

THE MINERAL INDUSTRY OF

COLOMBIA

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Although its mineral sector was relatively modest by world standards, Colombia's mineral production was significant to its gross domestic product (GDP), which grew by 3.2% in 1997 and reached \$2,300 per capita.¹ Colombia has had positive growth of its GDP for more than six decades and was the only Latin American country not to default on or restructure its foreign debt during the 1980's, probably owing, in no small, part to the conservative monetary policy conducted by an independent central bank. Inflation has declined steadily during the 1990's, declining to about 16% in 1997. Efforts to foster an expanded mineral sector were hindered by continuing terrorist activity, including repeated blasting of oil pipelines by dissident factions, along with attacks on mines, petroleum production facilities, and personnel. A major problem hindering development of Colombia's mineral industry is the lack of infrastructure.

Total foreign direct investment in Colombia climbed sharply during the present decade, starting at about \$500 million in 1990 and reaching \$5.3 billion in 1997, of which about \$1.7 billion was directed to petroleum and mining. Complementing this has been a continuous growth of public and private investment in national infrastructure, especially in energy, telecommunications, and transportation. Privatization continued in electric power, mining, natural gas, and telecommunications, in descending order of revenues received. In spite of its problems, Colombia has investment-grade ratings from major U.S. ratings agencies for its debt (Wall Street Journal, 1997).

Government Policies and Programs

The principles of "private property and initiative" are the foundation of the economic system of Colombia. The constitution guarantees that investment of foreign capital shall have the same treatment that citizen investors have. The constitution grants the State ownership of the subsoil and nonrenewable resources with the obligation to preserve natural resources and protect the environment. The State performs supervision and planning functions and receives a royalty as economic compensation for the exhaustion of nonrenewable resources. The State believes in privatization as a matter of principle. The Colombian constitution permits the expropriation of assets without indemnification.

The mining code (Decree 2655 of 1988) covers the prospecting, exploration, exploitation, development, beneficiation, transformation, transport, and marketing of minerals. Under the

law, the Ministry of Mines and Energy grants permission to explore, exploit, and develop mineral resources through the appropriate title or right. Foreign investment is dictated by Law 9 of 1991, which covers the issue of equal treatment for foreign and domestic investors with access to all sectors except those considered to be vital to national security, defense, and toxic waste disposal; addresses the foreign exchange statute, which allows free remittance of profit and capital, protection of investors from adverse changes in exchange guarantees, except temporarily when Colombia's international reserves are less than 3 months of imports; and grants the responsibility of foreign investment to the Consejo Nacional de Política Económica y Social. In 1997, the Government of Colombia continued to publicize its interest in encouraging foreign investment in the mining sector and in reducing its own role as a producer of minerals.

The current tax structure (Law 223 of 1995) includes national levies of a 35% income tax; a 35% capital gains tax; a 7% remittance tax; a 16% value-added tax; and a 1% one-time-only stamp tax at the time the mining contract is ratified. Municipal levies include a 0.2% to 0.7% industry tax and/or a 0.2% to 1.0% trade tax, as well as a property tax ranging between 0.1% and 0.16% depending upon the locality. According to Law 141 of 1994, royalties on mined coal are 10% on 3 million tons per year (Mt/yr) or more, and 5% on less than 3 Mt/yr. Other royalties are 8% on nickel; 6% on alluvial gold; 5% on copper, iron ore, and platinum; 4% on lode gold and silver; and 1.5% on emeralds. Exemptions from customs duties are granted on machinery, technical equipment, their fittings, and materials and spare parts required for mineral exploration, including oil and gas.

Environmental Issues

The Colombian Constitution expresses a fundamental interest in sustainable growth with preservation and restoration of the environment. All economic activity is subject to environmental norms. Any activity may be closed down and prohibited if it cannot justify the damage it does to the environment. Procedures are being stabilized and streamlined so that the Ministry of Mines and Energy can supervise mines for compliance with environmental regulations and any possible sanctions defaults.

