October 2003

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Bolivia

With the second-largest natural gas reserves in South America, Bolivia has the potential to become a natural gas hub for the Southern Cone, as well as a major exporter of liquefied natural gas to Mexico and the United States.

Note: Information contained in this report is the best available as of October 2003 and can change.

BACKGROUND

Bolivia, already one of the poorest countries in South America, has been enduring a period of sub-par economic growth. Between 1999 and 2002, Bolivia's real economic growth averaged 1.8%. That is a marked contrast to the previous nine years, when the country boasted an averaged economic growth rate of 4.4%. Low prices for Bolivia's commodity exports (e.g., zinc), slow economic growth in the United States, one of the country's main trading partners, as well as regional economic difficulties in Brazil and Argentina have contributed to Bolivia's continued economic sluggishness. In 2002, the Bolivian economy rebounded slightly, growing 2.8%. Exports were up by 1.4% and foreign direct investment, of which 46% was directed to oil and natural gas, also increased 2% over 2001. Although Bolivia's economy grew in 2002, analysts have forecasted that it will most likely contract in 2003.

After nearly 15 months in office, Bolivian President Gonzalo Sanchez de Lozada resigned on October 17, 2003 after anti-government protests forced him from power. On the same day, the Bolivian Congress designated Vice President Carlos Mesa to take over the presidency and to serve out Sanchez de Lozada's term until 2007.

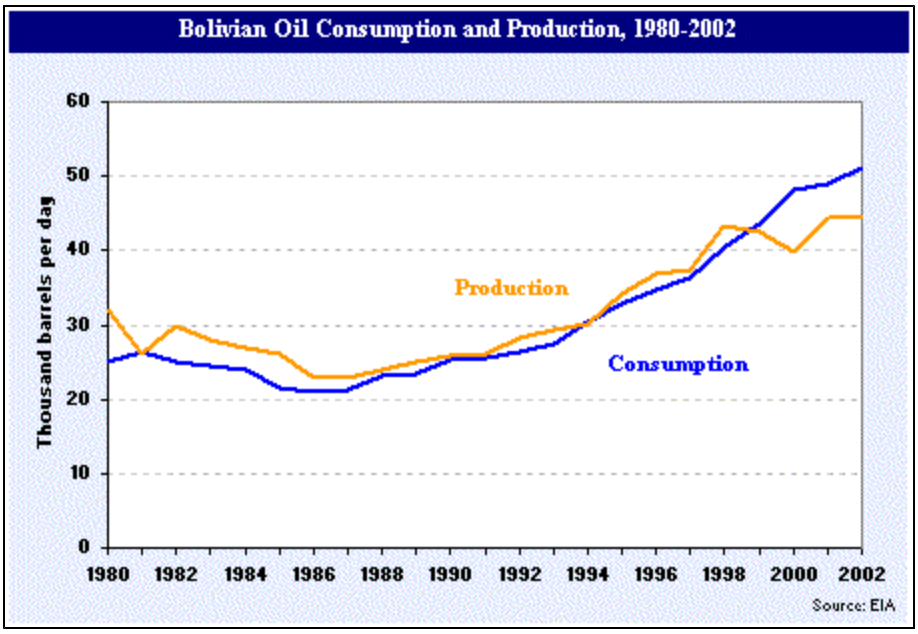
Since coming to power in August 2002, Sanchez de Lozada had been trying to reinvigorate the economy through public job creation programs, promotion of free trade agreements, energy exports and market liberalization. These policies, along with a U.S.- backed coca eradication, were, however, unpopular with a majority of Bolivia's population. Many peasant farmers, for instance, blame the drug eradication policy for deepening their poverty.

Popular revolt against Sanchez de Lozada began in February 2003 when riots broke out in La Paz,

after the government attempted to introduce a new income tax to help reduce the government's deficit from 8.5% of the budget to the 5.5% required by the International Monetary Fund. The revolt, which ultimately forced Sanchez de Lozada out of power, began September 15, 2003, when indigenous and workers groups began protests, strikes and roadblocks against the government's plan to export natural gas to the United States and Mexico via Chile. The opposition to the project has been particularly strong because many Bolivians are against exporting natural gas through a Chilean port. Bolivia lost access to the ocean in 1883, after a war with Chile. The demonstrations against the natural gas project subsequently spiraled into widespread protests against the government's free-market policies and its failure to alleviate poverty.

Bolivia's main hope for future economic growth will likely hinge on increasing natural gas exports and becoming a major energy hub for South America's Southern Cone in coming years. Possible markets for Bolivian natural gas include Brazil, Mexico, Argentina, and the United States. The decision whether to export liquefied natural gas (LNG) from a port in Chile or from Peru remains, however, politically sensitive, as was seen with the ouster of Sanchez de Lozada. Newly appointed President Mesa has already indicated that he will hold a referendum on plans to export natural gas. During the protests, many called for the nationalization of the country's oil and natural gas reserves.

