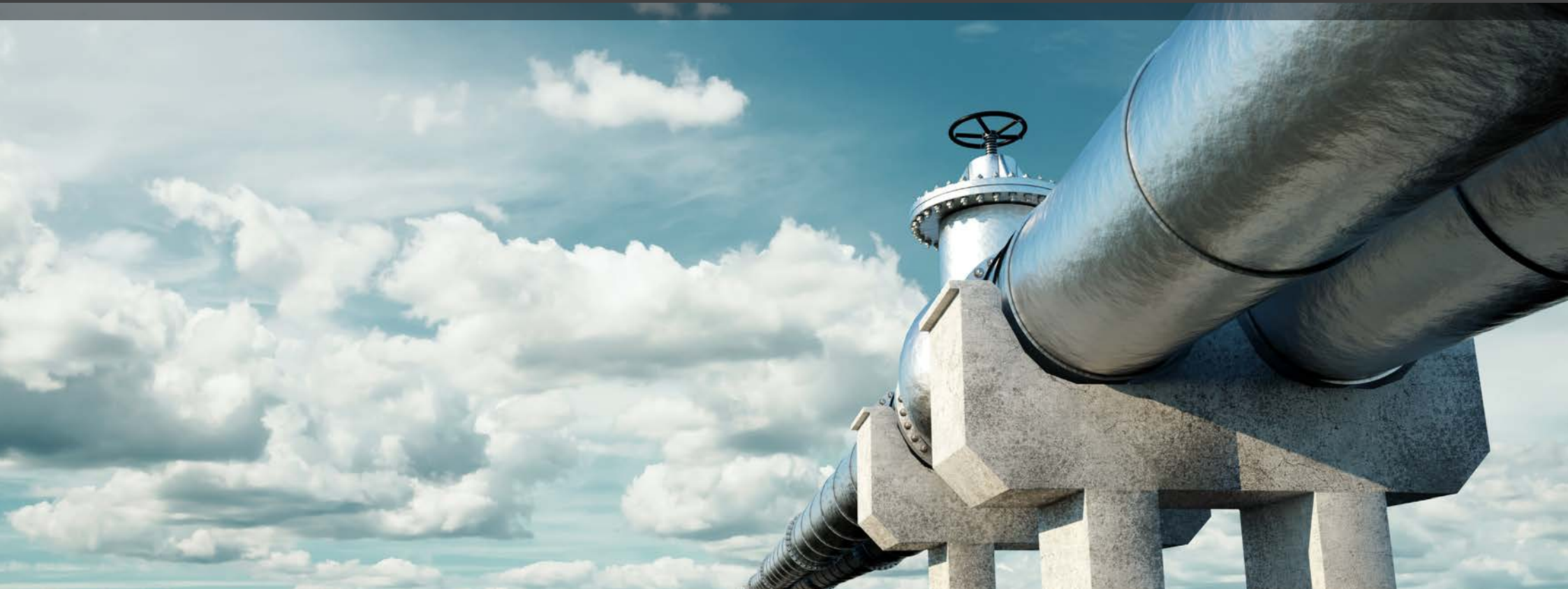




LGC
Latin America
& Caribbean
Gas Conference
& Exhibition

Digital Dialogue

Vaca Muerta: Investment and Energy Policies to Accelerate Development



Introduction

Digital Dialogue: “Vaca Muerta: Investment and Energy Policies to Accelerate Development” is the second issue of a series of dialogues being held on a monthly basis under a virtual format as from May 2021. This initiative is part of the **Latin American Gas Conference & Exhibition, an event that has been jointly organized by ARPEL, IGU and EnergyNet, with the support of OLADE.**

[See full webinar](#)

The **objective** of these dialogues is to **promote the development of natural gas as a source of energy that may reduce emissions, contribute to energy transformation and foster the economic recovery of Latin America and the Caribbean through dialogue and cooperation among companies, governments and other stakeholders.**

Each dialogue will have a specific focus on countries, regions or topics and will gather the main players of the industry in this region, from both the business sector and the governmental sector.

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The 2020-2024 Gas Plan

The GasAr Plan, created under Executive Order 892/2020, defined a contracting scheme that helped give predictability to the demand for natural gas, within a 4-year time horizon, in order to facilitate investment decisions and the development of resources. This plan has:

Prices were defined by means of auctions and on a competitive basis among operating companies.

Established contracts by volumes and auction prices, with a time horizon until 2024.

Defined export permits on a firm basis for summer periods with low demand.

Included more stringent requirements in terms of national added value, seeking to generate a spillover effect in the local productive structure.

