



2010 Minerals Yearbook

COLOMBIA [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF COLOMBIA

By Susan Wacaster

In 2010, Colombia was estimated to be the world's ninth ranked nickel-producing country, and the Cerro Matoso operation (99.94% owned by BHP Billiton Ltd. of Australia) was the world's second ranked producer of ferronickel. Colombia was a regionally significant coal producer; at yearend, it had 6.7 billion metric tons (Gt) of proven coal reserves, which accounted for 0.8% of the world total and represented the largest proven reserves of coal in Latin America and the second largest in the Western Hemisphere after the United States. Although Colombia was not a globally significant producer of natural gas or petroleum, the country was a regionally significant producer and had net proven reserves that increased by 14% in 2010 to 1.54 billion barrels (BHP Billiton Ltd., 2011a, p. 28; BP p.l.c., 2011, p. 30; Kuck, 2011).

Minerals in the National Economy

In 2010, Colombia's real gross domestic product (GDP) (at constant 2005 prices) increased by 4.3% compared with about 1.5% in 2009, 3.5% in 2008, 6.9% in 2007, and 6.7% in 2006. The exploitation of mines and quarries (not including petroleum) accounted for about 7.1% of Colombia's GDP in 2010 compared with 6.7% in 2009, 6.1% in 2008, 5.7% in 2007, and 6.0% in 2006, and the sector thus seems to have maintained a relatively constant share of the GDP during the past 5 years. In 2010, the aggregate value of the mineral sector (including energy products) increased by 11.1%, which was attributed to a 16.9% increase in the value of crude petroleum, natural gas, thorium, and uranium production; a 2.2% increase in the value of coal production; a 1.8% increase in the value of metallic mineral production; and a 1.6% increase in the value of nonmetallic mineral production. The aggregate value of metallic minerals increased as a result of an increase in the volume of production of gold, iron, platinum, and silver. Increased international prices for hydrocarbon products contributed to increases in the volume of production of petroleum (by 17.2%), natural gas (8.7%), and coal (2.0%). Increased prices for nonmetallic minerals also led to an increase in the production volume of construction materials and emerald (Departamento Administrativo Nacional de Estadística, 2011, p. 1–16).

Government Policies and Programs

Colombia's mining law is Law 685 of 2001 (La Ley 685 de 2001). Since 2001, the Colombian Ministry of Mines and Energy (MME), which was created in 1940, had been composed of special administrative units, including the Commission for the Regulation of Energy and Gas and the Mining and Planning Unit (UPME); public organizations, including the Institute for the Planning and Promotion of Energy Solutions (IPSE) and the Nuclear, Environmental, Mining and Geoscientific Information and Research Institute (INGEOMINAS); and associated

entities, including Colombian Gas Co. (Ecogas), the Colombian Petroleum Enterprise (ECOPETROL), Electric Interconnection S.A. E.S.P. (ISA), Isagen S.A. E.S.P., National Mining Co. Ltd. (Minercol), and others.

In 2009 and 2010, the MME had been conducting a national census of the mining sector, which was the first such census conducted in the country since the 1980s. The objectives of the census were to help improve planning and organization within the mining sector and get a handle on mining activities, especially small- and medium-scale mines. The census was being conducted in two phases. In the first phase, which was implemented between October 2009 and June 2010, information was collected pertaining to administrative, economic, organizational, social, and technical aspects of mining in Antioquia, Bolivar, Boyaca, Cauca, Cundinamarca, Huila, North of Santander, and Tolima Departments. Phase 2 was started in July 2010 and was to cover the remaining Departments of the country.

The results of the census were to be compiled by yearend 2011 and were expected to be used to determine the number of mining operations and their legality, assess any environmental permits that had been issued, perform a complete labor analysis to include the number of people working at various sites (and those working directly in mining or other associated economic activities) and the number of child laborers, quantify production volumes by mineral, determine the method of exploitation and the number of operations that were paying royalties, and more (Ministerio de minas y Energia, 2011a).

Production

In 2010, copper production decreased by 37.5% to 3,555 metric tons (t) from a revised 5,688 t in 2009. This was an indication that the only reported producing copper mine in the country was winding down operations, as had been reported for several years, or perhaps was processing lower grade ores. There did not appear to be any copper mine projects in the feasibility stage and none appeared to be coming online in the near term. Gold production increased by 12% compared with that of 2009 and was carried out by at least three companies at their respective properties, including Gran Colombia Gold Corp. of Canada's El Silencio, Providencia, and Sandra K Mines; Mineros S.A.'s Antioquia Mine; and Minera el Roble S.A.'s El Roble Mine.

