

THE MINERAL INDUSTRIES OF

CENTRAL AMERICA

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

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Introduction

Central America is made up of the long tapering isthmus that forms a bridge between North America and South America. It has an area of about 524,000 square kilometers (km²) and includes the countries of Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

In 2001 (the last year for which data are available), the region had a population of 38.2 million and had an annual growth rate of about 3.1%. The region's combined gross domestic product (GDP) was estimated to be \$155.6 billion at purchasing power parity, and the per capita GDP was estimated to be \$4,436 (U.S. Central Intelligence Agency, 2002¹). Central America's economy was based primarily on agriculture and manufacturing commodities, which constituted the major components of its trade. The years 2001 and 2002 were particularly unusual for most of the Central American countries because their major trading partner, the United States, had an economic slowdown and world coffee prices reached their lowest levels in 100 years. The Central American Northern Triangle (El Salvador, Guatemala, and Honduras) signed a free trade agreement (FTA) with Mexico on May 15, 2001, and entered into an FTA with the Dominican Republic. The Northern Triangle also had been negotiating an agreement with the Andean Community (Bolivia, Colombia, Ecuador, Peru, and Venezuela) since 2000. In 2002, Costa Rica entered the Central America-Dominican Republic Free Trade Agreement. The Central America Common Market (Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua) signed an FTA with Panama. The Central America-Chile FTA, which had been signed in December 2001, became effective for Chile, Costa Rica, and El Salvador; thus, FTA allowed for the trading of regional electric power among the member countries beginning in 2006.

The region's small but diverse mining operations produced a variety of metals, industrial minerals, and mineral fuels. The metals sector continued to be limited to the mining of antimony, cadmium, gold, lead, silver, iron ore, and zinc and the production of steel. Gold mining was centered primarily in Costa Rica, Guatemala, Honduras, Nicaragua, and Panama. Industrial minerals production included cement, gypsum, limestone, marble, pumice, salt, and sand and gravel. In some countries of Central America, the mineral industry was dominated by cement production. Mineral exploration by a handful of companies, however, continued throughout the area. All seven Central American countries relied heavily on hydroelectric plants and thermal plants fueled by imported petroleum to meet domestic energy demand. Imported petroleum comes mainly from Mexico and Venezuela under the terms codified in the San José Pact and the Caracas Energy Accord. Historically, hydroelectric power has dominated Central America's electricity sector. With increased foreign investment in the 1990s, however, the use of thermally generated power has grown rapidly. Integration of the region's electrical systems has been under consideration since 1996. The Empresa Propietaria de la Línea was formed under the Sistema de la Integración Centroamericana to operate the proposed 1,802-kilometer (km), 230-kilovolt (kv) transmission line that would link Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama (Drosdoff, 2001§). At yearend 2001, petroleum refineries were operating in Costa Rica, El Salvador, Guatemala, and Nicaragua. Chevron Texaco Corp's. Escuintla refinery in the Province of Colón, Panama, was closed in July 2002 and was expected to be converted to a terminal facility (storage) in 2003. The refinery in Guatemala was converted to a terminal operation (storage) in September 2002. Guatemala and Panama produced crude oil (U.S. Energy Information Administration, 2002§).

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¹References that include a section mark (§) are found in the Internet References Cited sections.

BELIZE

Belize has been an independent member of the British Commonwealth since 1981. Its economic performance is highly susceptible to external market changes. Belize borders the Caribbean Sea between Guatemala and Mexico. It has an area of 22,966 km² and a July 2002 estimated population of 263,000. According to a 2002 International Monetary Fund (IMF) estimate, the country's GDP growth was 3.5% lower than that of the previous year. The slow growth was attributed to the residual effect of Hurricane Iris on the agriculture, the fishing, and the tourism segments of the economy. The nation's estimated GDP at purchasing power parity was \$830 million; per capita GDP was estimated to be \$3,250 (U.S. Central Intelligence Agency, 2002§).

The Ministry of Natural Resources is responsible for the administration of the mining sector in Belize. Mining activities were regulated by the Mines and Minerals Act of 1998, which covers all mining operations in Belize. The Fiscal Incentive Package for mining allows investors quick recovery of their investments; this program covers mines or quarries that have been shut down. Ad valorem taxes must be paid and to restart industrial and construction mineral properties (3%), on all precious and semiprecious-metal properties (5%). It also provided for losses to be carried forward for 7 years after which only the amount that reduces the profit in that year to one-half of its value can be allowed. The Act also provides for exemption from payment of custom duty for mining equipment and supplies. Petroleum was not included.

Clays, dolomite, lime, limestone, marble, and sand and gravel for construction and civil works were the mainstay of Belize's mineral production. A very small amount of gold has been produced per year by stream panning. No mineral commodities were known to have been exported, and the country was dependent on imports for its fuel and mineral requirements. Belize's electricity supply to meet domestic demand was approximately 50% from Mexico, 30% from Belize's Mollejon Dam, and 20% from the country's thermal plants.

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Geology and Petroleum Office
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COSTA RICA

Costa Rica, which is in the middle of Central America, borders the Caribbean Sea and the North Pacific Ocean between Nicaragua and Panama. It has an area of 51,100 km² and a population of approximately 3.8 million. Although still a largely agricultural country, it has achieved a relatively high standard of living. Costa Rica's economy was also depended on tourism and electronics exports. The country's political stability and high education levels attracted foreign investors. Costa Rica's GDP was estimated to be \$31.9 billion, and GDP per capita was estimated to be \$8,500. GDP composition by sector was services, 52%; industry, 37%; and agriculture, 11%. Traditional exports (predominantly agricultural) amounted to \$5.0 billion [free on board (f.o.b.)], and total imports were valued at \$6.5 billion (f.o.b.). Europe and the United States remained as the major export and import partners (U.S. Central Intelligence Agency, 2002§).

