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# The Bolivian Gas Market

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## Introduction

Approximately 611.000 km<sup>2</sup> (55.6 %) of the Bolivian territory comprises areas worthy of hydrocarbon potential. Out of this extension, 138.507.8 km<sup>2</sup> (22.66%) is currently under production by private parties who operate subject to joint venture agreements. Consequently, 472.492,2 km<sup>2</sup> (77.33%) comprises areas still to be exploited.

At present, Bolivia has the second largest natural gas reserves in South America, second only to Venezuela. Proven and probable reserves stand at 48 trillion cubic feet (tcf), while projected reserves are estimated at over 70 tcf. In terms of the region's total reserves, Bolivia has an approximate 17%.

Bolivia has four natural gas fields: San Alberto, San Antonio, Itau and Margarita. Each gas field is estimated to have over 5 tcf. The fields are located in the eastern and southeastern part of the country, the Tarija basin being the most important.

It is estimated that Bolivia has reserves for 89 years. This is above the region's average since Central and South America have a reserves-to-production (R/P) ratio of 73.9 years, while the EE/FSU has reserves for 80.4 years and the Middle East more than 100 years. In contrast, the United States and Canada have R/P ratios of 23 years.

## Privatization of YPFB

The privatization of *Yacimientos Petrolíferos Fiscales Bolivianos* (YPFB), the Bolivian state oil company, was set in motion with the passage of the Capitalization Law No. 1544 of March 21, 1994. This law paved the way for partial privatization of six nationally owned industries: YPFB, ENDE (electricity), ENTEL (telecommunications), LAB (airlines), ENFE (railroads) and EMV (tin/antimony).

In order to privatize YPFB, the company was divided into two upstream units, a transport company, a refining company, and several service companies. The two upstream units were half-privatized in 1996, with sales to U.S.-based Amoco (now BP Amoco) and Argentine YPF (now Repsol YPF) for a total of \$571 million. Chaco S.A. is the corporation that currently represents BP Amoco's interest while Andina S.A. represents the Repsol YPF interest. A consortium between U.S.-based Enron and Royal Dutch/Shell won the transportation bid by offering \$263.5 million. Transredes S.A. is the corporation that currently operates the downstream unit and consequently represents the Enron/Shell interest.

In October 1999, YPFB decided to sell the last six divisions of the company that remained under government control: storage facilities and multi-purpose pipelines, gas distribution grids, liquid petroleum gas (LPG) bottling plants, service stations, airport fuel

terminals and refineries. In November 1999, YPFB completed the privatization of its refining business by selling its two largest refineries to a 70%-30% consortium of Brazilian Petrobras and Argentine Perez Companc for \$102 million. In late June 2000, YPFB went ahead with the sale of its remaining 20 storage facilities and 6 product pipelines. A German-Peruvian consortium called Oil Tanking-GMP was the only bidder and won the tender with an offer of just over \$12 million. This sale had been intended to complete the YPFB privatization process. YPFB now is slated to remain Bolivia's sole gasoline and diesel distributor for at least another two years.

As a result of the privatization of the oil and gas industry, the following international oil companies are currently operating in Bolivia:

<i>Company</i>	<i>Block</i>	<i>Percentage Participation</i>	<i>Certified Reserves (TCF)</i>	<i>%</i>
TotalFinaElf	XX Tarija Oeste	41,0%	3.00	
	San Alberto	15,0%	0.80	
	San Antonio	15,0%	0.79	
			<b>4.59</b>	<b>14.2%</b>
PETROBRAS	San Alberto	35,0%	1.87	
	San Antonio	35,0%	1.84	
			<b>3.70</b>	<b>11.5%</b>
Andina S.A.	Campos Capitalizados	100,0%	2.84	
	San Alberto	50,0%	2.67	
	San Antonio	50,0%	2.63	
			<b>8.13</b>	<b>25.3%</b>
Chaco S.A.	Campos Capitalizados	100,0%	<b>2.05</b>	<b>6.4%</b>
Vintage Petroleum		100,0%	<b>1.18</b>	<b>3.7%</b>
Maxus Bolivia Inc. – Repsol YPF	Caipipendi	37,5%	<b>2.52</b>	<b>7.8%</b>
BG Bolivia Corporation Sucursal Bolivia	XX Tarija Oeste	25,0%	1.83	

