

Argentina's Energy Sector

Status and Outlook

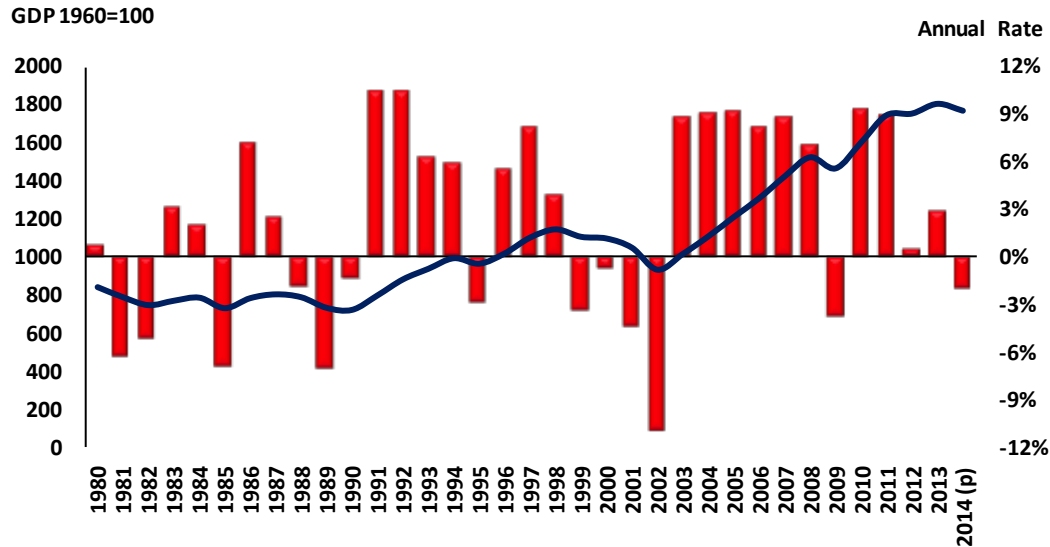
July 28, 2014

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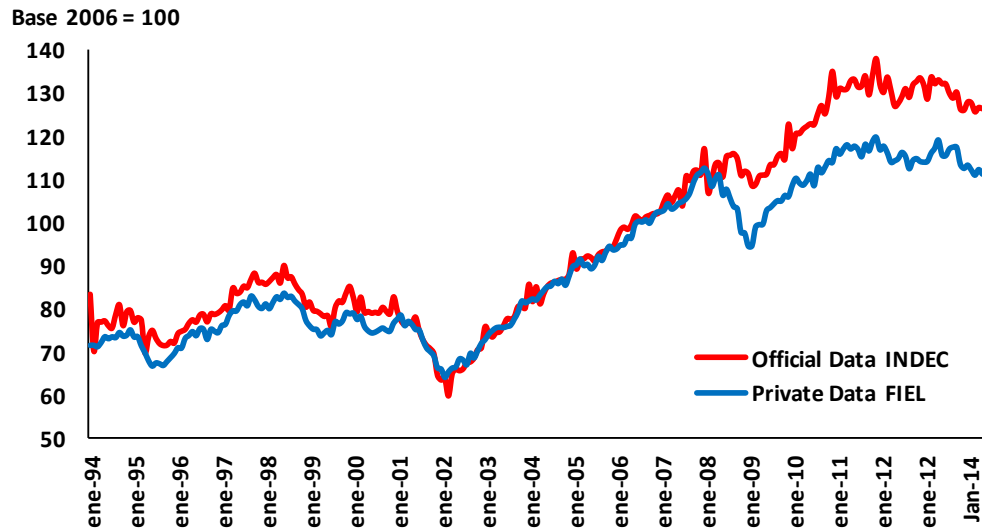
Economic Stagnation

ARGENTINE GDP EVOLUTION

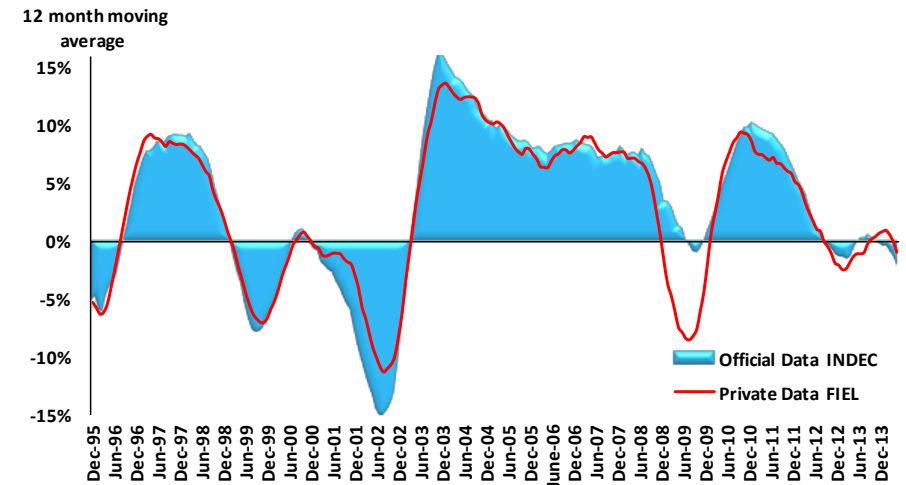


- *End of the high economic growth cycle*
- *Industrial stagnation since 2010*
- *Correlation between industrial stagnation, and impact of energy imbalance*

INDUSTRIAL ACTIVITY INDEX

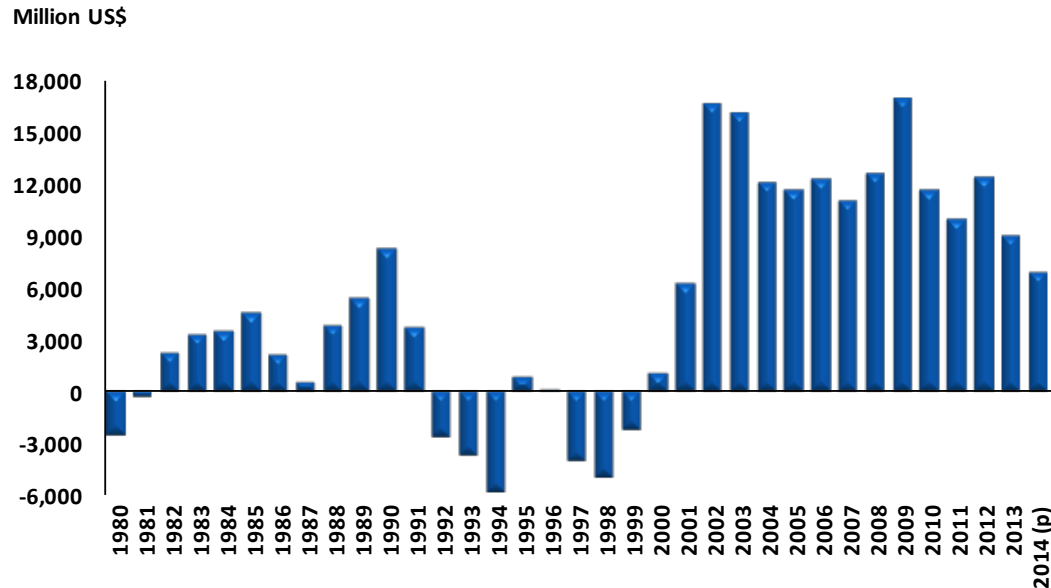


INDUSTRIAL ACTIVITY INDEX



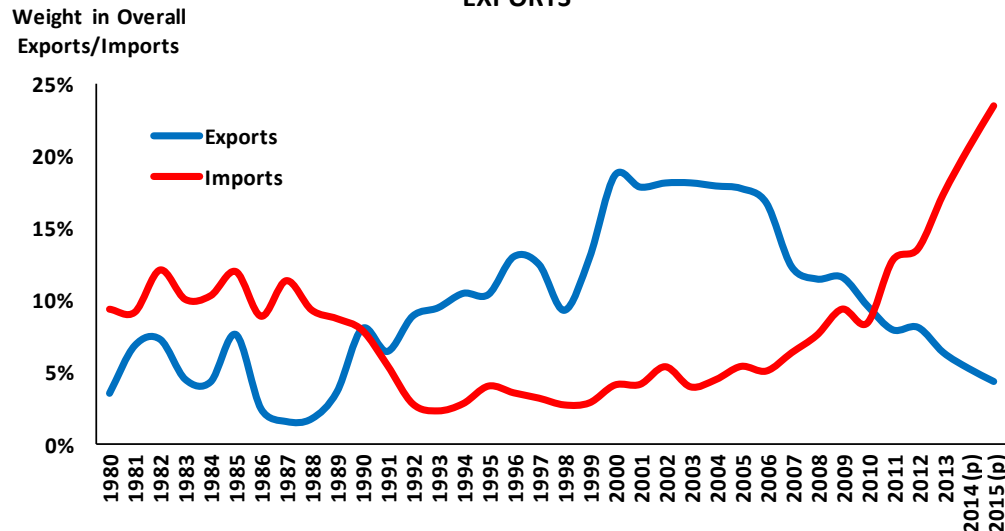
Economic Stagnation

TRADE BALANCE OF ARGENTINA



- “Currency exchange control” was the “solution” sought to stabilize funds flow from Argentina
- Reduction of Trade Balance due to energy imports
- Reduction of direct and financial investments due to aggression against companies
- Explosion of fiscal deficit to 5% mostly due to energy subsidies

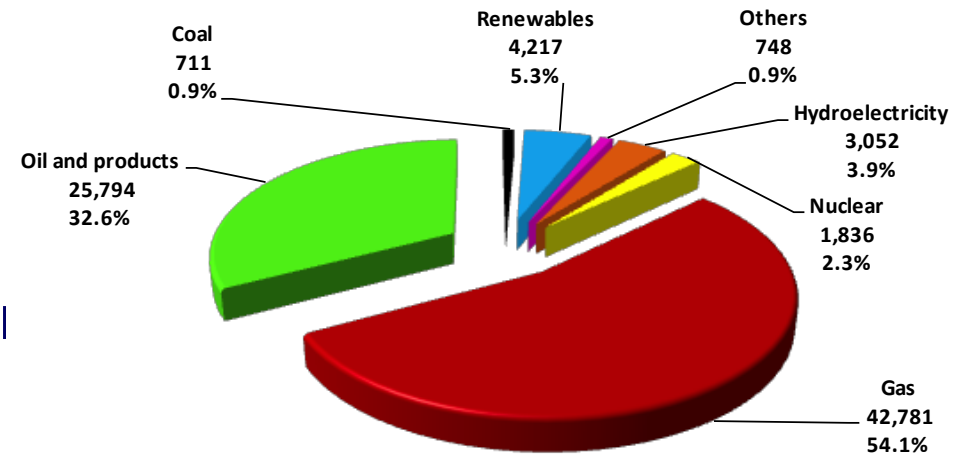
RELATIVE WEIGHT OF ENERGY PRODUCTS ON IMPORTS AND EXPORTS



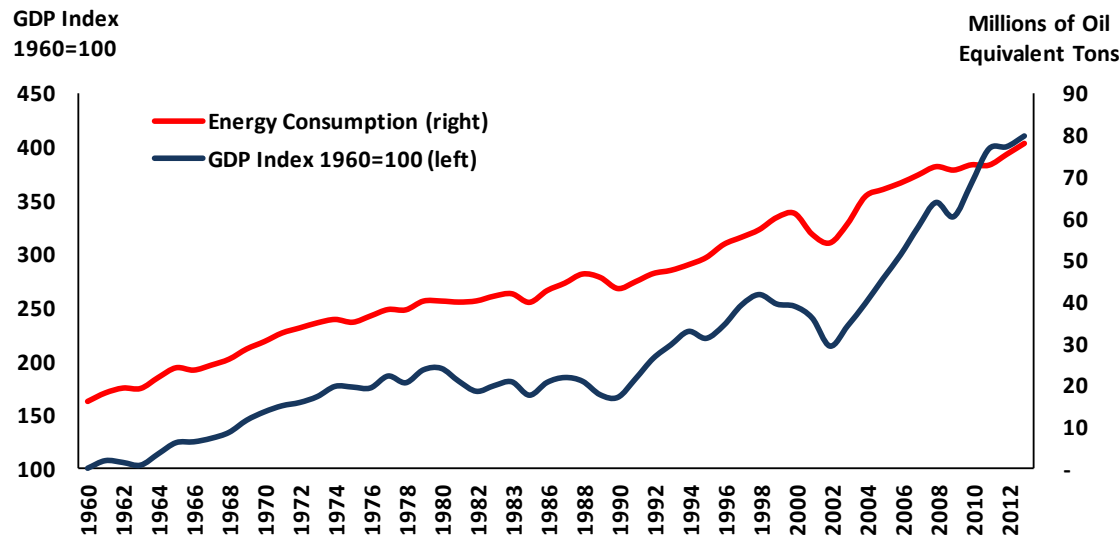
Strong dependence on domestic oil and gas production

- Argentina's energy consumption biased towards hydrocarbons - 87.6% of overall consumption
- Natural Gas 54.1% even under large shortages

ENERGY CONSUMPTION IN ARGENTINA (million tons oil equivalent)



GDP AND PRIMARY CONSUMPTION OF ENERGY IN ARGENTINA



- **Economic growth and energy demand: strong correlation**

- *No energy, no growth?*
- *High growth, more energy?*
- *Somebody will need to find the way to guarantee sustainable energy supply*

Energy policies expected to change, as current status is unsustainable

Growing demand of power, gas, gasoline ➡ 3/4/9%

Domestic oil and gas production decline ➡ -1.6%; -5.2%



Import Gas, LNG, gasoline, diesel ➡ +48%; +29%; +500%; +40%



Need for Dollars to pay for imports ➡ - US\$ 12.8 Bn 2013

Need for Pesos for booming subsidies ➡ + AR\$ 90 Bn 2013



Stagflation causes social unrest and loss of elections

➡ Forced changes in paradigms for Energy Sector

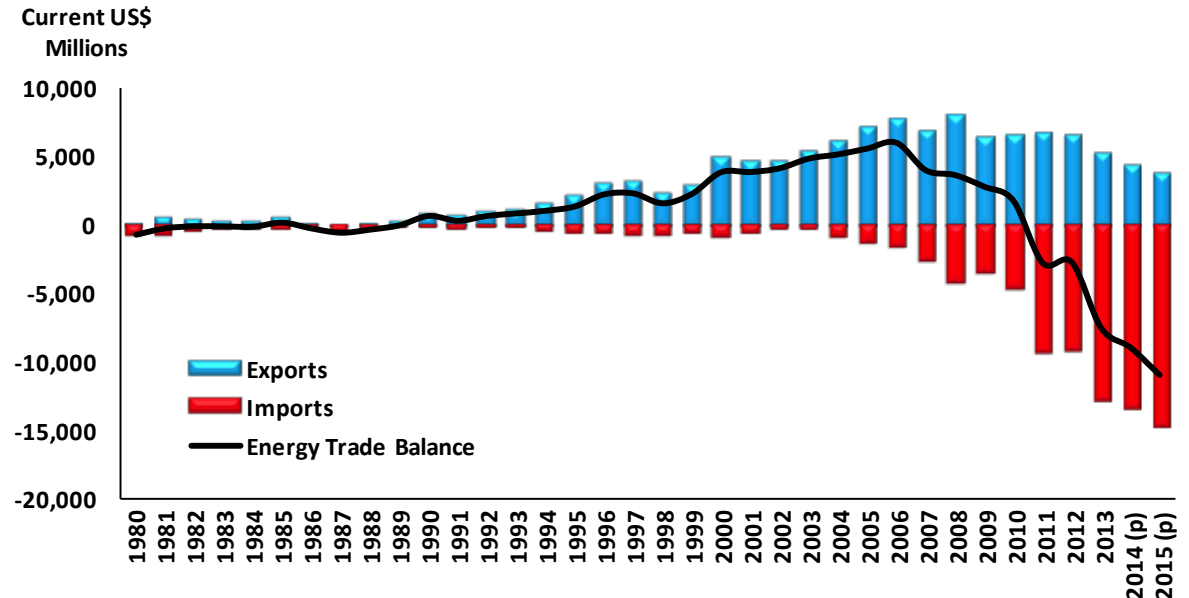
WHEN?

