

THE MINERAL INDUSTRY OF

CUBA

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In 1999, Cuba's gross domestic product increased by 6.2% compared with that of 1998; two important sources of foreign exchange were sugar, which increased by 17.1% and tourism, which increased by 11%. Investment was estimated to have increased by 9.4%—significant portions of which went to energy generation, gas, housing construction, petroleum exploration and production, telecommunications, transportation, and tourism (Ministerio de Economía y Planificación, [undated], Resultados económicos de 1999, accessed September 15, 2000, at URL http://www.cubagob.cu/des_eco/mep/resultados_econ99.htm).

The Government expected investment to grow by 9% in 2000, with planned significant increases in cement, crude petroleum, electricity generation (70%), natural gas, petroleum refining capacity (2.6 times), and steel (Ministerio de Economía y Planificación, [undated], El plan económico y social para el año 2000, accessed September 15, 2000, at URL http://www.cubagob.cu/des_eco/mep/plan_econ2000.htm).

Mining contributed significantly to Cuba's revenue through foreign trade and because of interest by the international sector as a result of recent changes in investment and mining laws. Nickel production and trade continued to dominate the mining sector. Cuba's reserves were the world's fourth largest and its reserve base were the largest (Kuck, 2000). Cuba was the sixth leading producer of mined nickel. Traditionally, nickel has been Cuba's second largest merchandise export after sugar (Financial Times, Mining—Modernisation programme picks up pace, accessed October 13, 2000, at URL <http://www.ft.com/ftsurveys/country/sc68d2.htm>). Production of cobalt, which is a byproduct of nickel operations, has also been important to Cuba's mineral sector. In 1999, Cuba was the sixth leading world producer of cobalt with about 7% of the total world mine production. In addition, Cuba produced moderate amounts of ammonia, cement, chromite, copper, gold, gypsum, petroleum and petroleum products, salt, silica sand, steel, sulfur as a byproduct of petroleum refining, and other construction materials (table 1).

Mining activity in Cuba is regulated by the constitution, the mining law (law No. 76), the foreign investment law (law No. 77), and the environmental law (law No. 88).

El Ministerio de la Industria Básica (Ministry of Basic Industry) is the Government entity with responsibility for energy, geology and mining, and basic chemistry. Mineral concessions are awarded by the Oficina Nacional de Recursos Minerales, which is an agency under the Ministerio de Industria Básica that was created in 1995 as a result of the new mining law. The Oficina Nacional de Recursos Minerales is also charged 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 Unión Geológica Minera S.A. (Geominera) and Unión del Níquel S.A. both of which are Government companies. Geominera is responsible for the exploration and production of all metallic and nonmetallic minerals except nickel and cobalt. The company works in joint venture (shared-risk ventures) with the private sector and has focused its activities in commodities with high potential, such as gold and silver. Unión del Níquel is responsible for the production and processing of nickel and cobalt. The company works independently and with the private sector to produce nickel from the three active mines in western Cuba.

Cubapetróleo S.A. (CUPET), which is a Government-owned company, is responsible for exploring, refining, and marketing petroleum. CUPET has three drilling and production subsidiaries, four refineries, distribution companies, and a lubricants company. It works in association with the private sector in an effort to increase production from the existing fields and has production-sharing contracts in 45 blocks. The Corporación de Cemento reports to the Ministerio de Industria Básica. Cuba's clay, marble, and other construction materials report to the Ministerio de Construcción (Ministry of Construction) (Otero Costafreda, 1999). Mineral production continued to be dominated by the Government. Recent changes in mining and foreign investment legislation, however, have changed the nature of the industry. The Government and the foreign private sector have formed joint corporations (mixed enterprises). Exploration and production contracts between the Government and the foreign sector may be of shared risk or with risk assumed by the foreign company.

In early 1999, foreign investment in Cuba since 1990 was estimated to be \$1.7 billion (U.S.-Cuba Trade and Economic Council, Inc., 1999, Foreign investment and Cuba, accessed September 15, 2000, at URL <http://www.cubatrade.org/foreign.html>). The total represents amounts committed or delivered during that period. Canada, Mexico, and Italy were the largest sources of foreign investment with \$600 million, \$450 million, \$378 million, respectively. Of the total, telecommunications received \$650 million; mining, \$350 million; and tourism, \$200 million.

Sherritt International Corporation of Canada was the second largest foreign investor in Cuba (U.S.-Cuba Trade and Economic Council, Inc., 2000, 1999 commercial highlights, accessed October 13, 2000, at URL <http://www.cubatrade.org/99highlights.html>). In addition to the investment in mineral-related areas, such as nickel and cobalt production and oil and gas exploration and development, Sherritt invested in agriculture, power

generation, telecommunications, and tourism.