	Caipipendi	37.5%	2.52	
	Varios Campos	100.0%	0.53	
			<b>4.88</b>	<b>15.1%</b>
ExxonMobil	XX Tarija Oeste	34.0%	<b>2.49</b>	<b>7.7%</b>
Union Texas Petroleum	Caipipendi	25.0%	<b>1.68</b>	<b>5.2%</b>
Perez Companc	Caranda - Colpa	100.0%	<b>0.78</b>	<b>2.4%</b>
Others	Varios Campos		<b>0.19</b>	<b>0.6%</b>
			<b>32.2</b>	<b>100.0%</b>

## Gas Authorities

The Ministry of Economic Development prepares and compiles development policies, norms and regulations for the energy and hydrocarbons sector. The Vice-Ministry of Energy and Hydrocarbons prepares and proposes policies and norms to the Ministry of Economic Development. The Vice-Ministry is also in charge of verifying that norms and regulations are complied with, while also stimulating and promoting national and foreign investment for projects related to energy and hydrocarbons.

The Superintendency of Hydrocarbons acts as the regulator for all parties involved in the production and commercialization of hydrocarbons. As regulator, the Superintendency grants concessions, licenses, permits and authorizations for activities involving hydrocarbons.

YPFB represents the Bolivian government in all joint venture agreements entered into with private national and foreign investors. In addition, YPFB represents the Bolivian government in the gas purchase agreements entered into with Petrobras and YPF, and acts as aggregator for gas exports to Brazil.

Any type of project that may have an impact on the environment must first be approved and authorized by the Undersecretary for Sustainable Development and the Environment. This authority is in charge of enforcing the compliance of provisions set forth by the Bolivian Environmental Law No. 1333 and its regulations.

## Gas Export Projects

Bolivia has been exporting natural gas for more than 40 years. Exports have been traditionally destined to neighboring countries. However, as a result of recent discoveries,

private producers are now eager to export gas into other areas. The ongoing concern is that additional export infrastructure will be needed if natural gas exploration is to take advantage of its full potential.

#### A. Bolivia to Brazil Pipeline

The Bolivia-Brazil gas pipeline is by far the most important energy endeavor in the Southern Cone region of South America. In February 1993, the two countries signed an agreement to construct and operate jointly the \$2 billion pipeline, which would originate in the Bolivian city of Santa Cruz and span for 3,000 kilometers into the city of Sao Paulo, Brazil.

The pipeline was built by a consortium headed by Petrobras (51 percent), with partners BTB consortium (British Gas, Tenneco, and Australian BHP Petroleum 25 percent), YPFB in conjunction with U.S. partner Enron (20 percent), and private groups in Brazil (4 percent). Construction started in the summer of 1997 and was completed in the spring of 1998. Initial flows of 285 million cubic feet per day (MMcf/d) were projected to begin in April, 1999. These flows are projected to double by the eighth year of operation, and to ultimately reach 1.1 billion cubic feet per day (Bcf/d) by the end of a 20-year contract.

#### B. Cuiaba

The joint owners of Transredes S.A., Enron and Royal Dutch Shell have begun construction of a \$560 million, 160 mile, 18-inch pipeline extending from the main BTB pipeline at San Miguel, Bolivia, to a new gas-fired power plant (CEMAT Electric Power Plant) in the Brazilian city of Cuiaba. Transredes S.A. is planning to spend an additional \$300 million to construct a gathering systems network of 500 miles of pipelines to bring gas from the various fields to a collection center located in Rio Grande, 40 kilometers southeast of Santa Cruz, Bolivia.

#### C. Argentina

Bolivia currently has one existing gas export pipeline to Argentina, with a capacity of 212 million cubic feet per day. Bolivia had exported about \$100 million worth of natural gas to Argentina until August 1999, when flow on that pipeline was suspended in order to comply with commitments with the Brazilian market. This pipeline is currently not in operation.