Apart from minor coal deposits, no other sources of fossil fuel have been discovered. Water resources from abundant rainfall have permitted the construction of several hydroelectric powerplants, which have made Costa Rica self-sufficient in all energy needs except petroleum products for transportation. About 90% of the country's electricity was generated by hydroelectric plants, and the Nation's electricity sector was dominated by the state-owned electricity monopoly Instituto Costarricense de Electricidad (ICE), which supply almost 100 % of the country's electricity needs. Compañía Nacional de Fuerza y Luz, S.A. (a subsidiary of ICE) handles the electricity distribution. Costa Rica estimated that the electricity demand will grow by about 6.0% per year through 2020, and will require an investment of about \$3 billion by 2011.

Costa Rica had its first round of oil exploration bidding in 1998 for two offshore and two onshore areas in the Caribbean. In 2000, Costa Rica granted U.S.-based Mellon Resources Corporation an oil and gas exploration concession for 9.3 million square kilometers) on six onshore blocs in the northeastern part of the country. U.S.-based Harkens Energy and MKJ Exploration also hold oil and gas concessions in Costa Rica. Trinidad and Tobago's state oil company, Petrotrin, planned to upgrade the state-owned Recope refinery and to participate in the petroleum products distribution sector (U.S. Energy Information Administration, 2002§).

Low international gold prices restricted investors' interest in several prospective gold deposits. In 2001, Ariel Resources Ltd. suspended operations and withdrew from El Rocío and the Tres Hermanos Mines. In January 2002, Vanessa Ventures Ltd. received an exploitation permit for the Crucitas gold project and submitted environmental impact assessments for review in March. An executive decree signed in June banned new open pit mines (Interamerican Association for Environmental Defense, 2002§). In October, Glencairn Gold Corp. acquired Wheaton River Minerals Ltd. and its interest in the Bellavista gold project. Government environmental and exploitation permits had been approved for the Bellavista project (Glencairn Gold Corp., 2002).

Industrial mineral production included cement, clays diatomite, lime, pumice, salt, sand and gravel, and crushed stone (table 1). Cement operations in Costa Rica included a cement plant northwest of the capital of San José and clinker grinding mill. The 850,000-metric-ton-per-year (t/yr)-capacity cement plant operated by CEMEX S.A. de C.V. supplied a predominantly domestic retail market; more than 75% of the country's cement sales was estimated to be bagged cement (CEMEX S.A. de C.V., 2001§).

The San Martín Mine was briefly mined by open pit methods in 1997 by Ariel Resources but remained shutdown in 2002. The most recent resource estimate by TC & A Geological Consultants was 1.5 million metric tons (Mt) at 2.0 grams per metric ton (g/t) gold. Ariel Resources did limited underground development work, which left in reserve approximately 10,000 metric tons (t) of ore at 9 g/t gold in the Fortuna sector (Seaward and Coates, 2002).

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EL SALVADOR

El Salvador, which is in the middle of Central America, borders the North Pacific Ocean between Guatemala and Honduras. It has an area of 21,040 km² and a population of approximately 6.4 million. Despite the fact that several severe earthquakes rocked El Salvador in early 2001, the economy and political situation remained stable, and total exports have grown substantially. The trade deficit has been offset by remittances (an estimated \$1.6 billion in 2000) from Salvadorans living abroad and by external aid. The GDP was estimated to be about \$28.4 billion, and the per capita GDP was estimated to be \$4,600. The economy depended on services (about 60% of GDP), industry (about 30%), and agriculture (about 10%). In 2002, the real GDP growth rate was 1.4%. Major export trading partners remained the United States (65%), Guatemala (11%), Honduras (8%), and Europe (5%). Since January 1, 2001, the U.S. dollar has been legal tender, and annual inflation was estimated to be 3.8% (U.S. Central Intelligence Agency, 2002§).

In 2002, exploration activities in El Salvador were continued by a few companies that were involved in prospecting and mining previously in this country. Dayton Mining Corp. was exploring the El Dorado gold-silver concession, which covers the former El Dorado Mine that had been operated by the New York and Honduras Rosario Mining Company during the 1950s. Indicated reserves at El Dorado gold mine amounted to 23,082 kilograms (kg) (742,100 ounces) of gold and 172,000 kg (5.53 million ounces) of silver in 2002. In January 2002, Dayton announced that it would join with Pacific Rim Mining Corp. to form a new entity to develop El Dorado gold-silver deposit. This should prove to be a very positive step in bringing El Dorado Mine to production after 8 years of exploration (Curtis, 2002).

In 2001, Intrepid Minerals Corp. in conjunction with Apex Silver Mines Ltd. (Apex) of Canada was exploring at its Aldea Zapote silver-zinc-lead property and San Cristobal gold-silver projects and also the silver-zinc targets at Metapan District in northwestern El Salvador. Apex earned a 60% interest in the project by spending \$400,000 and indicated that it will proceed to Phase II of the venture agreement. Drilling on Cerro Colorado was planned for 2002 at a budget of \$300,000 (Curtis, 2002).

Intrepid's San Cristobal project lies in the eastern part of El Salvador within a silver-gold district defined by many former producers. Intrepid continued to explore its 550-km² concessions. The concessions host the former Encuentros, Divisadero, Montecristo, Hormiguero, and Barrios gold-silver mines that were worked intermittently from 1900 to 1950. Exploration in 2001 and early 2002 delineated a new zone on the San Pedro concession in the center of the property. Assays of up to 1,000 g/t silver and 18 g/t gold were returned from bonanza veins, and a bulk tonnage target known as the Rio Seco Zone averaged about 3 g/t gold. Intrepid spent \$500,000 to drill several zones on the property in 2002. Brett Resources Inc. of Canada carried out work on its Cerro Potosi project east of El Salvador. Potosi has extensive underground workings, and in 2001, Brett sampled the surface outcrops of these vein systems. Best assay returns were 26.5 g/t gold over 3.9 meters (m) as true width (Curtis, 2002).