Production

Coal, nickel, and petroleum are the most important minerals to the Colombian economy. According to data received by the U.S. Geological Survey through country questionnaires, other official sources, or estimates, Colombia ranked 10th in the mine production of nickel in 1997, and although its ranking in coal and

¹Any datum or statistic in this text not referenced elsewhere may be assumed to be from "Country Presentation—Colombia," delivered by Dr. Orlando Cabrales Martinez, Minister of Mines, Colombia, at the Global Mining Opportunities Symposium, Palais des Congrès de Montreal, Quebec, Canada, May 4-6, 1998.

petroleum were lower, the contribution of those commodities to the economy is significant in terms of foreign-exchange earnings.

Colombia is also well known as a leading producer of emeralds and, in the past, has been an important producer of gold. Although the country's production of gold has fluctuated conspicuously, it continues to be an important source of Government revenue. With less than 1% of total output in 1997, Colombia ranked about 16th in world mine production of gold, with less than 1% of total output, and was the 5th largest producer of gold in Latin America after Peru, Brazil, Chile, and Mexico. In addition, Colombia produces a number of other mineral commodities and products in modest amounts, including copper, iron ore, lead, manganese, platinum, and zinc, and a number of industrial minerals, including cement; in 1997, Colombia was the sole producer of platinum in Latin America. Colombia was the fifth leading producer of crude petroleum in the region, after Venezuela, Mexico, Brazil, and Argentina.

Mineral production during the year included gains for the fuel minerals; natural gas increased steeply to new highs; and coal and crude oil climbed less steeply but also to new highs. Among the metals, iron ore and nickel output increased conspicuously, but production of copper, gold, and platinum dropped sharply. Lead and zinc were essentially unchanged. Among the more important industrial minerals, cement output sagged from 1997, as did the production of emeralds.

Trade

Colombia's value of exports totaled about \$10.6 billion in 1996, the latest period for which data are available (International Monetary Fund, 1997). Crude petroleum and petroleum products accounted for almost 27% of all exports, or about \$2.86 billion. Coal exports accounted for 10% of the value of total exports in 1996, or about \$1.06 billion. Colombia's value of imports was \$13.6 billion (Washington Times, 1997). The United States continued to be Colombia's main trading partner. Total trade between the two countries was \$9.8 billion.

Preliminary mining export data for 1997 show, in descending order of value, coal valued at \$944 million; ferronickel, at \$193 million; emeralds, at \$129 million; gold, at \$84 million; cement and clinker, at \$69 million; platinum, at \$3 million; and silver, at \$438,000. Although these are only the principal mineral exports, their total value is about \$1.422 billion. Petroleum export data were not available.

Structure of the Mineral Industry

Although privatization is being emphasized by the Government, ownership of the mineral industry in Colombia is, nonetheless, mixed. The Government participates directly in the production of minerals through several companies associated with the Ministry of Mines and Energy. The Government company, Minerales de Colombia S.A. (MINERALCO), manages, develops, and promotes the exploitation of minerals, except coal, petroleum, and radioactive minerals (INGEOMINAS-UPME, 1996). The Empresa Colombiana de Carbon Ltda., another Government-owned company under the Ministry of Mines and Energy, has the responsibility to manage the country's coal resources and to

promote coal production (INGEOMINAS-UPME, 1996). The Empresa Colombiana de Petróleos (ECOPETROL) negotiates all petroleum contracts with the private sector on behalf of the Government. It participates in the production of petroleum and natural gas directly and in association with the private sector.

Commodity Review

Metals

Copper.—Colombia's copper production has been uneven since beginning in 1990. Output grew slowly until 1993, when it was nonexistent. Since then, output has continued at a lesser rate than in 1990-92. Production during the current year dropped by about 20% from that of 1996, and future output of copper seems somewhat unpredictable.

Colombia has several porphyry copper deposits, consistent with porphyry-type mineralization elsewhere in the *cordillera*. In the past, some copper had been mined at El Roble gold mines, southwest of Medellín. In 1990, El Roble Exploracion Y Explotacion S.A. began operations at a new copper mine northwest of Medellín, from which concentrates were shipped to Hibi Kyoda Smelting Co. in Japan. More recently, Cobres de Colombia S.A. operated copper smelting and refining facilities at Cali. Other copper porphyry deposits are at Acandi, El Dovio, Mocoa, Murindo, and Pantanos. Murindo has been considered to be a good future mining target because of its attractively high gold content.

