Perú, 2006b§; Ministerio de Energía y Minas, 2006a§).

In 2005, mining was the main exporting sector of the country. The price increases for such commodities as, in order of value, copper (29.5%), gold (10.5%), zinc (32.6%), and molybdenum (65.4%) played an essential role in the Peruvian trade balance. Two-thirds of the total minerals exported (\$9.8 billion) were copper (\$3.4 billion) and gold (\$3.2 billion). Peru's other mineral exports were molybdenum (\$1.15 billion), zinc (\$805 million), lead (\$491 million), silver (\$281 million), tin (\$270 million), and iron (\$216 million) (Ministerio de Energía y Minas, 2006a, p. 8-15; 2006a§; Banco Central de Reserva del Perú, 2006b§).

Peru's fourth major traditional export, petroleum and derivatives, was valued at \$1.5 billion in 2005 compared with \$646 million in 2004 and \$621 million in 2003. Peru's total mineral exports, which included petroleum and derivatives, amounted to more than 65% of its total exports in 2005. Total mineral imports, which consisted mostly of petroleum and derivatives, however, increased in value by about 32.4% to \$2.3 billion compared with \$1.8 billion in 2004 and \$1.4 billion in

2003. Total imports increased in value by about 23.2% to \$12.1 billion compared with \$9.8 billion in 2004 and \$8.2 billion in 2003 and generated a surplus of \$5.3 billion compared with \$3.0 billion in 2004 and \$853 million in 2003 (Sociedad Nacional de Minería, Petróleo y Energía, 2006a, p. 32; 2006b, p. 28; 2006c, p. 17; Banco Central de Reserva del Perú, 2006b§). In 2005, the United States (31.4%), China (11.0%), Chile (6.7%), Canada (6.0%), and Japan (3.5%) were Peru's leading mineral consumers. The United States, China, and Chile were the main importers of gold, copper, and molybdenum, respectively. Peru sold about 6% of its exports to the other members of the Mercado Común Andino (Ancom) (Bolivia, Colombia, Ecuador, Peru, and Venezuela); about 3% was sold to the Mercado Común del Cono Sur (Mercosur) countries (Argentina, Brazil, Paraguay, and Uruguay and associate members Bolivia and Chile); and 15% to other Latin American countries. Peruvian mineral exports could increase if the negotiations between Ancom and Mercosur were to lead to a South American free trade agreement and because of the free trade agreement signed recently (2006) between the United States and Peru (Ministerio de Energía y Minas, 2006a, p. 31, 2006a§; Sociedad Nacional de Minería, Petróleo y Energía, 2006c, p. 55; Banco Central de Reserva del Perú, 2006b§).

Structure of the Mineral Industry

The structure of the Peruvian mineral industry continued to change owing to the privatizations and joint-venture projects. The establishment of consortia in such deregulated industries as oil and gas and joint ventures in energy and mining projects were becoming a common practice in Peru. According to the Ministerio de Energía y Minas (2005§; 2006b§), Peru was the seventh most attractive area for investments in exploration after, in order of investment attractiveness ranking, Tasmania (Australia), Nevada and Alaska (United States), Northwest Territories (Canada), Western Australia, and Indonesia (Ministerio de Energía y Minas, 2005§; 2006b§; ProInversión—Private Investment in Peru, 2006a§).

The new operating process, which was the result of privatization and joint-venture projects, incorporated policies that deal with economic and societal development issues and with environmental protection in a sustainable way. Private local interests owned most of the medium- and small-sized mining operations. More than 250 foreign mining companies have been established in Peru since 1990 (table 2).

Commodity Review

Metals

Copper.—Peru's copper output (Cu content) was about 1.01 Mt compared with almost 1.04 Mt in 2004, which was a decrease of less than 3%. The decreased output was the result of lower economic activity in BHP Billiton Tintaya S.A.'s Tintaya Mine, which was affected by social unrest with the neighboring communities, and decreased production at SPCC's Cujajone and Toquepala copper mines. These decreases were partially offset by increased production at CMA's Antamina Mine and Cerro

Verde's Cerro Verde Mine; expansions at Volcan's San Cristobal Mine, Doe Run Peru S.R. Ltda.'s Cobriza Mine, Compañía Minera Condestable S.A.A.'s Condestable Mine; and several small- and medium-sized copper mines contributed as well. The country's copper metal exports in 2005 totaled about 984,200 metric tons (t) valued at \$3.4 billion compared with 940,500 t valued at \$2.5 billion in 2004; this value was 36% higher than that of 2004 as a result of the copper price increase to \$1.549 per pound of copper in 2005 from \$1.196 per pound in 2004 (Ministerio de Energía y Minas, 2006a, p. 25-26, 2006a§; Banco Central de Reserva del Perú, 2006b§).

