

Argentina:  
Hydrocarbons Sector  
facing the challenge of recovering  
production and reserves

October 2016

# Summary

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Slow recovery of the international price of crude oil due to high inventory levels.

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In the last five years, production of both crude oil and natural gas has declined.

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The adjustment was made via the external sector with lower placements of oil and its derivatives and growing import needs for natural gas or substitute fuels (LNG, diesel), due to the high dependence which Argentina's energy matrix shows in relation to the latter fuel.

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The new authorities, in this scenario of falling levels of production and hydrocarbon reserves, with distorted price signals, particularly in the case of natural gas, which operates with high levels of subsidies, have taken measures to deregulate the sector and grant greater autonomy to the provinces to grant exploration and exploitation permits, as well as sending price restructuring signals to make investment more attractive.

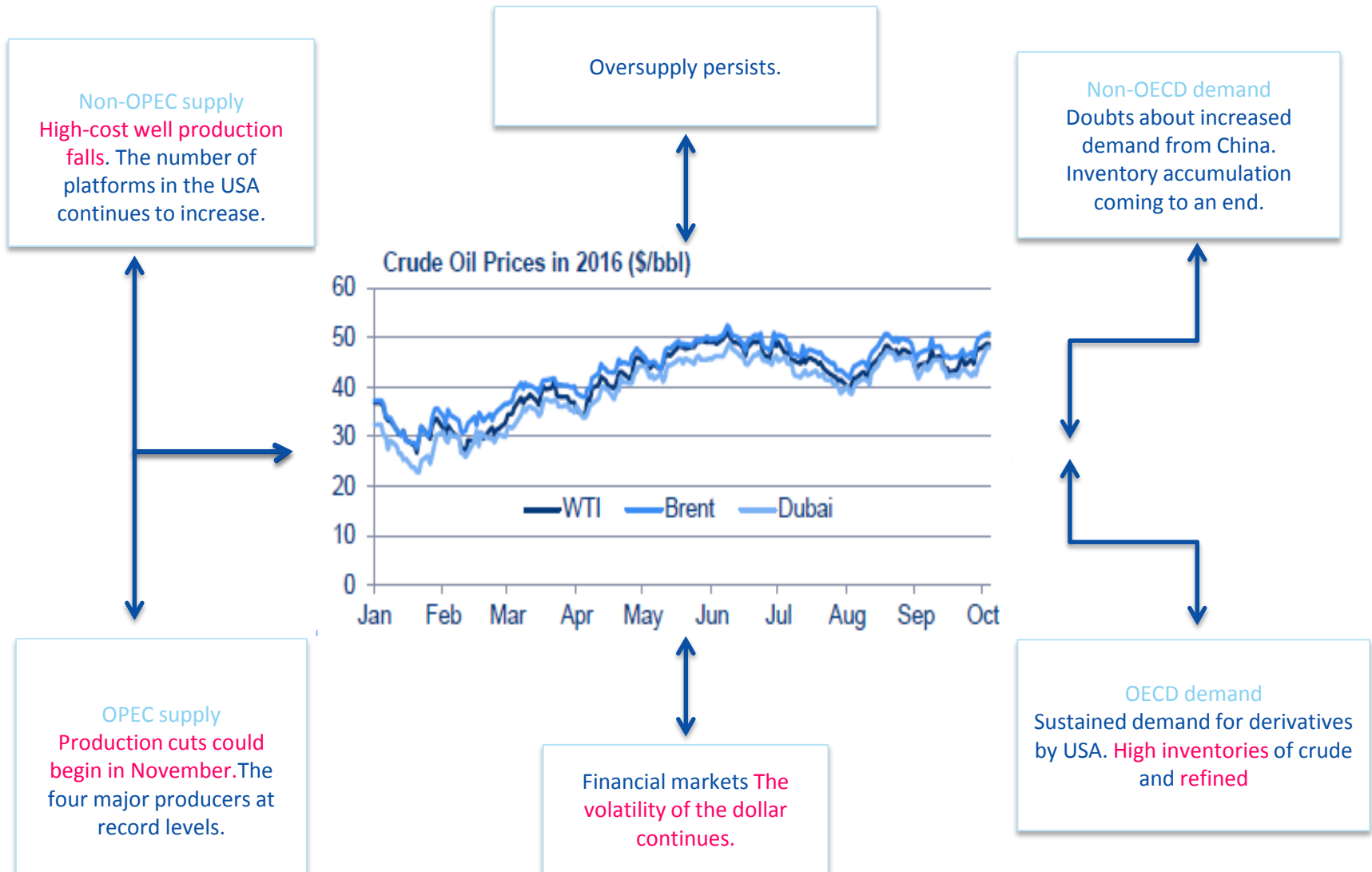
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In 2016, investment has not yet reacted at the expected speed, however as the proposed scheme becomes consolidated and there are firmer signs of greater legal certainty, it is expected that the investment process will take on an upward trend.