A number of gold mining companies, which included Newmont Mining Co. and Bema Gold Corp., have carried out evaluations in the country during the past 12 months (Curtis, 2002).

Cementos de El Salvador (CESSA) remained the principal producer of cement in the country. It sourced limestone in Metapan for its expanded 2,500-metric-ton-per-day cement plant. CESSA was fully integrated and shipped cement to neighboring Guatemala and Honduras and distributed it throughout El Salvador. Besides cement and limestone, El Salvador produced aluminum metal, fertilizer, gypsum, steel semimanufactures, fertilizer, gypsum, and salt.

Central America's largest producer and consumer of geothermal energy is El Salvador which has two main geothermal facilities, Ahuachapan, and Berlin with a generating capacity of 95 MW and 66 MW respectively, they are in Ahuachapan and Usulután Provinces. In 2000, El Salvador produced about 0.8 billion kilowatt-hour (kWh) of geothermal electricity, which represented about 20% of the total electricity consumption. Thermal generation and hydropower also play significant roles (U.S. Energy Information Administration, 2002§).

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Major Sources of Information

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GUATEMALA

Guatemala, which is in the middle of Central America, borders the Caribbean Sea between Honduras and Belize and borders the North Pacific Ocean between El Salvador and Mexico. It has an area of 108,890 km² and an estimated population of 13.3 million. GDP growth was estimated to be 2.3%, or \$48.3 billion, and per capita GDP was about \$3,700 in 2002 (U.S. Central Intelligence Agency, 2002§).

Guatemala has a diverse regional geology and the largest economy in the region, but it faced numerous economic and social challenges, as a result of a civil war that ended in 1997. Central America's worst drought in 10 years affected Guatemala's agricultural production to a greater extent than neighboring countries. Helpful developments, however, included the Mexico-Northern Triangle Free Trade Agreement with El Salvador, Honduras, and Mexico that went into effect on March 15, 2001, and also the North American Free Trade Agreement (NAFTA) parity for clothing exports in October 2000 as part of the Caribbean Basin initiative.

Guatemala's mineral production included small amounts of antimony, gold, iron ore, lead, and other minerals (table 1). The Ministerio de Energía y Minas is responsible for the administration of the mining sector in Guatemala (Harris, 2002).

Chesbar Resources Inc. and its joint venture partner in Guatemala's Intrepid Minerals Corp. concentrated on two nickel laterite properties, Sechol and Marichaj. The 51.5 km² Sechol property has combined measured and indicated reserves of 37 Mt at a grade of 1.39% nickel. It is on the north shore of Lake Izabal in eastern Guatemala and is adjacent to International Nickel Company Ltd.'s Exmibal nickel project. Chesbar commissioned an independent updated resource calculation and was also carrying out metallurgical testing on the recovery of cobalt, magnesium, and nickel from the laterite material (Chesbar Resources Inc., 2002). Nueva Caledonia (99.66 km²), Marichaj (51.5 km²), and San Lucas (41 km²). The new acquisitions included a 16-km² extension of Marichaj, and three new properties—Tres Juanes (65.85 km²), El Túnico (40 km²), and Seamay (5.60 km²) (Chesbar Resources Inc., 2002).

Radius Explorations Ltd. of Canada continued its exploration program in eastern Guatemala. Gold Fields of South Africa took over as operator on the Motagua Gold Belt in December 2001 and has been conducting an extensive evaluation of the 25-km-long trend of gold occurrences. Gold Fields has the right to earn a 55% interest in the property by spending \$5 million within 3.5 years. A drill program has begun that will test the depth extensions of the Laguna Norte, the Laguna Sur, and the 785-km² Progreso I concession on the Bella Vista portion of the trend.

On May 28, 2002, Radius and Pillar Resources of Vancouver signed a joint-venture option agreement with respect to the Marimba Gold property in eastern Guatemala. Pillar Resources can earn a 60% interest in the project by expending \$2.5 million within 3 years. Radius has the right to require Pillar to purchase the remaining 40% of the project. Pillar began a program on geological mapping, rock and soil sampling, and trenching on the Marimba Gold Property in June. Radius and Pillar were very encouraged by the results and planned to advance this project to the drilling stage by October 2002.

Radius announced a property agreement with Lalo Ventures Ltd. on the Holly Gold Project in eastern Guatemala. Lalo has been given the right to earn a 50% interest in the property by expending \$2.5 million within 3 years. The Holly Gold Project hosts high-

grade gold and silver veins with grades up to 330 g/t gold and 1,000 g/t silver in silicified volcanoclastics as well as disseminated gold mineralization in silicified limey mudstone at a grade of up to 8.9 g/t gold. The property was mapped and sampled by Radius in early 2002. In Phase I, a 1,200-m diamond drill program started in September 2002 (Radius Explorations Ltd., 2002).

The Banderas Gold Project is 10 km southeast of the Holly Gold Project. Geological mapping, prospecting, and soil and rock sampling are being conducted at the site. The strongest zone discovered to date hosts mineralization that grades as much as 14.6 g/t gold and 330 g/t silver. This occurs as outcrop and float in a 600 by 400-m northwest-elongated area on the northern part of the Cerro Golera trend. Trenching and systematic channel sampling were planned in 2002 for this area. Drilling was planned for the Banderas Project as early as 2003 (Radius Exploration Ltd., 2002).

On October 11, Lalo informed Radius that it was unable to cover the costs of the Holly Gold Property exploration program. Lalo's option to earn a 50% interest was relinquished. Radius will proceed on its own in funding the exploration program (Radius Exploration Ltd., 2002).

