



Argentina Oil & Gas Sector

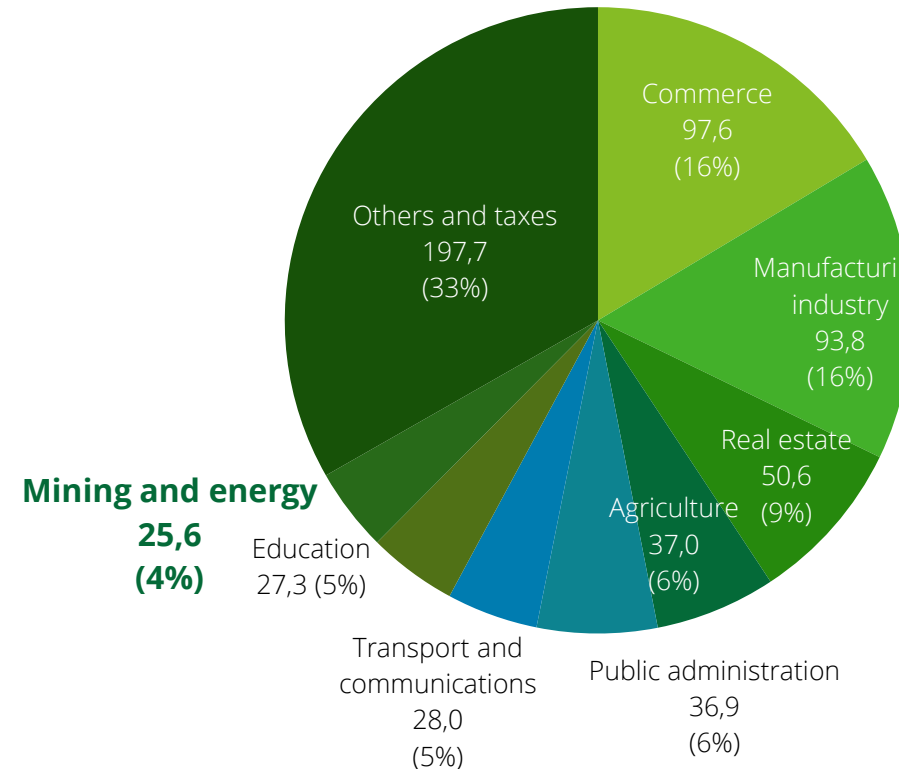
Economy Overview

Argentina's Economic Structure: Predominance of the Tertiary Sector, Significant Contributions from the Manufacturing Industry, and High Growth Potential in the Mining and Energy Sector

PRODUCTION BY SECTOR

- In Argentina, the tertiary sector¹ is the largest component of GDP (representing 53.5%), followed by the secondary sector (23.4%) and the primary sector (6.5%).
- Within the mining and energy sector (4% of GDP), the **extraction of crude oil and natural gas and related activities** stand out with a gross added value of USD 20.2 billion, representing 3.4% of the total GDP.
- If we look at the manufacturing industry sector, one of the areas with the greatest growth potential is the chemical and petrochemical industry, which in turn includes the manufacture of coke, **petroleum refining products** and nuclear fuel, with a gross value added of USD 3.8 billion, representing 0.6% of total GDP.

GDP by sector. Billions of dollars, last 4 quarters (3Q 2023 - 2Q 2024).



Source: Econosignal based on INDEC.

¹The tertiary sector is composed of service activities. The secondary sector comprises manufacturing, construction, and extraction activities, while the primary sector comprises agricultural activities

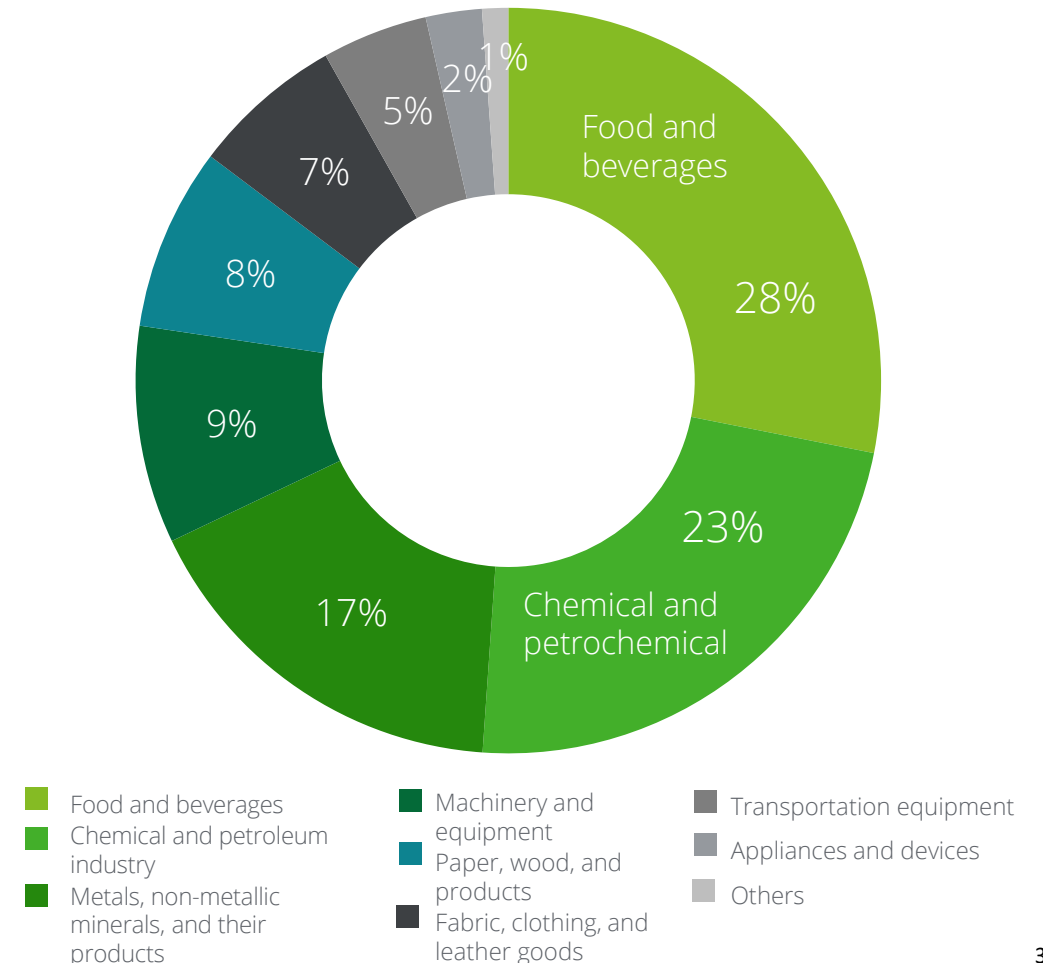
Economy Overview

Due to its comparative advantage in the agri-food sector, Argentina continues to be a leader in food production and exports. In the mid term, energies will follow this lead

INDUSTRIES IN ARGENTINA

- Argentina ranks among the **top 10 largest producers and exporters of agricultural commodities in the world**. The **food and beverage sector is the most important within the manufacturing sector**, representing 28% of the total.
- The **second most important industry is the chemical and petrochemical industry (23%)**. The significance of this sector stems from the installed capacity in the country and its close productive relationship with the oil extraction sector. A significant portion of the production is directed towards the domestic market.
- In the last decade, the sector has experienced a negative trade balance due to low investments and a significant portion of manufacturing output being directed towards the domestic market. **However, this trend is now changing and is expected to continue improving in the future.**

