

# ARGENTINA'S HYDROCARBON INDUSTRY

2019 Outlook



INSTITUTO ARGENTINO  
DEL PETRÓLEO Y DEL GAS

# 2019 Outlook

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# 1 Introduction

Argentina's hydrocarbon industry has passed the hundred-year milestone. It began in 1907 with the discovery of crude oil in the Golfo San Jorge Basin and, throughout the XX century, it registered a sustained growth, reaching self-sufficiency of oil in 1980. As from 1990, influenced by strong changes in the rules of the game of the oil industry, production increased significantly and Argentina became an oil-exporting country since 1992. This growth was accompanied by the installation of the necessary refineries to supply the domestic market and even export oil by-products. Likewise, we witnessed the development of a transportation and distribution infrastructure that includes river and sea ports, pipeline networks, loading terminals and all the necessary facilities to guarantee the distribution of fuels to every corner of a large country.

Natural gas arrived from Patagonia to the capital city in 1949 with the inauguration of the Comodoro Rivadavia-Buenos Aires gas pipeline, later extended to Tierra del Fuego. During the next four decades, another three trunk gas pipelines were built that transport gas from the reservoirs in the Noroeste (Northwest) and Neuquén basins, where significant gas reserves have been discovered since 1977. In addition, a wide medium and low pressure network that transport gas from production basins and distribute it to the largest consuming centers, besides exporting it to neighboring countries since 1997.

During the first years of the XXI Century, there were no significant increases in oil and gas proven reserves and production began to stall as from 2004, while the internal demand continues to grow. Today, Argentina faces the challenge to promote

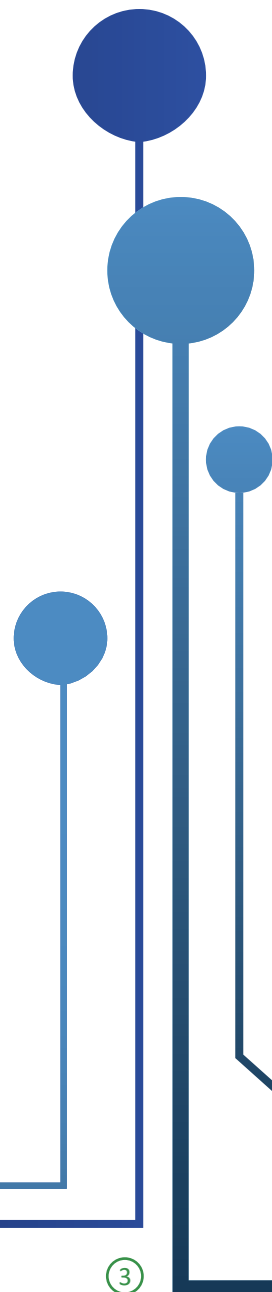
exploration and increase production sensibly in order to recover and sustain self-sufficiency of oil and natural gas, and become an exporting country again. To this purpose, it relies on a mature industry formed by large Argentine and foreign companies operating fields and refineries, hundreds of companies providing supplies and services, including SMEs (*pymes*, in Spanish) as well as professionals and technicians with a high level of knowledge and expertise. In those regions where the industry has a higher activity, we have witnessed the growth of cities and towns with the health and educational services necessary to ensure a good standard of living for professionals, technicians and workers. In most of the forty national universities, as well as in several private ones, they offer technical careers related to the oil industry.

The statistical information contained in this report is based on the Oil and Gas Information System (**OGIS**) prepared by the Argentina Oil and Gas Institute (IAPG). The IAPG also publishes a Geographic Information System for Oil and Gas (**GEO-PG**) with georeferenced data. The GEO-PG system is displayed through smart layers that can be enabled and disabled to carry out different queries, produce lists and create cartographic representations based on the requirements of each query. Statistical and geographical information is also available at the official website of the **Argentine Ministry of Energy and Mines**.

# 2 Legal Framework

Article 124 of the National Constitution (amended in 1994) establishes that the control of natural resources existing in their territories belong to the provinces and authorizes them to enter into

international agreements as long as these are compatible with Argentina's foreign policy. **Law 26197** of January 2007 regulates the National Constitution and returns hydrocarbon fields to



the provinces, which were under the Nation's jurisdiction until that moment.

Oil and gas exploration, exploitation, industrialization, transportation and commercialization activities are within the scope of regulation of the [Argentine Ministry of Energy and Mines](#). These activities are ruled by 1967's [Law 17319](#), which suffered several amendments in further legislation, especially through [Law 27007](#) of October 2014 that established precise and standardized rules for tenders in terms of conventional, unconventional hydrocarbons and offshore areas.

The currently law establishes new deadlines for the concessions, differentiated according to the type of exploitation: 25 years for conventional fields, 35 years for unconventional fields and 30 years for the so-called offshore developments in the Argentine continental shelf, granting the provinces the power to extend the period to 10 years to those companies meeting the strategic investment plan. It also establishes that offshore developments should have a tax deduction of 20%

when wells are located less than 90mts away from the coastline; it can reach 60% in areas beyond that distance. According to the law passed, the rights of the current licensees will not be affected by the amendments.

The National Gas Regulator (*Ente Nacional Regulador del Gas* - ENARGAS) controls natural gas treatment, transportation and distribution operations. The regulatory framework, as well as the operating rules corresponding to those operations, can be queried in the regulating body's website. The production and commercialization of Liquefied petroleum gas (LPG) is regulated by [Law 26020](#) (2005) and [Decree 297/2005](#).

The national, provincial and municipal legislation related to the oil and gas industries and environmentally related problems is included in the IAPG's [Environmental Digest](#). Laws, decrees and resolutions of national jurisdiction can also be checked in [INFOLEG](#), a legislative database published by the Argentine Ministry of Justice.

### 3 Sedimentary Basins



The Argentine territory hosts twenty-four onshore and offshore sedimentary basins that extend throughout a surface larger than three million square meters, within which 850 areas are delimited. Five of these basins have been commissioned between 1907 and 1949 and contain 230 areas currently producing.

