



24th World Gas Conference
ARGENTINA | 2009
5-9 October

The Global Energy Challenge:
Reviewing the Strategies
for Natural Gas

**International Gas Union
Program Committee C**

Study Group C.2 Report

**Developing Gas Markets in South America and
Trinidad Tobago
(from a more integrated perspective)**

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Objectives of SG2 Report

Study Group C2 Report - Analyze and identify key market levers and drivers, emerging issues and challenges in **developing the gas markets** in South America and Trinidad Tobago, from a more **integrated** perspective

- Examine possible strategies to enhance **security and reliability of gas supply**;
- Promote market integration and encourage **efficient utilization** of natural gas;
- Offer suggestions to promote the **development of gas markets** in the region;
- Identify the potential of **LNG** and **pipelines** in the transportation of gas;
- Identify **issues, challenges and opportunities** in developing gas markets in the region;
- Propose **strategic options** in developing gas markets and regional gas market integration.



South America and TT NG Data

Country	Reserves (bcm)	Production (bcm/y)	Consumption (bcm/y)	Share of NG in Primary Energy Demand (%)
Argentina	440	44.8	44.1	53
Brazil	365	11.3	22	9
Bolivia	740	13.5	2.5	36
Peru	355	2.7	2.7	22
Trinidad & Tobago	480	40	17	87
Venezuela	5150	28.4	28.4	48

Source: BP (2008), OLADE (2007)



Cross- Border Gas Pipeline Interconnections

Name	Distance (km)	Capacity (10 ⁶ m ³ /d)
Argentina → Chile	3233	41.1
Argentina → Brazil	440	12
Argentina → Uruguay	234	5.7
Bolivia → Argentina	972	29
Bolivia → Brazil	3770	32.8
Colombia → Venezuela	230	14.2
Total	8879	134.8



Source: CIER, 2007; IEA, 2003



Infrastructure: LNG

Liquefaction/ Regas Terminals in South America and Trinidad Tobago

Status	Liquefaction Plants			Regasification Plants		
	Project	Startup	Capacity (mcm/day)	Project	Startup	Capacity (mcm/day)
Under Operation	Trinidad Tobago – Atlantic LNG	1999 (1st train) 2006 (4th train)	60.8	Argentina (Bahia Blanca)	2008	11.2
				Brazil (Pecem)	2009	7
				Brazil (Baia de Guanabara)	2009	20
				Chile (Quintero)	2009	9
Under Construction	Peru (Pampa Melchorita)	2010	17	Chile (Mejillones)	2010	6.2
Proposed	Venezuela (1) Trinidad Tobago (1) Brazil (1)	-	-	Brazil (1) Argentina (1) Uruguay (1)	-	-

Source: BMI, 2009



NG Integration Projects in South America and Trinidad Tobago

- **Southern Energetic Ring:** Pipeline grid covering Argentina, Uruguay, Chile, Bolivia and Brazil.
- **Andean Energetic Ring:** Pipeline grid connecting Bolivia to Peru, Ecuador and Colombia.
- **Caribbean Ring:** Pipeline grid connecting Venezuela to Colombia, Central America and Caribbean countries.

Source: Petroleum Economist (2007), adapted



- Obtain economies of scale, **optimizing costs** along the chain and **reducing price volatility**;
- Increase the degree of **energy security** provided by the **diversification of supply sources**;
- Constitute larger markets, **supplying more consumers** and offering more attractive **opportunities to investors**.



NG Markets in South America and Trinidad Tobago: Challenges

- **Insufficient coordination** among multiple institutions created to promote integration in the region (CEPAL, CIER, MERCOSUR, OLADE)
- **Unstable macroeconomic and social conditions**
(Eg: High levels of indebtedness; income inequalities)
- **Regulatory Frameworks:** Different schemes
- **Restrictions in infrastructure:**
(Eg: investments in pipelines are discouraged by large distances and environmental constraints).