The plan was welcomed by companies since it is a milestone that provides predictability and allows for allocating resources to the development of growth projects.

The bidding process of volumes was truly successful since it helped reach the goal of placing 70 MM³/d at an average price below USD 4/MMbtu.

Reached the goal of placing

70 MM³/d

at an average price below

USD 4/MMbtu

YPF committed to make investments for

USD 500 million

in 2021 and

USD 1.5 billion

until 2024

New Dynamics of the Regional Market and the Challenges of Vaca Muerta

Vaca Muerta formation continues to be a potential growth vector for Argentina, given the role of natural gas within a broader decarbonizing strategy at regional and global level. The prices and volumes obtained in the Gas Plan auction prove the competitiveness of both resources and technology; however, its development faces challenges at three levels: **regulatory framework, transportation infrastructure and markets development.**

1 The stability ensured by the Gas Plan has helped reduce the uncertainty in terms of the **regulatory framework**; however, the development of resources on a sustainable basis requires explicitness and transparency in the rules of the game for the long term.

2 The **new dynamics of the gas markets in the Southern Cone** opens a wide range of opportunities for an enhanced development of Vaca Muerta resources, in particular related to the placement of surpluses in the Southern Cone countries.

In the **short term, it will be necessary to develop transportation infrastructure** in order to establish a connection between demand and the potential offered by Vaca Muerta, to avoid bottlenecks and to take advantage of market development opportunities.

In the **medium term, LNG at a small scale, the Parana-Paraguay Waterway and international bunkering, the road transportation and the virtual gas pipelines will also offer opportunities** of new markets with great potential in the country for the gas from Vaca Muerta.

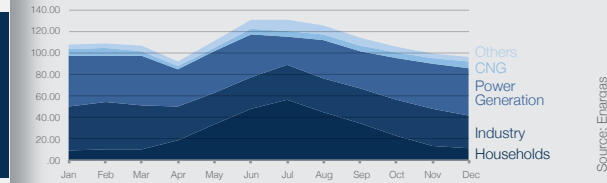
LNG at a large scale and underground storage will open new doors to manage one of the main challenges of gas demand in Argentina: its noticeable seasonality.

Main Drivers of the Southern Cone Gas Markets

Argentina

- Large resource potential in Vaca Muerta
- High seasonality
- Need of developing a higher demand to foster the development of the resources

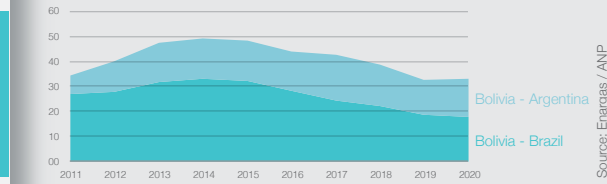
Gas consumption by sector Argentina 2020



Bolivia

- Exporter to Brazil and Argentina via gas pipelines
- Declining production, E&P challenges

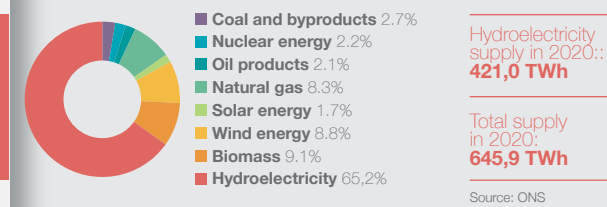
Natural Gas imports from Bolivia



Brazil

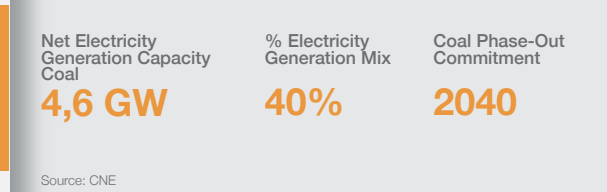
- Rigid supply related to oil from the pre-salt layer
- Flexible demand associated with backup electrical generation of hydroelectricity
- New Gas Law, which will boost investment and LNG
- Large energy demand from the industrial sector

Power Generation Matrix Brazil



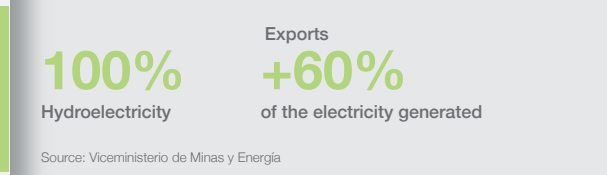
Chile

- Strong support to energy transition, renewable energy sources, energy efficiency and hydrogen
- Commitment to remove coal from the energy matrix
- Large energy demand for mining in the north of the country



Paraguay

- 100% of hydroelectric power
- Absence of natural gas infrastructure
- High use of biomass and green hydrogen potential



Uruguay

- +90% of renewable power generation
- Support to power mobility and hydrogen

	2018	2019	2020
Renewable Electricity Generation	97%	98%	90%
Thermal - Fossil	3%	2%	6%
Imports	0%	0%	4%

Source: ADME

The Needs of New Transportation Infrastructure

Domestic Supply

The main challenge is to take gas from Vaca Muerta formation to the center-north of the country since this region depends, in physical terms, on the gas coming from Bolivia.

