



Home > Country Analysis Briefs > [Ecuador Country Analysis Brief](#)

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February 2005

[Background](#) | [Oil](#) | [Natural Gas](#) | [Electricity](#) | [Environment](#) | [Profile](#) | [Links](#)

Ecuador

Ecuador is one of Latin America's largest crude oil producers. The country's oil exports have increased significantly in the past few years following the construction of a second crude oil pipeline.

Note: Information contained in this report is the best available as of February 2005 and can change.



BACKGROUND

Ecuador has a small economy, with a 2004 gross domestic product (GDP) of \$30 billion. Ecuador benefited from high oil prices in 2004, as its economy experienced a real GDP growth rate of 6.2%. The oil industry dominates the Ecuadorian economy, accounting for 40% of export earnings and one-third of all tax revenues; other important export industries include bananas and cut flowers. Inflation, once a serious problem for the Ecuadorian economy, has declined from an annual rate of 96.1% in 2000 to 2.7% in 2004. This reduction occurred principally because the Ecuadorian government replaced its own currency, the sucre, with the U.S. dollar in 2000. While unable to formulate its own monetary policy, Ecuador benefited from the low inflation of the dollar.

Since its economic troubles in the late 1990s, when it defaulted on some of its sovereign debt, Ecuador has received financial assistance from the International Monetary Fund (IMF). This assistance has helped Ecuador deal with structural deficiencies in its public finances. However, in exchange for this economic assistance, Ecuador has had to implement many IMF-sponsored reforms, such as reductions in social programs and liberalization of domestic energy prices. President Gutierrez, elected in 2003, has strongly pushed these reforms, costing him some popularity amongst Ecuador's rural poor. The main opposition party, which controls the Ecuadorian Congress, tried to impeach Gutierrez in late 2004, coming only a few votes short. Gutierrez has also fought a long-running political battle with Ecuador's court system, which has accused him of corruption. He dissolved Ecuador's Supreme Court in late 2004 and has called a

constitutional convention for 2005 to attempt reforms of the country's core political institutions.

OIL

Ecuador is the fifth-largest producer of crude oil in South America. In 2004, the country produced 534,800 barrels per day (bbl/d) of total oil liquids, of which 528,200 bbl/d was crude oil. Ecuador also consumed 144,000 bbl/d of oil in 2004. According to *Oil and Gas Journal*, Ecuador held proven oil reserves of 4.6 billion barrels in 2005, the third-largest in South America.

Ecuador is a significant oil exporter, mostly to the United States. Ecuador sends over 50% of its oil exports to the U.S., the remainder split between Latin America and Asia. During the first eleven months of 2004, Ecuador exported 226,000 bbl/d of crude oil to the United States, some 2.3% of U.S. total oil imports. Ecuador is the second-largest single source of crude oil imports from South America, after Venezuela.

Sector Organization

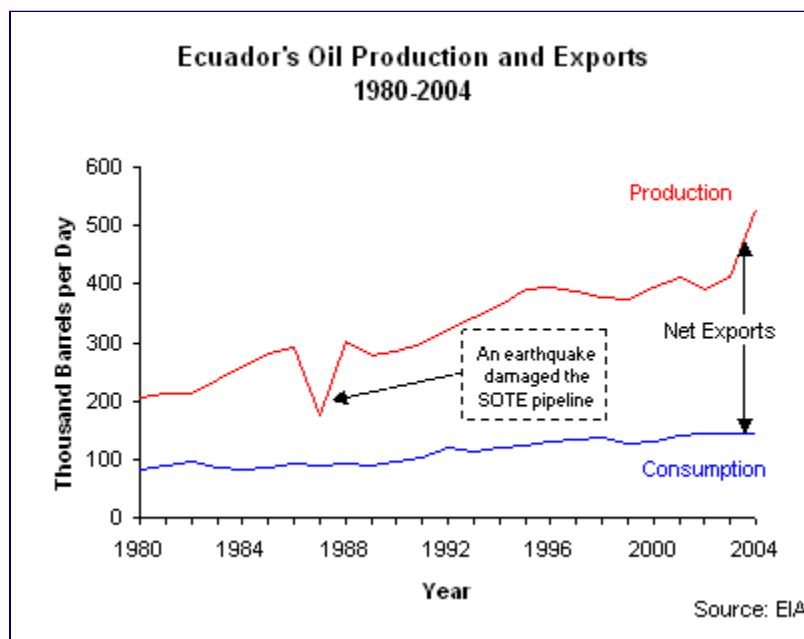
Petroecuador, owned by the Ecuadorian government, dominates oil production in the country. The company controlled about 37% of Ecuador's total oil production during 2004. The most important private oil companies are foreign-owned, with the largest being Occidental, EnCana, and Repsol YPF. However, EnCana announced in 2004 that it would divest all of its holdings in the country, with Indian, Chinese, and Japanese companies rumored as interested in buying those assets. While overall oil production in Ecuador has increased in recent years, Petroecuador's output levels have actually declined, raising the relative importance of private oil companies. President Gutierrez has tried to reform the oil sector to attract more private investment, including a re-organization of Petroecuador, and private companies have begun to operate many Petroecuador-owned fields under service contracts. Many of the most controversial reforms have met with stiff resistance from opposition politicians and labor unions. In 2004, the Ecuadorian Congress vetoed Gutierrez's new hydrocarbons proposal that would have implemented these reforms.