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- 1 International market, characterised by high inventories and slight recovery in oil prices
- 2 Crude oil: declining production and reserves
- 3 Natural Gas: recovered in the last year, but the result for the decade remains negative
- 4 The new authorities show signs of applying less government intervention and higher prices to encourage production and recovery of reserves, while gradually lowering subsidies to gas consumers

# Oil: oversupply persists ... with some surprises

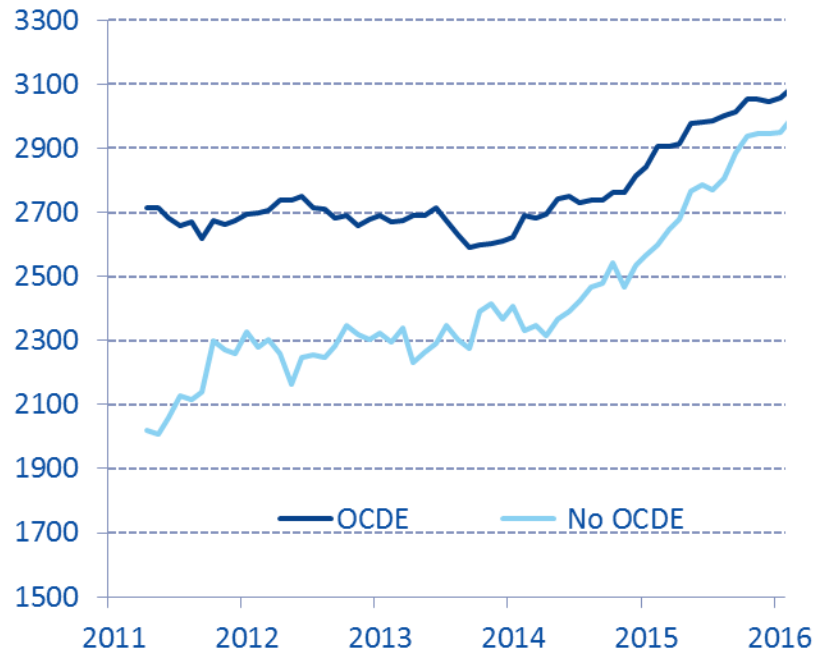


## Ramping up of prices in 2017 with downward bias due to risk of financial volatility

- The OPEC quota agreement set a reduction of 750,000 barrels per day, although the scope by country has still not been defined
- The high inventory levels are impeding fast recovery of prices
- A sustained price rebound would end production cuts in the USA

