THE MINERAL INDUSTRIES OF

# THE ISLANDS OF THE CARIBBEAN

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## ANTIGUA AND BARBUDA

In 2001, the mining sector played a minor role in the economies of Antigua and Barbuda. The country experienced a slowdown in economic activity during the year. The estimated gross domestic product (GDP) growth rate decreased by 1.5% compared with that of 2000. The slowdown was attributed to the decline in tourism, which accounted for more than one-half of the country's GDP, and to the moderate growth in construction activities. Total visitor arrivals decreased by 5.4% to 601,988 in 2001 from 636,277 in 2000. Agricultural production increased marginally despite a period of drought during the first one-half of the year. Manufacturing production, however, grew by 3% (Caribbean Development Bank, 2002, p. 28-31). Exports of petroleum products accounted for 48% of the country's exports, which totaled $40 million in 2000. As of July 2002, the population was estimated to be about 67,000 (U.S. Central Intelligence Agency, 2002a§[1]).

The Ministry of Public Works, Utilities, and Energy is the Government agency that oversees the mineral industries of Antigua and Barbuda. Mineral commodities produced in the country were crushed stone, limestone, salt, and sand and gravel. In 2000, Devcon International Corp. of the United States operated the largest quarry in Antigua, which produced a full range of aggregates from boulders to manufactured sand. The economy was expected to grow by about 2% in 2002 on the basis of growth in construction activities as a result of the development of new tourism-related projects (Caribbean Development Bank, 2002, p. 28-31).

## ARUBA

In 2001, mining did not play a significant role in the economy of Aruba. The country experienced a slowdown in economic activity. Real GDP decreased by 1.0% compared with the 2.5% increase in 2000 (Centrale Bank van Aruba, 2002). Leading sectors of the economy were tourism, banking, and oil refining. Tourism, which accounted for 70% of the country's GDP in 2000, was particularly affected by the decline in the number of arrivals to the island following the events of September 11 in the United States. As of July 2002, the population was estimated to be about 70,000 (U.S. Central Intelligence Agency, 2002b§).

In January 2001, El Paso Energy Corp. of the United States completed a $24 billion merger with Coastal Corporation, which made El Paso Energy the fourth largest U.S. energy company. Coastal Corporation operated a 280,000-barrel-per-day (bbl/d) refinery in Aruba. The refinery closed in April 2001 following an accidental explosion but resumed operations later in the year (El Paso Energy Corp., 2001§).

## THE BAHAMAS

In 2001, The Bahamas experienced a slowdown in economic activities. The country's estimated GDP decreased by about 2% compared to a 5% growth in 2000. Leading sectors were tourism and offshore banking. Economic activity in the country was adversely affected by Hurricane Michelle in late November and the unexpected contraction in tourism attributed to the events of September 11 in the United States. Despite the downturn, tourism continued to be the leading sector of the country's economy (Caribbean Development Bank, 2002, p. 31-32). As of July 2002, the population was estimated to be about 301,000 (U.S. Central Intelligence Agency, 2002c§). Mineral commodities produced in the Bahamas were aragonite, cement, refined petroleum, salt, sand and gravel, and stone.

Marcona Ocean Industries of the United States operated an aragonite production facility near Bimini and an aragonite processing plant in Ocean Cay. The company had a long-term lease with The Bahamian Government to mine aragonite on three other islands, namely Joulter's Cay, Tongue of the Ocean, and Schooner's Cay. Aragonite was shipped to the United States (Ellicott International, 2002§). Morton Bahamas Salt Co. of the United States was the major salt producer on the Islands.

In July 2001, BHP Billiton Ltd. and Teekay Shipping Corporation signed an implementation agreement to form a joint-venture company called Teekay Marine Pty. Under the agreement, Teekay Marine would contract services to BHP Billiton for its existing shipping fleet. Teekay Shipping held a 70% interest in the company, and BHP Billiton held the remaining 30%. Teekay Shipping was a Bahama-based provider of international crude oil and petroleum product transportation services through a fleet of medium-sized oil tankers (Teekay Shipping Corporation, 2001§).

In 2001, El Paso Corporation of the United States planned to increase the capacity of its proposed Seafarer natural gas pipeline system to 1 billion cubic feet per day from 800 million cubic feet per day. The Seafarer pipeline will transport gas from a terminal at Grand Bahama Island to a gas transmission pipeline in Florida. The system was expected to come online in summer 2005 (Oil & Gas Journal, 2002).

## BARBADOS

In 2001, mining continued to play a minor role in the economy of Barbados. The country's GDP decreased by 2.8% in 2001 compared with a 3% growth rate in 2000. New oilwell drillings were suspended until 2002, and efforts to obtain additional output from existing wells were unsuccessful.

[1]References that include a section twist (§) are found in the Internet References Cited section.

Tourism, which was the country's major foreign exchange earner, was estimated to have declined by 5.9% compared with a 7.7% increase in 2000. Sugar production fell by 14.7%, and construction decreased by 6.3% after five consecutive years of growth. The construction boom that began in 1997 as a result of private investments in tourism and other commercial projects came to an end in 2001 when most of the projects were completed (Caribbean Development Bank, 2002, p. 33-34). To protect local agricultural and manufacturing goods, the Government increased the common external tariff on selected extra regional goods, which included cement, clay tiles, prefabricated steel buildings, and welded wire mesh, to 60% from 20% (Caribbean Update, 2002b). Mineral commodities produced in Barbados were cement, clays, crude petroleum, limestone, natural gas, and sand and gravel.

The Ministry of Environment, Energy, and Natural Resources is the Government agency responsible for the mining sector of Barbados. The country's energy companies were Barbados National Oil Company and National Petroleum Company.

Production of crude petroleum was 1,000 bbl/d in 2001. Crude petroleum was produced by Barbados National Oil Company. The company planned to increase production to 3,000 bbl/d in coming years. Barbados had no refining capacity. Crude petroleum was shipped to Trinidad and Tobago for refining and then returned for domestic consumption (U.S. Energy Information Administration, 2002a§). In 2000, Conoco Inc. of the United States and TotalFina Elf of France signed an agreement to explore for oil and gas offshore Barbados. In 2001, TotalFina Elf increased its ownership in the joint venture to 70%. Conoco, which held the remaining interest, planned to start drilling off southern Barbados in late November 2001. The cost of the project was estimated to be $33 million (Caribbean Update, 2001a).

Arawak Cement Company Limited [a wholly owned subsidiary of Trinidad Cement Limited (TCL)] was Barbados' sole cement manufacturer. Cementos Mexicanos S.A. de C.V. (CEMEX) of Mexico held a 20% interest in TCL. Of Arawak Cement's total production, 60% was exported to several Eastern Caribbean countries and Suriname via a deepwater jetty (International Cement Review, 2001).

Infrastructure projects in 2001 included the upgrade of the island's two-lane ABC highway and the Queen Elizabeth Hospital.

## BERMUDA

In 2001, the mining sector continued to play a minor role in the economy of Bermuda. The country's economy was primarily based on providing financial services for international businesses and luxury facilities for tourists. The GDP based on purchasing power parity was estimated to be $2.2 billion in 2001. Tourism accounted for an estimated 28% of the country's GDP. Agriculture did not play a significant role in Bermuda's economy because only 6% of the land is arable. Construction materials continued to be important to the island's economy. In 2000, exports (mainly reexports) of pharmaceuticals were valued at $51 million. International financial services contributed more than 60% of Bermuda's economic output. As of July 2002, the population of Bermuda was estimated to be about 64,000 (U.S. Central Intelligence Agency, 2002d§).

Secondary industries included beer brewing, carbonated beverage bottling, condiments, concrete blocks, dairy products, and ornamental iron working.

Electricity in Bermuda was provided by Bermuda Electric Light Company Limited (Belco). The company had two power generating stations. Heavy fuel was transported through a pipeline from the Ferry Reach dock in St. George's Parish to the central electricity generating plant in Pembroke Parish, west of the city of Hamilton. Natural gas was imported by Shell Oil Company and distributed by Bermuda Gas and Utility Company (a subsidiary of Belco, Master Limited, and Sunshine Gas, which were Bermudian joint-stock companies) (Bermuda Online, 2001§).

## CUBA

In 2001, Cuba's GDP increased by 3.0% compared with that of 2000. Mining increased by 3.1%; industrial production by 0.5%; and construction, by 3.6%. Agriculture decreased by 1.7%, and tourism, by 10% (Naciones Unidas, 2002§). Poor performance of the sugar industry, the events of September 11 in the United States, and the strike of Hurricane Michelle in early November were among the reasons cited for the downturn in the agriculture and tourism sectors. An estimated 54% of the sugar industry was affected by the hurricane. Damage to crops and the country's infrastructure was estimated to be $1.87 billion. Nickel, sugar, and tobacco were Cuba's leading exports, and tourism represented more than one-half of all hard currency earnings (Portela, 2002). The country was also a moderate producer of ammonia, cement, chromite, copper, gold, gypsum, salt, silica sand, steel, and sulfur. Cuba was the world's sixth leading producer of mined nickel [72,619 metric tons (t)] in 2001 and the seventh leading producer of cobalt (7,321 t) (Kuck, 2002; Shedd, 2002).

