



2006 Minerals Yearbook

CENTRAL AMERICA

THE MINERAL INDUSTRIES OF CENTRAL AMERICA

BELIZE, COSTA RICA, EL SALVADOR, GUATEMALA, HONDURAS, NICARAGUA, AND PANAMA

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In 2006, the mineral industries of Central America produced a variety of metals, industrial minerals, and mineral fuels. In the metals mining sector, antimony, gold, iron ore, lead, silver, and zinc were produced. Production of nonprecious refined metals consisted almost exclusively of steel production in electric arc furnaces from imported materials. Industrial mineral production included that of cement, clays, gypsum, limestone, marble, pozzolan, pumice, salt, and common sand and gravel. Central America's identified metallic mineralization occurs as follows: the northwestern part of the region contains deposits that are richer in lead and associated more with silver and zinc; the southern and eastern parts of the region contain relatively less lead but more copper and some associated gold and silver. In 2006, investment in the region's metals mining sector was mainly focused on discovering and developing gold deposits that lie mostly along the Central American Gold Belt (CAGB). The CAGB extends southeastward from at least western Guatemala (the Marlin deposit) across Guatemala (the Cerro Blanco deposit), through central El Salvador, southern Honduras, and Nicaragua, and into western Costa Rica (the Crucitas deposit). Panama also contains various copper and gold properties that were the targets of increased investment in exploration and development in 2006. Central American countries had limited resources of mineral fuels and required imports of petroleum (some at preferential prices from Mexico and Venezuela) to supply about 75% of apparent energy consumption in the region (table 1; Intrepid Mines Ltd., 2006; Ellis, 2007; Giglio, 2007; Harben, Victoria, 2007; Redwood, 2007; U.S. Energy Information Administration, 2007; Harben, Mark, 2008).

By the end of the year, the Governments of El Salvador, Guatemala, Honduras, and Nicaragua had ratified the United States–Central America–Dominican Republic Free Trade Agreement (CAFTA-DR). The Government of Costa Rica still had not ratified CAFTA-DR, however, and neither Belize nor Panama were included in the free trade agreement. Full ratification and enactment of CAFTA-DR was expected to increase trade flows between the United States and Central America, including trade in mineral-based goods. It was also expected to result in increased economic efficiencies—for example, by exposing the lack of internationally competitive profitability in mineral-based processing or manufacturing operations, which might be profitable only with the support of import tariffs on imported (competing) products. Additionally, enactment of CAFTA-DR was expected to help member countries become more open to foreign direct investment (FDI) over time. During 2006, however, FDI flows into the mineral industries of Central American countries remained lower than expected (even for the countries that ratified CAFTA-DR) owing to uncertainties concerning country-specific mining

and hydrocarbons laws, a lack of sufficient infrastructure in the most promising mineral resource areas, and public protests against nascent mineral development projects. The FDI in exploration and development of mineral properties that did occur was concentrated in the countries with mining and investment laws that were less uncertain or more oriented toward developing more-extensive mineral industries, including Belize, El Salvador, Guatemala, Nicaragua, and Panama (Ellis, 2007; Giglio, 2007; Glencairn Gold Corp., 2007, p. 4, 8; Office of the United States Trade Representative, 2007; Redwood, 2007; Seaward and Coates, 2008; U.S. Energy Information Administration, 2007; Harben, 2008).

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BELIZE

Not including any manufacturing of mineral commodities, such as cement or petroleum refinery products, the mineral industry accounted for about 3% of the gross domestic product (GDP) at current prices in Belize. Belize was part of the San José Pact, which enabled the country to receive crude petroleum under preferential terms and pricing from Mexico and Venezuela. Venezuela was also able to provide additional shipments of crude petroleum to Belize according

to the terms of the Caracas Energy Accord and as part of Venezuela's PetroCaribe initiative (Petroleum Economist, 2006; Central Bank of Belize, 2007, p. 1; U.S. Energy Information Administration, 2007).

Production

Data on mineral production are provided in table 1. Although the data have been provided by the Geology and Petroleum Department, Ministry of Natural Resources & the Environment, Government of Belize, information concerning the causes of the large percentage changes in many of the data series was unavailable for this country. Many of these changes are large in percentage terms but do not involve globally significant volumes of production. The startup of marketable production of crude petroleum by Belize Natural Energy Ltd. (BNE) (together with investment partners Aspect Energy LLC and CHx LLC of Denver, Colorado) at the company's Spanish Lookout concessions was the most notable production development in the mineral industry of Belize. Also, Erin Ventures Inc. of Canada recovered a marketable quantity of alluvial gold through preproduction sampling at the Ceibo Chico gold property, and this production was marketed through Technic Inc. of Canada (table 1; Petroleum Economist, 2006; Romero, 2006; Erin Ventures Inc., 2007; U.S. Energy Information Administration, 2007).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities, operators, and owners. BNE is included in table 2 but Erin Ventures is not because the gold produced by Erin Ventures appears to be only from preproduction exploration operations. Also, Erin Ventures was conducting exploration of the Ceibo Chico concession under an ownership option contract with an undisclosed owner and had apparently not exercised the company's option through the end of 2006. Erin Ventures planned to continue conducting sampling operations at Ceibo Chico with a goal of attaining commercial production. BNE's discovery of petroleum in Belize increased this company's interest in the sector and encouraged Perenco plc of France (although registered in the United Kingdom) to acquire a new petroleum exploration concession in the country (Romero, 2006; Erin Ventures Inc., 2007; Perenco plc, undated).