Gold.—Production of gold, totaling 18.8 metric tons (t) was down about 15% compared with that of 1996. Between 10% and 20% of total output is by large mining companies, the remainder being produced by small- and medium-sized companies, as well as individuals. Gold mining in Colombia dates back to pre-Columbian times. As is true elsewhere in Latin America, inherited but primitive methods of treating placer (alluvial) ores result in significant loss, estimated to be as much as 60%. The largest present producer, Mineros de Antioquia S.A., extracts gold from placer deposits in the Nechi River and its affluent, the Tigui River. The company's production was exported mainly to the United States, North Korea, and Switzerland (Minas Hoy, 1995).

Nickel.—Mine production of nickel from Cerro Matoso S.A. (CMSA), the only nickel producer in Colombia, was 25,172 t, up by almost 10% from that of 1996. Production of ferronickel was 25,000 tons, up by about 9% from that of 1996. Most of Colombia's nickel reserves are being exploited by CMSA at a large open-pit mine in Cordoba State in northern Colombia, formerly a joint venture between the Colombian Government and GENCOR Ltd. of South Africa. The majority owner, GENCOR, acquired the shares owned by the Government during the latter's privatization program and transferred ownership to its newly constituted subsidiary, Billiton Company (Mining Journal, 1997a). For the 12 months ending June 30, 1996, run-of-mine production averaged 2.9% nickel, one of the highest lateritic nickel ore grades in the world (GENCOR Ltd., 1996).

Platinum.—Colombian production of platinum in 1997 was 409 kilograms, a decrease of almost 40% from that of 1996. Although Colombia produced less than 1% of the total platinum, it ranked 6th among the 10 world producers. The leading producing Departments were Choco and Antioquia; smaller quantities were produced in the Departments of Bolivar, Cauca, Cordoba, Narino, and Valle. The Choco Department has been producing platinum since the 16th century (Loebenstein, 1985), and Colombia was the only producer of platinum until the beginning of the 20th century (Garces Gonzalez, 1995). All platinum production in Colombia is from placer deposits which are, in some places, associated with the production of gold.

Industrial Minerals

Emerald production totaled about 6,688,000 carats, a decrease of about 6% compared with that of 1996. Emerald mining goes back to pre-Columbian times in Colombia, and many individual prospectors today work over the waste heaps of larger mines and otherwise hunt for these gemstones. The main emerald producers in Colombia are Tecnicas Minerals Ltda., Compania Colombiana de Explotaciones Mineras, Sociedad de Esmeraldas y Minas S.A., Compania Esmeraldas de Chivor S.A. (formerly Empresa Chivorena de Minas S.A., a private company founded and licensed in 1990 to produce emeralds from Oriente Mine through a contract with MINERALCO), 80% owned by Chivor Emerald Corp. Ltd.

The production center best known for the quality of its emeralds is Muzo-Quipama in Boyaca Department. Other deposits are also exploited in the municipalities of Chivor, Coscuez, and Penas Blancas also in Boyaca, and in Ubala, Gachala, and Yacopi in the Cundinamarca Department (INGEOMINAS-UPME, 1996, p. 28).

Mineral Fuels

Coal.—Output of coal reached new highs during the year, climbing by almost 8% over that of 1996. Colombian coal deposits are the largest in Latin America, with proven reserves of 6.5 billion metric tons. The principal coal producing regions are La Guajira and Cesar Departments, together yielding four-fifths of the country's output. Physically, the coal sector is divided into two main areas—the highly modernized open-pit mines (steam coal) of Guajira and Cesar in which large investment in equipment and technology have been made, and the more traditional underground mines (coking and steam coals) of the Andean Mountains in the regions of Boyaca, Cundinamarca, Antioquia, and Valle del Cauca. The Cerrejon Norte Mine in La Guajira Department was the largest producer, with an output approaching 15 million t, or nearly one-half of the country's production. The mine was a joint venture between Carbones de Colombia S.A. and Exxon Corporation through its subsidiary, International Colombian Resources Corp. (INTERCOR). In 1993, the Government created a new state-owned company, Empresa Colombiana de Carbon Ltda. (ECOCARBON), to manage and regulate the country's coal resources. ECOCARBON grants coal-mining licenses or association contracts to private companies and to individuals intending to explore for and exploit coal in Colombia (Colombian Government Trade Bureau,

Washington, DC [no date], Energy and mining, accessed August 24, 1998, on the World Wide Web at URL <http://www.access.digex.net/~coltrade/31.htm>).