Manufacturing industries. Contribution to total income, percentage

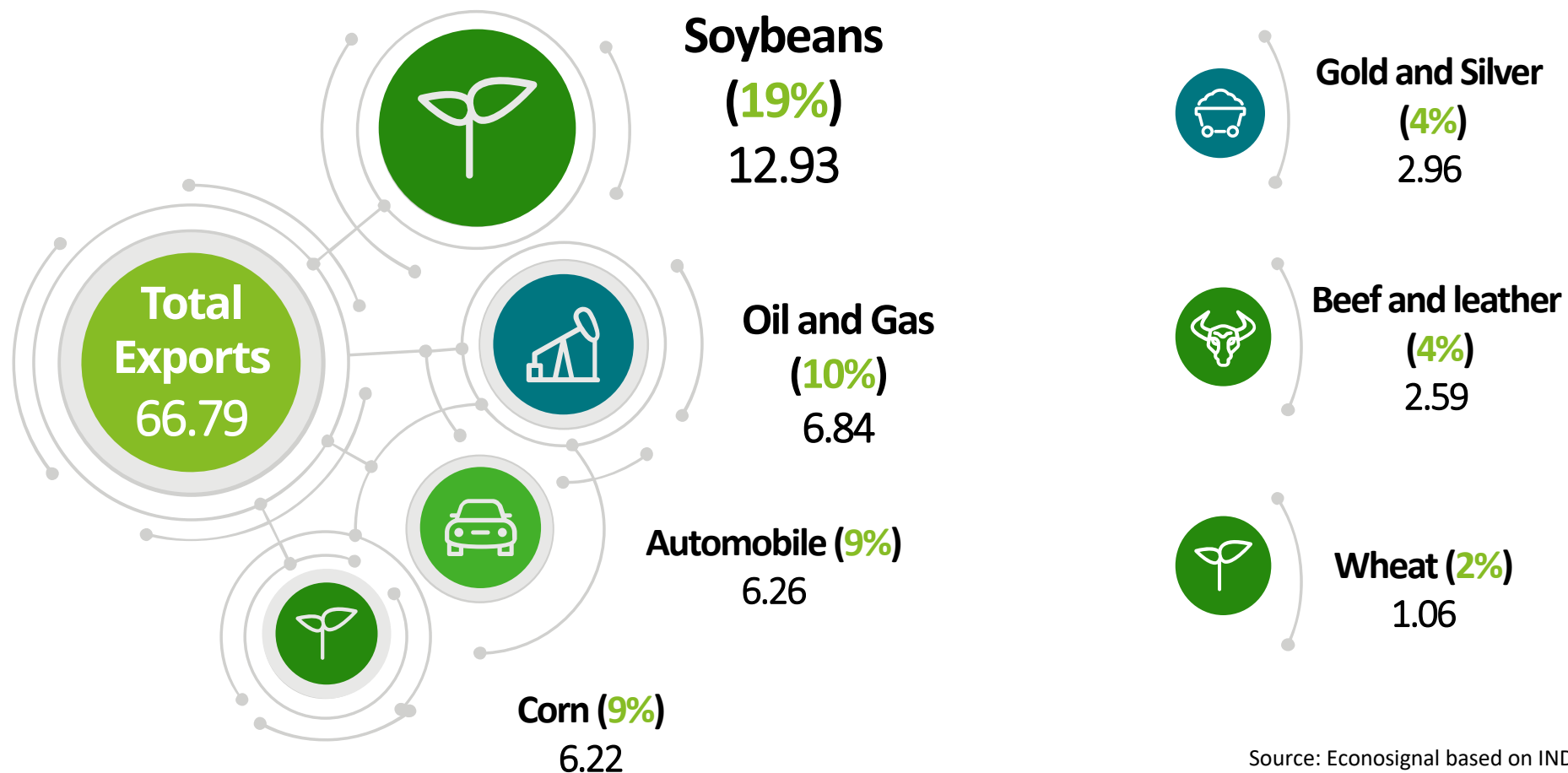


Economy Overview

ARGENTINA'S EXPORTS

In 2023, exports fell due to a drought that impacted grain production. In 2024, exports are projected to reach a total of USD 77.8 billion, with oil and gas exports contributing USD 9.5 billion, representing over 12% of the total.

Exports by product groups in 2023 and Contribution to total. Billion USD

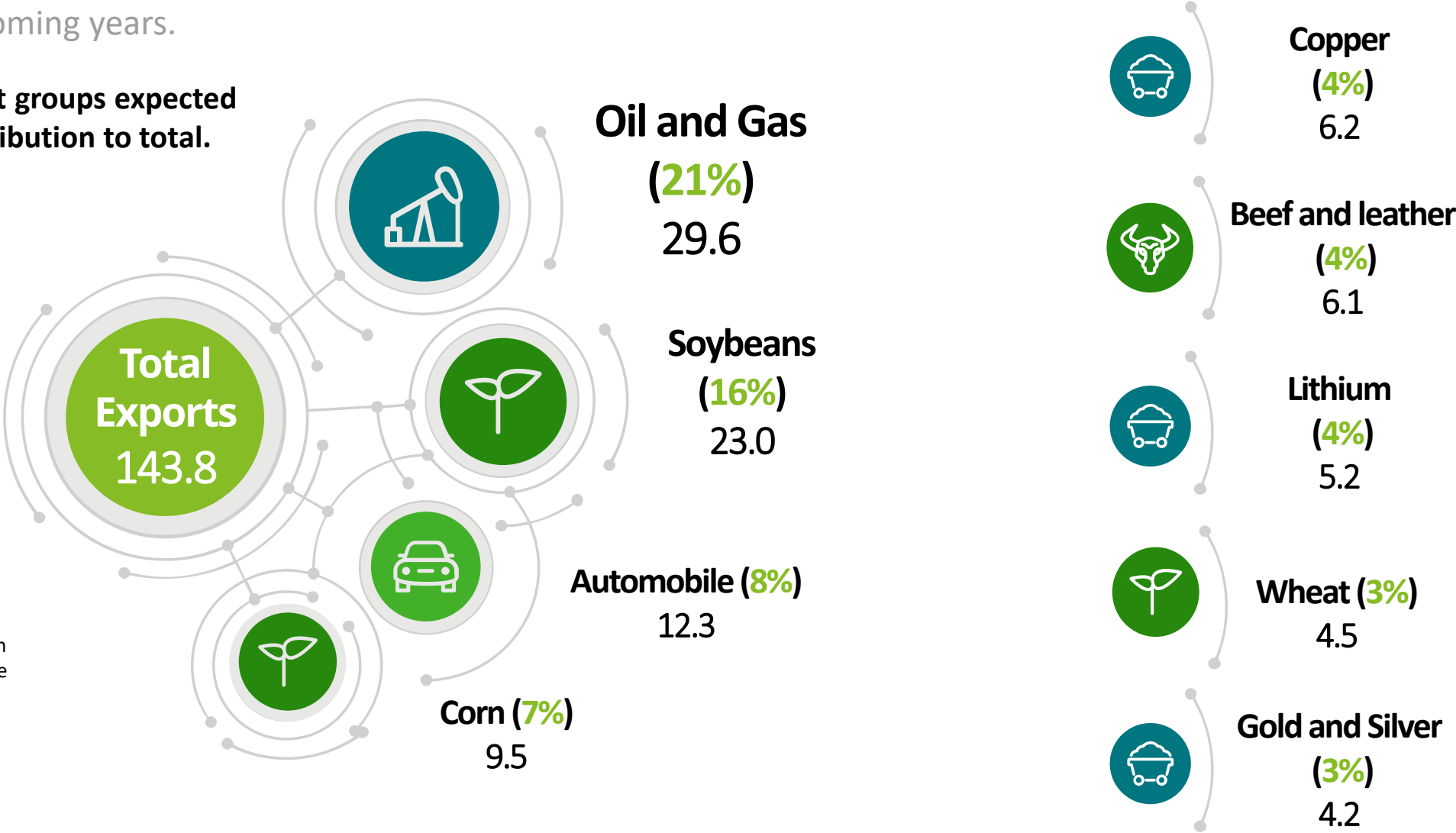


Economy Overview

ARGENTINA'S EXPORTS

By 2030, the exponential growth of Argentina's energy sector will allow it to position itself as the main export sector. Exports of lithium and copper, which in 2023 amounted to USD 807 million and USD 2 million, respectively, will grow strongly in the coming years.

Exports by product groups expected by 2030 and Contribution to total.
Billion USD



Source: Econosignal based on Central Bank of the Argentine Republic: Trade balance projections 2024-2030 and own estimates.

