



2011 Minerals Yearbook

COLOMBIA

THE MINERAL INDUSTRY OF COLOMBIA

By Susan Wacaster

In 2011, Colombia was estimated to be the world's 10th ranked nickel-producing country, and the Cerro Matoso operation (99.94% owned by BHP Billiton Ltd. of Australia) was reported by BHP Billiton to be the world's 2d ranked producer of ferronickel. Colombia was a regionally significant coal producer; at yearend, it had 6.75 billion metric tons of proven coal reserves, which accounted for 0.8% of the world total and represented the largest proven reserves of coal in Latin America. Although Colombia was not a globally significant producer of natural gas or petroleum, the country was a regionally significant producer and had 0.2 trillion cubic meters of natural gas reserves and 2.0 billion barrels of proven petroleum reserves (each of which accounted for 0.1% of the world's share) (BHP Billiton Ltd., 2012a; BP p.l.c., 2012, p. 6, 20, 30; Kuck, 2012).

Minerals in the National Economy

In 2011, Colombia's real gross domestic product (GDP) at constant 2005 prices increased by 13.3% compared with a 4.3% increase in 2010. The exploitation of mines and quarries (not including petroleum) accounted for about 11.3% of Colombia's GDP in 2011 compared with 8.6% in 2010. The value of production derived from the exploitation of mines and quarries increased to about \$38.3 billion in 2011 from \$25.7 billion in 2010. Of that amount, production of crude petroleum and some quantity of uranium and thorium accounted for \$28.1 billion, production of coal accounted for \$6.6 billion, production of metallic minerals accounted for \$2.6 billion, and production of nonmetallic minerals accounted for \$1 billion (Departamento Administrativo Nacional de Estadística, 2012b).

Government Policies and Programs

Colombia's mining law is law No. 685 of 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 country's Mining and Planning Unit (UPME) and other public organizations, such as the mining and geoscientific information and research institute [formerly the National Institute of Geology and Mining (INGEOMINAS)]. INGEOMINAS originated in 1916 as the National Science Commission (NSC) to conduct geologic mapping and exploration of mineral resources. By 1968, the NSC assumed the duties for the national mineral inventory and the national chemical laboratory and then became the INGEOMINAS, which, in 1985, was assigned responsibilities related to natural hazards and volcano monitoring. In 1998, the agency was assigned some functions of the Institute of Nuclear Sciences and Alternative Energies that were related to minerals, radioactive materials, and nuclear and conventional energy sources (Servicio Geológico Colombiano, 2012).

In 2011, the MME released Executive Order 4131, which was part of a reorganization of the country's mining and energy sectors. INGEOMINAS' name was changed to the Colombian Geological Survey (CGS). The CGS currently falls under the administration of the MME and was expected to become part of the National System of Science, Technology and Innovation, which was created in 2009 by law No. 1286 (Ministerio de Minas y Energía, 2011).

On January 30, 2012, the MME released resolution No. 180102 (the regulatory language for Article 108 of law No. 1450), which defines strategic minerals of interest to the country and delimits special areas that are open to concession applications and other areas for which no new applications may be submitted. Mineral deposits containing coal (metallurgical and thermal), coltan (niobium and tantalum), copper, gold, iron, magnesium, phosphates, platinum, potassium, and the byproducts, concentrate, and associated minerals thereof are classified as strategic materials (minerals) based upon the CGS's knowledge of the country's terrain and areas that had been identified as having the greatest potential for hosting the strategic mineral deposits (Ministerio de Minas y Energía, 2012).

Production

In 2011, copper production increased by 3% to 4,042 metric tons (t) from a revised 3,916 t in 2009. Gold production increased by only about 4% and was carried out by at least three companies at their respective properties, including Gran Colombia Gold Corp. of Canada's El Zancudo and Segovia operations; Mineros S.A.'s Antioquia Mine; and Minera el Roble S.A.'s El Roble Mine. Silver production increased by 57%, which was attributable in part to the startup of production at Gran Colombia Gold's El Zancudo operation. Iron ore production increased by 126% in 2011 to 174,000 t. Iron ore production in 2010 had decreased significantly compared with previous years, however, so that the increase in 2011 brought production to a level that was still lower than years leading up to 2010. Votorantim Siderurgia of Brazil's Acerias Paz del Rio operations, which had accounted for about 30% of the country's iron ore processing in recent years, were expected to expand capacity to 2.5 million metric tons per year by approximately mid to late 2013.