Production of nickel from ferronickel decreased by about 5% in 2010 to 49,443 t, all of which was from BHP Billiton's Cerro Matoso laterite nickel operation in Montelibano. Reported emerald production increased by 78% in 2010 compared with that of 2000; however, information regarding the actual tonnage of emerald produced in Colombia (which had typically been reported as the volume of emerald recorded as exports rather than the volume of emerald produced in the country) continued to be unavailable (table 1).

Structure of the Mineral Industry

Table 2 is a list of major mineral facilities.

Mineral Trade

In 2010, the value of nonfuel mineral sector exports from Colombia increased to about \$9.4 million compared with \$8.2 million in 2009, \$7.4 million in 2008, \$9.0 million in 2007, and \$7.4 million in 2006. Mineral exports accounted for about 24% of the value of all exports in 2010 compared with 25% in 2009, 20% in 2008, 30% in 2007, and 30% in 2006. Thus, although the value of mineral exports in 2010 exceeded that of each of the past 5 years, the value of mineral exports as a percentage of total exports remained below the level recorded before the global economic downturn of 2008. In 2010, the value of gold exports increased by 36% to \$2.1 billion, the value of ferronickel exports increased by 28% to \$967 million, and the value of coal and coke exports was about \$6 million compared with \$5.4 million in 2009 (Ministerio de Minas y Energia, 2011b).

Commodity Review

Metals

Gold.—In 2010, Mineros' Antioquia Mine produced about 28,000 kilograms (kg) of gold from its operation at Mina La Ye. Annual production reportedly decreased by about 350 kg as a result of sabotage of the company's electrical unit on three separate occasions. In 2011, Mina La Ye, which was the company's only producing mine, had total estimated reserves and resources of about 5,700 kg of contained gold and the company's Aluvion and greenfield exploration projects were estimated to have an estimated 38,000 kg of contained gold in reserves and resources (Minero S.A., 2010, p. 16; 2011).

Starting in 2008, the Colombian Government began to seek bids for the bankrupt Frontino Gold Mines Ltd.'s Frontino property. In early 2010, Medoro Resources Ltd. of Canada was in negotiations with Frontino to acquire the property. Medoro intended to sell a 50% interest in Frontino's assets to Gran Colombia Gold, and the agreement was scheduled to be made final in mid-2010. A coalition of local workers, owners, and creditors of Frontino Gold Mines, the Segovia City council, and other people of the region disputed the agreement and claimed that they were the rightful owners of the mine. Medoro received Government support for the acquisition from the MME and by June reported that it was proceeding with the acquisition.

Medoro's funding for the acquisition, however, became problematic, and the joint-venture partners renegotiated their agreement so that the \$200 million purchase price would be fully funded by Gran Colombia Gold. Medoro reportedly had an option to gain a 50% share by paying one-half of the purchase price and due diligence costs within 1 year, during which time the company would retain a 5% carried interest in the project. By early September 2010, Gran Colombia Gold completed the acquisition of the mining assets of Frontino Gold Mines and had resumed operations at the three underground mines (El Silencio, Providencia, and Sandra K Mines). The company produced

about 450 kg of gold in 2010 in its first year of renewed operations.

Gran Colombia Gold also had several small- to medium-scale contractors in the area that were producing a combined 700 kilograms per year (kg/yr) of gold and numerous exploration projects ongoing in Colombia. The company expected to increase gold production to about 3,000 kg/yr by the end of 2011 and reported that it was in the process of hiring about 1,600 former Frontino employees. It remained unclear what, if any, conciliatory actions were made on behalf of the local unionized workers who objected to the acquisition (Gran Colombia Gold Corp., 2010; Medoro Resources Ltd., 2010a–d; Reuters.com, 2010).

Nickel.—In 2010, the nickel content of Colombia's ferronickel production decreased by about 5% to about 49,400 t compared with output in 2009. The decreased production was attributed to the planned replacement of the 27-year-old Line 1 furnace at Cerro Matoso, which was being done to improve the operational reliability and to accommodate changes in the mineralogy of the ore feed. Cerro Matoso's ore reserves were updated as the result of revised geologic modeling, mine design, and mining cost estimates. The new reserve estimates as of June 30, 2011, included total proven and probable laterite ore reserves of 48 Mt grading 1.3% nickel and about 65 Mt of other ores and stockpiles grading between 0.2% and 1.3% nickel. In 2011, the company began conceptual studies into options for expanding production at Cerro Matoso and began work on a feasibility study for adding a heap-leach project to the operation (BHP Billiton Ltd., 2011a, p. 27–30, 69; 2011b, p. 4; 2011c, p.14).