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COSTA RICA

The mineral industry was estimated to account for about 0.2% of the GDP in Costa Rica. By the end of 2006, the Government of Costa Rica had still not officially retracted a moratorium that it had placed on new oil exploration activities, the opening of any new open pit mines, and any commercial-scale cyanide processing. This policy was approved in May 2002 and was viewed as continuing to deter investment in the mineral industry of the country during 2006. Costa Rica was part of the San José Pact, which enabled the country to receive crude petroleum under preferential terms and pricing from Mexico and Venezuela. Venezuela was also able to provide additional shipments of crude petroleum to Costa Rica according to the terms of the Caracas Energy Accord. Of all Costa Rica's mining activity, only mine production of diatomite was estimated to be of any global significance, accounting for about 1% of the world's production (U.S. Energy Information Administration, 2007; Founie, 2008; Seaward and Coates, 2008; Banco Central de Costa Rica, undated).

Production

Most of the mineral production data for Costa Rica provided in table 1 are estimated. The figures for mine production of gold and production of petroleum refinery products from imported oil are compiled from individual company sources. The substantial increase in gold production compared with that of 2005 is owing to the first full year of production from the Bellavista gold mine, which was wholly owned by Glencairn Gold Corp. of Canada. The substantial increase in the production of petroleum refinery products was owing to completion of a maintenance and modernization project at the Moin refinery by Refinadora Costarricense de Petróleo S.A. (table 1; Refinadora Costarricense de Petróleo S.A., 2006, p. 25; Glencairn Gold Corp., 2007, p. 1, 6).

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Glencairn had planned to ramp up production of gold at Bellavista to a greater extent and to attain the designed production capacity early in the year, but mechanical problems with the secondary crusher made the recovery rate of gold from the ore lower than expected. A feasibility study was started by Holcim Ltd. of Switzerland for a second phase of expansion at the company's majority-owned Cartago cement plant because the increase in capacity expected from the first expansion in 2005 apparently was not attained. Therefore, the capacity listed in table 2 is reduced from that reported in the 2005 chapter (Glencairn Gold Corp., 2007, p. 1, 4, 6-7; PEG S.A., 2007).

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EL SALVADOR

The mineral industry was estimated to account for approximately 1% of the GDP in El Salvador, although data for the mineral extraction sector were not listed separately from the manufacturing sector. El Salvador was part of the San José Pact with Mexico and Venezuela, and Venezuela was also able to provide additional shipments of crude petroleum to El Salvador according to the terms of the Caracas Energy Accord. El Salvador produced petroleum refinery products from imported oil (U.S. Energy Information Administration, 2007; Banco Central de Reserva de El Salvador, undated).

Production

Data on mineral production are provided in table 1. The data on the production of cement, limestone, pumicite (pozzolan), and salt (marine) through 2004 are based on responses to USGS Minerals Questionnaires supplied by the Dirección de Hidrocarburos y Minas, Ministerio de Economía, El Salvador. After 2004, these production data are estimated or compiled from secondary sources or published company information. According to the International Iron and Steel Institute (IISI), production of continuously cast crude steel from imported mineral raw materials was substantially higher compared with that of 2005. Detailed information concerning the reason for this increase was unavailable, but IISI estimated that apparent domestic consumption of crude steel increased to 362,000 metric tons (t) from 351,000 t in 2005. IISI estimated that production of steel semimanufactures (hot-rolled products) increased slightly and that the country's exports of steel products increased to 129,000 t compared with 126,000 t in 2005 (table 1; International Iron and Steel Institute, 2007, p. 11, 47, 73, 78).

Structure of the Mineral Industry

Since Guatemala and Panama closed their crude petroleum refineries in 2002, El Salvador has increased its exports of refinery products, especially to neighboring Guatemala. El Salvador also signed a bilateral free trade agreement with Mexico by 2005, which helped ensure sufficient flows of crude petroleum into El Salvador for refining, reexporting, and domestic consumption. El Salvador is Central America's leading producer of geothermal energy, and about 44% of the country's electricity consumption was provided by domestic geothermal

sources. The remainder of El Salvador's electricity demand was met by imports from Guatemala and Honduras (U.S. Energy Information Administration, 2007).

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GUATEMALA

In Guatemala, production of antimony was the only mine production that was estimated to be of global significance; antimony production accounted for about 1% of the world's production. Not including manufacturing of mineral commodities, such as cement or petroleum refinery products, the mineral industry accounted for about 3% of the country's GDP at current prices. Guatemala was part of the San José Pact, which enabled the country to receive crude petroleum under preferential terms and pricing from Mexico and Venezuela. Venezuela also provided additional shipments of crude petroleum to Guatemala according to the terms of the Caracas Energy Accord. Guatemala was the only producer of commercial volumes of crude petroleum in Central America, although such production was still only of regional significance (Carlin, 2007; U.S. Energy Information Administration, 2007; Banco de Guatemala, undated).

Reports of any exploration or development efforts on two nickel-cobalt laterite properties, Marichaj and Sechol, which were part of the Buena Vista concession in eastern Guatemala, were not available after BHP Billiton Plc, which is dual-listed in the United Kingdom and Australia, completed acquisition of the concession on January 31 from Jaguar Nickel Inc. of Canada. The Buena Vista concession property borders the property of the former Exploraciones y Explotaciones Mineras Izabal S.A. (Exmibal) nickel mine and smelter. In 2004, Skye Resources Inc. of Canada had acquired Inco Ltd.'s (Canada) 70% share of Exmibal and renamed the property the Fenix nickel project. In 2005, Skye increased its share in Compañía Guatemalteca de Níquel S.A. (formerly Exmibal) to 90.9%. Ferronickel production at this site would require reactivation of Exmibal's powerplant and nickel processing plant, which had been closed for 21 years. Skye estimated that it could potentially produce between 13,500 and 24,500 metric tons per year (t/yr) of nickel content after updating and expanding the processing plant. As of the end of 2006, the company expected to achieve first nickel production sometime in 2009, but it would not be able to ramp up to full production capacity until about 2012 (Jaguar Nickel Inc., 2006; Skye Resources Inc., 2007, p. 22; Harben, 2008).