Exploration and Production

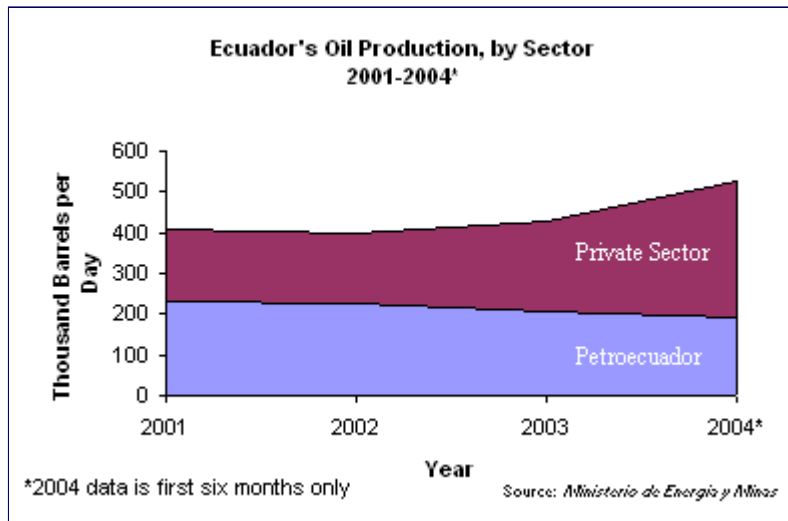
Overview

Ecuador's most productive oil fields are in the northeast corner of the country. The largest oil field is Occidental's Eden Yuturi, which produced over 75,500 bbl/d during the first half of 2004. Other major oil fields include Shushufindi (Petroecuador), Dorine (EnCana), and Sacha (Petroecuador). Ecuador produces two varieties of crude oil: Oriente and Napo. Napo is a heavy, sour crude, with a 19.2° API and 2% sulfur content, while Oriente is a medium-heavy, medium-sour crude, with a 28.8° API and 1% sulfur content.

The Ecuadorian government announced it would auction the Ishpingo-Tapocochoa-Tiputini (ITT) block in 2005. The IIT block, located in Ecuador's Amazon region, contains an estimated 900 million barrels of proven reserves, with potential recoverable reserves possibly as high as 1.3



billion barrels. Analysts predict that the block could produce at least 190,000 bbl/d. The ITT block reportedly contains a variety of crude even heavier than Napo, so any oil producer would need to blend the crude with lighter hydrocarbons before shipping it via Ecuador's pipeline network.



Factors Affecting Oil Production

Several exceptional factors affect oil production in Ecuador. First, many private companies have clashed with the government over contract and tax issues, especially dealing with rebates of the value-added tax (VAT) paid by oil exporters. Both Occidental Petroleum and EnCana have taken legal action against the Ecuadorian government over VAT rebates. In order to avoid future legal conflicts, the Ecuadorian Congress amended tax laws in 2004 to specifically exempt oil exporters from VAT rebates. While the tax

reform mitigated potential clashes with foreign oil producers, it also reduces the financial incentives for foreign investment. Second, there has been significant opposition to oil development by indigenous groups. These groups have repeatedly obstructed exploration and production activities in Ecuador's eastern region. The IIT block, which sits deep in the Amazon region, will likely face particularly fierce resistance from these groups. Indigenous activists have also brought a lawsuit against ChevronTexaco over Texaco's former oil operations in Ecuador. The suit is still in litigation, but a resolution of the case in favor of indigenous activists could introduce additional risk for foreign oil operators.

Downstream Activities

Ecuador has three oil refineries, with a combined capacity of 176,000 bbl/d. The largest refinery in Ecuador is Esmeraldas (100,000 bbl/d), located on the Pacific coast. Ecuador has one of South America's largest markets for liquefied petroleum gas (LPG), used extensively for residential heating and cooking. Domestic production, though, only meets one-quarter of LPG demand. Ecuador is a net importer of refined oil products, and the government has made it a priority to increase domestic refining capacity by improving the efficiency of existing plants and building a fourth refinery with a planned capacity of 200,000 bbl/d.