Scientists who were exploring the wilds of Guatemala have found a mountainous region with huge jade boulders. It was discovered after hurricane Mitch hit Honduras and Guatemala exposed the veins of jade, which includes large outcroppings of blue jade. According to Teams of experts from North America, the deposits rival the world's leading current source of mined jade, in Burma. The implications for history, archaeology and anthropology are just starting to emerge. A jade specialist at the American Museum of Natural History said of the find, "This is the big one." The discovery is a result in part of the devastating storm that hit Central America in 1998, killing thousands of people and touching off floods and landslides that exposed old veins and washed jade into riverbeds. Local prospectors picked up the precious scraps, which found their way into Guatemalan jewelry shops and, eventually, the hands of astonished scientists (Broad, 2002).

National cement consumption tended to exceed local supply with imports of up to 40,000 t/yr. Cementos Progreso S.A. has two plants and a 1.4-million-metric-ton-per-year capacity; expansions at its San Miguel plant have helped increase production (Harris, 2002).

U.S.-based Anadarko Petroleum Corp. has sold 100% of its wholly owned subsidiary Basic Resources International to the European exploration company Perenco for \$120.5 million. Basic produced and refined crude oil in Guatemala. Perenco assumed full responsibility for the operations and facilities on July 26, 2001. Basic operated and controlled 100% of the fully developed infrastructure that extends from the wellhead to the export terminal, which included processing plants, a 475-km pipeline system, an asphalt refinery, and storage and loading facilities at the Piedras Negras shipping terminal on the Caribbean coast and a 6,000-barrel-per-day (bbl/d) refinery at La Libertad. Perenco planned to continue the development of the Xan Field by completing a program that included drilling new water disposal wells and upgrading new production wells. At yearend 2002, Basic had proven and probable reserves of 58 million barrels of oil. The proven oil reserves are primarily in the country's northern jungles of the Peten Basin, and are most likely associated with those in Mexico's Tabasco Formation. Production was 20,000 bbl/d by the end of 2001. The Government has been opening areas for bidding and granting concessions for oil exploration. Oil production has increased dramatically, peaking at 21,000 bbl/d in the year 2001. In 2002, production settled slightly lower at about 19,000 bbl/d. As of September, Perenco had controlled oil production in Guatemala. Perenco had a 100% interest in its integrated production, pipeline, refining, and marine export operations. Production was set to rise from 20,000 barrels (bbl) to about 25,000 bbl in response to market conditions. Additionally, Perenco was the main producer of asphalt in Guatemala with a road distribution system that extended to several countries in Central America (U.S. Energy Information Administration, 2002§).

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Major Sources of Information

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HONDURAS

Honduras, which is in the middle of Central America, borders the Caribbean Sea between Guatemala and Nicaragua and the North Pacific Ocean between El Salvador and Nicaragua. In 2002, the Honduran economy grew by 2.1% with an estimated GDP of about \$17 billion, and the GDP per capita was about \$2,600. Honduras has an estimated population of 6.6 million. Overall, economic growth was expected to continue into 2003 (U.S. Central Intelligence Agency, 2002). As reconstruction from 1998's Hurricane Mitch was completed, Honduras, which was one of the poorest countries in the Western Hemisphere with an extraordinarily unequal distribution of income, anticipated additional economic assistance under the United States' Enhanced Caribbean Basin Initiative and debt relief under the World Bank Group's Initiative for Heavily Indebted Poor Countries.

Mineral production in the country included gold, lead, byproduct silver, and zinc, as well as minor amounts of cadmium. Industrial minerals included limestone, marble, pumice, rhyolite, iron oxide, and salt. The Dirección Ejecutiva de Fomento a la Minería is responsible for the administration of the mining sector.

El Mochito Mine produced 46,339 t of zinc, 8,128 t of lead and 52,877 kg of silver in 2002 compared with 48,485 t of zinc, 6,750 t of lead and 46,831 kg of silver in 2001. The increase in cash costs to \$0.34 per pound from \$0.33 per pound was attributable to lower zinc concentrate production owing to lower mill-feed zinc grade. During 2002, successful underground exploration drilling was carried out in the mine that resulted in additions being made to the mineral reserves and resources. At the end of November, El Mochito's proven and probable reserves stood at 3.4 Mt with an average grade of 6.8% zinc, 1.9% lead, and 78 g/t silver; this was an increase of 18% compared with that at the end of 2001. El Mochito's estimated measured and indicated reserves were 5.9 Mt (up 26%) with an average grade of 7.8% zinc, 2.7% lead, and 115 g/t silver. In the inferred category, 793,000 t had a grade of 7.3% zinc, 4.3% lead, and 102 g/t silver (Breakwater Resources Ltd., 2002).

In 2002, Glamis Gold Ltd.'s San Martín project has seen its first full year of operation with a production of 3,553 kg (114,216 ounces) of gold at a total cash cost of \$120 per ounce. At yearend 2001, the company decided to expand production to a rate of 3,732 kg (120,000 ounces) per year, and the expansion was completed in the third quarter of 2002. Output at the San Martín Mine was 4,026 kg (129,435 ounces) of gold at \$106 per ounce. Since beginning commercial production in the first quarter of 2001, the San Martín Mine has been the company's largest gold producer and the largest contributor of earnings and cash flow (Harris, 2002).

The Vueltas gold mine, which is in the State of Santa Barbara 90 km south west of San Pedro Sula, was owned by Geomaque Explorations Ltd. of Canada. Production from an open cut and heap-leach operation at the mine began in June 2001. In 2002, production totaled 958 kg (30,785 ounces) of gold compared with 842 kg (27,077 ounces) of gold in 2001 (Geomaque Exploration Ltd., 2003§).

U.S.-based Maya Gold Ltd. was seeking a new partner for its El Triunfo gold project in southern Honduras after BHP Billiton pulled out after having spent more than \$1million to explore under an option agreement. Maya Gold indicated that the gold project had "considerable merit." Most of BHP Billiton's investment was spent on exploring a gold and copper porphyry deposit known as "Los Lirios" and the potential epithermal precious-metal deposit Rio Rico. El Triunfo concession covers more than 404,700 km² (100,000 acres) of southern Honduras near the border with Nicaragua. Some 148 km further north, Maya also held the 5,666-hectares Casas Viejas concession, which lies along the central Honduran mineral belt not far from Glamis' San Martín Mine (Metals & Minerals Latin America, 2002).