The Government continued with its plans to privatize its 50% interest in Cerrejon Norte, despite the dynamiting, by the Cuban-inspired National Liberation Army, of a 490-foot section of the rail tracks over which coal is shipped for export. The terrorist group registered its evident opposition to INTERCOR and the Government (Exxon Corp.'s INTERCOR, September 29, 1997, Exxon unit's Colombia coal exports halted, accessed September 30, 1997, at URL http://biz.yahoo.com/finance/97/09/29/XON_y0021_1.html).

Two other important coal properties in northern Colombia have been combined. Cerrejon Centro, previously owned by the Swiss trading company, Glencore (50%), and Amcoal/Minorco (50%), has been combined with Rio Tinto's Oreganal property into a single venture owned by Rio Tinto, Glencore, and Minorco/Amcoal in shares of one-third each (Mining Journal, 1997a). This same consortium then acquired the contract from ECOCARBON to develop the Cerrejon Sud property adjoining the Cerrejon Centro and the Oreganal tracts.

Colombia's consumption of coal is modest; a large proportion of its output is exported, averaging more than 80% of total production. Of this, about 60% was from the Cerrejon Norte Mine. Europe has been the main purchaser of Colombian coal, receiving almost three-quarters of the 24 Mt of coal exported by Colombia in 1997. The United States received about one-fifth of Colombian coal exports; Latin America and the Far East received the remainder.

Natural Gas and Petroleum Crude.—Gas and crude set record highs for Colombian production. Output of natural gas was up sharply, about 38%, compared with that of 1996. Production of crude increased by about 4% compared with that of 1996. Gas production in Colombia is from associated and, in some cases, large non-associated reservoirs.

The Government-owned company, ECOPETROL, is responsible for the exploration and production of natural gas and petroleum crude in Colombia. ECOPETROL explores and produces natural gas and petroleum independently, as well as in association with the private sector. In addition, a small percentage of hydrocarbons is produced by the private sector in concessions awarded by the Government.

Events during the year were unsettling for the petroleum industry. Equipment was sabotaged, employees were abducted and held hostage, pipelines were dynamited, and production suffered. The first half of the year saw lagging production amidst these and other difficulties, but during the second half, production increases yielded a net gain on the entire year. Contractual problems became acute in terms of the division of revenues and the deadlines for declaring exploration blocks feasible for commercial production to avoid losing production rights. A complication was that Colombia's arrangements with private companies involved “. . . some of the least competitive oil contracts in the world” (Financial Times, 1997b). Reportedly, the Government “take” averages about 85% of every barrel produced; by contrast, in Britain, it is about 35%. At yearend, talks were stalled between British Petroleum Ltd. and ECOPETROL.

Although both sides were working toward agreement, it was not clear that anything substantive could be accomplished before the presidential elections in May 1998.

Infrastructure

Colombia has 106,600 kilometers (km) of highways, of which 12,685 km are paved. The country has 14,300 km of waterways navigable by river boats. There are a total of 3,386 km of railway, of which 150 km are standard gauge and carry coal from the Cerrejon mines to the marine port of Bahia Portete. Narrow gauge railways total 3,236 km, of which about 1,830 km are in use. Colombia has 606 airports with paved runways—2 are longer than 3,047 meters (m), 9 are between 2,438 and 3,047 m long, 32 are between 1,524 and 2,438 m long, 36 are between 914 and 1,524 m long, and 527 are less than 914 m long.