Emerald production decreased by 35% in 2011 compared with that of 2000; however, information regarding the actual volume of emerald produced in Colombia (which had typically been reported as the volume of emerald exports) continued to be unavailable. Production of nickel in ferronickel decreased by about 24% to 37,817 t, all of which was from BHP Billiton's Cerro Matoso laterite nickel operation in Montelibano (table 1; Metal Bulletin, 2011, p. 18).

Structure of the Mineral Industry

Table 2 is a list of major mineral facilities.

Mineral Trade

In 2011, the total value of mineral sector exports was about \$31.3 billion, and accounted for about 55%, in terms of value, of the country's total exported goods compared with \$19.2 billion and a 35% value share of exported goods in 2010. Some of the mineral commodities that were exported were borates, which were probably reexports (and went to—in the order of the value of the exports received—Chile, Panama, and Ecuador); coal (received by greater than 50 countries led by the Netherlands, the United States, Denmark, and the Falkland Islands); combustibles and crude oil and its derivatives (which went to Ecuador and Venezuela); nickel (China, the Netherlands, the United States, and Italy); gold (the United States and Switzerland); silver (the United States and United Arab Emirates); and platinum (the United States and Italy) (Departamento Administrativo Nacional de Estadística, 2012a; Sistema de Información Minero Colombiano, 2012b).

In November 2011, the President of Colombia and the President of Venezuela signed an economic cooperation agreement that addressed culture, energy, health, science, and technology issues to strengthen diplomatic and economic relations. They also signed a new customs agreement to enhance commercial trade with respect to approximately 3,500 commodity codes; the new agreement would replace the former framework agreement of the Andean Community (from which Venezuela withdrew in 2006) (Deloitte Global Services Ltd., 2012, p. 5).

In February 2011, it was reported that Colombia imposed anti-dumping duties on imports of aluminum extrusions, foils, and laminates that originated in or were exported from China to prevent financial damage to domestic producers of aluminum. The duties were to be effective for 4 months pending the outcome of an investigation that was launched after complaints by members of the aluminum sector (Deloitte Global Services Ltd., 2012, p. 8).

Commodity Review

Metals

Copper.—El Roble copper, gold, and silver underground mine is located in Choco Department. El Roble is situated on a volcanogenic massive sulfide deposit. In January 2011, Atico Mining Corp. signed an option agreement to acquire a 90% interest in the property, which covers more than 8,000 hectares (ha), during a 2-year period. By early 2012, Atico closed its first initial public offering. The company expected to begin exploration drilling in massive sulfide lenses close to the current mine by midyear 2012. The company's stated objective was to discover additional ore deposits that would justify an upgrade to the milling facility (Atico Mining Corp., 2012, p. 3).

Gold.—In 2011, Mineros was estimated to have produced about 3,800 kilograms (kg) of gold from its operation at Mina La Ye compared with a revised 3,050 kg in 2010. In April 2011, Gran Colombia Gold and Medoro Resources Ltd., both of Canada, announced that they had merged to operate and expand the former Frontino Gold Mines Ltd.'s Frontino property. The name of the property and its operations was changed to

the Gran Colombia Gold Mine (also known as the Segovia Operations), and production at the previously producing operation was restarted in the first quarter of 2011. The Colombian Government had begun to seek bids for the Frontino property in 2008, and in 2010, Gran Colombia Gold and Medoro Resources were involved in negotiations to acquire the property. By April 2012, the Segovia Operations covered an area of about 2,900 ha. Gran Colombia Gold also owned 177 surface land properties in the region with a total area of about 6,400 ha. Gold production in 2011 from the Segovia Operations was about 2,100 kg, and silver production was about 2,000 kg (Gran Colombia Gold Corp., 2010, 2011; Minero S.A., 2011, p. 9).

Nickel.—Decreased nickel production was attributed to continued work on the replacement of the 27-year-old Line 1 furnace at Cerro Matoso, which was completed and commissioned in 2011. During the year, the company began conceptual studies for expanding production at Cerro Matoso and subsequently initiated a feasibility study of the expansion, including adding a heap-leach project to the operation (BHP Billiton Ltd., 2012b, p. 15).

