

## THE MINERAL INDUSTRY OF

# VENEZUELA

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Venezuela's gross domestic product (GDP) in terms of purchasing power parity (PPP) was \$208.3 billion<sup>1</sup> (International Monetary Fund, 2003§<sup>2</sup>). At constant prices, the GDP decreased by 8.9% compared with that of 2001; this was a reverse from that of 2001 when the GDP increased by 2.8%. Venezuela's petroleum activity, which was the country's most important economic sector and represented 25% of Venezuela's GDP, decreased by almost 13%; this level was lower than that achieved in 1995. Construction decreased by 20% after an increase of 13.5% in 2001. The mining sector, however, increased by less than 1% (Banco Central de Venezuela, 2003a§). In the second semester of 2002, unemployment reached 16.5%. During this period, the construction sector had the highest unemployment rate at 27%; the manufacturing sector, 15%; and petroleum and mining and quarrying, 12.5% (Banco Central de Venezuela, 2002c§). Inflation (in the Caracas metropolitan area) increased to 31.2% from 12.3% in 2001 (Banco Central de Venezuela, 2003b§). Venezuela's economy was significantly affected by the political instability that led to a coup d'état in April, which removed the Government for 2 days; in addition, in December, a 2-month national strike included work stoppage in *Petróleos de Venezuela S.A.* The strike, which called for a referendum to decide if the President should be ousted, affected all sectors of the economy (U.S. Central Intelligence Agency, 2003§). As a result of the strike, only 30% of mining activity was operating normally during December (Aluminum Association, Inc., The, 2003§).

### Government Policies and Programs

The current mining law Decreto No. 295 of September 5, 1999, establishes the rules for all mines and minerals (except hydrocarbons and some industrial minerals not found in Government lands) within Venezuelan territory; exploration, production, beneficiation, storage, lease, distribution, transportation, and internal and external marketing of extracted substances not included in other laws are included. Under Venezuelan law, the country's mineral and hydrocarbon resources belong to the State. Under the decree, the *Ministerio de Energía y Minas (MEM)* is the Government institution responsible for all matters related to mining activity. Mining is permitted only through direct participation of the Government, concessions, and production authorization to artisanal miners, mining cooperatives, and small mining sector.

The 1999 law establishes a combined 20-year exploration and production concession renewable for a period not to exceed 20 years. Exploration period for the concession is limited to 3 years with a possible extension of 1 year. The size of a concession is not to exceed 6,156 hectares (ha). An environmental, financial, and technical feasibility study must be presented to the MEM during the exploration period of the concession. With permission from the MEM, the concessions may be rented, subcontracted, or transferred.

The 1999 mining law establishes the mining cooperative and regulates the artisanal mining sector for the first time. It defines the small mining sector in reference to the production of diamond and gold in areas not to exceed 10 ha to be worked by no more than 30 individuals with a nonrenewable, nontransferable permit unless transferred to a social fund to form a mining cooperative. The maximum production period is 10 years.

A permanent interministerial commission, which was integrated by the ministries that deal with defense, energy, environment, finances, mining, and natural resources, was created to coordinate all aspects that affect the mining sector. The law proposes a one-stop office to deal with all associated permits related to mining concessions.

The surface tax that must be paid beginning in the fourth year of the concession eliminates the exploration tax. At the production phase of the concession, the production tax will be reduced from the surface tax. For gold, platinum-group metals, and silver, the production tax is 3% of the Caracas commercial value of the refined "mineral." Diamond and precious stones are taxed at 4% of the Caracas commercial value. Other minerals are taxed at a calculated 3% of commercial value at the mine. At the discretion of the Executive, the production tax may be reduced to 1% as merited by economic conditions.

The Executive also reserves the option of exempting mining entities of import taxation of items indispensable to mining that are not produced in Venezuela. With permission from the Executive, equipment exempted from import taxation may be sold to a third party; the purchaser pays the import tax.

With the exception of precious materials, industrial minerals not found in Government lands continue to be governed by Articles 7, 8, 9, and 10 of the derogated Mining Law of 1945 until the individual States establish regulations.

At the expiration of the mining rights, all equipment and installations related to the mining activity will become the property of Venezuela without compensation to the concession holder.

The *Instituto Nacional de Geología y Minería (INGEOMIN)* was established as an independent agency ascribed to the MEM under the Decree. The INGEOMIN was charged with interdisciplinary research in the geosciences, and the planning, coordination, and

<sup>1</sup> Where necessary, values have been converted from Venezuelan Bolivars (Bs) to U.S. dollars at the rate of Bs 1,163.95=US\$1.00.

<sup>2</sup> References that include a section mark (§) are found in the Internet References Cited section.

execution of all geoscience-related programs. The agency was also given the responsibility for evaluating Venezuela's mineral and nonconventional energy resources, providing technical advice to other Government entities and the private sector, and disseminating technical and scientific information.

The new Reglamento General de la Ley de Minas—Decreto No. 1.234 was published in the Gaceta Oficial de la República de Bolivariana de Venezuela on March 9, 2001. The Reglamento establishes the terms, conditions, and administrative procedures in support of the Decreto No. 295.