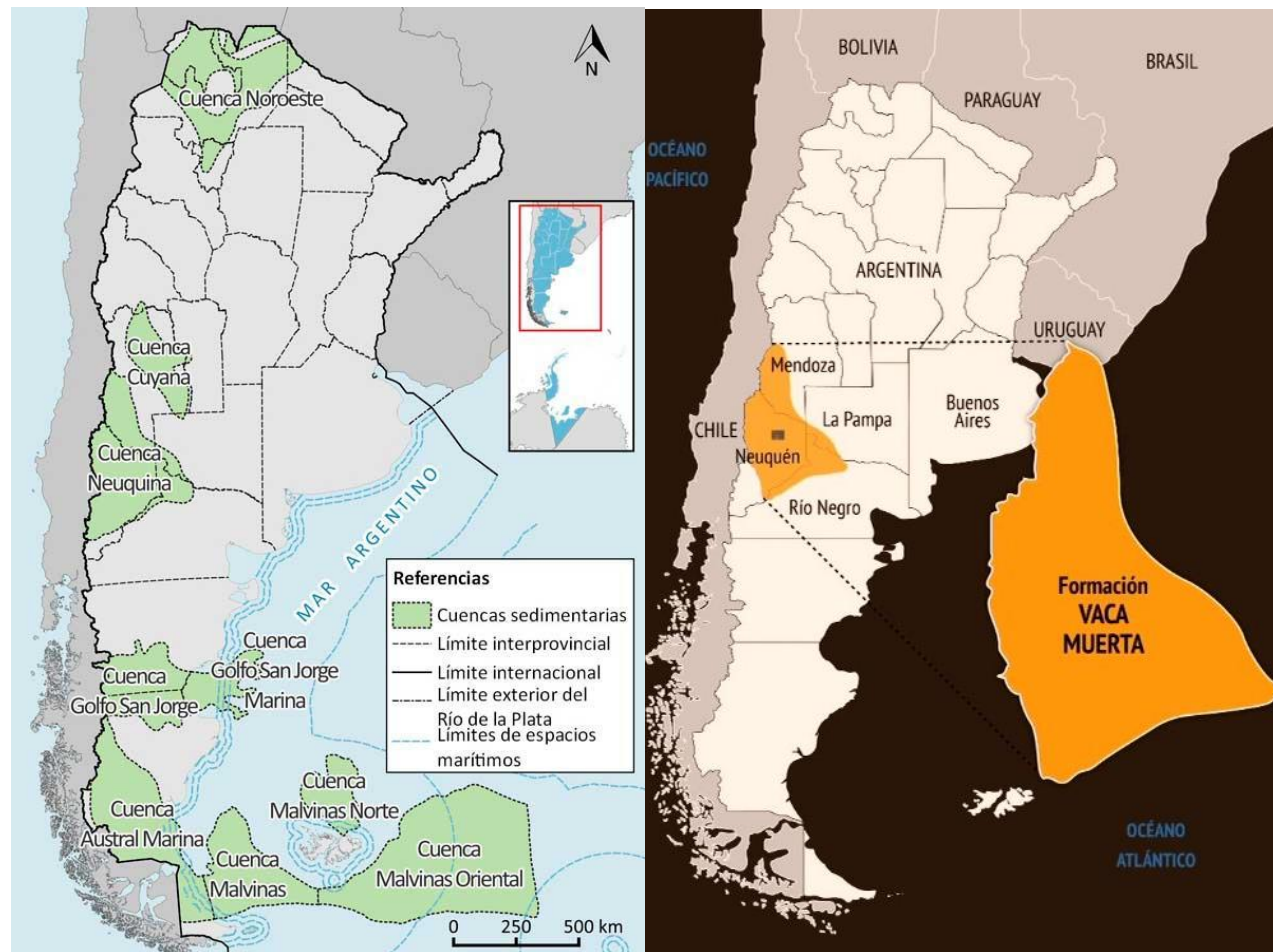
Fossil Fuels Overview

Fossil fuels will help the country's growth and exports in the coming years

OIL PRODUCTION

- **Vaca Muerta** in Argentina is the **world's second-largest shale gas reserve** and **fourth-largest in shale oil**. It's located in the **Neuquén basin** in the provinces of Neuquén, Río Negro, La Pampa and Mendoza. The area of the deposit is 30,000 square kilometers.
- In 2024, Neuquén Basin represents almost **68% percent of the total production of oil in the country**, with potential to make Argentina a top 20 oil-exporting country and reduce gas imports by 60% in 2 years.
- **Crude oil production in Vaca Muerta began to be planned in 2013**, primarily due to investments by the state-owned YPF. That year, YPF signed an agreement with Chevron for unconventional exploration and exploitation in Vaca Muerta. Additionally, in 2013, Dow joined forces with YPF to commence exploitation.

Oil and gas basins. Sedimentary basins



Source: Econosignal based on Ministry of Energy.

Oil Production

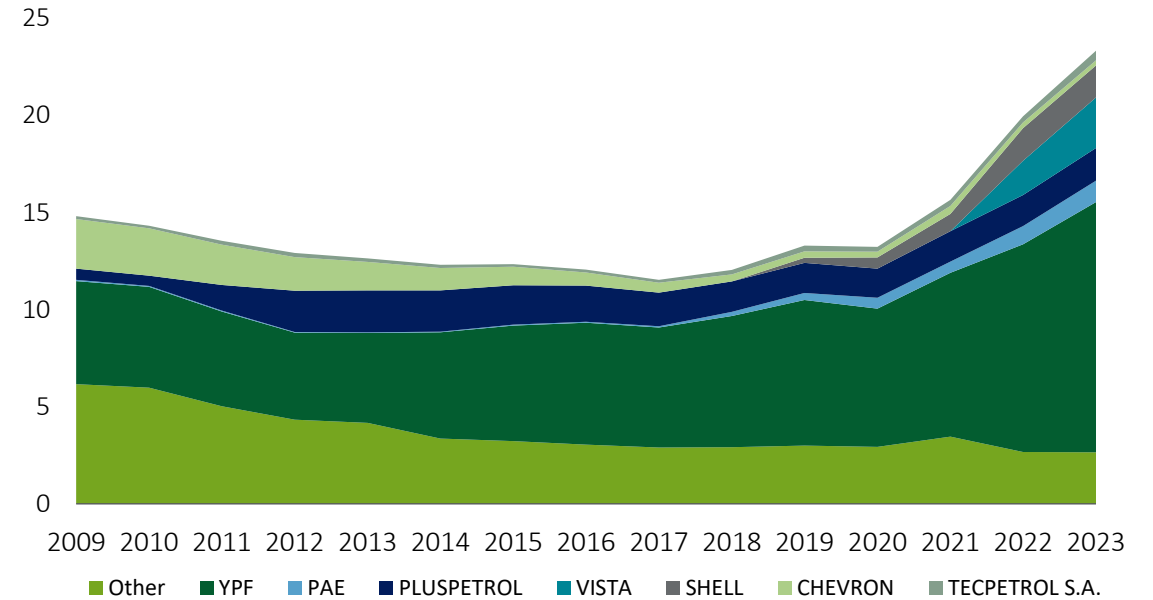
Neuquén Basin represents almost 68% percent of the total production of oil in the country

NEUQUÉN BASIN PRODUCTION

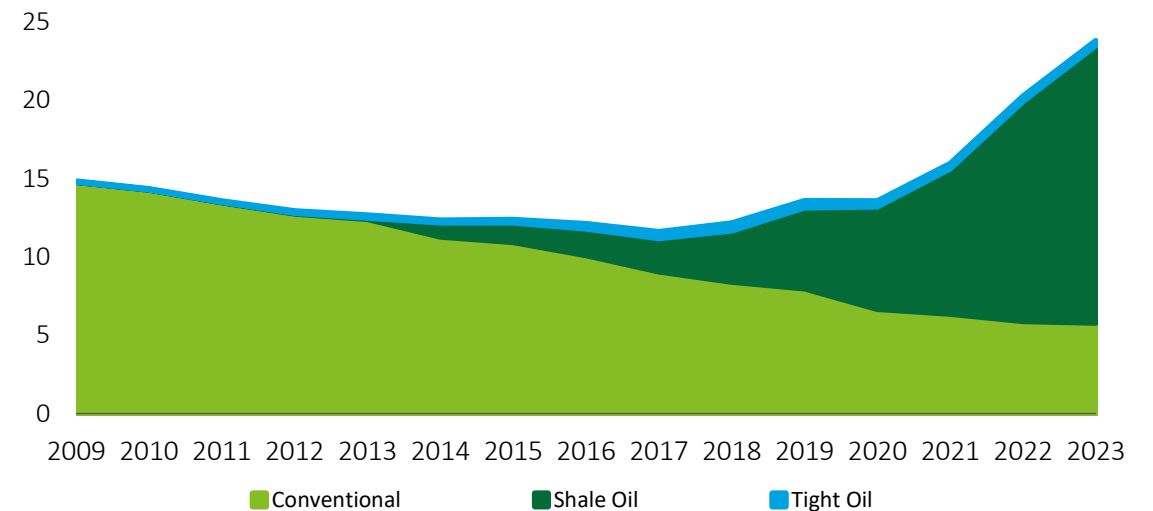
- In 2014, **the amount of shale oil in the Neuquén basin began to grow**. New oil companies entered the market, including the French company Total, the American company Exxon Mobil, the Dutch company Shell and the Canadian companies Americas Petrogas and Madalena Energy¹. Oil companies with national capital also began to operate, such as Pan American Energy (PAE), Pluspetrol and Tecpetrol (owned by Techint).
- The shale quality, production incentives, tax exemptions, and labor concessions for this area have helped to reduce operational costs and improve efficiency. In 2019, there was a change in strategy by different companies, which began to **increase oil production to the detriment of gas, due to its greater ease of transportation**.
- In 2024, the production of shale oil and tight oil represented **54% of the total production**, while in 2019, it was 18%.

