

THE MINERAL INDUSTRY OF

PERU

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Peru is the third largest country in South America, bordering Brazil and Bolivia in the east, Colombia and Ecuador in the north, and the South Pacific Ocean between Ecuador and Chile in the west. Peru has three natural regions: "costa," western coastal plain; "sierra," high and rugged Andes in the center; and "selva," eastern lowland in the Amazon Basin. More than one-half of the country is covered by forests. Most of Peru's minerals are mined in the Andes and its foothills.

After the stabilization of the Peruvian economy through strict fiscal actions, 1994 was one of the most active and productive years for the mining sector. Peru continued to be a major world supplier of arsenic, bismuth, copper, gold, lead, molybdenum, silver, and tellurium. The country was the third largest producer of silver, following Mexico and the United States, and produced more than 17 metallic and 30 industrial minerals. In Latin America, Peru was the leading producer of zinc.

In 1994, Peru, with a population of almost 24 million, had a gross domestic product (GDP) of about \$79 billion.² The mining and quarrying sectors accounted for 4.7% of GDP. Nonferrous metals refining, iron and steel, and industrial minerals accounted for 6.1% of GDP, while hydrocarbon extraction and petroleum refining accounted for 4.6% of GDP. Thus, minerals and related industries were 11% of Peru's 1994 GDP. Mining export revenues, including petroleum, represented about 48% of Peru's total export earnings.

The Peruvian GDP declined 2.7% in 1992, experienced a 7% growth during 1993, and 12.7% in 1994. The inflation rate was reduced from about 55% in 1992 to 39.5% in 1993 and 15.4% in 1994. The country's total foreign debt amounted to almost \$23 billion and its reported net international reserves were about \$6 billion by yearend 1994.

During 1994, the Peruvian Government succeeded in its efforts to pacify the country and stabilize the economy, which was seen by foreign investors as a distinct sign of the real changes that took place in Peru and making it the most attractive open-market economy in Latin America. The country slashed subsidies and tariffs, freed foreign exchange and interest rates, liberalized international investment rules, and embarked on a sweeping privatization process.

According to the "Carta Minera's ANUARIO" of the Andean Air Mail & Peruvian Times, Lima, and the "Sociedad Nacional de Minería y Petróleo" (SNMP), the Peruvian privatization program began on July 19, 1991.

During 1994, the Government privatized 29 firms collecting \$2.6 billion; investment commitments to modernize and expand operations were \$2 billion.

Privatization of state-owned mining companies was expected to continue during the 1995-96 period. The state-owned firms, "Empresa Minera del Centro del Perú S.A. (CENTROMIN PERU S.A.), the largest mining company, and Petróleos del Peru S.A. (PETROPERU, which changed to PERUPETRO), will be offered for sale next year.

Government Policies and Programs

The Peruvian Constitution of December 1993 promotes and protects domestic and international investments. The dramatic changes in Government policies and the rebounding of Peru's economy resulted in a boom in foreign investment. The Lima Stock Exchange (LSE), fueled by international investors, responded with annual yields in excess of 100% during 1993-94. Peru presented fewer risks than any other country in Latin America and, as a result, was attracting more international corporations; institutional investors also were looking for business opportunities in the country.

After strict fiscal measures during the last 3 years, reduced taxes and tariffs, a favorable 1993 Constitution for investment, an open market economy, and a privatization program, the Government succeeded in bringing the country's economy back to a competitive position. All of these reforms generated great confidence, attracting investment and creating business opportunities in Peru.

The privatization process was managed by the Comisión de Promoción de la Inversión Privada (COPRI), and responsibility for specific privatization was vested in special committees, Comités de Privatización (CEPRI), whose members were selected from the ranks of leading professionals and officials, mainly from the private sector.

Legislative Decree 662 of August 29, 1991, was enacted as the Foreign Investment Promotion Law. Supreme Decree No. 014 of June 2, 1992, was enacted as the general text of the Mining Law. Decree 109 of June 12, 1981, and Decree 708 of December 14, 1991 (liberalizing the General Mining Law), were contained in this general text. Legal procedures to obtain mining rights were made easier by the enactment of complementary legislation, Supreme Decree No. 018 of July 9, 1992. The Government no longer had exclusive control over exploration, mining, smelting, and refining of metals and fuel minerals. Individuals and private companies are

allowed to hold mining permits in Peru.

The state-owned PERUPETRO managed energy-related activities for the Government. PERUPETRO is headquartered in Lima and has offices in Iquitos and Talara that supervise operations in the jungle and the northwest region, respectively. All mineral resources, including geothermal resources, belonged to the Government of Peru. The Government granted concessions for use by the State, private companies, and individuals. The administration and management of all mining activities rested in the executive branch. From the early 1970's until 1991, all gold produced in Peru had to be sold to the Government's Mining Development Bank (Banco Minero), abolished in 1992. Since then, the Central Bank had the legal authority to buy gold.