In 1975, the Government of Venezuela nationalized the petroleum sector. In November 2001, the new hydrocarbon law Decreto No. 1.510 was passed. The law, which was published in November in the Gaceta Oficial de la República Bolivariana de Venezuela No. 37.323, became effective on January 1, 2002. Under the decree, all hydrocarbon deposits belong to the nation. In agreement with article 302 of the Constitution of 1999, all primary hydrocarbon activities are reserved for the Government. Refining and marketing of hydrocarbons (secondary activities) can be by the Government and the private sector jointly or separately.

Primary activities will be carried out by the Government directly by the Executive, by companies owned by it, or by companies in which the Government owns more than 50% interest (mixed enterprises). Companies engaged in hydrocarbon production are denominated operating companies. The maximum area assigned to an operating company is 100 square kilometers.

The creation of a mixed enterprise for primary production of hydrocarbons requires the approval of the National Assembly. The duration of the mixed company will be 25 years with a possible extension of 15 years. The extension must be applied for between 12½ and 20 years of the granting of the original permit. The lands and permanent works, which include installations, accessories, and equipment, must be maintained in good working order so that when they are relinquished to Venezuela, their future use or activity cessation with minimal environmental damage can be guaranteed.

The Government has the right to 30% of production from any deposit as royalty payment. The rate can be decreased to 20% if the economics of production are affected by the higher rate. The production royalty from mixed bitumen from the Orinoco Belt can be reduced to 16% if the projects are not viable at the 30% rate. In both cases, the higher royalty rate can be reestablished when necessary. Natural gas is excluded from this law; it is regulated by the Ley Orgánica de Hidrocarburos Gaseosos.

Decreto No. 1.257 of 1996, Normas sobre Evaluación Ambiental de Actividades Susceptibles de Degradar el Ambiente established the Ministerio del Ambiente y de los Recursos Naturales Renovables. The law requires an environmental impact study for projects and programs in the areas of mining and hydrocarbons.

## **Production**

In 2002, Venezuela was an important producer of nonfuel mineral commodities in the Latin American region, although it held modest ranking in terms of world output (table 1).

According to U.S. Geological Survey data, Venezuela was the world's 7th largest producer of bauxite, the 8th largest producer of alumina, and the 10th largest producer of aluminum. In Latin America, it was the second largest producer of primary aluminum, iron ore, and phosphate rock (after Brazil), the third largest producer of bauxite and alumina (after Brazil and Jamaica), and the fourth largest producer of cement (after Brazil, Mexico, and Colombia) and steel (after Brazil, Mexico, and Argentina).

In the Western Hemisphere, Venezuela was the third largest producer of bauxite (after Brazil and Jamaica) and phosphate rock (after the United States and Brazil) and the fourth largest producer of alumina (after the United States, Brazil, and Jamaica) and primary aluminum (after the United States, Canada, and Brazil).

Performance of the nonfuel mineral production in 2002 was mixed when compared with that of 2001 (table 1). Output of alumina, which was one of Venezuela's traditional nonfuel mineral commodities, decreased by 3%, and that of bauxite and iron ore, which were two other traditional mineral commodities, increased by about 13% and 7%, respectively. Production of primary aluminum increased by 6% compared with that of 2001. Official production of diamond more than doubled from that of 2001 (revised). Gold production increased for the third consecutive year, but output in 2001 was only about 43% of the production level in 1997. Statistics for industrial minerals were incomplete. The Government of Venezuela does not require companies to report industrial mineral production. On the basis of available data, production of most industrial minerals decreased. The exceptions were dolomite and silica sand, which increased by 39% and 10%, respectively. Cement production was estimated to have decreased by 20%; consequently, Venezuela was a net exporter of cement.

## **Trade**

Venezuela's exports totaled \$26.2 billion in 2002; of this, \$19.8 billion was from petroleum. In current prices, this was about a 4.4% decrease compared with that of 2001. Total imports decreased significantly to \$13 billion, which was a 28% decrease from the revised figure for 2001 (Organization of the Petroleum Exporting Countries, 2003, p. 4-6).

In 2000 (the last year for which information was available), exports of metals in all forms were valued at \$83.2 million, and imports totaled \$57.6 million. Value of exports of industrial minerals, which included cement and lime, totaled \$120.4 million. Of this total, cement exports were \$115.0 million (95.5% of the total). Imports of industrial minerals were \$55.8 million. Cement accounted for \$3.8 million. In addition, exports of ferroalloys were valued at \$40.9 million, and their imports were only \$11.6 million (Ministerio de Energía y Minas, 2001, p. 113-114, 144-146).

In 2002, Venezuela's exports of crude petroleum totaled 619.3 million barrels (Mbbbl), which was an 18% decrease from that of 2001. Exports of refinery products totaled 215.5 Mbbbl, which was an 11% decrease. The United States received 64% of Venezuela's

crude exports and 31% of its refinery products exports (Ministerio de Energía y Minas, 2003, cuadro 38 [table 38], cuadro 39 [table 39]).