Production

Data on mineral production are provided in table 1. Although data has been provided by the Dirección General de Minería

(DIGEMIN), Ministerio de Energía y Minas, Government of Guatemala, information concerning the causes of the large percentage changes in many of the data series was unavailable. Many of these changes may appear to be large in percentage terms but they do not involve globally significant volumes of production. IISI estimated that Guatemala's production of crude steel increased by 41% compared with that of 2005. Also, IISI estimated that production of steel semimanufactures (hot-rolled products) increased during this timeframe in Guatemala, but that the percentage increases in production of semimanufactures was not as great as in production of crude steel (table 1; International Iron and Steel Institute, 2007, p. 11, 47; U.S. Energy Information Administration, 2007).

No production of antimony in 2006 was published in DIGEMIN's Anuario Estadístico Minero 2006, but news concerning closure of any antimony mines by Minas de Guatemala S.A. was also not available. Thus, it was not clear whether mine production of antimony ceased in the country, or was temporarily suspended, or that production data for antimony was simply not available. It was also not clear if the iron oxide produced in the country was for metallurgical purposes or other uses. Gold and silver mine production increased substantially compared with that of 2005 because Goldcorp Inc. of Canada ramped up production of gold and silver at the company's Marlin Mine through the end of the year. Perenco reported that the company's production of crude petroleum in Guatemala decreased compared with that of 2005 owing to decreasing reserves (table 1; Dirección General de Minería, 2007; Goldcorp Inc., 2007, p. 4, 8; Harben, 2008; Perenco plc, undated).

Structure of the Mineral Industry

In 2006, a notable change in ownership occurred when Goldcorp completed its acquisition of Glamis Gold Ltd. of Reno, Nevada, on November 4, which changed the ownership of the Marlin gold and silver mine in Guatemala. The company was still ramping up production underground and expected to obtain full (designed) underground capacity at the Marlin Mine by mid-2007. Exact information concerning the current design capacity was unavailable, but Glamis projected in 2005 that combined underground and open pit production operations at the Marlin Mine could produce approximately 7,800 kilograms per year (kg/yr) of gold and 120,000 kg/yr of silver (Glamis Gold Ltd., 2006, p. 6; Goldcorp Inc., 2007, p. 8, 31-32).

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HONDURAS

Not including any manufacturing of mineral commodities, such as cement or petroleum refinery products, the mineral industry accounted for about 2% of the GDP in Honduras. Honduras was part of the San José Pact, which enabled the country to receive crude petroleum under preferential terms and pricing from Mexico and Venezuela. Venezuela also provided additional shipments of crude petroleum to Honduras according to the terms of the Caracas Energy Accord (Harben, 2007; U.S. Energy Information Administration, 2007).

The Government of Honduras that was elected on November 26, 2005, announced plans to implement a moratorium on new oil exploration activities, the opening of any new open pit mines, and any commercial-scale cyanide processing. The previous Honduran Government had already decided on July 16, 2004, to suspend granting of any new mineral concession licenses (either for exploration or exploitation). In combination with public antimining protests in Honduras, such Government policies were expected to deter FDI in exploration or development of new mining projects at least through 2007 (Giglio, 2007; Harben, 2007)

Production

Data on mineral production are provided in table 1. The data on the production or estimated production of cement, gold, gypsum, iron oxide, lead, limestone, marble, and zinc through 2003 are based on responses to USGS minerals questionnaires supplied by the Dirección Ejecutiva de Fomento a la Minería (DEFOMIN). After 2003, these production data are estimated or compiled from secondary sources or published company information. Goldcorp reported that the company produced about 1,850 kilograms (kg) of gold compared with 2,535 kg in 2005 at the company's San Martin Mine as the mine neared the expected conclusion of productive activities. After 2007, Goldcorp did not expect to mine any more gold at San Martin owing to depletion of reserves. Yamana Gold Inc. (Canada) reported production of about 2,200 kg of gold compared with 1,900 kg in 2005 at the San Andres Mine, and the company expected to produce between 2,200 kg and 2,500 kg there in 2007. El Mochito Mine in western Honduras was owned by Breakwater Resources Ltd. of Canada, and produced lead, silver, and zinc in concentrate. El Mochito Mine appeared to account for all mine production of these metals in the country, and the company reported that production of lead and silver increased by 12.3% and 2.65%, respectively, and that of zinc decreased by 11.8% compared with levels of mine production in

2005. Although grades of the ore at El Mochito were expected to remain about the same as in 2006, the company expected that mine production of all three metals would decrease in 2007 because of a planned 12% reduction in ore to be milled there (table 1; Breakwater Resources Ltd., 2007, p. 6, 19-20; Goldcorp Inc., 2007, p. 4, 32; Harben, 2007; Yamana Gold Inc., 2007, p. 12, 54).