The above-mentioned areas are Golfo de San Jorge, Neuquina, Austral, Noroeste and Cuyana basins, being the first three ones those with the highest proportion of reserves and production. The geological conditions of the basins in Argentina are summarized in the book "[Rocas reservorio de las](#)

#### Productive basins

- Basins currently without production
- Productive basins
- ◆ Shale formations

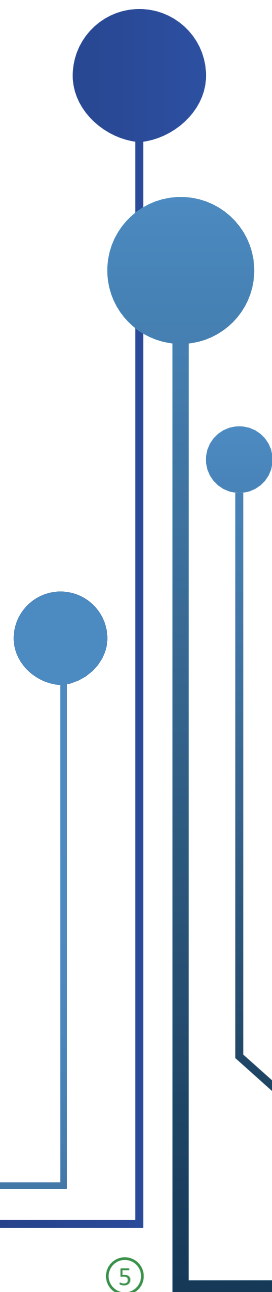
**cuencas productivas de la Argentina”** (Reservoir Rocks in Argentina’s Productive Basins), published by IAPG. The information on concessions is listed in the website of the **Argentine Ministry of Energy and Mines** and of the **Oil and Gas Geographic Information System (GEO PG)** drafted by IAPG.

## 4 Reserves and Resources

Proven oil and gas reserves have not increased significantly in the last years, while the demand continues to grow. This situation may change if we can turn into reserves the resources contained in unconventional reservoirs, which, according to estimates of the U.S. Energy Information Administration (EIA), are equivalent to seventy-two times those current gas reserves and to eleven times the oil reserves. According to the study **World Shale Gas and Shale Oil Resource Assessment**, published by EIA in 2009 (revised and republished in 2011 and 2015) that analyzes the potential of 42 countries based on geological studies of low permeability reservoirs (shale and tight), Argentina ranks in second place worldwide after China in the shale gas ranking with 10.5% of available resources in the world. Whereas, in the shale oil ranking Argentina is in fourth place, preceded by Russia, United States and China. This study estimates that over 25% of shale gas resources in Neuquén Basin are technically recoverable (TRR), a significant rate considering that in US reservoirs it is around 10%.



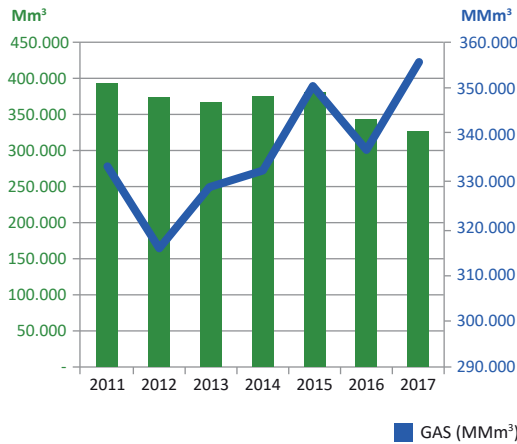
The increase in oil and gas reserves can result from not only the exploration and development of unconventional reservoirs but also from exploration jobs done looking for conventional fields. In 2012, YPF S.A. established an Exploration Plan, covering basins currently in production and some not productive as well, like Bolsones Intermontanos and Chacoparanaense. The **Argentine Ministry of Energy and Mines** announced in December 2017 a new exploration plan in Mar Argentino basins, which comprise the Cuenca Marina Austral and the Cuenca Malvinas Oeste.



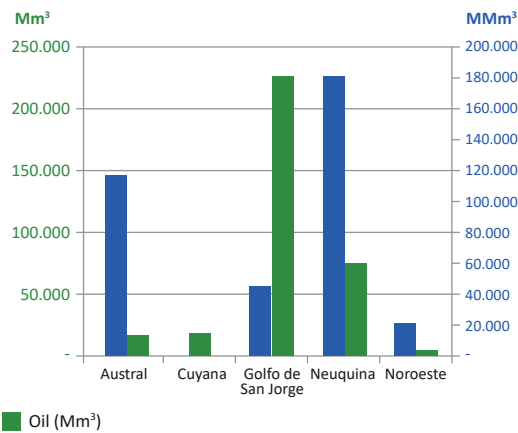
### ARGENTINA - OIL AND NATURAL GAS RESERVES 2011 - 2017

	Proven Oil (Mm <sup>3</sup> )	Proven Gas (MMm <sup>3</sup> )	Probable Oil (Mm <sup>3</sup> )	Probable Gas (MMm <sup>3</sup> )
2011	393.996	332.494	131.533	137.398
2012	374.289	315.508	124.243	143.269
2013	370.374	328.258	132.288	142.011
2014	378.343	332.165	133.915	149.075
2015	380.731	350.484	131.344	160.441
2016	343.764	336.669	119.686	148.634
2017	320.640	355.460	116.741	188.988

## ARGENTINA. OIL AND GAS RESERVES 2011-2017



## ARGENTINA. OIL AND GAS RESERVES BY BASIN 2011-2017



# 5 Oil and Natural Gas Production

The crude oil extraction experiences a deceleration that is maintained since 2001. Natural gas production began to stall in 2007, reaching its lowest level in this century by the year 2014 to start growing in the last three years, caused in part by

the contribution of the unconventional reservoirs. Well drillings in the five sedimentary basins under exploitation accompany such trend, although with some fluctuations.

## ARGENTINA. WELLS DRILLED 2011 - 2018

	Gas Advanced	Gas Exploration	Gas Exploration	Oil Advanced	Oil Exploration	Oil Exploration	Unproductive	Service	Total Wells
<b>2011</b>	2	10	83	55	53	917	47	139	<b>1.306</b>
<b>2012</b>	7	15	103	70	71	834	25	99	<b>1.224</b>
<b>2013</b>	5	18	80	53	47	969	28	102	<b>1.302</b>
<b>2014</b>	10	14	167	55	60	980	9	142	<b>1.437</b>
<b>2015</b>	8	7	196	74	54	993	8	100	<b>1.440</b>
<b>2016</b>	9	9	208	39	43	677	11	101	<b>1.097</b>
<b>2017</b>	16	13	275	40	52	542	5	76	<b>1.019</b>
<b>2018</b>	9	17	322	24	22	543	9	84	<b>1.030</b>

The exploration projects started, as well as the development of tight gas fields are a means to sustain self-sufficiency and resume crude oil and natural gas exports. In March 2017, the [Argentine Ministry of Energy and Mines](#) published [Resolution 46-E/2017](#), an "Incentive Program for Investments in Natural Gas Production Developments from Unconventional

Reservoirs". This resolution stipulates economic compensations for those concessions in Neuquén Basin having a specific investment plan.