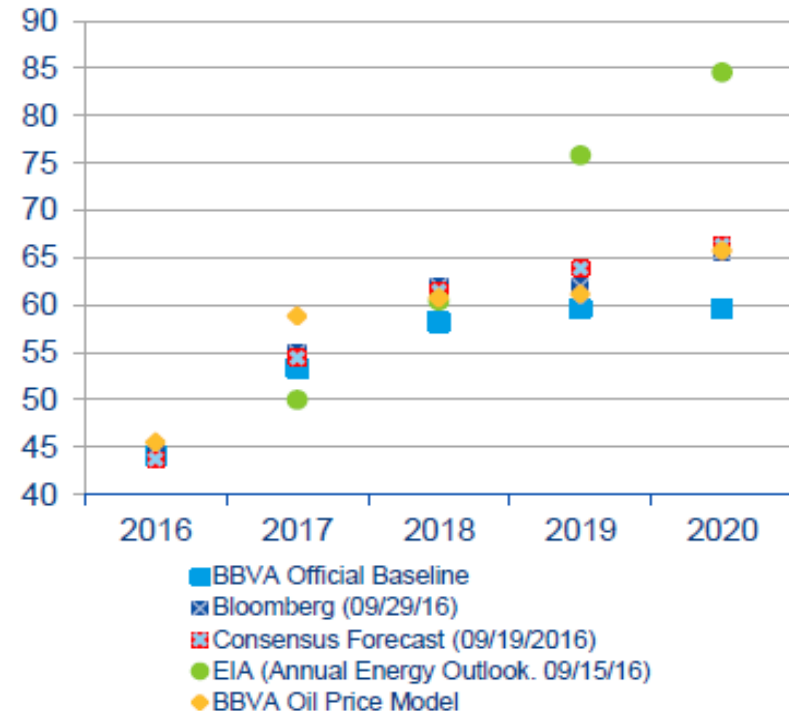
### Global oil inventories

FDP, millions of barrels



### Crude oil price estimates

Brent, USD/barrel average.



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# Production fell in the last five years

## Crude Oil Balance - annual average Mm3

Source: BBVA Francés Research on data from the Ministry of Energy and Mining.

Variable	1990/ 1999	2000/ 2009	2010/ 2015
Production	38.979	40.270	31.899
Imports	605	500	252
<b>Supply</b>	<b>39.584</b>	<b>40.770</b>	<b>32.151</b>
Internal Consumption 1/	28.437	30.845	29.053
Exports	11.147	9.926	3.097
<b>Demand</b>	<b>39.584</b>	<b>40.770</b>	<b>32.151</b>

1/ Stock include.

- ■ Production fell 20.8% compared to the past decade:
  - Underinvestment
  - Gradual decrease in yields of existing basins
- ■ Exports fell 68.8% due to falling export balances against the totals for the decade 2000-2009, while domestic consumption fell by 5.8%.
- ■ Imports continued to play a marginal role, covering needs of some varieties of crude oil not produced locally.

## It stabilised in 2015 and contracted again in 2016

### Production rose just 0.1% YoY in 2015 but fell again in 2016

- Production decreased for all operators except YPF (+4.0% YoY) and Pan American Energy (+5.2% YoY). The latter company receives a bonus awarded by the Government for the export of the Escalante variety it produces, over and above the international price of crude oil, since the total production cannot be absorbed by the local refineries.
- The top five operators accounted for 22.4% of total production in 2015.
- In the first half of 2016, output again fell 3.0% YoY.

### Crude Oil Extraction by Operator

Source: BBVA Francés Research on data from the Ministry of Energy and Mining-

Operator	thousand m3							Variation %
	2009	2010	2011	2012	2013	2014	2015	2015/14
YPF S.A.	11.914,9	11.855,7	10.952,2	11.296,2	11.640,6	12.671,2	13.178,1	4,0%
PAN AMERICAN ENERGY (SUCURSAL ARGENTINA) LLC	6.520,6	6.450,2	6.372,7	5.814,5	5.583,6	5.734,1	6.034,1	5,2%
PLUSPETROL S.A.	699,5	647,6	1.427,3	2.189,9	2.225,5	2.127,1	2.024,2	-4,8%
SINOPEC ARGENTINA EXPLORATION AND PRODUCTION, INC.	0,0	0,0	1.539,2	2.183,6	2.131,2	1.849,9	1.669,6	-9,7%
TECPETROL S.A.	1.566,0	1.424,8	1.372,7	1.285,7	1.175,7	1.114,3	1.071,2	-3,9%
Resto	14.331,1	13.820,9	10.451,7	9.198,8	8.576,4	7.384,6	6.920,7	-6,3%
<b>TOTAL</b>	<b>35.032,0</b>	<b>34.199,2</b>	<b>32.115,9</b>	<b>31.968,6</b>	<b>31.332,9</b>	<b>30.881,2</b>	<b>30.897,8</b>	<b>0,1%</b>