Mining activity in Cuba is regulated by law No. 76.; foreign investment, by law No. 77; and the environment, by law No. 88. El Ministerio de la Industria Básica is the Government entity responsible for energy, geology, and mining. Mineral concessions are awarded by the Oficina Nacional de Recursos Minerales, which was created in 1995; it is charged also with protecting Cuba's mineral and hydrocarbon resources, controlling mineral production, and ensuring the preservation of the environment in areas of mineral activity. Geology and mining are overseen by the Government companies Unión del Níquel S.A. and Unión Geológica Minera S.A. (Geominera). Unión del Níquel is responsible for the production and processing of cobalt and nickel. The company works independently and with private companies to produce nickel from three active mines in eastern Cuba. Geominera is responsible for the exploration and production of all metallic and nonmetallic minerals, except nickel. The company works in joint ventures (shared risk ventures) with foreign private companies.

Government-owned Cubapetróleo S.A. (CUPET) was responsible for exploring, refining, and marketing petroleum. In 2001, onshore and offshore acreage in Cuba was available for exploration either by direct negotiation with CUPET or through several farm-in opportunities. The 110,000-square-kilometer Cuban sector of the Gulf of Mexico was subdivided into blocks and made available for licensing during the year

(Blickwede, 2001). Of the 59 offshore blocks available for exploration in 2000, 20 were granted in 2001. The Government expected to increase petroleum production to 43.8 million barrels per year (Mbbl/yr) from more than 18.6 Mbbl/yr in 2001 (U.S. Energy Information Administration, 2002b§). Cuba produced petroleum from four fields in Boca de Jaruco (discovered in 1968), Varadero (discovered in 1969), Perifericos (discovered in 1972), and Pina (discovered in 1989) (U.S.-Cuba Trade and Economic Council Inc., 2002§). In April 2001, Pebercan Corporation of Canada signed an agreement to acquire Maurel & Prom's block 7 petroleum interests in Cuba. The transaction increased Pebercan's interest to 60% in the Canasi field and 55% in the remainder of the block (CCN Newswire, 2001§).

Cuba's principal European trading partner continued to be Spain, which was the country's third major market for exports. European Union member-countries made up more than 50% of foreign joint ventures in Cuba. Spanish investments had been traditionally focused on tourism, but in 2000 and 2001, interests shifted to other industries, such as cement factories, powerplants, and offshore oil exploration (Amuchastegui, 2002). At yearend, the number of economic associations operating with foreign capital in Cuba increased to 405 from 392 in 2000. Countries with the largest investment participation were Canada, Italy, and Spain. Nine reciprocal investment protection and promotion agreements were signed in 2001; the countries that signed the agreements were Cambodia, the Caribbean Community (CARICOM), Croatia, Denmark, Finland, Honduras, Mexico, Mozambique, and Qatar (Naciones Unidas, 2002§).

In July 2001, a joint venture was signed between Cuba's Ministerio de la Industria Básica and Ibersuiza of Spain for the operation of the Karl Marx cement plant in Cienfuegos. Ibersuiza will own two-thirds of the plant, and the Cuban Government, the remaining one-third (Amuchastegui, 2002). Cuba had six cement plants with a combined total clinker capacity of 5.4 million metric tons (Mt). The six cement plants were Mariel, Cienfuegos, Antemisa, Santiago, Siguaney, and Nuevitas. In 2000, Ibersuiza signed an agreement with the Government of Cuba to build a new cement plant near the Santiago works. The project was a joint venture between Government-owned Geominera and Ibercubana de Cementos (a subsidiary of Ibersuiza). Cuba had 246 quarries for construction aggregates and 32 quarries for marble production. Most of the country's new heavy construction equipment was imported from Asia (U.S.-Cuba Trade and Economic Council Inc., 2002§).

International Barytex Resources Ltd. and Northern Orion Explorations Ltd. of Canada entered into an option agreement in 2001, whereby Barytex would acquire 100% interest in Minera Mantua Inc. (a wholly owned subsidiary of Northern Orion Explorations Ltd. in Cuba). Minera Mantua held a 50% stake in the Mantua copper project. Geominera held the remaining 50% interest in the project (Northern Orion Ltd., 2001§).

Production of mined nickel (nickel content of nickel oxide, nickel-cobalt sulfide, and nickel-cobalt ammonium liquor) was 72,619 t in 2001. Production of nickel and cobalt came from three operations, two of which produced nickel oxide and one that produced the intermediate product nickel-cobalt sulfide. Cobalt and refined nickel were derived from the treatment of mixed sulfides from the Moa S.A. facilities. Moa S.A. was a joint-venture company of the Government of Cuba (50%) and Sherritt International Corp. of Canada (50%). Production from the Moa operation increased by 9.6% from that of 2000 to 32,360 t of nickel-cobalt mixed sulfide with a nickel content of about 29,225 t (Sherritt International Corp., 2002, p. 11). Production of nickel oxide was 40,748 t. Nickel produced from ammonium liquor was about 1,960 t of nickel. The nickel was produced at the nickel oxide plant in Nicaro and Punta Gorda.

Production of steel decreased to about 269,600 t from 327,300 t in 2000. Of total produced steel, 75% was exported to the Caribbean region and Central America. Total investments in the steel industry from January to August 2001 were $14.6 million, which was 76% less than the $59.9 million planned for the year (Caribbean Update, 2001b).

Production of petroleum, which continued to increase in 2001, averaged 51,000 bbl/d. Natural gas production was 594 million cubic meters. Petroleum was imported from Mexico and Venezuela to meet domestic demand. The special financial agreements that allowed Venezuela to sell petroleum to Cuba under preferential conditions collapsed, which left the island about 53,000 bbl/d short of domestic demand. As of January 2002, the country's proven crude oil reserves were estimated to be 750 million barrels (Mbbl), while proven natural gas reserves were about 70.8 billion cubic meters (U.S. Energy Information Administration, 2002b§).

Petroleum production in Cuba was sold to the Government. Sherritt was the largest producer of petroleum in the country. In 2001, Sherritt's gross average output increased by 15% to 33,888 bbl/d from an average of 29,554 bbl/d in 2000. The company's output accounted for about 66% of Cuba's total petroleum production. Sherritt identified several additional exploratory prospects along the northern coast of the country. The company participated in the drilling of seven development wells and two exploratory wells in 2001 (Sherritt International Corp., 2002, p. 23-24). Almost 90% of the crude petroleum produced domestically has high sulfur content and can be used only for cement manufacturing and power generation. Burmah Castrol Group of the United Kingdom had a contract to use excess Cuban refining capacity to process lubricants for sale in the Caribbean (U.S.-Cuba Trade and Economic Council Inc., 2002§).

In 2001, in partnership with State-owned Union Eléctrica, Sherritt was constructing a 75-megawatt (MW) electric generating facility. The company, which already owned a 150-MW plant in the country, was studying the construction of another 140 MW of capacity. In early 2001, the Cuban Government completed construction of a 250-MW electric power unit at the Felton powerplant (U.S. Energy Information Administration, 2002a§). Sherritt Power (a wholly owned subsidiary of Sherrit) held one-third indirect interest in Energas S.A. whose powerplants in Boca de Jaruco and Varadero had a combined installed capacity of 131 MW. A 20-MW gas turbine near the Varadero plant was refurbished to use natural gas from the Varadero operations. Electricity output is expected to increase by 75 MW for a total generating capacity of 226 MW (Sherritt International Corp., 2002, p. 15-16).

## DOMINICA

In 2001, the mining industry played a minor role in the economy of Dominica. The country's GDP was estimated to have fallen by more than 4%. The GDP based on purchasing power parity was $262 million in 2001 (U.S. Central Intelligence Agency, 2002e§). Most sectors of the economy, which included agriculture, distribution, financial services, hotels and restaurants, manufacturing, and transportation, recorded declines. Banana exports declined by 37.9%, and earnings from these exports declined by 34.4%. In the tourism sector, visitor arrivals declined by 4.1% during the first three-quarters of the year to 202,506 compared with 211,189 in the first three-quarters of 2000. Estimated visitor expenditure fell by 1.8% to $31.1 million in 2001 compared with $31.8 million in 2000 (Caribbean Development Bank, 2002, p. 39-40).