At the end of 2004, SPCC identified a massive sulfide ore body, which increased the Toquepala Mine's proven and probable reserves to 770 Mt at grades of 0.74% copper and 0.08% molybdenum and 1.931 billion metric tons of copper oxide—leachable ("lixiviable") reserves at a grade of 0.20% copper (Ministerio de Energía y Minas, 2006a, p. 4-6, 20). SPCC continued to be the leading copper company producer in the country with a total output of 357,612 t of copper, which included 321,114 t in concentrates from the Cuajone 1 (163,659 t) and the Toquepala 1 (157,455 t) open pits, and 36,498 t of cathode copper, which was produced by solvent extraction-electrowinning (SX-EW), from the Totoral (24,213 t), the Simarrona (6,414 t), and the Cocotea (5,871 t) (about 31.8% of Peru's total copper concentrate and lixiviates produced in 2005). Copper metal output at SPCC's Ilo refinery, which was located in the Department of Moquegua, increased to 285,199 t in 2005 from 280,676 t in 2004, or by about 1.6% (Ministerio de Energía y Minas, 2006a, p. 25-26; 2006a§).

The CMA's Antamina Mine was the leading copper concentrate producer in the country with a total output of 383,039 t in 2005 compared with 370,957 t in 2004. Cerro Verde's SX-EW plant at the Cerro Verde copper mine produced 93,542 t of cathode compared with 88,493 t in 2004. BHP Billiton Tintaya's SX-EW plant reported an output of 35,491 t of cathode compared with 36,381 t in 2004. Doe Run Peru produced 59,663 t of cathode compared with 57,632 t in 2004 (Ministerio de Energía y Minas, 2006a, p. 5, 16, 26; 2006a§).

Gold.—In 2005, the increased gold output was a result of better prices in the open market and higher production achieved by all types of mine operations, which was 207.8 t compared with 173.2 t in 2004. MYS produced 103.2 t compared with 90.4 t in 2004. Other gold producers were Minera Barrick Misquichilca S.A. (36.6 t), Aruntani S.A.C. (6.4 t), Compañía Minera Ares S.A.C. (6.2 t), Minera Aurífera Retamas S.A. (5.3 t), Compañía Minera Aurífera Santa Rosa S.A. (4.7 t), Buenaventura and Consorcio Minero Horizonte S.A. (4.0 t, each), and Inversiones Mineras del Sur S.A. (1.7 t). The increase in gold production reflected Barrick's start of operations at Alto Chicama; Aruntani S.A.C.'s, Yanacocha's, and Minero Horizonte's increased output compared with 2004; and, to a lesser extent, Buenaventura's operations at Chipmo gold mine, which is located in the Department of Arequipa (Ministerio de Energía y Minas, 2006a, p. 18-21; 2006a§).

Gold recovered as a byproduct from the concentrates of Peru's polymetallic mines amounted to 2.5 t. From the total gold output in 2005, large- and medium-sized producers reported 190.2 t; small-sized mines, 1.4 t; and an unknown number of placers

and "garimperos" (informal individual miners), 16.1 t. Placers accounted for almost 8% of the gold produced in the country. The southeastern Andes have well-known gold placers on the Inambari River and its tributaries. Placer gold was produced mostly in the Inca and the Mariategui Regions and also from rivers and streams throughout the jungle (Ministerio de Energía y Minas, 2006a, p. 17-18; 2006a§).

Goldfields Limited, which was the world's fourth ranked gold producer, entered into a joint venture with Compañía de Minas Buenaventura S.A.A. to start operations in the Puquio gold project in the Department of Ayacucho in the third quarter of 2007. Goldfields Limited was also looking into the Cerro Corona gold project in the Department of Cajamarca (ProInversión—Private Investment in Peru, 2006a§).

Iron Ore.—Shougang Hierro Perú S.A.A. (a subsidiary of China's Shougang Corp.) continued to be Peru's sole iron ore producer in Marcona, Department of Ica. Mine output increased to 4.6 Mt of iron content in 2005 from 4.3 Mt in 2004. The iron ore exports amounted to 6.6 Mt at a value of \$216.0 million compared with 6.0 Mt at a value of \$129.0 million in 2004, which was an increase in value of 67.4% compared with that of 2004. The domestic consumption amounted to 300,000 t of iron ore, which was about the same level as that of 2004. Iron ore production increased in response to higher demand in China and other economies in the Asian region for construction and higher steel output, which had a positive effect on molybdenum production as well (Ministerio de Energía y Minas, 2006a, p. 34; 2006a§; Banco Central de Reserva del Perú, 2006b§).