# Derivatives: big increases in sales of fuel oil in 2015

## Sales of Fuel oil

Companies	thousands of tons				Change %	Share			
	2012	2013	2014	2015		2012	2013	2014	2015
YPF S.A.	729	718	1115	1374	23,2%	34,3%	36,3%	43,9%	41,2%
SHELL C.A.P.S.A.	746	588	648	847	30,7%	35,0%	29,7%	25,5%	25,4%
ESSO S.A.P.A.	388	404	449	572	27,6%	18,2%	20,4%	17,6%	17,2%
OIL COMBUSTIBLES S.A.	107	86	141	239	69,8%	5,0%	4,3%	5,5%	7,2%
PETROBRAS ARGENTINA S.A.	71	96	89	189	111,8%	3,3%	4,9%	3,5%	5,7%
Rest	87	88	102	112	10,4%	4,1%	4,4%	4,0%	3,4%
<b>TOTAL</b>	<b>2128</b>	<b>1980</b>	<b>2544</b>	<b>3333</b>	<b>31,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

## Sales of Gas Oil

Companies	thousands of meters cubics				Change %	Share			
	2012	2013	2014	2015		2012	2013	2014	2015
YPF S.A.	7049	6986	6978	6730	-3,6%	57,6%	57,2%	59,4%	58,0%
ESSO S.A.P.A.	1833	1882	1768	1848	4,5%	15,0%	15,4%	15,0%	15,9%
SHELL C.A.P.S.A.	1375	1399	1342	1346	0,3%	11,2%	11,5%	11,4%	11,6%
PETROBRAS ARGENTINA S.A.	693	682	671	727	8,3%	5,7%	5,6%	5,7%	6,3%
OIL COMBUSTIBLES S.A.	659	683	626	651	3,9%	5,4%	5,6%	5,3%	5,6%
Rest	622	579	371	292	-21,2%	5,1%	4,7%	3,2%	2,5%
<b>TOTAL</b>	<b>12231</b>	<b>12210</b>	<b>11757</b>	<b>11594</b>	<b>-1,4%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

## Sales of Gasoline

Companies	thousands of meters cubics				Change %	Share			
	2012	2013	2014	2015		2012	2013	2014	2015
YPF S.A.	2947	3308	3506	3392	-3,3%	53,1%	54,3%	56,9%	55,1%
SHELL C.A.P.S.A.	1013	1063	1001	1004	0,3%	18,3%	17,4%	16,3%	16,3%
ESSO S.A.P.A.	782	868	882	955	8,4%	14,1%	14,3%	14,3%	15,5%
PETROBRAS ARGENTINA S.A.	378	376	343	355	3,4%	6,8%	6,2%	5,6%	5,8%
OIL COMBUSTIBLES S.A.	249	265	235	257	9,2%	4,5%	4,3%	3,8%	4,2%
Resto	176	211	194	196	1,3%	3,2%	3,5%	3,1%	3,2%
<b>TOTAL</b>	<b>5545</b>	<b>6090</b>	<b>6161</b>	<b>6159</b>	<b>0,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

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# Natural gas: growing demand and falling production

## Balance of Natural Gas - MMm3 annual average

Source: BBVA Francés Research on data from the Ministry of Energy and Mining.-

Variable	1990/ 1999	2000/ 2009	2010/ 2015
Production	30,831	49,320	43,809
Imports 1/	1,873	706	9,430
<b>Total supply</b>	<b>32,704</b>	<b>50,026</b>	<b>53,240</b>
Gas flared	2,444	813	964
On-site consumption	2,194	4,138	4,909
Dom. mkt. consumption 2/	27,482	40,801	47,268
Exports 1/	585	4,274	99
<b>Total demand</b>	<b>32,704</b>	<b>50,026</b>	<b>53,240</b>

1/ Includes LPG.-

2/ Includes wastage.-

- In this decade, production is 11.2% below what was obtained in the previous decade
  - Domestic demand expanded 15.8%.
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- There was an adjustment via the external sector, drastically reducing exports, which virtually disappeared
  - Commencement of a process of increasing imports of natural gas, via Bolivia, as well as LNG from different countries. Imports grew more than 13 times over in this decade.

## Natural gas: first year of growth in 2015

After having stabilised in 2014, production grew 3.4% YoY in 2015 and continues to grow in the first half of 2016

- The most positive trend in crude oil: extraction level increases quite extensively.
- Strong growth in YPF (+10.2% YoY) and Pan American (+15.9% YoY) stand out but positive performances are also observed in Tecpetrol and the group of Other operators.
- The five main operators accounted for 78.5% of total production in 2015.
- In the first six months of 2016 the positive trend was maintained with an increase of 5.1% YoY.