OIL



Bolivia's total proven oil reserves stood at 440.5 million barrels as of January 2003. In the first ten months 2003, Bolivia consumed an estimated 53,000 barrels per day (bbl/d), while producing 40,700 bbl/d. Although Bolivia meets most its domestic oil consumption needs from indigenous production, the country imported nearly half of its diesel requirements between 1997-2002, according to Bolivia's Ministry of Mines and Hydrocarbons. In order to lessen the country's dependence on diesel imports, the Bolivian government is currently supporting the potential construction of two gas-to-liquids (GTL) plants , which would produce diesel from natural gas. Almost all crude oil produced in Bolivia is for domestic consumption, except for a small amount that is exported to Chile through the Sica-Arica pipeline. In 2002, the country exported an estimated 6,024 bbl/d of crude oil, according to data released by Bolivia's Central Bank.

Industry Organization

The privatization of Bolivia's state-owned oil company, *Yacimientos Petroliferos Fiscales Bolivianos* (YPFB), began in 1994, with the passage of the Capitalization Law. YPFB was divided into two upstream units, a transport company, a refining company, and several service companies. The two upstream units, *Empresa Petrolera Andina* and *Empresa Petrolera Chaco*, were privatized in 1997. Amoco, now part of British Petroleum, and Argentina's Bridas acquired a 50% stake in Chaco through their joint-ownership of Pan American Energy. Bolivian pension funds and company

employees acquired the remaining shares. A consortium, consisting of YPF (now Repsol-YPF), Pérez Companc (Pecom), and Pluspetrol, acquired a 50% stake in Andino. In February 2001, through an asset swap agreement, Repsol-YPF acquired Pecom's 20.25% and Pluspetrol's 9.5% stake, raising its stake in Andina to 50%. As of January 2003, Andina owned 25.7% of Bolivia's probable and proven natural gas reserves.

Also, in 1997, TR Holdings, a consortium of Enron and Shell Gas, acquired a 50% stake in the oil and natural gas transport company, Transredes. TR Holdings has the management control of the company while former company employees and private pension funds control the remaining 50%.

In 1998, Petrobrás and Pérez Companc, under the joint venture of *Empresa Boliviana de Refinación*, acquired YPFB's two larger refineries, Gualberto Villarroel and Guillermo Elder Bell, with a combined crude oil capacity of 60,000 bbl/d. In January 2001, YPFB transferred the ownership of its 3,000-bbl/d Carlos Montenegro refinery (Sucre) to the plant's 130 workers, who subsequently created the private company Refisur.

Oil storage facilities, some domestic pipelines, and airport jet fuel terminals also have been sold, leaving only retail gasoline and diesel stations to be privatized. Dates for this final step have not been announced. In April 2002, the government abandoned an attempt to sell off YPFB's natural gas distribution networks, as no bids were submitted.

Bolivia's government also plans to send a new law to Congress that would allow YPFB to participate once again in the country's natural gas sector. Currently, YPFB acts as a regulator of privatized hydrocarbon assets. The new law would allow the company to participate in natural gas development projects (e.g., Pacific LNG consortium, in which YPFB has already acquired a stake) and the government's plan to build out 236,000 natural gas connections across the country over the next five years.

In 1994, the government established a Superintendency of Hydrocarbons to regulate the oil and gas industries. Its responsibilities include implementing the relevant laws, granting concessions and licenses, and ensuring a competitive industry. Once YPFB has sold its remaining assets, the Superintendency of Hydrocarbons is expected to take on a new role as the administrator of international negotiations and contracts with foreign oil companies.

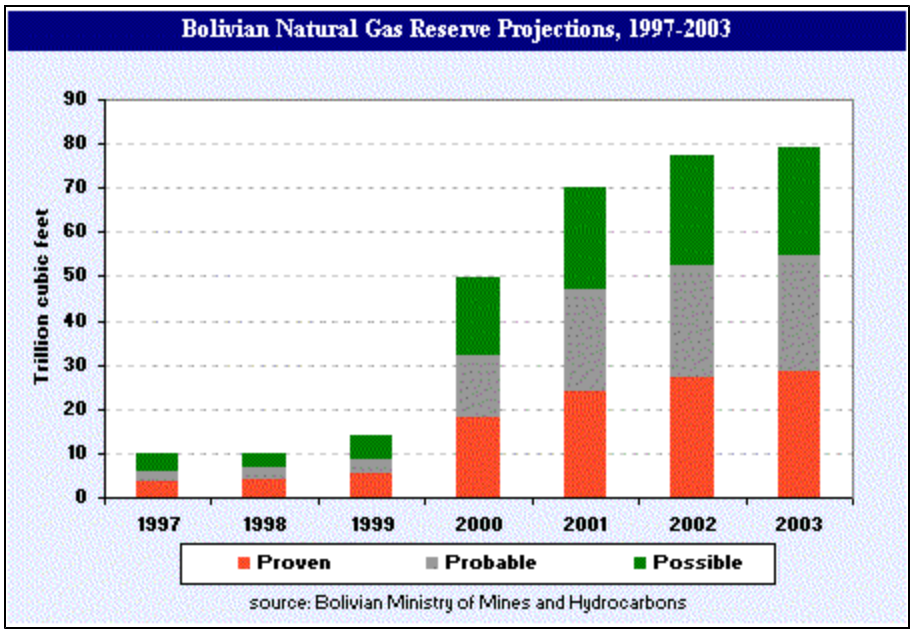
International Licensing Round

In 1997, Bolivia held its first annual oil and natural gas exploration and production (E&P) licensing round, awarding contracts for 13 blocks (10 exploration and three production). Five blocks (three exploration and two production) were awarded in 1998, followed by only one exploration in 1999 and one production in 2000. In 2001, Bolivia awarded four exploration blocks (Río Hondo, Aquio, Ingre, and Vuelta Grande Norte). In 2002, the Bolivian government abandoned an exploration block concession round because no bids were presented.