Pipelines

Ecuador has two major oil pipelines. The first is the *Sistema Oleducto Trans-Ecuatoriano (SOTE)*, built in the early 1970s. The 310-mile, 400,000-bbl/d SOTE runs from Lago Agrio to the Balao oil terminal on the Pacific coast. SOTE often suffers from natural disasters that can severely disrupt Ecuador's oil production. In March 2004, a landside halted oil shipments through SOTE, prompting Petroecuador to declare *force majeure* on its export contracts. In 1987, an earthquake destroyed a large section of SOTE, reducing Ecuador's oil production for that year by over 50%.

The second oil pipeline is the *Oleducto de Crudos Pesados (OCP)*. The 300-mile, 450,000-bbl/d OCP mostly parallels the route of the SOTE. The OCP began operations in September 2003, and its completion immediately doubled Ecuador's oil pipeline capacity. The completion of the OCP pipeline has been the most important reason why Ecuador's oil production has increased sharply in the past two years, as private companies are no longer constrained by the capacity limits of the

SOTE. EnCana leads a consortium of private oil companies that operates the OCP.

Ecuador utilizes one international pipeline, the TransAndinio. The pipeline connects Ecuador's oil fields with the Colombian port of Tumaco, carrying about 50,000 bbl/d of Ecuadorian oil.

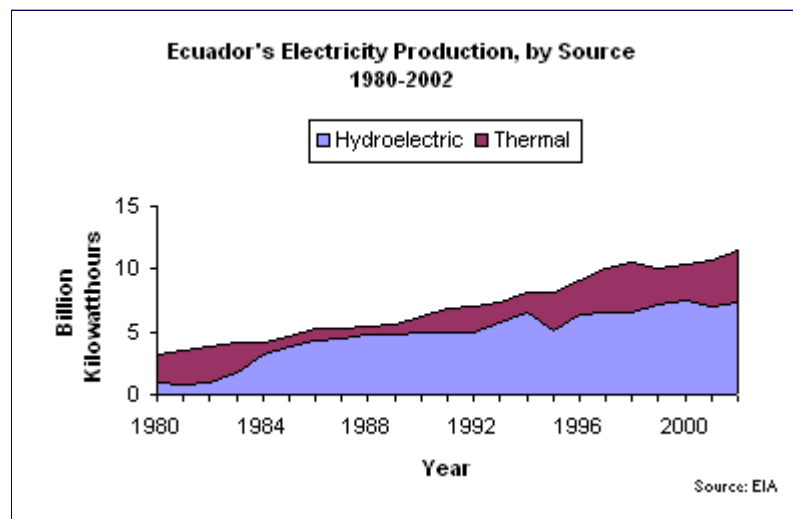
NATURAL GAS

Ecuador has relatively small proven natural gas reserves, with only some 345 billion cubic feet (Bcf) according to *Oil and Gas Journal*. There is negligible domestic demand and support infrastructure for natural gas. The single, large-scale natural gas project in Ecuador is the Amistad field, located in the Gulf of Guayaquil. Noble Energy, the operator of the field, produced 30 million cubic feet per day (Mmcf/d). All of Amistad's natural gas production flowed to Noble's Machala facility, a 130-megawatt (MW), onshore, gas-fired power plant that supplies electricity to the Guayaquil region. Ecuador's oil industry also flares a significant amount of natural gas from its operations, and there are plans to capture that gas for domestic use.

Ecuador signed preliminary agreements in late 2004 to import natural gas from Peru. Initially, Peruvian gas producer BPZ would supply between 13 and 97 Mmcf/d through a new pipeline linking northern Peru and southwestern Ecuador. The natural gas will fuel several new power plants near Guayaquil.

ELECTRICITY

Ecuador produced 11.5 billion kilowatthours (Bkwh) of electricity and consumed 10.8 Bkwh in 2002. About 63% of Ecuador's electricity production comes from hydroelectricity, with the balance supplied by conventional thermal plants. While Ecuador has a net electricity surplus, it often faces supply shortages during the October-March dry season, when hydroelectricity output declines. To make up for these shortfalls, Ecuador must import electricity from Colombia. There are plans to build new electricity connections to Peru, which would further allow Ecuador to alleviate its seasonal power shortages and open additional markets for electricity exports.