Pipeline lengths total 3,585 km for crude oil, 1,350 km for petroleum products, 830 km for natural gas, and 125 km for natural gas liquids. Of Colombia's nine ports, the main ones are in Barranquilla, Buenaventura, Cartagena, and Santa Marta. (Central Intelligence Agency, 1997, Colombia, World Factbook, accessed September 29, 1997, on the World Wide Web at URL <http://www.odci.gov/cia/publications/factbook/country-frame.htm>). Near yearend, the Government solicited bids on renovating a stretch of railway connecting the capital, Bogota, with the Caribbean port of Santa Marta (Financial Times, 1997a).

Outlook

For Colombia to realize the promise of its extensive mineral resources, it will need to continue development of its infrastructure, coping successfully with the terrorist activities aimed at destroying this infrastructure. It will need to continue its privatization program. Moreover, it could expect greater returns from its mineral deposits by improving and clarifying its contractual relations with the private sector. Coal and petroleum should play a major role in the creation of future wealth in this well-endowed country.

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Major Sources of Information

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TABLE 1
COLOMBIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

	1993	1994	1995	1,996	1997 e/
METALS					
Bauxite e/	1,700	1,700	1,700	1,700	1,700
Copper, mine output, Cu content	--	2,581 r/	2,747 r/	2,222 r/	1,145 2/
Gold kilograms	27,471	20,762	21,165 r/	22,073 r/	18,810 2/
Iron and steel:					
Iron ore and concentrate thousand tons	545	610	734	638 r/	737 p/
Pig iron do.	238	244	282	274 r/	322 2/
Steel, crude do.	687	693	714	677	710 p/
Semimanufactures, hot-rolled do.	636	642	692	650 e/	650
Lead:					
Mine output, Pb content	447	290	300 e/	300 e/	300
Refined (secondary) e/	3,600	3,500	3,500	3,500	3,500
Manganese, mine output, Mn content	800	220	1,000	1,000 e/	1,000
Nickel:					
Mine output, Ni content	22,831	26,141	24,194	27,700 r/	31,230 2/
Ferronickel, Ni content	20,181	20,833	24,565	22,934	25,171 2/
Platinum-group metals kilograms	1,722	1,084	973	672 r/	409 p/
Silver do.	7,328	5,899	5,913	6,407 r/	3,510 p/
Zinc, mine output, Zn content e/	279 2/	275	275	275	275
INDUSTRIAL MINERALS					
Asbestos, mine output	--	--	122,717 r/	137,277 r/	136,700 p/
Barite	4,840	7,000	21,300	6,800 r/	600 p/
Cement, hydraulic thousand tons	7,930	9,322	9,407 r/	8,345 r/	7,854 2/
Clays:					
Bentonite	--	1,018	9,000	9,000 e/	8,640
Common clay and kaolin thousand tons	2,097	6,700	7,300	3,957 r/	8,040 p/
Diatomite e/	4,400	4,000	4,000	4,000	4000
Feldspar	60,458	76,188	58,100	78,093 r/	66,845 p/
Fluorite	1,800	800	720	655 r/	802
Gemstones, emerald 3/ thousand carats	5,150	7,202	6,306	7,151	6,688 p/
Gypsum thousand tons	439	450	450 e/	522 r/	565
Lime, hydrated and quicklime e/ do.	1,300	1,300	1,300	1,300	1,300
Magnesite	8,816	10,747	10,500	10,500 e/	10,500
Mica e/	55	55	55	55	55
Nitrogen, N content of ammonia e/	98,500	111,600	98,900	101,500 2/	80,900 2/
Phosphate rock	44,994	48,107	50,000	40,484 r/	44,517 p/
Salt: e/					
Rock thousand tons	231 2/	315	315	153 r/ 2/	144 p/
Marine do.	169 2/	250	250	423 r/ 2/	182 p/
Total do.	400 2/	565	565	576 r/ 2/	326 p/
Sodium compounds, n.e.s., sodium carbonate e/	121,000	121,000	121,000	121,000	125,000
Stone and sand:					
Calcite e/	6,500	6,500	6,500	6,500	6,500
Dolomite e/ thousand tons	45	45	45	45	45
Limestone do.	15,701	14,000	19,248	14,151 r/	13,392 p/
Marble e/	34,500	75,000 r/	130,000 r/	170,000 r/	191,250 p/
Sand excluding metal-bearing e/	850,000	850,000	900,000	900,000	900,000
Sulfur:					
Native (from ore)	51,396	53,357	60,000	49,425 r/	53,541 p/
Byproduct, from petroleum e/	12,200	12,200	15,000	16,000 2/	16,000
Total	63,596	65,557	75,000	65,425 r/	69,541
Talc, soapstone, pyrophyllite	19,550	18,000	19,248	14,800 r/ e/	14,832 p/
MINERAL FUELS AND RELATED MATERIALS					
Carbon black e/	23,800	24,000	24,000	24,000	24,000
Coal thousand tons	21,223	22,665	26,020	30,065	32,362 p/
Coke, all types do.	632	562	600 e/	600 e/	610
Gas, natural:					
Gross million cubic meters	5,334	5,423	7,674	9,424 r/	13,019 2/
Marketed do.	4,360	4,430	5,000 e/	5,200 e/	5,905 2/
Natural gas liquids e/ thousand 42-gallon barrels	2,300	2,500	2,500	2,500	2,600