The possibilities of increasing production not only aim at the development of unconventional resources or at the discovery of new fields but also at mature fields through the implementation

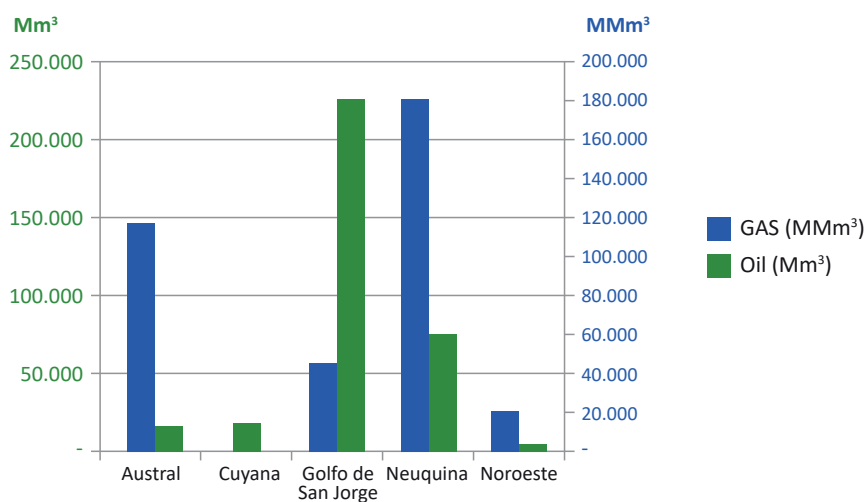
of enhanced oil recovery systems. Regarding this, within the framework of an agreement between the Ministry of Science, Technology and Productive Innovation and IAPG an Enhanced Oil Recovery (EOR) Research and Innovation Project is being developed. The strategic objective suggested is the development of pilot projects aimed at improving

the input of fields with a vast production history. Three national universities and eight companies that operate fields in the country have participated in the project: YPF S.A., Pan American Energy LLC Suc. Arg., Tecpetrol S.A., Pluspetrol S.A., Chevron Arg. S.R.L. Petrobras Argentina S.A., Enap Sipetrol S.A. and Sinopec S.A.

### ARGENTINA - OIL PRODUCTION BY BASIN 2017

Unit: m<sup>3</sup>

	Oil (Mm <sup>3</sup> )	Gas (MMm <sup>3</sup> )
<b>AUSTRAL</b>	11.624	117.170
<b>CUYANA</b>	12.926	362
<b>GOLFO SAN JORGE</b>	219.966	43.441
<b>NEUQUINA</b>	72.170	177.129
<b>NOROESTE</b>	3.955	17.358





## ARGENTINA - OIL AND NATURAL GAS PRODUCTION 2011 - 2018



## 6 Treatment, Transportation and Distribution of Natural Gas and Liquefied Gases

Purification and treatment of the natural gases obtained from fields as well as the processes to extract liquefied gases are under the domain of thirty (30) treatment plants distributed in the producing basins. These plants produce ethane, liquefied gases, gasoline and condensate destined to domestic consumption bottled in cylinders, to

the petrochemical industry and to exports. Besides, liquefied gases are produced from crude oil at refineries. Historically, around 30% of the liquefied gas total production is consumed in the domestic market and the remaining 70% is exported.

### Production at Gas Treatment Centers (GTC) 2011 - 2018 Original Units

	Propane (ton)	Butane (ton)	Liquefiedgas (ton)	Gasoline (m³)	Condensate (m³)	Ethane (ton)
<b>2011</b>	1.143.613	768.360	63.907	629.097	48	810.586
<b>2012</b>	1.056.224	707.042	65.516	568.676	-	824.646
<b>2013</b>	1.019.987	650.932	69.209	449.034	-	837.292
<b>2014</b>	1.027.698	650.745	67.503	453.589	-	889.009
<b>2015</b>	949.350	609.787	65.847	438.235	-	908.055
<b>2016</b>	938.425	621.195	63.351	444.224	-	990.848
<b>2017</b>	941.981	546.783	64.268	468.246	94.773	939.631
<b>2018</b>	992.190	656.346	56.394	478.002	85.406	912.583



## Propane and Butane Production in Refineries

UNIT: Tons

	Propane	Butane
2011	1.143.613	768.360
2012	1.056.224	707.042
2013	1.019.987	650.932
2014	1.027.698	650.745
2015	949.350	609.787
2016	938.425	621.195
2017	941.981	546.783
2018	992.190	656.346



## Total Production. Gas Treatment Centers + Refineries

UNIT: Tons

	Propane	Butane	Gas Licuado	Total Liquefied Gases
2011	1.143.613	768.360	63.907	<b>1.975.879</b>
2012	1.056.224	707.042	65.516	<b>1.828.782</b>
2013	1.019.987	650.932	69.209	<b>1.740.128</b>
2014	1.027.698	650.745	67.503	<b>1.745.946</b>
2015	949.350	609.787	65.847	<b>1.624.984</b>
2016	938.425	621.195	63.351	<b>1.622.971</b>
2017	941.981	546.783	64.268	<b>1.553.032</b>
2018	992.190	656.346	56.394	<b>1.704.930</b>

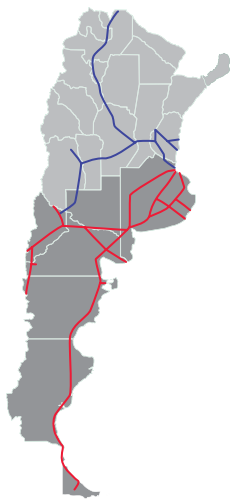
Natural gas is essential to the Argentine energy matrix to which it contributes – since mid-90's - with over 50% of the energy supply.

Natural gas transportation is carried out through more than 15,500 km of trunk gas pipelines that, in the last twenty years, have increased their capacity 110%. During that period, we have also witnessed the construction of four gas pipelines that cross the Andes to Chile and other four cross to Brazil and Uruguay. Moreover, several gas pipelines were laid out crossing Tierra del Fuego, transporting gas destined to the South of Chile. The operation of trunk gas pipelines is in the hands of two transporting companies and the distribution to population centers through medium and low pressure networks is handled by nine (9) regional distributors.