The economy of Dominica was primarily dependent on the services sector. The tourism industry was still underdeveloped owing mostly to the country's rugged coastline, lack of beaches, and the absence of an international airport. Agriculture accounted for 18% of the GDP, while the industry and services sector accounted for 23% and 59%, respectively. The population was estimated to be about 70,000 as of July 2002 (U.S. Central Intelligence Agency, 2002e§). Dominica's mineral products were cement, clay, limestone, pumice, sand and gravel, and volcanic ash.

## DOMINICAN REPUBLIC

In 2001, real GDP increased by 2.7%; mining, represented only 1.6% of the GDP. Total mineral production decreased by 15.2% principally as a consequence of the decrease in the production of nickel. The construction sector increased by 0.9%. Production of industrial minerals, such as sand and gravel, decreased by 3.5% owing mostly to the decrease in domestic demand for construction materials (Banco Central de la República Dominicana, 2002, p. 5).

The country remained a regional producer of cement, ferronickel, gypsum, marble, petroleum refinery products, salt, sand and gravel, and steel. Production of such commodities as cement, gypsum, marble, and sand and gravel was solely for domestic consumption. Nickel was the major source of foreign earnings from the mining sector. Production of gold and silver was suspended in 1999 and had not resumed in 2001 (table 1). Mining of amber, larimar (pectolite), and limestone was undertaken by six small artisanal mining associations in Caballero, El Pomier, Extractores de Ambar en la Cumbre, Extractores de Ambar en el Valle de Hato Mayor, Extractores de Larimar, and Extractores de Piedra Caliza. The Secretaría de Estado de Industria y Comercio, through the Dirección General de Minería, supervised the activities of these miners and occasionally provided technical support. The Government continued to seek foreign investment for the mining sector. Mineral production in the Dominican Republic was by the Government and the private sector.

Law 146 of 1971 regulates mining activities in the Dominican Republic. The entity responsible for supervising the sector is the General Mining Office of the Ministry of Industry and Trade. Under the mining law, concessions are limited to an area of 20,000 hectares; foreign companies must establish legal domicile in the country by appointing a legal representative; and foreign governments cannot obtain concessions. In addition to the provisions of the Tax Code, mining activities require the purchase of a mining business patent that is issued by the Ministry of Industry and Trade. Exports are charged with a 5% tax calculated on the free-on-board price of the minerals exported. This payment may be deducted from the income tax payable in the same fiscal year in which the export is made (European Commerce Chambers—Federation of the Dominican Republic, 2001§). The free trade agreement signed in 1998 between the CARICOM and the Government of the Dominican Republic was finally ratified and implemented in December 2001 by Barbados, the Dominican Republic, Jamaica, and Trinidad. Ratifications were pending in Belize, the Eastern Caribbean states, and Guyana. The country's principal Caribbean trading partner in 2001 was Trinidad and Tobago (Revista Inter-Forum, 2002§).

Direct foreign investment increased by 20% in the first 9 months of 2001 to $888.9 million. Investments were primarily in the areas of agriculture, commerce, communications, electricity, free zones, finance, and mining. Total foreign investments for the year were estimated to be $1.2 billion (Caribbean Update, 2002a).

Under Decree 947-01, the Government created the industrial mining free zones. Free zones were established in the Provinces of Altagracia, Azua, Barahona, Boca Chica, Dajabón, Pedernales, Puerto Plata, Samaná, San Cristóbal, and Santiago. The industrial mining free zones operated under the Commercial, Industrial, and Service Sector decree established by law 8-90 of 1990 and law 4315 of 1955. Decree 963-01 created the Bauxite Mineral Commission, which is formed by the Corporación de Fomento Industrial, the Dirección General de Minería, and the Unidad Corporativa Minera; they are responsible for the marketing and sales of bauxite in the Dominican Republic.

Among the many steps that the Government has taken to address the restructuring of the mining industry was the creation of the Consejo Nacional para el Desarrollo Minero and the Unidad Corporativa Minera (UCM) through Decree 613-00 of 2000 (Dirección General de Minería and Unidad Corporativa Minera, 2002). The Consejo Nacional was formed by the President of the Dominican Republic, the Secretary of Industry and Commerce, the Governor of the Central Bank, the Technical Secretary, the Secretary of Environment and Natural Resources, the Judicial Consultant to the Executive Power, the Director of Lome IV, the Director of the Industrial Promotion Directorate, the President of the Mining Chamber, the President of the Dominican Geologic Society, the Director General of Mining, and the Executive Director of the UMC. The purpose of the UCM is to follow up and serve as an operational collaborator in all mining projects in which the Government is a participant. It will also arrange for private investments in the mining sector, assist Government-owned Rosario Dominicana S.A. in the search for strategic partners, and represent the Government's mining rights of the bauxite deposits in Cabo Rojo (Dirección General de Minería and Unidad Corporativa Minera, 2002).

After conducting an international bidding process, the Government granted Newmont Mining Corporation of the United States an exploration license for the Ampliación Pueblo

Viejo gold deposit in March 2001. The property is in the municipality of Cotuí in the Province of Sánchez Ramírez and is north of the Pueblo Viejo Mine (Pedro Vásquez Chávez, Director, Dirección General de Minería, written commun., July 16, 2001). The property is one of the three areas that the Government separated for exploration and that have been identified as probable gold reserves.

Before 2000, natural resources in the Dominican Republic were not effectively protected. In October 1999, a bill for a General Law on Environment and Natural Resources was submitted to Congress and was approved in August 2000 as law 64-00. This law regulates air contamination; hazardous products, elements, and substances; domestic and municipal waste; and soil and water contamination. It also regulates the granting of rights by the Ministry of Environment and Natural Resources and/or municipal authorities for the use of natural resources, which include caves, coastal and marine resources, forests, minerals, soil, and water. The Ministry of Environment and Natural Resources is responsible for the administration of the ecosystems, environment, and natural resources (European Commerce Chambers—Federation of the Dominican Republic, 2001§).

Rosario Dominicana continued to be idle during the year. The company operated the Pueblo Viejo Mine and was the country's only producer of gold and silver. By March 2001, the bidding process to select a company for the sulfide operation of Rosario Dominicana was halted and eventually postponed.

Production of nickel in ferronickel decreased by 22.2% compared with that of 2000 to about 21,700 t. The downturn in the production of nickel was attributed to a 3-month plant shutdown by Falconbridge Dominicana C. por A. (Falcondo) that began in late October 2001 (Metal Bulletin, 2001). Falcondo was a subsidiary of Falconbridge Ltd. of Canada (85.26%), which was the only nickel producer in the country; the remaining equity was owned by Redstone Resources Inc. (4.1%) and the Government (10.64%). Low base-metal prices and weak demand from the stainless steel market were among the reasons cited for the shutdown (Falconbridge Ltd., 2002, p. 15). Total ore milled at Falcondo was about 3.6 Mt. The metal produced was cast into ferrocones that contained about 40% nickel and 60% iron. About 45% of production was shipped to Europe; 40%, to Japan and Korea; and the remainder, to North America (Metal Bulletin Monthly, 2001). Falcondo's production capacity is 30,000 metric tons per year (t/yr) of nickel contained in ferronickel. The company comprised seven surface-mining areas in Caribe, Fraser, Guardarraya, Larga, Ortega, Peguera, and Taína. The facilities included a metallurgical treatment plant, a crude oil processor, and a 200-MW thermal powerplant. Crude oil was piped 80 kilometers (km) to a plant in Bonao. Oil was converted into diesel for mobile equipment, naphtha for the reduction furnaces, and fuel oil for the powerplant. The excess power produced by the plant was sold domestically and diverted to the national grid (Metal Bulletin Monthly, 2002a). Falcondo's total proven and probable mineral reserves decreased by 4.4 Mt to 60.7 Mt in 2001.

In 2001, production of gypsum increased by 59.5% to about 176,000 t (Banco Central de la República Dominicana, 2002, p. 5). Gypsum reserves were estimated to be 800 Mt. Cemex Dominicana S.A. (a subsidiary of CEMEX) was the sole producer of gypsum during the year; Corporación Dominicana de Empresas Estatales held minority interest in the venture (Rodríguez-Reyes, 2001).

Chalk, coquina, and other types of limestone used in the construction sector were mined at Pedernales and Polo in the Province of Barahona and at El Pomier in the Province of San Cristóbal. Ideal Dominicana S.A. mined dolomite at Pedernales in the Province of Barahona (Rodríguez-Reyes, 2001).