On August 25, 2003, Petrobrás was the only bidder in Bolivia's latest licensing round, acquiring the Irenda block in the south of the Santa Cruz department. The two other blocks, Sipotindi and Almendro, failed to draw any interest. According to some analysts, interest in investing in Bolivia will remain limited until the government decides where to build an LNG export facility. Some have also criticized the government for not focusing on developing the country's oil reserves, as production is expected to decrease without additional investment. The next licensing round is expected to take place in March 2004.

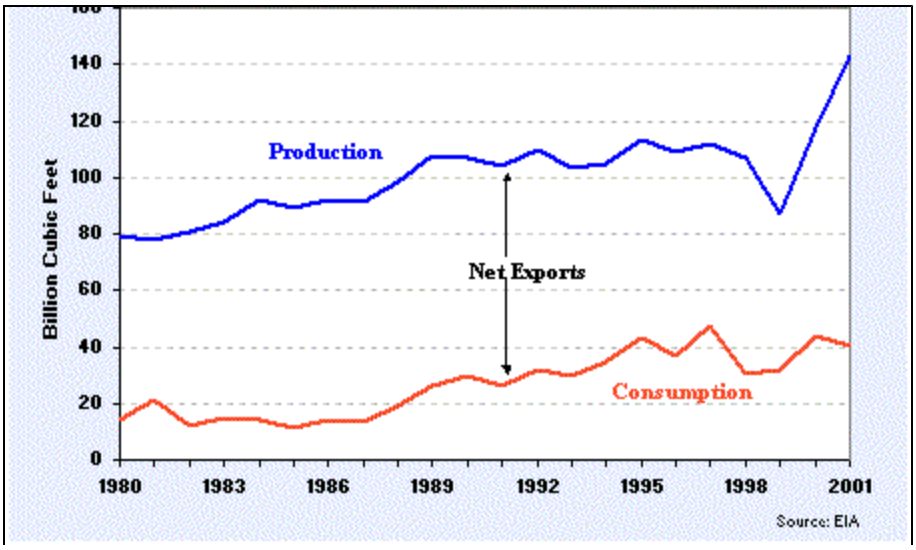
NATURAL GAS

According to the *Oil and Gas Journal*, Bolivia's proven natural gas reserves were 24 trillion cubic feet (Tcf), as of January 2003. A study by U.S.-based consulting firm DeGolyer & MacNaughton in April 2003, however, certified Bolivia's natural gas reserves at 54.9 Tcf, giving Bolivia the second-largest reserves in South America after Venezuela. The graph to the right reflects the large increases in reserve estimates since 1997.



Aggressive exploration efforts in recent years have resulted in many large discoveries, with several fields holding over 10 Tcf, according to estimates that combine probable and possible valuations. These fields, which are located in the Tarija department, in the south of the country, include: San Alberto (11.9 Tcf); San Antonio (8.6 Tcf); Itau (10.4); and Margarita (13.4 Tcf). As a result, nearly 90% of the country's reserves are located in the Tarija department. With these recent discoveries, supply has outstripped regional demand, and the government has been looking for other ways to export natural gas, namely, new regional export markets and LNG to the United States and Mexico.

Bolivia has been producing natural gas since the 1960s. The domestic natural gas market in Bolivia is small but growing in importance. In 1990, natural gas accounted for only 3% of the country's primary energy while it represented nearly 26% in 2001. The government's recent efforts to promote domestic use will most likely increase consumption of natural gas in the future. Example of these projects include supporting construction of two gas-to-liquids plants, installation of 230,000 residential natural gas connections by 2007 and conversion of 80,000 vehicles to use natural gas will most likely increase consumption in the future. In 2001, Bolivia produced an estimated 143 billion cubic feet (Bcf) of natural gas, a 22% increase over 2000 production.



Despite growing domestic consumption, export markets will remain the key destination for Bolivian natural gas. Bolivia began exporting natural gas to Argentina in 1972, under a 20-year export contract. After the contract expired in 1992, the two countries signed several extensions until 1999, when Bolivia began exporting natural gas to Brazil. After a three year pause, small volumes began

to flow again to Argentina in 2002. There also have been other regional plans to link Bolivia's natural gas reserves to Paraguay, as well as to construct a larger regional pipeline project called Gas Integration (Gasin).

Chilean gas transporter and power generator, GasAtacama, had also considered importing natural gas from Bolivia but decided to put those plans on hold last January. The company indicated that it would not proceed with the project until the Bolivian government decides on a port for LNG exports.