To the aforementioned, it must be added the recent construction of the gas pipelines that

transport the Liquefied Natural Gas (LNG) arriving to the ports of Escobar and Bahia Blanca. The gas pipelines network is currently under expansion. In this regard, the most important project is the construction of the Noroeste Argentino gas pipeline that will cover the only region of the country that does not have gas through networks yet.

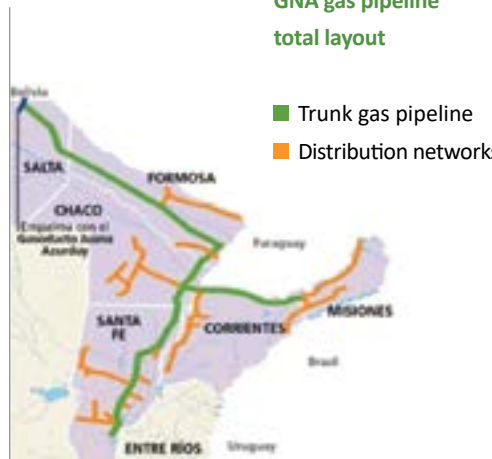
Both the **Oil & Gas Geographic Information System** (GEO PG) elaborated by the IAPG and the **Geographic Information System** of the Ministry of Energy offer important information on transport and gas distribution infrastructure.



**Licensees of the Gas transportation service**

- TGN
- TGS

→ Distributors

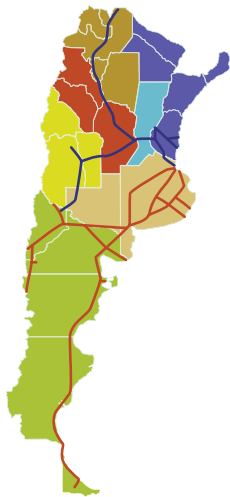


**GNA gas pipeline total layout**

- Trunk gas pipeline
- Distribution networks



**Licensees of the Gas distribution service**



- Gasnor S.A.
- Gasnea S.A.
- Distribuidora de Gas del Centro S.A.
- Litoral Gas S.A.
- Distribuidora de Gas de Cuyana S.A.
- Gas natural Ban S.A.
- Metrogas S.A.
- Camuzzi Gas Pampeana S.A.
- Camuzzi Gas del Sur S.A.

→ Transporters

*Transportation and Distribution System. Gas Delivered by Type of User 2011-2018.*

*Unit: Mm3 of 9300 kcal*

	Residential	Commercial	Official Entities	Industry	Power Plants	Sub distributors	GNC	Total
<b>2011</b>	9.552.089	1.255.001	425.574	12.511.707	12.951.424	878.538	2.761.088	<b>40.335.421</b>
<b>2012</b>	10.031.821	1.342.963	444.186	11.661.256	14.350.359	936.731	2.784.981	<b>41.552.297</b>
<b>2013</b>	10.491.043	1.343.634	445.904	12.391.359	14.471.673	1.012.083	2.759.075	<b>42.914.771</b>
<b>2014</b>	10.107.687	1.325.918	441.683	12.477.649	14.542.907	1.001.170	2.852.517	<b>42.749.531</b>
<b>2015</b>	10.229.001	1.334.006	430.631	12.632.440	14.916.184	1.047.421	2.980.874	<b>43.570.557</b>
<b>2016</b>	10.835.009	1.368.085	478.704	12.084.232	16.002.489	1.090.381	2.826.613	<b>44.685.513</b>
<b>2017</b>	9.637.658	1.262.860	442.281	12.498.756	17.257.368	1.043.463	2.553.603	<b>44.695.989</b>
<b>2018</b>	9.568.375	1.256.816	431.586	13.193.227	17.189.400	1.044.737	2.400.545	<b>45.084.687</b>

# 7 Crude Oil Transportation and Refining, Elaboration and Distribution of by-products

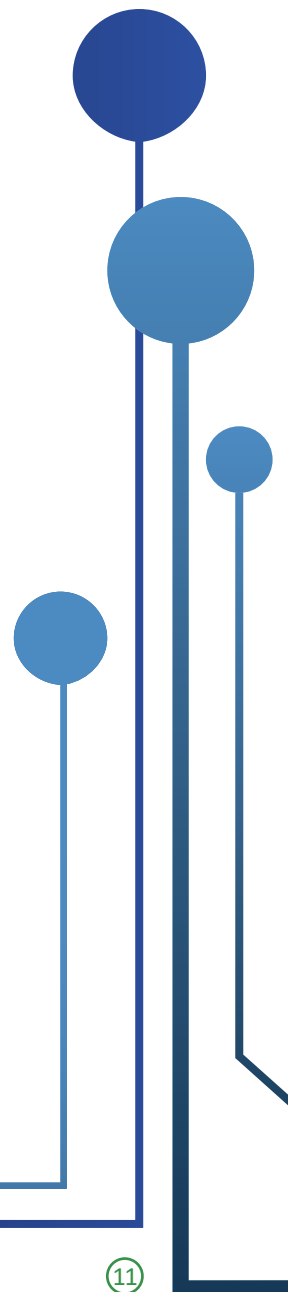
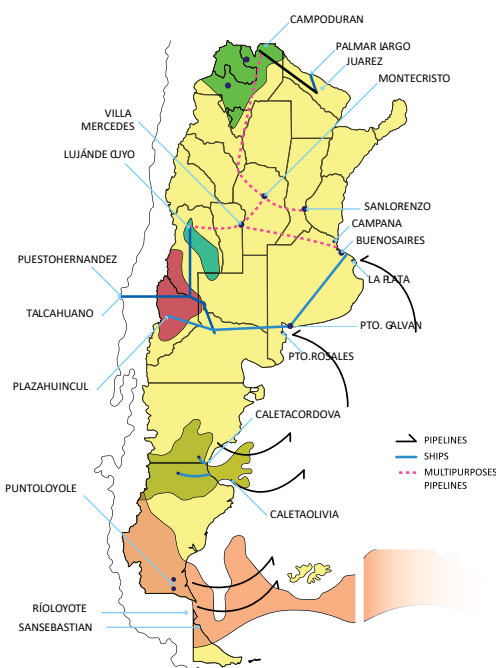
The crude oil produced in Patagonia is transported to the refineries by sea and by trunk pipelines. The Golfo de San Jorge and Austral basins have a local pipeline network that carries the crude to the loading terminals of ships that transport it mainly to the refineries of Buenos Aires. The oil produced in the Neuquina Basin reaches the refineries through a pipeline network whereas the crude of the Cuyana and Noroeste basins is processed at refineries located in those regions. A multipurpose pipeline network goes through Argentina's north and center transporting oil byproducts produced in Campo Durán (Salta), Luján de Cuyo (Mendoza), San Lorenzo (Santa Fe) and La Plata (Buenos Aires).