## Structure of the Mineral Industry

The private sector participated in the production of nonfuel minerals in Venezuela; Government companies, however, controlled a varying portion or the entire production of bauxite and alumina, aluminum, diamond, gold, and iron ore (table 2). Bauxite, alumina, and aluminum production was controlled by the Government through Corporación Venezolana de Guayana (C.V.G.). Private international companies held small interests in alumina and aluminum.

A large portion of gold was produced by C.V.G. or by its subsidiary C.V.G. Compañía General de Minería de Venezuela C.A. (Minerven).

Production of iron ore was nationalized in 1975, and the only producer was C.V.G. Ferrominera Orinoco C.A. (Ferrominera). Steel production became totally private in 1997 when Siderúrgica del Orinoco C.A. (SIDOR), which was the largest steel producer in Venezuela and the Andean region, was privatized. The ferrosilicon producer C.V. G. Felsiven C.A. was privatized in 1998.

Five private companies produced cement in Venezuela. CEMEX Venezuela S.A.C.A., which was the largest company, was owned by Cementos Mexicanos S.A. de C.V. (CEMEX), which was the world's third largest cement company. Holderbank Management and Consulting Ltd. and Lafarge France, which were the other world-leading cement companies, held interests in Consolidada de Cementos C.A. and C.A. Fábrica Nacional de Cementos, which were the second and third largest cement companies in Venezuela, respectively.

Venezuela was a founding member of the Organization of Petroleum Exporting Countries (OPEC). Following Venezuela's nationalization of the petroleum sector, Petróleos de Venezuela S.A. (PDVSA) was formed in 1976 as the Government company responsible for the exploration and production of all hydrocarbons. PDVSA also has the responsibility for crude refining and petrochemical manufacturing. Storing, transporting, and domestic and international marketing of hydrocarbons and their products are also the responsibility of PDVSA. Since the early 1990s, however, Corporación Venezolana de Petróleos (CVP) (a subsidiary of PDVSA) began to open opportunities to the private sector through a number of production agreements. The early program involved the production of inactive wells. CVP also entered into association with the private sector to explore new areas and to develop the extra-heavy crude in the Orinoco Belt.

## Commodity Review

### *Metals*

**Bauxite, Alumina, and Aluminum.**—Venezuela's entire bauxite production was from Los Pijiguaos Mine in the State of Bolívar. The mine was owned by C.V.G. Bauxilum C.A. (Bauxilum), which was owned by the Venezuelan Government [through C.V.G. (99%)] and Alusuisse Lonza Holding (1%)]. Bauxilum was also the sole producer of alumina in Venezuela. Bauxite production from Los Pijiguaos fed the alumina refinery owned by Bauxilum. Venezuela's bauxite production capacity was 6 million metric tons (Mt) (table 2). In 2002, bauxite production increased by 13% to 5.1 Mt. Production of alumina decreased by 3% to 1.78 Mt (table 1).

In addition to having plans to expand the production capacity of bauxite from Los Pijiguaos Mine, the Venezuelan Government was interested in developing another bauxite deposit in the State of Bolívar. El Palmar, which is located in the Río Grande area, west of Ciudad Guayana, had estimated reserves of 300 Mt (In Service Extra, 2002§). During 2002, C.V.G. met with representatives from BHP Billiton to discuss the possibility of investment to develop this deposit and a new aluminum smelter.

In 2002, production of aluminum increased by 6% to 605,290 metric tons (t). Production of aluminum in Venezuela was by two primary smelters with majority ownership by C.V.G. The largest of the two was C.V.G. Venezolana de Aluminio C.A. (Venalum) with a nominal capacity of 430,000 metric tons per year (t/yr). In 2002, Venalum produced 434,820 t. This was a 5.6% increase from the production level achieved in 2001. The other smelter, C.V.G. Aluminio del Caroní, S.A. (Alcasa), had a design capacity of 210,000 t/yr of aluminum. Production from Alcasa was 170,480 t, which was an increase of 7.2% increase compared with that of 2001.

Venezuela continued with plans to expand the aluminum capacity of Alcasa and Venalum. C.V.G. announced its intent to add an additional production line to each of the smelters. The Alcasa capacity would be increased to 410,000 t; this would include the reactivation of two lines that had been idle for 5 years, one of which was back in production in 2002. The cost of the new Alcasa production line was estimated to be more than \$500 million. The strategy was to increase the country's total capacity to about 1 Mt in partnership with a foreign investor. The construction of a new line for Venalum would increase its production capacity to about 675,000 t. This part of the expansion was estimated to cost \$650 million (In Service Extra, 2002§).

During the year, C.V.G. and Venalum's Japanese investors had difficulty in reaching agreement on a new contract. As a result, shipments of aluminum to Japan were halted in April. A new contract was signed in November, which called for 90,000 t/yr of Venalum's production to be shipped to Japan. The new contract expires in March 2006 (Showa Denko K.K., 2002).

