

Forecasting natural gas supply and demand in Bolivia

Mauro F. Chávez-Rodríguez*, Alexandre Szklo, André F.P. Lucena
Energy Planning Program, Federal University of Rio de Janeiro
*mfchavezr@gmail.com

Abstract—Natural gas plays an important role in Bolivian economy. In spite of a slightly increase in proven reserves, this increase has not followed the pace of rising demand.

We modeled the natural gas consumption and supply of Bolivia in order to estimate future demand considering current governmental policies, furthermore we analyzed the supplying capacity to attend local and exportation markets.

Our findings showed that domestic demand will rise from 2400 MMm³/d in 2012 to 7000 MMm³/d in 2030, despite of this increase, exportation to Argentina and Brazil will remain as the main markets for Bolivia.

Moreover, in order to attend future domestic demand and exportation commitment, Bolivia will require the development of almost all its current 3P natural gas reserves.

Keywords—Natural Gas, Bolivia, Energy Planning, Forecasting .

1. OVERVIEW

Bolivia's economy is highly concentrated in hydrocarbons. In 2013, hydrocarbons industry represented 7.9% of total GDP, and natural gas exports accounted for 49,6% (6,113 MMUS\$) of total imports [1]. In 2013, crude oil production only represented 8.7% (5.14 kbbbl/d) of liquid hydrocarbon production, liquids from natural gas accounted for 91.3% (53.9 kbbbl/d). Net natural gas production arose from 0.36

tcf/year in 2004 to 0.74 tcf/year in 2013 (average growth of 8,3%) [2]. Proven natural gas reserves has risen from 9.9 tcf in 2009 to 10.45 tcf in 2013 [3]. However the proven reserves-production (R/P) ratio has declined from 22 to 14 years for the same period.

According to Cendrero[4], investment in exploitation of existing fields have been prioritized over investment in exploration. This lack of investment on discovery of new plays could explain the downward trend of the R/P ratio, which combined with a risen demand of natural gas it may jeopardize the supply of natural gas for exportation (Brazil and Argentina) and industrialization of natural gas projects [5].

Natural gas consumption in the local market has increased significantly driven by a steady economy growth. According to IMF[6], "Good macroeconomic performance and active social policies since the mid-2000s have helped Bolivia to nearly triple income per capita and reduce poverty". In 2013, Bolivia's GDP grew 6.78%[1], supported by high hydrocarbon exports, strong private consumption, and accommodative macroeconomic policies [7]. In fact, for the next years, Bolivia is expected to have the highest economic growth in Latin America (above 5%) [8].

Bolivian government policies are aiming to expand domestic natural gas consumption. For instance, in 2010 the Bolivian Government created the NGV Conversion Executing Entity (EEC-GNV) through Supreme Decree No. 0675[9] to stimulate the utilization of natural gas in transportation. The EEC-GNV must execute the NGV Conversion Program, equipment maintenance