Production of marble increased by 45% to about 5,900 cubic meters in 2001 (Banco Central de la República Dominicana, 2002, p. 5). Mining of marble was by the Asociación de Marmoleros de Caballero (a cooperative of miners formed by 39 proprietors). About 500 families in five communities were said to benefit from the mining of marble. Marble reserves in the Dominican Republic were estimated to be about 30 million cubic meters (Rodríguez-Reyes, 2001). The most significant deposits in the country were in the Samaná peninsula. Other deposits have been identified in the Provinces of El Ceibo, Hato Mayor, La Vega, Puerto Plata, Sánchez Ramírez, and Santiago.

Production of rock salt was reported to be about 12,200 t in 2001. Rock salt reserves were estimated to be 70 Mt. The Dominican Republic's only rock salt mine, Barahona Mine, was to the south of the Neyba Valley in Barahona. Salt production was transported to the port of Barahona and exported to the United States. Barahona's grinding and sieving salt plant had a production capacity of 65,000 metric tons per month. Access to the plant was by means of a 5-km dirt road from the town of Las Salinas. The plant was not connected to the local grid, and water needed in the operation of the plant was transported by trucks (Rodríguez-Reyes, 2001). Marine salt also was produced in the Provinces of Baní, Barahona, and Monte Cristi. Production of sand and gravel decreased by 3.5% compared with that of 2000 to about 15.7 million cubic meters owing to a decrease in cement sales. The construction sector, however, registered a slight increase of about 0.9% (Banco Central de la República Dominicana, 2002, p. 5, 8).

Amber in the Dominican Republic was mined by rudimentary methods in the communities of El Valle located in the Provinces of Hato Mayor, Puerto Plata, and Santiago, and in La Cumbre, Los Cacaos, and Palo Alto. To assist the locals in the extraction of amber, the Government provided heavy equipment to facilitate access to the amber mines. Pectolite, which is marketed in the Dominican Republic under the name of larimar, was produced by a cooperative of artisanal miners in the city of Barahona. Alabaster, onyx, and travertine deposits are known to exist in the Province of Barahona near Canoa and Vicente Noble. Limestone production was used domestically for the manufacturing of calcium carbonate, hydrated lime, and quicklime aggregates for the construction industry. Kaolin was mined in El Tamarindo (Rodríguez-Reyes, 2001).

The first reported oil discovery in the Dominican Republic was in 1862. Oil seeps were reported near Higuerito. In 1904, oil was discovered, and production began at about 400 bbl/d. Production, however, was ephemeral and lasted only a week. By 1939, another discovery was made; once again, sustained production was not attained. Although exploration continued throughout the 1960s and 1970s, no oil was produced. In 1991, Mobil Oil Corporation acquired 1,556 km of seismic data in Ocoa Bay in the southern part of the Dominican Republic. In 1996, Mobil assigned the concession to Murfin Dominicana Inc.

(MDI) of the United States. MDI acquired onshore seismic data, performed geochemical surveys, and compiled and evaluated all the data (Pierce, 2002).

In 2001, the Dominican Republic did not produce petroleum. The country imported crude petroleum and refined products from Mexico and Venezuela. MDI continued exploration of its concession, which included the Azua and San Pedro Basins. The property comprised 1.1 million hectares (2.8 million acres). Exploration was concentrated on the eastern Azua Basin, which comprised the Higuerito and Maleno onshore oilfields and the Ocoa Bay offshore anticline. Reserves at Ocoa have been estimated to be 300 Mbbl of oil (Pierce, 2002).

In 2001, the Dominican Republic's electricity generation capacity was enough to meet the country's demand. Constant power outages related to the Government's inability to pay private generating companies and the reduction in availability of hydroelectric power related to periods of drought were straining the system (U.S. Energy Information Administration, 2001§). Generation, transmission, and distribution of energy in the Dominican Republic was by the Government-owned Corporación Dominicana de Electricidad (CDE). In 1997, law 141-97 ordered the capitalization of CDE and by 1999, the company's electricity assets had been privatized. Unión Fenosa of Spain and AES Corporation of the United States took over the distribution of electricity in the country. Unión Fenosa (through its subsidiaries Ede-Norte and Ede-Sur) and AES (through its subsidiary Ede-Este) operated in the Dominican Republic. The Cayman Power barge II, which produced 30 MW of power for the country, departed in 2001.

AES and Union Fenosa bought into the distribution networks of CDE. Generation plants were bought by a consortium of companies that included AES Gener S.A. of Chile and Coastal Power Company, Enron, and Seaboard Transcontinental Capital Corp. of the United States. The Government retained hydropower stations and transmission facilities. Of the country's total power, 40% was provided by independent power distributors. The country's installed capacity was 2,000 MW, of which about 400 MW came from hydropower plants. Although power demand was about 1,600 MW in 2001, only 1,300 MW was being produced. Power outages in the country were attributed to the inability of state institutions to pay for power services and to frequent mechanical breakdowns that caused the deliberate shutdown of plants by some generators. Future investments that could total $2 billion to double generating capacity by 2004 were planned during the year (Canute, 2001).

In 2001, foreign firms continued to invest in the country's power infrastructure. Enron and Unión Fenosa invested in a 500-MW gas-powered plant in Punta Caucedo and a regasification plant. AES began construction of a 300-MW gas-fired plant and a liquefied natural gas importing terminal near Santo Domingo. Taiwan also announced the construction of a 5-MW diesel-fired plant (U.S. Energy Information Administration, 2001§).

To strengthen its basic infrastructure to support mining activities, the Government was studying a private investment proposal for the construction of a cargo and passenger railroad to connect Santo Domingo and Santiago in its first phase. Second and third phases will connect Dajabón to the southern regions of the country and Santiago to Puerto Plata (Russin, Vecchi, and Heredia-Bonetti, 2001§).

## GRENADA

In 2001, mining did not play a significant role in the economy of Grenada. As of July 2002, the population was estimated to be about 89,000. The country's GDP based on purchasing power parity was $424 million in 2001 (U.S. Central Intelligence Agency, 2002f§). The country's economy was adversely affected during the year mostly because of the downturn in the air travel industry as a result of the terrorist attacks of September 11 in the United States. Traditionally, tourism has been Grenada's leading sector and the largest earner of foreign exchange, followed by agriculture and a developing offshore financial service industry. About 25% of the country's GDP has been derived from tourism. Grenada's main export earners in 2001 were nutmeg and cocoa. Production of cocoa declined by 37.8% owing, among other things, to adverse weather conditions and the reduction in the number of farmers and acreage farmed. Banana production declined by 14.9% during the first 9 months of the year. Activity in the construction sector was slower in 2001 following the completion of large commercial projects in the retail and tourism sectors. The number of building permits granted during the year decreased by 6.4%. Public sector construction activities were focused on the rehabilitation of roads (Caribbean Development Bank, 2002, p. 41-42). Mineral commodities produced were limestone and sand and gravel solely for domestic consumption.

From June 2000 to June 2001, foreign investments in Grenada were about $83 million compared with $6 million for the same time period in 1999. Of total investments, 60% was in the construction sector mainly for the construction of hotels; 30%, in the manufacturing sector; and 7% in the service sector (Washington Times, 2002b). In 2001, about $30 million was spent for the infrastructure of the country. The major infrastructure projects included disaster rehabilitation, roads, and water supply. About $27 million was allocated for infrastructure projects in 2002 (Washington Times, 2002a). Other infrastructure projects included the $8.1 million to be spent on the island's sole operational airport at Point Salines to resurface the runway and restore arrival and departure halls. Plans to construct a new terminal also were underway in 2001 (Caribbean Airports, 2001§).

## JAMAICA

In 2001, Jamaica's GDP increased by 1.7% compared with that of 2000. The output of the mining and quarrying industry increased by 3.8% and represented 9.1% of total real GDP; of the construction sector, by 2.0% and represented 7.5% of real GDP; of the agriculture sector, by 5.2% and represented 7.3% of real GDP; and of the manufacturing sector, by 0.6% and represented 15.5% of real GDP. Despite growth in most sectors of the economy tourism decreased by 5.1% compared with that of 2000. The overall economy was affected by the events of September 11 in the United States, civil disturbances in western Kingston in July, and heavy rains during November associated with Hurricane Michelle, which resulted in severe flooding (Planning Institute of Jamaica, 2002§). Jamaica continued to rank among the world's leading producers of bauxite and

alumina in 2001 (Plunkert, 2002). The country also produced cement, gold, gypsum, lime, limestone, refined petroleum products, salt, and other construction materials.