Lead, Silver, and Zinc.—In spite of higher demand for zinc by Asian countries and higher international prices in 2005, the Peruvian zinc industry produced 1.2 Mt of zinc in concentrates, which was about the same level as that of 2004. Of the total output, the main producers' contributions were, in order of tonnage, Volcan (237,288 t), CMA (218,265 t), Empresa Minera Los Quenuales S.A. (191,291 t), Compañía Minera Milpo S.A. (89,346 t), El Brocal (60,230 t), Atacocha (59,174 t), Empresa Administradora Chungar S.A.C. (55,576 t), and others (290,501 t) (Ministerio de Energía y Minas, 2006a, p. 27-33; 2006a§).

The country's total silver content output increased to more than 3,190 t compared with 3,060 t in 2004. Peru, for the second time, surpassed Mexico's silver output of 2,700 t in 2005. In silver output, companies, such as Aruntani, El Brocal, Compañía de Minas Buenaventura S.A.A., and Volcan Compañía Minera S.A.A. were more active, and silver production was higher than last year because Minera Yanacocha S.R.L. and medium-sized gold-silver mines exceeded their initial production goals. Yanacocha increased its output mainly as a result of technological innovations in its gold-silver recovery process. Higher international prices allowed medium-sized mines and small producers to mine lower grade ores. Peru produced 319,345 t of lead in concentrates compared with 306,211 t in 2004 (Ministerio de Energía y Minas, 2006a, p. 32, 35; 2006a§). Exports of zinc, lead, and silver were valued at about \$805 million, \$491 million, and \$281 million, respectively, compared with \$577 million, \$389 million, and \$260 million, respectively, in 2004 (Banco Central de Reserva del Perú, 2006b§).

In 2005, Volcan was the first ranked zinc producer in the country with an output of 237,288 t of zinc, 62,463 t of lead,

and 346.4 t of silver from its operations at the Cerro de Pasco property, which is located in the Department of Cerro de Pasco, and the Andaychahua, the Carahuacra, and the San Cristobal base-metal mines, which are located in the Department of Junin. CMA, which was the country's second ranked zinc producer, produced 218,265 t of zinc and 333.7 t of silver from the Antamina Mine. Empresa Minera Los Quenuales S.A. produced 191,291 t of zinc, 25,059 t of lead, and 170.8 t of silver from the Iscaycruz, the Pachangara, and the Yauliyacu mines and became Peru's third ranked private zinc producer after Volcan and CMA (Ministerio de Energía y Minas, 2006a, p. 27-33; 2006a§).

Refined metals were reported as follows: Doe Run Peru produced 122,079 t of lead, 1,080 t of silver, and 41,179 t of zinc from La Oroya complex; Sociedad Minera Refinería de Zinc Cajamarquilla S.A. produced 33.0 t of silver and 122,424 t of zinc from the Cajamarquilla refinery; and SPCC produced 109.9 t of silver from its refining operations in Ilo. Peru's silver metal production decreased to 1,223 t from 1,250 t in 2004 (table 1; Ministerio de Energía y Minas, 2006a, p. 27-33; 2006a§).

In the mining sector, Grupo Votorantim Metais S.A. of Brazil acquired 99% of the Cajamarquilla refinery for about \$210 million. Grupo Votorantim was planning to increase its zinc output to 260,000 metric tons per year (t/yr) from 130,000 t/yr with an additional investment of \$200 million by 2007 (Banco Central de Reserva del Perú, 2006b§; Grupo Votorantim Metais S.A., 2006§).

Tin.—Production from Minsur's San Rafael Mine in the Mariategui Region was 42,145 t in concentrate compared with 41,613 t in 2004. Minsur's tin smelting and refining operations in Pisco, which is located south of Lima, produced 36,733 t of metal compared with 40,624 t in 2004. The decrease was owing to a lower market price of tin, which decreased to \$3.31 per pound from \$3.90 per pound in 2004. 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 15% of the world's output and exported 40,400 t valued at \$270.0 million in 2005, which was 21.9% lower in value compared with that of 2004 (Ministerio de Energía y Minas, 2006a, p. 35; 2006a§; Banco Central de Reserva del Perú, 2006b§).

Industrial Minerals

Cement.—Peru's total cement production was at about the same level as that of 2004, or 4.6 Mt. Five main cement companies had an operating capacity of almost 6.0 Mt/yr. Cementos Lima S.A. (CLSA) was the leading cement producer and produced about 3.0 Mt of cement, or more than 65%, of Peru's total cement output; CLSA's Atocongo plant had a production capacity of about 3.5 Mt/yr and drew from nearby limestone quarries. Cementos Pacasmayo S.A.A. was the second ranked cement producer and accounted for about 17% of total production; it had a production capacity of 1.0 Mt/yr. Cemento Andino S.A. was the third ranked cement producer and accounted for 13% of total production; it had a production capacity of 0.8 Mt/yr. Cementos Yura S.A. was the fourth ranked company and had a production share of 3%. Cemento Sur S.A. was the fifth ranked company and had a production

share of about 2%. Yura and Sur had production capacities of 300,000 t/yr and 200,000 t/yr, respectively (Pflucker, 2005, p. 6; Ministerio de Energía y Minas, 2006a, p. 62-64).