See footnotes at end of table.

TABLE 1--Continued
 COLOMBIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1993	1994	1995	1996	1997 e/
MINERAL FUELS AND RELATED MATERIALS--Continued					
Petroleum:					
Crude thousand 42-gallon barrels	165,762	166,096	213,397	228,589 r/	238,146 2/
Refinery products:					
Liquefied petroleum gas do.	4,080	6,203	7,010	7,955 r/	7,881
Gasoline:					
Aviation do.	209	182	250	136	142 2/
Motor do.	30,703	30,072	26,459	38,320	37,920 2/
Jet fuel do.	4,835	5,328	5,662	6,036	5,792 2/
Kerosene do.	1,754	1,437	1,342	1,523	1,180 2/
Medium distillate fuel oil do.	19,207	20,612	21,969	24,518	24,265 2/
Lubricants do.	329	372	372	400 e/	410
Residual fuel oil (Black oil) do.	21,049	19,886	20,039	19,361	19,730 2/
Asphalt and bitumen do.	1,852	2,865	2,964	3,000 e/	3,000
Refinery fuel and losses and unspecified products e/ do.	4,263	3,017	7,476	15,000 r/	15,000
Total do.	88,281	89,974	93,543	116,249 r/	115,320

e/ Estimated. p/ Preliminary. r/ Revised.

1/ Includes data available through July 1, 1998.

2/ Reported figure.

3/ Based on registered exports by the Banco de la República.