The Ministry of Mines and Energy is the Government agency responsible for the mining sector in Jamaica. Legislation that governs the mineral sector includes the Mining Act, mining regulations, the Minerals (Vesting) Act, mines and health regulations, the Bauxite and Alumina (Encouragement) Act, the Quarries Control Act, quarries regulations, and the Gunpowder and Explosives Act. The Mines and Geology Division supports the Ministry through research and ensures compliance with the mining laws. The Jamaica Bauxite Institute is responsible for monitoring and regulating the bauxite industry and serves as the Government adviser in all matters that concern the industry. The Bauxite and Alumina Encouragement Act provides for waiver of duties on capital expenditures among other things. In addition, a provision under the Bauxite and Alumina Industries Special Provision Act encourages incentive-based agreements between the Government and bauxite/alumina producers. Incentives given are an up-to-10-year tax holiday, pay no custom duties on capital goods, and pay no withholding tax on dividends. An income tax of 33.3% on all profits of mining companies, with the exception of bauxite companies, is assessed under the Income Tax Act (Mines and Geology Division of Jamaica, 2001§). Similar incentives also are available for the nonbauxite/industrial minerals sector. The Mining Act and the Quarries Control Act governs the prospecting and exploitation of mineral resources in Jamaica. The laws and regulations that control mining and prospecting are administered by the Commissioner of Mines and Geology within the Ministry of Mining and Energy (Jamaica Promotions Corporation, 2001§).

The Jamaica Bauxite Institute regulates and monitors the operations of bauxite companies, oversees and controls access to lands for mining, and monitors environmental effects and damages caused by the bauxite mining operations. Once a mine closes, bauxite companies are required by law to return the land to a productive state (Neufville, 2001§). Talks of a Government proposal to replace Jamaica's bauxite levy on production with a new system to tax profits were underway in 2001 (Metal Bulletin Monthly, 2002b). The Government continued the implementation and monitoring of the Jamaica National Environmental Action Plan. In April 2001, the National Environment and Planning Agency (NEPA) was created. The NEPA was the product of a merger among the Natural Resources Conservation Authority, the Town Planning Department (TPD), and the Land Development and Utilization Commission. Among the NEPA's objectives are the integration of environmental, planning, and sustainable development policies and programs in Jamaica (National Environmental and Planning Agency, 2002§).

Production of minerals in Jamaica was by the Government and the private sector. The bauxite and alumina industry was being constrained by a lack of additional refining capacity. In 2001, total bauxite production (crude bauxite for exports plus bauxite converted to alumina) increased by 10% to about 12.4 Mt compared with that of 2000; the increase was a result of the resumption of production at the Gramercy refinery in Louisiana, which was one of the facilities to which Jamaica shipped ore to be refined (Caribbean News Agency, 2001§). Production of alumina was 3.5 Mt compared with 3.6 Mt in 2000. The decrease in production of alumina was attributed to the temporary closure of the Jamalco refinery in October 2001 following a strike. In 2001, a joint venture was signed between Glencore International AG of Switzerland and Jamaica Bauxite Mining Ltd. for the operation of Jamaica's Ewarton and Kirkvine alumina refineries. Glencore entered the venture by acquiring Alcan Inc.'s 93% interest in the operations. The remaining 7% will be owned by Jamaica Bauxite Mining. The joint venture will operate under the name of West Indies Alumina. The refineries have a combined capacity of 1.2 million metric tons per year (Mt/yr) of alumina (Engineering and Mining Journal, 2001). Glencore also owned aluminum production facilities in the United States through Century Aluminum Company.

Alumina Partners of Jamaica (Alpart) [a joint venture between Kaiser Aluminum Corporation of the United States (65%) and Norsk Hydro A/S of Norway] was planning a 250,000 t/yr expansion of their plant, which has capacity of 1.5 Mt/yr (Financial Times, 2001). Jamaica's Kaiser Bauxite plant restarted shipments to the Gramercy alumina refinery in Louisiana during the year. The plant had been closed following an explosion in 1999. The Government owned 51% of Kaiser Jamaica Bauxite Company, and Kaiser Aluminum owned the remaining 49%.

The Jamalco aluminum refinery in Halse Hall, Clarendon Parish, was shut down towards the end of the year following a strike that began in October. Jamalco was a joint venture between Alcoa Inc. (50%) and the Government (50%) (Mining Journal, 2001).

In 1986, in collaboration with the Canadian International Development Agency, the Government conducted an island-wide metallic mineral survey. The survey reported 210 positive geochemical anomalies. Of these anomalies, 17 were in the area of Main Ridge in the Clarendon Parish. In June 1989, an exploration license was granted to Jamaican Mining Company Ltd. At the time, BHP International Mineral Exploration acquired an interest in the prospect. The prospect was then optioned to Orvana Minerals Corporation (a Canadian exploration company that created a local subsidiary under the name of Clarendon Mining Ltd.). In 1996, Clarendon Mining Ltd. created an interest in favor of Ausjam Pty of Australia to develop a mine in Main Ridge. The mining lease was granted in June 1997. Ausjam began operating the Pennants gold mine in May 2001. During the year, 214 kilograms (kg) of gold and 95 kg of silver were produced. Gold mined at Pennants was exported to Australia and Canada (Carlton Baxter, Director of Economic Minerals Section, Ministry of Mining and Energy of Jamaica, written commun., August 2002).

Jamaica produced approximately 11 Mt of aggregate in 2001 (table 1). The three most widely used aggregates by volume were marl-fill (5.4 Mt), crushed stone (2.3 Mt), and sand and gravel (2.2 Mt). Rugby Jamaica Lime and Minerals Ltd. (a subsidiary of Rugby Group plc of the United Kingdom) was a major lime producer. Lime produced at the Rugby plant was sold primarily to domestic alumina refineries; small quantities also were sold domestically to the sugar estates and to Ausjam's gold mine. Rugby Group was a partner of Clarendon Lime Ltd. of Jamaica. The company's market share was about 36% of all lime used in the country, and its output accounted for approximately 95% of all lime produced from noncaptive kilns

(World Cement, 2001).

In 2001, Jamaica depended on imported petroleum for more than 90% of its energy needs. Most of the crude was imported from Mexico and Venezuela. The petroleum sector was shared by the Government and the private sector. Petroleum Corporation of Jamaica (PCJ), which is a statutory corporation under the Ministry of Mining and Energy, had the exclusive right to explore for oil, to develop petroleum resources, to negotiate import contracts, to operate refineries, and to sell petroleum and petroleum products in Jamaica. PCJ's subsidiaries were Petrojam Limited, which operated the oil refinery, and Petcom Limited, which was the marketing and retailing company (Petroleum Corporation of Jamaica, 2001§).

The Government, through Jamaica Public Service Company, Limited (JPSCo), which was the country's main power provider, generated, transmitted, and distributed most of the electric power in Jamaica. The Government owned 23 generating plants that produced 73% of the country's power requirements. Five of the plants were steam-generating units, eight were hydropowered, eight were gas turbines, and two used diesel fuel. The company had an installed generating capacity of 660 MW, which included independent power producers. In an effort to liberalize the electricity sector, the Government granted private companies the opportunity to take charge of any new power generation in the country through independent power producers (Petroleum Corporation of Jamaica, 2001§).

In March 2001, the Government sold 80% of JPSCo to Mirant Corporation of the United States at a cost of $201 million; the Government maintained a 20% interest in JPSCo. Mirant planned to add an additional 385 MW of generating capacity to the system. Initially, the company planned to build a 25-MW oil-fired steam generator, followed by an additional 40-MW combustion turbine and another 40-MW unit that will be added to the Bogue generating facility in 2002. Other installations were planned for the Hunt's Bay generating facility in 2005 (Jamaica Public Service Company, Limited, 2001§). The bauxite and alumina sector consumed about 40% of all electricity in Jamaica. In 2001, Jamaica was considering importing liquefied natural gas (LNG) from Trinidad. Petrojam operated a 36,000-bbl/d refinery (Petroleum Economist, 2002).

Plans to build a 20-MW wind farm near Newport, Manchester Parish, were underway in 2001. The project was a partnership between PCJ and Renewable Energy Systems Limited of the United Kingdom. Of the country's energy needs, 90% was satisfied by using petroleum-based products. The wind farm project was expected to enhance Jamaica's energy-producing capacity and to reduce its reliance on imported oil. Among PCJ's functions was the implementation of Jamaica's energy policy; this was aimed at promoting investment in renewable energy sources in an effort to reduce the country's oil import bill, which was Jamaica's largest import cost item (Petroleum Corporation of Jamaica, 2001§).

In June 2001, the French company Bouygues was awarded the contract to begin construction of the first phase of the Highway 2000 project; this will be a four-lane highway that in its first phase will run between Kingston and Williamsfield, Manchester Parish. The first phase of the project was scheduled to be completed in 30 months and will cover 74 km. The cost of the project was estimated to be $390 million. Bouygues will be responsible for raising $283 million, and the Government will be responsible for securing the remaining $107 million, which will be made available to Bouygues in the form of a loan concession to be repaid by cash flows generated from the project (Jamaica Gleaner, 2001§).