As in the past, Argentina will change its energy policy to boost production (*)

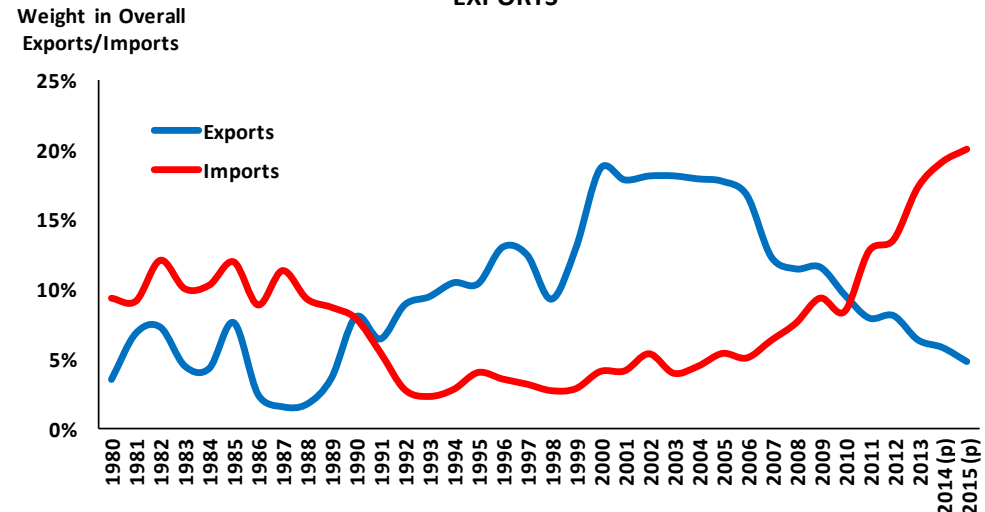
- Impressive imports of energy products at US \$ 12.8 Bn in 2013, to *partially* satisfy demand
- Energy imports subsidized 80% of actual cost
- Economic variables under stress

(*) In 1958, 1967, 1976, 1987, and 1990 Argentina modified its oil/gas policies to attract foreign investment to boost domestic production

ENERGY SECTOR EXTERNAL TRADE BALANCE



RELATIVE WEIGHT OF ENERGY PRODUCTS ON IMPORTS AND EXPORTS



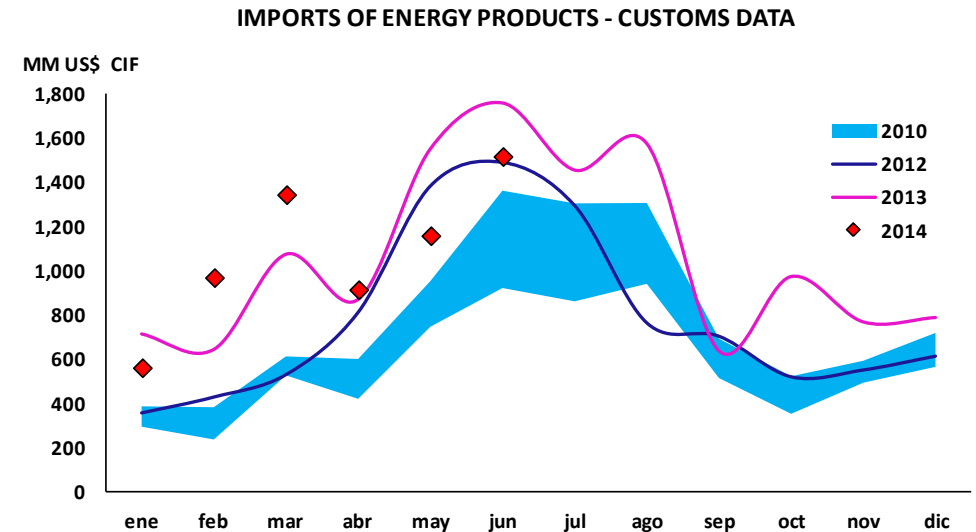
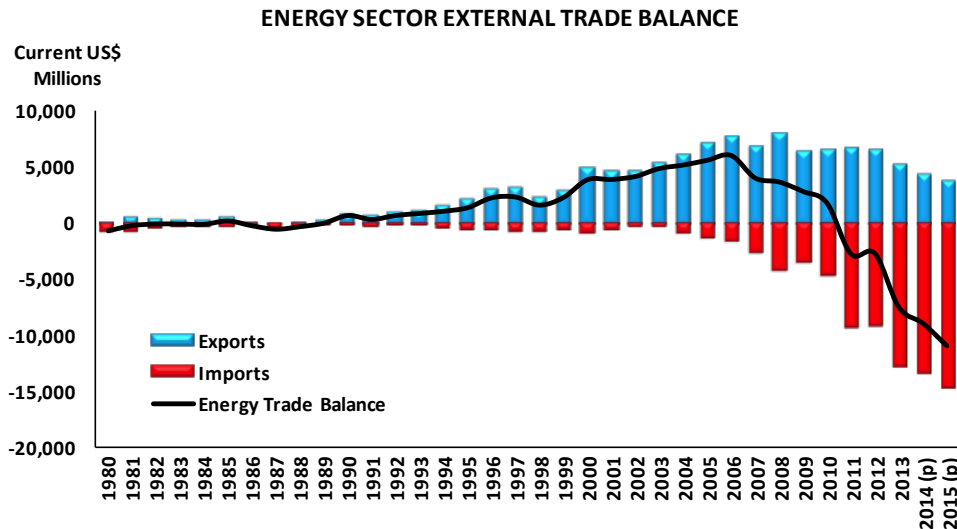
Impact of insufficient domestic hydrocarbon production

- **Unfavorable Trade Balance with negative trend**

- US\$ needed for imports -
- AR\$ needed for subsidies

US\$ 12.8 Bn 2013

+ AR\$ 80.0 Bn 2013

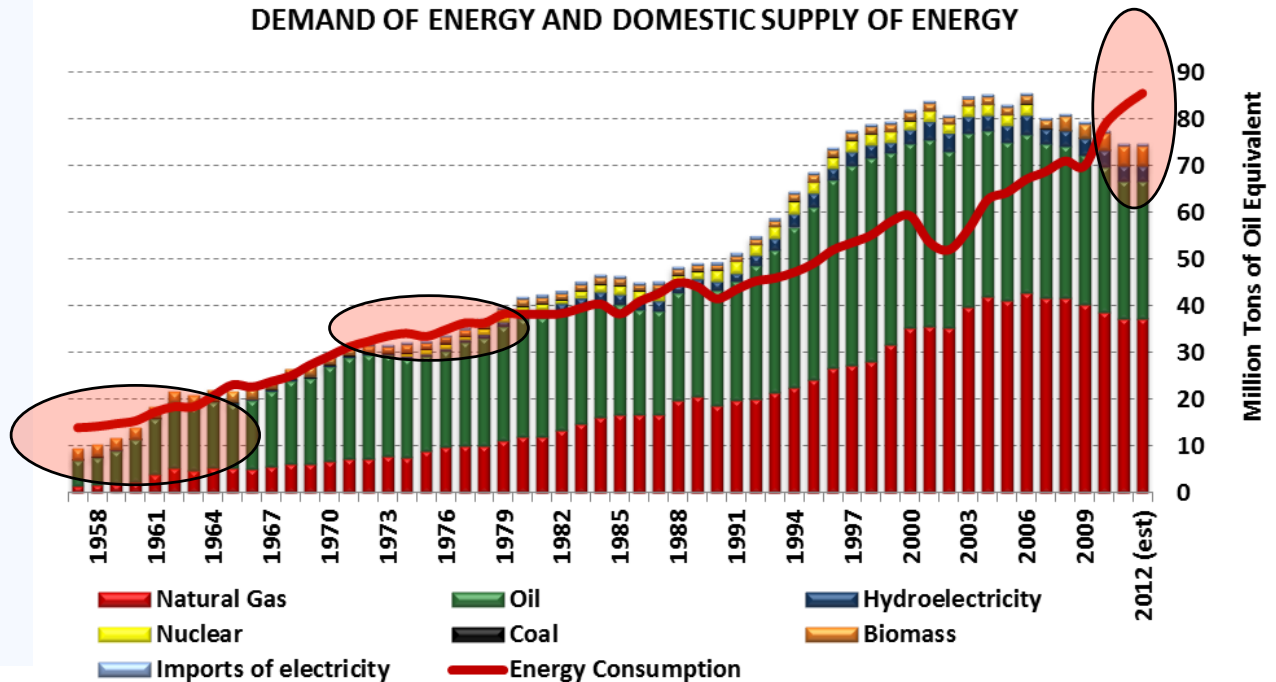


Imports of energy products decreased just 2.2% in H1 2014 at US\$ 6.5 Bn, despite recession

Exports of energy products declined

Is there a chance for further boost of business terms?

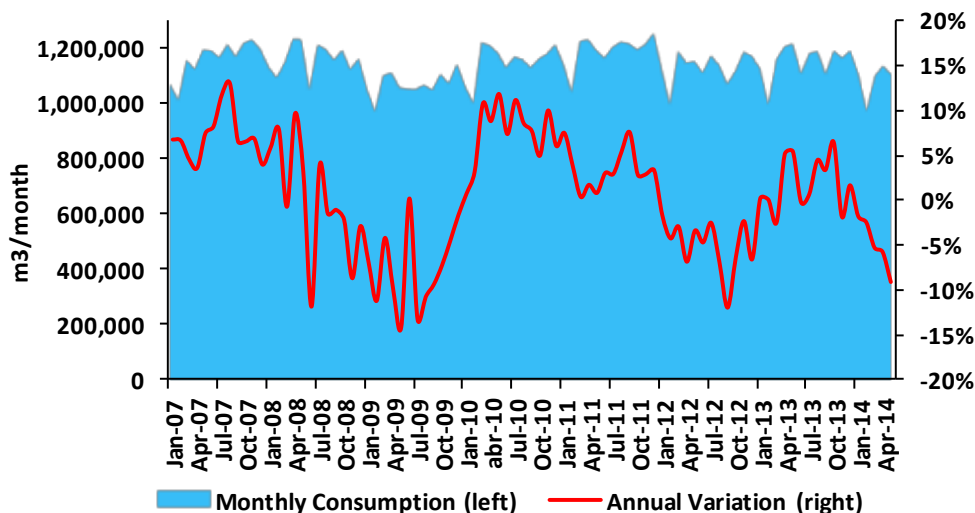
Whenever Argentina faced imports of energy products, a change took place to boost domestic oil and gas production through improved terms



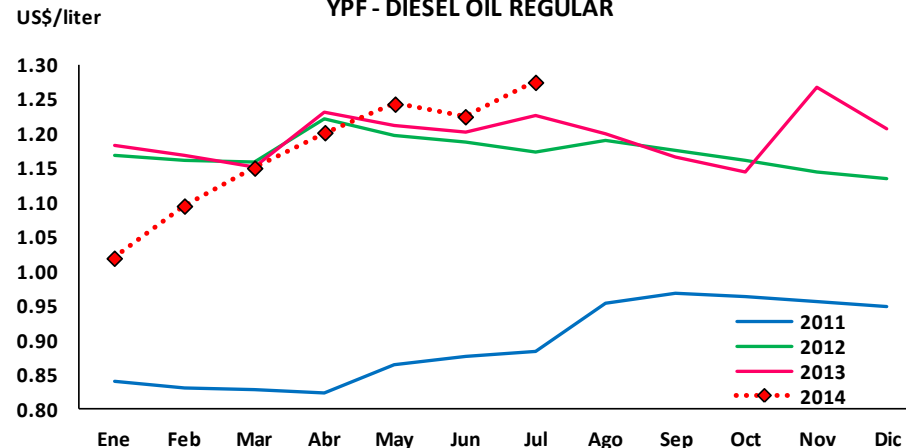
- Expected US\$ disbursements to import energy in 2014-2016 are so large, that something will have to change to improve domestic production, aggressively

