

ECUADOR

By Pablo Velasco

The Ecuadorian economy continued to be heavily dependent on petroleum production and exports of agricultural commodities and seafood. In 2000, the economy generated an estimated gross domestic product (GDP) of about \$13.9 billion in real terms, which represented a growth of 1.9% from that of 1999. Buoyed by high oil prices, the economy experienced a modest recovery in 2000, with the GDP rising by 1.9%. Although the improving economy provided jobs for about 1 million people, 70% of the population was living below the poverty line; this was more than double the rate of 5 years ago. Inflation in 2000 remained high at 96.1%, but the rate of inflation continued to fall (U.S. Department of State, April 2001, Ecuador—Economy, Background Notes, accessed April 17, 2001, at URL <http://www.state.gov/r/pa/bgn/index.cfm?docid=2906>).

In the wake of a 63% inflation rate and a 65% devaluation of the national currency in 1999, the Government announced its intention to adopt the U.S. dollar as the official currency of Ecuador to address the ongoing economic crisis. Subsequent protests led to the removal of the President from office and the elevation of the Vice President to the Presidency. The new administration, however, confirmed its commitment to adopt the U.S. dollar in the Ecuadorian economy.

On January 9, 2000, the Congress approved the Economic Transformation Law declaring the U.S. dollar a legal tender in Ecuador. The Central Bank of Ecuador will no longer print sucres, and although sucres will remain as a legal tender, the U.S. dollar is expected to cover most transactions. Bank assets and liabilities will be denominated in U.S. dollars, and the Government will pay wages in U.S. dollars. After the official announcement by the President of the Ecuadorian Economic Restructuring Law (Ley para la Transformación Económica del Ecuador), the country received immediate support from the International Monetary Fund (IMF), the World Bank, and the Inter-American Development Bank, which committed more than US\$2.0 billion in credits during the next 3 years, subject to the completion and implementation of the new economic law just passed. The support of the IMF is expected to open up the possibility of significant foreign investment into the country.

In 2000, Empresa Estatal Petróleos del Ecuador (Petroecuador), which oversees all the hydrocarbon operations, accounted for about 75% of the country's total production. Of the about 400,000 barrels per day (bbl/d) produced in Ecuador, Petroecuador contributed about 300,000 bbl/d, and private companies, an estimated 100,000 bbl/d. Ecuador's net oil export was 236,000 bbl/d, most of which went to the United States (100,000 bbl/d) as well as to Asia, the Caribbean, and Chile (U.S. Energy Information Administration, July 2000, Ecuador—Oil, Country Analysis Brief, accessed January 28, 2001, at URL <http://www.eia.doe.gov/emeu/cabs/ecuador.html>).

Final bids to build a second crude oil export pipeline to double Ecuador's export capacity included a surprise bid from a group

led by Ecuador's Army Corps of Engineers (CIE) along with private sector bids from Brazilian firms Andrade Gutierrez and Petróleo Brasileiro S.A., U.S.-based Williams Group, and a producer consortium headed by Spain's Repsol-YPF Ecuador SA. All bids were due at the offices of Ecuador's Ministry of Energy by the end of August 31, 2001. CIE and its civilian partner proposed building a pipeline with an initial capacity of 290,000 bbl/d at a cost of \$470 million. The group has proposed two possible routes—one along the northern border and the other parallel to the Transecuadorian Pipeline System "SOTE." In 2000, SOTE carried crude oil from eastern Ecuador west to the Pacific Ocean export terminal at Esmeraldas and provided the main source of export revenue for the country. SOTE recently expanded its pumping capacity to slightly more than 400,000 bbl/d, or about half of the near-term production capacity (Oil & Gas Journal, 2000b).

In another proposal, a consortium of five companies under the newly formed Oleoducto de Crudos Pesados Ltd. (OCP) would build and operate a 500-kilometer (km), 0.65- to 0.75-centimeter-diameter heated pipeline. OCP consisted of Repsol-YPF Ecuador (25.1%), Alberta Energy Co. Ltd. (27.3%), Agip Oil Ecuador BV (9.6%), Kerr McGee Ecuador (5.1%), Occidental de Ecuador Inc. (23.9%), and Techint International Construction Corp. (Buenos Aires 9%).