Oil products are also transported in ships that carry crude oil to Campana and fuels to the ports located alongside the Paraguay-Paraná waterway hub supplying the coastal provinces.

The national oil and by-products transportation and distribution system is completed with tank trucks that transport fuels from the terminals located throughout the multipurpose pipeline network, the ports or the refineries to consumption points, specially gas stations and industrial plants. The mean distance of fuel road transportation is around 250 kilometers, almost never exceeding 800 km.

The refining industry in Argentina is as old as oil production. For more than 100 years it is been led for eight decades by three big companies: YPF S.A., Shell CAPSA and Esso SAPA (now Axion Energy), that progressively adapted their processing capacity to demand growth. Historically, YPF – owner of Refinerías La Plata, Luján de Cuyo and Plaza Huincul, has concentrated over 50% of the total production of oil by-products. Shell Refinery in Dock Sud and Esso Refinery in Campana contribute with a percentage ranging between 30 and 35% of by-products production, whereas the remaining percentages are distributed in other 18 production plants.

## Transportation of crude oil and by-products



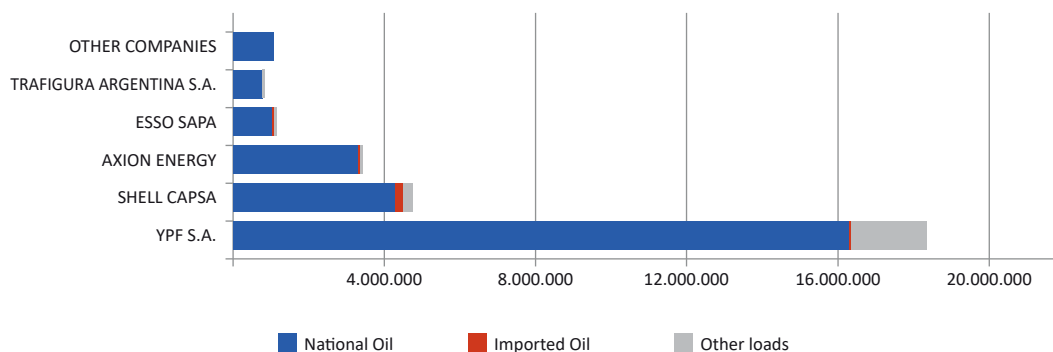
## Crude Oil and Other Loads Processed in Refineries 2010 -2018

Unit: m<sup>3</sup>

	National Oil	Imported Oil	Other Oils
<b>2011</b>	29.822.587	-	3.125.304
<b>2012</b>	30.490.740	247.866	3.714.464
<b>2013</b>	30.119.333	421.240	3.830.747
<b>2014</b>	29.943.410	546.858	3.889.743
<b>2015</b>	30.122.756	915.926	3.931.775
<b>2016</b>	28.810.377	888.145	3.919.701
<b>2017</b>	27.746.234	1.217.648	3.798.793
<b>2018</b>	26.614.520	581.760	3.491.153

## Crude Oil and Other Loads Processed by Company

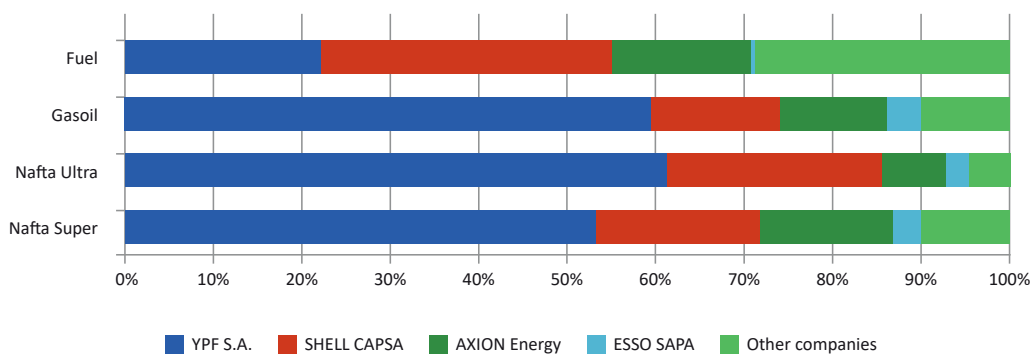
Unit: m<sup>3</sup>



The sales of fuels, lubricants and other by-products in the domestic market are proportionally similar to the elaboration figures, with the exception of fuel oil, which leadership is exclusive to Shell. Geographically speaking, the higher percentage

of sales is in the provinces of Buenos Aires, Santa Fe, Cordoba and Mendoza, as well as in the Autonomous City of Buenos Aires, where, besides, the plants with a larger refining capacity are located.

## Sales to the domestic fuel market by Company - 2018

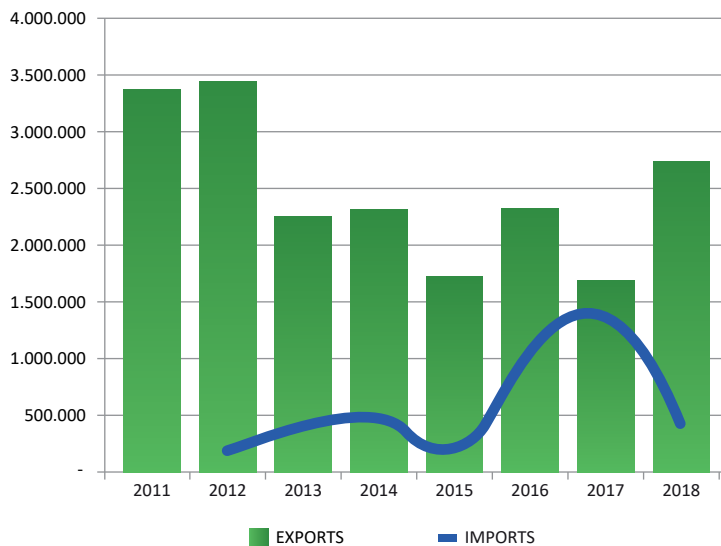


## 8 International Trade

In 1980, Argentina reached self-sufficiency in crude oil and had the refining capacity necessary to produce the fuels and other oil byproducts destined to domestic demand. In 1985, it started to export crude oil in percentages that did not exceed 2% of annual production. Since 1990, changes on the regulatory framework of the industry boosted an export process that reached its peak in 1997

and 1998 when 40% of the annual production was sold abroad. Since 2001, domestic supplied was maintained but exports started to decrease. The international market of oil by-products presents in the last five decades a parity between inputs and outputs with some seasonal peaks due to specific circumstances.

