

Since gas is a cheaper and more environmentally friendly energy source, Latin American countries have pursued various investment policies to successfully develop the gas sector, including a strong focus on regional integration.

# GAS SECTOR INVESTMENT POLICY: THE LATIN AMERICAN EXPERIENCE

## SUMMARY

This Brief presents a concise overview of the Latin American (LA) gas industry, focusing on its policy experience and performance. In particular, it reviews the advantages and disadvantages of the region's three different policy models: state-led, private and state-private. It describes the evidence suggesting that in LA the state-private model has been most economically and politically successful. Finally, it discusses the focus on regional integration that is a particular feature of the LA case. The lessons learned will be useful for African and South Asian policymakers interested in boosting their own gas sectors.

## KEY CHALLENGE: INCREASING ENERGY DEMAND FOR DOMESTIC GROWTH

Gas is a cleaner source of energy than oil, carbon or wood, and is typically more affordable for both households and industry than oil or electricity. Thus, the common challenge – and first step – for Latin American, African and Asian countries with gas reserves is to develop their gas sector for their domestic markets, meaning increasing their reserves and production, while at the same time encouraging domestic consumption. Net exporter countries like Bolivia or Nigeria face the added challenge of accessing stable foreign markets for their production surplus. For net importers such as Brazil, South Africa and India, the challenge is accessing stable foreign sources of gas for import, potentially opting for regional collaboration – a challenge in and of itself – to secure a source 'close to home'.

## LATIN AMERICA'S THREE MAIN POLICY MODELS

LA countries have had one main incentive for seeking out investment to develop their gas sector: fulfilling domestic and regional demand. In particular, they sought to develop exports while fulfilling domestic expectations of a cheap energy source, choosing between three main models.

## KEY LESSONS LEARNED

The state-private model seems to have been the most successful, achieving a fair balance between economic needs and national political concerns.

Regional integration has been key to further developing the LA gas sector.





**State-led Model:** In this model, countries concentrate gas operations in state hands, with only marginal private sector presence. Venezuela and Mexico, the two countries adopting the model, allowed only a limited amount of foreign investment, and only for downstream operations such as transport and commercialisation, while upstream operations, like extraction, have been kept in state hands. The state-led model channelled all production to the domestic market, thus fulfilling domestic demand, but it has been less efficient in increasing gas reserves and production for export.

In terms of economic performance, Venezuela's known reserves rose almost 28% from 2005 to 2010. In the same period, production grew only 4% compared to consumption growth of 12%. As a result, Venezuela is now more dependent on oil for domestic energy needs, and has become a net gas importer despite its huge reserves. Mexican reserves dropped between 2005 and 2010. Though Mexican production rose about 23%, its consumption grew 28%, thereby outpacing production and making the country dependent on gas imports.

What is the reason for this underperformance? Specialists consider that state companies in a state-controlled market tend to suffer from institutional problems such as not keeping independent accounts, with gas earnings subsidising other state sectors' expenditures, poor auto-regulation and company corruption. On the other hand, supporters believe state companies can improve their performance without privatisation, and argue that corruption and mismanagement are administrative problems not inherent to the model.

**Private Model:** In this model, countries like Bolivia, Argentina and Peru concentrated gas operations in private or foreign state-owned companies. Economically, the model has attracted much foreign investment and achieved fair results in gas production. For example, between 2005 and 2010, gas production and reserves rose in Peru and in Bolivia, though they dropped in Argentina.

However, the problem with this model has been more political than economic, with countries facing political backlash for choosing privatisation. In Argentina, conflict with private companies arose over the raising of domestic gas prices, which the government considered unfair. In both Peru and Bolivia, public discontent has grown as gas supply has not reached the poor as expected because the governments did not prioritise infrastructure construction. In Bolivia in particular, a storm of protest erupted over plans to export gas to Chile, triggering the collapse of the government in an episode known as the 'Gas War'.