The long-awaited natural gas project (Amistad Field) in the Gulf of Guayaquil was scheduled to begin drilling operations by mid-2000. Drilling was being carried out by EDC Ecuador Ltd. (subsidiary of Houston-based Samedan Oil Corp.). With estimated reserves of 9,769 million cubic meters, a daily production of 906,138 cubic meters was expected to generate 204 megawatts (MW) of electricity for the southwest part of the country (Puig, 2000).

Noble Affiliates Inc., Ardmore, Oklahoma, held a 100% working interest through subsidiaries Samedan Oil and EDC Ecuador in a project to build a 64.4-km pipeline to transport Amistad gas to a powerplant at Machala, Ecuador. The company projected a cash flow of \$32 million per year from the powerplant and \$534 million net cash flow during the life of the plant. Noble was spending \$78 million to drill four wells from the Amistad platform. The first well, Amistad 5, encountered about 104 meters (m) of net gas pay that compared favorably with the three wells that Ada Oil Exploration Group drilled after discovering the field in the early 1970s (Amistad 1, 3, and 4). Amistad 5 is more than a mile southwest of Amistad 1, which cut more than 107 m of pay and tested 807 million cubic meters per day from just about 11.6 m of formation. Amistad 5's total depth (TD) is more than 3,322 m. The platform is in about 40 m of water in the Gulf of Guayaquil about 8 km north of Peruvian waters. Amistad 7 was drilling in late September. The field would supply about 368 million cubic meters per year of gas to the \$140 million 200-MW combined-cycle powerplant at Machala for 20

years. The project was to start up early in 2002. Noble estimated power demand to be 2,900 megawatts per year (MW/yr) in Ecuador and a constrained 80 MW/yr in Machala. Noble's generators would provide power to Machala and the national grid (Oil & Gas Journal, 2000a).

The slow pace of exploration and mining activities reflected low metal prices and, most of all, the uncertainties and disappointments that the country experienced politically and economically. Ecuador has extensive but underdeveloped gold resources as well as other minerals. In 2000, official reported gold production was 2,823 kilograms (kg). Gold production in Ecuador has been consistently carried out for the past 14 years mainly by small miners' cooperatives. The sources of the gold have normally been alluvial and hard-rock deposits in several gold districts throughout the country. These activities were reported unofficially as an annual production of about 15 metric tons of gold. Minera Bira S.A. in the Portovelo Zaruma gold district continued to be the largest formal gold producer. Legal reforms, improved protection of property rights, and consistent Government policies were required for Ecuador to attract large-scale foreign investment in its mining sector (U.S. Embassy, Quito, Ecuador, 1999).

Ecuador enjoyed trade preferences to access the markets of the Andean Community, the European Union, Japan, Latin American countries, and the United States. Ecuador, as well as more than 140 independent countries and territories, is a beneficiary of the U.S. Generalized System of Preferences and, as well as Bolivia, Colombia, and Peru, is a beneficiary of the Andean Trade Preferences Act (ATPA), which covers most products. The total exports of all merchandise goods in 2000 was \$4.845 million. The major export markets were the United States, (38%), Latin America (32%), Asia and the European Union (12%), followed by Colombia, Japan, Germany, and Venezuela. During 2000, the major export products by value were crude oil (28%), bananas (23%), and shrimp (14%), and the major import products by value were raw materials for industry (43%), capital goods (28%), and consumer goods (21%). Imports valued at \$3.465 million came from Latin America (46%), the United States (26%), the European Union (12%), and Asia (11%). Most Ecuadorian products enjoy duty-free access to the U.S. market under the ATPA.