### *Argentina. Imports and Exports of Crude Oil* Unit: m<sup>3</sup>

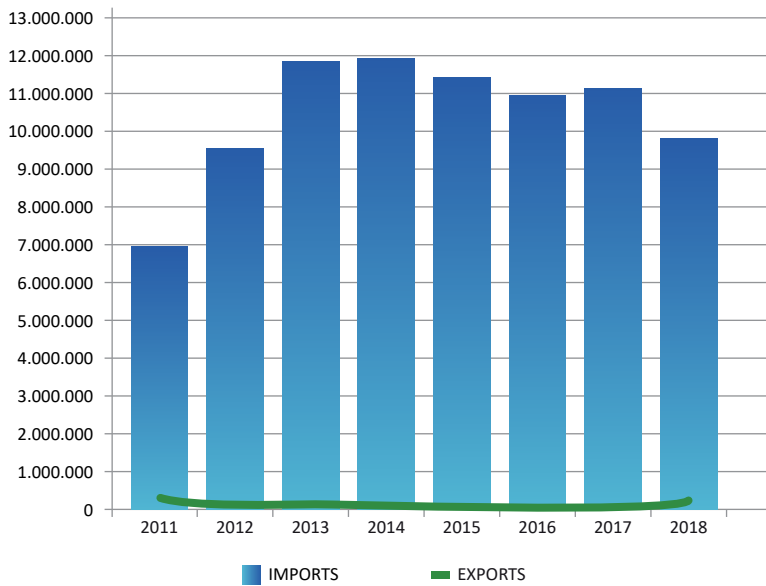


Natural gas represents a particular problem. Traditionally, even in the years of higher production, Argentina imported gas through pipelines from Bolivia, to enter the transportation network. In 1997, Argentina started to export natural gas to Brazil, Chile and Uruguay. The maximum volumes of gas exports were recorded between 2001 and 2006.

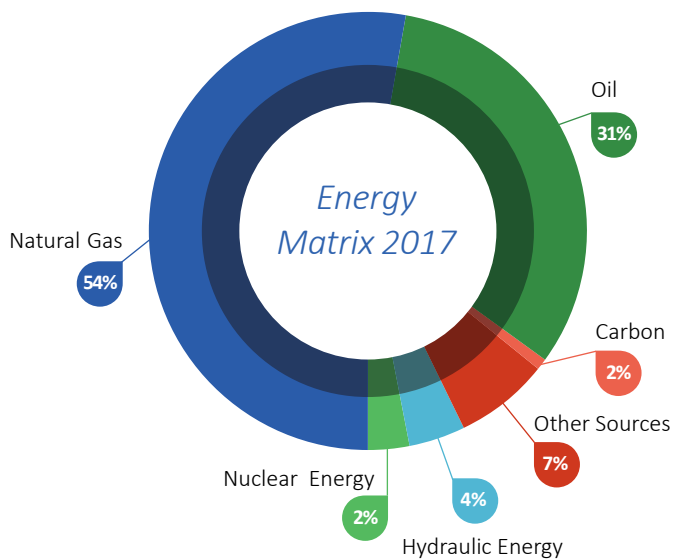
At the same time, the medium and low pressure pipeline distribution network expended, creating a sustained growth of the internal market. The increase of the demand from all of the consuming sectors, especially from energy generating plants, made it necessary not to only reduce the exports

since 2007, but also to start liquefied natural gas (LNG) imports. As already set out, the development of tight gas reservoirs opens the door to a solution for this problem and the most optimistic opinions suggest that Argentina will no longer import LNG in the next decade, going back to the export market. To that end, the country has an important infrastructure for transportation through pipelines in order to access the markets of neighboring countries.

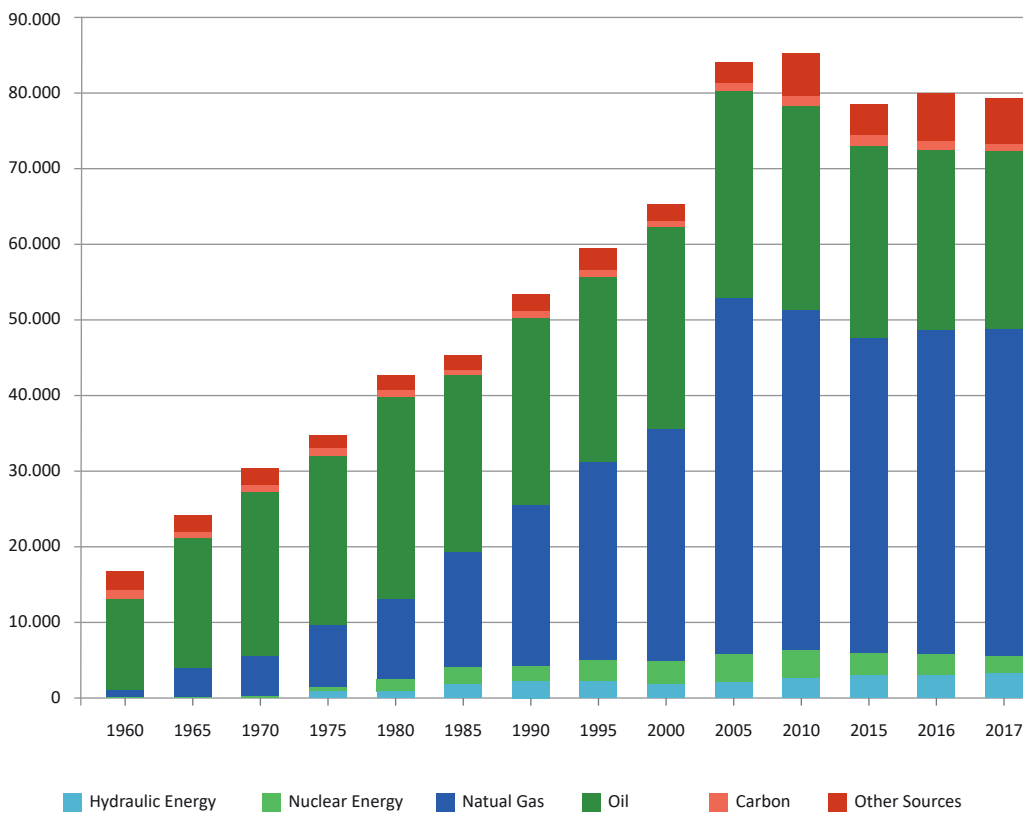
Argentina. Imports and Exports of Natural Gas  
Unit: Mm<sup>3</sup>