Gas to Liquids Plant
In order to increase the domestic use of natural gas, the Bolivian government has been supporting the development of gas-to-liquids (GTL) plants. In August 2003, a consortium, comprising of Ivanhoe Energy, Syntroleum Corporation and Repsol-YPF, began putting together a feasibility study on developing a 90,000-bbl/d gas-to-liquids project in Santa Cruz. The study will examine whether it would be profitable to convert natural gas into diesel and naphtha to sell to Paraguay, Peru, Brazil, as well as Mexico and the United States. The current project would cost an estimated $3 billion.

GTL Bolivia and U.S.-based Rentech are conducting a similar project. On September 25, 2003, the two companies announced that they secured funding to go ahead with a feasibility study on a 10,000-bbl/d GTL plant. If these plants are built, they would most likely have a positive effect on Bolivia's economy by not only reducing its needs to import diesel fuel, for example, but also by helping monetize the country's large natural gas resources, which, up to now, have yet to be fully utilized, due to location, limited regional demand and political barriers.

Domestic Natural Gas Pipeline Network
Transredes controls most of the natural gas pipelines within Bolivia. The pipeline network can be divided into northern and southern systems. The northern system serves the cities of La Paz, Cochabamba, Oruro, and Santa Cruz. The southern gas system originates at Yacuiba on the Argentine border and extends approximately 276 miles north to Río Grande. This south-to-north pipeline, known as the **Yabog**, has two branches, serving the cities of Sucre, Potosí and Tarija in the southwest region of Bolivia. The southern system's importance is based on its proximity to the natural gas fields of Margarita, San Alberto and San Antonio in the Gran Chaco province, department of Tarija. Bolivian regulations require Transredes to operate all pipelines under a fixed tariff regardless of distance, a system known as postage stamp tariffs.

In April 2003, Transierra opened **Gasyrg**, a new 260-mile pipeline which runs parallel to the Yabog pipeline. Gasyrg connects the San Alberto and San Antonio fields, which are operated by Petrobrás, in partnership with Repsol-YPF and TotalFinaElf, to the Río Grande pumping station. The pipeline has an initial capacity of 388 million cubic feet per day (Mmcf/d), which is expected to rise to 600 Mmcf/d by the end of the year when a compression station is completed in Villamontes. Transierra is a consortium consisting of Petrobrás, Andina and TotalElfFina.

Cross-border Natural Gas Pipelines
The Yabog pipeline also extends to Campo Durán in Argentina and was Bolivia's only cross-border interconnection until 1999. Argentina's Pluspetrol currently exports natural gas from the company's Bolivian fields, Bermejo and Madrejones, to Argentina.

Bolivia-Brazil Pipeline (Río Grande - São Paulo - Porto Alegre)
The nearly 2,000-mile **Bolivia-Brazil** pipeline is the longest in South America. When all of its compressors are completed in 2004, it will be capable of transporting approximately 1.1 Bcf per

day. The first section of the pipeline was completed in December 1998, connecting Rio Grande, Bolivia to São Paulo, Brazil. Natural gas began flowing in July 1999. The second section, extending southward from São Paulo to Porto Alegre, was completed in April 2000.

Gas Transboliviano SA (GTB) owns and operates the 348-mile segment from Río Grande to Corumbá on the Brazilian border. Stakeholders in GTB include Transredes (51%) of which Bolivian pension funds make up 25.5%, Enron 12.75%, and Shell 12.75%, Gaspetro (9%), a subsidiary of Petrobrás, BBPP Holdings (6%) of which BG Group holds 2%, TotalElfFina 2%, and El Paso 2%, Enron (17%), and Shell (17%).

Transportadora Brasileira Gasoducto Bolivia-Brasil SA (TBG) operates the 1,620-mile Brazilian segment. Stakeholders include Gaspetro (51%), BBPP Holdings, consisting of British Gas, El Paso Energy and TotalFinaElf (9.66% each), Transredes (12%) of which Bolivian pension funds hold 6%, Shell 3% and Enron 3%, and Enron (4%) and Shell (4%).