**Gold.**—Official production of gold in Venezuela increased by 4% to 9,465 kilograms (kg) in 2002 compared with that of 2001. Still, production was about 40% of the level achieved in 1997. The largest producer was Hecla Mining Company through its subsidiary Minera Hecla Venezolana C.A., which operated La Camorra underground mine in the State of Bolívar and produced almost

5,200 kg (reported as 167,386 ounces), or 55% of Venezuela's official gold output. Production from La Camorra Mine increased by 10% compared with that of 2001 at an average total cash cost of \$137 per troy ounce. At yearend 2002, La Camorra's proven and probable reserves totaled about 411,200 t with an average grade of 31.2 grams per metric ton (g/t) gold (reported as 453,224 short tons with an average grade of 0.910 troy ounces per short ton) (Hecla Mining Company, 2003, p. 16).

Hecla began to produce gold from La Camorra in 1999. Ore production in 2002 averaged 500 metric tons per day. Production was mostly by longhole stoping, and the ore was hauled to the surface by truck. In the processing plant, after a three-step crushing process, the ore was ground. Gold was then recovered by using the conventional carbon-in-leach process; the plant had a recovery rate of more than 95%. Gold bars were then sent to a refinery. During the year, Hecla's exploration program at La Camorra was in the 400- to 500-meter (m) depth to define the ore in that area. In addition, Hecla had nine other exploration concessions near La Camorra with a total area of 8,000 ha, which included the Canaima. Work at the Canaima was focused on prefeasibility diamond drilling and a geotechnical and hydrogeological investigation (Hecla Mining Company, 2003, p. 15).

In April, Hecla announced that it had been awarded the exploration and mining lease on Block B in El Callao gold mining district by Minerven. The 1,795-ha block included the Chile, Laguna, and Panama Mines, which were in production from 1921 to 1946. Under the preliminary agreement, Hecla would invest \$22 million in the first 3 years. In September, Hecla paid Minerven \$500,000 and agreed to pay \$1.25 million in March 2003, followed by a \$1 million payment in September. The company agreed to pay Minerven a royalty of from 2% to 3% on future production. By yearend 2002, Hecla had completed 3,932 m of exploration drilling in the Chile Mine (Metal & Minerals Latin America, 2002; Hecla Mining Company, 2003, p. 5, 17).

Another gold producer in Venezuela was Crystallex International Corporation of Vancouver, British Columbia, Canada, through its subsidiary Crystallex de Venezuela C.A.. The company production decreased significantly compared with that of 2001. Production from open pits in the Tomi Mine in El Callao was only 73 kg, which was a 79% decrease. Production from the underground mine was 90 kg, which was a 43% decrease. In addition, Crystallex held an 80% interest in El Callao Mining Corp., which owned 51% of the holding company that owned 100% of Auríferos El Callao, which was the operating company of Lo Increíble concession. The property consisted of six deposits, the largest of which was La Victoria. Production from La Victoria open pit also decreased by 15% to 701 kg. Production levels from these properties were affected by lack of capital for development and equipment and, in the case of La Victoria, difficulties in treating the refractory ore (Crystallex International Corporation, 2003, p. 23, 27). A reason for the lack of capital available for these properties was Crystallex's decision to continue with its efforts to acquire exclusive rights to operate one of the world's largest undeveloped gold deposits, Las Cristinas in Kilometro 88 in the State of Bolívar. In September 2002, after years of legal battles, Crystallex was awarded a mining operation contract by C.V.G. The contract was for 20 years with two 10-year renewable terms. In the third-quarter of 2002, Crystallex paid \$15 million for the use of data, infrastructure, and existing reports. Royalty payments of from 1% to 3% would be paid on monthly production depending on the price of gold. By using a gold price of \$325 per ounce, proven and probable reserves at Las Cristinas were estimated to be 223.9 Mt with 1.33 g/t gold (Crystallex International Corporation, 2003, p. 20). Plans called for a feasibility study to be completed by September 2003. Legal challenges of ownership to the property continued as Vannessa Ventures Ltd. (which had acquired the rights to the property from Placer Dome Corp. in 2001 when the latter decided against developing Las Cristinas), through its subsidiary Minera Las Cristinas C.A. (MINCA), challenged C.V.G.'s cancellation of the C.V.G.-MINCA contract (Vannessa Ventures Ltd., 2002).

In addition to Tomi and Lo Increíble, Crystallex had a concession in Kilometro 88. Albino 1 had been in production from 1996 to 1998. During 2002, Crystallex was evaluating two options for processing Albino 1's ore. The original plan had been to transport the ore to the Revemin mill in El Callao where ore from La Victoria and Tomi was processed. The second option under consideration was to process Albino 1's ore at Las Cristinas, which is adjacent to the Albino 1 property.