Outlook

Economic growth in Colombia was expected to remain strong in 2011 with a projected real GDP growth rate of 4.9% compared with 4.3% in 2010. The country's projected growth is in line with numerous South American mineral commodity exporting countries that are expected to be less directly affected by the negative economic situation in the United States, the debt crises in Europe, or any potential economic downturn in Asia than most of Central America, Mexico, and the Caribbean (which suffered from high national debt levels). Nevertheless, Colombia's projected GDP growth rate placed it only 9th among 12 South American nations in 2011 (and 5th in 2012, as strong growth in other South American countries was predicted to be moderate), so a downward shock to commodity prices could still cause a slowdown to the overall economy in Colombia that might not affect other South American countries. By yearend 2010, at least one-half dozen precious- and (or) base-metal projects had projected startup dates of between 2010 and 2015, but without any major projects coming online, Colombia's mineral sector will likely maintain the relatively constant share of the GDP that it has had in recent years (International Monetary Fund, 2011).

References Cited

BHP Billiton Ltd., 2011a, Annual report 2011: Melbourne, Victoria, Australia, BHP Billiton Ltd., September, 264 p.

- BHP Billiton Ltd., 2011b, BHP Billiton production report for the half year ended 31 December 2010: Melbourne, Victoria, Australia, BHP Billiton Ltd., 15 p.
- BHP Billiton Ltd., 2011c, Summary review 2010: Melbourne, Victoria, Australia, BHP Billiton Ltd., September, 38 p.
- BP p.l.c., 2011, BP statistical annual review of world energy: London, United Kingdom, BP p.l.c., June, 43 p.
- Departamento Administrativo Nacional de Estadística, 2011, Producto interno bruto—Cuarto trimestre de 2010: Departamento Administrativo Nacional de Estadística, March, 67 p.
- Gran Colombia Gold Corp., 2010, Gran Colombia re-starts production of three underground mines acquired from Frontino Gold Mines and provides operational update: Toronto, Ontario, Canada, Gran Colombia Gold Corp., September, 2 p.
- International Monetary Fund, 2011, Latin America—Solid growth but risks grow: International Monetary Fund. (Accessed October 11, 2011, at <http://www.imf.org/external/pubs/ft/survey/so/2011/CAR100511A.htm>.)
- Kuck, P.H., 2011, Nickel: U.S. Geological Survey Mineral Commodity Summaries 2011, p. 108–109.
- Medoro Resources Ltd., 2010a, Colombian Government supports Medoro's acquisition of Frontino: Toronto, Ontario, Canada, Medoro Resources Ltd., April, 2 p.
- Medoro Resources Ltd., 2010b, Medoro in negotiations regarding Frontino gold mines: Toronto, Ontario, Canada, Medoro Resources Ltd., January, 1 p.
- Medoro Resources Ltd., 2010c, Medoro to acquire high grade Frontino Gold Mines in Colombia: Medoro Resources Ltd., Toronto, Ontario, Canada, March, 2 p.
- Medoro Resources Ltd., 2010d, Update on Frontino Gold Mines asset acquisition: Toronto, Ontario, Canada, Medoro Resources Ltd., April, 2 p.
- Minero S.A., 2010, Resultados financieros 4° trimestre y año 2010: Medellín, Colombia, Minero S.A., December, 20 p.
- Minero S.A., 2011, Mineros S.A. presenta resultados a sus accionistas y ratifica su liderazgo en el sector aurífero Colombiano: Medellín, Colombia, Minero S.A., March, 2 p.
- Ministerio de Minas y Energía, 2011a, Censo minero Colombiano: Ministerio de Minas y Energía. (Accessed October, 10, 2011, at http://www.minminas.gov.co/minminas/minas.jsp?cargaHome=3&id_categoria=279&id_subcategoria=766.)
- Ministerio de Minas y Energía, 2011b, Estadísticas mineras—Exportaciones—Julio de 2011: Ministerio de Minas y Energía. (Accessed October 10, 2011, at http://www.minminas.gov.co/minminas/minas.jsp?cargaHome=3&id_categoria=108.)
- Reuters.com, 2010, A statement from the rightful owners of Frontino Gold Mines: Marketwire Inc., April. (Accessed October 10, 2011, at <http://www.reuters.com/article/2010/04/05/idUS130035+05-Apr-2010+MW20100405>.)