First Point Minerals Corp. of Canada continued exploration drilling at the Cacamuya gold-silver property in Honduras. Approximately 664 m of a planned total of 2,000 m have been drilled in 12 short reverse circulation drill holes.

Drilling has also begun on the Cerro Chachagua Project. Drilling was also planned for the Carmen-Esperanza veins and the Filo Lapa and Hilo Libre Projects where reverse circulation holes drilled prior to the wet season last year encountered previously reported significant gold finding grades (First Point Minerals Corp., 2003).

Honduras also produced a number of industrial minerals that included gypsum and marble, which were mostly for export, and salt from the Choluteca District. Local limestone was used by Cementos del Norte S.A. de C.V. (formerly Cementos de Honduras S.A.) and Industria Cementera Hondureña S.A. de C.V. (Incehsa) (in which Lafarge Group of France had a majority stake), which had clinker capacities of 600,000 and 450,000 t/yr, respectively. Incehsa proposed to expand its clinker capacity to 657,000 t/yr (El Herald, 2002§).

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Major Sources of Information

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NICARAGUA

Nicaragua, which is in the middle of Central America, borders the Caribbean Sea and the North Pacific Ocean between Costa Rica and Honduras. In 2002, the Nicaraguan economy grew by 2.5% with an estimated GDP of about \$12.3 billion, and GDP per capita was about \$2,500. Nicaragua had an estimated population of about 5 million. Overall, economic growth was expected to improve because of increased direct private investment (U.S. Central Intelligence Agency, 2002§).

Corporación Nicaraguense de Minas is responsible for the administration of the mining sector in this country. Nicaragua was a producer of construction minerals, gold, and silver. In 2001, it produced some 3,745 kg (120,400 ounces) of gold compared with the 3,673 kg (118,100 ounces) of gold produced in 2000 and 2,500 kg (80,377 ounces) of silver compared with the 2,498 kg produced in 2000 (Bowyer, 2002).

Toronto, Ontario, Canada-based Black Hawk Mining Inc. operated El Limón gold mine in northwestern Nicaragua, which was the main gold producer in the country. El Limón produced an estimated 1,723 kg (55,388 ounces) of gold in 2002 compared with 2,188 kg (70,351 ounces) of gold in 2001. The average grade of gold ore milled was 6.2 g/t in 2002 compared with 7.0 g/t in 2001. More than 314,567 t was milled in 2002 compared with 349,415 t in 2001. The lower mill feed tonnage and grade resulted in decreased gold production by 11%. Cash operating cost was \$219 per ounce in 2002 compared with \$183 in 2001; the higher cash cost per ounce in 2002 was due to lower gold production recovery (Black Hawk Mining Inc., 2002).

Newmont Overseas Exploration Limited (a 100% subsidiary of Newmont Mining Corporation) withdrew from an option to earn an interest in Black Hawk's exploration properties in Nicaragua (Black Hawk Mining Inc., 2002).

Diadem Resources Ltd., which was a Canadian mineral resource company, was engaged in the acquisition and exploration of natural resource properties and had interests in properties in Nicaragua and other countries. In particular, it has an interest in 200-hectare La Mestiza gold property, which is in the La India District and is held under an exploration permit. Diadem had an option to acquire a 68.25% interest in the deposit from the Archon Prospecting Syndicate. Diadem estimated the deposit to have measured reserves of 157,473 t at a grade of 10.63 g/t gold, indicated reserves of 1.51 Mt at a grade of 9.3 g/t, and inferred reserves of 3.47 Mt at a grade of 9.19 g/t, which totaled approximately 31.1 t (1.0 million ounces) of gold. By yearend 2001, Diadem was shut down and covered by a force majeure clause in the agreement. On October 15, 2002, Diadem signed a letter of intent with a Canadian mining company to sell the project. The terms of the agreement were subject to due diligence with a closing date of December 30, 2002 (Diadem Resources Ltd., 2002).

The state-owned Compañía Nacional Productora de Cemento controlled Nicaragua's cement production. The company had a clinker production capacity of 350,000 t/yr installed at its plant at San Rafael del Sur. Cementos de Nicaragua S.A. (Cemenic) has been operational since March 1999. Cemenic was owned by Unión Marítima Internacional, S.A.; Unión was a Holderbank Group Company, which held 70% of the company's equity (GoldGroup.com, 2002§). Cemenic, which had changed its name to HOLCIM (Nicaragua) S.A. in 1997 as a result of a joint venture between a group of Nicaraguan investors and HOLCIM Ltd. of Switzerland, became one of the major cement producers in Nicaragua. In 2001, CEMEX started formal operations in Nicaragua by means of a 25-year agreement signed with the Nicaraguan Government under which the company would operate a local cement plant Compañía Nacional Productora de Cemento, S.A., which had a production capacity of 450,000 t/yr. The plant was 45 km from the capital Managua, which was the country's main market. In its first year of operations in Nicaragua, CEMEX managed to decrease variable costs by 18%, reduce management expenses by 45%, and increase sales by 63% (CEMEX S.A. de C.V., 2003§).

Nicaragua relied on imports for mineral fuels, especially crude oil from Venezuela. Esso Standard Oil S.A. Ltd. of Nicaragua supplied most of the country's oil needs.