Regional Export Markets

The gas from Vaca Muerta formation is already competitive at regional level and it is critical to make progress in infrastructure development and in a better regional integration so as to extend to new markets, optimize gas flows and create appropriate conditions for investment.

The main opportunities lie in:

Brasil

because it is likely to expand its market after the New Gas Law



Digital Dialogue

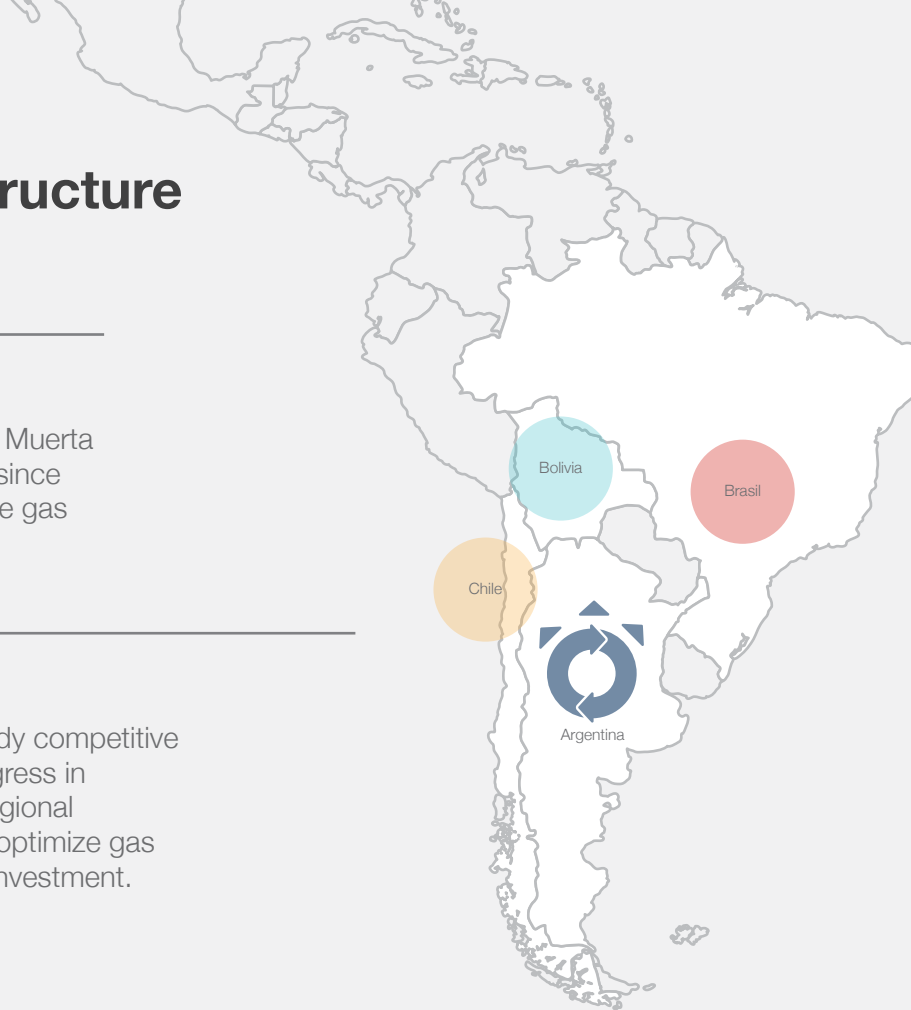
How will the new gas law transform Brazil's gas market and the region?

Chile

because it has a firm demand for mining activities in the north of the country and has undertaken a remarkable decarbonizing commitment, which will lead to higher percentages of non-manageable sources of energy and to the replacement of coal in its power matrix, which is standing at around 40% nowadays.

Bolivia

because of its idle infrastructure to export gas to Brazil, either via commercial swaps or by physically injecting gas.



At present, there are surveys in progress to analyze some alternatives for infrastructure development that may help leverage these opportunities and consolidate the domestic market.