## 9 Energy Matrix



Argentina. Evolution of the Primary Energy Matrix  
Unit: ktep



## 10 Appendix: Unconventional resources

Argentina has large unconventional oil and gas resources, which were already mentioned in chapters 4 and 5 of this document.

The development of these important resources is focused on Neuquén basin, with a series of pilot projects initiated by different operators that, in some cases, have managed the development phase with significant success. Today, these resources represent 41% of the country's natural gas production and 17% of the oil production (March 2019).

The word 'unconventional' takes as a main parameter the permeability of the rocks from

where the resources are produced. The resources present in source rocks and impermeable are known as 'shale', and those found in rocks that, although not source rocks have a very limited permeability, are commonly known as 'tight'.

Vaca Muerta formation in Neuquén basin stands out among the shale resources, with approximately 302 TCF [trillion cubic feet] of natural gas and 16,200 million barrels of oil; its exploration phase began in 2010 and the development phase started in 2013. Currently, the formation is very attractive to national and international investors, and considered one of the best reservoirs in the world due to its characteristics. Companies such as YPF



S.A., Pan American Energy, Total, Shell, Tecpetrol S.A., Pluspetrol S.A., ExxonMobil, Wintershall, Vista Oil, Chevron Argentina, Pampa Energía, Enap Sipetrol and Phoenix – among others – have operations in Vaca Muerta. ‘Los Molles’ and ‘Mulichinco’ shale formations, in the same basin, have been explored less extensively but they also have a great potential.

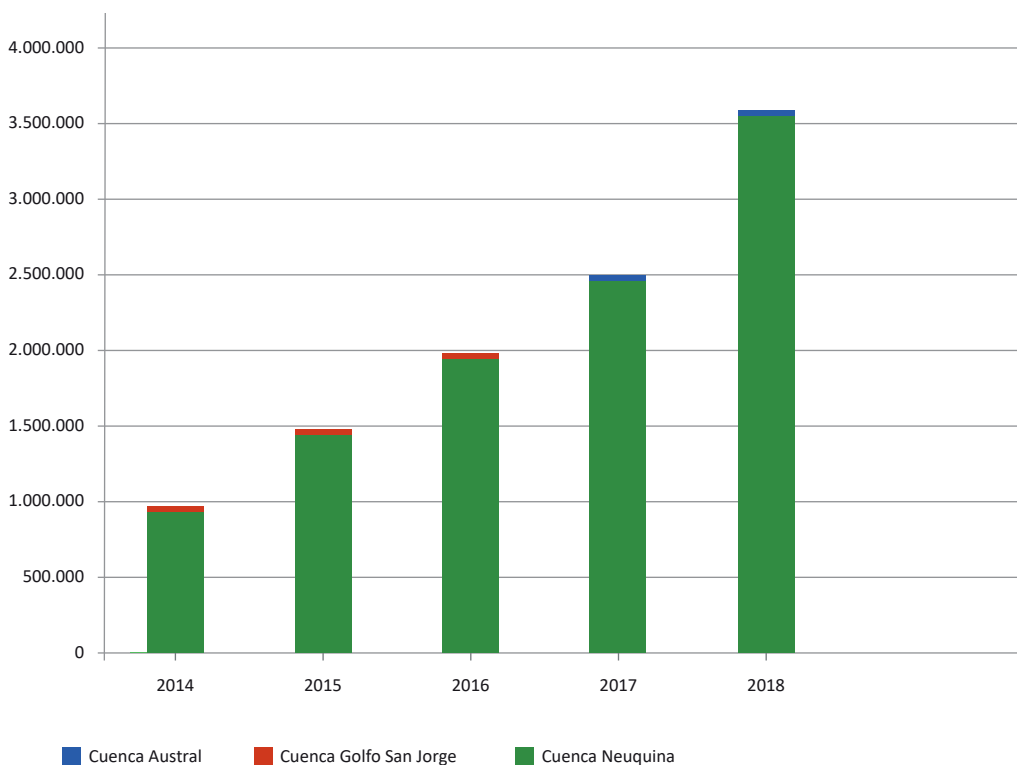
Other shale formations in different sedimentary basins throughout the country have potential as well, although they require further studies of their physical characteristics and the resources they present. This is the case of ‘Inoceramus inferior’ formation (Austral basin), ‘Neocomiano’ and ‘D-

129’ (Golfo San Jorge basin), ‘Cacheuta’ (Cuyana basin) and ‘Los Monos’ formations (Northeastern basin), all of them totaling an estimated volume of 500 TCF of natural gas.

As regards tight resources, the country produces gas from these type of rocks since 2005, with important developments in the Neuquén basin and, at present, a new development in the Austral basin in the province of Santa Cruz. ‘Estación Fernández Oro’ (province of Río Negro); ‘Río Neuquén’, ‘Lindero Atravesado’ and ‘Loma La Lata’ in the province of Neuquén, are some of the areas with greater production of this resource.