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Major Sources of Information

Corporación Nicaraguense de Minas (INMINE)

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PANAMA

Panama, which is in the middle of Central America, borders both the Caribbean Sea and the North Pacific Ocean between Colombia and Costa Rica; the area is 78,000 km². In 2002, the Panamanian economy grew by about 1.4%; the estimated GDP was about \$16.9 billion, and GDP per capita was about \$5,900. The population was estimated to be about 2.9 million. The economy was based primarily on a well-developed services sector that accounted for three-fourths of the GDP. Services included the Colon Duty Free Zone, international banking and insurance services, the Panama Canal, ship registry, and tourism. Industries, such as construction, cement and other construction materials, brewing, petroleum refining, and sugar milling, accounted for about 17% of the GDP (U.S. Central Intelligence Agency, 2002§).

The Dirección General de Recursos Minerales is responsible for the mining sector in Panama; it was only a small-to-moderate-sized mineral sector by world standards. Several mineral properties were, however, considered to be prospective. Panama produced cement, clays, gold, lime, limestone, marine salt, sand and gravel, and silver in small operations.

Panama produced about 760,000 t of cement yearly. CEMEX was Panama's main supplier of cement. The company operated a dry-process cement plant just north of Panama City. The production capacity of CEMEX in Panama was 400,000t/yr. The company upgraded its cement plant to run on a more cost-efficient mix of fuels, by completely replacing fuel oil with petroleum and coke (pet coke). The reduced energy costs represented a key competitive advantage over the competition (CEMEX S.A. de C.V., 2003§).

After 2 years of prospecting, Panama has not identified oil and gas reserves. All oil was imported from Ecuador, Mexico, Saudi Arabia, and Venezuela. The country neither produced nor consumed natural gas. The Dirección General de Recursos Minerales has been modernizing its mining laws to promote investments in the mineral sector. This was being carried out in cooperation with the Interamerican Development Bank. Electricity generation accounted for most of Panama's domestic energy production, and hydroelectric generation accounted for 75% of the country's total energy mix (Ellis, 2002).

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U.S. Central Intelligence Agency, 2002, Panama, World Factbook 2002, accessed February 6, 2003, at URL <http://www.cia.gov/cia/publications/fact/geos/pn.html>.

Major Sources of Information

Dirección General de Recursos Minerales

Ministerio de Comercio e Industrias

P.O. Box 8515, Panama 5, Panama

Telephone: (507) 36-1823

Fax: (507) 36-3173

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

(Metric tons unless otherwise specified)

Country and commodity		1998	1999	2000	2001	2002
BELIZE						
Clays	thousand tons	600 ^r	600 ^r	622 ^r	557 ^r	600 ^e
Dolomite		30,000	30,000	5,272 ^r	4,525 ^r	4,500 ^e
Gold ^e	kilograms	6	6	7 ^r	1 ^r	1 ^e
Lime ^e		1,250	1,250	1,250	1,200	1,200
Limestone	thousand tons	315 ^e	320 ^e	217 ^r	696 ^r	700 ^e
Marl	do.	1,300 ^e	1,300 ^e	728 ^r	1,143 ^r	1,150
Sand and gravel	do.	360 ^e	360 ^e	363 ^r	412 ^r	415
COSTA RICA						
Cement ^e	do.	1,085 ³	1,100	1,150	1,100	1,100
Clays, common ^e		415,000	415,000	418,000	420,000	420,000
Diatomite		16,255	18,000 ^e	34,704	26,350	26,400 ^e
Gold ^e	kilograms	742 ³	165	51	100	100
Iron and steel, semimanufactures		84,074	80,025	80,000 ^e	80,000 ^e	80,000 ^e
Lime ^e		9,800	9,800	9,800	9,000	9,900
Petroleum, refinery products ^e	thousand 42-gallon barrels	5,475 ³	5,480	5,500	5,500	5,500
Pumice ^e		8,000	8,000	8,000	8,000	8,000
Salt, marine ^e		37,000	37,000	37,000	37,000	37,000
Silver	kilograms	69 ³	112	100	100 ^e	100 ^e
Stone, sand and gravel:						
Crushed rock and rough stone	thousand tons	1,060	109	201	200 ^e	200 ^e
Limestone and calcareous materials	do.	1,600 ^e	978	905	900 ^e	900 ^e
Sand and gravel ^e	do.	1,640 ³	1,650	1,650	1,500	1,500
Sandstone ^e	do.	3,262	3,300	3,300	3,300	3,300
EL SALVADOR						
Aluminum, metal including alloys, semimanufactures ^e		2,650	2,650	2,650	2,650	2,650
Cement, hydraulic		1,065	1,031 ^r	1,064 ^r	1,174 ^r	1,318 ³
Fertilizer materials: ^e						
Phosphatic		13,500	13,700	13,600	13,600	13,600
Other mixed materials		56,500	56,500	56,500	56,500	56,500
Gold	kilograms	93	71 ^e	--	--	--
Gypsum ^e		5,600	5,600	5,600	5,600	5,600
Limestone ^e	thousand tons	3,000	3,200	3,200	3,200	3,200
Petroleum, refinery products ^e	thousand 42-gallon barrels	6,300	6,300	6,300	6,300	6,300
Salt, marine		88,948	741,500	715,260	710,000 ^e	715,000 ^e
Silver	kilograms	39	20	--	--	--
Steel, semimanufactures		43,162	33,501	35,000 ^e	38,500 ³	48,800 ³
GUATEMALA						
Antimony: ^e						
Mine output, Sb content		400	--	--	--	--
Trioxide		340	--	--	--	--
Barite ^e		--	75	113	100	100
Cement, hydraulic ^e	thousand tons	1,500	1,600	1,600	1,600	1,600
Clays:						
Bentonite		2,278	4,301	3,317	3,000 ^e	3,000 ^e
Kaolin ^e		7,150	61	77	100	100
Unspecified ^e		25,000	20,000	20,000	20,000	20,000
Feldspar		17,248	17,072	17,804	17,000	17,000 ^e
Gold	kilograms	100	4,449	4,500	4,500 ^e	4,500 ^e
Gypsum		152,216 ^r	110,173	212,109	100,000 ^e	100,000 ^e
Iron and steel:						
Iron ore, gross weight		5,102	10,536	16,254	15,000 ^e	15,000 ^e
Steel, semimanufactures		119,398	119,056	119,000 ^e	201,800 ³	215,900 ³
Lead, metal, including secondary ^e		74	115	570	500	550
Lime	thousand tons	4,350 ^r	4,396 ^r	4,532 ^r	4,550 ^r	4,550 ^e
Natural gas, gross	thousand cubic meters	700 ^r	732 ^r	622 ^r	630 ^{r,e}	650 ^e
Petroleum:						
Crude	thousand 42-gallon barrels	9,308	8,489 ^r	7,571 ^r	21,000 ^{r,e}	19,000 ^e
Refinery products ^e	do.	7,300	7,300 ³	7,300 ^r	7,600 ^r	7,600 ^e
Pumice		81,513 ^r	238,425 ^r	261,947 ^r	262,500 ^r	263,000 ^e
Salt ^e		48,000	50,000	50,000	50,000 ^r	50,000