The Electrical Concession Law of November 1992 provided the framework for the participation of the private sector in the electrical public service.

Environmental Issues

The Environmental Law 25763 of October 11, 1992, and its environmental regulations mandated by Supreme Decree 016-93-EM and modified by Supreme Decree 059-93-EM established the Peruvian environmental and regulatory norms for the mining sector.

Environmental impact studies for each phase of mining and petroleum operations were required by the Environmental and Natural Resources Law, Decree Law 611 of September 1990. Hydrocarbons, guano deposits, and mineral-rich waters were exempted from that law. Hydrocarbon activities were the responsibility of the Ministry of Energy and Mines (MEM).

The General Directorate of Environmental Affairs (DGAA), established in 1991 within the MEM as the Competent Authority, has the responsibility to address environmental problems resulting from energy and mining activities, and is mandated to implement the current environmental code and regulations. During 1994, the National Council for Environment (Consejo Nacional del Ambiente) was created by Law No. 26410 and progress has been made to date in database information reported by energy and mining firms under the Preliminary Environmental Assessment (EVAP), Environmental Impact Assessment (EIA), and Environmental Adjustment and Management Program (PAMA). However, concrete followup activities still need to be undertaken to ensure the DGAA's strengthening and restructuring in a manner that would enhance its efficiency in carrying out environmental planning, intersectoral coordination, and environmental management.

Production

During 1994, according to the ANUARIO for 1993-94 and SNMP, the Carachugo and Maqui-Maqui mines were the largest gold producers of the country. ANUARIO's statistics indicated substantial increases for Peruvian metals, minerals,

and petroleum production compared with 1993. (*See table I.*)

Trade

While the Latin American region was experiencing a dramatic economic upsurge as it neared the turn of the century, Peru, as a member of the Andean Common Market (ANCOM, comprised of Bolivia, Colombia, Ecuador, Peru, and Venezuela), sold about 8% of its exports to the other ANCOM members and almost 5% to the other countries in Latin America. ANCOM was established as a free trade block by the Cartagena agreement. During the past few years, trade with other Andean countries was less than 10% of total Peruvian trade. In an attempt to increase interregional trade, ANCOM sought to unify external tariffs. Also, Peru recently became eligible to apply for benefits under the United States Andean Trade Preference Act.

During 1994, the country's mining production, valued at \$2.1 billion, increased by almost 5% compared to 1993, of which an estimated \$1.9 billion was exported. Peru's export earnings, including petroleum, amounted to \$2.1 billion or 48% of its total exports of \$4.5 billion. Imports increased by 37% to \$5.6 billion, creating a deficit of \$1.1 billion. Peru imported crude oil valued at \$319 million, which created a trade deficit of \$141 million for the energy sector.

Structure of the Mineral Industry

Peruvian mining law defined large-scale companies as those producing more than 5,000 metric tons per day (mt/d) of ore. Medium-scale companies were those with a daily output of 350 to 5,000 mt. Small companies produced less than 350 mt of ore daily. The largest state-owned mining companies are CENTROMIN PERU S.A. and Empresa Minera del Perú, S.A. (MINERO- PERU). Souther Peru Copper Corp. (SPCC), also a large mining company, is privately owned. Large companies produced about 95% of the Nation's copper, 100% of iron ore, 40% of lead, 30% of silver, and 40% of zinc. The medium-sized companies accounted for 5% of copper, 55% of lead, 60% of silver, and 55% of zinc outputs. The largest gold producer in the country is YANACOCCHA, which invested \$88 million last year to bring into production the Maqui-Maqui Mine, a second gold operation near to the Carachugo Mine. Private companies, mostly controlled by local interests, dominated the medium and small mining operations.

During 1993-94, three state-owned companies were privatized: Empresa Minera Especial Tintaya S.A. (TINTAYA), which was acquired by a consortium of Magma Copper Co. and Global Magma Ltd., of the United States for \$273 million and included a commitment to invest \$85 million to improve and modernize its mining activities; the Cajamarquilla zinc refinery, purchased by Cominco Ltd., of Canada (87%), and Marubeni Corp. of Japan (13%), for \$193 million with a commitment to invest \$20 million; and the Ilo copper refinery, which was acquired by SPCC, for

\$68 million and featured a commitment to invest an additional \$20 million to modernize the refinery during the next 3 years. SPCC continued with its \$300-million investment to improve operations and to conduct environmental projects; SPCC invested about \$56 million alone in 1994.

Petroleum activities were administered by the state-owned PERUPETRO. The new hydrocarbon law eliminated the company's exclusive rights in the industry, such as control over secondary recovery operations, refining, and the importation and subsequent resale of crude petroleum and byproducts. The law enhanced oil and gas exploration and production contract terms, which resulted in an increased number of domestic and foreign firms expressing interest in participating in exploration contracts with PERUPETRO (See table 2.)