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Goldcorp's acquisition of Glamis also changed the ownership of the San Martin gold mine in Honduras. Goldcorp completed reclamation activities for the Rosa pit and also started production at the remaining Palo Alto pit at San Martin. Although mining from the Palo Alto pit was not expected to continue after 2007, continuing production was expected from the material already on the leach pads until sometime in 2009. In 2006, Breakwater announced that the company would need to reduce the amount of lead-silver-zinc-bearing ore processed in 2007 at El Mochito Mine because the company encountered unexpected delays in 2006 in the construction of the new Soledad tailings pond and processing facility. These delays required an emergency upgrade of the existing Pozo Azul tailings pond so that it could contain tailings from 2006 and early 2007 mine production at El Mochito. The new expected date for completion of the Soledad facility was the third quarter of 2007, at which point the company planned to begin reclaiming Pozo Azul. Yamana had owned the San Andres gold mine since acquiring RNC Gold Inc. of Canada on February 28, 2006. RNC Gold had acquired the San Andres Mine in 2005 (Breakwater Resources, 2007, p. 15, 20; Goldcorp Inc., 2007, p. 8, 32; Yamana Gold Inc., 2007, p. 3).

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NICARAGUA

Not including manufacturing of mineral commodities, such as cement or petroleum refinery products, the mineral industry accounted for about 1% of the GDP in Nicaragua. Nicaragua also produced petroleum refinery products from imported crude petroleum. Nicaragua was not part of the San José Pact with Mexico and Venezuela when it was created in 1980, but was included as part of the Caracas Energy Accord with Venezuela in 2000. In 2006, Norwood Resources Ltd of Canada began exploration drilling for petroleum on the company's onshore

Oklanicsa concession (Norwood Resources Ltd, 2006; Ellis, 2007; U.S. Energy Information Administration, 2007; Venezuela Information Office, undated).

Production

Data on mineral production are provided in table 1. Data have been provided by the Dirección General de Minas (DIGEMIN), Ministerio de Energía y Minas, Government of Nicaragua. However, information concerning the causes of the large percentage changes in many of the data series was unavailable. For example, information concerning the reason for the substantial increase in the country's production of gypsum compared with that of 2005 was not available. Many of the changes in production may appear to be large in percentage terms but do not involve globally significant volumes of production. Glencairn reported that the company produced about 1,030 kg of gold compared with 1,230 kg in 2005 at El Limon Mine, primarily owing to public protests that resulted in road blockages and temporary mine closures that lasted 43 days during the year. The company reported that the blockades and protests were a response to a reduction in the number of employees at the mine by about 85 people as part of restructuring at the end of 2005. The company's production of gold at La Libertad Mine was about 455 kg compared with about 1,050 kg in 2005 owing to a lower rate of gold recovery per metric ton of ore. Small-scale mining of gold by individual or cooperative miners, who mostly used artisanal methods, was believed to have accounted for the remainder of gold mine production (table 1; Platts Metals Week, 2006; Glencairn Gold Corp., 2007, p. 4, 8-11, 22, 29).

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Yamana sold the company's La Libertad Mine, which it had acquired from RNC on February 28, to Glencairn in early July, and Glencairn planned to stop production temporarily at La Libertad during 2007 to convert the traditional mine to a more-efficient conventional milling operation. RNC had acquired La Libertad Mine in 2005 (Glencairn Gold Corp., 2007, p. 1, 5, 10-11; Yamana Gold Inc., 2007, p. 3).

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PANAMA

Not including any manufacturing of mineral commodities, such as cement or petroleum refinery products, the mineral industry accounted for about 1% of the GDP in Panama. Panama was part of the San José Pact, which allowed the country to receive crude petroleum under preferential terms and pricing from Mexico and Venezuela. Venezuela also provided additional shipments of crude petroleum to Panama according to the terms of the Caracas Energy Accord. Panama was not part of CAFTA-DR and was still negotiating a separate bilateral free trade agreement with the United States through the end of 2006. In July, the Government of Panama approved a referendum for a major expansion of the Panama Canal, and citizens of Panama voted in favor of the referendum in October. The extensive construction project was expected to begin sometime in the second half of 2007 and to substantially increase the country's consumption of aggregate mineral materials, cement, steel, and other mineral-based construction materials (Panama Canal Authority, 2006a, b; Office of the United States Trade Representative, 2007; Redwood, 2007; U.S. Energy Information Administration, 2007).

Minera Petaquilla S.A. was a joint venture between Petaquilla Minerals Ltd. of Canada (52%) and Inmet Mining Corp., also of Canada (48%). Minera Petaquilla was formed in 1997 to explore and develop the Cerro Petaquilla copper-gold porphyry deposit and other metallic mineral deposits within the Ley Petaquilla property, which is a large concession area that extends south from the Caribbean coast approximately 100 kilometers west of the Panama Canal. Teck Cominco Ltd. of Canada had an option contract to earn a 50% ownership share in Petaquilla Minerals (26% share in Minera Petaquilla) if it continued to fund all Petaquilla Minerals' share (52%) of the exploration and development costs of the Cerro Petaquilla copper project; Inmet was expected to fund the other 48% of total expenditures in the project. By the end of 2006, however, Inmet and Petaquilla Minerals continued to agree to extend Teck Cominco's option until production is achieved or until all three companies agree to terminate the project, and almost no investment was made in the copper project during the year. The new deadline for a commitment by Teck Cominco was set to expire on March 30, 2008 (Petaquilla Minerals Ltd., 2007b; Redwood, 2007).

Global Energy Development PLC (Harken Energy Corp. of Southlake, Texas, 34%, and other private shareholders, 66%) of the United Kingdom was still negotiating exploration contracts with the Ministry of Commerce and Industry of the Republic of Panama through the end of 2006 (Global Energy Development PLC, 2007, p. 4, 11-12; Harken Energy Corp., 2007, p. 3; Redwood, 2007).