A number of major mining companies continued various regional exploration of potential copper and gold targets. The most active mining companies were Newmont Overseas Exploration Ltd. of the United States (Newmont) (a wholly owned subsidiary of Newmont Mining Corp. of the United States) and Billiton plc. of the United Kingdom. Odin Mining and Exploration Ltd. received notice that Newmont had elected not to invest further in the joint venture with Odin in Ecuador; it had invested more in the project than the amount required to earn its 60% interest. The issuer was actively looking for a third party to review the Cangrejos property and some other related Ecuadorian properties, and Newmont was cooperating fully with Odin in this regard. Newmont carried out a diamond-drilling program that totaled 5.594 m on the Cangrejos property and announced that all holes intersected porphyry-style gold-copper mineralization exceeding 1.0 gram per metric ton (g/t) gold (Puig, 2000).

Billiton's exploration during the past 5 years in the Rio

Zamora area in southeastern Ecuador outlined a porphyry district with at least six separate large porphyry copper systems. These discoveries will be followed up by a joint venture among Corrientes Resources Inc., Lowell Mineral Exploration, and Billiton. Headed by Corrientes, it will focus work on four main targets within these systems—the Panantza, the San Carlos, the Sutzu, and the Warintza areas. Channel sampling at Warintza yielded 1.2% to 1.3% copper, and high-grade chalcocite occurs at the surface. This apparent chalcocite blanket lies within an approximately 1.5- by 3-km copper-rich soil anomaly. The San Carlos target is potentially a surface oxide copper resource. Billiton's 5,900-m preliminary drilling led to an estimate of more than 1,000 million metric tons (Mt) of low-grade primary copper mineralization (0.4% copper) with 400 Mt at 0.7% copper in the inferred resource category. Panantza, which was initially tested by scout holes that totaled 2,900 m, also shows good surface oxide potential as demonstrated by two holes that yielded 1.3% and 1.15% copper (in oxide ore). Sutzu consists of a large soil copper anomaly with porphyry-type alteration. Corrientes Resources will continue exploration on the four mineralized areas during 2001 (Puig, 2000).

Cía. Minera Gribipe continued exploration for gold and base metals at its prospects in southeastern Ecuador. The company reported that in the Nambija district free gold has been recovered with values that range between 2 and 150 g/t gold. Followup exploration was planned for 2001 (Puig, 2000).

Zamora Gold Corp. announced plans to expand the capacity production of the Campanillas mill in the Nambija District. The plant capacity will be increased from 130 metric tons per day (t/d) to 750 t/d. In 2000, the flotation/leach mill treated ore with an average grade of 5.4 g/t and metallurgical recovery of 92%. Zamora Gold also announced that it experienced a loss of \$846,000 for the year ended December 31, 2000, compared with that of \$688,000 in 1999. After having consolidated its operation in the Campanillas-Nambija gold belt region of Ecuador in 1999, Zamora Gold had optimistic expectations for 2000. Several negative events, however, impaired the company's performance during the year and limited gold production to 30.5 kg. Zamora Gold controlled more than 35,000 hectares in the highly prospective Campanilla-Nambija gold belt region of Ecuador. In 2000, exploration efforts were focused on increasing gold reserves in the Campanillas and Nambija 1 concessions. In the longer term, the company planned to pursue the porphyry copper potential of the Mina Real concessions south of Nambija (Zamora Gold Corp., April 25, [2001], Zamora Gold Corp. plans to expand production, press release, accessed April 26, 2001, at URL [http:// biz.yahoo.com/prnews/000425/co_Zamora_1.html](http://biz.yahoo.com/prnews/000425/co_Zamora_1.html)).

Four cement companies, which shared some 3.2 Mt of clinker production capacity between them, operated in Ecuador. La Cemento Nacional had around 2.3 metric tons per year of capacity installed in its Cerro Blanco and San Eduardo works. Holderbank Group sold 1.8 Mt of cement in 1998 and may have reached close to 2 Mt of sales in 2000. Cementos Selva Alegre in Perugachi Otavalo operated 0.42 Mt/yr of clinker capacity. Empresas Industrias Guapan added 35 t to the country's production base. Finally, Empresa de Cemento Chimborazo operated a 29 metric-ton-per-year plant in San Juan Chico. This plant, which was essentially state-controlled, was put forward for privatization in mid-1999 (International Cement Review, 2000).