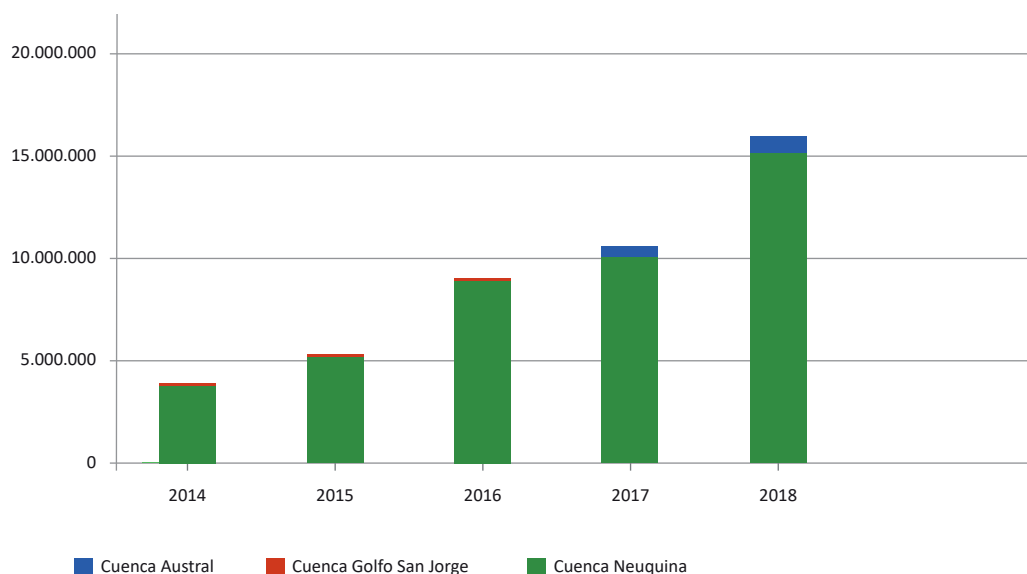
*Argentina. Oil production in unconventional reservoirs*  
Unit: m<sup>3</sup>

	Cuenca Neuquina	Cuenca Golfo San Jorge	Cuenca Austral	Total
<b>2014</b>	1.048.425	3.496	-	<b>1.051.921</b>
<b>2015</b>	1.479.813	5.769	-	<b>1.485.582</b>
<b>2016</b>	1.971.130	16.062	-	<b>1.987.192</b>
<b>2017</b>	2.556.479	8.170	10.589	<b>2.575.238</b>
<b>2018</b>	3.788.110	1.002	26.580	<b>3.815.692</b>



Argentina. Natural gas production in unconventional reservoirs  
Unit: m<sup>3</sup>

	Cuenca Neuquina	Cuenca Golfo San Jorge	Cuenca Austral	Total
<b>2014</b>	4.058.492	15.771	-	<b>4.074.263</b>
<b>2015</b>	6.445.709	13.780	-	<b>6.459.490</b>
<b>2016</b>	9.398.131	15.488	-	<b>9.413.619</b>
<b>2017</b>	11.189.019	10.414	276.799	<b>11.476.232</b>
<b>2018</b>	15.810.303	1.427	806.332	<b>16.618.062</b>



Argentina. Oil production in unconventional reservoirs per operator  
Unit: m<sup>3</sup>

	2018/03	2018/06	2018/09	2018/12	2019/03
<b>YPF S.A.</b>	205.080	2015.993	272.219	303.793	311.987
<b>PANAMERICAN ENERGY SL</b>	9.209	12.005	12.482	24.545	24.418
<b>TECPETROL S.A.</b>	4.416	5.981	24.769	22.649	21.484
<b>O&amp;G DEVELOPMENTS LTD S.A.</b>	20.052	20.128	20.897	22.322	17.221
<b>TOTAL AUSTRAL S.A.</b>	2.391	2.532	3.239	11.845	10.584
<b>VISTA OIL &amp; GAS ARGENTINA S.A.</b>	-	-	473	552	7.796
<b>EXXONMOBIL EXPLORATION ARGENTINA S.R.L.</b>	10.089	12.303	6.981	7.605	6.049
<b>PLUSPETROL S.A.</b>	4.111	2.427	1.719	3.450	4.530
<b>CAPEX S.A.</b>	464	509	1.320	1.520	3.927
<b>COMPAÑIA GENERAL DE COMBUSTIBLES S.A.</b>	1.670	2.419	2.074	2.616	2.987
<b>PETROLERA EL TREBOL S.A.</b>	153	4	-	1.276	2.608
<b>WINTERSHALL ENERGÍA S.A.</b>	1.740	3.548	6.177	3.625	1.795
<b>PAMPA ENERGÍA S.A.</b>	382	247	258	246	202
<b>MEDANITO S.A.</b>	58	78	99	107	95
<b>CHEVRON ARGENTINA S.R.L.</b>	26	26	21	39	38
<b>OTHER OPERATORS</b>	25.047	24.659	-	-	-
<b>TOTAL</b>	<b>284.887</b>	<b>292.858</b>	<b>352.728</b>	<b>406.191</b>	<b>415.721</b>

Argentina. Gas production in unconventional reservoirs per operator  
Unit: mm<sup>3</sup>

	2018/03	2018/06	2018/09	2018/12	2019/03
<b>YPF S.A.</b>	631.882	648.327	662.785	560.082	533.165
<b>TECPETROL S.A.</b>	137.226	214.868	304.673	435.828	473.418
<b>TOTAL AUSTRAL S.A.</b>	98.665	88.899	134.887	176.164	180.915
<b>PAMPA ENERGÍA S.A.</b>	86.422	94.914	91.750	114.707	137.476
<b>PANAMERICAN ENERGY SL</b>	84.843	105.990	125.311	125.423	111.042
<b>COMPAÑÍA GENERAL DE COMBUSTIBLES S.A.</b>	55.964	67.423	74.506	87.651	88.893
<b>PLUSPETROL S.A.</b>	43.704	45.747	42.126	41.775	43.375
<b>CAPEX S.A.</b>	14.857	13.250	24.279	26.884	37.356
<b>EXXONMOBIL EXPLORATION ARGENTINA S.R.L.</b>	5.603	10.759	5.010	8.416	21.795
<b>O&amp;G DEVELOPMENTS LTD S.A.</b>	2.051	2.568	3.403	3.975	2.958
<b>VISTA OIL &amp; GAS ARGENTINA S.A.</b>	-	-	68	63	1.019
<b>WINTERSHALL ENERGÍA S.A.</b>	337	1.291	2.707	1.761	892
<b>OILSTONE ENERGÍA</b>	959	789	727	705	250
<b>PETROLERA EL TREBOL S.A.</b>	142	1	-	-	239
<b>CHEVRON ARGENTINA S.R.L.</b>	25	16	13	23	20
<b>MEDANITO S.A.</b>	53	30	20	12	18
<b>OTHER OPERATORS</b>	114.653	121.361	-	-	-
<b>TOTAL</b>	1.277.386	1.416.234	1.472.264	1.583.469	1.632.832