Commodity Review

Metals

Copper.—In 1994, according to ANUARIO for 1993-94 and SNMP, Peru's copper mine output increased to 383,756 mt of copper content from its mine operations, or about 4% compared with 1993, with a value of \$834 million. SPCC remained the largest copper producer in the country with an output of 242,976 mt of copper content from its mine operations at Toquepala and Quajone open pits, slightly higher than that of 1993 (241,891 mt). Toquepala produced 102,796 mt of blister copper containing 49 mt of silver and 2,316 mt of molybdenite. Cuajone's production was 140,723 mt of blister copper containing 55 mt of silver and 2,319 mt of molybdenite.

TINTAYA, Peru's second largest copper producer privatized in 1994, produced 46,930 mt of copper content, while refined copper production from SPCC's Ilo refinery amounted to 111,572 mt of copper cathodes. CENTROMIN, the state-owned mining company scheduled to be privatized in 1995-96, reported a total production of 32,470 mt of copper content from its seven base metal mines, while its smelting and refining complex at La Oroya produced 44,441 mt of refined copper, a figure slightly higher than that achieved in 1993.

Cyprus Minerals Company, a U.S. firm based in Denver, Colorado, the new owner of the Cerro Verde copper open pit, invested about \$40 million to modernize the crushing facilities at the mine site. The company reported a production of 20,461 mt of copper content. Other copper content producers were Cía Minera Pativilca, a private mining company, 6,153 mt; and Cía Minera Condestable S.A., privatized in 1992, 4,507 mt. An additional 20,157 mt came from medium- and small-sized mines throughout the country.

Gold.—In 1994, Peru's gold production more than doubled from the previous year, amounting to 46 mt; the country exported 31 mt of gold valued at \$381 million.

YANACOCCHA, owned by Newmont Mining Co. of the United States (38%); Cía. de Minas Buenaventura of Peru (32%); France's Bureau de Recherches Géologiques et Minière (BRGM) through its subsidiary Compagnie Française des Mines (25%); and the World Bank's International Finance Corporation (5%), completed a \$113 million investment in its gold mines and remained the largest gold producer in the country with 10.2 mt of gold for 1994. After the opening of the Maqui-Maqui Mine in October 1994, the company was expected to increase gold production to 16 mt in 1995. Newmont has identified and partially measured a geologic resource of more than 186 mt of gold in nine deposits within the Yanacocha Gold District.

Gold recovered as a byproduct from the concentrates of the Nation's polymetallic mines amounted to 4 mt. Other private gold producers in 1994 were Minera Aurífera Retamas, 3.1 mt; Cía. Minera Poderosa, 2.5 mt; and Consorcio Minero Horizonte, 1.5 mt. Cía. de Minas Orcopampa S.A., Buenaventura's subsidiary, produced 1.1 mt of gold as a byproduct of its base metal concentrates. Other medium-sized operations and small mines reported 5.6 mt, and an unknown number of "garimperos" (informal individual miners) accounted for almost one-half, or 17.1 mt, of gold produced in the country.

The southeastern Andes have well-known gold placers on the Inambari River and its tributaries. Placer gold production was concentrated in the Inca and Mariategui Regions, although gold was recovered from placers in rivers and streams throughout the jungle.

Iron and Steel.—In 1994, Hierro Peru S.A. (HIERROPERU) owned by China's Shougang Corporation, produced 4.8 million metric tons (Mmt) of iron ore. Although still below the plant capacity, HIERROPERU announced plans to continue increasing its output. The Marcona Mine produced all types of iron exports, such as pelletized fines, blast furnace pellets, and sinter feed. In 1994, the company exported 6.8 Mmt of iron ore, valued at \$105 million, through the Port of San Nicolás, 15 kilometers (km) from the Marcona Mine, to Argentina, China, Japan, South Korea, and the United States. Domestic sales were made to Empresa Siderúrgica del Perú.

Lead and Zinc.—In 1994, Peru produced 226,350 mt of lead content and 682,387 mt of zinc content. Both lead and zinc production increased by 4.3% and 2.8%, respectively, compared with 1993 mine outputs.

Zinc metal was refined at the SPCC's Cajamarquilla plant (113,156 mt) and at CENTROMIN's La Oroya plant (68,624 mt). CENTROMIN also reported a production of 87,440 mt of refined lead and continued as the leading lead-zinc producer from its seven mines and smelting and refining complex at La Oroya.

Cía Minera San Ignacio de Morococha, S.A. remained the country's largest private zinc producer with 70,376 mt. Cía Minera Santa Luisa, a subsidiary of Mitsui Mining Company of Japan, produced about 39,852 mt of zinc and 16,429 mt

of lead from its Huanzalá Mine.