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Major Sources of Information

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Ecuador Chamber of Mining
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Quito, Ecuador
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Fax: (593-2) 462-939

Major Publications

Banco Central del Ecuador-Division Tecnica; Boletin Anuario.
U.S. Embassy, Quito, Ecuador: Country Commercial Guide,
annual.

TABLE 1
ECUADOR: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity		1996	1997	1998 e/	1999	2000
METALS						
Cadmium, mine output, Cd content e/	kilograms	200	200	200	200	200
Copper, mine output, Cu content e/		100	100	100	100	100
Gold, mine output, Au content	kilograms	7,208	3,070	3,500	2,026	2,823
Iron and steel:						
Steel, crude		20,477	43,700	45,784 3/	53,000	50,000 e/
Semimanufactures		20,477	43,700	45,784 3/	53,000	50,000 e/
Lead concentrate, Pb content e/		200	200	200	200	200
Silver, mine output, Ag content		1,325	2,135	2,000	2,000 e/	2,000 e/
Zinc, mine output, Zn content e/		100	100	100	100	100
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand tons	3,028	2,900	2,600 r/ 3/	2,300 r/	2,800 e/
Clays:						
Bentonite		431,758	205,445	200,000	-- 3/	41 3/
Common:						
For cement e/	thousand tons	2,000	2,000	2,000	2,000	2,000
Other		835,867	485,234	450,000	450,000	450,000 e/
Kaolin		86,541	7,345	7,000	20,652 3/	11,022 3/
Feldspar		10,321	60,328	60,000	33,142 3/	47,041 3/
Gypsum, crude		2,038	1,510	1,500	1,456 3/	1,042 3/
Sand:						
Silica (glass sand)		24,070	43,240	40,000	21,978 3/	27,522 3/
Ferruginous e/		10,000	10,000	10,000	9,950	9,950
Stone, sand and gravel:						
Limestone (for cement manufacture)	thousand tons	3,491	4,261	4,200	2,865 3/	3,147 3/
Marble		17,225	1,089	1,000	2,508 3/	1,679 3/
Pozzolan e/		88,000	85,000	80,000	70,000	80,000
Pumice		231,875	368,269	320,000	275,274 3/	275,879 3/
Sand and gravel	thousand tons	1,325	2,135	2,100	6,148 3/	6,489 3/
Salt (common) e/		110,000	100,000	100,000	95,000	90,000
Sulfur: e/						
Native		4,000	4,000	4,000	4,000	4,000
Byproduct:						
From petroleum		5,000	5,000	5,000	8,243 3/	11,778 3/
From natural gas		5,000	5,000	5,000	5,000	5,000
Total		14,000	14,000	14,000	17,200 r/	20,800 r/
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	187	189	190	964	1,057
Marketed e/	do.	115	118	119	113 3/	113 3/
Liquefied natural gasoline e/	thousand 42-gallon barrels	3,290	1,830	1,830	2,014 3/	2,818 3/
Petroleum:						
Crude	do.	144,540	141,620	136,875 r/ 3/	136,291	146,180
Refinery products:						
Liquefied petroleum gas	do.	3,040	2,555	3,000	3,000 r/	2,600 3/
Gasoline	do.	10,789	10,950	10,800	9,783 r/	9,272 3/
Jet fuel	do.	1,690	1,460	1,700	1,554 r/	1,976 3/
Kerosene	do.	730	365	720	716 3/	575 3/
Distillate fuel oil	do.	12,700	9,490	10,700 r/ 3/	8,361 3/	12,161 3/
Residual fuel oil	do.	22,239	19,710	20,300 r/ 3/	20,833 3/	16,327 3/
Unspecified	do.	8,369	8,030	8,430	7,856 3/	9,173 3/
Total	do.	59,557	52,560	55,700	52,103 r/	52,084 3/

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

1/ Includes data available through August 2001.

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

3/ Reported figure.