### Natural Gas Extraction by Operator

Source: BBVA Francés Research on data from the Ministry of Energy and Mining-

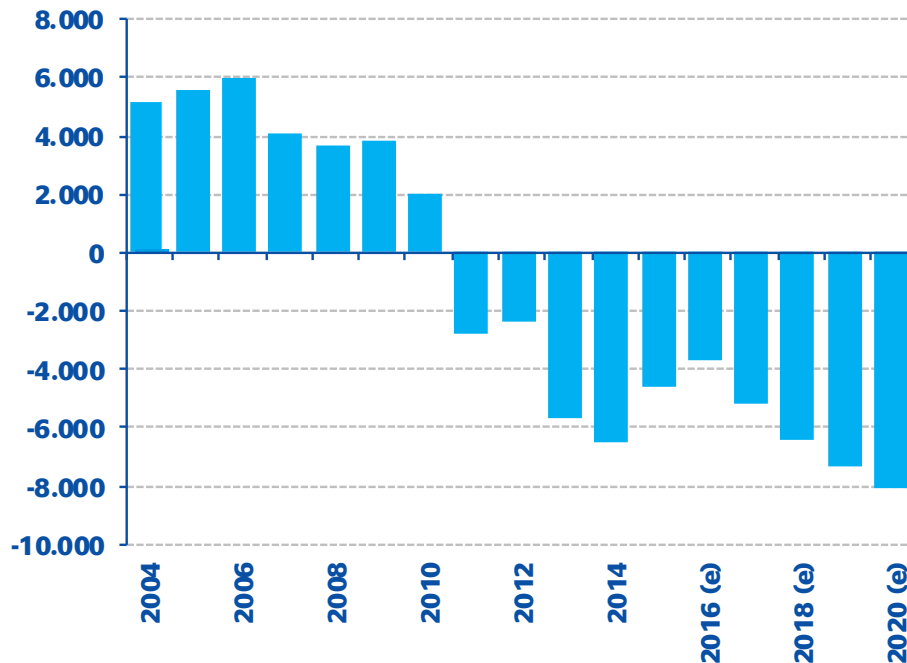
Operator	millions of cubic metres							Change % 2015/14
	2009	2010	2011	2012	2013	2014	2015	
YPF S.A.	12,326.0	11,726.8	10,604.4	10,326.7	10,534.3	11,855.2	13,058.7	10.2%
TOTAL AUSTRAL S.A.	12,530.9	13,250.9	13,674.2	13,262.8	12,329.3	11,634.5	11,138.1	-4.3%
PAN AMERICAN ENERGY (SUCURSAL ARGENTINA)	6,346.5	5,951.9	5,686.0	5,275.5	4,747.5	4,763.2	5,521.9	15.9%
PETROBRAS ARGENTINA S.A.	4,675.8	4,272.6	4,187.7	3,988.1	3,547.8	3,311.8	2,658.6	-19.7%
TECPETROL SA	1,782.9	1,471.8	1,513.6	1,457.0	1,336.0	1,226.1	1,289.2	5.1%
Resto	10,757.3	10,433.6	9,861.6	9,813.7	9,213.3	8,693.4	9,239.0	6.3%
<b>TOTAL</b>	<b>48,419.2</b>	<b>47,107.6</b>	<b>45,527.6</b>	<b>44,123.7</b>	<b>41,708.3</b>	<b>41,484.0</b>	<b>42,905.5</b>	<b>3.4%</b>

# Cyclical improvement in trade deficit: its evolution is very sensitive to long-term growth

In 2016, the decline in activity and low international prices reduced the external imbalance

Energy balance (US\$ million)

Source: BBVA Francés Research on INDEC data and own estimation-



- We estimate the energy trade deficit in 2016 would be reduced to USD 3.7 billion as a result of the joint action of still-depressed international prices and the drop in the level of activity (-2.0%).
- In a context of slow stabilisation of international oil prices, the energy deficit will continue to widen as imports grow in line with economic growth, which we estimate at around 3.0% annually
- We do not estimate a rapid improvement in exports due to the maturation times of the new investments the sector needs.

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## First measures by the new government aimed at eliminating regulatory restrictions on investments

Smaller State presence in investment planning.