**Iron and Steel.**—Production of iron ore from Ferrominera's Cerro San Isidro, Los Barrancos, and Las Pailas open pits increased by 6.5% to 18 Mt. This was the highest production level since 1997 when production was 18.5 Mt. Venezuelan reserves totaled 14.657 billion metric tons (Gt) of iron ore, of which 4.184 Gt was proven. Of the 1.708 Gt of high-grade iron ore, Los Barrancos had 318 Mt; San Isidro, 214 Mt; Cerro Bolivar, 182 Mt; Grupo Redondo, 165 Mt; and Altamira, 163 Mt (C.V.G. Ferrominera Orinoco C.A., 2002a§).

In September 2002, the Ministerio de Planificación y Desarrollo published the Plan Nacional del Sector del Hierro y Acero. This preliminary discussion document analyzed the situation of the iron mining, iron metal, and steel production and its products in Venezuela. This document presented the position that the production of iron ore, which has been in the exclusive hands of the Government since 1975 through Decreto Ley No. 580, should be opened to private sector participation. Reasons for this were the lack of balance between the country's vast reserves and its production capacity, which has not increased in 25 years, and that Ferrominera would be unable to procure the capital required to develop new deposits (Ministerio de Planificación y Desarrollo, 2002, p. 18).

Production of raw steel and direct-reduced iron (DRI) increased by 9% and 8%, respectively. The two largest producers, Siderúrgica Venezolana C.A.S.A. (Sivensa) and SIDOR, approved debt restructuring plans during the year. In an extraordinary assembly in January, Sivensa approved the plan for restructuring the company and its subsidiary Siderúrgica del Turbio S.A.'s debt. The new loan would become due on September 30, 2007. Part of the loan, \$121 million, would be paid every 3 months at an interest rate of 3.5%. The sum of \$125 million would be paid in full at the end of the term. As part of the agreement, Sivensa approved the issuance of common stocks to the lenders equivalent to 15% of the common stock and gave them certain rights of approval and to designate to positions to the board (Siderúrgica Venezolana C.A.S.A., 2002). In July, SIDOR signed an agreement to reduce its debt from \$1.45 billion to \$750 million (Siderúrgica del Orinoco C.A., 2002).

**Nickel.**—In 2000, Venezuela began producing nickel and ferronickel from its Loma de Níquel Mine and ferronickel plant located along the boundaries of the States of Aragua and Miranda. The mine and ferronickel plant were operated by Loma de Níquel C.A. (majority owned by Anglo American plc). Nickel mine production in 2002 was about 18,200 t, which was a 34% increase compared with that of 2001. The nickel content of ferronickel produced was 15,700 t, which was about 92% of the design capacity (tables 1, 2).

### *Industrial Minerals*

**Cement.**—Venezuela was the fourth largest cement producer in Latin America after Brazil, Mexico, and Colombia. Production of cement in 2001 was estimated to have increased slightly to 8.8 Mt despite responding to the increase in the construction sector. Venezuela was a net exporter of cement. CEMEX Venezuela S.A. C.A. (a subsidiary of CEMEX) was the largest producer with more than 50% of the country's production capacity (CEMEX S.A. de C.V., 2002§).

**Diamond.**—Official production of diamond, which had been decreasing, increased almost threefold compared with that of 2001. Traditionally, diamond in Venezuela has been produced by the small-scale producers either through cooperatives or in contract with C.V.G. The main producing areas were Aza Karon, Guaniamo, Icabaru, Santa Elena, and San Salvador de Paul.

### *Mineral Fuels*

**Coal.**—Production of coal in Venezuela decreased by about 5% to 8.1 Mt. Most of the production was from the State of Zulia where PDVSA produced coal through its subsidiary, Carbozulia S.A., in two joint ventures with the private sector, Carbones de Guasare, S.A. and Carbones de la Guajira, S.A.

**Orimulsión®.**—Orimulsión® is a PDVSA-patented boiler fuel (a mix of natural bitumen and water) that is used in power generation. Venezuela's production capacity of Orimulsión was 6.2 million metric tons per year. The producing company is Bitúmenes de Orinoco, C.A. (Bitor) (a subsidiary of PDVSA). In 2002, Bitor produced at 100% of installed capacity, which was the same production level achieved in 2001. Orimulsión® was exported to Barbados, Canada, China, Denmark, Finland, Germany, Italy, Japan, and Lithuania.

**Petroleum.**—Venezuela produced 1.1 billion barrels of crude petroleum in 2002. About 53% of Venezuela's crude production was from the Oriental Basin and 44% was from the Maracaibo Basin. Part of the Venezuelan production (about 25%) was from the Government in joint venture with the private sector through operation contracts or strategic associations. Production from operation contracts totaled 153 million barrels (Mbbbl). Production from strategic associations totaled 129 Mbbbl [Ministerio de Energía y Minas, 2003, cuadros (tables) 18, 22]. The strategic associations were formed to expand Venezuela's production by developing the extra-heavy crude in the Orinoco Belt. Of the associations in production in 2002, Petrozuata, which was a joint venture between Conoco Inc. of the United States and PDVSA, had the largest output with 41.9 Mbbbl. The second largest producer among the associations was a joint venture of PDVSA, Statoil of Norway, and TotalFinalElf of France [Ministerio de Energía y Minas, 2003, cuadro (table) 22].