TABLE 2
COLOMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 1997

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Carbon black		Cabot Colombiana S.A. (private, 100%)	Cartagena, Bolivar Department (plant)	NA
Do.		Productos Petroquimicos S.A. (Private, 100%)	Cali, Valle del Cauca Department (two plants)	12
Cement		Cia. Colombia de Clinker S.A. (Colclinker) (private, 100%)	Cartagena, Bolivar Department (plant)	1,100
Do.		Cementos del Caribe S.A. (private, 100%)	Barranquilla, Atlantico Department	1,000
Do.		Cementos del Valle S.A. (private, 100%)	Yumbo, Valle del Cauca Department	1,200
Do.		Cementos Rio Claro S.A. (private, 100%)	Puerto Trifuno, Antioquia Department	1,000
Coal		Carbones de Colombia S.A. [CARBOCOL (Government) 50%] and International Colombia Resources Corp. [INTERCOR (Exxon) 50%].	El Cerrejon Norte Mine, La Guajira Department	15,000
Do.		Rio Tinto (1/3); Minorco/Amcoal (1/3) ; Glencore (1/3).	Cerrejon Centro mines, Cerrojon Sud mines, and Oreganal mines, La Guajira Department	NA NA
Do.		Drummond, Ltd. (Drummond Co., 100%)	Drummond Mine, Cesar Department	4,000
Do.		Prodeco (private, 100%)	Calenturitas in Cesar Department	2600
Do.		Acerias Paz del Rio S.A. (private, 100%)	Paz del Rio, Boyaca Department (mine)	600
Copper		El Roble Exploracion y Explotacion S.A. (Minas El Roble, 51%; Nittetsu Mining, 44.1%; and C Itoh, 4.9%)	El Roble Mine, El Carmen, Choco Department	4
Emerald		Minerales de Colombia S.A. (MINERALCO) (Government, 100%)	Chivor, Coscuez, Muzo, and Quipama Mines, Boyaca Department	NA
Gold	kilograms	Frontino Gold Mines Ltd. (private, 100%)	El Silencio Mine, Segovia, Antioquia Department	1,500
	do.	Fisher-Watt Gold Co. (private, 100%)	Oronorte Mine, Segovia, Antioquia Department	500
Do.	do.	Mineros de Antioquia S.A. (private, 100%)	Rio Nechi, near El Bagre, Antioquia Department (mines)	2,000
Do.	do.	Small miners (Cooperatives and individual prospectors)	Rio Nechi, Antioquia Department (mines)	NA
Iron ore		Acerias Paz del Rio S.A.	Paz del Rio, Boyaca Department (mine)	800
Kaolin		Ceramicas del Valle Ltda., (private, 100%)	Yumbo, Valle del Cauca Department (mine)	NA
Natural gas	million cubic meters	Empresa Colombiana de Petroleos (ECOPETROL) (Government, 100%)	North coast, La Guajira Department (national gasfields)	3,500
Do.	do.	International Petroleum Colombia, Ltd. (International Petroleum Corp., 100%)	Barrancabermeja locale, Antioquia and Santander Departments	1,200
Nickel		Cerro Matoso S.A. (Billiton Company, 100%, latter owned by GENCOR Ltd, 100%).	Cerro Matoso Mine, Montelibano, Cordoba Department	25
Nitrogen		Abonos de Colombia (private, 100%)	Cartagena, Bolivar Department (plant)	100
Do.		Monomeros Colombo-Venezolanos S.A. (private, 100%)	Barranquilla, Atlantico Department (plant)	85
Petroleum	thousand 42-gallon barrels	ECOPETROL	16 fields in various departments	70,000
Do.	do.	Houston Oil Colombiana S.A. (HOCOL) (Royal Dutch Shell, 100%)	14 fields in various departments	36,500
Petroleum products	do.	ECOPETROL	Barrancabermeja Refinery, Santander Department	71,400
Do.	do.	Do.	Cartegena Refinery, Bolivar Department	25,806
Do.	do.	Do.	Tibu, Norte de Santander Department	1,825
Do.	do.	Do.	Orito, Putumayo Department	875
Phosphate		Fosfatos de Colombia S.A. (private, 100%)	Neiva, Huila Department	30
Do.		Fosfatos Boyaca, S.A (Government, 100%)	Iza, Boyaca Department	20
Platinum		Small miners (cooperatives and individual prospectors)	Rio San Juan, Choco Department	NA
Salt, marine		Instituto de Fomento Industrial (IFI) (Government, 100%)	Manaure Salina, La Guajira Department	700
Salt, rock		Concesion Salinas (Government, 100%)	Zipaquirá, Cundinamarca Department	500

See footnotes at end of table.

TABLE 2--Continued
 COLOMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 1997

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Silver	kilograms	Frontino Gold Mines Ltd.	El Silencio Mine, Segovia, Antioquia Department	2,500
Do.	do.	Small miners (Individual prospectors and cooperatives)	Rio Nechi, Antioquia Department (mines)	2,000
Steel, intergrated plant		Acerias Paz del Rio S.A.	Belencito, Boyaca Department	400
Steel, semiintergrated plants		Siderurgica del Caribe (private, 100%)	Cartagena, Bolivar Department	NA
Do.		Siderurgica del Boyaca S.A. (private, 100%)	Bogota, Federal District	NA
Do.		Siderúrgica del Medellin S.A. (private, 100%)	Medellin, Antioquia Department	NA
Do.		Siderurgica del Muna S.A. (private, 100%)	Chusaca, Federal District	NA
Do.		Siderurgica del Pacifico S.A. (private, 100%)	Cali, Valle del Cauca Department	NA
Sulfur		Industrias Purace S.A. (private, 100%)	El Vinagre Mine, Cauca Department	60
Do.		ECOPETROL	Barrancabermeja, Santander Department	29

NA Not available.