Cía. Minera Milpo, S.A., the largest private lead producer in Peru, reported 21,362 mt of lead and 40,397 mt of zinc outputs in 1994. Milpo operated a lead-zinc-silver deposit in the Central Mining District, Andrés Avelino Cáceres Region, northeast of Lima. This company was 73.8% owned by local shareholders and 26.2% by foreign investors.

Cía. Minera Atacocha, S.A., also operated in the Central Andes Cáceres Region. The Atacocha Mine, 15 km northeast of Cerro de Pasco, produced about 30,071 mt of zinc and 15,649 mt of lead in 1994.

Silver.—Production increased about 9.4% to 1,785 mt in 1994, making Peru the world's third largest producer, after Mexico and the United States. The medium-sized companies accounted for 55% of total output; large mining companies contributed 30%; and small companies, the remaining 15%.

Peru operated at least 30 silver mines in 1994. The most important were Andaychagua, Arcata, Carolina, Cuajone, Casapalca, Caylloma, Cerro de Pasco, Cobriza, Julcani, El Brocal, Millotingo, Morococha, Orcopampa, Santa Luisa, Toquepala, Uchucchacua, and Yauricocha.

In 1994, CENTROMIN led silver producers in the Nation's total output, with 572 mt. Buenaventura and its subsidiary, Orcopampa, dominated the medium-sized silver mining sector with 166 mt, or 18%, of the country's total silver production.

Tin.—Minsur, S.A. was Peru's only tin producer in 1994. Production from its San Rafael Mine in Mariátegui Region was 20,046 mt of tin, a 46.5% increase from that of 1993. Thus, Peru was the second largest tin producer in Latin America after Brazil. According to Carta Minera, Peru's proven and probable tin reserves amounted to 7.8 million metric tons (Mmt), grading 5.5% metal content; this grade was reported to be the highest in the world. Bolivia and Brazil, other world-class producers of tin, had a metal content of only 1% and 2%, respectively. Tin concentrates were exported to Brazil and Thailand.

Tungsten.—Two private companies in Peru were mining tungsten at the Pasto Bueno Mine in Ancash and at Regina in Puno Region. The Palca XI Mine in Puno, operated by Sociedad Minera Regina, was the main producer. In 1994, production decreased to 256 mt or almost 36% from that of 1993, mainly because of lower world market prices.

Industrial Minerals

Cement.—Five cement companies operated in Peru, including Cementos Lima, S.A.; Cementos Norte Pacasmayo, S.A.; Cemento Andino, S.A.; Cementos Yura; and Cementos del Sur. The Government was planning to sell its 48.87% share in Cementos Lima, S.A., the country's main cement producer. The company produced about 850,000 mt of cement in 1994, about 40% of Peru's total cement output.

The Atocongo has a design capacity of 1 million metric tons per year (Mmt/a), with limestone quarries nearby. Most of the cement was exported primarily to Chile via the firm's own pier at Port Conchan, about 8 km from the plant. The company also operated the small Rioja cement plant in San Martín Region using Chinese equipment. Cementos Norte Pacasmayo, S.A. was the second largest cement company in Peru, accounting for 21% of total production. It has an installed capacity of 1 Mmt/a, with a plant utilization of 47%. The plant is 670 km north of the Panamerican Highway in Pacasmayo, La Libertad Region.

Fertilizers.—Phosphate and potash deposits in the Sechura Desert, in the Grau Region of northern Peru, have been studied intermittently since the late 1950's. The phosphate deposits of Bayóvar, also in northern Peru, had proven reserves of 570 Mmt, but were covered by sand and recent landslides. In 1994, only 37,381 mt of phosphate was produced. The 90,000-mt-per-year (mt/a) phosphate plant was operated by Empresa Minera Regional Grau Bayóvar, S.A. Phosphate shipments continued to New Zealand under a 100,000-mt contract signed with Norphos International Ltd. of Auckland, New Zealand. Other shipments went to Chile and Costa Rica through the Port of Paita.

In addition to the oil refineries, PERUPETRO also operated five industrial plants. The company closed its unprofitable fertilizer and carbon black plants, as well as a solvent complex, as part of its reorganization plan. However, its natural gas and the oil lubricants plants remained open.

Mineral Fuels

Liquid fuels provided more than 60% of Peru's total energy requirements. Petroleum accounted for 23% of energy consumption, and electricity met 10% of energy demand. Natural gas supplied 7% of the country's energy mix. Gas was projected to provide a significantly increased share with the development of the fields in the Camisea area.

Peru's largest coal deposits are at Alto Chicama, 140 km north of Trujillo in La Libertad Region. Other coal deposits occur in the Cuenca del Santa in the Maraón Region and coal basins of Goyllarisquiza and Hatun Huasi in the Cáceres Region of central Peru.