Higher prices are influencing demand for gasoline, which still grows

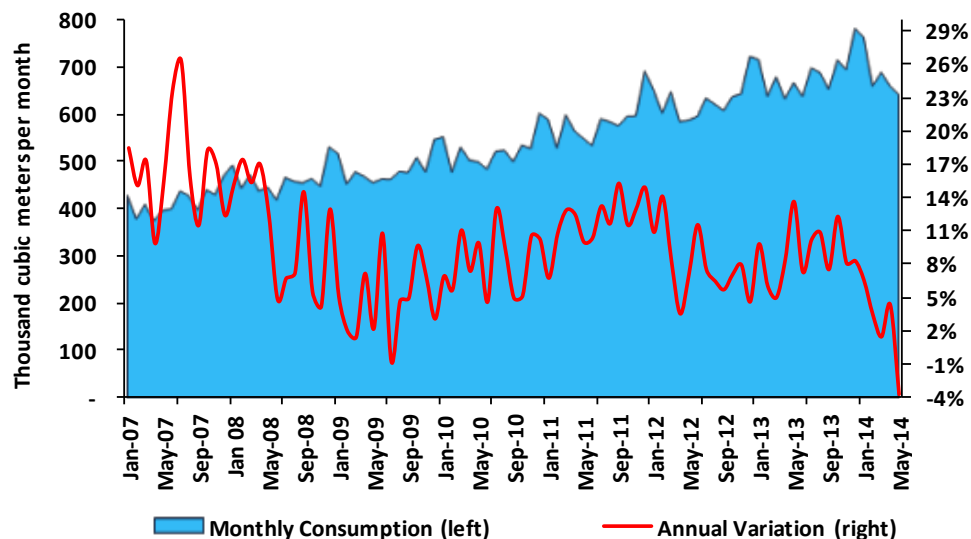
DIESEL OIL CONSUMPTION - EXCLUDES POWER GENERATION



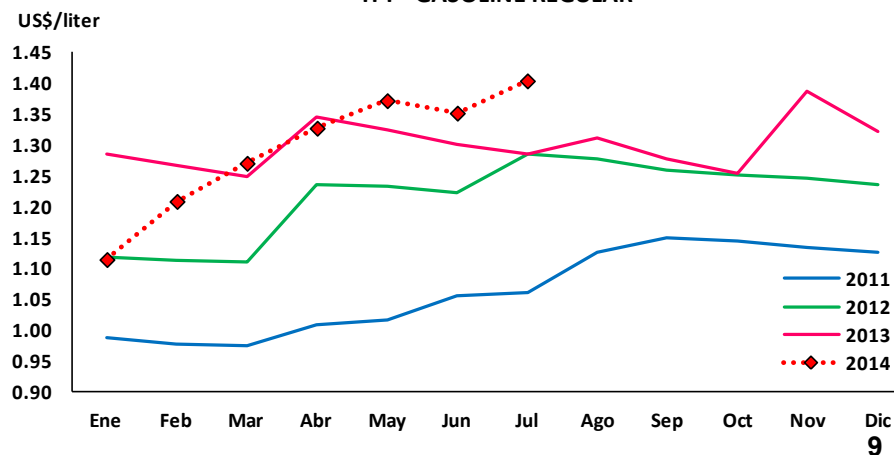
YPF - DIESEL OIL REGULAR



CONSUMPTION OF GASOLINE - ALL TYPES

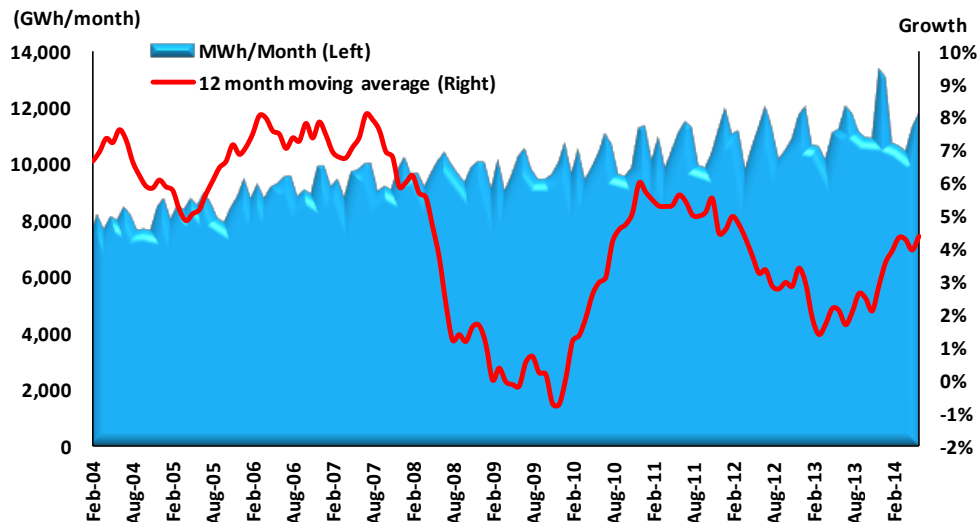


YPF - GASOLINE REGULAR

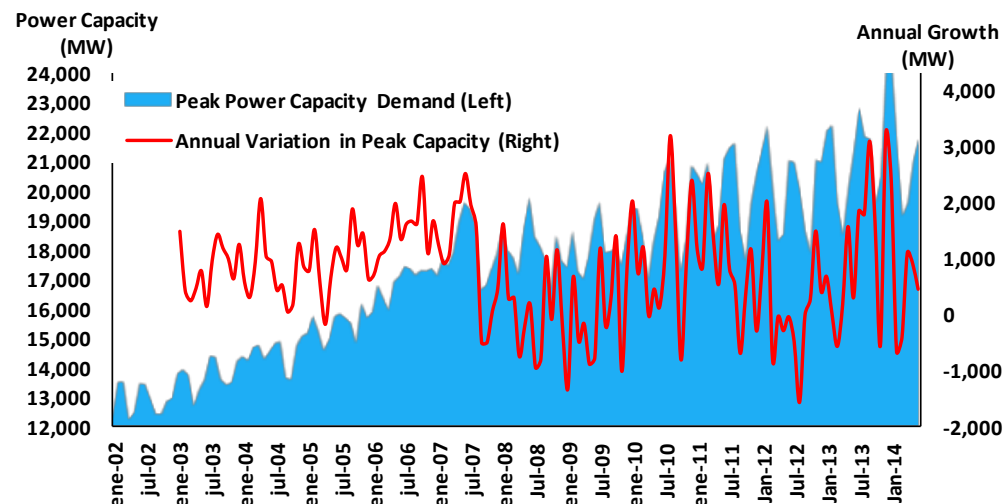


Thermal Power Generation nearly 70% of supply, requiring more fuel

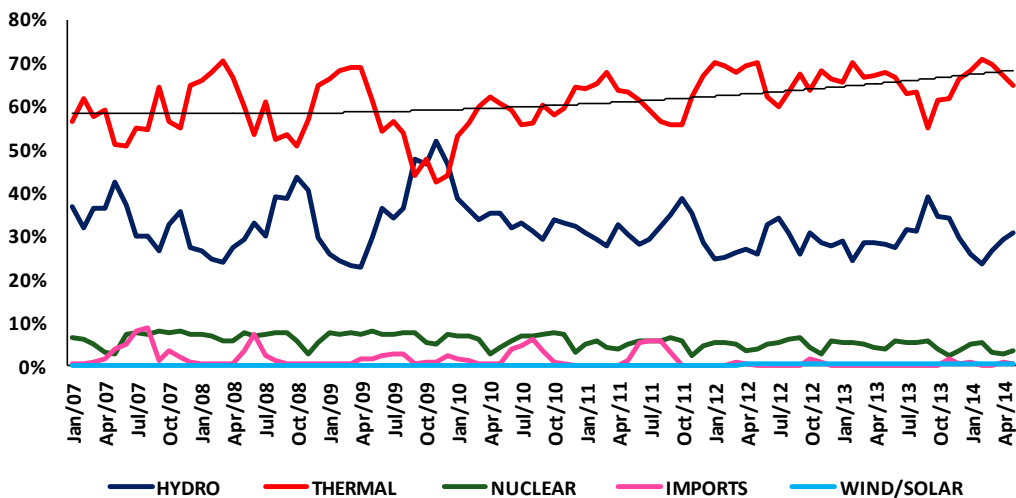
GROSS DEMAND OF ELECTRICITY (excludes exports)



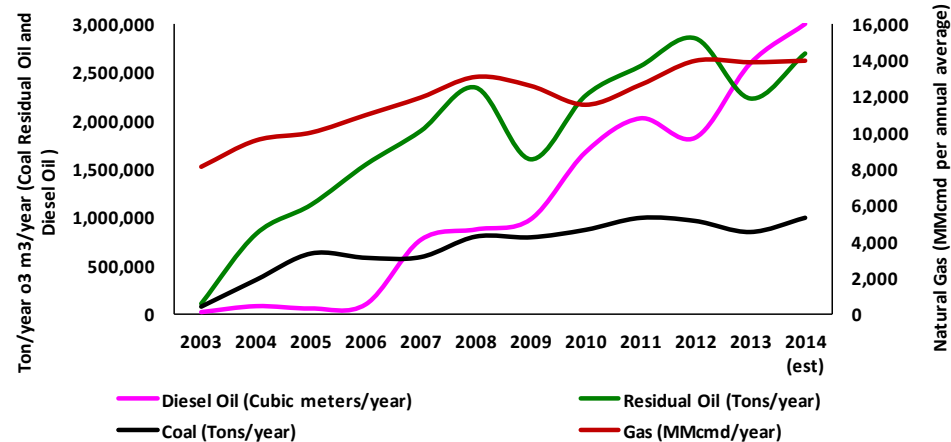
DEMAND OF PEAK POWER CAPACITY - NET OF SHORTAGES