As a result of these protests, in the mid-2000s Bolivia and Argentina decided to re-strengthen the state's role in their energy sectors, re-funding the state companies as regulators or new companies in an open market. In the Peruvian case,

the sector is still privatised, though political protest continues, and the gas sector was an important theme in the recent elections. Argentina has also essentially kept the same model, since state market shares are still marginal, though the state strengthened its regulatory and political role over the private gas sector and acquired some rights over future gas ventures, it is not nationalised.

Bolivia has actually gradually turned to a particular form of the state-private model. The state nationalised gas at the wellhead level, meaning it retained the right to take part in private companies' gas commercialisation decisions. It also significantly increased gas taxes and royalties. The Bolivian case is different because production still relies almost exclusively on foreign companies despite state intervention. The state initiated a plan to increase domestic consumption and the state's revenues to achieve social relief, but so far these have not increased.

#### Colombia's Plan for Natural Gas Extension

In 1990, the Colombian government launched its *Plan Colombiano de Masificación del Gas Natural*, constructing pipelines to connect gas deposits with mayor cities. In two decades, the country's gas supply rose from 5.2% to 13.6% of its total energy consumption. Residential gas connections, such as for cooking and heat, increased from half a million to more than five million home units, with 85% in the poorest social sectors. Likewise, by 2010, a quarter of a million vehicles ran on gas and overall gas consumption increased 112% since 2005.

**State-Private Model:** The state-private model balances state and private shares in the gas sector, which operates in a free market. In Brazil and Colombia, the two countries adopting the model, state companies maintain an important, though not dominant, presence in upstream operations, while foreign investments are concentrated in downstream operations.

In terms of performance, between 2005 and 2010, Brazilian and Colombian gas production rose, with Colombia becoming a net exporter, and Brazil doubled its reserves, though Colombia's reserves remained unchanged. Both countries also successfully promoted domestic consumption and secured domestic supply to meet expectations, though Brazil had to acquire access to Bolivian gas to satisfy domestic demand.

Moreover, this model has been politically stable, with no significant public demonstrations against the model, likely because state companies maintain a presence and they promoted domestic consumption while ensuring domestic supply.

**FIGURE 1**  
Evolution of Gas Production, Consumption and Reserves

Investment Model	Country		2005	2010	% change 2010- 2005
State-led Model	Mexico	Production (BcM)	45.0	55.3	22.9
		Consumption (BcM)	53.8	68.9	28.1
		Production-Consumption (BcM)	-8.8	-13.6	-54.5
		Reserves (TcM)	0.4	0.3	-25
	Venezuela	Production (BcM)	27.4	28.5	4.0
		Consumption (BcM)	27.4	30.7	12.0
		Production-Consumption (BcM)	0.00	-2.2	-2.2
		Reserves (TcM)	4.3	5.5	27.9
Private Model	Argentina	Production (BcM)	45.6	40.1	-12.1
		Consumption (BcM)	40.4	43.3	7.2
		Production-Consumption (BcM)	5.2	-3.2	-161.5
		Reserves (TcM)	0.6	0.3	-50
	Bolivia	Production (BcM)	11.9	14.4	21.0
		Consumption (BcM)	2.1	3.0	42.8
		Production-Consumption (BcM)	9.8	11.4	16.3
		Reserves (TcM)	0.7	0.8	14.3
	Peru	Production (BcM)	1.5	7.2	380.0
		Consumption (BcM)	1.5	5.4	260.0
		Production-Consumption (BcM)	0.0	1.8	1.8
		Reserves (TcM)	0.2	0.4	100.0
State-Private Model	Brazil	Production (BcM)	11.0	14.4	30.9
		Consumption (BcM)	19.7	26.5	34.5
		Production-Consumption (BcM)	-8.7	-12.1	-39.0
		Reserves (TcM)	0.2	0.4	100.0
	Colombia	Production (BcM)	6.7	11.3	68.6
		Consumption (BcM)	6.7	9.1	35.8
		Production-Consumption (BcM)	0.0	2.2	2.2
		Reserves (TcM)	0.1	0.1	0

BcM: Billion cubic metres; TcM: Trillion cubic metres

Own elaboration. Source: US Energy Information Administration, BP Statistical Review of World Energy 2011

## INTEGRATION POLICY AND THE GAS SECTOR

A particular feature of the LA investment experience is the focus on regional integration. Emerging economies with limited or no gas reserves compared to their strong domestic needs, like Brazil, Argentina, Uruguay, and Chile, turned to boosting economic, energy, and political integration on a regional scale in order to access neighbouring countries' rich gas deposits.