Phosphate Rock.—Empresa Minera Regional Grau Bayvar S.A.'s [Companhia Vale do Rio Doce (CVRD)] phosphate deposits (Bayóvar project) produced 37,757 t of phosphate ore, which was about the same level as that of 2004. The 90,000-t/yr phosphate plant that was operated by Grau Bayóvar produced 14,000 t of phosphate (P_2O_5) in 2005. The Bayóvar project comprises 150,000 hectares of phosphate and brine and has proven reserves of 820 Mt of phosphatic rock equivalent to 260 Mt of rock phosphate with 30% P_2O_5 content. CVRD won an international bid on March 16, 2005, to explore further the Bayóvar phosphate deposit. The feasibility study to produce about 3.3 Mt/yr was expected to be completed in the second quarter of 2007 (Ministerio de Energía y Minas, 2006a, p. 46; Companhia Vale do Rio Doce, 2006§).

Mineral Fuels

Coal.—Peru's largest coal deposits were at Alto Chicama in La Libertad Region. Other 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 2005, according to the Ministerio de Energía y Minas (2006a, p. 57), Peru's recoverable coal reserves were estimated to be 1.1 billion metric tons, and coal production was relatively small (about 22,252 t) compared with an estimated consumption of more than 1.3 Mt/yr (U.S. Energy Information Administration, 2006§).

Natural Gas and Petroleum.—In 2005, according to the Ministerio de Energía y Minas (2006b-d§), Peru's recoverable (proven and probable) and possible crude oil, liquefied natural gas (LNG), and natural gas reserves were estimated to be 6,239.1 million barrels (Mbbbl); LNG 1,373.8 Mbbbl; and natural gas 859 billion cubic meters (30.4 trillion cubic feet), respectively. The leading gasfields were the Aguaytía, which is located about 41 km west-northwest of Pucallpa and had proven reserves of 8.5 billion cubic meters (301 billion cubic feet) of gas and 9 Mbbbl of natural gas liquids (NGL) and the Camisea gasfields in the Ucayali Basin with 250 billion cubic meters (8.7 trillion cubic feet), which included 600 Mbbbl of NGL. Natural gas production increased to 860 million cubic meters from 523 million cubic meters in 2004 and was produced by Aguaytía S.A. (43.6%), Pluspetrol S.A. (23.2%), Petrotech del Perú S.A. (13.4%), Petróleo Brasileiro S.A. (Petrobrás) (10.1%), and others (9.7%). Petrobrás through Petrobrás Energía S.A. acquired exploration and production rights for natural gas and petroleum in Lots 57 and X, respectively (Ministerio de Energía y Minas, 2006b, p. 40-42; 2006b§, d§; Petróleo Brasileiro S.A., 2005§; U.S. Energy Information Administration, 2006§).

The Camisea Project encompasses three phases—Upstream, Transportation, and Distribution of natural gas from the Camisea field, which is located in the Ucayali Basin in the Department of Cusco. Under the license contract, the Upstream Consortium holds the rights to produce natural gas and liquids in Block 88 for 40 years. Investments to develop and produce, transport, and distribute natural gas from the Camisea field were estimated as

follows: the Upstream Project to develop and produce natural gas, \$550 million; the Transportation Project to transport natural gas and liquids to Lima through pipelines, \$820 million; and the Distribution Project for the distribution network in Lima, \$170 million (Camisea Project, 2006§).

In 2005, crude oil production increased to 106,688 barrels per day (bbl/d) from 94,120 bbl/d in 2004, or by 13.4%. Production of petroleum derivatives increased to 64,390 bbl/d from 63,525 bbl/d in 2004, or by 1.4%. Peru imported an average of 49,112 bbl/d crude oil and petroleum products to satisfy its internal consumption of 155,800 bbl/d (Ministerio de Energía y Minas, 2006b, p. 17; 2006d§; U.S. Energy Information Administration, 2006§).

Peru's total crude oil production of 38.9 Mbbbl in 2005 came from Pluspetrol S.A. (63.8%), Petrobrás (12.0%), Petrotech (13.4%), and others (10.8%) (table 1; Ministerio de Energía y Minas, 2006b, p. 25; 2006d§; Sociedad Nacional de Minería, Petróleo y Energía, 2006c, p. 55). Almost 60% of the country's crude oil production came from the jungle blocks in the Loreto and the Ucayali Regions; the remainder was produced at the coastal and offshore fields in Talara. The country's proven petroleum reserves were estimated to be about 0.9 billion barrels on January 1, 2006 (Ministerio de Energía y Minas, 2006d§; U.S. Energy Information Administration, 2006§).