Sector Organization

In 1999, the Ecuadorian government broke apart INECEL, the former, state-owned electricity monopoly that had controlled the generation, transmission, and distribution sectors. Six state-owned companies now dominate the generation sector, though there are important private producers supplying customers in the urban areas surrounding Quito and Guayaquil. A single, state-owned company, Transelectric, controls the transmission system. In the distribution sector, one municipal-owned and nineteen state-owned companies operate in the country. Most of these distributors are inefficient and suffer from sizable debt loads, which contributes to Ecuador's electricity shortages during the dry season. The Ecuadorian government has repeatedly tried to privatize the distribution sector, though each attempt has failed due to resistance from Congress, protests by labor unions and rural activists, and lack of interest from private investors.

Hydroelectricity

The 1,100-MW Paute plant, located in eastern Ecuador, represents over 60% of the country's hydroelectric generating capacity. In 2003, the state-owned operator of the Paute plant, Hidropaute, won a tender to build the Mazar hydroelectric dam several miles upriver from Paute. When completed in 2007, the 180-MW Mazar plant will act as a secondary holding reservoir for Paute, reducing sediment buildup and increasing production capacity during the dry season. Another large hydroelectric facility is the planned San Francisco project, downstream from the existing Agoyan plant on the Pastaza River. The San Francisco project, owned by Hidropaute, is a run-of-river style plant, diverting water through a 7.5-mile, underground channel. Brazilian engineering firm Odebrecht expects to finish the San Francisco plant by 2007.

Conventional Thermal

Most of Ecuador's conventional thermal generating capacity is diesel-fired, supplied by imports and domestic refineries. Many of Ecuador's diesel power plants are old and inefficient, and often cannot meet electricity demand during the dry season. There have been efforts to increase gas-fired capacity in the country, such as the Machala plant and natural gas import deals with Peru (see above); however, financial problems faced by the operators of conventional thermal plants continues to deter private investment.

Sources for this report include: Andean Community; Business News Americas; China Energy Report Weekly; CIA World Factbook; Dow Jones News Wire Service; Economist; Ecuador Ministry of Energy and Mines; EFE News Service; EnCana; Financial Times; Global Power Report; Economist Intelligence Unit (EIU) ViewsWire; Eni; Financial Times; Global Insight; International Energy Agency; International Market Insight Reports; International Monetary Fund; Latin American Energy Alert; Latin American Power Watch; Occidental Petroleum; Odebrecht; Oil and Gas Journal; Oil Daily; Perenco; Petrobras Energía; Petroecuador; Petroleum Economist; Petroleum Intelligence Weekly; Platt's Oilgram News; Repsol-YPF; Reuters; Security and Exchanges Commission; Stratfor; U.S. Energy Information Administration; World Bank; World Markets Analysis.

COUNTRY OVERVIEW

President: Lucio Gutierrez (since January 2003)

Independence: May 24, 1822 (from Spain)

Population (2004E): 13.2 million

Location/Size: Northwestern South America, 105,037 sq. mi., slightly smaller than Nevada

Major Cities: Quito (capital), Guayaquil, Cuenca, Machala, Portoviejo, Manta, Ambato, Santo Domingo, Esmeraldas

Languages: Spanish (official), Amerindian languages (Quechua, etc.)

Ethnic Groups: Mestizo (mixed Amerindian and white, 65%), Amerindian (25%), Spanish and others (7%), Black (3%)

Religion: Roman Catholic (95%)

ECONOMIC OVERVIEW

Minister of Economy and Finance: Mauricio Yopez

Currency: U.S. Dollar

Gross Domestic Product (2004E): \$30 billion

Real GDP Growth Rate (2004E): 6.2% **(2005F):** 3.2%

Inflation Rate (CPI, 2004E): 2.7% **(2005F):** 2.8%

Unemployment Rate (2004E): 11.1%

Merchandise Exports (2004E): \$7.5 billion
Merchandise Imports (2004E): \$7.8 billion
Trade Balance Deficit (2004E): -\$244 million (0.8% of GDP)
Major Trading Partners: United States, Colombia, Venezuela, Chile, Brazil, Japan, Germany
Major Export Products: Petroleum, bananas, cut flowers, shrimp
Major Import Products: Consumer goods, industrial raw materials, capital goods
Total External Debt (2004E): \$11.2 billion