After the dissolution of the Soviet Union in the early 1990's, Cuba's foreign trade has changed significantly. In 1999, Europe was Cuba's main trading partner with 47% of total trade, and was followed by countries from North America and South America with 37% and Asia with 14%. Individually, Russia and Spain were Cuba's main trading partners from Europe. Canada, Mexico, and Venezuela were the leading partners from North America and South America (Ministerio de Comercio Exterior, Comercio Exterior, [undated], accessed September 15, 2000, at URL http://www.cubagob.cu/des_eco/minex/com_extP.htm).

Production of mined nickel (nickel content of nickel oxide and nickel-cobalt sulfide) decreased in 1999 to about 64,900 metric tons (t), which was a 1% decrease from that of 1998. Production of nickel, which was concentrated in the northeastern side of the island, came from three operations—two produced nickel oxide and one, nickel-cobalt sulfide, an intermediate product. Moa S.A., which was the sulfide producer, was a mining and processing operation that was part of a vertically integrated joint-venture company between the Government of Cuba and Sherritt (50% each). The joint venture was formed in 1994 with facilities in Canada, Cuba, and The Bahamas. Production from the Moa operation decreased slightly to 27,020 t from 27,066 t in 1998 (Sherritt International Corporation, 2000, p. 19). Nickel production from the nickel oxide plant in Nicaro and Punta Gorda totaled 38,500 t (International Nickel Study Group, 2000).

Cement production in 1999 was 1.8 million metric tons (Mt) with a consumption of 1.06 Mt. Exports totaled 740,000 t of cement and 123,000 t of clinker. In 1998, 54% of Cuba's cement exports were to the Dominican Republic. Cuba also exported cement to Brazil, Haiti, and other islands of the Caribbean (Palomar Llovet, 2000).

Production of chromite was 35,750 t, which was a 27% decrease compared with that of 1998, and significantly less than the 50,000 t planned for the year. Cromo-Moa S.A. in Holguín Province, which was the sole producer had a production capacity of 100,000 t (U.S.-Cuba Trade and Economic Council, August 9-15, 1999, Economic eye on Cuba—Chrome production update, accessed September 13, 2000, at URL <http://www.cuba.trade.org/eyeonz36.html>). Production had been increasing since 1995 when production had been slightly higher than 30,000 t.

Gold production from the Mantúa copper deposit in the Pinar del Río Province totaled 469 kilograms (kg) (reported as 15,066 troy ounces) in 1999 (Northern Orion Explorations Ltd., 2000). Most of the production was from the first half of the year when Mantúa's output was 372 kg (reported as 11,953 troy ounces) (Northern Orion Explorations Ltd., 1999a). Mining from Mantúa was suspended in September and gold assets were written down because of low gold prices. Production, however, resumed in the fourth quarter with an output of 9 kg (reported as 302 troy ounces) during that period. Mantúa, which was a joint-venture project between Northern Orion Explorations Ltd. and the Government of Cuba through Geominera, began production in February 1998. Northern Orion produced 508 kg (reported as 16,323 troy ounces) in 1998. Originally, plans called for an estimated production of 22,000 kg (reported as 70,000 troy ounces) within a 2-year period, but poor leaching kinetics and

low gold prices resulted in the much lower output. In August 1999, Northern Orion completed a prefeasibility study of the second phase of the project, copper recovery by ferric leaching and solvent extraction-electrowinning (SX-EW) (Northern Orion Explorations Ltd., 1999b). The company had originally considered the pressure oxidation process. Resources were estimated to be 11 Mt with a grade of 2.09% copper. Estimated proven and probable reserves (assuming a copper price of \$0.85 and a cutoff grade of 0.7% copper) were determined to be 7.5 Mt at 2.75% copper, containing about 206,000 t of copper (Minerals Engineering International Online, August 9, 1999, Northern Orion completes prefeasibility study on Mantua copper project, accessed May 10, 2000, at URL <http://min-eng.com/opssa.html>). This ferric leaching/SX-EW process is expected to have a copper recovery rate of 88%. Copper production was planned to be 18,000 t per year for 10 years. Direct capital cost, excluding financing costs, were estimated at \$48.4 million (Engineering and Mining Journal, 1999).

Cuba is not self-sufficient in energy. Prior to the dissolution of the Soviet Union, Cuba imported its oil requirements from the Soviet Union. Since then, oil exploration and development have been priorities for the Cuban Government. Cuba has also expanded the production of natural gas, which was almost nonexistent in the 1980's (Alexander's Oil & Gas Connections, 2000). In 1999, about 15 foreign companies from Canada, France, Germany, Spain, Sweden, and the United Kingdom were exploring and/or operating in Cuba's petroleum sector (OilOnline, March 6, 2000, Cuba opens licensing round, accessed October 10, 2000, at http://www.oilonline.com/news/news_international_contracts_cuba030600.html). The largest crude petroleum producer in Cuba was Sherritt. The company held interest in 11 production-sharing contracts, 4 of which were through a subsidiary involved in working with existing wells and developing new wells in existing oilfields. The remaining seven contracts, in which Sherritt held indirect interests, were for developing new wells or extending known field boundaries (Sherritt International Corporation, 2000, p. 11). Sherritt produced 60% of Cuba's total crude production of almost 12.4 million barrels (Sherritt International Corporation, 2000, p. 4).

