

PARAGUAY AND URUGUAY

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PARAGUAY

The Republic of Paraguay, which is located northeast of Argentina in central South America, has an area of about 406,750 square kilometers (km²). The area supported a population of more than 5.7 million people, the gross domestic product (GDP) per capita was \$4,750, and the GDP was \$26.2 billion based on 2000 purchasing power parity. Of the total population, 36% was estimated to be existing below the poverty line. Industry accounted for about 21% of the GDP compared with agriculture (28%) and services (51%) (U.S. Central Intelligence Agency, 2002a§¹). A large informal segment of the economy included microenterprises, urban street vendors, and the re-export of consumer goods (CountryWatch.com, 2001, p. 27). Economic reforms deemed to be necessary to alleviate the country's economic stagnation were impeded by the uncertain political environment (U.S. Energy Information Administration, 2000§).

The mineral industry of Paraguay accounted for less than 1% of its GDP and was focused on the production of cement and the extraction of industrial minerals, such as clays, gypsum, limestone, marble, ocher, sand, and talc. Other mineral-related activity, which depended on imported raw materials, included the production of pig iron and steel and the refining of petroleum.

In 2001, Newmont Overseas Exploration Ltd. (a subsidiary of Newmont Mining Corp. of the United States) terminated its exploration program with Yamana Resources Inc. of Canada after the evaluation of a 2,724-meter (m) diamond-drilling program on the Guazucua area (two holes) and the Sapucaí igneous complex (nine holes) (Yamana Resources Inc., 2001).

Paraguay had no developed oil or natural gas resources, and hydrocarbon exploration continued. Domestic petroleum demand of about 23,000 barrels per day (bbl/d) was met by imported petroleum products, which were supplemented by the output of Petróleos Paraguayos' 7,500-bbl/d-capacity refinery. Crude oil for the refinery was imported from Algeria and Argentina (U.S. Energy Information Administration, 2000§).

Hydroelectric powerplants made Paraguay a low-cost provider of electricity in South America. Estimates of electricity availability ranged from 51% to more than 70% (U.S. Energy Information Administration, 2000§).

Paraguay and Brazil proposed to expand their Itaipu hydroelectric facility on the Rio Paraná, which with an installed electricity-generating capacity of 12,600 megawatts (MW) was the world's largest operational hydroelectric facility. Two 700-MW units were planned to be added to the 18 existing

generating units by 2004. Downstream on the Paraná, the Governments of Argentina and Paraguay proposed to increase the electricity-generating capacity of the 2,700-MW Yacyreta hydroelectric powerplant and to build a 3,000-MW plant at Corpus Christi.

URUGUAY

The Republic of Uruguay, which is located in southern South America and borders the South Atlantic Ocean between Argentina and Brazil, has an area of about 176,220 km². In 2001, the population was about 3,400,000. The GDP per capita was \$9,300, and the overall GDP was \$31 billion (U.S. Central Intelligence Agency, 2002b§). The GDP growth in 2001 was estimated to be about -1.5% after a fall of 1.3% in 2000 (U.S. Department of State, 2002§). The Uruguayan economy remained dependent on agriculture and a well-educated workforce. The industrial sector, which accounted for 28% of the GDP, was largely based on agricultural products production. Mining output accounted for about 0.2% of the GDP.

In 1999-2000, the economy suffered from lower demand for goods from Argentina and Brazil, which together accounted for about half of Uruguay's exports. The unemployment rate was estimated to be about 14% in 2000. Uruguay's annual inflation rate decreased to about 3.6% in 2001 compared with about 130% in 1990 (U.S. Department of State, 2002§).

In 2001, the Government privatized oil refining, but oil imports will remain under exclusive government control until 2006. Previous administrations privatized road construction and repair and piped-gas distribution; natural gas transmission, however, remained a government monopoly. According to a 2001 study, utility privatization in Uruguay would create 45,000 new jobs (U.S. Department of State, 2002§).