Natural gas was primarily piped from the Talara Basin in the Grau Region to the Talara refinery on the coast. Two gasfields in the Ucayali Basin were candidates for development. Peru's proven natural gas reserves at the end of 1994 were estimated at 196 billion cubic meters (m³). The Aguaytia gasfield, approximately 41 km west-northwest of Pucallpa, had proven reserves of 12.5 billion m³ of gas and 13.2 million barrels (Mbbbl) of condensate. The country's largest potential gasfield is Camisea in Cuzco. The San Martín and the Cachiriari prospects at Camisea had estimated potential reserves of about 305.8 billion m³ of gas and 725 Mbbbl of condensate (natural gas liquids). The fields are distant from potentially accessible markets; however, infrastructure must be developed.

In 1994, petroleum production in Peru averaged 127,300 barrels per day (bbl/d) compared with 1993's output of 126,280 bbl/d. However, for the eighth consecutive year, the country imported crude oil and petroleum products to satisfy its internal demand.

Peru's total crude oil production of 46 Mbbl in 1994 came from PERUPETRO, 36%; Occidental Petroleum Corp. of the United States, 43%; Petrotech of Peru, 15%; and the consortium Oxi-Bridas of Peru, 4%. About 66% of the country's crude oil production came from the jungle blocks; the remaining was produced at the coastal and offshore fields in the north of Peru.

There were 18 identified oil basins in the country, covering 84 million hectares. Offshore and coastal basins were, from north to south, Tumbes-Progreso, Talara, Lancones, Sechura, Trujillo, Salaverry, Lima, Pisco, Moquegua, and Mollendo. Interior basins were, from north to south, Marañón, Santiago, Bagua, Huallaga, Ucayali, Ene, Madre de Dios, and Titicaca. Most production was from fields in the Marañón and Talara basins. Seven of the basins reportedly have yet to be drilled. Peru's petroleum reserves have been declining and were estimated at about 400 Mbbl in 1994, compared with the 1981 peak of 835 Mbbl.

In Peru, 12 of the 20 private oil companies were American, including Petrotech International Corp. of Delaware, which won the bidding to operate for 20 years the offshore reserves of Petrotech. Mobil Exploration & Producing Peru Inc. had contracted to explore blocks 28, 29, 30, and 53 in the Upper Huallaga Valley and continued seismic and geological studies in the northern portion of its property, just south of PERUPETRO's block 8.

The largest oil refinery in Peru was La Pampilla, with a capacity of about 102,000 bbl/d. The second largest oil refinery in Peru, Talara, had a capacity of about 60,000 bbl/d. Smaller refineries were in Conchan, Iquitos, and Pucallpa.

Infrastructure

The country had 1,801 km of railroads and 69,942 km of roads, of which 7,459 km were paved and 13,538 km were unpaved. There were 8,600 km of navigable waterways and tributaries to the Amazon River system, and 208 km of waterways into Lake Titicaca.

Peru had an installed electrical generating capacity of 5,042 megawatts (MW), 60% of which came from hydroelectric plants. Power and telecommunication lines, railroads, and roads in the Andes were subject to damage by landslides.

Important mineral industry ports included Callao, Ilo, Matarani, Paita, San Nicolás, and Talara on the Pacific Ocean and Iquitos on the Amazon River. Also, a petroleum depot was at Bayóvar, servicing the 800-km North Peru crude oil pipeline. Natural gas and liquid gas were transported through a 64-km pipeline. PERUPETRO employed pipelines, coastal tankers, trucks, railway cars, and barges to supply crude oil and products to its 6 refineries, 20

sales plants, and 6 airport stations throughout the country.

Outlook

Peru's economy rebounded as strong capital flow from domestic and foreign investors helped to push growth to 12.7%. Foreign investment, after 20 years of absence, returned to the country, attracted by the Government's continued privatization program and its sound political, fiscal, and economic policies.

Paving the road to the country's economic recovery were fiscal austerity, hyperinflation control, privatization, reduced taxes and tariffs, new financial conditions and arrangements for its mounting external debt, a new 1993 Constitution that promotes and protects investment, and the country's economy becoming increasingly market-oriented. These reforms were also expected to bring long-term benefits to the energy, mining, and mineral processing industries.

Peru's austerity program eliminated government price subsidies; with high inflation under control, monthly price increases eased to the single-digit level. By working with the International Monetary Fund, the World Bank, and the Inter-American Development Bank, Peru succeeded in ending its arrears by March 1993.

With additional privatizations scheduled for 1995-96, prospects for the mining and oil and gas industries were expected to continue improving. Mineral industry output was expected to increase in 1995 in spite of lower prices for Peru's main mineral exports, base and precious metals; moreover, the medium- and long-term outlook for the mining sector was positive. The petroleum sector also improved in 1994. PERUPETRO, the former PETROPERU, planned to privatize some of PETROPERU's operations during the 1995-96; however, the Government would retain a 40% interest in the refineries.

Peru's privatization program was to continue acting as a catalyst to reactivate the entire mineral sector. During 1991-94, the Government had privatized 49 state-owned firms. About 130 state-owned companies, including electrical, mining, and petroleum units, were scheduled to be privatized during 1995-96.