1. Six of the ten Big Oil Supermajors already operate in the country: Chevron, Royal Dutch Shell, BP, Exxon Mobil, Eni and Total.

Neuquén Basin. Oil production in million cubic meters by company



Neuquén Basin. Oil production in million cubic meters by type



Source: Econosignal based on Ministry of Energy.

Oil Production

The biggest obstacle to Vaca Muerta's expansion was the insufficient infrastructure for oil and gas transport

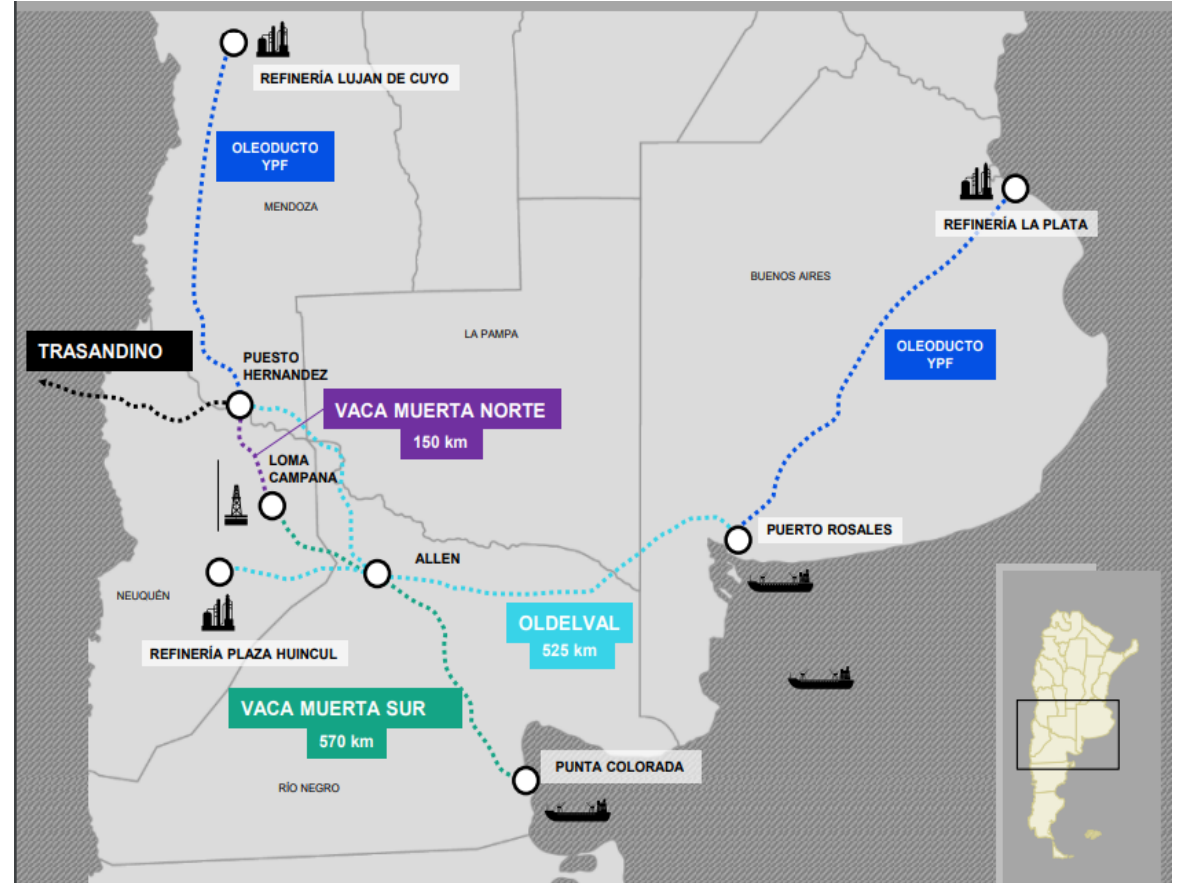
OIL TRANSPORT INFRASTRUCTURE

- In May 2023, **Trasandino pipeline was reactivated, which connects Neuquén with Chile** and today has the capacity to export 110,000 barrels per day, after being out of operation for 17 years¹.
- In October 2024, the **USD 250 million “Vaca Muerta Norte” Pipeline** finished its construction after 18 months, enabling the transport of 160,000 barrels per day (bpd), thereby increasing the export utilization of the Transandino pipeline.
- **The expansion of the Oldelval (Oleoductos del Valle) pipeline, which connects Vaca Muerta with Bahía Blanca, has been initiated.** This USD 1.2 billion investment will increase the transport capacity from the total current 555,000 bpd to 750,000 bpd in the first half of 2025.
- **The USD 2.5 billion infrastructure project, the “Vaca Muerta Sur” oil pipeline, developed by YPF has reached its final phase before construction.** It includes a pipeline linking Vaca Muerta to Punta Colorada port in Río Negro. Additionally, a storage facility and port terminal will be established at this location, enabling a twofold increase in Argentina's oil export capacity. It is expected to be completed in the second half of 2026 increasing the total capacity to 930,000 bpd. In 2030 it is expected to increase its capacity to 1.5 million bpd.



This bottleneck compelled companies to either seal drilled wells or transport crude oil by truck to Bahía Blanca, which incurred higher logistical expenses.

Transportation from Neuquén Basin. Ongoing Expansions



Source: YPF, *Presentación y panorama estratégico*. July 2024

Note: The blue lines represent pipelines that were already completed and operating.