In 2005, the largest oil refinery continued to be Petroperú's La Pampilla, which had a designed capacity of about 100,000 bbl/d. The second largest oil refinery was Petroperú's Talara, which had a designed capacity of about 70,000 bbl/d. Other refineries had the following designed capacities: Conchan, 20,000 bbl/d; Iquitos, 10,500 bbl/d; Pucallpa, 3,500 bbl/d; and El Milagro, 2,500 bbl/d. Refinery production came from La Pampilla (47%), Talara (37%), Conchan (8%), Iquitos (5%), Pucallpa (2%), and Milagro (1%) (Ministerio de Energía y Minas, 2006b, p. 17; 2006d§; Sociedad Nacional de Minería, Petróleo y Energía, 2006a, p. 50).

Reserves

Table 3 lists the Peruvian reserves of major minerals, such as copper, gold, iron ore, lead, molybdenum, silver, and zinc, on or about January 1, 2006. 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, 2006a, p. 51; 2006d§).

Annual changes in assessment of reserves are the result of additions to reserves, deletions from reserves, and production. A complication in Peru has been the production of more than one metal by a large number of mines, thus necessitating close attention to market prices and processing costs for two or more mineral commodities simultaneously to determine production as coproducts (share costs) or/and byproducts (credits).

Reserves of the leading base and precious metals increased significantly—gold in Alto Chicama and copper ore during the expansion of the Cerro Verde, the Cuajone, the Tintaya, and the Toquepala Mines. Reserves of major metals are distributed unevenly throughout Peru and were influenced mostly by mineralization of the Precambrian Cordillera and the Coast Ranges where several districts dominated the reserves position in terms of proven and probable (minable) reserves of major metals (Sociedad Nacional de Minería, Petróleo y Energía, 2006a, p. 15).

Infrastructure

Peru had 3,462 km of railways and 78,672 km of roads, of which 10,314 km was paved and 68,358 km was unpaved. Peru had 8,808 km of waterways—8,600 km of navigable tributaries of the Amazon River system and 208 km of waterways into Lake Titicaca. Also, a petroleum depot at Bayovar serviced the 800-km northern Peru crude oil pipeline. Crude oil was transported through a 1,754-km pipeline; natural gas and NGL, 983-km dual pipelines; and refined products, a 13-km pipeline. Important mineral industry ports 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 electrical generating capacity of 5,050 megawatts (MW), about 80% of which was provided by hydroelectric plants. The Peruvian Government raised about \$2 billion from the privatization of its electrical sector and committed to an investment of about \$20 million to install an additional 1,006 MW of capacity in the immediate future. The energy mix, by source, was hydro (74.5%), fossil fuel (24.5%), and others (1.0%) (Ministerio de Energía y Minas, 2006b§; U.S. Central Intelligence Agency, 2006§).

Outlook

A positive macroeconomic performance characterized the Peruvian economy in 2005. The GDP grew by 6.4% and inflation was 1.5%. The country reduced its fiscal deficit to 0.3% of the GDP from 1.0% of the GDP in 2004; this action is worth highlighting because the price of its exports increased by 16.3%, with copper, gold, molybdenum, and zinc contributing most heavily to this result. In this context, exports grew by 35.3% and reached \$17.3 billion in 2005, a level that was more than \$4.5 billion higher than that of 2004, as a result of both higher prices and larger volumes of exports. Imports increased by 23.2% as well, but Peru's trade balance increased to \$5.3 billion from \$3.0 billion in 2004. Peru's net international reserves increased to \$14.1 billion from \$11.2 billion in 2004. The Standard and Poor's upgrading of the country's economic outlook to positive from stable and Peru's earlier external debt payment to the members of the Paris Club generated good will among investors. This good will has, however, decreased owing to the uncertainty brought about by the closeness of the Presidential and Congressional elections in April 2006. Peru has maintained its country risk index at 287, which was among the lowest of the region (Chile was 75, and

Mexico, 174). Latin America had a risk index of 485 in 2005 (ProInversión—Private Investment in Peru, 2006b). Changes in legislation will not affect investors and/or corporations who have signed legal stability agreements for a period of 10 years and, in the case of mineral concessions, the term will be subject to the life of the agreement (Banco Central de Reserva del Perú, 2006a§; Comisión Nacional de Inversión y Tecnología, 2006§; ProInversión—Private Investment in Peru, 2006a§).