1. Argentina-Brazil Exports through Bolivia

Strengthening of TGN System between Neuquén-Mendoza-Córdoba

It allows to place **20 MM³/day** in the domestic market

Release the Bolivian gas to be placed in Brazil using the existing infrastructure (GTB / TBG)

Estimated investment: **USD 1.4- 1.5** billion

Additional expansion

To physically inject

10 MM³/d of **Argentine** gas into **Bolivia**

Estimated investment: **USD 400 to 500** million

Total estimated investment: 1.8 to 2.0 billion

2. Argentina-Brazil Direct Exports

Gas Pipeline Uruguayana – Porto Alegre

Strengthening of domestic infrastructure to place

30 MM³/d in **Greater Buenos Aires and the Argentine Littoral**

10 MM³/d in **Porto Alegre**

Total estimated investment: 3.0 to 3.5 billion

LNG and Storage



LNG

So far, the main driver of LNG development in Argentina has been the replacement of more expensive and polluting liquid fuels in order to reduce the operating costs of the energy system, providing flexibility and satisfying winter demand peaks.

However, LNG offers several opportunities for the development of new businesses at both small and large scales.

- Heavy road transportation
- River transportation via the Paraguay-Paraná Waterway
- Bunkering
- Virtual gas pipelines

In turn, looking into the future, LNG markets will be increasingly more liquid and more flexible for trade, offering better opportunities for integration of the Argentine gas to the rest of the world.

In the medium term, Vaca Muerta formation tends to be competitive at international level; therefore, in order to take advantage of these opportunities, all the parties involved must work together in advance in infrastructure projects and in the various potential alternatives.

Storage

The high seasonality of the Argentine demand creates opportunities to think about underground storage as an alternative to stabilize demand all year long. Both Tecpetrol and YPF have storage projects in declining fields of the Neuquén Basin. However, there would be other opportunities to develop strategic storage sites closer to the demand.

Key Messages



The **Gas Plan** has helped make **demand & supply contracts, on a firm basis, within a 4-year time horizon, and this has improved stability** and fostered investment and the search for new business opportunities.

New investments will be required in terms of gas transportation opportunities in the very short term in order to continue developing Vaca Muerta formation, especially towards the center-north region of Argentina.

Brazil and Chile represent great opportunities as regional destination markets of the gas from Vaca Muerta. **This requires** developing transportation infrastructure but, above all, **deepening the regional integration of the Southern Cone energy markets** in order to optimize gas flows and infrastructure use.

The development of regional markets would also facilitate a better integration between **Vaca Muerta and LNG global markets**, which are increasingly more liquid and under a full development process in the region.

Other non-traditional alternatives that are being developed or studied are **small scale LNG, bunkering, river transportation, road transportation and storage at a large scale.**

In the abovementioned development paths, there are several investment alternatives and they require a **comprehensive perspective for the development of Vaca Muerta that may adequately combine the energy policy, the climate policy and decarbonizing commitments.**

What is **ARPEL**

ARPEL is a non-profit association gathering oil, gas and biofuels sector companies and institutions in Latin America and the Caribbean. Founded in 1965 as a vehicle of cooperation and reciprocal assistance among sector companies, its main purpose is to actively contribute to industry integration and competitive growth, and to sustainable energy development in the region.

Its membership currently represents a high percentage of the upstream and downstream activities in Latin America and the Caribbean and includes national and international operating companies, providers of technology, goods and services for the value chain, and national and international sector institutions.

What is **EnergyNet**

EnergyNet has been producing investment forums and executive dialogues for Latin America and Africa's power sector for the last 25 years - in Europe, the USA, China and across Africa and Latin America.

We work with governments and national utilities to facilitate investment summits where international investors can build relationships with credible public sector stakeholders to advance access to power. We facilitate investment into the energy sector to get projects moving and bring electricity to global communities.

What is **IGU**

The mission of IGU is to advocate for gas as an integral part of a sustainable global energy system, and to promote the political, technical and economic progress of the gas industry. The more than 160 members of IGU are associations and corporations of the gas industry representing over 95% of the global gas market. The working organisation of IGU covers the complete value of gas chain from exploration and production, transmission via pipelines and liquefied natural gas (LNG) as well as distribution and combustion of gas at the point of use.

IGU has the vision of being the most influential, effective and independent non-profit organisation, serving as the spokesperson for the gas industry worldwide. The IGU is the "Global Voice of Gas"

What is **OLADE**

The Latin American Energy Organization (OLADE) is an intergovernmental public body of cooperation, coordination and technical advisory, established on November 2, 1973 by signing the Lima Agreement, ratified by 27 countries in Latin America and the Caribbean, with the fundamental objective of promoting the integration, conservation, rational use, commercialization and defense of the region's energy resources.



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