1. According to market, in September 2024 it operated at 75% capacity.

Oil Production

Oil production reached its highest level in the past 20 years in 2024

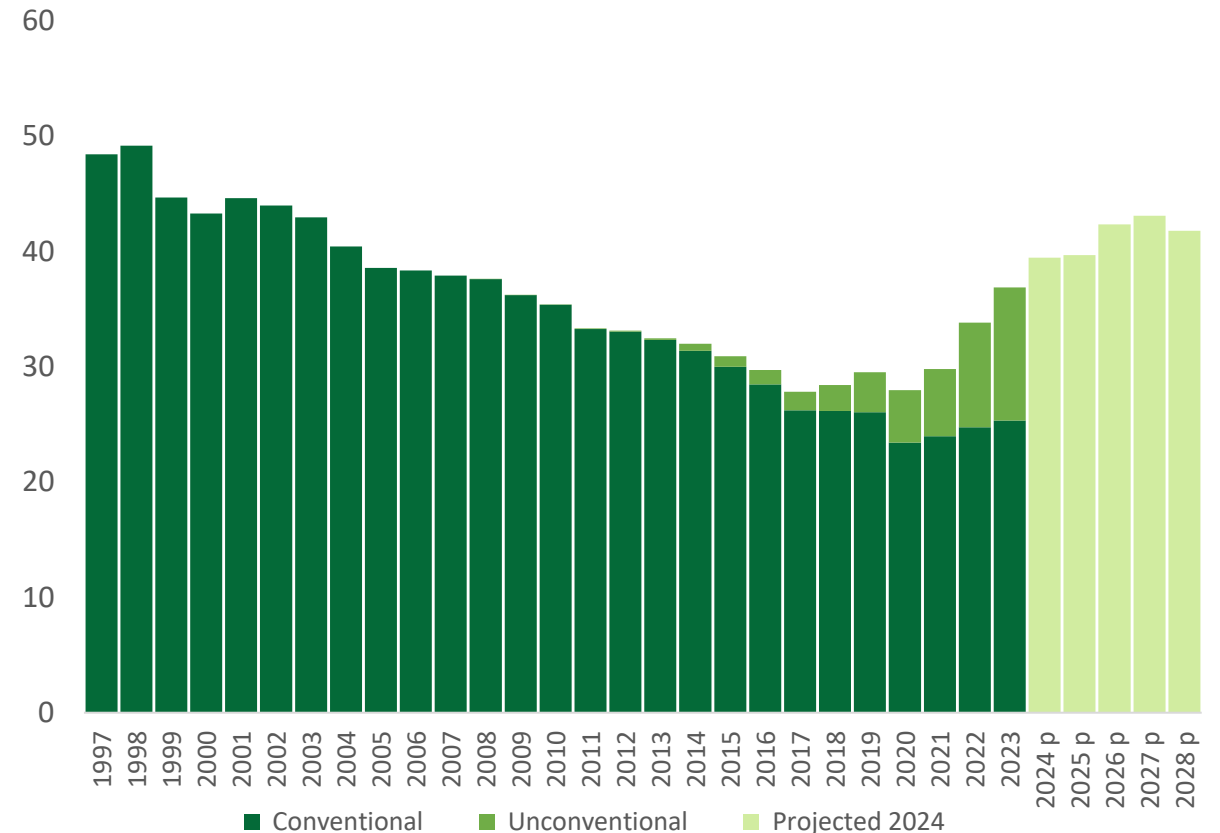
OIL PRODUCTION OUTLOOK

- In October, production reached **743.2 thousand barrels of oil per day** of crude oil, 12.3% more than in October 2023 and the most in any month since 2003.
- Due to investments made in recent years, oil production is expected to **grow by 4% annually through 2027**.
- With the approval of the Incentive Regime for Large Investments (RIGI, by its initials in Spanish) which safeguard investor interests and ensures dividend availability, **the Oil and Gas sector could generate up to \$27 billion in export revenues from oil and gas, equivalent to 30% of 2022 exports, starting from 2027-29**.
- **This could help alleviate the country's balance of payments in the medium term, along with the positive results from mining and agriculture.**
- It is expected that **by 2027, the country will reach one million barrels of oil per day produced.**



On average, Argentina's daily oil production stands at 690,000 barrels, with 485,000 barrels consumed locally and 205,000 barrels exported.

Oil production in Argentina. Million cubic meters



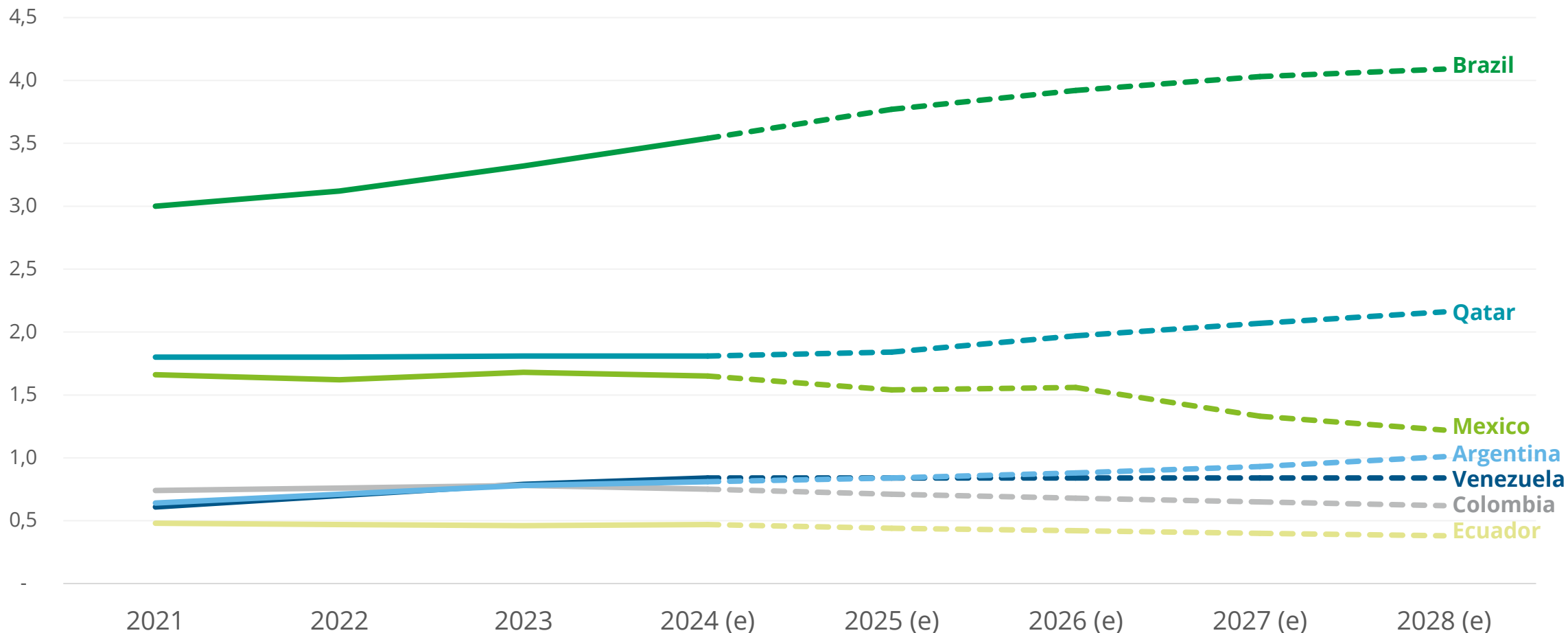
Source: Econosignal based on Ministry of Energy. p: projected value

Note: the estimates refer to the production that would be achieved with current investments. 9

Oil Production

By 2028, Argentina will consolidate its position as the third largest oil producer in the region, exceeding one million barrels of oil per day and approaching Mexico's production, although still far from Brazil.

Oil production in selected countries. Million barrels of oil per day



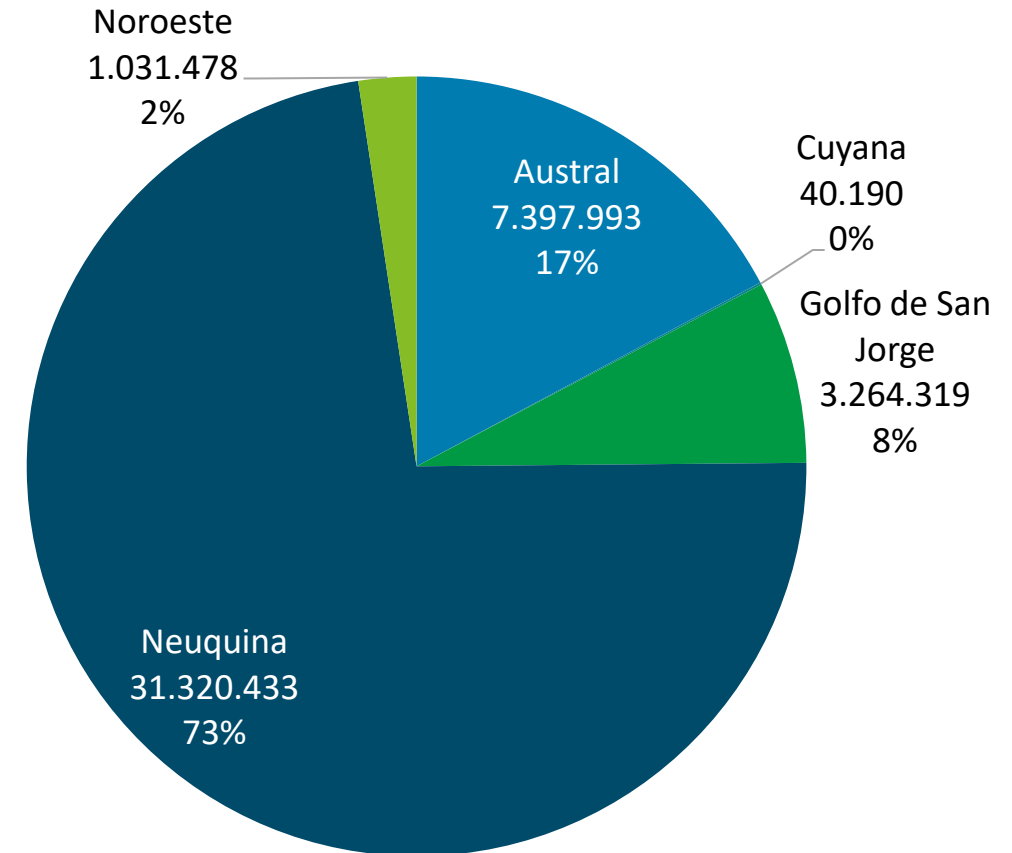
Gas Production

Neuquén Basin represents almost 73% percent of the total production of gas in the country

NEUQUÉN BASIN PRODUCTION

- In October, Argentina recorded historic figures in hydrocarbon production. With 133,1 MMm³/d of gas, the country achieved a year-on-year growth of 5.7% compared to the same month in 2023. Gas production is reaching the highest volume in the last 21 years.
- Focusing on unconventional resources, *Vaca Muerta* contributed 54.8% of the total gas production. The formation generated 81 MMm³/d of gas. In this sense, the Neuquén Basin produced 73% of the gas in Argentina in 2024.
- In 2024, the main shale gas areas in Vaca Muerta are Fortín de Piedra by Tecpetrol (12.1% of total production), Aguada Pichana Este by Total Energies (7.1%), Aguada Pichana Oeste by Pan American Energy (5.9%), El Mangrullo by Pampa Energía (5.6%) and La Calera by Pluspetrol (4.8%).