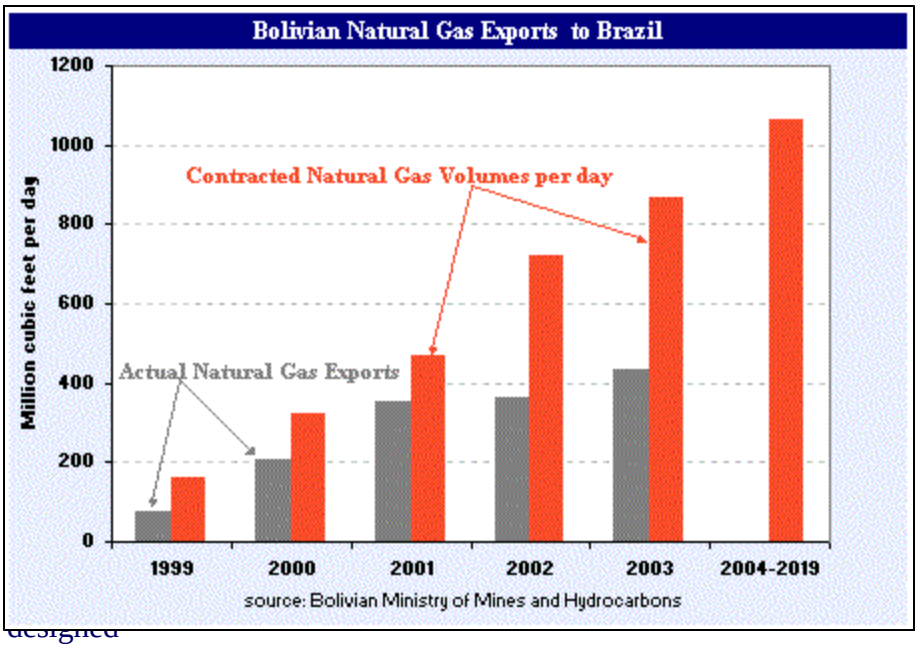
Second Bolivia-Brazil Pipeline (Río San Miguel - San Matías - Cuiabá)
A second Bolivia-Brazil pipeline came onstream in April 2002. The 391-mile pipeline starts in Río San Miguel, Bolivia, where it connects to the main Bolivia-Brazil pipeline. The pipeline then passes through San Matías and extends to Cuiabá, where the pipeline fuels a 480-MW thermal power plant. Enron and Shell developed the project. *Gas Oriented Boliviano* (GasBol) operates the 226-mile segment in Bolivia and *Gasocidente do Mato Grosso Ltda* (GasMat) operates the 175-mile segment in Brazil. The initial capacity of the pipeline is 99 Mmcf/d, with maximum capacity of 265 Mmcf/d, after the third phase of the project is completed.

Other Pipelines
The **Bolivia to Paraguay** natural gas project envisaged building a pipeline extending from southern Bolivia to the Paraguayan capital of Asunción. The project would also include building a 120-MW power plant in western Paraguay and a 750-MW plant near Asunción. Although Bolivia and Paraguay signed a protocol promoting this project in December 2002, there has been little progress towards realization of the project.

A more ambitious project was the so-called **Gas Integration** project (Gasin) which would transport natural gas from southern Bolivia through northern Argentina, where a spur would link to Asunción and eventually to Brazil. A feasibility study was set to be completed in June 2002, with operations starting in 2005. The $5 billion project, however, has yet to get off the ground, mainly to due to the lack of a viable market for natural gas.

Bolivia-Brazil Gas Supply Agreement (GSA)
Exports to Brazil began in July 1999, under a 20-year, take-or-pay contract between YPFB and Petrobrás. According the to gas supply agreement (GSA), export volumes are expected to increase incrementally until reaching the pipelines expected daily capacity of 1.1 Bcf by 2004. Since signing an agreement with YPFB in 1997, Brazil has taken only a fraction of the natural gas, to which it had agreed.

Government delegations from Bolivia and Brazil have met repeatedly over the last six months in attempt to renegotiate the contract. Brazil wants to import less and pay less for natural gas from Bolivia, suggesting a more flexible agreement. Bolivia indicated after a meeting held in May 2003 that it would not change the contract unless Brazil would guarantee that exports would increase in the future. Bolivia outlined three conditions for reducing the cost of natural gas to Brazil: 1) 10-year extension to the existing GSA; 2) Brazilian government develops policies to promote natural gas consumption; and 3) current revenues from the contract to the Bolivian treasury are maintained.



designed to expand the natural gas market in Brazil. The program proposed creating an oil, natural gas and renewable fuels department, expanding existing pipelines and commission new ones, retrofitting refineries so that they can use natural gas as feedstock for petrochemicals industry, and expanding the country's natural gas distribution network. The Brazilian government also indicated that in return for their willingness to increase consumption, it would like to see a 30% decrease in the price of natural gas. Brazilians have reportedly been paying US $1.94 per million Btu (without including transportation costs) while the Argentines have been paying $0.82 per million Btu.

New Natural Gas Discoveries in Brazil

Petrobrás' recent reassessment of natural gas reserves in Santos Basin (September 2003) could also impact the renegotiation of the GSA with Bolivia, particularly since natural gas produced in Brazil is less expensive. Petrobrás reported that natural gas reserves in the Santos Basin increased to 14.8 Tcf from an earlier assessment of 2.5 Tcf.

Following the discovery, Petrobrás reportedly has been considering potentially building an LNG gasification terminal to export natural gas to the United States. On October 10, 2003, Petrobrás and Norway's Statoil signed an agreement to expand cooperation in oil and natural gas exploration and in other activities. One area of cooperation would be Statoil's participation in a new liquefaction plant in Rio de Janeiro State to process natural gas from Brazil's Santos Basin, which would then be exported to the United States.