GROSS SUPPLY OF ELECTRICITY

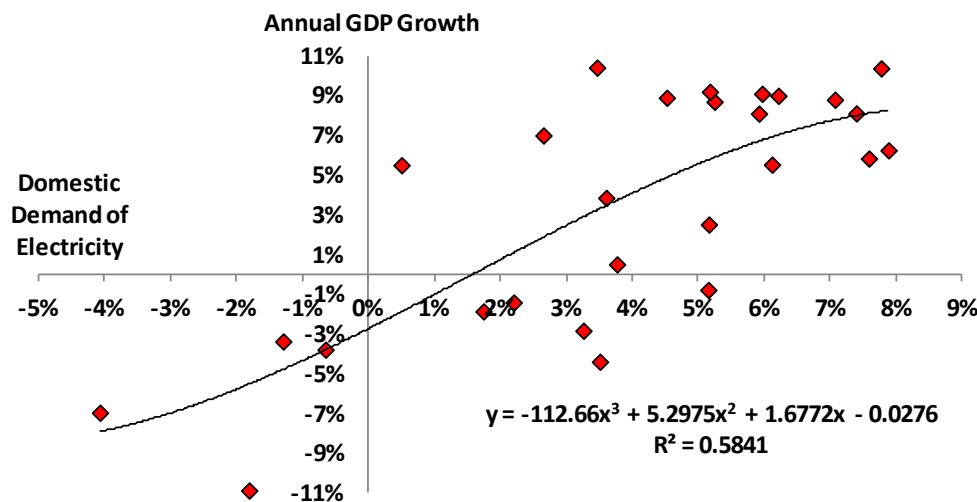


CONSUMPTION OF ALTERNATIVE FUELS FOR POWER GENERATION

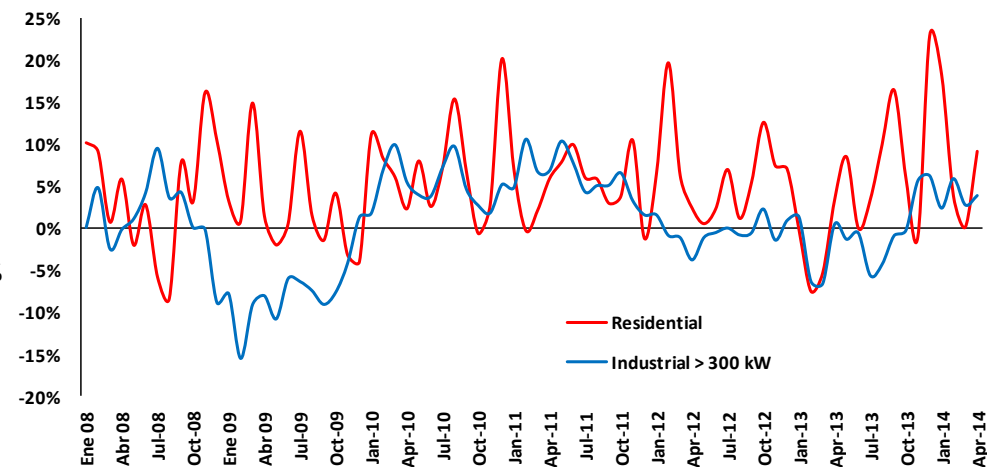


Power demand propelled by Residential – Decrease in Industrial demand

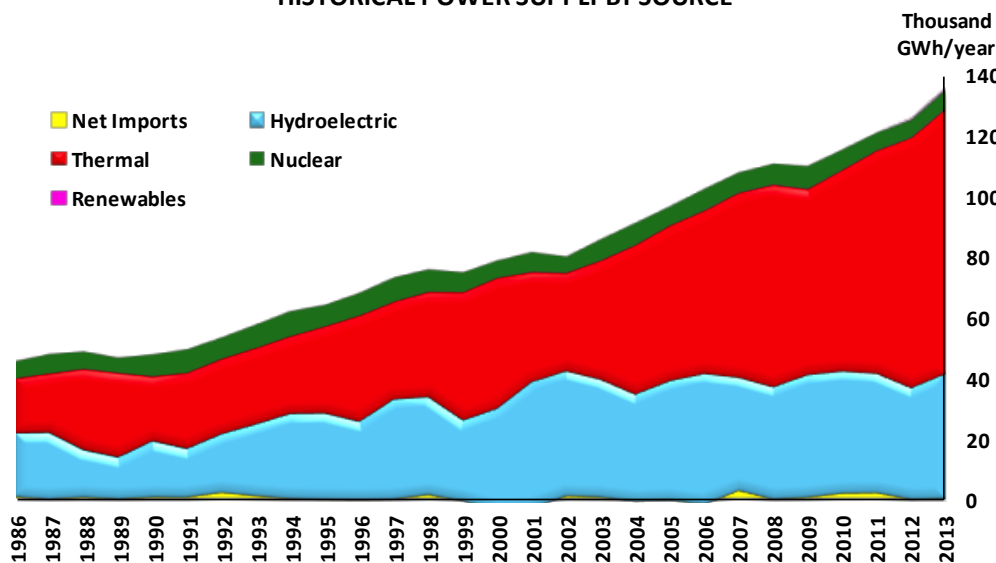
CORRELATION GDP vs. ELECTRICITY DEMAND



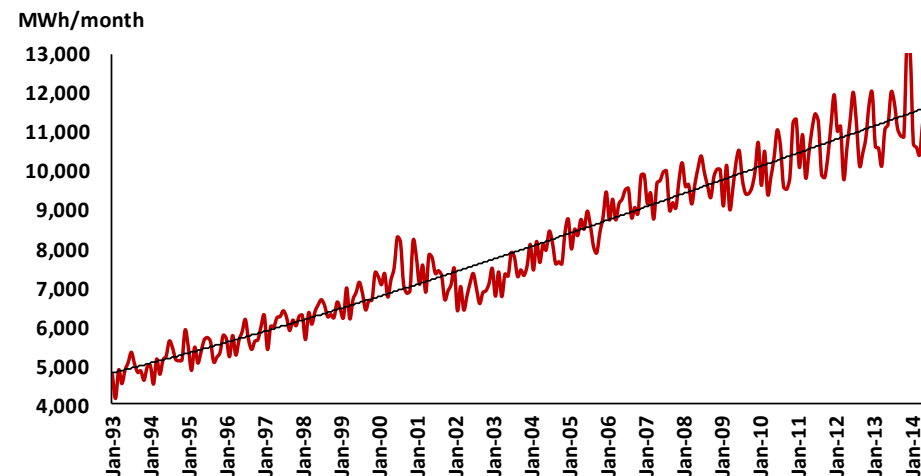
ANNUAL POWER DEMAND EVOLUTION FOR MAIN SEGMENTS OF CONSUMPTION



HISTORICAL POWER SUPPLY BY SOURCE



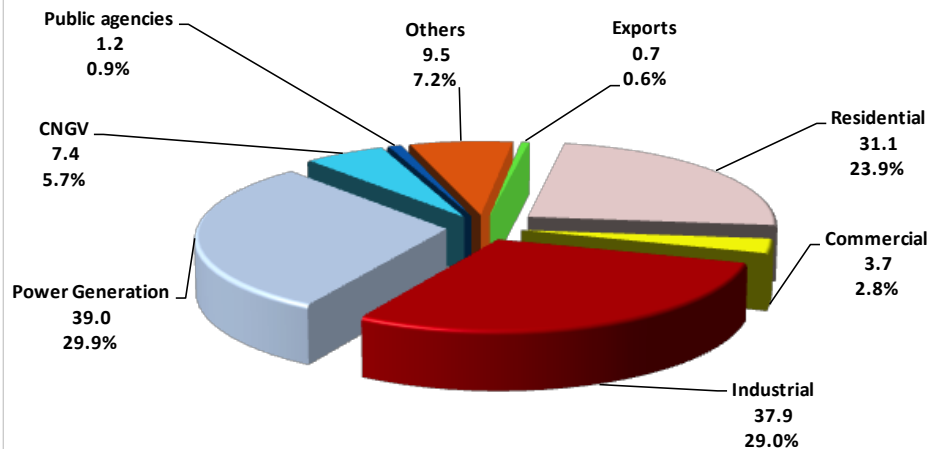
CONSUMPTION OF ELECTRICITY IN ARGENTINA



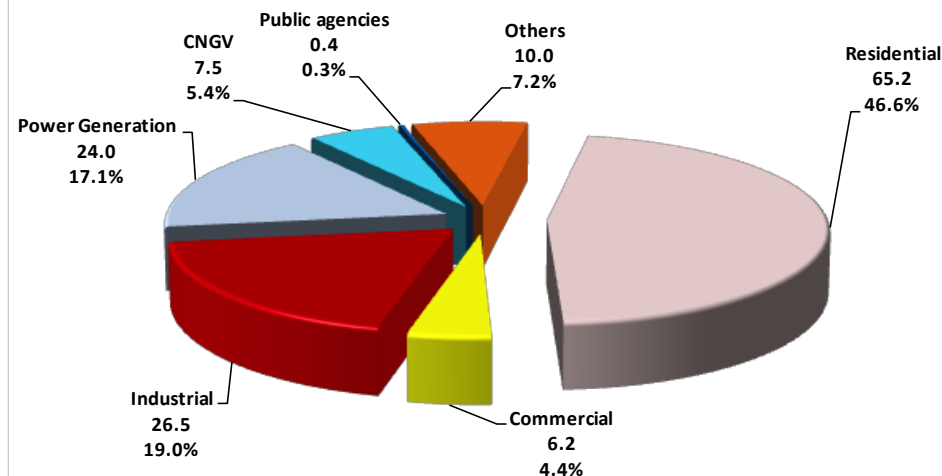
Gas consumption by segment - Winter

residential demand affects large consumers

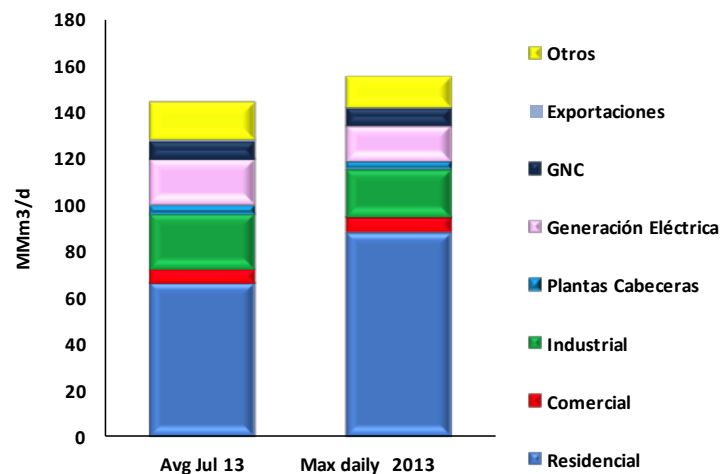
AVERAGE GAS CONSUMPTION 2013 (MMm3/d)



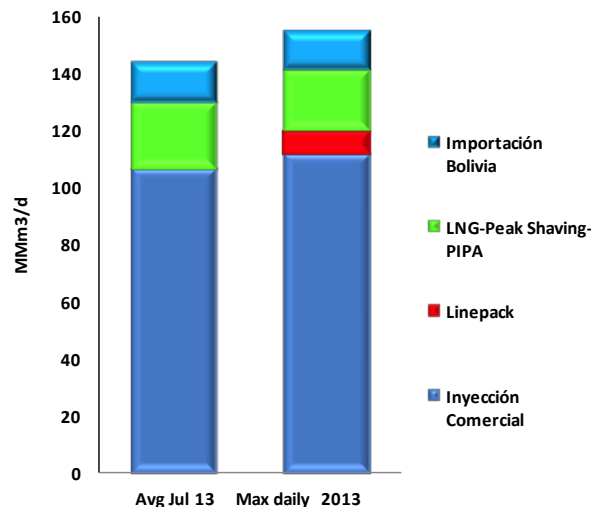
WINTER 2013 - AVERAGE GAS CONSUMPTION (MMm3/d)



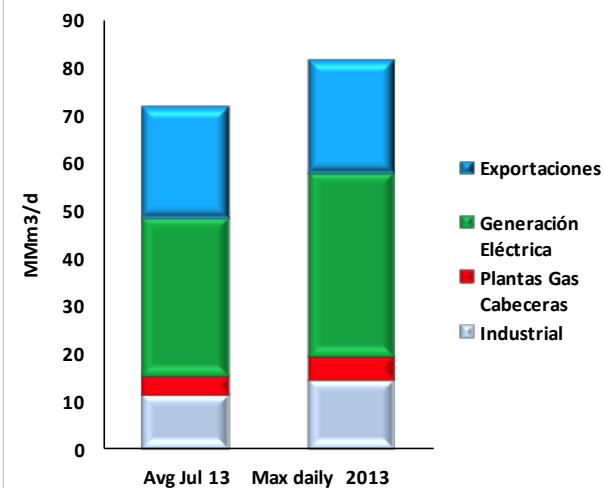
EFFECTIVE GAS CONSUMPTION WINTER 2013



ACTUAL GAS SUPPLY WINTER 2013

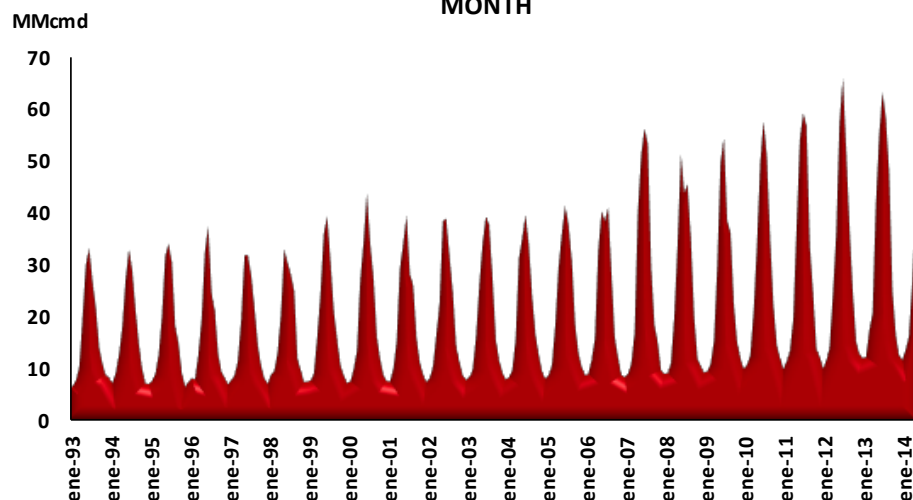


UNSATISFIED GAS DEMAND WINTER 2013

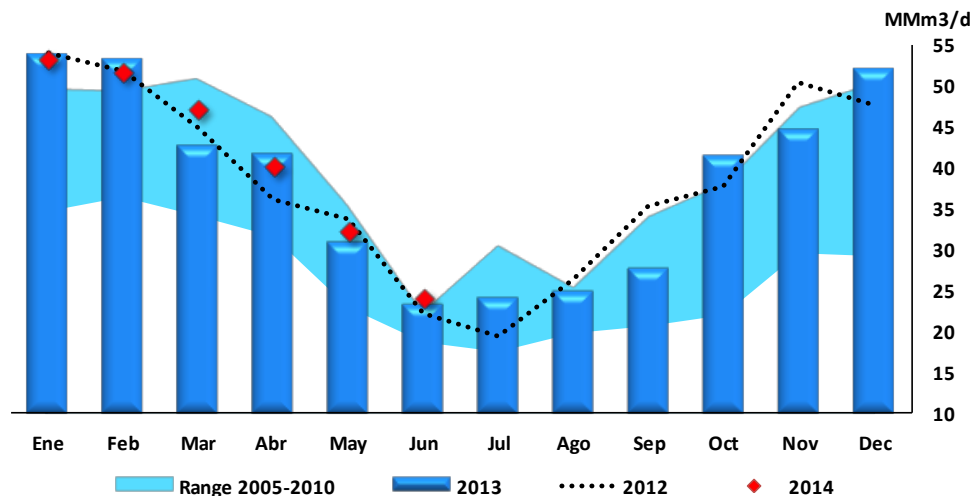


Natural gas large unsatisfied demand

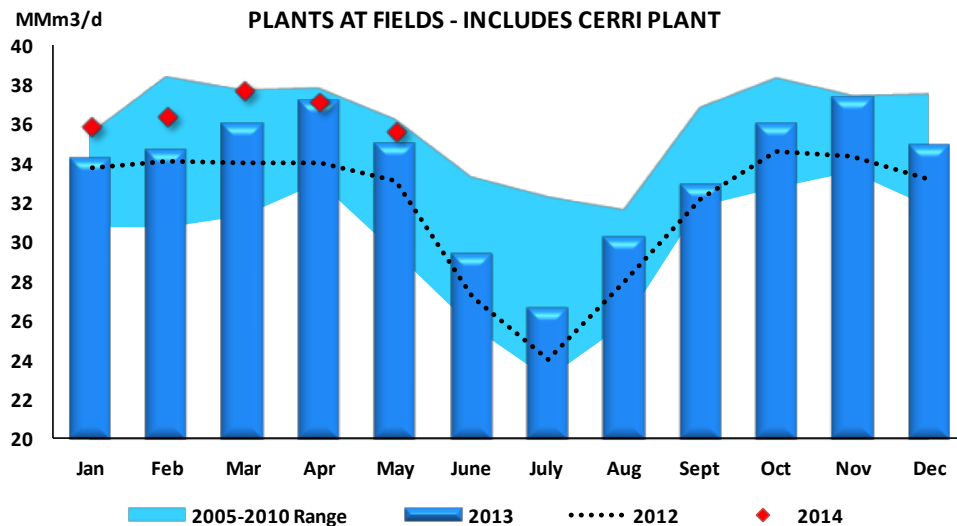
DEMAND BY RESIDENTIAL MARKET - DAILY AVERAGE IN A MONTH



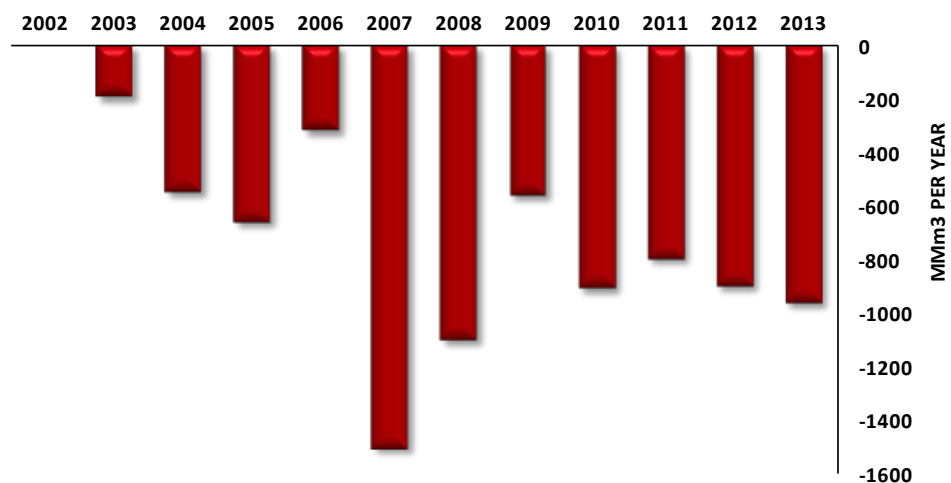
GAS CONSUMPTION IN THERMAL POWER GENERATION