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

(Metric tons unless otherwise specified)

Commodity	2006	2007	2008	2009	2010 ^p
METALS					
Copper, mine output, Cu content	2,902	4,196	5,248	5,688 ^r	3,555 ^{3,4}
Gold kilograms	15,683	15,482	34,321	47,838 ^r	53,606 ^{3,4}
Iron and steel:					
Iron ore and concentrate thousand metric tons	644	624	473	281 ^r	77 ^{3,4}
Pig iron do.	360	341	300	342 ^r	327 ⁴
Steel, crude do.	1,221	1,260	1,125	1,053 ^r	1,213 ⁴
Semimanufactures, hot-rolled do.	1,598	1,598	1,435	1,454	1,614 ⁴
Nickel:					
Mine output, Ni content	94,100	75,864	64,200	72,000 ^e	70,200 ^e
Ferronickel, Ni content	51,137	49,314	41,636	51,802 ^r	49,443 ^{3,4}
Platinum kilograms	1,438	1,526	1,370	929 ^r	997 ^{3,4}
Silver do.	8,399	9,765	9,162	10,827 ^r	15,300 ^{3,4}
INDUSTRIAL MINERALS					
Cement, hydraulic thousand metric tons	10,038	11,068	10,456	9,100	10,000 ^e
Gemstones, emerald ⁵ thousand carats	5,734	3,389	2,122	2,945 ^r	5,230 ^{3,4}
Salt:					
Rock	248,245	204,090	245,170	255,332 ^r	288,676 ^{3,4}
Marine	389,630	309,557	386,461	356,481 ^r	356,797 ^{3,4}
Total	637,875	513,647	631,631	611,813	654,473
Stone and sand, limestone for cement	11,993	13,229	12,699	11,300	13,000 ^e
Sulfur:					
Native (from ore)	47,438	48,999	56,892	54,367 ^r	59,556 ^{3,4}
MINERAL FUELS AND RELATED MATERIALS					
Coal thousand metric tons	66,192	69,902	73,502	72,807 ^r	74,350 ^{3,4}
Gas, natural, gross million cubic meters	3,958	7,679	9,033	10,400	11,300 ⁴
Petroleum:					
Crude thousand 42-gallon barrels	193,085	193,815	214,620	244,800	286,890 ⁴
Refinery products:					
Gasoline:					
Aviation do.	388	136	106	100	100 ^e
Motor (extra) do.	1,739	1,560	2,101 ^r	2,123 ^r	2,200 ^e
Motor (regular) do.	28,240 ^r	25,272 ^r	34,067 ^r	34,431 ^r	35,000 ^e
Jet fuel do.	6,421	5,834 ^r	7,726 ^r	8,368 ^r	8,400 ^e
Kerosene do.	112	121 ^r	148 ^r	160 ^r	170 ^e
Medium distillate fuel oil do.	36,909 ^r	38,741 ^r	36,692 ^r	35,214 ^r	36,000 ^e
Natural gas liquids (propane) do.	7,649 ^r	6,552 ^r	7,275	7,368 ^r	7,400 ^e
Residual fuel oil (black oil) do.	23,379	24,437	23,022 ^r	21,694 ^r	22,000 ^e
Asphalt do.	1,175 ^r	1,167 ^r	1,188 ^r	1,365 ^r	1,300 ^e
Total do.	106,012 ^r	103,820 ^r	112,325 ^r	110,823 ^r	112,570 ^e

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. do. Ditto. ^pPreliminary. ^rRevised.

¹Table includes data available through October 10, 2011.

²In addition to the commodities listed, Colombia also produced clays, coke, feldspar, gypsum, magnesite, phosphate rock, sand and gravel, secondary iron, and sulfur (byproduct from petroleum processing), but available information is inadequate to make reliable estimates of output.

³Data from Sistema de Informacion Minero Colombiano.

⁴Reported figure.

⁵Based on production reports as determined by payments of royalties and other economic considerations prior to export.