Liquefied Natural Gas (LNG) Plans

In July 2001, Bolivia's largest natural gas producing companies - Repsol-YPF, British Gas, and British Petroleum controlled Pan American Energy - agreed to form a liquefied natural gas (LNG) export consortium (Pacific LNG) in hopes of delivering Bolivian natural gas to the United States and Mexico. The project entails investing $5 billion to construct a pipeline and port facilities to transport natural gas from Bolivia's southern Margarita field to the Pacific coast. However, it has yet to be determined whether the terminal will be constructed in the Peruvian port city of Ilo or in the Chilean port city of Patillos. A land dispute between Bolivia and Chile has made the decision politically sensitive. A majority of Bolivians prefer a Peruvian port to a Chilean, although the former would be more expensive. Pacific LNG has stated that it would consider the Peruvian option if Peru paid the extra cost - possibly as much as $600 million - entailed in building a pipeline to Ilo.

In June 2003, Pacific LNG and Sempra Energy announced plans to sign a 20-year contract in October 2003. Pacific LNG and Sempra originally signed a memorandum of understanding on natural gas deliveries beginning in 2004 at the earliest and lasting for 20 years, which expired in October 2002. The LNG would supply Sempra's planned re-gasification plant in Mexico's Baja California State. The recent protests in Bolivia , however, have delayed any decision indefinitely, as well as forced the company to look for alternative sources of LNG.

Since much of the public remains opposed to the project's plans to build an LNG terminal in Chile, it remains unclear when and whether the project will be developed. Many analysts feel that Bolivia might lose market share if it cannot settle on a location for LNG export plant. After discovering large quantities of natural gas, Brazil has indicated that it would like to develop its resources, increasing the pressure on Bolivia to tap its huge natural gas potential or risk losing market share regionally, as well as in the United States and Mexico to competitors. Bolivia's neighbor Peru, for instance, is moving ahead with the development of the Camisea natural gas project and securing market share in North America. Companies are also looking potentially to secure deals with Indonesia or Australia to provide LNG. Finally, the political turmoil has hurt Bolivia's image as a safe place for foreign companies to invest.

ELECTRICITY

Approximately 72% of Bolivia's electric generating capacity is thermal (oil and natural gas), with the remaining 28% hydro. In 2001, the country generated about 3.9 billion kilowatthours, approximately 54% of which was hydro and the remainder thermal.

In 1994, Bolivia passed an electricity law that established the Superintendency of Electricity as the regulatory body for the Bolivian electricity sector. Its mandate included protecting consumer rights; granting and amending concessions and licenses; approving international interconnections and stipulating the quantity of electricity exports and imports (should interconnections be established); supervising the activities of the National Committee of Load Dispatch, the body responsible for the coordination and administration of transactions on the national grid, the *Sistema Interconnectado Nacional* (SIN); and approving and setting prices and tariffs for the electricity industry.

The 1994 law divided the assets of ENDE (*Empresa Nacional de Electricidad*), the national electric company, and separated the responsibilities for electric generation, transmission and distribution. Any generating company operating on the SIN was prohibited from owning more than 35% of national installed generating capacity. The law also stipulated that companies on the SIN were only allowed to participate in one activity: generation, transmission or distribution. However, power companies that do not operate on the SIN are allowed to be vertically integrated. There are a number of companies that produce electricity in isolated areas (*Sistemas Aislados*) which are not connected to the main grid. Power company, CRE, is an example of this because it has both generation and distribution assets, which are not connected to the SIN. ENDE still retains some generation and distribution assets which are not connected to the SIN as well.

Generation

There are eight power-generating companies in Bolivia, which generate power for the SIN. Three of which (Guaracachi, Valle Hermoso and Corani) the Bolivian government carved out of ENDE's 468 MW of capacity in 1995. U.S.-based Energy Initiatives, Constellation Energy, and Dominion Energy (Duke Energy since 1999) originally acquired 50% stakes in these companies, while the remaining stakes were placed in private pension funds for Bolivians. U.S.-based NRG Energy owns the second largest generation company in Bolivia, Cobee *(Compañía Boliviana de Energia Eléctrica)*. The company owns 15 hydropower plants (ten in the Zongo valley, four in Miguillas valley, one in La Paz) and one thermoelectric plant, the 17.6-MW El Alto-Kenko facility.

A number of hydroelectric plants power the SIN, with Corani, Cobee and Hidroeléctrica Boliviana, supplying the bulk of the power. There are seven thermal power plants on the SIN, with Guaracachi having the most installed capacity, followed by *Compañía Eléctrica Central Bulo Bulo* and Valle Hermoso. Thermal capacity rose nearly 90% between 1997-2001, with electricity supply outstripping demand.

Outside the Grid (Sistemas Aislados)
Many areas of Bolivia are not connected to the national grid and rely on local generators for electricity. Six companies (ENDE, CRE, *Servicios Eléctrica Tarija* (SETAR), GENERGYs, Cascada del Sur, and Gas y Electrida) provide electricity, of which 91% is thermal-generated. There are also cooperatives and self-producers (mainly mining and manufacturing operations), which generate their own electricity.