Petaquilla Minerals acquired 100% ownership of the Molejon epithermal gold deposit on the Ley Petaquilla property in Panama, where the company focused almost all its investment during the year through its new gold-properties subsidiary, Petaquilla Gold S.A. Inmet and Teck Cominco retained only royalty rights (at rates to be determined) on any eventual production from gold deposits located within the Ley Petaquilla property. By sometime in 2008, Petaquilla Minerals expected

to achieve the company's first production of gold at Molejon (Petaquilla Minerals Ltd., 2007a, p. 5, 27, 89).

Production

Reliable mineral production data for 2006 were not available for Panama at the time of this writing, but production of aggregate mineral materials, cement, and other construction materials was expected to have increased compared with that of 2005. This was mainly because of public approval on October 22, 2006, for expansion of the Panama Canal to start sometime during the second half of 2007. This construction project was expected to be large enough that mineral companies in the construction materials sector in Panama, other countries of Central America, and in nearby Colombia would be ramping up production and securing contracts with the Panama Canal Authority to supply mineral-based materials for the canal expansion (Autoridad del Canal de Panama, 2007; Panama Canal Authority, 2007; Redwood, 2007).

Structure of the Mineral Industry

According to the Panama Canal expansion plan, the project was expected to continue until 2014, and increased demand for construction materials in the region was expected to continue at least until that time. To be able to meet increased demand during this period, many cement and construction materials companies in Panama and nearby countries were expected to expand production capacities (Autoridad del Canal de Panama, 2007).

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TABLE 1
CENTRAL AMERICA: PRODUCTION OF MINERAL COMMODITIES^{1, 2}

(Metric tons unless otherwise specified)

Country and commodity	2002	2003	2004	2005	2006	
BELIZE						
Clays, unspecified ³	thousand metric tons	487	413	571	281 ^r	428
Dolomite		5,500	6,319	3,288	2,937 ^r	5,488
Gold	grams	--	--	--	75 ^r	5,040
Lime ^e		-- ^r	-- ^r	-- ^r	-- ^r	--
Petroleum, crude ^e	thousand 42-gallon barrels	--	--	--	14 ^s	797 ^s
Quartz sand (silica)	thousand cubic meters	38 ^e	31	28	18 ^r	11 ^e
Sand and gravel	do.	100 ^{r, e}	109	162	154 ^r	219
Sand, including lime sand, river sand, silt and mud	do.	95	82	274 ^r	52 ^r	856
Stone, natural:						
Limestone, including marl ⁴	thousand metric tons	358	881	571	126 ^r	287
Other, unspecified ^e	thousand cubic meters	--	--	164 ^s	60 ^s	--
COSTA RICA⁶						
Cement ^e	thousand metric tons	1,100 ^r	1,130 ^r	1,900	2,000	2,000
Clays, unspecified ^e		420,000	419,000	420,000	420,000	400,000
Diatomite ^e		26,400	26,450 ^s	26,500	26,000	25,000
Gold ^e	kilograms	100	110	150	424 ^{r, s}	1,210 ^s
Iron and steel, semimanufactures ^e	thousand metric tons	72	102	165	118 ^r	120
Lime ^e	do.	10	10	10	10	10
Petroleum, refinery products ⁷	thousand 42-gallon barrels	3,310 ^{r, e}	3,790 ^{r, e}	3,761 ^r	3,522 ^r	4,920
Pumice ^e		8,000	8,000	8,000	8,000	8,000
Salt, marine ^e	thousand metric tons	20	20	20	20	20
Silver ^e	kilograms	-- ^r	-- ^r	-- ^r	-- ^r	--
Stone, sand and gravel ^e :						
Crushed rock and rough stone	thousand metric tons	200	200	200	200	200
Limestone and calcareous materials	do.	900	920	920	920	900
Sand and gravel	do.	1,500	1,550	1,550	1,550	1,500
Sandstone	do.	3,300	3,250	3,250	3,250	3,000
EL SALVADOR						
Aluminum, metal, including alloys and semimanufactures ^e		2,650	2,600	2,600	2,600	2,500
Cement, hydraulic	thousand metric tons	1,323 ^r	1,391 ^r	1,265 ^r	1,131 ^r	1,311
Fertilizer materials ^e :						
Phosphatic		13,600	13,600	13,600	13,600	10,000
Other mixed materials		56,500	56,000	56,000	56,000	55,000
Gypsum ^e		5,600	5,600	5,600	5,600	5,500
Iron and steel, metal ^e :						
Steel, crude		48,832 ^s	56,900	59,000	48,000 ^r	77,000
Semimanufactures		76,000	92,000	88,000	89,000 ^r	90,000
Lead, metal, secondary ^e		8,000	8,000	10,000	10,000	10,000
Limestone	thousand metric tons	1,631	1,194	1,161	1,150 ^e	1,200 ^e
Petroleum, refinery products ^{e, 7}	thousand 42-gallon barrels	6,800 ^r	6,900 ^r	5,670 ^r	6,200 ^r	6,180
Pozzolan	cubic meters	279,389	294,871	222,826	223,000 ^e	223,000 ^e
Salt, marine ^e		31,552 ^s	31,366 ^s	31,400	31,400	30,000
GUATEMALA						
Antimony		4,010	3,000 ^{r, e}	2,686	1,007	--
Basalt	thousand cubic meters	318	936	1,050	1 ^{r, e}	1,604
Of which, andesite	cubic meters	99,941	100 ^e	110	-- ^r	--
Barite		100 ^e	100 ^e	70	181	--
Cement, hydraulic ^e	thousand metric tons	2,068 ^{r, s}	1,650 ^r	2,200	2,400	2,500
Clays:						
Bentonite		12,415	6,438	81,688	135,451	20,034
Ferruginous, including shale	thousand metric tons	84 ^r	65 ^e	54	90	202
Fuller's earth (attapulgitite)		10	9 ^e	9	--	19
Kaolin		372	1,497	-- ^r	4,107	4,395

See footnotes at end of table.