INDUSTRIAL GAS CONSUMPTION - EXCLUDES GAS PROCESSING PLANTS AT FIELDS - INCLUDES CERRI PLANT

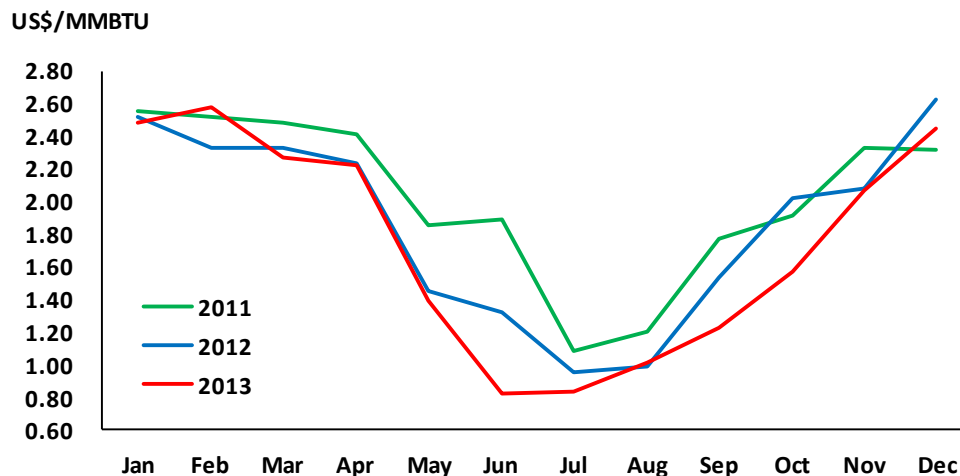


ESTIMATED GAS SUPPLY RESTRICTIONS TO INDUSTRIAL CONSUMERS

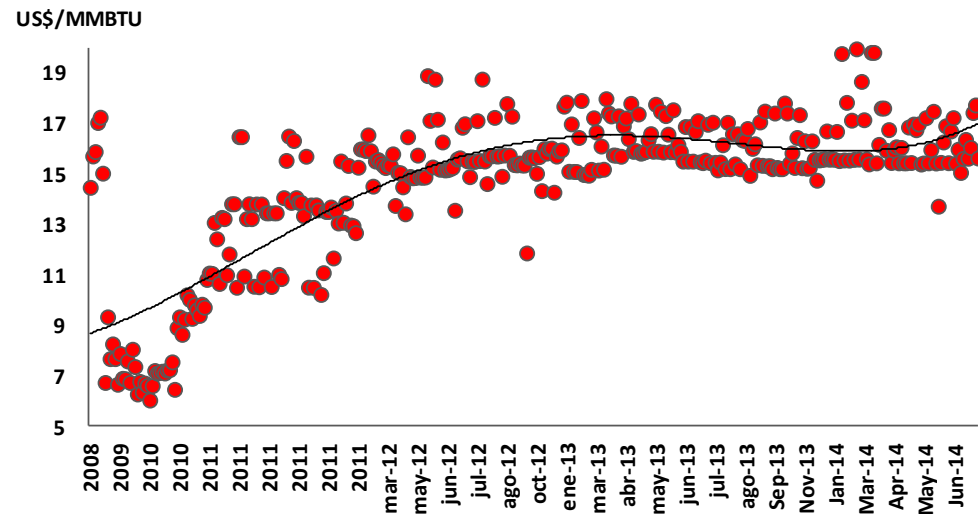


PlanGas complements price to 7.5 US\$/MMBTU for incremental volumes

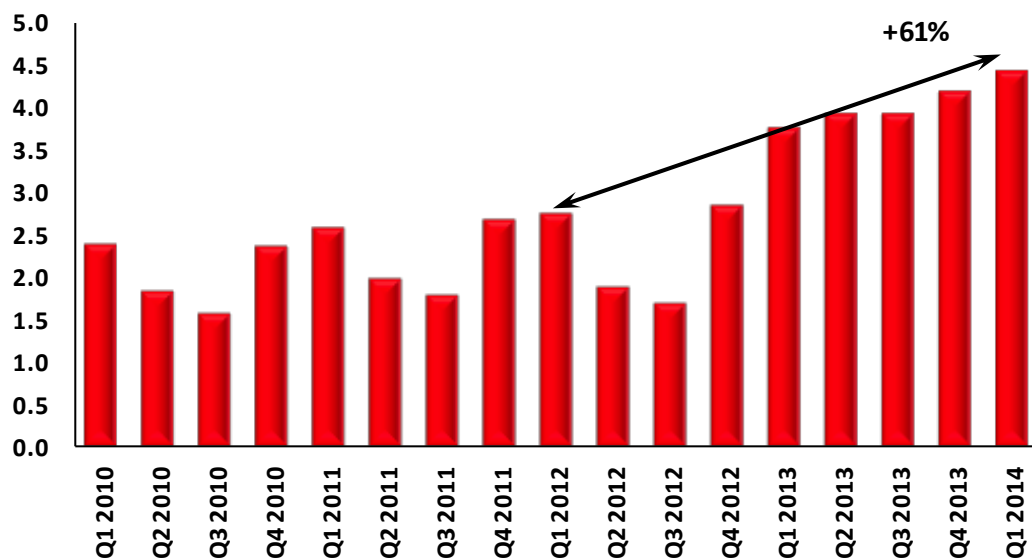
AVERAGE NEUQUEN BASIN WELLHEAD GAS PRICE



IMPORTED LNG PRICES - DES CONDITION - 2008-2014



YPF WELLHEAD GAS PRICE - NEUQUEN BASIN (US\$/MMBTU)



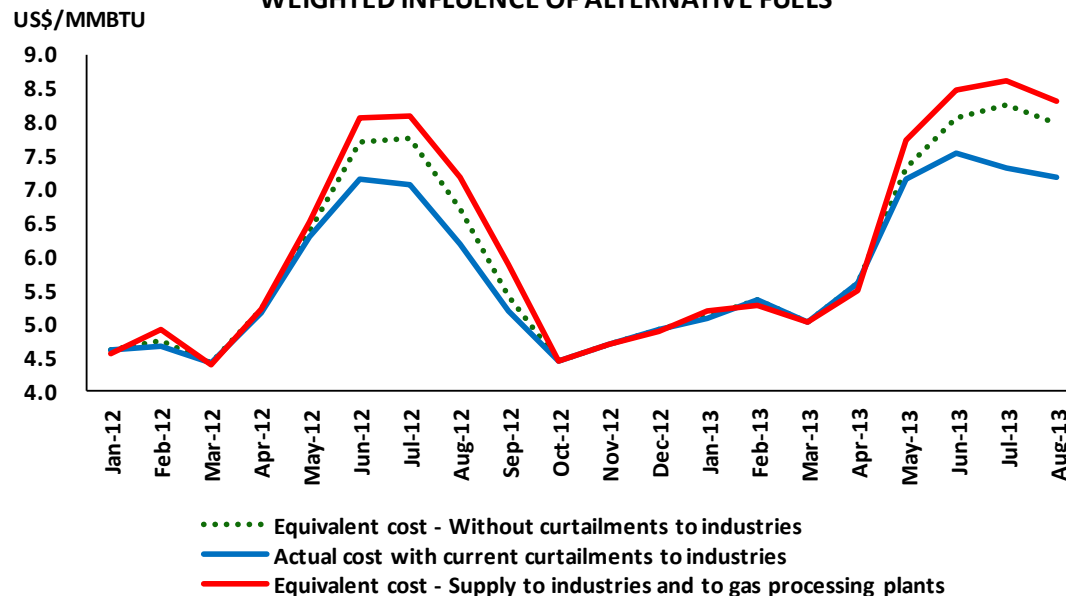
PlanGas price scheme provides incremental subsidy, but average realize price converges to 4.5 US\$/MMBTU

Not enough average if weight of tight and shale gas increase in future developments

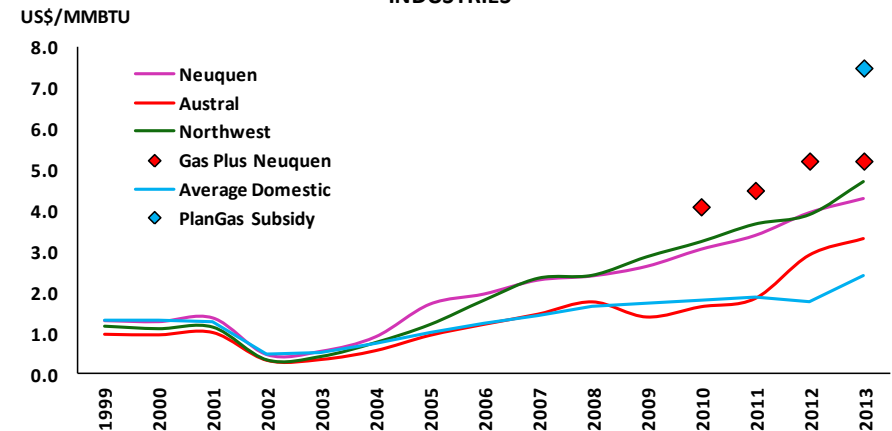
Very high actual cost of gas supply

- When considering the cost of substitute fuels and eventual cost of satisfying industrial gas demand which is curtailed, current actual cost exceeds 8 US\$/MMBTU

**COST OF EQUIVALENT SUPPLY OF GAS TO DOMESTIC MARKET -
WEIGHTED INFLUENCE OF ALTERNATIVE FUELS**

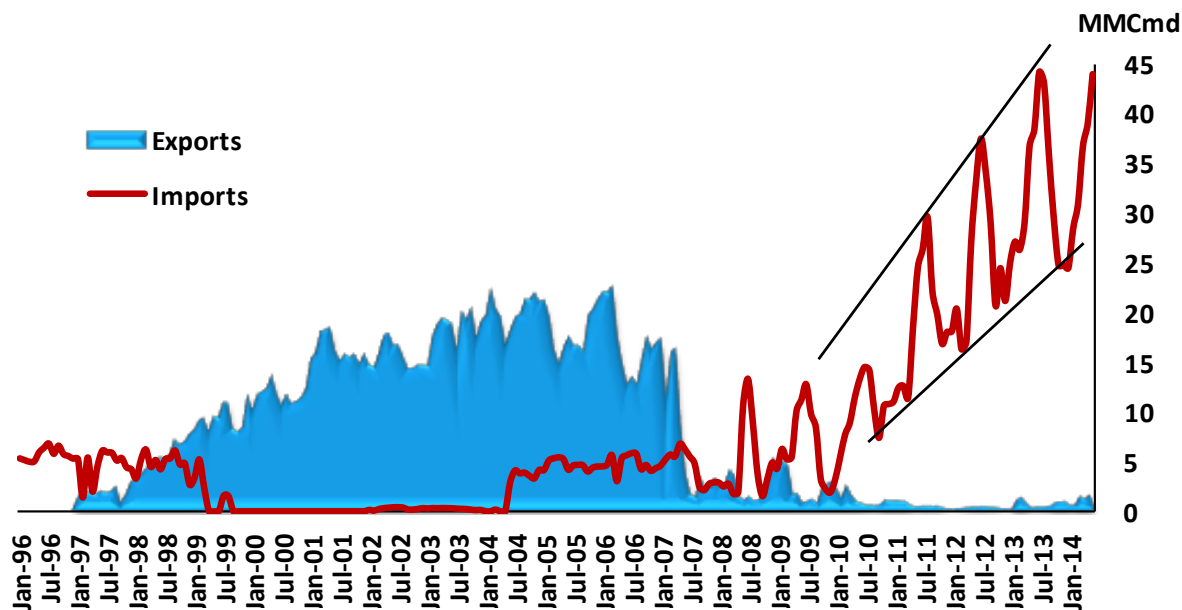


**ESTIMATED WELLHEAD GAS PRICES - TERM CONTRACTS TO
INDUSTRIES**

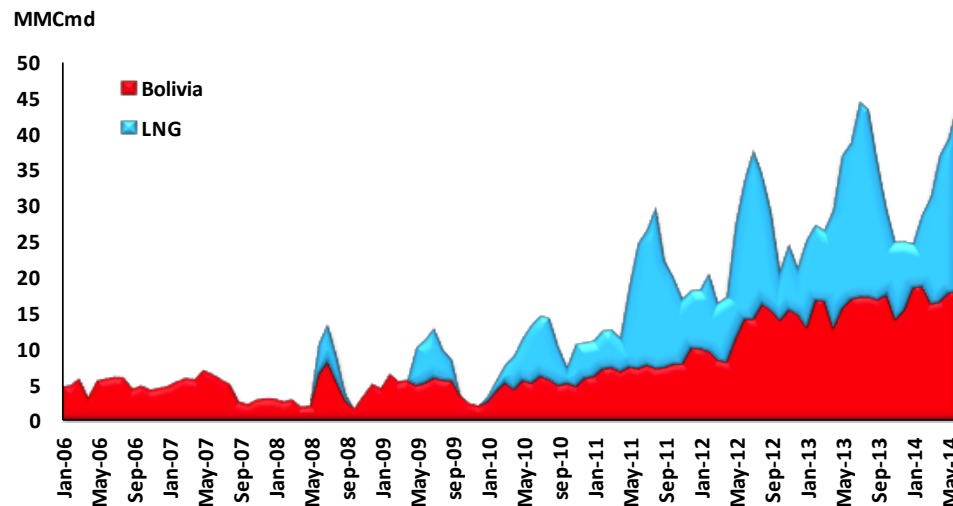


Dependence of imported gas from Bolivia and LNG

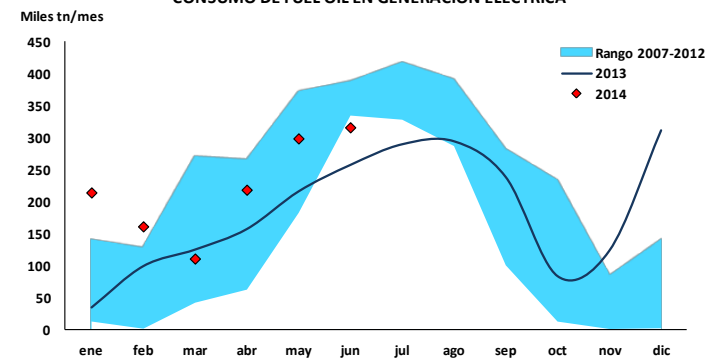
NATURAL GAS EXPORTS AND IMPORTS IN ARGENTINA