Investment studies for new energy production projects were being drafted with the support of the Inter-American Development Bank and the World Bank. Also, planning was underway to privatize or form joint ventures in existing power companies. New investments in the mining sector were considered to amount to about \$8 billion during the next 5 years, of which \$1.8 billion would be dedicated to exploration of minerals; \$2 billion for the expansion of current mine operations; and \$4.2 billion in developing new mines. PETROPERU was in the process of being privatized. The energy, mining, and related industries remained the most optimistic and promising prospects for the Peruvian economy.

¹Text prepared July 1995.

³Where necessary, values have been converted from Peruvian nuevos soles (S/.) to U.S. dollars using the average exchange rate for 1994 of S/2.18=US\$1.00.

Major Sources of Information

Dirección General de Minería
Ministerio de Energía y Minas
Avenida Las Artes, Urbanización San Borja,
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Dirección General de Hidrocarburos
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Andean Air Mail & Peruvian Times, S.A., Lima: Carta Minera y Panorama Petrolero, weekly.
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TABLE 1
PERU: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1990	1991	1992	1993	1994 e/
METALS					
Antimony:					
Mine output, Sb content	307 r/	278 r/	339	240 r/	460 r/
Metal	313	227	311	195 r/	379 4/
Arsenic, white 3/	500 e/	661	644 r/	391 r/	286 4/
Bismuth:					
Mine output, Bi content	555 e/	610 e/	550 e/	1,000 e/	1,000
Metal	521	377 r/	419 r/	937 r/	871 4/
Cadmium:					
Mine output, Cd content	378	526 r/	500 e/	500 e/	600
Metal	265	138 r/	399 r/	472 r/	507 4/
Chromium, mine output, Cr content e/	400	410	400	400	400
Copper:					
Mine output, Cu content	318,000	382,000	369,000	375,000 r/	384,000 4/
Sulfate (Cu content)	3,500 e/	4,700 r/	3,300 r/	3,400 r/	3,500
Metal:					
Smelter:	196,000	269,000	254,000	254,000	244,000 4/
Refined	165,000	228,000	232,000	241,000 r/	243,000 4/
Electrowon	16,300	17,900	19,000	18,200 r/	44,000 4/
Total refined	182,000	246,000	251,000	259,000 r/	287,000 4/
Gold:					
Mine output, Au content 5/ kilograms	9,100 r/ e/	9,930 r/	16,000 r/	23,000 r/	46,000 4/
Metal do.	1,270	1,350 r/	1,230	2,430 r/	3,000
Indium do.	2,800	3,140	3,050	3,190 r/	4,000 4/
Iron and steel:					
Iron ore and concentrate:					
Gross weight thousand tons	3,310	3,590	2,850	4,930 r/	7,430 4/
Fe content do.	2,150	2,330 r/	1,850 r/	3,400 r/	4,830 4/
Metal:					
Pig iron do.	93	207	147	147	150
Sponge iron	29,000	24,100	20,000 e/	20,000 e/	20,000
Ferroalloys	1,710 r/	390 r/ e/	360 e/	360 e/	360
Steel ingots and castings thousand tons	284	418	338	338	340
Semimanufactures	243	251 r/	242	242	250
Lead:					
Mine output, Pb content	188,000 r/	200,000	194,000	219,000 r/	226,000 4/
Metal:	69,300	74,500	82,500	86,900 r/	87,000
Manganese, mine output, Mn content e/	150	160	160	160	200
Molybdenum, mine output, Mo content	2,510	3,030 r/	3,340	2,980 r/	2,820 4/
Selenium, metal, refined kilograms	8,910	12,400	14,400	17,100 r/	21,000 4/
Silver:					
Mine output, Ag content	1,760	1,770	1,570	1,620 r/	1,790 4/
Metal, refined	623	631	691	589 r/	710 4/
Tellurium, metal kilograms	7,840	13,400	18,600	17,400 r/	28,000 4/
Tin, mine output, Sn content	5,130	6,560	10,200	13,700 r/	20,000 4/
Tungsten, mine output, W content	1,540	1,230	802	398 r/	256 4/
Zinc:					
Mine output, Zn content	584,000	628,000	603,000	665,000 r/	682,000 4/
Metal	121,000	154,000	124,000	157,000 r/	182,000 4/
INDUSTRIAL MINERALS					
Barite:	130,000 r/ e/	150,000	16,600	24,000 r/	24,000
Boron materials, crude (borates)	19,900 r/	26,400 r/	26,600	36,500 r/	30,000
Cement, hydraulic thousand tons	2,190	2,200 e/	2,090	2,090	2,100
Chalk e/	200,000	91,500	100,000	1,200 r/	1,200
Clays:					
Bentonite	45,000 e/	55,300	14,500	10,000 e/	10,000
Fire clay	5,000 e/	7,320	9,500	9,500	9,500
Kaolin	8,000	7,100 4/	5,500	5,100 4/	5,100
Common clay	100,000 e/	396,000	67,900	138,000 e/	138,000
Diatomite	20,000	25,500 4/	25,000	35,100	35,100
Feldspar	10,000 e/	3,000 e/	10,000	11,400 r/	11,400

See footnotes at end of table.