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	1998	1999	2000	2001	2002	
GUATEMALA--Continued:						
Stone, sand and gravel:						
Dolomite	--	23 ^r	63 ^r	--	--	
Limestone	thousand tons	10,062	4,396	4,532	2,775 ³	3,040 ³
Marble:						
Block	cubic meters	9,953 ^r	10,222 ^r	10,200 ^{r,e}	10,200 ^{r,e}	10,200 ^e
Chips and pieces		130,802	112,290	245,175 ^r	230,000 ^e	230,000 ^e
Sand and gravel	thousand tons	900 ^r	2,712 ^r	4,158 ^r	4,000 ^{r,e}	4,000 ^e
Silica sand	do.	125 ^r	116 ^r	173 ^r	170 ^{r,e}	170 ^e
Stone, crushed ^e		50,000 ^r	50,000 ^r	50,000	50,000	50,000
Talc ^e		948	-- ^r	--	--	--
HONDURAS						
Building materials: ^e						
Limestone		450,000	985,743 ³	1,230,478 ³	1,230,000	1,230,000
Marble	square meters	95,000	95,000	95,000	95,000	95,000
Cadmium, Cd content of lead-zinc concentrates ^e		75	75	75	75	75
Cement		895,500	980,000	1,100,000	1,100,000	1,100,000 ^e
Gold	kilograms	150 ^e	879	878	4,574 ^r	4,984 ³
Gypsum		30,000	55,848	59,211	59,500	60,000 ^e
Iron oxide pigments		--	--	69,969	70,941	71,000 ^e
Lead, mine output, Pb content		4,329	3,764	4,805 ^r	6,750 ^r	8,128 ³
Petroleum, refinery products	thousand 42-gallon barrels	-- ^r	-- ^r	-- ^r	-- ^r	--
Pozzolan		--	--	186,948	189,999	190,000 ^e
Rhyolite		--	--	35,680	32,700	32,700 ^e
Salt ^e		25,000	25,000	25,000	25,000	25,000
Silver	kilograms	42,964	38,153	31,958	46,831 ^r	52,877
Zinc, mine output, Zn content		36,639	31,095	31,226 ^r	48,485 ^r	46,339
NICARAGUA ⁴						
Bentonite		875 ^e	5,280	6,490	6,000 ^e	6,000 ^e
Cement ^e		377,000 ³	350,000	360,000	360,000	360,000
Gold, mine output, Au content	kilograms	3,834	4,448 ^r	3,673 ^r	3,745 ^r	3,750 ^e
Gypsum and anhydrite, crude		22,660	26,880	28,170	28,100 ^e	28,100 ^e
Lime ^e		58,527 ³	58,000	58,000	55,000	56,000
Limestone:						
For cement		--	281,050	266,740	270,000	270,000 ^e
For other uses		--	325,580	293,470	310,000	310,000 ^e
Petroleum, refinery products ^e	thousand 42-gallon barrels	5,600	5,600	5,650	5,650	5,650
Salt, marine		15,132	26,880	28,170	28,100	28,100 ^e
Sand and gravel	thousand tons	696	1,843	1,339	1,300	1,300 ^e
Silver, mine output, Ag content	kilograms	4,000	1,780	1,571 ^r	2,498	2,500 ^e
Stone, crushed		--	688,792	1,136,824	900,000	900,000 ^e
PANAMA						
Cement ^e		750,000 ³	760,000	760,000	760,000	760,000
Clays:						
For cement		45,000	46,000	45,500	45,000 ^e	45,000 ^e
For products		7,200	7,400	7,300	7,300 ^e	7,300 ^e
Gold	kilograms	1,500	1,500	1,500	1,500 ^e	1,500 ^e
Lime		3,500	3,500	3,500	3,500 ^e	3,500 ^e
Petroleum, refinery products ^e	thousand 42-gallon barrels	10,000	10,000	10,000	-- ^r	-- ^e
Salt, marine ^e		22,500	22,500	22,500	22,500	22,500
Silver	kilograms	2,000	2,000	2,000	2,000 ^e	2,000 ^e
Stone, sand and gravel: ^e						
Limestone:						
For cement		270,000	275,000	270,000	270,000	270,000
For other uses		62,500	63,000	63,000	63,000	63,000
Sand and gravel	thousand tons	3,000	3,000	3,000	3,000	3,000

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

¹Table includes data available through April 2003.

²Construction materials (clays, gravel, miscellaneous rock, sand, and weathered tuffs) were presumably produced in all countries. In some cases, available information is inadequate to make reliable estimates of output levels.

³Reported figure

⁴In addition to the commodities listed, Nicaragua produced a variety of additional industrial minerals to meet domestic needs. Output of these materials was not reported, and available information is inadequate to make reliable estimates of output levels.