In 2001, exports were estimated to have reached \$2.6 billion, and imports, \$3.4 billion. Traditionally, a substantial percentage of Uruguay's trade was with neighboring Argentina and Brazil, and this increased with its integration into the Mercado Común del Cono Sur (Southern Cone Common Market) (MERCOSUR), which included Argentina, Brazil, and Paraguay; Bolivia and Chile were associated members of MERCOSUR. Trade with MERCOSUR members accounted for about 45% of exports and about 43% of imports. The United States was the third largest exporter to Uruguay after MERCOSUR and the European Union (U.S. Central Intelligence Agency, 2002b§).

The Uruguayan mining sector traditionally has been based on the exploitation of nonmetallic minerals for the construction, glass, and ceramics industries. The following commodities are important: clay, bentonite, broken stone, dolomite, feldspar, gravel, gypsum, limestone, pebbles, quartz, sand, and talc.

¹References that include a section twist (§) are found in the Internet References Cited section.

Ornamental rocks, such as flagstone, granite, and marble, also were exploited, as were semiprecious stones for jewelry, such as agate and amethyst. The ongoing extraction projects operating totaled more than 350 facilities; most were small scale.

In the past few years, the Uruguayan mining sector has started to change with the revival of minerals prospecting and exploitation that had been idle for many years. In 2001, diamond exploration was added to this list. The country has opened its doors to foreign investment as a result of changes in national legislation that have improved the business environment. Mining output has grown at a pace of almost 4% per year during the past 5 years, and two projects were implemented—one for gold and the other for cement production.

Minera San Gregorio S.A. (a subsidiary of Crystallex International Corp. of Canada acquired in October 1998) has produced an average of about 70,000 ounces per year [2,177 kilograms per year] of gold and was expected to maintain a similar output throughout 2004. In 2001, a new water treatment facility at the San Gregorio Mine was commissioned, and mining began at the Santa Teresa deposit. About 1.1 million metric tons (Mt) of ore were processed at the mill to produce 66,957 ounces [2,083 kilograms] of gold at a cash cost of \$218 per ounce. In the fourth quarter, better head grades and reduced soluble losses allowed the San Gregorio mill to recover nearly 18,000 ounces (560 kg) of gold from nearly 280,630 metric tons (t) of processed ore; this was a significant increase compared with previous quarters. The mill operated at a rate of 3,118 metric tons per day (t/d) with a recovery rate of nearly 92% (Crystallex International Corp., 2002). In the third quarter of 2001, Crystallex began mining from the Santa Teresa ore body, which is located 1 kilometer (km) west of the San Gregorio main pit.

Reverse circulation drilling at Sobre Saliente, which is adjacent to the San Gregorio Mine, by the joint venture of Uruguay Goldfields Inc. and Rio Tinto Mining and Exploration Ltd. defined a mineralized zone about 2,450 m long and 25 to 100 m wide. Based on a cut-off grade of 0.1 gram per metric ton (g/t) gold, an inferred resource of 47 Mt that graded 0.3 g/t gold was calculated. At a higher cut-off grade (0.3 g/t), the resource shrinks to 6.8 Mt that averages 1 g/t gold (Uruguay Goldfields Inc., 2002). Rio Tinto subsequently withdrew from the joint venture because the resource was not large enough to meet the company's investment criteria.

In 2001, Uruguay Goldfields began drilling on the Paso del Lugo nickel project, proposed a geophysical program on the Las Mandarinas nickel project, and planned a bulk sampling program on the Minas de Corrales diamond project.