**Refinery.**—PDVSA operated six petroleum refineries in Venezuela. In 2002, production of refined products increased by about 6%. The Amuay refinery in the State of Falcon, which was the largest producer, processed 45% of the crude. Cardon, which is also in the State of Falcon, was the second largest refinery in Venezuela; it processed about 26% of Venezuela's crude [Ministerio de Energía y Minas, 2003, cuadro (table) 24].

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## Major Sources of Information

### Dirección de Planificación y Economía Minera

Av. Lecuna, Parque Central  
Torre Oeste, Piso 6  
Caracas, Venezuela  
Telephone: (58-212) 507 25 34  
Fax: (58-212) 575 52 39

### Dirección de Planificación y Economía de Hidrocarburos

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TABLE 1  
VENEZUELA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	1998	1999	2000	2001	2002	
<b>METALS</b>						
Aluminum:						
Alumina	1,553	1,469	1,755	1,833	1,778	
Bauxite	4,826	4,166	4,361	4,585 <sup>r</sup>	5,191	
Metal, primary, unalloyed	metric tons	584,690	570,321	569,123	571,000 <sup>r</sup>	605,000
Gold, mine output, Au content	kilograms	6,740	5,946	7,332	9,076	9,465
Iron and steel:						
Iron ore and concentrate, gross weight	16,553	14,051	17,350	16,902	18,000	
Iron ore and concentrate, metal content	11,014	9,292	11,092	10,817	11,500	
Metal, direct-reduced iron	5,424	5,071	6,401	6,380 <sup>r</sup>	6,890	
Ferroalloys:						
Ferromanganese	7,671 <sup>r</sup>	10,694 <sup>r</sup>	15,655 <sup>r</sup>	12,715 <sup>r</sup>	12,000	
Ferronickel	--	--	133 <sup>r</sup>	32,300 <sup>r</sup>	51,700	
Silicomanganese	48,507 <sup>r</sup>	47,635 <sup>r</sup>	69,735 <sup>r</sup>	56,640 <sup>r</sup>	55,000	
Ferrosilicon <sup>2</sup>	37,277 <sup>r</sup>	38,886 <sup>r</sup>	56,926 <sup>r</sup>	46,236 <sup>r</sup>	58,000	
Total	93,455	97,215	142,449	147,891	176,700	
Steel, crude	3,553	3,261	3,835	3,814	4,160	
Semimanufactures, hot-rolled	2,643	2,599	2,858	2,797	3,000 <sup>e</sup>	
Lead, secondary, refined <sup>d</sup>	metric tons	25,000	25,000	30,000	30,000	30,000
Nickel:						
Mine output, Ni content	do.	--	--	2,540	13,600	18,200 <sup>e</sup>
Ferronickel, Ni content	do.	--	--	40	9,700 <sup>e</sup>	15,700 <sup>e</sup>
<b>INDUSTRIAL MINERALS</b>						
Amphibolite	--	--	--	14,230 <sup>r</sup>	10,600	
Cement, hydraulic	8,202	8,500	8,600	8,700 <sup>e</sup>	7,000	
Clays:						
Kaolin	4	12	10	10 <sup>e</sup>	10 <sup>e</sup>	
Other	2,099	2,180	2,319	4,664	4,500 <sup>e</sup>	
Diamond:						
Gem	carats	80,033	59,446	29,280	14,321	45,707
Industrial	do.	16,778	35,698	80,317	27,826 <sup>r</sup>	61,060
Total	do.	96,811	95,144	109,597	42,147	106,767
Feldspar	148	125	130	142	147	
Gypsum	72	42	25	5	10 <sup>e</sup>	
Lime	378	400	400	400 <sup>e</sup>	400 <sup>e</sup>	
Nitrogen, N content of ammonia	526	522	423	808	666	
Phosphate rock	322	366	389	399	393	
Pyrophyllite <sup>c</sup>	32	32	32	32	32	
Salt, evaporated <sup>e</sup>	metric tons	350,000	350,000	350,000	350,000	350,000
Serpentinite, crushed <sup>e</sup>	550	550	550	550	550	
Stone, sand and gravel:						
Stone:						
Dolomite	71	--	12	66 <sup>r</sup>	92	
Granite	807	1,151	581	796	750 <sup>e</sup>	
Limestone <sup>3</sup>	14,246	13,735	11,302	18,158	13,434	
Sand and gravel	4,753	5,431	3,106	8,601	4,677	
Silica sand <sup>3</sup>	344	295	422	627	690	
Sulfur, petroleum byproduct	401	68	328	322	283	
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Carbon black <sup>e</sup>	60	60	60	60	60	
Coal, bituminous	6,458	6,593	7,910	7,685	8,097	
Gas, natural:						
Gross	million cubic meters	62,167	57,062 <sup>r</sup>	61,878 <sup>r</sup>	62,941 <sup>r</sup>	61,982
Marketed	do.	32,335 <sup>r</sup>	27,269 <sup>r</sup>	27,801	29,593 <sup>r</sup>	28,415
Natural gas liquids: <sup>4</sup>						
Natural gasoline	thousand 42-gallon barrels	13,024 <sup>r</sup>	12,379 <sup>r</sup>	10,281 <sup>r</sup>	10,619 <sup>r</sup>	11,619
Liquid petroleum gas	do.	53,153 <sup>r</sup>	56,629 <sup>r</sup>	53,649 <sup>r</sup>	54,360 <sup>r</sup>	57,206
Total	do.	66,177 <sup>r</sup>	69,008 <sup>r</sup>	63,930 <sup>r</sup>	64,979 <sup>r</sup>	68,825

See footnotes at end of table.