ENERGY OVERVIEW

Minister of Energy and Mines: Eduardo Lopez
Proven Oil Reserves (1/1/05E): 4.6 billion barrels
Oil Production (2004E): 534,800 barrels per day (bbl/d), of which 528,200 bbl/d was crude oil
Oil Consumption (2004E): 144,000 bbl/d
Net Oil Exports (2004E): 390,800 bbl/d
Crude Oil Refining Capacity (1/1/05E): 176,000 bbl/d
Natural Gas Reserves (1/1/05E): 345 billion cubic feet (Bcf)
Natural Gas Production (2002E): 3.5 Bcf
Natural Gas Consumption (2002E): 3.5 Bcf
Recoverable Coal Reserves (2002E): 26 million short tons
Coal Production and Consumption (2002E): None
Electric Generation Installed Capacity (2002E): 3.3 gigawatts (54% hydroelectricity and 46% conventional thermal)
Electricity Generation (2002E): 11.5 billion kilowatthours (Bkwh) (63% hydroelectricity and 37% conventional thermal)
Electricity Consumption (2002E): 10.8 Bkwh

ENVIRONMENTAL OVERVIEW

Minister of Environment: Fabian Valdiviero
Total Energy Consumption (2002E): 0.37 quadrillion Btu (0.09% of world total energy consumption)
Energy-Related Carbon Dioxide Emissions (2002E): 21.69 million metric tons of carbon dioxide (0.09% of world carbon dioxide emissions)
Per Capita Energy Consumption (2002E): 28.53 million Btu (vs. U.S. value of 339.09 million Btu)
Per Capita Carbon Dioxide Emissions (2002E): 1.69 metric tons of carbon dioxide (vs. U.S. value of 19.97 metric tons of carbon dioxide)
Energy Intensity (2002E): 9,223 Btu per \$1995 (vs. U.S. value of 10,618 Btu per \$1995)**
Carbon Dioxide Intensity (2002E): 0.55 metric tons of carbon dioxide per thousand \$1995 (vs. U.S. value of 0.63 metric tons per thousand \$1995)**
Fuel Share of Energy Consumption (2002E): Oil (78%), Hydroelectricity (20%), Natural Gas (1%), Coal (0.0%)
Fuel Share of Carbon Dioxide Emissions (2002E): Oil (91%), Natural Gas (9%), Coal (0%)
Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified February 23rd, 1993). Ratified the Kyoto Protocol on January 13th, 2000).
Major Environmental Issues: Deforestation; soil erosion; desertification; wastes in ecologically sensitive areas of the Amazon Basin and Galapagos Islands.
Major International Environmental Agreements: A party to the Antarctic-Environmental Protocol, Antarctic Treaty, Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon dioxide emissions are also based on IEA data.

**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

OIL AND GAS INDUSTRIES

Organization: Petroecuador serves as the holding company for all state-owned petroleum operations

Foreign Oil Company Involvement: Occidental Petroleum, EnCana, Repsol YPF, Agip, Perenco, Sipec, Petrobell

Major Oil Fields: Eden Yuturi, Shushufindi, Sacha, Dorine

Major Refineries (capacity, bbl/d, 1/1/05E): Esmeraldas (110,000), La Libertad (46,000), Shushufindi (20,000)

LINKS

For more information from EIA on Ecuador, please see:

[EIA - Historical Energy Data on Ecuador](#)

Links to other U.S. Government sites:

[CIA World Factbook - Ecuador](#)

[U.S. Department of Energy's Office of Fossil Energy's International section - Ecuador](#)

[U.S. Embassy in Quito, Ecuador](#)

[U.S. State Department Background Notes on Ecuador](#)

[U.S. State Department's Consular Information Sheet - Ecuador](#)

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Associations and Institutions

[Andean Community \(Energy Integration\)](#)

[ARPEL, Regional Association of Oil and Natural Gas Companies in Latin America and the Caribbean](#)

[The Latin American Integration Association \(ALADI\)](#)

Electric Generation, Distribution and Transmission

[Compania Nacional Transmision Electrica \(Transelectric S.A.\)](#)

[Consejo Nacional de Electricidad \(CONELEC\)](#)

[Elecaustro](#)

[Emelnorte S.A.](#)

[Empresa Electrica Quito S.A.](#)

[Empresa Elecutectrica Regional del Sur S.A.](#)

[Hidropaute S.A.](#)

[Noble Energy Incorporated](#)

[Odebrecht](#)

[Termopichincha S.A.](#)

[The Regional Electric Integration Commission of Latin America \(CIER\)](#)

General Information

[Information on Ecuador from the Latin America Network Information Center \(LANIC\)](#)

[International Monetary Fund \(IMF\) on Ecuador](#)

[International Energy Agency \(IEA\) on Ecuador](#)

[International Newspapers Online: Ecuador](#)

[LatinWorld's section on Ecuador](#)

[World Bank on Ecuador](#)

Government

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[Ministry of Energy and Mines](#)

Oil Companies

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[China National Petroleum Corporation](#)

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