### Less Centralisation

- Decree 272/15 dissolved the Commission of Strategic Planning and Coordination of the National Hydrocarbon Investment Plan, set up in 2012, thereby eliminating regulatory centralisation.
- Various regulations on monitoring and compliance deadlines of investments in the sector disappeared, as did sanctions in case of default.

### Deregulation of prices

Also, the market is being deregulated with regard to the functions of monitoring reasonable prices and competition in the hydrocarbons and derivatives markets.

### Provincial autonomy

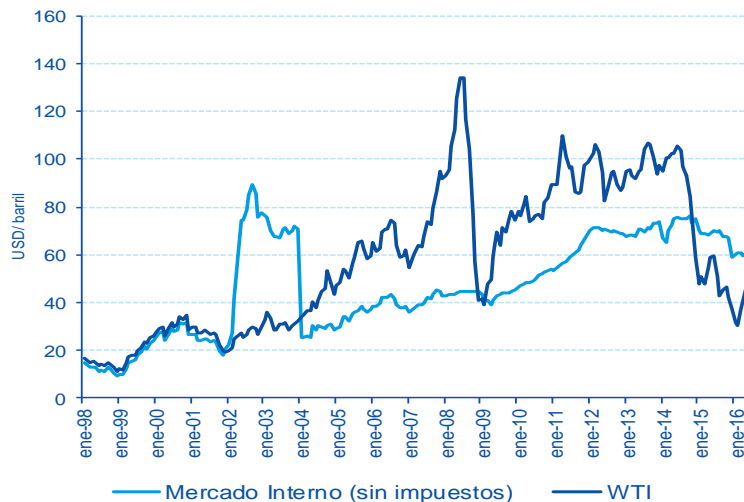
According to Article 124 of the Constitution, the provinces hold the original control over natural resources and they are the ones in charge of granting permits for exploration and exploitation of hydrocarbons.

## Crude oil: export incentives in the face of the collapse of international prices

- The Stimulus Programme was created to export surplus crude oil intended for the heavy variety “Escalante”, effective for 2016. While international prices are located below USD 47.5 per barrel, a stimulus in pesos is set equivalent to USD 7.50 at the exchange rate on the day of the date of export. The aim is to maintain and develop activity and employment at regional level.
- The average price of **domestic** crude oil is above the international price after dismantling the entire system of moveable deductions from last year when the collapse of international prices brought them close to the reference price of USD 42 a barrel on which the surplus value was captured via deductions.
- The main derivative fuels have followed a similar path to that observed in domestic crude oil, although at lower levels for fuel oil.