## MONTSERRAT

Since the eruption of the Soufriere Hills volcano in 1995, the downward trend in economic activity in Montserrat has been steady. In 2001, however, the level of contraction was lower. Real GDP decreased by 4.8% compared with a decrease of 6.7% in 2000 and 12.6% in 1999. As of July 2002, Montserrat's population was estimated to be about 8,400. Several major public sector projects, such as the construction of a new police station, fire stations, and new housing projects, were scheduled during the year. Although the country lacked adequate infrastructure to transport tourists, total tourist arrivals for the first 10 months of the year increased by 8.7% to 12,392 from 11,399 during the same period in 2000. The country could only be accessed by helicopter or ferry. The construction of a new $17 million airport was expected to begin in 2002. Agricultural production was affected by a period of drought during the first one-half of the year. During the first 10 months of 2001, the United Kingdom committed $7.6 million to help restructure the island's economy. The provision of adequate housing remained one of the major problems in Montserrat. Although efforts to develop new housing continued in 2001, 547 persons were still on the housing register, 140 were in shelters, and 229 in temporary accommodations (Caribbean Development Bank, 2002, p. 47-48). Mineral commodities produced were modest amounts of sand and gravel and other quarry products.

## NETHERLANDS ANTILLES

Mining did not play a significant role in the economy of the Netherlands Antilles in 2001. The GDP based on purchasing power parity was estimated to be $2.4 billion. Exports were valued at $276 million. Leading sectors in the economy were offshore finance, petroleum refining, and tourism. Agriculture accounted for about 1% of the total GDP owing mostly to the lack of arable land. Most consumer and capital goods were imported from Mexico and the United States. As of July 2002, the population was estimated to be about 214,000 (U.S. Central Intelligence Agency, 2002g§).

Devcon International Corp. produced and distributed ready-mix concrete and concrete block in St. Maarten. In 2001, the company completed the dredging of a lagoon adjacent to the St. Maarten Airport expansion and the construction of a central-mix concrete batch plant for the company's quarry operations.

## SAINT KITTS AND NEVIS

In 2001, the mining sector played a minor role in the economies of Saint Kitts and Nevis consisting mainly of the supply of construction materials. As of July 2002, the population was estimated to be about 38,700 (U.S. Central Intelligence Agency, 2002h§). Estimated real GDP growth decreased by 2% during the year. Sugar production increased by 24.6% in 2001 compared with a 1.8% increase in 2000; sugar exports increased by 25.3% compared with 0.4% in 2000.

Construction activities, mostly related to tourism, decreased during the year. Significant projects included the construction of the Royal St. Kitts Beach Resort and Casino, the Paradise Beach Resort, and the Gulf View Resort. Government-financed activities included ongoing reconstruction of the J.N.F. General Hospital, the rehabilitation of Port Zante, the construction of the Nevis Airport Tower, and the resurfacing of roads (Caribbean Development Bank, 2002, p. 48-49).

## SAINT VINCENT AND THE GRENADINES

In 2001, mining did not play a significant role in the economies of Saint Vincent and the Grenadines. The estimated GDP based on purchasing power parity was $339 million. Agriculture represented 10% of GDP, and the industry and services sector accounted for 26% and 64%, respectively. In 2000, exports were valued at $53.7 million; export commodities were arrowroot starch, bananas, dasheen (taro), eddoes, and tennis racquets. Despite moderate growth in tourism and services, little development of new industries was initiated. As of July 2002, the population of Saint Vincent and the Grenadines was estimated to be about 116,000 (U.S. Central Intelligence Agency, 2002i§).

In 2001, Saint Vincent and the Grenadines was expected to import 1,000 barrels of refined oil from Venezuela under the Caracas Energy Accord. The accord is an expansion of the San José Agreement and establishes an arrangement for Caribbean countries to purchase petroleum products on concessionary terms from Venezuela. Under the agreement, the country will have to expand its fuel storage capacity (Alexander's Gas and Oil Connections, 2002b§).

## TRINIDAD AND TOBAGO

Trinidad and Tobago's real GDP increased by 3.5% in 2001, following a trend of eight consecutive years of economic growth that began in 1994. The nonpetroleum sector grew by 4.3%, and growth in the petroleum sector increased moderately by 0.7%. The petrochemical subsector increased by 11.3% mainly as the result of an increase in the production of ammonia and methanol. Output increased in most subsectors of the economy with the exceptions of agriculture, petroleum, and refinery products. Agriculture production decreased by 16% owing mainly to industrial unrest at the country's sugar factory and the effects of bad weather on the cocoa and coffee industries. Production of petroleum decreased by about 5.3% following an average trend of a 2.4% per year decrease in production since 1997; refinery output decreased by about 2.8% owing partly to a reduction of crude oil imported for processing (Central Bank of Trinidad and Tobago, 2002, p. 5). Trinidad and Tobago's petrochemical industries and the iron and steel sector benefited from the availability of inexpensive natural gas. The country also produced asphalt, cement, direct-reduced iron (DRI), limestone, and natural gas liquids.

The Ministry of Energy and Energy Industries was the Government agency responsible for the management and development of the petroleum and mineral resources of Trinidad and Tobago. The Ministry's major functions were leasing and licensing areas for petroleum exploration and production, regulating and managing all oil and gas activities, and administering domestic marketing of petroleum products, natural gas transmission and sales, petrochemical manufacture, and other natural-gas-based industries. The Ministry also was responsible for formulating and implementing legal instruments for the petroleum industry. It shared responsibilities for the collection of petroleum revenues accruing to the state and the administration and management of the minerals sector with the Ministry of Finance (Ministry of Energy and Energy Industries, 2002§).

Mineral commodities in Trinidad and Tobago were produced by the Government and the private sector. Exploration and development of natural gas continued in 2001. Two important discoveries were made during the year. In May 2001, BP Trinidad and Tobago announced the discovery of about 28 billion cubic meters of gas at the first of four wells targeted for drilling under the company's 2001 exploration program (Central Bank of Trinidad and Tobago, 2002, p. 5). The second discovery was by BHP Billiton of Australia. BHP discovered 1 billion barrels of oil and planned to begin production in 2004. The company planned to invest $500 million to develop the Greater Angostura field off the northeastern coast of Trinidad (Alexander's Gas and Oil Connections, 2002a§). In 2001, the Government invited exploration bids for seven new offshore blocks anticipating a growth in demand for natural gas related to the expansion of the Atlantic LNG project. From 1997 to 2001, drilling increased at an average of 7.8% per year. In 2001, a total of 16 wells were drilled (Central Bank of Trinidad and Tobago, 2002, p. 5).

In October 2001, National Gas Company of Trinidad and Tobago (NGC), through its subsidiary NGC Iron Company Limited, acquired 100% of the shares of Trinidad Iron Carbide Inc. The plant, which included the Savonetta pier No. 3, had a rated capacity of 300,000 t/yr of iron carbide. NGC planned to upgrade the Savonetta pier to provide services to gas-based plants in Point Lisas for the import and export of raw materials and products. National Energy Corporation (a wholly owned subsidiary of NGC) owned and managed the harbor and four other specialized pier facilities at Point Lisas (National Gas Company of Trinidad and Tobago, 2002§).

In 2001, production of ammonia (nitrogen content) increased by 11.7% to 3.0 Mt from 2.7 Mt in 2000. Exports of nitrogenous fertilizers increased by 19.6% during the year (Central Bank of Trinidad and Tobago, 2002, p. 7). Steel was produced by an integrated minimill owned by Caribbean Ispat Limited (a subsidiary of Ispat International N.V.). Production of billets, crude steel, and wire rods decreased in 2001. Production of DRI increased by about 30% to 2.2 Mt (Burt Gransaull, Marketing Manager, Caribbean ISPAT Limited, oral commun., August 2002).

In 2001, production of crude petroleum decreased by 5.3% to 41.4 Mbbl from 43.6 Mbbl in 2000. Petroleum production had been falling at an average rate of 2.4% per year since 1997. A reversal of this trend was expected for 2002 following the discovery of new wells in 2001. The amount of petroleum exported in 2001 was 18.3 Mbbl compared with 19.2 Mbbl in 2000. Production of refinery products decreased by 2.8% to 55.9 Mbbl from 57.5 Mbbl in 2000 (Central Bank of Trinidad and Tobago, 2002, p. 5).

Production of natural gas increased by 6.5% to 16.5 billion cubic meters in 2001 from 15.5 billion cubic meters in 2000.