Regional economic-political blocs like Mercosur and Unasur have fostered gas market integration. Integration has also been pushed bilaterally, such as in 2006 when the Brazilian government politically supported Bolivia by backing Bolivia's controversial nationalisation plans, while PETROBRAS

aggressively invested in a pipeline from Bolivia to Brazil in order to secure future gas supply, despite Bolivia's political instability in the mid-2000s.

Since gas is more efficiently transported through gas pipelines, companies have invested in constructing national and bi-national pipelines. For example, there is a regional project to build a South American gas pipeline to deliver Venezuelan gas to Brazil, Argentina, Paraguay and Uruguay. Accordingly, LA countries plan to invest US\$ 73 billion in gas transmission and distribution from 2008 to 2030.<sup>1</sup> Generally, LA regional and bi-national integration agreements include important investments in gas pipelines. As a result, nowadays Bolivia exports gas to Brazil and Argentina, which then exports gas to Uruguay and Chile, while Colombia exports gas to Venezuela.

<sup>1</sup> International Energy Agency (IEA). 2010

## CONTEXTUAL FACTORS

## ENABLING THE SUCCESS OF GAS SECTOR INVESTMENT POLICY



There are specific economic, political and institutional factors that have underpinned the policies undertaken and their success.

LA economic growth has produced an increasing need for energy sources, and gas offers an attractive alternative. It can be used in many sectors, for example, automobile, petrochemical and thermo-electric industries, and is appropriate for residential use. It has environmental benefits, and in particular, is seen as a suitable replacement for oil because it is cheaper. Countries thus had a strong incentive to focus on developing their gas sector.

The LA gas sector is heavily politicised, subject to concerns about national energy sovereignty and poor people's demands for a cheap energy source. This explains the social conflict in countries using the private model, and why gas exportation plans provoked protest unless domestic demands were first met. It also likely explains Brazil and Colombia's strong focus on promoting domestic industrial and residential gas use.

There are also institutional factors that explain some positive impacts of gas policies. First, countries like Colombia and Brazil improved their regulatory capacities: according to the Worldwide Governance Indicators, Colombia's governance score in regulatory capacities grew from 0.07 in 2005 to 0.24 in 2010, and Brazil increased from 0.07 to 0.18 in the same period.<sup>2</sup> Second, there is an increasing professionalisation in the energy sector, with companies encouraging staff to seek academic training and exchange programmes. Finally, public scrutiny, related to more democratic environments, has promoted more transparency in both private and state companies and the extractive sector as a whole.

In terms of the strong focus on regional integration, the fact that the same countries that most needed access to gas – such as emerging economies like Brazil – did not have gas reserves themselves, meant they had a strong incentive to promote regional cooperation. Existing regional integration initiatives facilitated gas cooperation, as did the relatively strong capacity and economic performance of the participating countries.

<sup>2</sup>Governance Score can range from -2.5 to +2.5 [http://info.worldbank.org/governance/wgi/sc\\_chart.asp](http://info.worldbank.org/governance/wgi/sc_chart.asp)

### LESSONS LEARNED

**1** In LA, the state-private model seems to be achieving the right balance between economic needs and national political concerns, succeeding in strong economic performance while avoiding political conflict. But if the state-led model is to be applied, state institutions have to be technologically, economically, and institutionally prepared.

**2** If the private model is pursued, states need to enhance their regulatory and political skills in order to meet domestic expectations of access to cheap gas and avoid social unrest.

**3** Indeed, domestic expectation of cheap fuel cannot be undermined by focusing exclusively on exports.

The goal is to achieve an export-import balance in order to maximise gas production and consumption in both domestic and regional terms, while avoiding political conflict.

**4** The LA case also shows an interesting example of how to use regional integration to achieve an export-import balance at both the country and regional level.

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