Outlook

Based upon reported Colombian mineral production levels in the first quarter of 2012 at operations that were in production in 2011, coal production may increase by as much as 10% compared with that of 2011, and copper, by 15%. Iron ore production is expected to increase as the capacity of the Acerías Paz del Rio operations is expanded, but the status of that expansion at individual operations was unclear. Based upon first quarter 2012 production, it is expected that annual production of iron ore for the year might increase by about 75% compared with that of 2011. Nickel from ferronickel production is expected to increase by as much as 75%. Gold and silver production in the first quarter of 2012 was not keeping pace with that of 2011; production may increase by as much as 25% or more, however, as Gran Colombia Gold continues to ramp up to production capacity (Sistema de Información Minero Colombiano, 2012a).

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TABLE 1
COLOMBIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2007	2008	2009	2010	2011 ^b
METALS					
Copper, mine output, Cu content	4,196	5,248	5,688	3,916 ^r	4,042 ^{3,4}
Gold kilograms	15,482	34,321	47,838	53,606	55,908 ^{3,4}
Iron and steel:					
Iron ore and concentrate thousand metric tons	624	473	281	77	174 ^{3,4}
Pig iron do.	341	300	342	327	295 ⁴
Steel, crude do.	1,260	1,125	1,053	1,213	1,290 ⁴
Semimanufactures, hot-rolled do.	1,598	1,435	1,454	1,614	1,500 ^e
Nickel:					
Mine output, Ni content	75,864	64,200	72,000	70,200	70,000
Ferronickel, Ni content	49,314	41,636	51,802	49,443	37,817 ^{3,4}
Platinum kilograms	1,526	1,370	929	997	1,231 ^{3,4}
Silver do.	9,765	9,162	10,827	15,300	24,045 ^{3,4}
INDUSTRIAL MINERALS					
Cement, hydraulic thousand metric tons	11,068	10,456	9,100	9,488 ^r	10,777 ^{3,4}
Gemstones, emerald ⁵ thousand carats	3,389	2,122	2,945	5,230	3,402 ^{3,4}
Salt:					
Marine	309,557	386,461	356,481	356,797	139,810
Rock	204,090	245,170	255,332	288,676	290,000 ^e
Total	513,647	631,631	611,813	645,473	428,486
Stone and sand, limestone for cement	13,229	12,699	11,300	13,000	13,000
Sulfur; native (from ore)	48,999	56,892	54,367	59,556	58,073 ^{3,4}
MINERAL FUELS AND RELATED MATERIALS					
Coal thousand metric tons	69,902	73,502	72,807	74,350	85,803 ^{3,4}
Gas, natural, gross million cubic meters	7,679	9,033	10,400	11,300	11,000 ⁴
Petroleum:					
Crude thousand 42-gallon barrels	193,815	214,620	244,800	286,890	334,100 ³
Refinery products:					
Gasoline:					
Aviation do.	136	106	100	100 ^e	100 ^e
Motor (extra) do.	1,560	2,101	2,123	2,200 ^e	2,200 ^e
Motor (regular) do.	25,272	34,067	34,431	35,000 ^e	35,000 ^e
Jet fuel do.	5,834	7,726	8,368	8,400 ^e	8,400 ^e
Kerosene do.	121	148	160	170 ^e	170 ^e
Medium distillate fuel oil do.	38,741	36,692	35,214	36,000 ^e	36,000 ^e
Natural gas liquids (propane) do.	6,552	7,275	7,368	7,400 ^e	7,400 ^e
Residual fuel oil (black oil) do.	24,437	23,022	21,694	22,000 ^e	22,000 ^e
Asphalt do.	1,167	1,188	1,365	1,300 ^e	1,300 ^e
Total do.	103,820	112,325	110,823	112,570 ^e	112,570 ^e

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

¹Table includes data available through June 20, 2012.

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 2011

(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 Rióclaro 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 plc, 100%)	Calenturitas Mine, Cesar Department	11,000
Do.		Carbones de La Jagua S.A. (Glencore International plc, 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 Guarjira 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 Gold Mine, Antioquia Department	5,000
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	150
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., 99.94%, and mine workers, .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 2011

(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 refinery, Norte de Santander Department	1,825
Do.	do.	do.		Orito refinery, Putumayo Department	875
Sulfur		Industrias Purace S.A. (private, 100%)		El Vinagre Mine, Cauca Department	NA
Do.		Ecopetrol S.A.		Barrancabermeja, Santander Department	NA

Do., do. Ditto. NA Not available.