TABLE 1--Continued  
 VENEZUELA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	1998	1999	2000	2001	2002
<b>MINERAL FUELS AND RELATED MATERIALS--Continued</b>					
<b>Petroleum:</b>					
Crude <sup>2</sup> thousand 42-gallon barrels	1,215,120	1,116,705	1,151,436	1,115,075	1,105,793
<b>Refinery products:</b>					
Liquefied petroleum gas do.	4,636	3,679	4,530	4,931 <sup>r</sup>	7,961
Gasoline, motor do.	70,956	71,887	73,460	74,128 <sup>r</sup>	68,565
Naphtha and other gasolines do.	72,964	70,405	66,350	63,601 <sup>r</sup>	79,461
Jet fuel do.	32,529	35,022	34,226	32,233 <sup>r</sup>	32,113
Kerosene do.	766	146	--	157 <sup>r</sup>	--
Distillate fuel oil do.	120,815	121,465	116,176	110,642 <sup>r</sup>	114,584
Lubricants do.	2,227	2,033	1,880	1,814 <sup>r</sup>	1,723
Residual fuel oil do.	80,957	73,624	92,046	92,914 <sup>r</sup>	81,475
Asphalt do.	10,986	12,990	12,297	11,581 <sup>r</sup>	11,129
Petroleum coke do.	8,369	2,869	10,454	11,362 <sup>r</sup>	12,235
Paraffins do.	190	157	193	150	153
For internal consumption do.	27,200	25,032	24,667	28,010 <sup>r</sup>	30,328
Unspecified do.	2,581	2,584	2,295	1,447 <sup>r</sup>	1,507
Gains and losses do.	-8,140	2,807	-281	-3,409 <sup>r</sup>	15,783
Total <sup>6</sup> do.	427,036	424,700	438,293	429,561 <sup>r</sup>	457,017

<sup>6</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through March 12, 2004.

<sup>2</sup>Production of 75% silicon-content ferrosilicon.

<sup>3</sup>Excludes production under contract with the Government.

<sup>4</sup>From nonassociated gas only.

<sup>5</sup>Includes condensate and bitumen for the production of Orimulsión®.

<sup>6</sup>Excludes byproduct sulfur, which is reported in the industrial minerals portion of this table, but includes losses.