TABLE 2
CENTRAL AMERICA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2002

(Thousand metric tons unless otherwise specified)

Country and commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
COSTA RICA				
Cement		Industria Nacional del Cemento, S.A. (INCSA) (Cementfabrik Holderbank AG, 44%; other private, 56%)	Aguas Calientes, Cartago, Cartago Province	550 ^e
Do.		Cementos del Pacifico, S.A. (CEMPASA) (CEMEX S.A. de C.V. 95.3%; Government, 4.7%)	Near Colorado, Guanacaste Province	850 ^e
Clays		CEMPASA	Tajo Finca, near Platanar, Guanacaste Province	100 ^e
Gold	kilograms	El Valiente Ascari, S.A. (Ariel Resources, Ltd. of Canada, 100%)	Tres Hermanos, El Recio, and San Martin Mines and Matapalo Mill, Las Juntas, Guanacaste Province	500 ^e
Do.	do.	Vanessa Ventures Ltd. of Canada	Beta Vargas Mine, Guanacaste Province	160 ^e
Do.	do.	do.	Cerro Crucitas and Cerro Conchudita Projects, northeastern Costa Rica	100 ^e
Limestone		INCSA	La Chilena quarry, near Cartago, Cartago Province	550 ^e
Do.		CEMPASA	Cerro Pena Blanca Quarry, Guanacaste Province	300 ^e
Petroleum products	thousand 42-gallon barrels	Refinadora Costarricense de Petroleo, S.A.	Moin refinery, Limon Province	5,760 ^e
EL SALVADOR				
Cement		Cementos de El Salvador, S.A. (CESSA)	Planta, El Ronco, Ciudad Metapan	900 ^e
Gold	kilograms	Dayton Mining Corp. and Pacific Rim Mining Corp.	El Dorado gold project, 65 km northeast of San Salvador	500 ^e
Limestone		Cementos de El Salvador, S.A. (CESSA)	Playa, La Flores, Acajutla, Sonsonate Department	440 ^e
Petroleum products	thousand 42-gallon barrels	Refineria Petrolera Acajutla S.A. (ExxonMobil Corp., 65%; Royal Dutch/Shell Group, 35%)	Ciudad Acajutla, Sonsonate Department	6,000 ^e
GUATEMALA				
Antimony		Minas de Guatemala S.A. (private, 100%)	Los Lirios and Anabella Mines, Ixtahuacan, Huehuetenango Department	2 ¹
Cement		Cementos Progreso S.A. (Lambert Freres et Cie., 70%; other, 30%)	San Miguel plant, Sanarate, El Progreso Department; La Pedrera plant, Guatemala City	1,600 ¹
Iron and steel (semimanufactures)		Grupo Industrial Minera Mexico S.A. de C.V. (IMSA), 100%	Guatemala City	119 ¹
Nickel		Exploraciones y Explotaciones Mineras Izabal, S.A. (Exmibal) (International Nickel Co. Ltd., 70%; Government, 30%)	Mine and processing plant inactive near El Estor, Izabal Department (inactive)	9 ¹
Petroleum:				
Crude	thousand 42-gallon barrels	Basic Resources International (subsidiary of Perenco Exploration Ltd.)	Rubelsanto and West Chinaja fields, Alta Verapaz Department; Caribe, Tierra Blanca, and Xan fields, Peten Department	20,000 ¹
Products	do.	Texaco Petroleum Co. (Texaco, Inc., 100%)	Refinery at Escuintla, Escuintla Department	7,600 ¹
Do.	do.	Norcen Energy Resources Ltd. (Canada) (public company)	Refinery near Santa Elena, El Naranjo, Peten Department	10,000 ¹
HONDURAS				
Cement		Cementos del Norte S.A. de C.V. (private, 100%)	Rio Bijao plant, San Pedro Sula, Cortes Department	1,100 ^e
Do.		Industria Cementera Hondurena S.A. de C.V. (La Farge, 53%)	Piedras Azules plant, Comayagua Department	610 ^e
Gold	kilograms	Glamis Gold Ltd.	San Martin Mine, central Honduras	4,000 ^e
Do.	do.	Geomaque Exploration Ltd.	Vueltas Mine, State of Santa Barbara	960 ^e
Lead		Cia. Minera Santa Barbara (Breakwater Resources Ltd., 100%)	El Mochito Mine, Santa Barbara Department	8
Petroleum products	thousand 42-gallon barrels	Refineria Texaco de Honduras S.A. (Texaco, Inc., 100%)	Puerto Cortes, Cortes Department	5,000 ^e
Silver	kilograms	Cia. Minerales El Paso Mining (private, 100%)	La Pochota Mine, Valle Department	20 ^e
Do.	do.	Cia. Minera Santa Barbara (Breakwater Resources Ltd., 100%)	El Mochito Mine, Santa Barbara Department	53,000 ^e

See footnotes at end of table.

TABLE 2--Continued
CENTRAL AMERICA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2002

(Thousand metric tons unless otherwise specified)

Country and commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
HONDURAS-Continued				
Zinc		Cia. Minera Santa Barbara (Breakwater Resources Ltd., 100%)	El Mochito Mine, Santa Barbara Department	46 ^e
NICARAGUA				
Gold	kilograms	Black Hawk Mining Inc. (private, 100%)	El Limon gold mine, northwestern Nicaragua	3,750 ^e
Cement		Compania Nacional Productora de Cemento	45 km from the capital Managua	450 ^e
Do.		CEMEX S.A. de C.V. Nicaragua	Managua	450 ^e
Cement, clinker		HOLCIM (Nicaragua) S.A. (formerly Cemenic)	San Rafael del Sur	350 ^e
Silver	kilograms	Black Hawk Mining Inc. (private, 100%)	El Limon gold mine, northwestern Nicaragua	2,500 ^e
PANAMA				
Cement		CEMEX S.A. de C.V. Panama (Direccion General de Recursos Minerales)	Panama City	760 ^e

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

^lReported figure.