TABLE 1
PERU: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1990	1991	1992	1993	1994 e/
INDUSTRIAL MINERALS--Continued					
Gypsum, crude	150,000	16,000	35,300	38,000 r/	38,000
Lime e/ thousand tons	13,000	14,000	14,000	14,000	14,000
Mica e/	100	100	100	100	100
Nitrogen: N content of ammonia e/	90,000	95,000	90,000	90,000	90,000
Phosphate, crude	47,300 r/	18,200 r/	37,300 r/	37,400 r/	37,400
Salt, all types	200,000 e/	200,000 e/	238,000	238,000	230,000
Stone, sand and gravel:					
Stone:					
Dolomite e/	9,000	43,800 4/	40,000	40,000	50,000
Flagstone e/	300,000	300,000	300,000	300,000	300,000
Granite	2,000	2,000	2,000	2,000	2,000
Limestone thousand tons	3,000 e/	3,200	1,480	1,610 r/	1,600
Marble e/	20,000	30,000	10,300 4/	13,300 r/	12,000
Onyx e/	500	500	204 4/	150 r/	150
Quartz and quartzite (crushed) e/	40,000	40,500 4/	40,000	40,000	40,000
Shell, marl e/	4,000	4,000	4,000	4,000	4,000
Slate e/	18,000	18,000	18,000	18,000	18,000
Travertine e/	5,000	5,000	3,990 4/	3,990 4/	5,000
Sand and gravel:					
Construction thousand tons	5,000 e/	3,100	960	871 r/	900
Silica sand do.	100 e/	150	152	115 r/	100
Sulfur:					
Elemental: e/					
Native	100	100	100	100	100
Byproduct of metallurgy	66,000	66,000	66,000	66,000	66,000
Sulfuric acid, gross weight	150,000 e/	207,000	42,000	227,000 r/	220,000
Talc and related materials: e/					
Talc	1,500	2,100 4/	2,000	1,200 r/	1,200
Pyrophyllite	7,500	8,000	8,000	8,000	8,000
Total	9,000	10,100	10,000	9,200 r/	9,200
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite, run-of-mine	125,000	125,000	79,800	31,100 r/	35,000
Bituminous, run-of-mine	50,000 e/	25,500	14,500	41,000 r/	45,000
Total	175,000 e/	151,000	94,300	72,100 r/	80,000
Coke, all types e/	10,000	10,000	10,000	10,000	10,000
Gas, natural: e/					
Gross million cubic meters	1,100	1,010	1,200	1,200	1,200
Marketed do.	280	566	570	570	600
Natural gas liquids					
Natural gasoline and others 6/ thousand 42-gallon barrels	226	299	295 e/	295 e/	295
Propane do.	93	--	--	--	--
Butane do.	6	4	4 e/	4 e/	4
Total do.	325	303	299 e/	299 e/	299
Petroleum:					
Crude do.	47,100	41,900 r/	42,300	46,000 r/	46,500 4/
Refinery products:					
Liquefied petroleum gas do.	1,470	1,480	1,540	1,540	1,540
Gasoline, motor do.	10,500	9,120	9,090	9,090	9,090
Jet fuel do.	2,030	2,530	2,170	2,170	2,170
Kerosene do.	5,700	5,470	5,530	5,530	5,530
Distillate fuel oil do.	8,580	9,590	11,600	11,600	11,600
Lubricants do.	38	54	38	38	38
Residual fuel oil do.	24,800	10,400	24,400	24,400	24,400
Asphalt do.	134	264	270	270	270
Other 7/ do.	888	16,700	848 e/	848 e/	848
Total	54,100	55,600	55,500	55,500	55,500

e/ Estimated. r/ Revised.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Table includes data available through June 1995.

3/ Output reported by Empresa Minera del Centro del Peru, S.A.

4/ Reported figure.

5/ Much of Peru's placer gold production was not reported.

6/ Includes hexane.

7/ Includes refinery fuel and losses.