TABLE 2  
VENEZUELA: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina		C.V.G. Bauxilum C.A. (Corporación Venezolana de Guayana, 99%; Aluisse Lonza Holding, 1%)	Ciudad Guayana, Bolivar State	1,800.
Aluminum		C.V.G. Aluminio del Caroní, S.A. (Corporación Venezolana de Guayana, 82%; Alcoa, 7.3%)	do.	210.
Do.		C.V.G. Venezolana de Aluminio C.A. (Corporación Venezolana de Guayana, 80%; Showa Denko K.K., Kobe Steel Ltd., Sumitomo Chemical Co. Ltd., Mitsubishi Materials Corp., Mitsubishi Aluminum Co., and Marubeni Corp., 20%)	do.	430.
Bauxite		C.V.G. Bauxilum C.A. (Corporación Venezolana de Guayana, 100%)	Los Pijiguaos, Bolivar State	6,000.
Cement		CEMEX Venezuela, S.A. C.A. (Cementos Mexicanos S.A. de C.V., 100%)	Barquisimeto, Lara State; Maracaibo, Zulia State; Pertigalete, Anzoategui State; San Cristobal, Tachira State	5,400.
Do.		Consolidada de Cementos C.A. (Holderbank Management and Consulting Ltd., 50%)	Cumarebo, Falcon State; San Sebastian de los Reyes, Aragua State	2,280.
Do.		C.A. Fábrica Nacional de Cementos (Lafarge France, 46.13%)	Palmira and Ocumare del Tuy, Miranda State	1,330.
Do.		Cementos Catatumbo (Lafarge France, 23.32%)	Montellano, Zulia State	650.
Do.		Cemento Andino	Curcas, Trujillo State	560.
Coal		Carbones del Guasare, S.A. (Carbozulia S.A., 49%; RAG International Coal AG, 24%; Anglo Coal, 24%; private, 3%)	Paso Diablo, Zulia State, Guasare coal basin	7,000.
Do.		Carbones de la Guajira, S.A. (Carbones del Mar, S.A., 64%; Carbozulia S.A., 36%)	Mina Norte and Cachiri, Zulia State, Guasare coal basin	1,200.
Ferrosilicon		Ferroatlántica de Venezuela, S.A. (Ferroatlántica S.L., 80%; Corporación Venezolana de Guayana, 20%)	Ciudad Guayana, Bolivar State	80.
Gold	kilograms	Revevin (Crystallex de Venezuela C.A., 51%; Corporación Venezolana de Guayana, 49%)	Revevin mill, El Callao, Bolivar State	1,500 mill.
Do.	do.	El Callao Mining Corp. (Crystallex de Venezuela C.A., 80%)	La Victoria (Lo Increible), El Callao, Bolivar State	1,700.
Do.	do.	Crystallex de Venezuela C.A. (Crystallex International Corp., 100%)	Tomí Mine, El Callao, Bolivar State	350.
Do.	do.	Minera Hecla Venezolana C.A. (Hecla Mining Inc.)	La Camorra, El Callao, Bolivar State	2,300.
Do.	do.	C.V.G. Compañía General de Minería C.A. (C.V.G. Ferrominera Orinoco C.A., 66.77%; Corporación Venezolana de Guayana, 33.23%)	Colombia and Union Mines and Caratal and El Peru plants, El Callao, Bolivar State	4,600 plant.
Iron, direct-reduced		do.	do.	4,600.
Do.		Complejo Siderúrgico de Guayana C.A. (Kobe Steel, 36.7%; C.V.G. Ferrominera, 17.4%; Tubos de Acero de México, S.A., 6.9%; Mitsui and Co. Ltd., Nissho Iwai Corp., Tomen Corp. and Shinsho Corp., 30.3%; International Finance Corp., 8.7%)	do.	1,000.
Do.		Orinoco Iron (International Briquettes Holding, 100%)	Puerto Ordaz, Bolivar State	2,200.
Do.		Venezolana de Prereducidos de Caroní (International Briquettes Holding, 100%)	do.	815.
Iron ore		C.V.G. Ferrominera Orinoco C.A. (Corporación Venezolana de Guayana, 100%)	Cerro San Isidro, Los Barrancos, and Las Pailas, Bolivar State	25,000.
Iron ore pellets		do.	Ciudad Guayana, Bolivar State	3,600.
Do.		Siderúrgica del Orinoco C.A. (Cosorcio Siderúrgico Amazonia Ltd., 70%; Corporación Venezolana de Guayana, 30%)	do.	7,000.
Lime		C.V.G. Compañía Nacional de Cal (Gorporación Venezolana de Guayana, 100%)		500.
Natural gas	million cubic meters	Petróleos de Venezuela S.A. (Government, 100%)	Processing plants in Anzoatigui, Monagas, and Zulia States	25,000.
Nickel		Loma de Níquel C.A. (Anglo American plc, 87.5%; Grupo Federal de Venezuela, 7.9%; International Finance Corp, 3.5%; Jourdex Resources Inc., 1.1%)	Loma de Níquel, Aragua and Miranda States	16.

TABLE 2--Continued  
 VENEZUELA: STRUCTURE OF THE MINERAL INDUSTRY IN 2002

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Nitrogen content of ammonia		Fertilizantes Nitrogenados de Oriente S.A. (Pequiven, 35%; Koch Industries, 35%; Snamprogetti International S.A., 20%; Empresas Polar, 10%)	Jose, Anzoategui State	1,070.
Do.		Pequiven (Petróleos de Venezuela S.A., 100%)	Petrochemical complexes in Zulia and Carabobo States	670.
<b>Petroleum:</b>				
Crude	million 42-gallon barrels	Petróleos de Venezuela S.A. (Government, 100%)	Fields in Anzoategui, Apure, Falcon, Guarico, Monagas, and Zulia States	1,393.
Crude, synthetic	do.	Petrozuata (Conoco Inc., 50.1%; Petróleos de Venezuela S.A., 49.9%)	Jose Industrial Complex, Anzoategui State	38.
Do.	do.	Cerro Negro (Exxon Mobil Corporation, 41.665%; Petróleos de Venezuela S.A., 41.665%; Veba Oil & Gas, 16.67%)	do.	39.
Refinery products	do.	do.	Refineries in Amuay and Cardon, Falcon State; Puerto La Cruz and San Roque, Anzoategui State; El Palito, Carabobo State; Bajo Grande, Zulia State	450.
Steel		Siderúrgica del Orinoco C.A. (Amazonia Consortium, 70%; Corporación Venezolana de Guayana, 30%)	Ciudad Guayana, Bolivar State	3,750.
Do.		Siderúrgica del Turbio C.A. (Siderúrgica Venezolana Sivensa S.A., 100%)	Antimano, Miranda State; Barquisimeto, Lara State; Casima, Bolivar State	907.
Sulfur		Petróleos de Venezuela, S.A. (Government, 100%)	Refineries in Amuay and Cardon, Falcon State; El Palito, Carabobo State; San Roque, Anzoategui State	422.
Do.		Petrozuata (Conoco Inc., 50.1%; Petróleos de Venezuela S.A., 49.9%)	Jose Industrial Complex, Anzoategui State	53.