Gas production in 2024. Basin Share and production in million cubic meters by basin



Source: Econosignal based on Ministry of Energy.

Gas Production

1st stage of Presidente Néstor Kirchner¹ Gas Pipeline is expected to save around \$3 billion in LNG imports

GAS TRANSPORT INFRASTRUCTURE

- In mid 2023, the 573 km first line of the 'Nestor Kirchner' gas pipeline (GPNK)¹ was inaugurated, initially transporting 11-14 million cubic meters per day (MMm³/d). It still required three compressor plants to reach full capacity.
- In October 2024, the Salliqueló compressor plant in Buenos Aires was inaugurated, increasing transportation capacity to 23 MMm³/d and completing the first stage of the pipeline.
- The two-stage project will span 1,070 km to San Jerónimo, Santa Fe. Stage II of the GPNK will complement domestic supply and enable *Vaca Muerta* gas exports to southern Brazil's industrial belts. **The USD 2.5B tender is expected in December 2024, with completion by March 2026.** Execution and financing will be handled by the private sector. **After Stage II, capacity would reach 39 MMm³/d, representing 25% of the total system demand. To export to Brazil, approximately five projects are under study.**

'Presidente Néstor Kirchner' Gas Pipeline¹. 1st and 2nd Stages



Source: U.S. Energy Information Administration (EIA).

Note: *Gasoducto Centro Oeste* and *Gasoductos Neuba* has been operating at full capacity
1. Recently the name has changed to 'Perito Moreno' gas pipeline.

Gas Production

Due to declining production, Bolivia stopped sending gas to Argentina in September 2024.

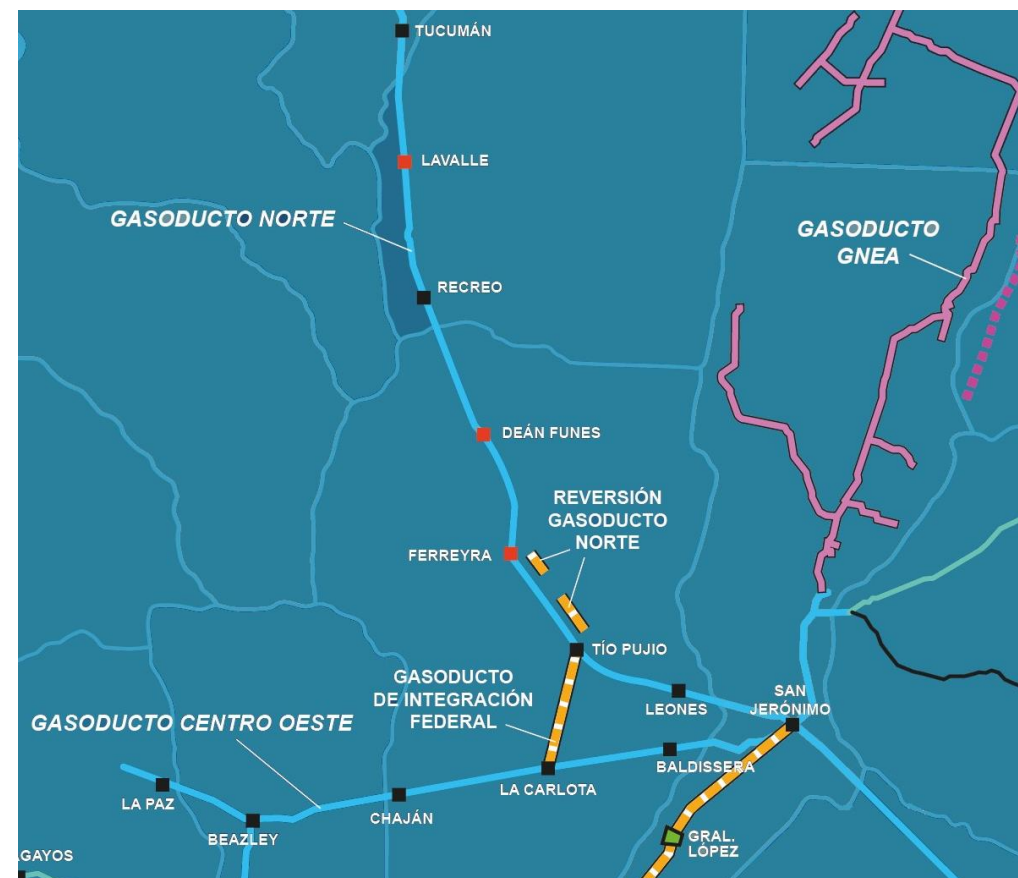
GAS TRANSPORT INFRASTRUCTURE

- Work was underway to reverse the Northern Gas Pipeline flow and send gas north, which received gas from Bolivia. The project was finished in October after the delayed tender was awarded in March 2024.
- The 740 million USD project will transport 19 MMm³/d to northern provinces (residents and mining industry) and allow bidirectional gas flow. **Argentina will no longer buy gas from Bolivia, which cost USD 11.4 per million BTU, while production in Argentina ranges from USD 2 to 3.5 per million BTU.**
- 540 million USD came from a loan by the CAF¹. The project involved developing 122 km of gas pipeline, 62 km of loops to the Northern Gas Pipeline near Ferreyra and Córdoba, and reversing four compressor plants in Córdoba, Santiago del Estero, and Salta.



With the Northern Gas Pipeline, the country will save up to 2 billion USD per year by substituting gas and liquid fuel (diesel and fuel oil) imports. Northern Argentina imported 4.5 million m³/d in the 2024 winter from Bolivia.