The production of minerals for the construction industry was economically significant in Uruguay. Among these materials, limestone, which was used in the manufacture of portland cement, had significant potential for export growth. In 2001, Uruguayan output of limestone was 1.3 Mt, which was an increase of 3% compared with that of 2000. In 2001, cement production remained the same level as in 2000 (700,000 t). In 2001, Argentinian cement producer Loma Negra, which borders Uruguay to the south and west, formed a new company Cementos del Plata. Loma Negra used most of its production to La Administración Nacional de Combustibles, Alcohol y

Portland (ANCAP) in Uruguay and some to Argentina; ANCAP is the state cement and oil company. In addition, Loma Negra provided technical assistance to Compañía Uruguaya de Cemento Portland (CUCP) and to Compañía Nacional de Cementos in Uruguay. These two companies planned to build any new capacity as a joint venture. In 2001, Uruguay continued exporting cement into Argentina, but this trade was declining rather than increasing, and more emphasis was expected to be placed on the domestic market. Uruguay had three cement companies with a combined capacity of about 1.02 mt. The largest one is ANCAP [510,000 metric tons per year (t/yr)]; two plants, Minas and Paysandú, followed by Compañía Uruguaya de Cemento Portland (450,000 t/yr; two plants, Verdun and Sayago) and finally Compañía Nacional de Cementos (55,000 t/yr; one plant, Maldonado) (International Cement Review, 2000).

Uruguay has no fossil fuel resources and only a small amount of hydroelectric power capacity compared with the other members of MERCOSUR. The country relied heavily (about 60% of total energy consumption) on imports to meet its energy needs. Uruguay's rivers were highly dammed; the potential for additional hydroelectric powerplants was limited. With the region's increased economic integration, Uruguay planned to increase the use of natural gas in homes as well as for electricity generation at existing or new powerplants.

Because Uruguay has no known oil resources, it imported about 43,000 bbl/d of crude oil to meet its energy demand. ANCAP owned Uruguay's only refinery the 37,000-bbl/d La Teja refinery in Montevideo (U.S. Energy Information Administration, 2001\$).

Natural gas pipelines have connected Argentina and Uruguay since 1998 when a 19.3-km from Entre Rios, Argentina, to Paysandu, western Uruguay, was opened. In 2001, work began on the Cruz del Sur pipeline. This \$170 million 5,000-million-cubic-meter-per-day natural gas pipeline from Buenos Aires to Montevideo will transport gas from fields in the western Neuquén and the southern Austral Basins of Argentina (U.S. Energy Information Administration, 2001\$).

References Cited

- Crystallex International Corp., 2002, Crystallex reports results for fourth quarter and year 2001: Vancouver, British Columbia, Canada, Crystallex International Corp. news release, April 1, [unpaginated].
CountryWatch.com, 2001, Country review—Paraguay—2001-2002: Houston, TX, CountryWatch.com, 101 p.
International Cement Review, 2000, Uruguay, *in* The global cement report: International Cement Review, December, p. 79-80.
Uruguay Goldfields Inc., 2002, Annual report—2001: Montevideo, Uruguay, Uruguay Goldfields Inc., 30 p.
Yamana Resources Inc., 2001, Yamana announces Newmont's withdrawal from Paraguay: Spokane, WA, Yamana Resources Inc. press release, May 1, 1 p.

Internet References Cited

- Trade Port, 2000, Paraguay—Economic trends and outlook—Chapter 2—Economic trends and outlook—Infrastructure, accessed June 3, 2002, at URL <http://www.tradeport.org/ts/countries/paraguay/trends.html>.
U.S. Central Intelligence Agency, 2002a, Paraguay, World Factbook 2001, accessed May 29, 2002, at URL <http://www.odci.gov/cia/publications/factbook/geos/pa.html>.
U.S. Central Intelligence Agency, 2002b, Uruguay, World Factbook 2001,

accessed May 29, 2002, at URL <http://www.odci.gov/cia/publications/factbook/geos/uy.html>.
U.S. Department of State, 2002, Uruguay, Background Note, accessed May 29, 2002, at URL <http://www.state.gov/t/pa/ei/bgn/2091.htm>.
U.S. Energy Information Administration, 2000 (June), Paraguay, Country Analysis Brief, accessed June 3, 2002, at URL <http://www.eia.doe.gov/emeu/cabs/paraguay.html>.
U.S. Energy Information Administration, 2001 (March), Uruguay, Country Analysis Brief, accessed June 3, 2002, at URL <http://www.eia.doe.gov/emeu/cabs/uruguay2.html>.