The energy, mining, and related industries are expected to continue to attract capital flows via joint ventures and consortia, privatizations, and direct acquisitions. According to CONITE and ProInversión, the privatization process in the minerals sector and FDI in every sector of the Peruvian economy, particularly in the banking and energy industries, are expected to continue to generate additional investments. Higher 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, North American Free Trade Agreement (NAFTA), and other trading partners is expected to increase Peru's mineral exports further (ProInversión—Private Investment in Peru, 2006a; Ministerio de Energía y Minas, 2005§, 2006b§; Comisión Nacional de Inversión y Tecnología, 2006§). The transportation phase of Camisea's pipelines for natural gas (714 km) and for NGL (560 km), however, could encounter financial difficulties because of leaky NGL pipeline. This second phase will involve the establishment of infrastructure to pipe the gas and associated liquids from Camisea to the Lima area and to liquefy 17 million cubic meters per day of gas for export to NAFTA and possibly to Chile. For that and to develop the 113 billion cubic meters of gas in Camisea's Block 56 will require an investment of \$3.2 billion. However, the natural gas liquids pipeline, which began operating in 2004 following the Upstream phase of development, has ruptured on five different occasions (Petroleum Economist, 2006, p. 39).

Peru continues to encourage community development and environmental protection based on social responsibility and sustainable development principles. In spite of that strategy, the country is facing political unrest, and the mining industry has been the target of social protest. These events have affected the image of the mining industry and caused growing concern about the regional climate for mining investments. At the national level, this trend could reduce the attraction of new investments and preclude the higher mineral output needed for regional economic development.

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TABLE 1
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2001	2002	2003	2004	2005 ^p
METALS					
Antimony:					
Mine output, Sb content ^e	460	460	460	460	1,000
Metal	274	356	356	356	807
Arsenic, white ²	2,800 ^r	2,970	2,970	2,970	2,970
Bismuth:					
Mine output, Bi content ^e	1,000	1,000	1,000	1,000	952 ³
Metal	640	568	600	600	600
Cadmium, metal	485 ^r	422	529	532	481
Copper:					
Mine output, Cu content	722,355 ^r	844,553	842,578 ^r	1,035,574	1,009,898
Sulfate, Cu content	1,953	1,950	2,000	2,000	2,000
Metal:					
Blister	326,899	314,938	314,228	320,135	321,968
Refined, primary:					
Electrowon	131,409	156,467	171,198	167,000 ^r	165,530
Other	342,502	346,282	345,848	338,308	344,862
Total	473,911	502,749	517,046	505,308 ^r	510,392
Gold:⁴					
Mines kilograms	121,902	138,810	159,770	158,438 ^r	191,688
Placers do.	16,620	18,720	12,849	14,786 ^r	16,134
Total do.	138,522	157,530	172,619	173,224 ^r	207,822
Indium do.	4,263	5,500 ^e	5,500	5,500	5,500
Iron and steel:					
Iron ore and concentrate:					
Gross weight thousand metric tons	4,564	4,594	5,239	6,439	6,810
Fe content do.	3,087	3,105	3,541	4,315	4,565
Metal:					
Pig iron ^e do.	330	330	330	330	330
Sponge iron do.	70	30	80 ^e	80	80
Ferrosilicon ^e	600	600	600	600	600
Steel:					
Crude ⁵	690,000	750,000	750,000	750,000	750,000
Ingots and castings ^e thousand metric tons	510	510	510	510	510
Semimanufactures ^e	250	250	250	250	250
Lead:					
Mine output, Pb content	289,546	305,651	308,874	306,211	319,345
Metal	121,169	119,588	112,289	118,970	122,079
Manganese, mine output, Mn content ^e	200	200	200	200	200
Molybdenum, mine output, Mo content	9,499	8,613	9,561	14,246	17,325
Selenium, metal, refined kilograms	16,110	20,600	20,600	21,000 ^e	17,400
Silver:					
Mine output, Ag content	2,571	2,870	2,921	3,060	3,193
Metal, refined	1,194	1,193	1,147	1,250	1,223
Tellurium, metal kilograms	19,105	21,600	22,000 ^e	22,000	32,880
Tin:					
Mine output, Sn content	38,182	38,815	40,202	41,613	42,145
Metal ⁶	27,683	35,828	39,181	40,624	36,733
Zinc:					
Mine output, Zn content	1,056,629	1,232,997	1,372,790	1,209,006	1,201,671
Metal	204,646	172,688	202,076	195,692	163,603

See footnotes at end of table.