Energas S.A., which was a company established to build and operate power facilities in Cuba by using domestic petroleum and natural gas, had two powerplants (one in Boca de Jaruco and the other in Varadero) with a combined capacity of 131 megawatts. Sherritt Power Corporation, 49.7% of which was owned by Sherritt, held one-third interest in Energas through a subsidiary. Energas planned to expand the Varadero plant in 2000 (Sherritt International Corporation, 2000, p. 15).

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TABLE 1
CUBA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1995	1996	1997	1998	1999	
Cement, hydraulic	1,469,700 4/	1,453,100 4/	1,712,800 4/	1,717,700 r/ 4/	1,801,000 4/	
Chromite	30,693 4/	37,300 4/	44,000 4/	49,044 4/	35,750 4/	
Cobalt 5/	1,850	2,340	2,490	2,660	2,620	
Copper, mine output, Cu content	2,000	2,000	1,000	1,000	1,000	
Gas, natural:						
Gross	thousand cubic meters	37,000	37,000	1,000,000 r/	1,000,000 r/	1,500,000
Marketed	do.	4,000	4,000	850,000 r/	900,000 r/	1,300,000
Gold	kilograms	184 4/	250	250	1,000	1,000
Gypsum	thousand tons	130	130	130	130	130
Iron and steel, steel, crude	do.	207 4/	231 4/	342 4/	284 4/	300
Lime	do.	180	180	180	180	180
Nickel:						
Mine output, Ni-Co content of oxide and sulfide 6/		42,700	53,600	61,900	68,200	67,500
Metallurgical products, Ni content: 5/						
Granular oxide, oxide sinter, and powder		21,400	26,700	34,000	38,700	38,500
Sulfide		19,500	24,600	25,500	26,900	26,400
Total		40,900	51,300	59,500	65,600	64,900
Nitrogen, N content of anhydrous ammonia	thousand tons	135	135	135	135	135
Petroleum:						
Crude	thousand 42-gallon barrels	10,200	10,500	10,800	11,300	12,500
Refinery products	do.	60,000	60,000	60,000	60,000	60,000
Salt	thousand tons	180	180	180	180	180
Silica (industrial sand and gravel)	do.	300	300	300	300	300
Sulfur, byproduct of petroleum	do.	5	5	5	5	5

r/ Revised.

1/ Estimated data are rounded to three significant digits; may not add to totals shown.

2/ Table includes data available through October 13, 2000.

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

4/ Reported figure.

5/ The Government of Cuba reports figures of nickel-cobalt content of granular and powder oxide, oxide sinter, and sulfide production. By using an average cobalt content in these products of 0.9% in total granular and powder oxide, 1.1% in total oxide sinter, and 4.5% in total sulfide, the cobalt content of reported nickel-cobalt production was determined to be 1.16% of granular and powder oxide, 1.21% of oxide sinter, and 7.56% of sulfide. The remainder of reported figures would represent the nickel content.

6/ Derived from data reported to the International Nickel Study Group.

TABLE 2
CUBA: STRUCTURE OF THE MINERAL INDUSTRY IN 1999

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement	Empresa del Cemento (Government, 100%)	Mariel, Pinar del Río Province; Cienfuegos, Cienfuegos Province; Santiago de Cuba Province.	4,600
Chromite	Ministerio de Industria Básica (Government, 100%)	Mercedita Mine and plant, Holguín Province	100
Copper	Empresa Minera de Occidente (Government, 100%)	Júcaro mine, Pinar del Río Province; Mina Grande, Santiago de Cuba Province	3
Nickel	Empresa Niquelífera Ernesto Ché Guevara (Government, 100%)	Punta Gorda, Holguín Province	30
Do.	Metals Enterprise S.A. (Government, 50%, Sherritt International Corporation, 50%)	Moa, Holguín Province	24
Do.	Empresa Niquelífera Comandante René Ramos Latour (Government, 100%)	Nicaró, Holguín Province	30
Petroleum:			
Crude	Cuba Petróleo S.A. (Government, 100%)	Northern coast area between Havana and Cárdenas	13,000 1/
Refinery products	do.	Refineries at Cienfuegos, Havana, and Santiago de Cuba	160 1/
Steel	Antillana de Acero (Government, 100%)	Cotorro, Havana Province	600
Do.	do.	Las Tunas, Las Tunas Province	150

1/ Thousand barrels per year.