TABLE 1--Continued
CENTRAL AMERICA: PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Country and commodity	2002	2003	2004	2005	2006
GUATEMALA--Continued					
Coal, lignite	-- ^{r, e}	-- ^r	50	-- ^r	--
Feldspar	11,843	9,320	4,473	3,808	17,176
Gold, mine output, Au content	kilograms		-- ^e	741 ^r	5,036
Gypsum, crude	thousand metric tons		81	67	106
Hematite	947	1,000 ^e	2,689	5,227	--
Iron and steel, metal: ^e					
Steel, crude	thousand metric tons		216	226	232
Semimanufactures	do.		135	173	242
Iron oxide, gross weight	35,226	2,276	2,823	11,268 ^r	7,341
Jadeite	92	48	27	27	419
Lead:					
Run of mine, Pb content of ore and concentrate	39	19	47	23	28
Metal, primary and secondary	-- ^r	-- ^r	-- ^r	-- ^r	--
Lime, hydrated ^c	547 ⁵	386 ⁵	400	400	400
Magnesite	3,758	8,022	8,000 ^e	5,636	1,084
Natural gas, gross ^e	thousand cubic meters		650	670	620
Petroleum:					
Crude	thousand 42-gallon barrels		9,005	9,028	7,334 ^r
Refinery products ⁷	do.		7,600 ^e	--	--
Pumice	thousand cubic meters		377	274	226
Pyrolusite, manganese dioxide (MnO ₂)	-- ^r	-- ^r	5	-- ^r	--
Rhyolite	1,000 ^e	1,000 ^e	1,375	2,707	236
Salt ^c	thousand metric tons		50	60	60
Silver, mine output, Ag content	kilograms		-- ^e	-- ^e	--
Stone, sand, and gravel:					
Dolomite	24,881	6,130 ^e	63,082	8,585	2,333
Flagstone, phyllite	cubic meters		98 ^e	59 ^e	1,446
Gravel, unspecified	do.		69,918	166,851	19,678
Limestone, crude	thousand metric tons		3,040	3,773	4,270
Of which, dimension stone	do.		34	42 ^e	48
Marble:					
Block	cubic meters		3,185	7,461	33 ^r
Unspecified, including chips and pieces	99,293	29,181	74,862	44,598	49,673
River sand and gravel	thousand cubic meters		743	296	90
Sand, common	do.		55	129 ^e	226
Sandstone	cubic meters		200 ^e	450	180
Schist, slate	thousand metric tons		496	497	543
Silica sand	37,552	30,462	988	474	57,692
Stone dust	cubic meters		7,433	12,537	1,852
Stone, round, unworked	do.		10,088	48,894	10,000 ^e
Volcanic ash and sand	thousand cubic meters		313	199	220
Talc and steatite	568	1,585	2,863	1,631	526
Zinc, run of mine, Zn content of ore and concentrate	-- ^e	-- ^e	10	11	--
HONDURAS ⁸					
Aggregate mineral materials, for construction	thousand metric tons		29	447	962
Cadmium, Cd content of lead-zinc concentrates ^e	-- ^r	-- ^r	-- ^r	-- ^r	--
Cement	thousand metric tons		1,224 ^r	1,268 ^r	1,392 ^r
Clays, unspecified	--	13,983	14,225	14,000 ^e	14,000 ^e
Copper, run of mine, Cu content ^e	300	300	300	300	300
Gold	kilograms		4,984	4,494 ^r	3,683 ^r
Gypsum ^e	20,000 ^r	19,921 ^{r, 5}	5,725 ^{r, 5}	5,700 ^r	5,500
Iron oxide, gross weight, for cement additive ^e	17,000 ^r	17,000 ^r	17,363 ^{r, 5}	17,000 ^r	17,000
Lead, mine output, Pb content of concentrate	8,128	9,014	8,877	10,488	11,775
Limestone	thousand metric tons		1,358 ^r	1,326 ^r	780 ^r
Marble, for construction ^c	square meters		-- ^r	-- ^r	-- ^r

See footnotes at end of table.