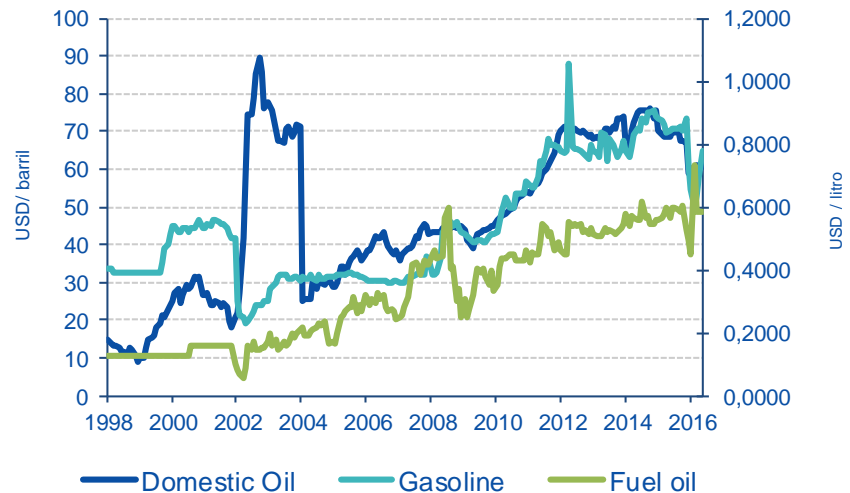
### Price of National Crude Oil and WTI

Source: BBVA Francés Research on data from the Ministry of Energy and Mining.-



### Price of Domestic Oil, Gasoline and Fuel Oil

Source: BBVA Francés Research on data from the Ministry of Energy and Mining.-





## Natural gas: serious distortion between the demand prices paid and production costs

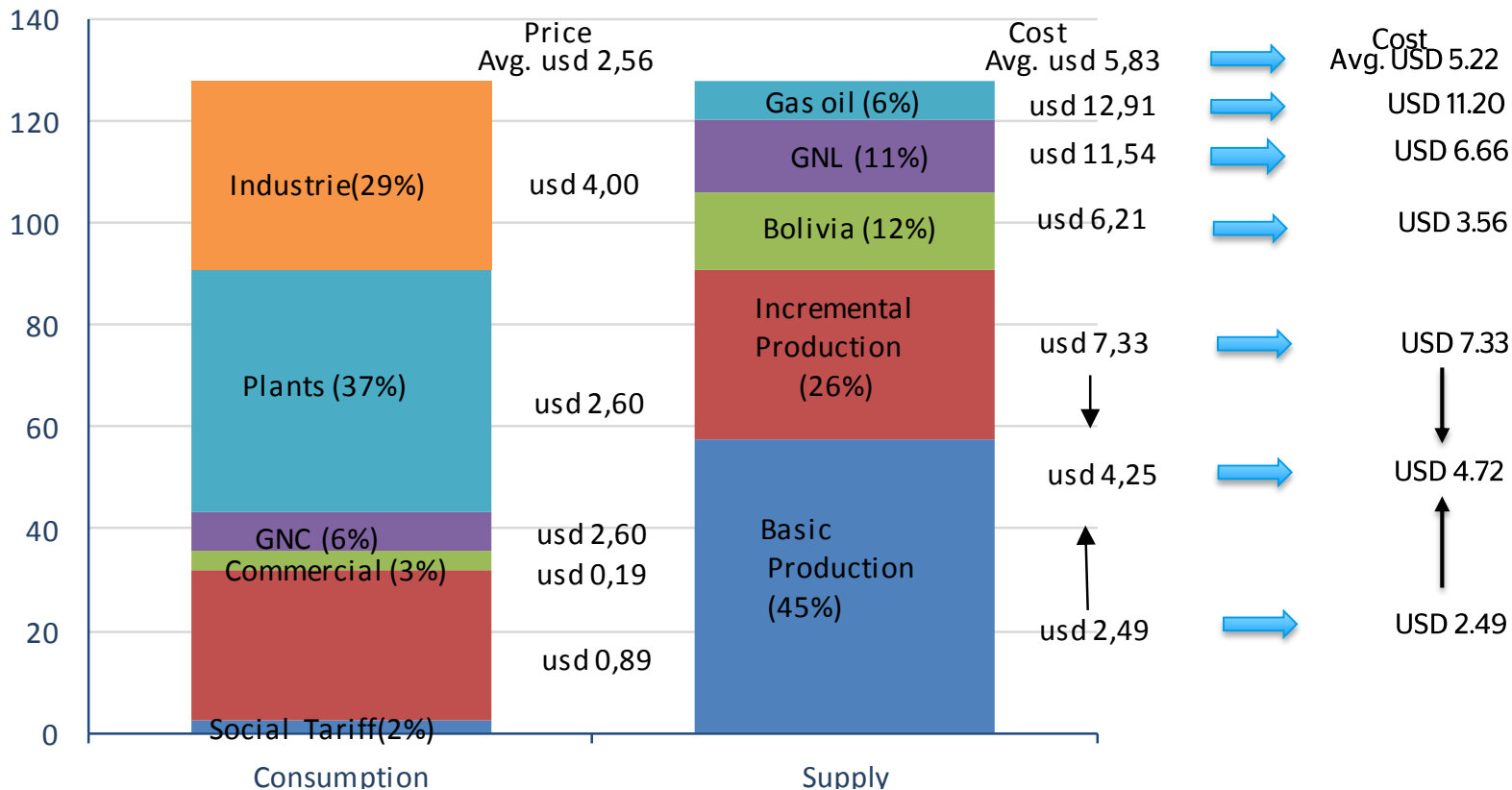
Subsidies in 2015 reached USD 5.7 billion