The major users of natural gas in the country were the petrochemical industry (41%), Atlantic LNG Company of Trinidad and Tobago (30%), and the power generating industry (12%). The Ministry of Energy commissioned two studies in the sector—one to determine the level of natural gas reserves in the country, and the other, to produce a plan for further development of the industry. Atlantic LNG exported 2.77 Mbbl of LNG to the United States and Spain in 2001. Work continued on Atlantic LNG's trains 2 and 3; train 2 was expected to begin production in the fourth quarter of 2002, and train 3, in the third quarter of 2003. In 2001, production of natural gas liquids was 7.5 Mbbl compared with 6.9 Mbbl in 2000 (Central Bank of Trinidad and Tobago, 2002, p. 6).

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**Major Sources of Information**

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TABLE 1
ISLANDS OF THE CARIBBEAN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

| Country and commodity | | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|
| ARUBA e/ 2/ | | | | | | |
| Petroleum refinery products | thousand 42-gallon barrels | 65,000 | 65,000 | 65,000 | 100,000 | 100,000 |
| Sulfur, byproduct of petroleum | | 50,000 | 50,000 | 50,000 | 77,000 | 77,000 |
| BAHAMAS, THE e/ 3/ | | | | | | |
| Salt | | 900,000 | 900,000 | 900,000 | 900,000 | 900,000 |
| Stone, argonite | | 1,200,000 | 1,200,000 | 1,200,000 | 1,200,000 | 1,200,000 |
| BARBADOS 3/ 4/ | | | | | | |
| Cement, hydraulic | | 172,728 | 259,181 | 252,929 | 267,659 | 270,000 e/ |
| Clay and shale | | 120,000 | 120,000 | 150,000 | 150,000 | 150,000 e/ |
| Gas, liquefied petroleum e/ | 42-gallon barrels | 20,000 | 20,000 | 20,000 | 20,000 | 20,000 |
| Gas, natural: | | | | | | |
| Gross | million cubic meters | 28 | 37 | 47 | 38 | 38 e/ |
| Marketed e/ | do. | 12 | 15 | 15 | 15 | 15 |
| Limestone e/ | | 1,500,000 | 1,500,000 5/ | 1,500,000 | 1,500,000 | 1,500,000 |
| Sand e/ | | 200,000 | 200,000 5/ | 200,000 | 200,000 | 200,000 |
| Petroleum: | | | | | | |
| Crude | thousand 42-gallon barrels | 328 | 585 | 708 | 560 | 365 e/ |
| Refinery products | do. | 2,653 | 2,277 | -- | -- | -- |
| CUBA 3/ 6/ | | | | | | |
| Asphalt | | 59,400 | 68,400 | 73,300 | 69,000 r/ | 70,000 e/ |
| Cement, hydraulic 7/ | | 1,700,600 r/ | 1,713,400 | 1,784,600 | 1,632,700 | 1,324,100 8/ |
| Chromite | | 44,000 | 46,000 | 52,000 | 56,300 r/ | 60,000 e/ |
| Cobalt, mine output, Co content: 7/ 9/ | | | | | | |
| Oxide, oxide sinter, sulfide, ammoniacal liquor precipitate | | 2,768 r/ | 3,135 r/ | 2,996 r/ | 3,322 r/ | 3,910 10/ |
| Sulfide and ammoniacal liquor precipitate | | 2,358 r/ | 2,668 r/ | 2,537 r/ | 2,841 r/ | 3,411 10/ |
| Copper, mine output, Cu content | | 2,208 | 1,351 | 1,090 | 1,346 r/ | 1,000 e/ |
| Feldspar | | 14,700 | 14,400 | 4,800 r/ | 6,700 r/ | 7,000 e/ |
| Gas, natural, marketed | thousand cubic meters | 37,200 | 124,200 | 460,000 | 574,100 r/ | 594,600 8/ |
| Gold e/ | kilograms | 250 | 1,000 | 1,000 | 1,000 | 1,000 |
| Gypsum e/ | thousand tons | 130 | 130 | 130 | 130 | 130 |
| Iron and steel, steel, crude | | 342,000 | 283,327 | 302,662 | 327,300 r/ | 269,600 8/ |
| Kaolin | | 11,500 | 11,000 | 10,400 | 9,700 r/ | 10,000 e/ |
| Lime | thousand tons | 106 | 93 | 92 | 82 r/ | 80 e/ |
| Nickel, Ni content: | | | | | | |
| Mine output, oxide, oxide sinter, sulfide, ammoniacal liquor precipitate | | 58,796 r/ | 64,605 r/ | 63,508 r/ | 67,754 r/ | 72,619 10/ |
| Metallurgical products: 9/ | | | | | | |
| Granular oxide, oxide sinter, powder | | 33,571 | 38,192 | 37,510 | 39,228 r/ | 40,748 10/ |
| Sulfide | | 24,507 | 25,176 | 24,999 | 27,288 | 29,914 10/ |
| Ammoniacal liquor | | 717 r/ | 1,237 r/ | 999 r/ | 1,238 r/ | 1,958 10/ |
| Total | | 58,795 r/ | 64,605 r/ | 63,508 r/ | 67,754 r/ | 72,620 |
| Nitrogen, N content of anhydrous ammonia e/ | thousand tons | 135 | 135 | 135 | 135 | 135 |
| Petroleum: | | | | | | |
| Crude 11/ | thousand 42-gallon barrels | 9,425 | 10,823 | 13,777 | 17,382 | 18,609 8/ |
| Refinery products | do. | 60,000 | 60,000 | 60,000 | 60,000 | 60,000 |
| Salt | | 163,600 | 134,600 | 159,100 | 177,000 r/ | 180,000 e/ |
| Sand | cubic meters | 1,949,100 | 1,861,200 | 1,775,700 | 1,989,300 r/ | 2,000,000 e/ |
| Silica sand | do. | 92,900 | 94,500 | 91,200 | 52,400 r/ | 50,000 e/ |
| Stone, crushed | do. | 2,919,600 | 2,860,000 | 2,950,300 | 3,301,300 | 3,300,000 |
| Sulfur, byproduct of petroleum e/ | | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Zeolites | | 37,500 | 41,700 | 37,000 | 37,400 | 37,500 e/ |
| DOMINICAN REPUBLIC 12/ | | | | | | |
| Cement, hydraulic | | 1,835,017 | 1,884,562 | 2,000,000 e/ | 2,194,000 r/ | 2,413,400 |
| Gold | kilograms | 2,349 | 1,424 | 651 | -- | -- |
| Gypsum 13/ | | 115,000 | 80,000 | 81,249 | 110,044 | 176,000 e/ |
| Iron and steel: | | | | | | |
| Ferroalloys, ferronickel | | 84,897 | 69,419 | 85,000 r/ | 84,900 r/ | 84,900 e/ |
| Steel, crude | | 82,479 | 35,874 | 42,893 | 35,801 | 35,800 e/ |
| Limestone | thousand tons | 1,000 e/ | 1,000 e/ | 605 | 703 | 881 |
| Marble 13/ | cubic meters | 2,126 | 2,687 | 2,700 | 4,057 | 5,881 |

See footnotes at end of table.

TABLE 1--Continued
ISLANDS OF THE CARIBBEAN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