TABLE 1--Continued
PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2001	2002	2003	2004	2005 ^p	
INDUSTRIAL MINERALS						
Barite	11,031	3,806	2,906	3,606	3,700	
Boron materials, crude (borates)	9,374	6,698	9,315	9,578	9,600	
Cement, hydraulic	thousand metric tons	3,950	3,980	4,000	4,590	4,600
Chalk ^c	101,000	101,000	101,000	101,000	101,000	
Clays:						
Bentonite	18,217	20,760	14,980	18,471	18,500	
Fire clay	5,900 ^e	5,900	5,900	5,900	5,900	
Kaolin	5,532	1,934	2,653	2,720	2,700	
Common clay	676,944	428,820	232,002	438,976	440,000	
Diatomite ^e	35,100	35,100	35,100	35,100	35,100	
Feldspar	4,253	6,018	7,349	6,005	6,000	
Gypsum, crude	20,966	75,306	71,114	149,735	150,000	
Lime ^c	142,000	184,800	195,400	205,100	215,400	
Limestone	4,370,865	5,695,392	6,021,502	6,321,592	6,636,600	
Nitrogen, N content of ammonia ^c	5,000	5,000	5,000	5,000	5,000	
Phosphate rock:						
Crude, gross weight ^c	15,800	16,400	31,600	37,760	37,800	
P ₂ O ₅ content	4,825	6,018	11,610	13,870	14,000	
Salt, all types	418,954	278,948	187,416	248,898	250,000	
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	thousand metric tons	4,370	4,400	4,400	4,400	
Marble	11,636 ³	16,553 ³	21,134 ³	22,208 ³	22,200	
Onyx	150	150	150	150	150	
Quartz and quartzite (crushed)	40,000	40,000	40,000	40,000	40,000	
Shell, marl	4,000	4,000	4,000	4,000	4,000	
Slate	16,800	10,944 ³	14,260 ³	11,950 ³	11,950 ³	
Travertine	2,971 ³	4,183 ³	4,658 ³	6,038 ³	6,050	
Sand and gravel:						
Construction	thousand metric tons	1,154	1,011	907	1,220	1,220
Silica sand	do.	120	300	196	871	900
Sulfur, elemental:						
Native ^c	100	100	100	100	100	
Byproduct of metallurgy	203,000 ^r	201,000 ^r	204,000 ^r	204,000 ^{r,e}	204,000 ^e	
Sulfuric acid, gross weight	623,084	623,100	623,000	623,000	623,000	
Talc and related materials:						
Talc	11,165	10,685	10,791	9,548	9,500	
Pyrophyllite	8,069	9,514	12,291	14,282	14,300	
Total ^c	19,234	20,199	23,082	23,830	23,800	
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Anthracite, run-of-mine	6,593 ^r	17,602 ^r	5,768 ^r	8,876 ^r	8,837	
Bituminous, run-of-mine	13,626 ^r	3,976 ^r	9,900 ^r	13,475 ^r	13,415	
Total	20,219 ^r	21,578 ^r	15,668 ^r	22,351 ^r	22,252	
Coke, all types ^c	10,000	10,000	10,000	10,000	10,000	
Gas, natural:						
Gross	million cubic meters	371	543	523	860	860
Marketed	do.	370	442	520	857	857
Natural gas liquids:						
Natural gasoline and others ⁷	thousand 42-gallon barrels	595	573	584	4,216	4,216
Butane	do.	1,223	989	1,037	5,508	5,508
Total	do.	1,818	1,562	1,621	9,724	9,724

See footnotes at end of table.

TABLE 1--Continued
 PERU: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2001	2002	2003	2004 ^p	2005 ^p	
MINERAL FUELS AND RELATED MATERIALS--Continued						
Petroleum:						
Crude	thousand 42-gallon barrels	35,440	35,356	33,343	34,448 ^r	38,941
Refinery products:						
Liquefied petroleum gas	do.	2,612	3,100	2,551	2,938	2,978
Gasoline, motor	do.	9,767	11,593	9,202	8,848	8,968
Jet fuel	do.	2,966	3,521	3,289	3,822	3,874
Kerosene	do.	5,503	6,532	4,354	2,467	2,501
Distillate fuel oil	do.	12,988	15,417	14,972	15,082	15,287
Lubricants	do.	539	642	520	266	271
Residual fuel oil	do.	19,287	22,894	23,134	20,462	20,740
Asphalt	do.	--	--	770	1,011	1,025
Other ⁸	do.	5,053	5,998	5,379	8,629	8,746
Total	do.	58,715	69,697	64,171	63,525	64,390

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^pPreliminary. ^rRevised. -- Zero.

¹Table includes data available through October 2006.

²Output reported by Doe Run Resources Corp.

³Reported figure. Source: Ministerio de Energía y Minas - Perú.

⁴Peru's placer gold production was reported.

⁵Output reported by Mexico's Steel Chamber-CANACERO—Ten years of steelmaking statistics in Latin America, 1996-2005.