Transmission
The national grid, the SIN, accounts for the vast majority of Bolivia's installed electric capacity and power generation, reaching six of the country's nine "departments." The grid was privatized in 1997 and is owned and operated by *Transportadora de Electricidad* (TDE), itself owned by *Red Eléctrica España* (REE) following its purchase of Union Fenosa's 69% share in July 2002. In July 2003, REE proposed building a new electricity transmission line, linking Bolivia to Peru. REE is part owner and operator of Peru's southern electricity transporter, Redesur. The plan included linking La Paz with Puno in Peru. The significance of this project is that it would offer an outlet for Bolivia's supply glut, as well as provide Peru with cheaper electricity. Electricity industry prices are more expensive in Peru than in Bolivia.

On June 25, 2003, Bolivia's Energy Superintendency awarded Colombia's ISA (*Interconexión Eléctrica S.A.*) a bid for the construction and 30-year operation of five substations and three transmission lines in Bolivia. The new lines will expand Bolivia's transmission capacity to 220,000 volts. Furnas, a Brazilian utility, announced in September 2003 that it is studying a project for constructing a 938-mile transmission line, bringing electricity from Bolivia to Brazil. The proposal, which was made in conjunction with Pan American Energy, also envisages constructing a 2,000 MW thermal electric plant from which electricity would be transported via this line to Brazil.

Although the SIN connects Bolivia's major cities, an estimated 75% of the country's rural population did not have access to electricity in 2001. In contrast, an estimated 90% of urban areas had access to electricity. The National Rural Electrification Program (Proner) aims to increase the rural electrification rate in coming years. Bolivia has been developing alternative electricity sources for its isolated communities. Renewable energy sources such as solar and biomass fuel small power generators in the highlands. Also, grid connections are expanding to include areas previously not accessed by the grid.

Level of Electrification in Bolivia

	1992		2001		
	Number of Households	**Level of Electrification (%)**	**Population**	**Number of Households**	**Level of Electrification (%)**
Bolivia	1,444,817	55.48	8,274,000	1,977,665	**64.38**
Urban Areas	806,815	87.05	5,165,000	1,210,962	**89.49**
Rural					

Areas	638,815	15.57	3,109,000	766,703	**24.72**

source: *Bolivia's Superintendency for Electricity*

Distribution
As part of the restructuring of the electricity sector in Bolivia, ENDE and Cobee were also forced to sell their distribution assets in 1996. Cobee sold its distribution assets, *Electricidad de La Paz* (Eléctropaz) and *Luz Fuerza de Oruro (Elfeo)* to Spain's Iberdrola. Iberdrola has since then sold 32.9% stake in Eléctropaz to a consortium of investment funds led by General Electric and American International Group (AIG). in 1998. ENDE sold its distribution firm *Empresa de Luz y Fuerza Electrica Cochabamba* (Elfec) to Chile's EMEL. In 2000, EMEL sold its 91.85% interest in Elfec to its parent company, the U.S.-based PPL Global.

Eléctropaz, CRE, and Elfec are currently the three largest distributors in Bolivia, together accounting for more an estimated 87% of power sales in 2002. Other distributors on the SIN include Cessa and Sepsa. In late 2000, the government restarted the privatization process for provincial electricity system *Servicios Electricos Tarija SA* (SETAR), but a sale of the company has yet to materialize. ENDE, CRE and COSERELEC also have distribution operations in regions not connected to the main grid.

COUNTRY OVERVIEW

President: Carlos Mesa (since October 17, 2003; after Gonzalo Sanchez de Lozada resigned)
Independence: August 6, 1825 (from Spain)
Population (July 2003E): 8.6 million
Location/Size: Central South America; 1,098,580 sq. km (424,164 sq. mi.), slightly less than three times the size of Montana/Central South America, southwest of Brazil
Major Cities: La Paz (executive capital), Sucre (judicial capital), Santa Cruz de la Sierra, Cochabamba
Languages: Spanish (official), Quechua (official), Aymara (official)
Ethnic Groups: Quechua (30%), Aymara (25%), Mestizo (mixed European and Indian ancestry-25-30%), European (5-15%)
Religions: Roman Catholic (95%), Protestant and other (5%)
Defense (8/98): Army (25,000), Navy (4,500), Air Force (4,000)

ECONOMIC OVERVIEW

Minister of Economic Development: Jorge Torres Obleas
Minister of Finance: Javier Comboni Salinas
Currency: 1 bolivianos ($B) = 100 centavos
Market Exchange Rate (10/09/03): US$1 = $B7.99
Gross Domestic Product (GDP 2002E): $7.8 billion **(2003F):** $7.9 billion
Real GDP Growth Rate (2002E): 2.8% **(2003F):** 2.6%
Gross Domestic Product per Capita (2002E): $883
Inflation Rate (consumer prices, 2002E): 0.9% **(2003E):** 3.4%
Merchandise Exports (2003E): $1.5 billion
Merchandise Imports (2003E): $1.5 billion
Major Export Products (2002): Natural gas, soya, zinc, gold, petroleum products
Major Importers (2002E): Brazil (22%), Argentina (17%), U.S. (15%), Chile (7%)
Export Destinations (2002E): Brazil (24%), Switzerland (16%), Venezuela (13%), U.S. (12%), Colombia (10%)
Foreign Direct Investment (2002E): $999 million of which U.S. contributed (29%), Spain (27%), Brazil (18%)