| Country and commodity | | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|
| DOMINICAN REPUBLIC--Continued 12/ | | | | | | |
| Nickel, Ni content: | | | | | | |
| Mine output, laterite ore | | 49,152 | 40,311 | 39,997 | 39,943 | 30,800 e/ |
| Metal, ferronickel: 14/ | | | | | | |
| Smelter | | 32,588 | 25,220 | 24,455 r/ | 27,829 r/ | 21,662 |
| Shipments | | 32,581 | 26,554 | 24,012 | 27,226 r/ | 27,230 |
| Petroleum refinery products: | | | | | | |
| Liquefied petroleum gas | thousand 42-gallon barrels | 409 | 480 | 433 | 450 e/ | 450 e/ |
| Gasoline, motor | do. | 1,925 | 1,877 | 1,906 | 1,900 e/ | 1,900 e/ |
| Kerosene | do. | 88 | 84 | 71 | 90 e/ | 90 e/ |
| Jet fuel | do. | 1,741 | 1,763 | 1,788 | 1,800 e/ | 1,800 e/ |
| Distillate fuel oil | do. | 2,754 | 2,888 | 2,656 | 2,700 e/ | 2,700 e/ |
| Residual fuel oil | do. | 4,359 | 4,506 | 4,408 | 4,400 e/ | 4,400 e/ |
| Total | do. | 11,276 | 11,598 | 11,262 | 11,300 e/ | 11,300 e/ |
| Salt: | | | | | | |
| Marine e/ | | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| Rock | | 10,479 | 5,672 | 10,000 r/ | 12,200 | 12,200 e/ |
| Total | | 60,479 | 55,672 | 60,000 r/ | 62,200 | 62,200 e/ |
| Sand and gravel 13/ | thousand cubic meters | 10,894 | 12,933 | 15,398 | 16,246 | 15,680 |
| Silver | kilograms | 12,406 | 7,409 | 3,140 | -- | -- |
| GUADELOUPE e/ 3/ 15/ | | | | | | |
| Cement | | 230,000 | 230,000 | 230,000 | 230,000 | 230,000 |
| Lime | | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Pumice | | 210,000 | 210,000 | 210,000 | 210,000 | 210,000 |
| Salt | | 48,000 | 48,000 | 50,000 | 49,000 | 49,000 |
| HAITI e/ 16/ | | | | | | |
| Sand and gravel: | | | | | | |
| Gravel | cubic meters | 400,000 | 400,000 | 427,300 5/ | 450,000 | 450,000 |
| Sand | do. | 2,000,000 | 2,000,000 | 2,053,500 5/ | 2,000,000 | 2,000,000 |
| Stone, marble | do. | 100 | 100 | 100 | 131 5/ | 131 |
| JAMAICA | | | | | | |
| Aluminum: 17/ | | | | | | |
| Bauxite, dry equivalent, gross weight | thousand tons | 11,987 | 12,646 | 11,688 | 11,127 | 12,370 |
| Alumina | do. | 3,394 | 3,440 | 3,570 | 3,600 | 3,540 |
| Cement, hydraulic 17/ | | 588,287 | 557,991 | 503,713 | 521,343 | 521,350 |
| Clay 17/ | | -- | -- | -- | -- | 91 |
| Gold 17/ | kilograms | -- | -- | -- | -- | 214 |
| Gypsum 17/ | | 263,662 | 154,451 | 235,900 | 330,441 | 320,323 |
| Lead, refined (secondary) 17/ | | 800 e/ | 800 e/ | 800 r/ e/ | -- | -- |
| Lime 17/ | | 199,419 | 227,300 | 226,882 | 267,215 | 281,853 |
| Petroleum refinery products | thousand 42-gallon barrels | 5,255 | 5,142 | 3,607 | 3,600 | 3,600 e/ |
| Salt | | 16,498 | 15,606 | 19,090 | 19,068 | 19,070 |
| Silica sand 17/ | | 12,089 | 6,128 | 9,400 | 6,700 | 8,244 |
| Silver | kilograms | -- | -- | -- | -- | 95 |
| Stone: 17/ | | | | | | |
| Limestone | thousand tons | 3,350 | 3,201 | 3,300 | 3,420 | 3,488 |
| Marble, cut and/or polished | | 1,500 | 750 | 375 | 150 | 150 e/ |
| Marl and fill | thousand tons | 4,198 | 3,900 | 4,490 | 4,720 | 5,422 |
| Sand and gravel | do. | 1,928 | 1,839 | 1,580 | 2,100 r/ | 2,205 |
| MARTINIQUE e/ 3/ 15/ | | | | | | |
| Cement, hydraulic | | 220,000 | 220,000 | 220,000 | 220,000 | 220,000 |
| Lime | | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Petroleum refinery products | thousand 42-gallon barrels | 4,800 | 4,800 | 4,800 | 4,800 | 4,800 |
| Pumice | | 130,000 | 130,000 | 130,000 | 130,000 | 130,000 |
| Salt | | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 |
| NETHERLANDS ANTILLES e/ 2/ | | | | | | |
| Petroleum refinery products | thousand 42-gallon barrels | 76,303 5/ | 78,169 5/ | 80,000 | 80,000 | 80,000 |
| Salt | | 432,225 5/ | 487,373 5/ | 500,000 | 500,000 | 500,000 |
| Sulfur, byproduct of petroleum | | 28,616 5/ | 30,000 | 30,000 | 30,000 | 30,000 |
| SAINT KITTS AND NEVIS e/ | | | | | | |
| Sand and gravel | | 100,000 | 200,000 | 211,849 5/ | 214,700 5/ | 215,000 |
| Stone, crushed | | 105,000 | 105,000 | 105,000 | 121,266 5/ | 121,270 5/ |

See footnotes at end of table.

TABLE 1--Continued
ISLANDS OF THE CARIBBEAN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

| Country and commodity | | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|
| TRINIDAD AND TOBAGO | | | | | | |
| Asphalt, natural 18/ | | 15,396 | 18,735 | 12,600 | 7,467 r/ 19/ | 16,216 19/ |
| Cement, hydraulic 18/ | | 652,500 | 690,400 | 688,400 | 742,645 19/ | 708,146 19/ |
| Gas, natural: 18/ | | | | | | |
| Gross | million cubic meters | 9,137 | 10,294 | 13,240 | 15,483 | 16,496 |
| Marketed | do. | 7,379 | 8,651 | 11,917 | 14,170 r/ | 15,111 |
| Iron and steel: | | | | | | |
| Direct-reduced iron 18/ | | 1,140,000 | 1,073,333 | 1,379,000 | 1,530,000 20/ | 2,186,382 20/ |
| Steel, crude 20/ | | 778,125 r/ | 809,270 r/ | 762,199 r/ | 753,125 r/ | 696,111 |
| Semimanufactures (billets) 20/ | | 747,000 18/ | 776,900 18/ | 723,900 | 723,000 | 668,267 |
| Lead, refined (secondary) e/ | | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 |
| Natural gas liquids 19/ | thousand 42-gallon barrels | 4,113 | 5,254 | 5,753 18/ | 6,932 | 7,521 |
| Nitrogen, N content of anhydrous ammonia 21/ | | 1,771,700 | 2,271,300 | 2,720,300 r/ | 2,679,669 r/ 19/ | 3,036,307 19/ |
| Petroleum: 19/ | | | | | | |
| Crude | thousand 42-gallon barrels | 45,166 | 44,759 | 45,662 18/ | 43,593 | 41,374 |
| Refinery products | do. | 33,525 | 49,019 | 53,320 18/ | 57,533 | 55,870 |
| Stone, limestone 22/ | thousand tons | 1,219 | 1,100 | 1,100 e/ | 1,815 r/ 19/ | 975 19/ |
| Sulfur, byproduct of petroleum e/ 23/ | | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 |

e/ Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. r/ Revised. -- Zero.

1/ Table includes available data through October 2002.

2/ In addition to commodities listed, crude construction materials (lime, sand, stone, and so forth) may be also produced, but data on such production are not available, and information is inadequate to make reliable estimates of output levels.

3/ In addition to commodities listed, crude construction materials (sand and gravel, and so forth) may be also produced, but data on such production are not available, and information is inadequate to make reliable estimates of output levels.

4/ Barbados also produced stone, but data on such production are not available, and information is inadequate to make reliable estimates of output levels.

5/ Reported figure.

6/ Cuba also produced marble and stone, but data on such production are not available, and information is inadequate to make reliable estimates of output levels.

7/ Source: Anuario Estadistico de Cuba.

8/ Source: Sitio del Gobierno de la República de Cuba at URL http://www.cubagob.cu.

9/ The Government of Cuba reports figures of nickel-cobalt content of granular and powder oxide, oxide sinter, and sulfide production. The cobalt content of reported nickel-cobalt production was determined to be 1.16% of granular and powder oxide, 1.21% of oxide sinter, 7.56% of sulfide, 33% of ammoniacal liquor. The remainder of reported figures would represent the nickel content.

10/ Sources: Cuba Web, International Nickel Study Group, and Sherritt International Corp. Sitio del Gobierno de La República de Cuba at URL http://www.cubagob.cu

11/ Production has been converted from metric tons to barrels using the U.S. Department of Energy's Energy Information Administration's factor of 6.449 barrels per metric ton of crude petroleum.

12/ In addition to commodities listed, crude construction materials (gravel, stone, and so forth) may be also produced, but data on such production are not available, and information is inadequate to make reliable estimates of output levels.

13/ Source: Banco Central de la República Dominicana.

14/ Source: Falconbridge Dominicana C. por A.

15/ Guadeloupe and Martinique also produced stone, but data on such production are not available, and information is inadequate to make reliable estimates of output levels.

16/ In addition to commodities listed, asphalt, lime, and salt may be also produced, but data on such production are not available, and information is inadequate to make reliable estimates of output levels.

17/ Source: Ministry of Mining and Energy of Jamaica.

18/ Source: Central Bank of Trinidad and Tobago Annual Economic Survey.

19/ Source: Ministry of Energy and Energy Industries of Trinidad and Tobago.

20/ Source: Carribbean Ispat Limited.

21/ Source: International Fertilizer Industry Association.

22/ Reported, in cubic meters, as in 2000, blue limestone, 415, and yellow limestone, 616; and in 2001, blue limestone, 481, and yellow limestone, 73. Low-density limestone conversion factor of 1.76 metric tons per cubic meter.

23/ Sulfur as a byproduct of natural gas may be produced, but information is inadequate for reliable output estimates.