TABLE 1--Continued
CENTRAL AMERICA: PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Country and commodity	2002	2003	2004	2005	2006
HONDURAS--Continued					
Pozzolan thousand metric tons	161 ^r	117 ^r	-- ^r	100 ^{r,e}	100 ^e
Rhyolite ^c	32,700	33,000	33,000	33,000	30,000
Salt ^c	42,000	42,000	42,000	42,000	40,000
Silver, mine output, Ag content of concentrate kilograms	52,877	50,962	48,218	53,617	55,036
Slate (pizarra), for construction thousand metric tons	106	70	--	50 ^e	50 ^e
Zinc, mine output, Zn content of concentrate	46,339	43,766	41,413	42,698	37,646
NICARAGUA⁹					
Bentonite ^c	-- ^r	-- ^r	-- ^r	-- ^r	--
Cement	549,403	589,611 ^r	521,000 ^{r,e}	530,300 ^r	530,000 ^e
Clays, unspecified ^c	2,771 ⁵	3,000	3,000	3,000	3,000
Gold, mine output, Au content kilograms	3,904 ^r	3,439 ^r	4,315 ^r	3,674 ^r	3,395
Gypsum and anhydrite, crude	28,153	30,642	36,466 ^r	36,456 ^r	42,191
Lime	3,351 ^r	2,848 ^r	3,482 ^r	2,178 ^r	2,351
Limestone:					
Calcium carbonate, including for cement	1,316 ^r	2,545 ^r	2,916 ^r	1,412 ^r	1,133
Other thousand cubic meters	290 ^r	292 ^r	248 ^r	292 ^r	313
Petroleum, refinery products ⁷ thousand 42-gallon barrels	6,008	5,981	6,145	5,500 ^{r,e}	5,200 ^e
Pumice, stone cubic meters	-- ^e	-- ^e	120	2,497	510
Pumicite, fine, including pozzolan do.	14,820	17,129	14,302	9,200	8,370
Salt, marine ^c	29,710 ⁵	31,320 ⁵	30,000 ^r	30,000 ^r	30,000
Sand, unspecified thousand cubic meters	273 ^r	399 ^r	358 ^r	374 ^r	435
Silver, mine output, Ag content kilograms	2,198	2,040	2,950 ^r	2,999 ^r	2,929
Stone:					
Crushed thousand cubic meters	204 ^r	421 ^r	722 ^r	639 ^r	695
Quarried, unspecified thousand metric tons	5,859	5,443 ^r	5,250 ^r	5,707 ^r	7,272
Tuff, volcanic do.	38	69	124	117	136
Volcanic ash and sand ^c thousand cubic meters	200	200	200	205 ⁵	262 ⁵
PANAMA					
Cement	747,800 ^r	888,900 ^r	1,042,200 ^r	1,050,000 ^{r,e}	1,050,000 ^e
Clays:^c					
For cement cubic meters	64,000	64,000	64,000	64,000	64,000
For products do.	4,300	4,300	4,300	4,300	4,300
Lime ^c	3,500	3,500	3,500	3,500	3,500
Salt, marine ^c	18,000	18,000	18,000	18,000	18,000
Stone, sand and gravel:^c					
Limestone thousand metric tons	270	270	270	270	270
Sand and gravel thousand cubic meters	1,200	1,200	1,200	1,200	1,200

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

¹Table includes data available through November 2007.

²In addition to the commodities listed, some additional construction materials (clays, gravel, miscellaneous rock, sand, and weathered tuff) are produced to meet domestic needs, but available information is inadequate to make reliable estimates of output.

³Some figures that are reported or estimated as a volumetric measure (cubic meters) have been converted to a weight measure equivalent (metric tons) by multiplying by an average density of 2.40 for clay (common).

⁴Some figures that are reported or estimated as a volumetric measure (cubic meters) have been converted to a weight measure equivalent (metric tons) by multiplying by an average density of 2.72 for limestone.

⁵Reported figure.

⁶An official response to the USGS Minerals Questionnaire for Costa Rica was last received in 2001. Therefore, all of the data is compiled or estimated from company or secondary sources.

⁷From imported crude petroleum.

⁸An official response to the USGS Minerals Questionnaire for Honduras was last received in December 2003, with some estimated figures for 2002.

Therefore, most of the data is compiled from individual company and some secondary sources or estimated from the most recent officially reported figures.

⁹In addition to the commodities listed, Nicaragua produced a variety of industrial minerals to meet domestic needs. Output of these materials was not reported, however, and available information is inadequate to make reliable estimates of output.

TABLE 2
CENTRAL AMERICA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2006

(Thousand metric tons unless otherwise specified)

Country and commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
BELIZE				
Dolomite		Belize Minerals Ltd. (Danish Development Bank, and other private, 100%)	Punta Gorda, Toledo District	6,320
Limestone		Caribbean Investors Ltd. (private, 100%)	Georgeville, Cayo District	1,140
Petroleum	thousand 42-gallon barrels	Belize Natural Energy Ltd. (BNE) (Aspect Energy LLC and CHx LLC), 100%	Spanish Lookout, Cayo District, Blocks 5 and 5a	1,000
COSTA RICA				
Cement		Holcim Costa Rica S.A. (Holcim Ltd., 59.8%, and other private, 40.2%)	Cartago cement plant, Aguas Calientes	1,200
Do.		CEMEX Costa Rica S.A. (CEMEX S.A. de C.V., 98.7%, and other private, 1.3%)	Colorado de Abangares cement plant, Guancaste Province, and Guatuso de Patarra cement grinding and bagging plant, San Jose	850
Clays		do.	Tajo Finca clay quarry, near City of Platanar	100
Gold	kilograms	Glencairn Gold Corp. (private, 100%)	Bellavista open pit mine, Montes de Oro Region, 70 kilometers west of San Jose	1,500
Limestone		CEMEX Costa Rica S.A. (CEMEX S.A. de C.V., 98.7%, and other private, 1.3%)	Cerro Pena Blanca limestone quarry, Guancaste Province	300
Do.		Holcim Costa Rica S.A. (Holcim Ltd., 59.8%, and other private, 40.2%)	La Chilena and three other quarries near Cartago cement plant, Cartago Province	650
Petroleum, refinery products	thousand 42-gallon barrels	Refinadora Costarricense de Petr�leo S.A. (RECOPE S.A.) (Government, 100%)	Mo�n refinery, City of Limon, Limon Province	9,000
Pozzolan		Holcim Costa Rica S.A. (Holcim Ltd., 59.8%, and other private, 40.2%)	La Chilena and three other quarries near Cartago cement plant, Cartago Province	8
Steel, semimanufactures		Laminadora Costarricense S.A. (Mittal Steel Company N.V., 50%, and Grupo Pujol-Mart�, 50%)	Rolling mill, steel manufacturing complex, Jimenez de Guapiles, Limon Province	400
Do.		Trefileria Colima S.A. (Mittal Steel Company N.V., 50%, and Grupo Pujol-Mart�, 50%)	Wire-drawing unit, City of Jimenez de Guapiles, Limon Province	60
EL SALVADOR				
Aluminum, semimanufactures	metric tons	Grupo Solaire S.A. de C.V.; Aluminio de Centro America S.A. de C.V.; INCO Industrias Consolidadas S.A. de C.V.; and others	Capital city of San Salvador	2,600
Cement		Cemento de El Salvador S.A. de C.V. (Holcim Ltd., 64.25%, and other private, 35.75%)	El Ronco and Maya Plants, near Metapan, Santa Ana Department	1,900
Limestone		do.	Quarries near Aldea El Zapote and Santa Ana, Santa Ana Department	440
Petroleum, refinery products	thousand 42-gallon barrels	Refiner�a Petrolera Acajutla S.A. de C.V. (RASA de C.V.) (Exxon Mobil Corp., 65%, and Royal Dutch/Shell Group, 35%)	Puerto de Acajutla, Sonsonate Department	8,000
Pozzolan		Cemento de El Salvador S.A. de C.V. (Holcim Ltd., 64.25%, and other private, 35.75%)	Quarries near Aldea El Zapote and Santa Ana, Santa Ana Department	650
Steel:				
Crude		Corporaci�n Industrial Centroamericana S.A. de C.V. (private, 100%)	Electric arc furnace, Quetzaltepeque, La Libertad Department	60
Semimanufactures		do.	Billet casting machine and rolling mill, Quetzaltepeque, La Libertad	92
GUATEMALA				
Antimony	metric tons	Minas de Guatemala S.A. (private, 100%)	Clavito, La Florida, and Los Lirios Mines, Ixtahuacan, Huehuetenango Department	2,700
Cement		Cementos Progreso S.A. (Holcim Ltd., 20%, and other private, 80%)	San Miguel plant, Sanarate, El Progreso Department, and La Pedrera plant, Guatemala City	3,000