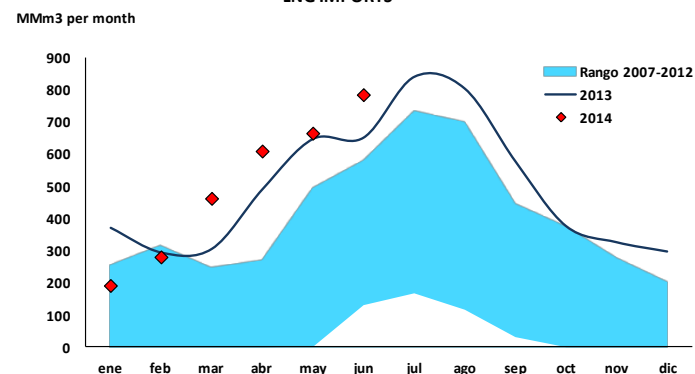
IMPORTS OF LNG AND NATURAL GAS FROM BOLIVIA



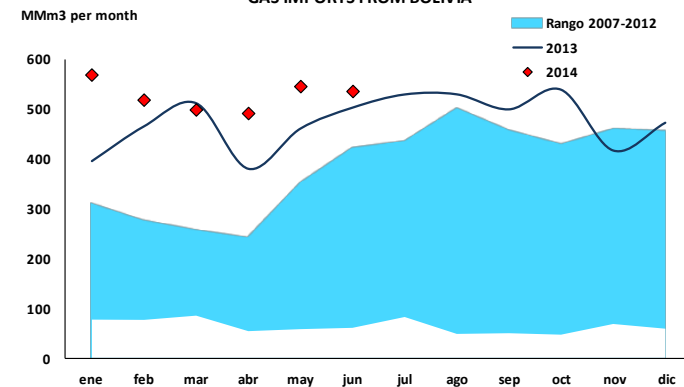
CONSUMO DE FUEL OIL EN GENERACIÓN ELÉCTRICA



LNG IMPORTS



GAS IMPORTS FROM BOLIVIA

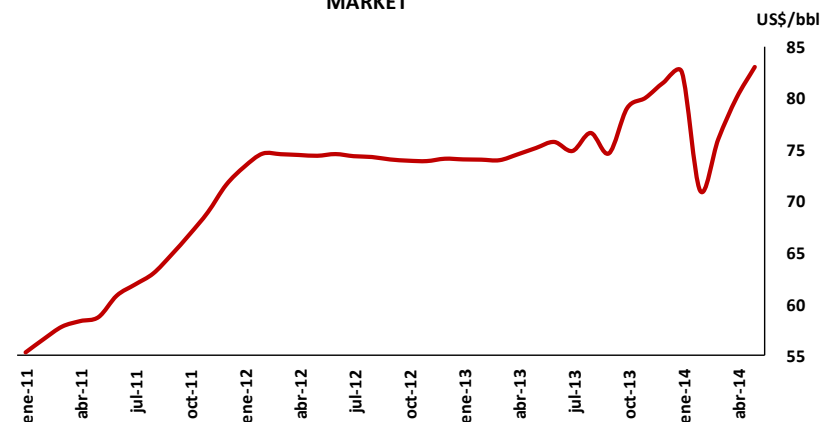


Medanito crude price previous to January estimated at 83 US\$/bbl

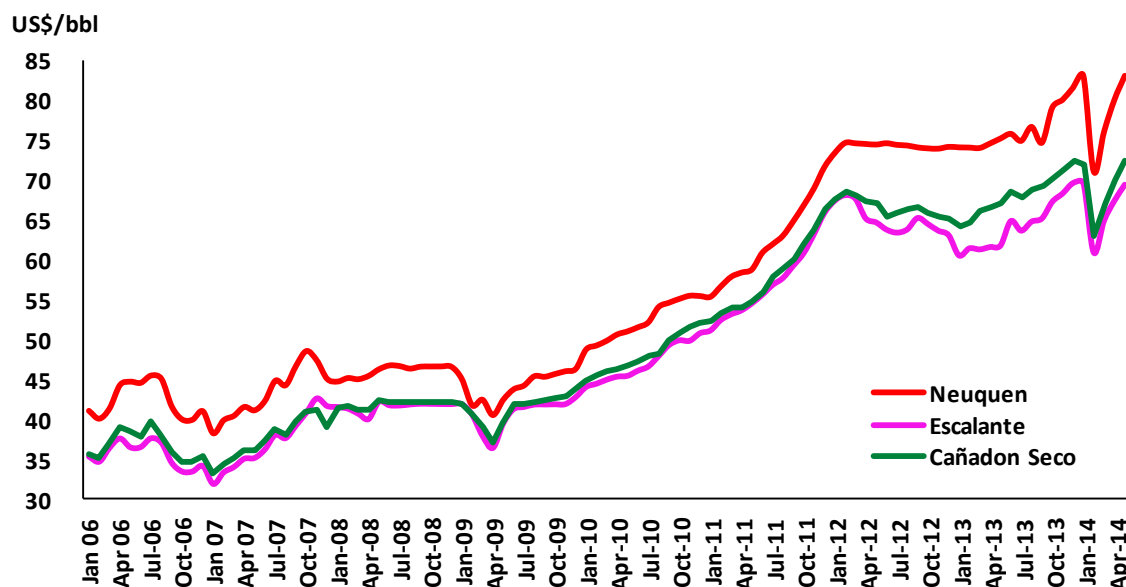
- Effects of changes after devaluation to last until May

MONTH	MEDANITO (US\$/BBL)	FUELS PRICE INCREASES AUTHORIZED
February	71	6.0%
March	76	6.1%
April	80	5.4%
May	83	3.8%

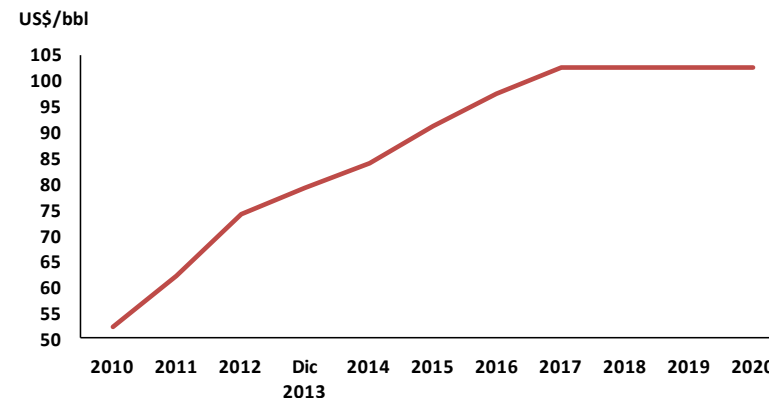
CRUDE OIL PRICES ASSESSED FOR MEDANITO TYPE - DOMESTIC MARKET



ASSESSMENT OF PRICES - MAIN DOMESTIC CRUDE OIL TYPES

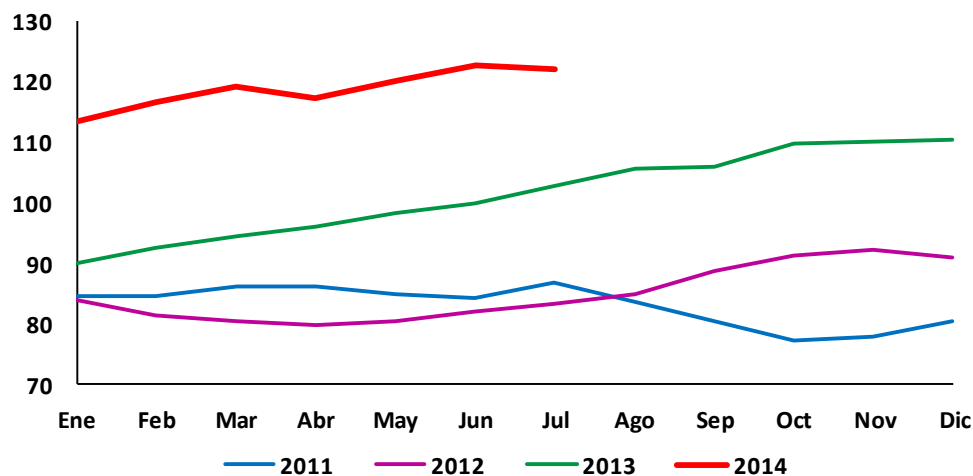


MEDANITO PRICE PROJECTION BY YPF

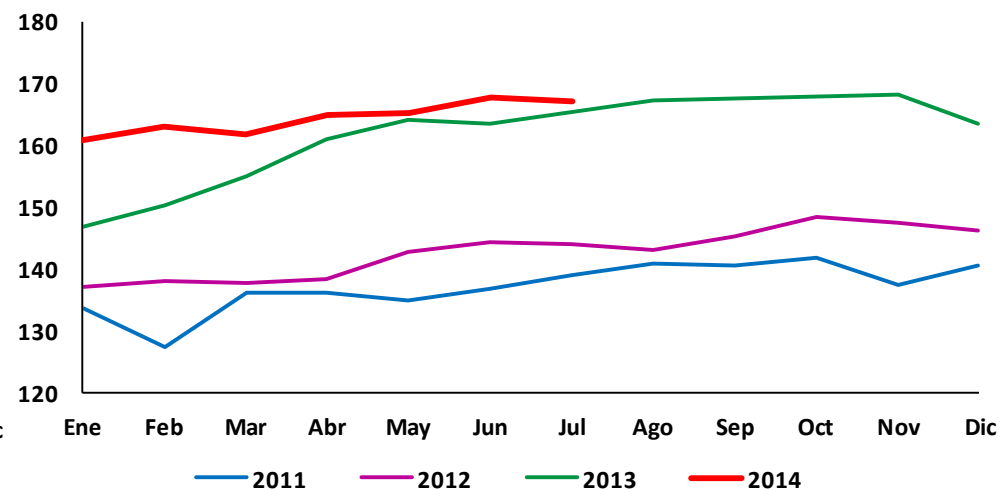


Active drilling and workover rigs in 2014 - Soaring drilling rates – 50,000 US\$/d

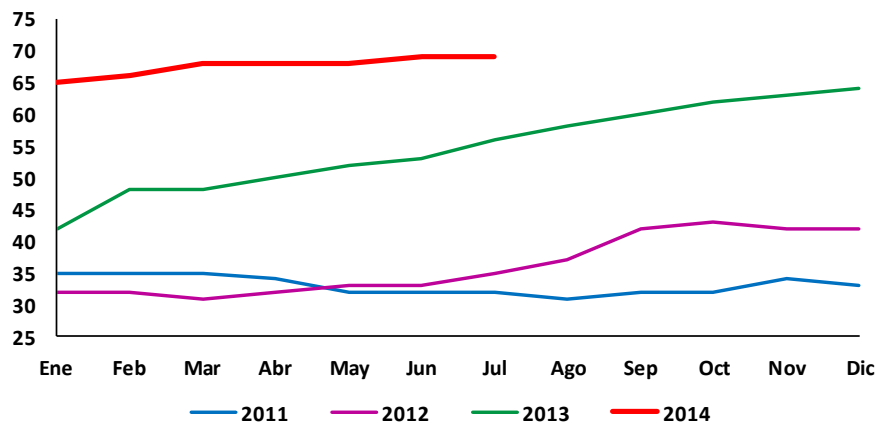
TOTAL ARGENTINA - ACTIVE DRILLING RIGS



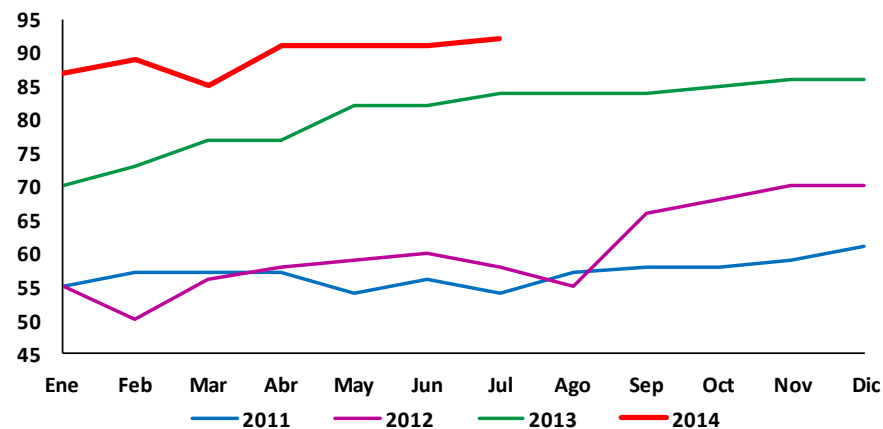
TOTAL ARGENTINA - ACTIVE WORKOVER RIGS



YPF - ACTIVE DRILLING RIGS

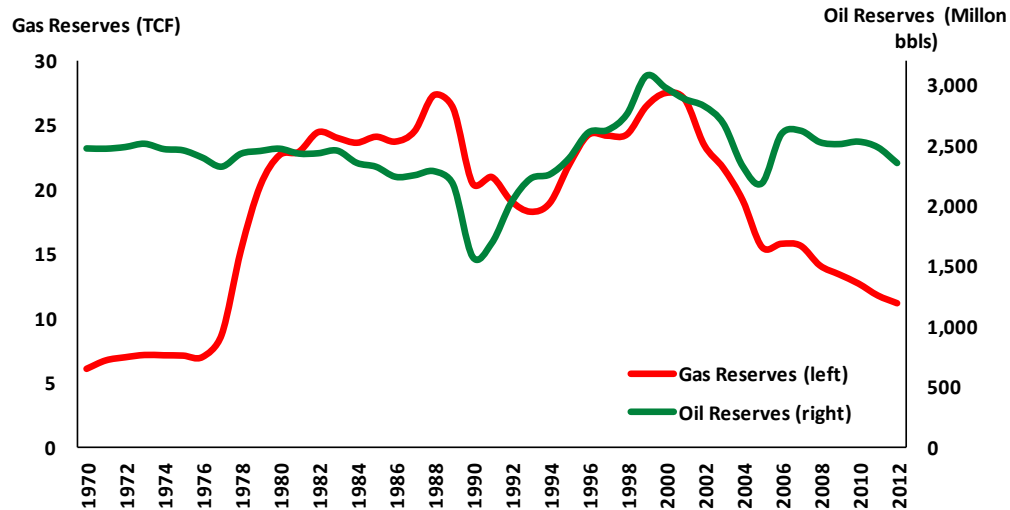


YPF - ACTIVE WORKOVER RIGS



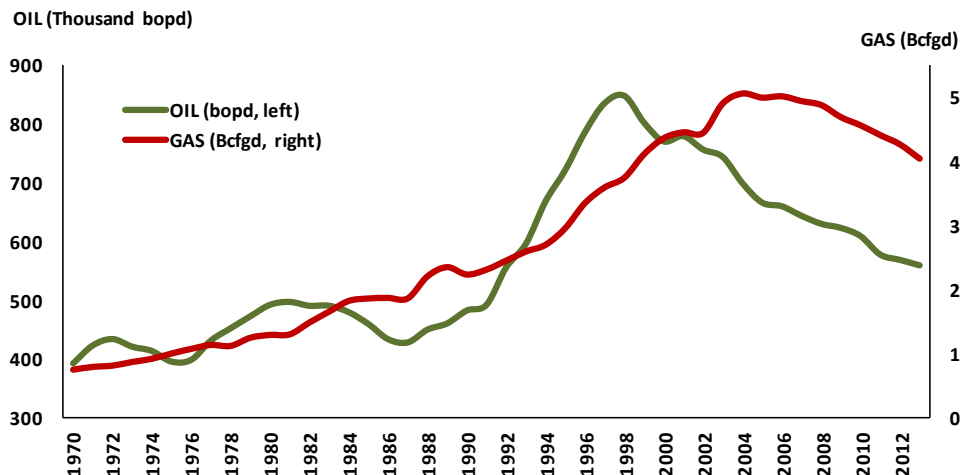
Declining oil (-5.3%) and gas (-5.1%) reserves by end of 2012