ENERGY OVERVIEW
Minster of Hydrocarbons: Jorge Berindoague Alcocer
Proven Oil Reserves (1/1/03E): 440.5 million barrels
Oil Production (Jan.-Oct. 2003E): 40,700 barrels per day (bbl/d), of which 29,700 bbl/d was crude oil
Oil Consumption (Jan.-Oct. 2003E): 53,000 bbl/d
Net Oil Imports (Jan.-Oct. 2003E): 11,300 bbl/d
Crude Oil Refining Capacity (1/1/03E): 63,000 bbl/d
Proven Natural Gas Reserves (1/1/03E): 24 trillion cubic feet -- Tcf (some estimates are as high as 54.9 Tcf)
Natural Gas Production (2001E): 143 billion cubic feet (Bcf)
Natural Gas Consumption (2001E): 41 Bcf
Net Natural Gas Exports (2001E): 102 Bcf
Electric Generation Capacity (2001E): 1.32 million kilowatts (of which 72% is thermal, 28% is hydro)
Electricity Generation (2001E): 3.9 billion kilowatthours
Electricity Consumption (2001E): 3.6 billion kilowatthours

ENVIRONMENTAL OVERVIEW
Minister of Sustainable Development & Planning: Erik Alberto Reyes Villa Bacigalupi
Total Energy Consumption (2001E): 0.16 quadrillion Btu* (<0.1% of world total energy consumption)
Energy-Related Carbon Emissions (2001E): 2.62 million metric tons of carbon (<0.1% of world carbon emissions)
Per Capita Energy Consumption (2001E): 19.1 million Btu (vs. U.S. value of 341.8 million Btu)
Per Capita Carbon Emissions (2001E): 0.31 metric tons of carbon (vs U.S. value of 5.5 metric tons of carbon)
Energy Intensity (2001E): 8,826 Btu/ $1995 (vs U.S. value of 10,809Btu/ $1995)**
Carbon Intensity (2001E): 0.14 metric tons of carbon/thousand $1995 (vs U.S. value of 0.17 metric tons/thousand $1995)**
Fuel Share of Energy Consumption (2001E): Oil (63%), Natural Gas (25%), Hydroelectricity (12%)
Fuel Share of Carbon Emissions (2001E): Oil (66%), Natural Gas (34%)
Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified October 3rd, 1994). Bolivia ratified the Kyoto Protocol on November 30th, 1999.
Major Environmental Issues: Clearing of land for agricultural purposes and the international demand for tropical timber are contributing to deforestation; soil erosion from overgrazing and poor cultivation methods (including slash-and-burn agriculture); desertification; loss of biodiversity; industrial pollution of water supplies used for drinking and irrigation.
Major International Environmental Agreements: A party to Conventions on Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Nuclear Test Ban, Tropical Timber 83, Tropical Timber 94 and Wetlands. Has signed, but not ratified, Environmental Modification, Marine Dumping, Marine Life Conservation and Ozone Layer Protection.

* 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 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: Yacimientos Petroliferos Fiscales Bolivianos (YPFB), Andina, Chaco and foreign companies
Major Ports: None (landlocked)
Foreign Energy Company Involvement: BG, BHP, BP, Orca Petroleum, Perez Companc, Petrobrás, Pluspetrol, Red Electrica Espana, Repsol-YPF, Royal Dutch/Shell, TotalFinaElf
Major Oil and Gas Blocks: Tarija, Tarija West, San Antonio, San Alberto, El Dorado, Caipipendi
Major Pipelines: Bolivia-to-Brazil
Major Refineries (crude oil capacity, 2003): Cochabamba (40,000 bbl/d), Santa Cruz (20,000 bbl/d), Sucre (3,000 bbl/d)

Sources for this report include: Associated Press; BBC News; Bolivia's Superintendency for Electricity; Bolivia's Superintendency for Hydrocarbons; Central Bank of Bolivia; CIA World Factbook; Comité Nacional de Despacho de Carga; Dow Jones; Global Insight; The Economist; Economist Intelligence Unit ViewsWire; Financial Times; International Monetary Fund; New York Times; OLADE; Oil Daily; Petroleum Economist; Transportadora Brasileira Gasoducto Bolivia-Brasil; U.S. Energy Information Administration; Wall Street Journal; Washington Post; World Markets Online.

LINKS

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Links to other U.S. Government sites:
U.S. State Department Background Notes on Bolivia
U.S. State Department Consular Information Sheet on Bolivia
CIA World Factbook on Bolivia
U.S. Department of Energy's Office of Fossil Energy's International section - Bolivia
U.S. Embassy in Bolivia

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Bolivia from Bolivia Web
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International Monetary Fund on Bolivia
Comité Nacional de Despacho de Carga
Cooperativa Rural de Electrificación Ltda (CRE)
Transredes

Transportadora Brasileira Gasoducto Bolivia-Brasil SA (TBG)
Gasoriente Boliviano Ltda
Gasocidente do Mato Grosso Ltda. (Gasmat)
Empresa de Luzy Fuerza Eléctrica Cochabamba (Elfec)
Empresa Eléctrica Corani
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