See footnotes at end of table.

TABLE 2--Continued
CENTRAL AMERICA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2006

(Thousand metric tons unless otherwise specified)

Country and commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
GUATEMALA--Continued				
Gold	kilograms	Montana Exploradora de Guatemala S.A. (Goldcorp Inc., 100%)	Marlin Mine, near municipalities of San Miguel Ixtahuacan and Sipakapa, Department of San Marcos	7,100
Lime	metric tons	Cementos Progreso S.A. (Holcim Ltd., 20%, and other private, 80%)	San Miguel plant, Sanarate, El Progreso Department, and La Pedrera plant, Guatemala City	550
Petroleum, crude	thousand 42-gallon barrels	Perenco plc (100%)	Rubelsanto and West Chinaja fields, Alta Verapaz Department, and Caribe, Tierra Blanca, and Xan fields, Peten Department	6,000
Silver	kilograms	Montana Exploradora de Guatemala S.A. (Goldcorp Inc., 100%)	Marlin Mine, near municipalities of San Miguel Ixtahuacan and Sipakapa, Department of San Marcos	94,000
Steel:				
Crude		Siderúrgica de Guatemala S.A. (SIDEGUA) (Aceros de Guatemala S.A., 100%)	Electric arc furnace, near City of Escuintla, Escuintla Department	260
Semimanufactures		Industria Galvanizadora, S.A. (INGASA) (Industrias Monterrey S.A. de C.V., 100%)	Plant near Guatemala City	74
HONDURAS				
Cement		Cementos del Norte S.A. de C.V. (Holcim Ltd., 24.2%, and Inversiones Continental S.A., 75.8%)	Rio Bijao plant, municipality of San Pedro Sula, Cortes Department	1,100
Do.		Lafarge Incehsa S.A. de C.V. (Lafarge Group, 52.8%, and other private, 47.2%)	Piedras Azules plant, municipality of Comayagua, Comayagua department	1,300
Gold	kilograms	Minerales Entre Mares de Honduras S.A. (Goldcorp Inc., 100%)	San Martin open pit mine, Palo Alto deposit, Department of Francisco Morazan	2,000
Do.	do.	Minerales de Occidente S.A. de C.V. (Yamana Gold Inc., 100%)	San Andres Mine, municipality of La Union, Department of Copan	2,300
Lead	metric tons	Compañía Minera Santa Bárbara (Breakwater Resources Ltd., 100%)	El Mochito Mine, municipality of Las Vegas, Santa Barbara department, 88 kilometers southwest of San Pedro Sula	9,000
Silver	kilograms	do.	do.	50,000
Zinc	metric tons	do.	do.	42,000
NICARAGUA				
Cement		CEMEX Nicaragua S.A. (CEMEX S.A. de C.V., 100%, but on lease from Government)	San Rafael del Sur plant, 45 kilometers from Managua, and milling plant in Managua	470
Cement, clinker		Holcim de Nicaragua S.A. (Holcim Ltd., 70%, and other private, 30%)	Nagarote grinding plant, San Rafael del Sur	350
Gold	kilograms	Glencairn Gold Corp., 95%, and Inversiones Mineras S.A., 5%	El Limon Mine, Talavera deposit, 100 miles north of Managua	1,400
Do.	do.	Glencairn Gold Corp., 100%	La Libertad Mine, 110 kilometers east of Managua	540
Petroleum, refinery products	thousand 42-gallon barrels	Refinería Esso Managua S.A. (Exxon Mobil Corp., 100%)	Capital city of Managua; 40-mile pipeline to the refinery from Puerto Sandino	7,300
PANAMA				
Cement		Cemento Panamá S.A. (Cementos del Caribe S.A., 50%, and Holcim Ltd., 50%)	Grinding plant in Quebrancha, Province of Panama	800
Do.		Cemento Bayano S.A. (CEMEX S.A. de C.V., 99.3%, and other private, 0.7%)	Plant in Calzada Larga, Province of Panama	450

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