⁶Output reported by Minsur S.A.'s smelter.

⁷Includes hexane.

⁸Includes refinery fuel and losses.

TABLE 2
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(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 Peru 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.	do.	Toquepala Mine, Tacna Department	160
Do.	do.	do.	Cocotea, Simarrona, and Totoral mines—SX-EW, Tacna Department	40
Do.	do.	do.	Smelter at Ilo, Moquegua Department	320
Do.	do.	do.	Refinery at Ilo, Moquegua Department	300
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	400
Do.	do.	do.	Antamina concentrator, Ancash Department	400
Do.		Doe Run Peru S.R. Ltda. (private, 100%)	Cobriza, Huancavelica Department	70
Do.	do.	do.	Smelter at La Oroya, Junin Department	65
Do.	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 Tunel, and Andaychagua, Junin Department	60
Do.		Cía. Minera San Ignacio de Morococha S.A. (private, 100%)	Yauricocha, Junin Department	60
Do.		BHP Billiton Tintaya S.A. (private, 100%)	Tintaya Mine, Cusco Department	90
Do.		Sociedad Minera Cerro Verde S.A.A. (Phelps Dodge Corp., 55%; Sumitomo Metal Mining Co. Ltd., 25%; Compañía de Minas Buenaventura S.A.A., 20%)	Cerro Verde, Arequipa Department	100
Do.	do.	do.	Electrowon 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%; World Bank International Finance Corporation, 5%)	Yanacocha, La Quinua, and Maqui-Maqui mines, Cajamarca Department	110,000
Do.	do.	Minera Barrick Misquichilca S.A. (Barrick Gold Corp., private, 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%)	Arcopampa, 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, Explatoro, and Molino de Oro, Arequipa Department	1,000
Do.	do.	Cía. Aurífera Río Inambari S.A. (Cía. Minera del Sur S.A., 84%; 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

TABLE 2--Continued
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold--Continued	kilograms	Consorcio Minero Horizonte S.A. (private, 100%)	Parcoy, La Libertad Department	4,000
Do.	do.	Compañía Minera Sipan 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.		Cía. Minera Aurífera Santa Rosa S.A. (private, 100%)	Santa Rosa, Peno 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. (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 Peru 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
Natural gas	million cubic meters per day	Pluspetrol Perú Corp. S.A. (Pluspetrol S.A., 36%; Hunt Oil Company, 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.	Petroperú S.A.	Refineries in Talara, Iquitos, Milagro, and Pucallpa	105,000
Do.	do.	do.	Refinery La Pampilla, Lima Department	100,000
Do.	do.	do.	Refinery Conchan, Lima Department	20,000
Phosphate rock	metric tons	Empresa Minera Regional Grau Bayóvar S.A. (Companhia Vale do Rio Doce, 100%)	Bayovar phosphate mine, Piura Department	50
Silica sand		Minera Baribent S.A. (private, 100%)	Maria G. and Martin I., 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.	Compañía 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%; Centromin 17%)	Julcani and Huachocolpa Mines Huancavelica Department, Uchucchacua Mine, Lima Department	350,000

TABLE 2--Continued
PERU: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Silver--Continued	do.	Compañía de Minas Buenaventura S.A.A. (private, 100%)	Orcopampa Mine, Arequipa Department	161,000
Do.		Volcan Compañía Minera S.A.A. (private, 100%)	San Christobal, Mahr Tunnel, and Andaychagua, Junin Department	350,000
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 Peru 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
Tin	do.	Minsur S.A. (private 100%)	San Rafael Mine/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%; Noranda Inc., 33.75%; Teck Cominco Ltd., 22.5%; Mitsubishi Corp., 10%)	Antamina Mine, Huari, Ancash Department	220
Do.		do.	Antamina concentrator, Ancash Department	70
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.		Sociedad Minera Refinería de Zinc 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%)	Huanzala 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

TABLE 3
PERU: RESERVES OF MAJOR MINERALS IN 2005

(Thousand metric tons unless otherwise specified)¹

Commodity	Reserves
Coal, all types	1,100,000
Copper	57,900
Gold	metric tons 3,000 ²
Iron ore	861,000
Lead	5,200
Molybdenum	450 ^c
Natural gas	billion cubic meters 250
Petroleum crude	million barrels 900
Phosphate Rock	820
Salt	100,000 ^c
Silver	metric tons 43,800
Sulfur	150,000 ^c
Tin	700
Uranium	100 ³
Zinc	18,200

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown.

¹2005 and 2006 "Anuario de la Minería del Perú" Ministerio de Energía y Minas except for natural gas and petroleum crude; U.S. Geological Survey Mineral Commodity Summaries 2006; U.S. Energy Information Administration 2006.

²Excludes metal in placer deposits.

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