OIL AND GAS PROVED RESERVES



- **Higher investments dedicated to shale oil**
 - Initial stage at shale gas
- **Maturing conventional oil and gas production due to limited exploration activity, led to decline in reserves**

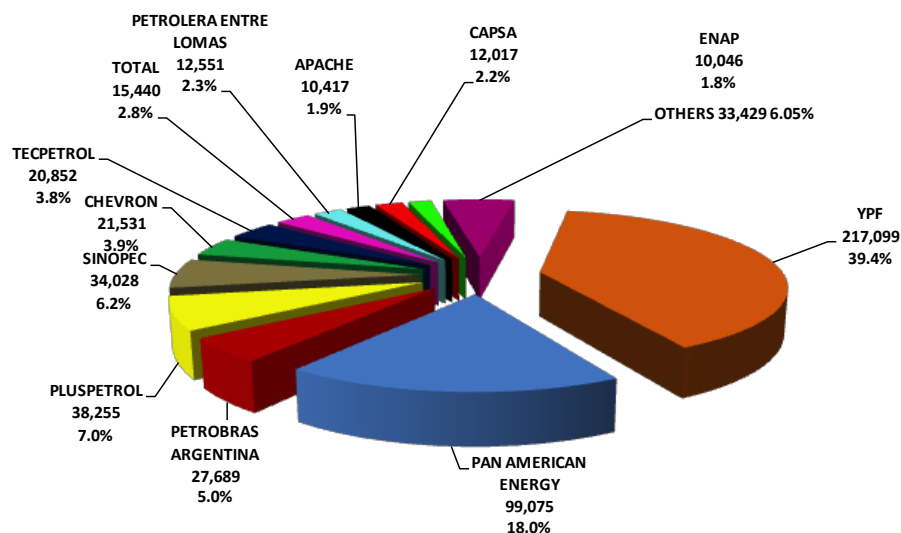
OIL AND GAS PRODUCTION



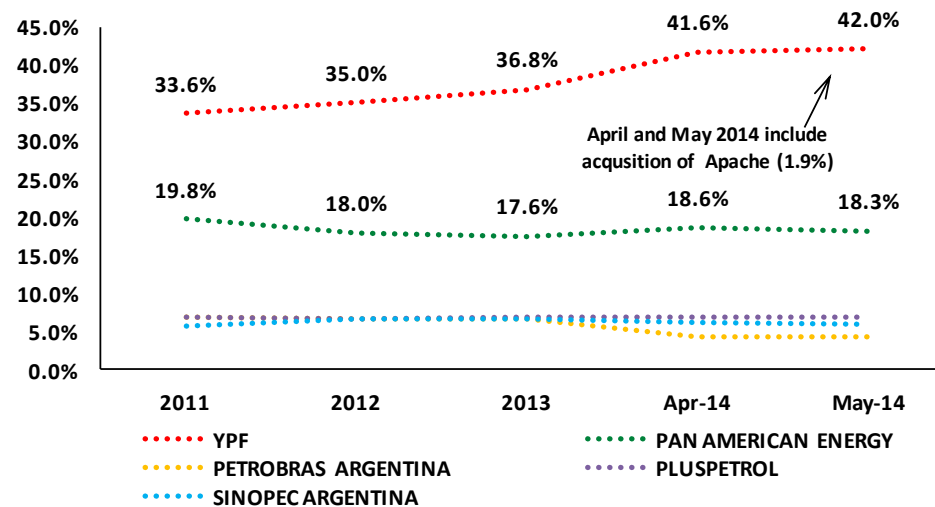
- Incentives to revert trend, with some small discoveries being made
- **YPF announced 148% reserves' replacement ratio based in recovery factor and extension of concessions**

YPF extending its influence rapidly

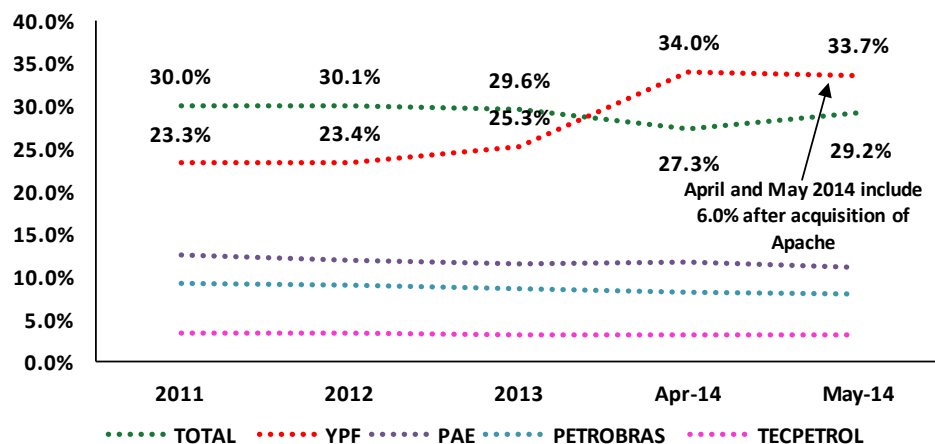
OIL PRODUCTION BY OPERATOR JAN-MAY 2014 (bopd)



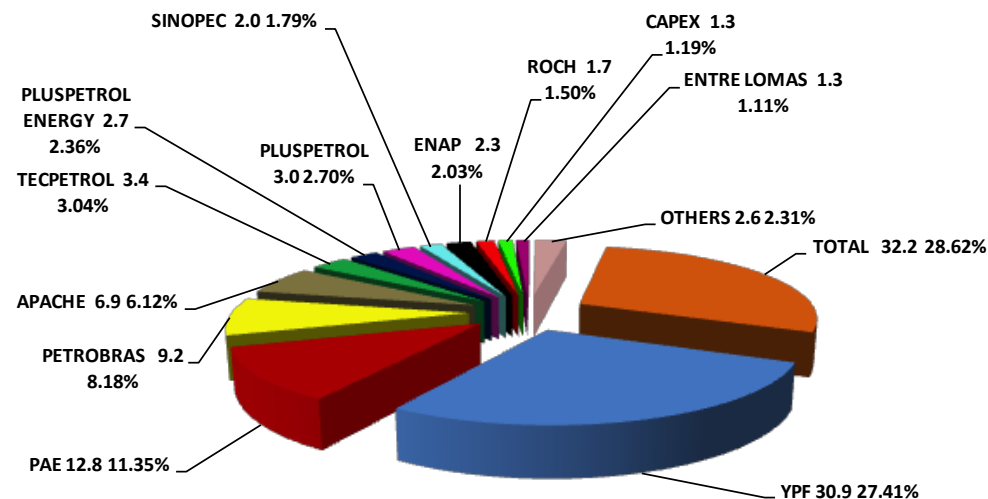
GROSS GAS MAIN OPERATORS - MARKET SHARE EVOLUTION



GROSS GAS MAIN OPERATORS - MARKET SHARE EVOLUTION

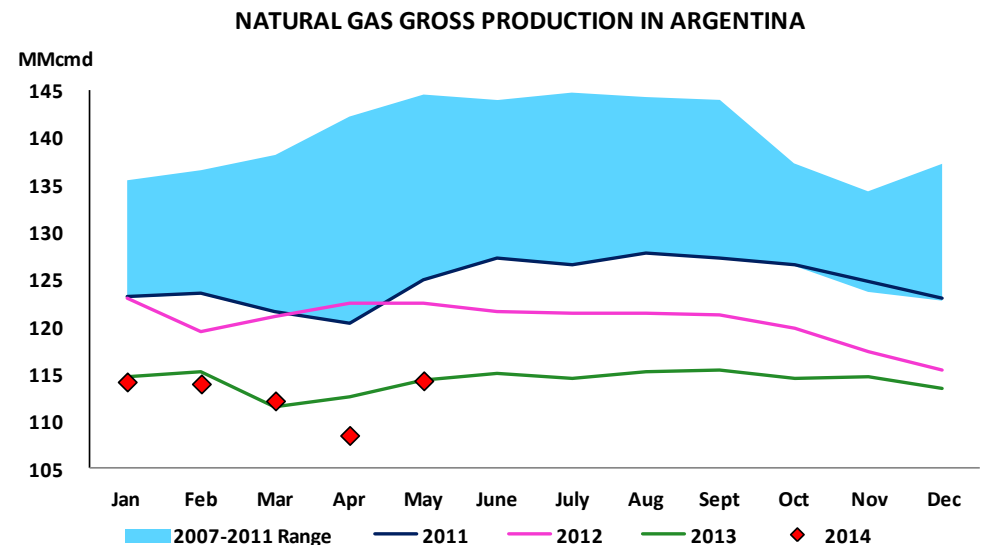
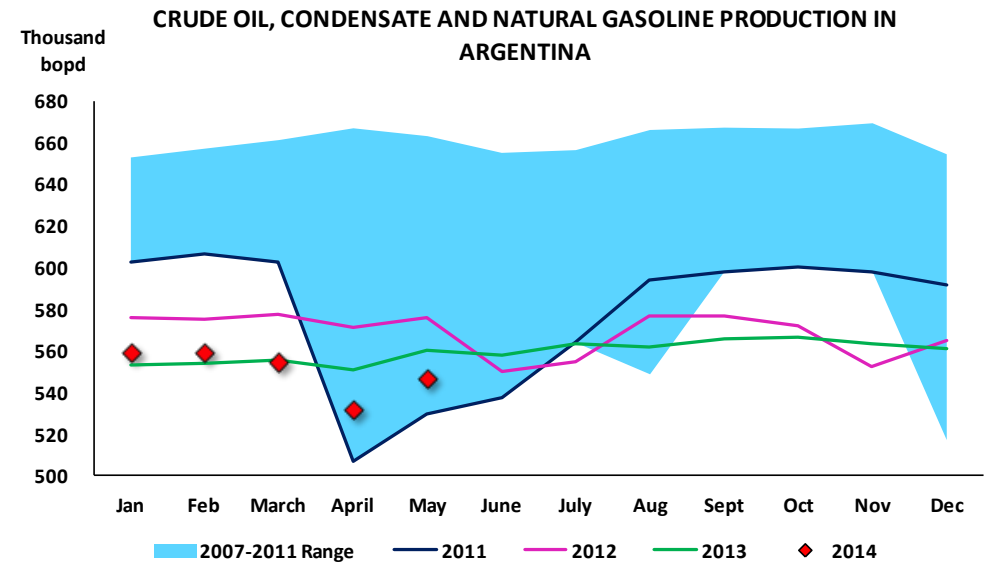


GROSS GAS PRODUCTION BY OPERATOR JAN-MAY 2014 (MMm3/d)



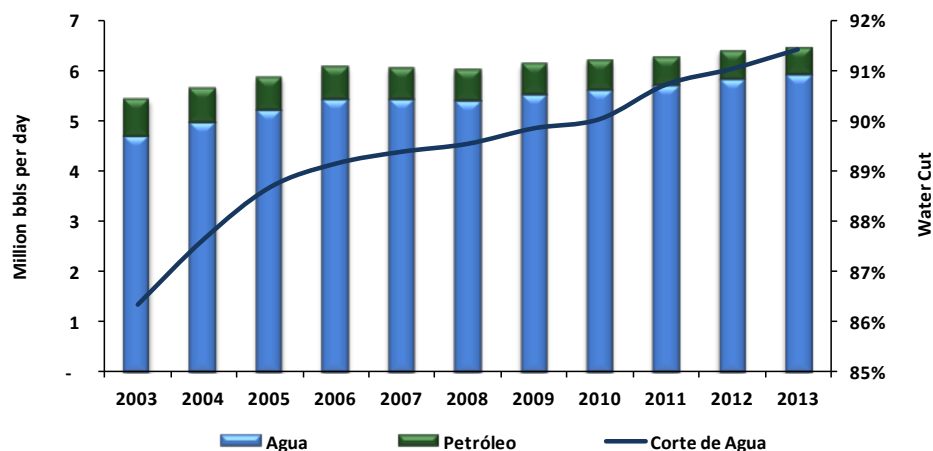
Oil and Gas production moderating declining trend in 2014

- **Oil production fell 1.6% in 2013**
 - Decrease of 0.8% in Jan-May 2014
 - Increase in drilling activity driven by YPF, focused at Neuquen basin
- **Gas production fell by 5.2% in 2013**
 - Equivalent to 6.3 MMm3/d
 - Expanding drilling activity since YPF expanded in H2 2013
 - Decrease of 0.9% in Jan-May 2014