### **Future Projects**

#### A. Paraguay

In January of 1996, the Paraguayan and Bolivian presidents signed an agreement, which proposed a new pipeline and natural gas trading agreement. The Paraguay-Bolivia

pipeline would run from Vuelta Grande in Bolivia to Asuncion in Paraguay. The 500-mile long Trans Chaco pipeline could transport up to 50 million cubic feet per day after five years from its initial 20 million cubic feet per day rate. Proposals are also being considered in extending the pipeline to Curitiba in Brazil. Finally, discussions have taken place between the two countries about a separate pipeline from Bolivia through Paraguay to Brazil, which would simultaneously supply Paraguay and Brazil.

## B. LNG

In early 1998, the government signed a memorandum of understanding with Peru for the proposed construction of a 418-kilometer gas pipeline. This would enable Bolivia to export liquid gas products (produced as byproducts of natural gas exploration). This project would also require the construction of a gas liquefying facility in order to transport the gas via LNG tankers.

Another proposal is to build a \$175 million, 260 mile pipeline to export natural gas liquids to the city of Ilo, on the Peruvian coast. This pipeline would allow Bolivia to export such products as propane, ethane and butane to the world market. Other proposed pipelines include a plan to connect Peru's Camisea gas field to the Brazilian market via Bolivia, as well as to expand the pipeline leading to Argentina in the north of Chile.

At present, the Bolivian government is promoting its natural gas export potential. Possible projects involve the export of LNG to energy-starved regions such as the western coasts of Mexico and the United States.

## C. Regional Integration

The South American gas market currently consumes around 2.7 billion cubic feet per day. Estimations predict that the market will grow to 7 billion cubic feet by 2005. Such demand may only be satisfied through an integrated system of pipelines that will connect the areas of supply and demand throughout the continent. Naturally, the existing Bolivia to Brazil pipeline will serve as a main conduit for natural gas flowing from southern regions of the continent into the Brazilian market and other potential sources of demand.

Bolivia has recently become an active member of Mercosur, a trade organization between Argentina, Brazil, Uruguay, Chile and Bolivia. One of the key features of this organization is a free trade program that will gradually reduce trade tariffs among the member countries. Part of the agenda also includes joint projects in energy, especially in relation to natural gas and transmission lines, as well as in transport and telecommunications.

## **Legal Framework**

The Bolivian oil and gas industry is mainly governed by the Law of Hydrocarbons No. 1689 of April 30, 1996 and its respective regulations. The Bolivian

Constitution states that all hydrocarbons including natural gas located in Bolivian territory are of the original domain of the State. Rights to explore and exploit such resources must be granted by the Bolivian State. YPFB acts on behalf of the Bolivian government while the Superintendency of Hydrocarbons serves as the regulating authority for the distribution of oil and gas.

Any private individual or entity, whether national or foreign, who is interested in pursuing upstream activities must enter into a joint venture agreement with YPFB. Alternatively, any private individual or entity, whether national or foreign, who is interested in pursuing downstream activities must obtain a concession from the Superintendency of Hydrocarbons.

The import, export and commercialization of hydrocarbons and natural gas are not subject to any special requirements. Foreign investors have the same rights and obligations as national citizens or entities. Private contractors are subject to royalties payable to the state where the hydrocarbons are located plus compensatory royalties payable to the states of Beni and Pando. Concessionaires are subject to regulating fees payable to the Superintendency of Hydrocarbons.

According to the Hydrocarbons Law and the Regulations for the Commercialization of Gas, the export of gas to worldwide spot markets is not subject to any special restrictions. As long as the gas commitments regarding the agreements signed with Petrobras of Brazil and YPF of Argentina are duly complied with, producers are free to sell their gas to any willing national or international buyer.

Producers interested in exporting gas must obtain a "Natural Gas Export Permit" from the Superintendency of Hydrocarbons. The Superintendency shall grant such permit only upon verification that the domestic market is satisfied and that contractual obligations with Petrobras and YPF have been duly complied with.

The Bolivian tax structure for hydrocarbons is very simple and has been conciliated with revenue services of most industrialized countries in order to avoid double taxation. The main applicable taxes are as follows:

- Royalties account for 18%
- Income tax - 25%
- Withholding tax - 12.5%

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