### Demand prices and Production Costs - 2015

Source: BBVA Francés Research on data from the Ministry of Energy and Mining-

### Estimated Production Costs - 2016

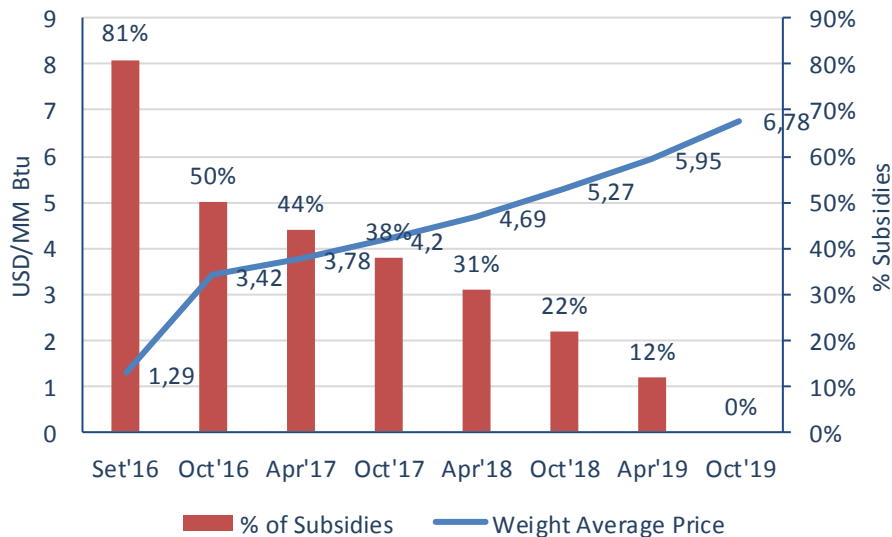
Source: BBVA Francés Research on Secretariat of Energy data-



# Natural gas: finally a public hearing set a gradual adjustment of prices and lowering of subsidies

## Evolution of gas from wellhead to consumer and Level of subsidies

Source: BBVA Francés Research on data from the Ministry of Energy and Mining.



- The Government was forced to annul the rise in natural gas rates arranged in April 2016 and hold public hearings prior to setting the new rates with a more gradual adjustment.
- The scheme established for a gas PIST rate of USD 6.72 per million BTU provides for full elimination of subsidies to consumers by 2019, with the exception of Patagonia, Malargüe (Mendoza) and some municipalities in the Puna region where elimination has been postponed to October 2022.
- The price is the weighted average price between different categories of consumers, while the social rate is maintained to serve the neediest sectors.

# Natural gas: following the Public Hearing, increase limits, social rate and bonuses were set starting in October

## Increase limits by type of user

Source: BBVA Francés Research on data from the Ministry of Energy and Mining-

User	Category	Max. limits to increase
Residential	R1 - R2.3	300%
Residential	R3.1 - R3.3	350%
Residential	R3.4	400%
General	SGP	500%

- According to what was discussed at the Hearing, agreement was reached on the gas price at the Point of Entry into the Transportation System (PIST) plus the temporary values set for transport and distribution until such values are set by means of a Comprehensive Tariff Review.
- The Government set increase limits relative to the amount paid in the same month last year for different categories of users according to the attached table.
- A bonus system has been established for residential users who record a saving in consumption equal to or greater than 15% of that consumed in the same period last year.
- Those low-income consumers will fall within the Social Tariff which includes the non-payment of Gas at the Point of Entry into the Transportation System, paying only the temporary values set for transport and distribution.

## Despite signs of stabilisation in natural gas prices and the more pro-market framework, signs of increased investment are still not being observed

### Main Investments Announced - 2016

Source: BBVA Francés Research on data from the Ministry of Energy and Mining-

Company	USD millions		
	Exploration	Complementary Exp.	Operation
YPF S.A.	175.6	0.0	3681.0
PAN AMERICAN ENERGY (SUCURSAL ARGENTINA) LLC	0.0	13.8	963.3
TOTAL AUSTRAL S.A.	98.6	0.0	590.1
PETROBRAS ARGENTINA S.A.	47.8	21.3	313.1
PLUSPETROL S.A.	4.3	4.0	262.9
ENAP SIPETROL ARGENTINA S.A.	1.0	0.0	201.4
SINOPEC ARGENTINA EXPLORATION AND PRODUCTION, INC.	0.0	0.0	187.7
Resto	264.0	37.8	1126.2
<b>Grand Total</b>	<b>591.3</b>	<b>76.9</b>	<b>7325.9</b>

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