Northern Gas Pipeline. 1st and 2nd Stages



Source: Econosignal based on Ministry of Energy

1. CAF – Development Bank of Latin America and the Caribbean

Gas Production

Gas production in 2024 reached its highest level in the past 21 years

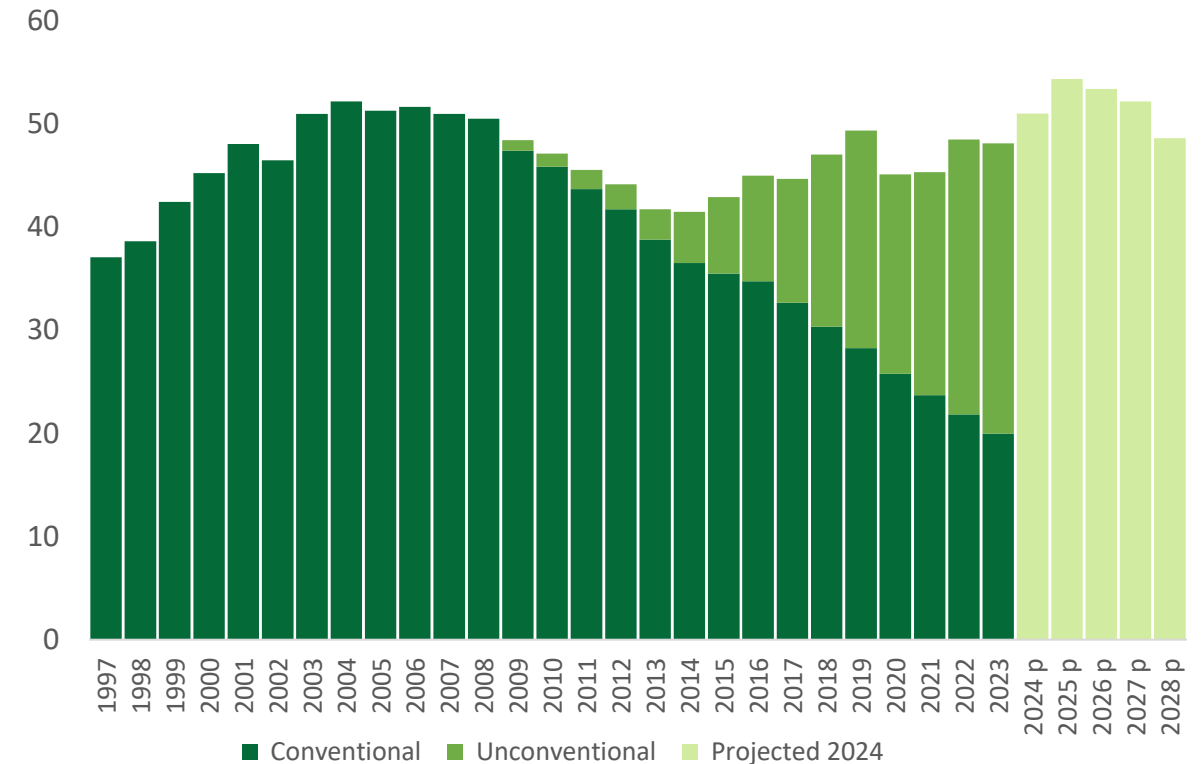
GAS PRODUCTION OUTLOOK

- **National gas production has reached record figures, peaking at 153 MMm3/d in August, the highest level in the past 21 years.**
- While Vaca Muerta increases production, Bolivia's declining gas reserves, which also supply Brazil, cause concern. Brazil relies heavily on hydroelectric plants affected by climate variability. **A 1990s water crisis led to a Bolivia-Brazil gas pipeline, now 60% idle, potentially allowing Argentina a supplier. With the prospect of increasing gas exports to Brazil, alternatives include using the Bolivian pipeline network¹ (now available with the reversion of the Northern Gas Pipeline), a new pipeline through Paraguay or extending the Perito Moreno Gas Pipeline to Uruguayana (after concluding II Stage in 2026).**
- With this expectation, the government enabled free competition for gas exports, expanding markets for Vaca Muerta's gas. After two decades of energy dependence, Argentina is on the path to a significant energy change.



65% of gas comes from the unconventional production of Vaca Muerta, thanks to advances in hydraulic fracturing (fracking) technology, which has enabled the exploitation of this geological formation.

Gas production in Argentina. Trillion cubic meters



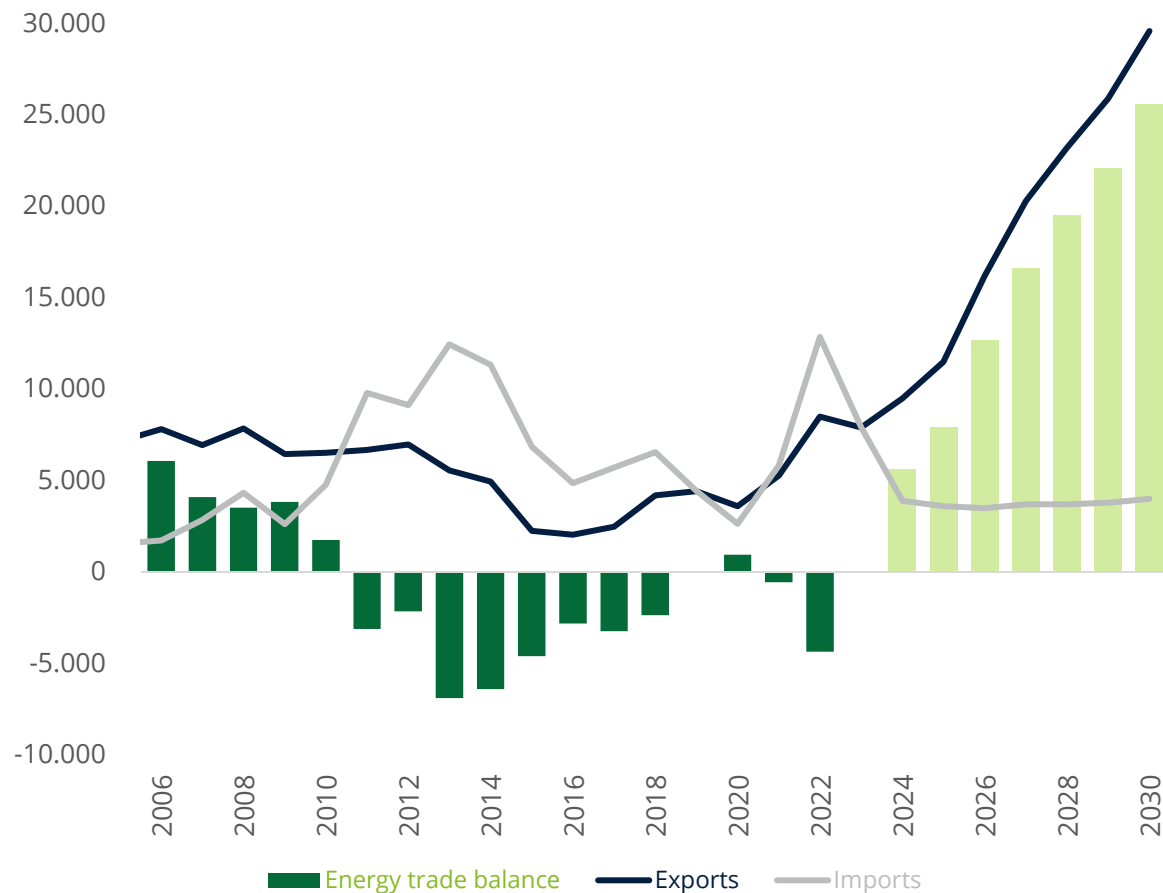
Source: Econosignal based on Ministry of Energy. p: projected value.

¹Some companies received authorization to export 3.8 MMm3/d to Brazil with this pipelines.

The future of the energy trade balance

In the coming years, the net foreign exchange earnings from the sector will be crucial for the country's external accounts.

Energy trade balance. Billion USD



Source: INDEC and Central Bank of the Argentine Republic: *Argentina Stage II: Establishing an Orthodox Monetary Framework*. July 2024 .

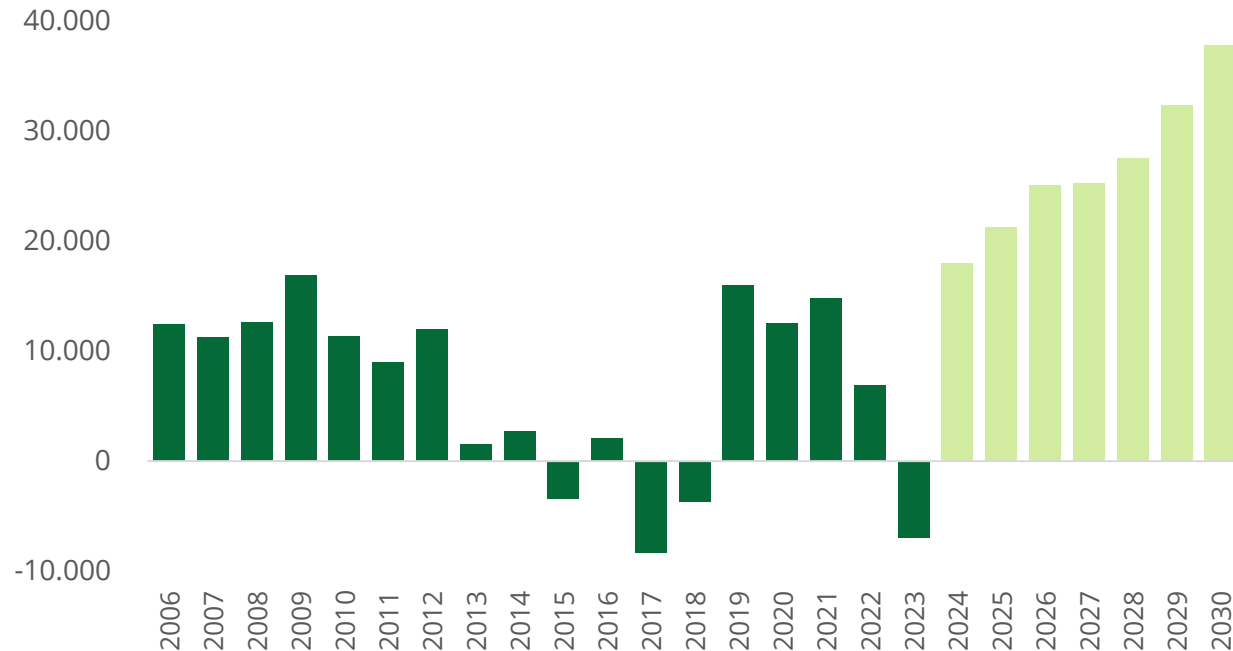
OUTLOOK FOR ENERGY EXPORTS AND IMPORTS

- In the last decade, the lack of investment in exploration caused a drop in oil and gas production, while demand increased significantly due to a greater need for electricity generation in thermal power plants, driven by subsidized price policies and an increase in residential and industrial consumption.
- Between 2011 and 2018, the energy deficit averaged USD 4 billion annually, totaling a deficit of USD 31.6 billion in this period. In 2022, due to record hydrocarbon imports, an energy deficit of USD 4.36 billion was reached, and then approached equilibrium in 2023.
- The Perito Moreno Gas Pipeline allowed savings in imports and *Vaca Muerta* production boosted hydrocarbon exports.
- The Central Bank of the Argentine Republic proposes a scenario of **stabilization of energy imports**, thanks to the greater transportation capacity of gas pipelines throughout the country, and a **greater dynamism of exports, which would reach USD 29.6 billion by 2030**. In this way, the energy surplus would reach USD 25.6 billion by that year.