Table 2
PERU: STRUCTURE OF THE MINERAL INDUSTRY

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Antimony	Empresa Minero del Centro del Peru (Centromin) (Government, 100%)	Smelter at La Oroya, Junin Department	700 1/
Barite	Barmine S.A. (private, 100%)	Santa Cruz de Cocachacra, Huarochiri Department	NA
Bentonite	Minerales Andinos S.A. (NL Industries, 90%)	Vichayal Mine, Piura Department.	9
Bismuth	Centromin	Refinery at La Oroya	1,000 1/
Copper	Southern Peru Copper Corp. (SPCC) (Asarco Inc., 63.0%; Phelps Dodge Overseas Capital Corp., 16.3%; The Marmon Group Inc., 20.7%)	Cuajone, Moquegua Department, and Toquepala, Tacna Department	300
		Smelter at Ilo, Moquegua Department	250
		Refinery at Illlo, Moquegua Department	175
Do.	Centromin	Cobriza, Huancavelica Department; Casapalca and Yauricocha, Lima Department; Morococha and San Cristobal, Junin Department	60
		Smelter at at La Oroya	65
		Refinery at La Oroya	60
Do.	Magma Copper Corp. (private, 100%)	Tintaya Mine, Cuzco Department	50
Do.	Cyprus Amex Mineral, Co. (private, 100%)	Cerro Verde, Arequipa Department	30
		Electrowon at Cerro Verde	20
Dolomite	Minera Baribent S.A. (private, 100%)	Esperanza, Ancash Department	25
Gold	Minera Yanacocha S.A. (Newmont Mining Corp., 38%; Cia. de Minas Buenaventura, 32%; BRGM of France, 25%; World Bank's IFC, 5%)	Yanacocha and Magui-Magui Mines Cajamarca Department	16,000 2/
Do.	Cia. Minera Ponderosa S.A.(private, 100%)	Ponderosa, La Libertad Department	1,300 2/
Do.	Cia de Minas Orcopampa S.A. (Buenaventura, 100%)	Orcopampa, Arequipa Department	1,050 2/
Do.	Asesoría Contable Minera S.A. (private, 100%)	Ocona, Santa Clarita, Explorator, and Molino de Oro, Arequipa Department	1,000 2/
Do.	Cia. Aurifera Rio Inambari S.A. (Cia. Minera del Sur S.A., 84%, Aurifera Claudia, 16%)	Rio Caichive, Madre de Dios Department	200 2/
Iron ore	Shougang Hierro Peru S.A. (private, 100%)	Marcona, Ica Department.	13,000
Lead	Centromin	Cerro de Pasco, Casapalca, San Cristobal, Morococha, and Yauricocha Mines	85
		Smelter at La Oroya	93
		Refinery at La Oroya	95
Do.	Cia. Minera Milpo S.A. (private, 100%)	El Porvenir Mine, Pasco Department	20
Molybdenum	SPCC	Cuajone, Moquegua Department and Toquepala, Tacna Department	NA
Petroleum, crude	Petroleos del Peru (Petroperu) (Government, 100%)	Onshore Piura Department; northeast and central jungle areas, Loreto Department	68,000 3/
Do.	Petroleos del Mar S.A. (Petroperu, 100%)	Pacific coast, offshore Piura Department	28,000 3/
Do.	Occidental Petroleum Corp. del Peru (private, 100%)	Northeastern jungle, Loreto Department	90,000 3/
Petroleum products	Petroperu	Refineries at Talara, Lima, Iquitos, Marsella, and Pucallpa	185,500 3/
Silica sand	Minera Baribent S.A. (private, 100%).	Maria G. and Martin I., Junin Department	27
Silver	Centromin	Cerro de Pasco, Cobriza, Monterrosas, Morococha, San Cristobal, and Yauricocha Mines	466,000 2/
		Refinery at La Oroya	809,000 2/
Do.	Cia. de Minas Buenaventura S.A. (Buenaventura) (private, 83%; Centromin 17%)	Julcani and Huachocolpa Mines Huancavelica Department, Uchucchacua Mine, Lima Department	187,000 2/
Do.	Cia. de Minas Orcopampa S.A. (Buenaventura, 100%)	Orcopampa Mine, Arequipa Department	161,000 2/
Steel	Empresa Siderúrgica del Peru (Government, 100%)	Chimbonte, Ancash Department	550
Do.	Empresa Laminadora del Pacifico S.A. (private, 100%)	Pisco, Ica Department	180
Tellurium	Centromin	Refinery at La Oroya	12 1/
Tungsten	Minera Regina S.A. (private, 100%)	Palca XI, Puno Department	1,400 1/
Do.	Fermin Malaga Santolalla (private, 100%)	Pasto Bueno, Ancash Department	1,000 1/
Zinc	Centromin	Casapalca, Cerro de Pasco Morococha San Cristobal, and Yauricocha mine units	235
		Refinery at La Oroya	70
Do.	Refinería Cajamarquilla S.A. (Cominco Ltd. of Canada, 87%; Marubeni Corp. of Japan, 13%), Minero Peru San Ignacio de Morococha S.A. (private, 100%)	Refinery at Cajamarquilla	102
Do.		San Vicente Mine, Junin Department	70

NA Not available

1/ Metric tons per year.

2/ Kilograms per year.

3/ Forty-two gallon barrels per day.