TABLE 2
COLOMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement		Cía. Colombiana de Clinker S.A. (Cementos Argos Colombia S.A., 100%)	Plant at Cartagena, Bolivar Department	1,250
Do.		Cementos del Caribe S.A. (Cementos Argos Colombia S.A., 74%)	Barranquilla, Atlantico Department	1,500
Do.		Cementos del Valle S.A. (Cementos Argos Colombia S.A., 70%)	Yumbo, Valle del Cauca Department	1,500
Do.		Cales y Cementos de Toluviejo S.A. (Cementos Argos Colombia S.A., 95%)	Toluviejo, Sucre Department	980
Do.		Cementos del Nare S.A. (Cementos Argos Colombia S.A., 100%)	Puerto Nare, Antioquia Department	210
Do.		Cementos El Cairo S.A. (Cementos Argos Colombia S.A., 100%)	Montebello, Antioquia Department	450
Do.		Cementos Paz del Río S.A. (Cementos Argos Colombia S.A., 62%)	Belencito, Boyaca Department	880
Do.		Cementos Ríoclaro S.A. (Cementos Argos Colombia S.A., 99%)	Sonson, Antioquia Department	1,400
Do.		Cementos Boyacá S.A. (Holcim Group, 100%)	Nobsa, Boyaca Department	1,500
Do.		CEMEX Colombia S.A. (CEMEX S.A.B. de C.V., 99.7%)	Bucaramanga, Santander Department; Buenos Aires, Tolima Department; Pamplona, Norte de Santander Department; La Calera, Cundinamarca	3,980
Coal		Carbones del Cerrejón LLC (Anglo American Plc, 33.3%; BHP Billiton plc, 33.3%; Xstrata plc., 33.3%)	Cerrejon Centro Mines, Cerrejon Sur Mines, Cerrejon Zona Norte, and Oreganal Mines, La Guajira Department	30,000
Do.		Drummond Ltd. (Drummond Co. Inc., 100%)	La Loma Mine, Cesar Department	23,000
Do.		C.I. Prodeco S.A. (Glencore International AG, 100%)	Calenturitas Mine, Cesar Department	11,000
Do.		Carbones de La Jagua S.A. (Glencore International AG, 100%)	La Jagua Mine, La Jagua de Ibirico, Cesar Department	2,500
Do.		Coalcorp [Coalcorp Mining Inc., La Francia, 100% (Caypa, 60%, and Xira Investment Co., 40%)]	La Francia Mine, Cesar Department, and Caypa Mine, La Guajira Department	2,000
Do.		Acerías Paz del Río S.A. (Votorantim Group, 52%)	Paz del Río Mine, Boyaca Department	350
Copper		Minera El Roble S.A.	El Roble Mine, El Carmen, Choco Department	3
Gold	kilograms	Gran Colombia Gold Corp. (private, 100%)	Gran Colombia, Antioquia Department	2000
Do.	do.	Mineros S.A. (private, 100%)	Mina La Ye, Rio Nechi, Antioquia Department	4,000
Do.	do.	Small miners (cooperatives and individual prospectors)	do.	NA
Do.	do.	Minera El Roble S.A.	El Roble Mine, El Carmen, Choco Department	NA
Iron and steel, steel		do.	do.	400
Do.		Diaco S.A. (Gerdau S.A., 98%)	Tuta and Duitama, Boyaca; Cali, Valle del Cauca; Tocancipa, Cundinamarca; Muna, near Bogota	NA
Do.		Siderúrgica del Pacífico S.A. (private, 100%)	Plant at Yumbo, Valle de Cauca Department	60
Iron ore		Acerías Paz del Río S.A. (Votorantim Metals, 72.67%)	El Uvo, Pírgua, and Ubals Mines, Boyaca Department, and plants, Boyaca Department	450
Natural gas	million cubic meters	Ecopetrol S.A. (Government, 100%)	North coast, La Guajira Department (national gasfields)	4,500
Nickel		Cerro Matoso S.A. (BHP Billiton Ltd., 99.4%, and Mineworkers, .06%)	Cerro Matoso Mine and ferronickel plant, Montelibano, Cordoba Department	55

See footnotes at end of table.

TABLE 2—Continued
 COLOMBIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners		Location of main facilities	Annual capacity
Petroleum	thousand 42-gallon barrels	Ecopetrol S.A.		16 fields in various Departments	70,000
Petroleum products	do.	do.		Barrancabermeja refinery, Norte de Santander Department	81,400
Do.	do.	do.		Tibu, Norte de Santander Department	1,825
Do.	do.	do.		Orito, Putumayo Department	875
Sulfur		Industrias Purace S.A. (private, 100%)		El Vinagre Mine, Cauca Department	NA
Do.		Ecopetrol S.A.		Barrancabermeja, Santander Department	NA

^cEstimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.