The future of the energy trade balance

In the coming years, the net foreign exchange earnings from the sector will be crucial for the country's external accounts.

Trade balance of goods. Millions USD



After a record trade surplus in 2024, the Central Bank expects it to continue to increase to almost USD 40 billion. With these forecasts, the trade surplus in goods would rise from 2.9% of GDP in 2024 to 5.2% in 2030.

IMPACT OF ENERGY EXPORTS IN TRADE BALANCE

- **Growth in oil and gas exports, together with greater dynamism in mining due to increased copper and lithium extraction, will boost the trade balance over the next five years.**
- **The current account reached an average deficit of USD 6.5 billion between 2006 and 2023 and would reach a surplus of USD 4 billion in 2024. If the scenario proposed by the Central Bank of a strong increase in the goods trade balance driven by higher energy exports is achieved, ceteris paribus, Argentina's current account could maintain the surplus reached in 2024 for at least the next 5 years.**

Source: Econosignal based on INDEC, Central Bank of the Argentine Republic: *Trade balance projections 2024-2030* and own estimates.

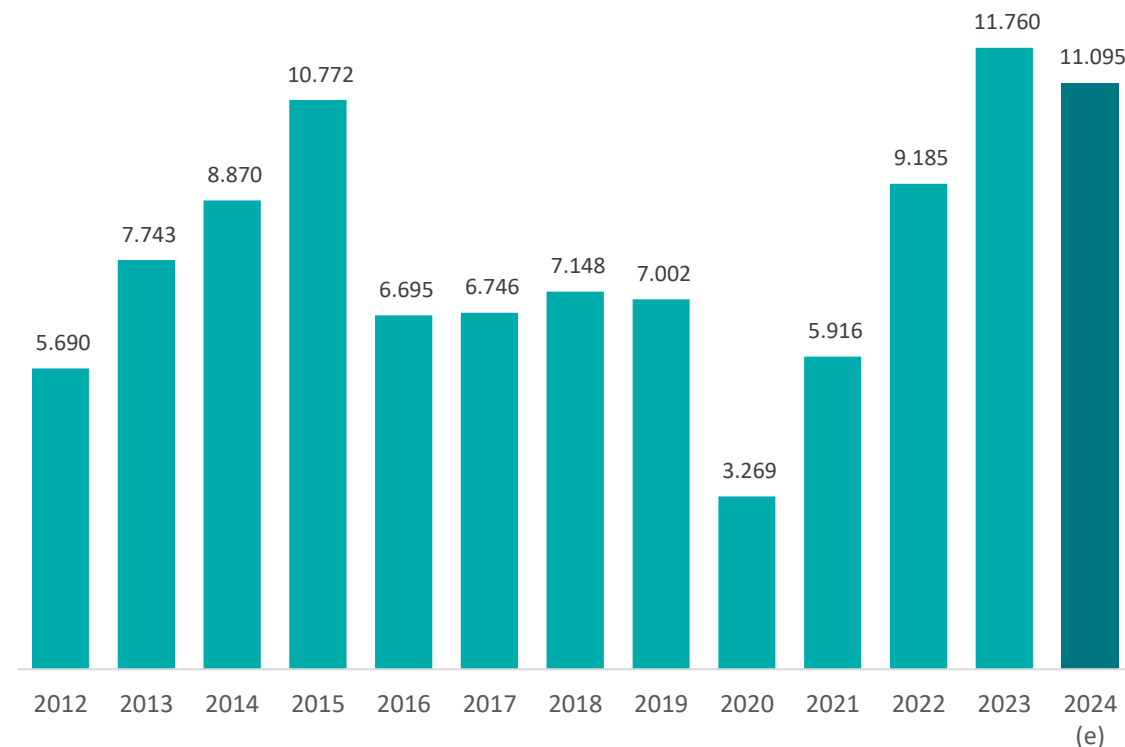
The future of the energy trade balance

In the coming years, the net foreign exchange earnings from the sector will be crucial for the country's external accounts.

INVESTMENTS

- Investment in oil and gas exploration and exploitation has increased significantly, reaching historic highs in 2023. Most of these investments are concentrated in oil exploitation in the Neuquén basin. In 2024, investment would be similar to that of 2023, with **strong growth in non-conventional sources, which would reach a record 75% of the total. According to official estimates, investments in the upstream sector could accumulate to USD 100 billion in the coming years.**
- With the approval of the “Ley Bases” in Congress, the **Incentive Regime for Large Investments (RIGI)** was created. The RIGI offers tax, customs and exchange incentives for 30 years to attract projects exceeding USD 200 million. Among the benefits are the reduction of income tax from 35% to 25%; VAT refunds; zero export tariffs for exports arising from these investments; free availability of foreign currency from exports; and access the foreign exchange market for debt payments, dividends, and repatriation of investments.

Upstream Investments in hydrocarbons. Millions of USD



Source: Secretariat of Energy of the Nation.

Incentive Regime for Large Investments (RIGI)

According to official estimates, there are \$11.8 billion in green projects as of November 2024. Investments could reach USD 30 billion in the energy sector and USD 54 billion in total. Some projects have already been presented in RIGI, while others are planned to be presented soon.

Project	Sector	Company	Millions USD
LNG liquefaction vessel "Hilli Episeyo"	Energy (LNG)	Pan American Energy – Golar LNG	2,900
Vaca Muerta Sur Oil Pipeline	Energy (oil)	YPF + Pluspetrol, PAE, Vista, Pampa Energía, Chevron and Shell	2,500
Sal de Oro at Salar del Hombre Muerto	Mining (lithium)	Posco	1,000
Carbonatos Profundos in Gualcamayo	Mining (gold)	Minas Argentinas	1,000
Iron foundry in San Nicolas	Metals (iron)	SIDERSA	300
Solar Park El Quemado	Energy (solar)	YPF Luz	220
Hombre Muerto Oeste	Mining (lithium)	Galan Lithium	200
Salar de Rincón*	Mining (lithium)	Rio Tinto	2,500
Perito Moreno Gas Pipeline Expansion*	Energy (LNG)	Transportadora de Gas del Sur (TGS)	700
Power lines and solar park*	Energy (solar)	Central Puerto	600
LNG plant Sierra Grande	Energy (LNG)	YPF - Petronas	30,000
Filo del Sol	Mining (copper and silver)	BHP – Lundin Mining	5,000
Taca Taca	Mining (copper)	First Quantum Minerals	4,000
Josemaría	Mining (copper)	BHP – Lundin Mining	3,000
Proyecto Mariana, Salar Llullaillaco	Mining (lithium)	Ganfeng	1,000
Salar Centenario-Ratones	Mining (lithium)	Eramet - Tsingshan	800

Source: Econosignal and Ministry of Economy of the Nation and Report of the Chief of the Ministerial Cabinet of the Nation to the Chamber of Deputies, September 2024. *Not confirmed

Main investment companies in hydrocarbons

Investments made (2012-2023)

Project	Basin	Company	Millions USD
Loma Campana	Neuquina	YPF S.A.	8,877
Aguada Pichana Este	Neuquina	Total Austral S.A.	6,183
Fortin De Piedra	Neuquina	Tecpetrol S.A.	3,503
La Amarga Chica	Neuquina	YPF S.A.	3,131
Bandurria Sur	Neuquina	YPF S.A.	1,923
Manantiales Behr	Golfo San Jorge	YPF S.A.	1,790
Rincon Del Mangrullo	Neuquina	YPF S.A.	1,698
La Calera	Neuquina	Pluspetrol S.A.	1,508
Lindero Atravesado Oriental	Neuquina	Pan American Energy Llc	1,322
Aguada Toledo	Neuquina	YPF S.A.	1,290
El Orejano	Neuquina	YPF S.A.	1,240
Bajada Del Palo Oeste	Neuquina	Vista Oil & Gas Argentina S.A.	1,238
Loma La Lata	Neuquina	YPF S.A.	1,150
Barranca Baya	Golfo San Jorge	YPF S.A.	1,102
Los Perales	Golfo San Jorge	YPF S.A.	1,075



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