Major Source of Information

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TABLE 1
PARAGUAY AND URUGUAY: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

| Country and commodity | 1997 | 1998 | 1999 | 2000 | 2001 e/ |
|---|---------|-----------|-----------|--------------|-----------|
| PARAGUAY 3/ | | | | | |
| Cement, hydraulic thousand tons | 675 | 620 | 680 r/ | 700 r/ | 750 |
| Clays: e/ | | | | | |
| Kaolin | 66,700 | 66,700 | 66,600 | 66,500 | 66,500 |
| Other thousand tons | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Gypsum e/ | 4,500 | 4,500 | 4,300 | 4,400 | 4,400 |
| Iron and steel: | | | | | |
| Pig iron | 78,615 | 65,545 r/ | 61,281 r/ | 82,018 r/ | 71,765 4/ |
| Steel, crude | 65,542 | 56,243 | 55,689 r/ | 76,784 r/ | 67,034 4/ |
| Lime e/ | 100,000 | 90,000 r/ | 90,000 r/ | 90,000 | 85,000 |
| Petroleum, refinery products: e/ | | | | | |
| Liquefied petroleum gas thousand 42-gallon barrels | 7 | 10 | 10 | 10 | 10 |
| Gasoline do. | 255 | 250 | 250 | 250 | 250 |
| Jet fuel do. | 71 | 110 | 100 | 100 | 100 |
| Kerosene do. | 50 | 50 | 50 | 50 | 50 |
| Distillate fuel oil do. | 593 | 600 | 600 | 600 | 600 |
| Residual fuel oil do. | 422 | 450 | 450 | 450 | 450 |
| Unspecified do. | 35 | 35 | 37 | 37 | 37 |
| Total do. | 1,430 | 1,510 | 1,500 | 1,500 | 1,500 |
| Pigments, mineral, natural, ocher e/ | 300 | 300 | 300 | 300 | 300 |
| Sand, including glass sand e/ | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Stone: e/ | | | | | |
| Dimension thousand tons | 70 | 70 | 70 | 70 | 70 |
| Crushed and brokened: | | | | | |
| Limestone (cement and lime) do. | 600 | 600 | 600 | 600 | 600 |
| Marble do. | 750 | 750 | 750 | 750 | 750 |
| Other do. | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Talc, soapstone, pryophyllite e/ | 200 | 200 | 200 | 200 | 200 |
| URUGUAY | | | | | |
| Aluminum, secondary e/ | 45 | 45 | 45 | 45 | 45 |
| Barite | 40 | 65 | 50 r/ | 33 r/ | 35 |
| Bentonite e/ | 60 4/ | 60 | 55 | 120 r/ | 120 |
| Cement, hydraulic | 781,000 | 750,000 | 720,000 | 700,000 | 700,000 |
| Clays, unspecified | 59,434 | 41,371 | 38,192 | 24,483 r/ | 24,950 4/ |
| Coke, gashouse e/ | 6,000 | 6,000 | 5,000 | 5,000 | 5,500 |
| Feldspar | 3,229 | 2,240 | 1,556 | 2,493 r/ | 1,500 |
| Gemstones, semiprecious: | | | | | |
| Agate | 74 | 270 | 362 e/ | 529 r/ | 500 |
| Amethyst | 49 | 48 | 45 e/ | 87 r/ | 80 |
| Gold kilograms | 2,177 | 1,985 | 2,400 e/ | 2,177 r/ | 2,083 4/ |
| Gypsum | 942,755 | 1,123,376 | 1,049,597 | 1,075,615 r/ | 1,050,000 |
| Iron and steel: | | | | | |
| Iron ore | 5,527 | 8,618 | 3,837 | 5,853 r/ | 5,800 |
| Metal: | | | | | |
| Ferroalloys, electric-furnace ferrosilicon crust e/ | 200 | 200 | 200 | 200 | 200 |
| Steel, crude | 39,070 | 52,012 r/ | 45,404 r/ | 38,102 r/ | 30,890 4/ |
| Semimanufactures | 35,120 | 47,345 r/ | 41,611 r/ | 34,312 r/ | 28,830 4/ |
| Lime e/ | 12,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Petroleum, refinery products: e/ | | | | | |
| Liquefied petroleum gas thousand 42-gallon barrels | 400 | 425 | 395 | 400 | 400 |
| Gasoline do. | 2,250 | 2,100 | 2,150 | 2,200 | 2,200 |
| Kerosene do. | 460 | 500 | 525 | 500 | 500 |
| Distillate fuel oil do. | 3,100 | 4,200 | 4,150 | 4,100 | 4,100 |
| Residual fuel oil do. | 3,450 | 3,600 | 3,620 | 3,600 | 3,600 |
| Unspecified do. | 240 | 260 | 280 | 280 | 280 |
| Total do. | 9,900 | 11,100 | 11,100 | 11,100 | 11,100 |
| Sand and gravel: | | | | | |
| Sand, common thousand tons | 2,135 | 2,753 | 2,506 | 2,699 r/ | 2,700 |
| Gravel do. | 40,109 | 40,192 | 49,887 | 49,776 r/ | 50,000 |