NG Markets in South America and Trinidad Tobago Possible Improvements:

- Promote **upstream exploration for new gas resources** in offshore environments, especially in deep water and new frontiers.
- New **LNG terminals** and pipelines to be considered favourably.
- Facilitate gas supply/gas **market integration** through enhancing regional cooperation.
- Stimulate development of relations and **cooperation between Government-to-Government and Business-to-Business** through NOCs and IOCs in the region.



SWOT Analysis

STRENGTHS

- Large gas reserves located in countries such as Venezuela, Bolivia and Peru.
- Potential of more gas discoveries in the region following the success of Petrobras in deep-water area such as in offshore Uruguay, Argentina etc.
- Growing gas demand in mature markets such as Argentina and fast growing demand in Brazil, Peru and Venezuela.
- Developed natural gas markets and infrastructure in Argentina, large potential in Brazil, Chile, Peru and Colombia.
- Relatively low investment required for gas power.
- High agricultural potential in many countries that would require gas for urea/ammonia.

WEAKNESSES

- Long distance between gas fields located in major supply sources such as in Venezuela and Bolivia to gas markets in Brazil and Argentina.
- Energy/gas policies that do not encourage/stimulate new investments.
- Unrealistic gas prices/subsidies that would distort the constitution of gas markets in the region.
- Bureaucratic administrative laws.
- Insufficient G-to-G co-operation for the development of cross-border gas pipeline interconnections.



SWOT Analysis

OPPORTUNITIES

- Creation of gas hubs in the Region.
- Development of methanol, fertilizer and other chemical conversion plants.
- New liquefaction and re-gasification plants to balance gas supply and demand in the Region.
- Development of integrated gas markets.

THREATS

- Volatilities in the international gas prices (e.g. Henry Hub).
- Global financial crisis and economic slowdown.



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Strategic Options

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A) Stimulate development of relations of **cooperation** between **Government-to-Government** and **Business-to-Business** among NOCs and IOCs in the region ;

B) **Investments:**

- **Upstream:** Promote offshore exploration, especially in deep water and new frontier areas
- **New pipelines:** compare alternatives pipeline/electric transmission lines
- **LNG:** regas/ liquefaction terminals
- **Building storage facilities:** Reduce price volatility
- **Increase financing sources,** mainly from National/Regional Development Banks (eg: Inter American Development Bank, Banco del Sur, Corporación Andina de Fomento)



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Strategic Options

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C) Strengthening and adequate coordination of **institutions*** dedicated to foster regional development and integration;

- Organization of the **planning** and **regulation** activities of the sector;
- Provision of **information** and **technological support** for projects;
- Facilitate the **harmonization of rules** and the negotiation of **contracts** and projects ;
- Adequate **price** and **tax** policies.

* **Integration Institutions:**

Mercosur - *South America Energy Council* (2007)

South America – *Unasur* (2008)



Conclusions

- **Energy integration** in South America is a complex project, which must involve an adequate **coordination among governments, companies and other agents**, with a proper, transparent **balance of risks and benefits** for all parties involved.
- **Economic** and **regulatory** aspects may offer **restrictions to the integration** of gas markets in the region.
- The introduction of **LNG** is an opportunity to **generate income to NG export countries** and **assure security of supply to NG import countries**. However, it requires **balanced NG price policies**.
- The **integration** and **cooperation** among countries in the region requires the development of a common understanding among countries, leading to the foundation of an **intergovernmental, broad cooperation programme**.



Strategic Options

Harmonization of Rules:

- Regulatory frameworks;
- Energy products specifications;
- Technical standards of equipments and energy facilities

Objective: Reduction of uncertainty over investments

Contractual Alternatives :

- Firm: Contracts during complete periods
- Preferential: Consumers contract gas only in periods they demand fuel
- Interruptible : If suppliers don't have gas in the moment, they offer compensation for alternative fuel used.