See footnotes at end of table.

TABLE 1--Continued
 PARAGUAY AND URUGUAY: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

| Country and commodity | 1997 | 1998 | 1999 | 2000 | 2001 e/ |
|---|----------|------------|------------|--------------|-----------|
| URUGUAY--Continued | | | | | |
| Stone: | | | | | |
| Flagstone | 4,502 | 4,000 | 4,100 e/ | 3,688 r/ | 3,700 |
| Granite: | | | | | |
| Dimension | 77,281 | 22,955 | 6,397 | 6,817 r/ | 6,800 |
| Crushed and brokened, alum schist | 418,200 | 450,000 e/ | 470,000 r/ | 810,237 r/ | 800,000 |
| Other, rough stone | -- | -- | -- | 238,601 | 238,000 |
| Dolomite | 21,847 | 17,440 | 8,439 | 8,229 r/ | 8,250 |
| Limestone thousand tons | 1,240 | 1,523 | 1,471 | 1,259 r/ | 1,300 |
| Marble, in blocks and broken: e/ | | | | | |
| Onyx | 123 4/ | 100 | 119 | 60 r/ | 65 |
| Travertine | 11 4/ | 11 | 15 | 35 r/ | 39 |
| Other, unspecified | 141 4/ | 340 4/ | 192 | 163 r/ | 170 |
| Marl | 44,775 | 68,810 | 33,387 | 35,000 | 35,000 |
| Quartz | 49 | 52 | 50 r/ | 20 r/ | 25 |
| Other, including ballast e/ thousand tons | 2,852 4/ | 2,690 | 2,500 | 2,821 r/ | 2,800 |
| Sulfur, elemental, byproduct | 2,000 e/ | 2,874 | 3,119 | 3,000 e/ | 3,000 |
| Talc, soapstone, pryophyllite | 1,133 | 972 | 2,905 | 2,903 r/ | 2,100 |
| Tuff, tufa | 691,151 | 865,860 | 800,000 e/ | 1,044,000 r/ | 1,000,000 |

e/ Estimated. r/ Revised. -- Zero.

1/ Includes data available through June 2002.

2/ Estimated data are rounded to no more than three significant digits; may not add to totals shown.

3/ In addition to the commodities listed, construction materials (clays, miscellaneous rock, sand, and weathered tuffs) were presumably produced. Available information is inadequate to make reliable estimates of output levels.

4/ Reported figure.