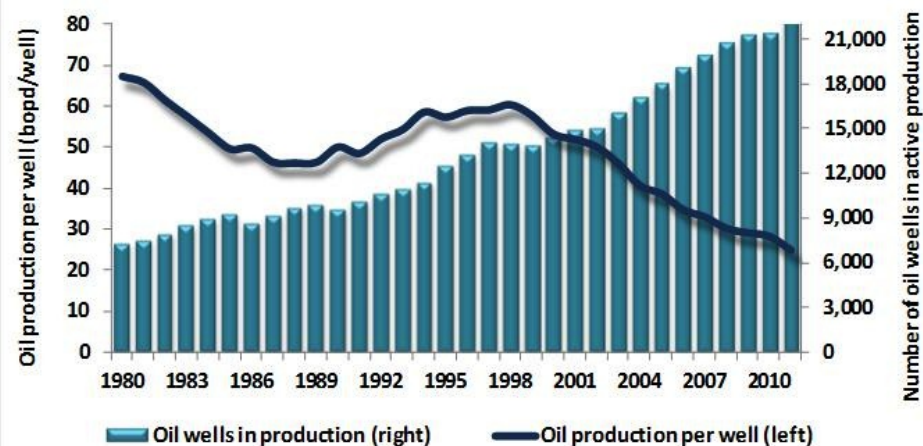


Declining trend in oil and gas productivity requires a change for higher prices

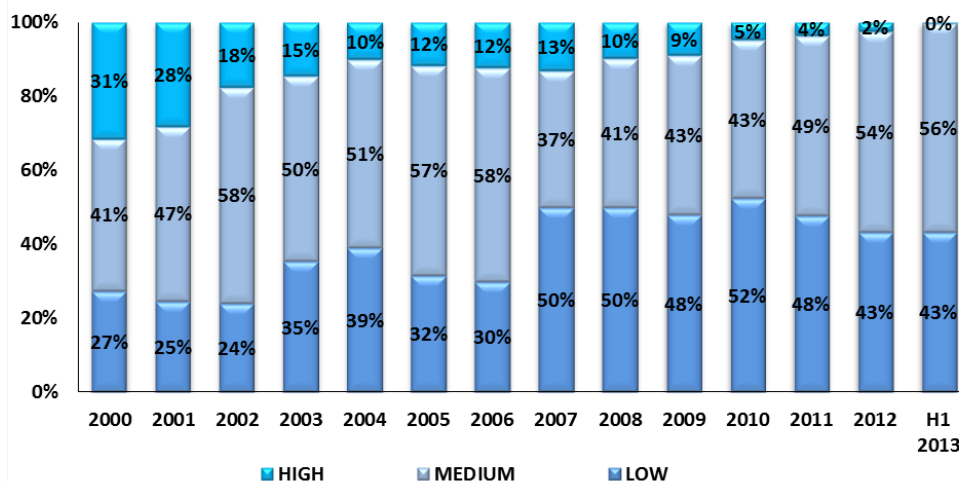
WATER PRODUCTION AT ARGENTINE OIL FIELDS



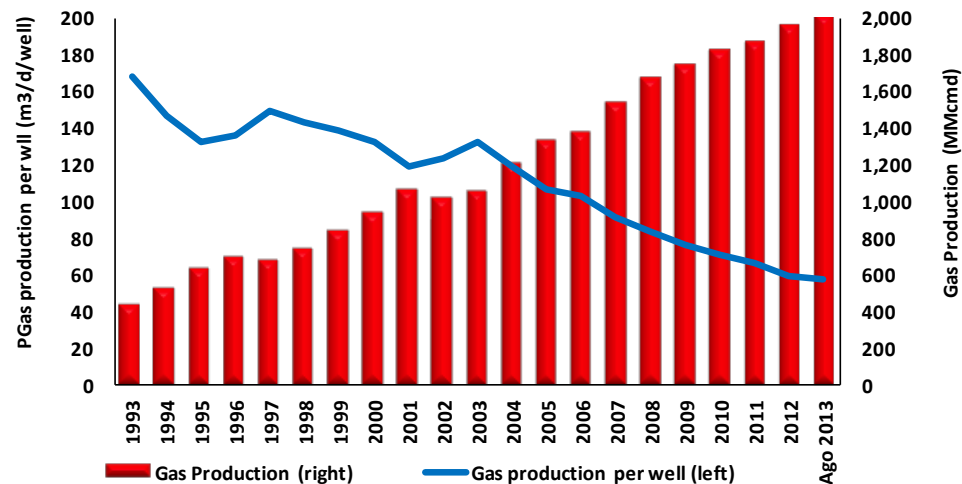
OIL PRODUCTION PRODUCTIVITY IN ARGENTINA



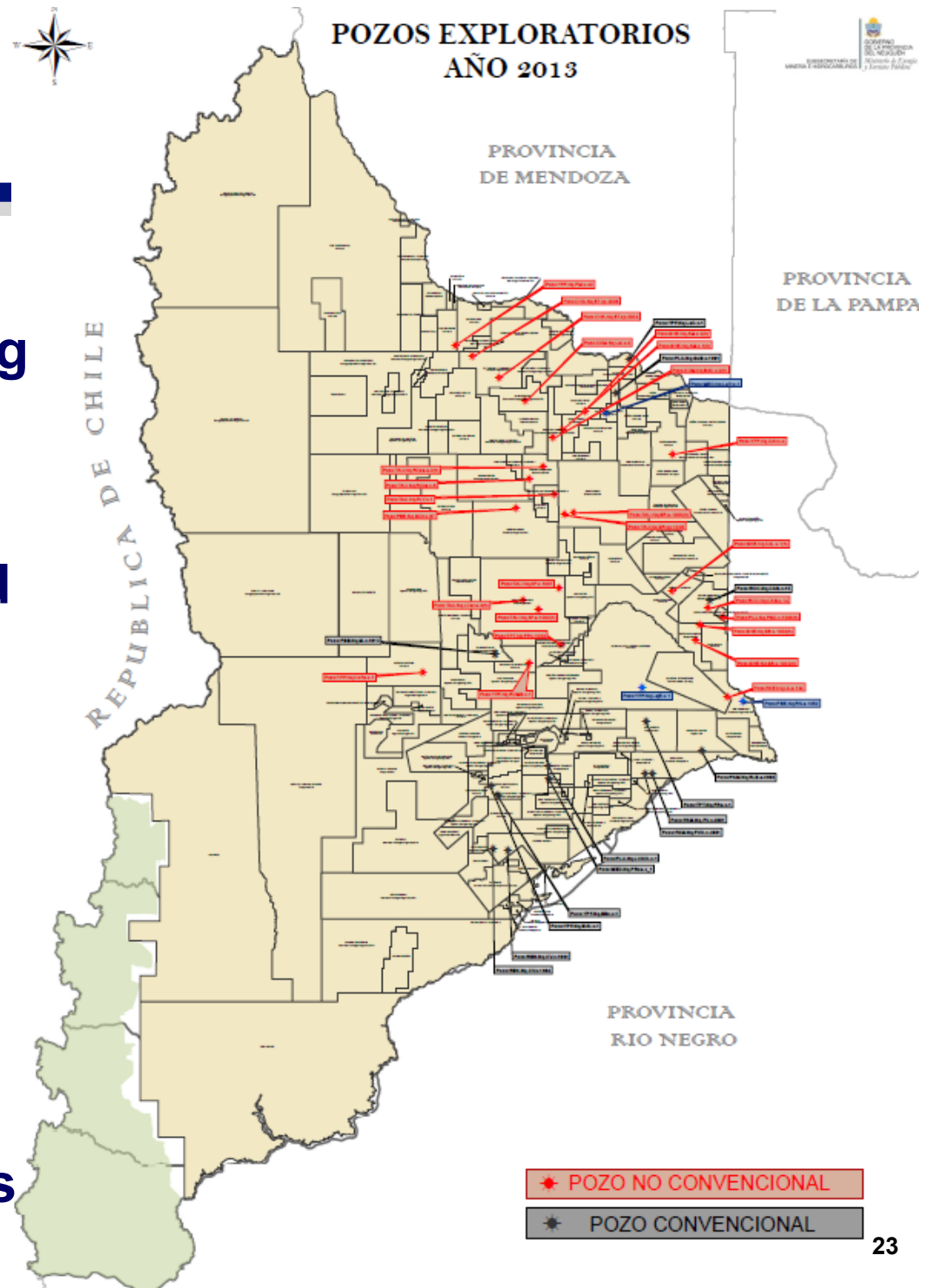
GAS PRODUCTION BY FIELD PRESSURE



GAS PRODUCTIVITY IN ARGENTINA

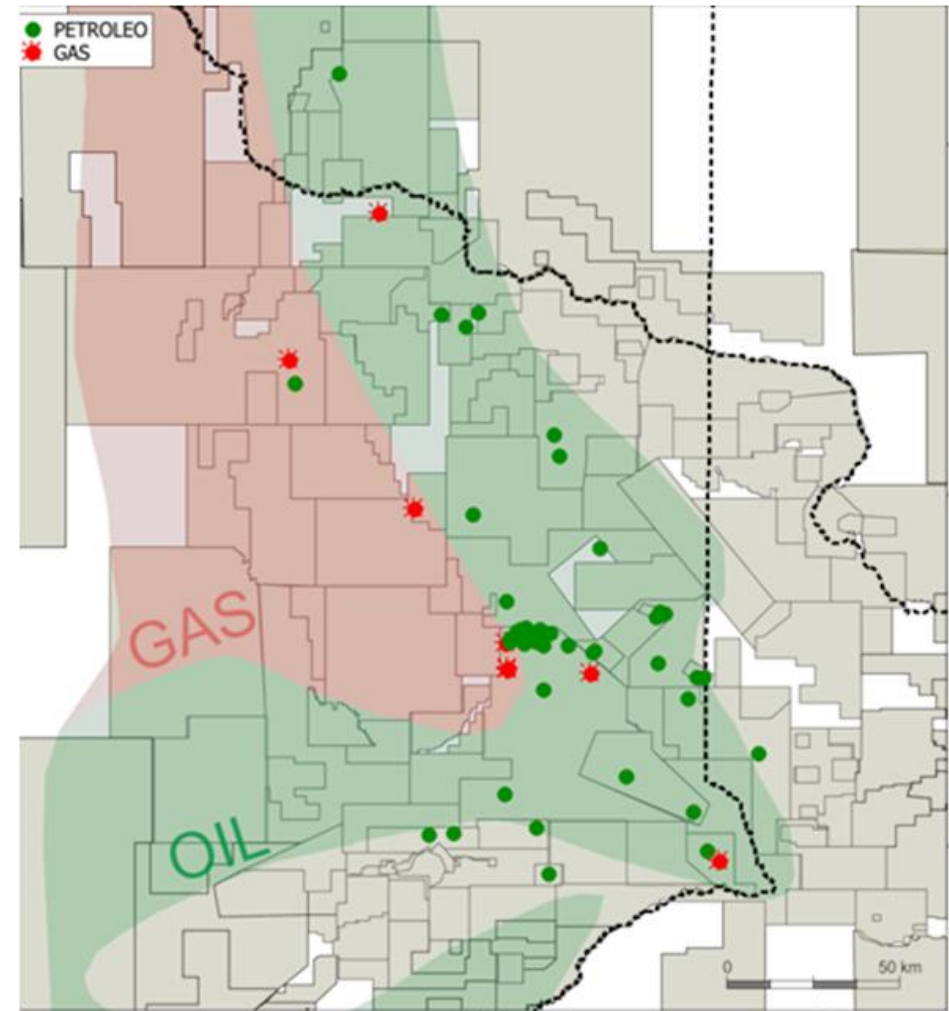


- **2011 through 2013 were years of acreage positioning**
 - High values paid: Chevron 10,000 \$/acre
- **Estimated \$ 3.5 Bn invested since 2010**
 - \$ 2.0 Bn in past 12 months
- **Several players assessing the Vaca Muerta play**
- **Expansion in exploration efforts**
- **Debate on ways to progress with Vaca Muerta play**



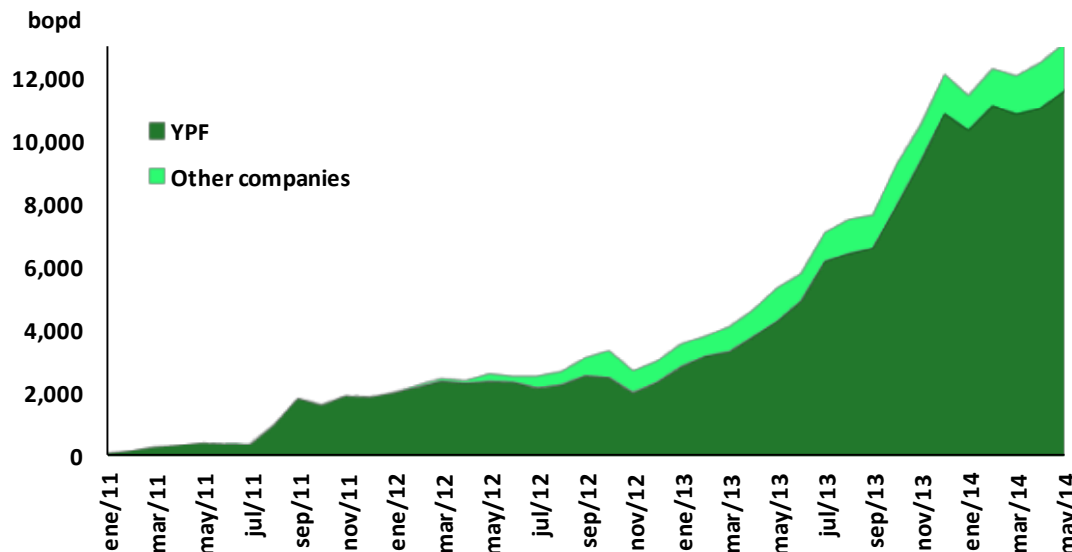
Shale play receives interest and will unfold in next years

- **Changes still required for development**
 - Regulatory stability
 - Higher prices
 - Reduction in Union activism
 - Service industry development
 - More rigs and fracking capacity
- **Water treatment centers required as utilization and scarcity will become an environmental flag**
 - Government promotes development of suppliers for the shale play



Actual output of shale play as of May 2014 – All operators in Argentina

SHALE OIL PRODUCTION IN ARGENTINA



Aggregate May 2014 output at 20,258 boe

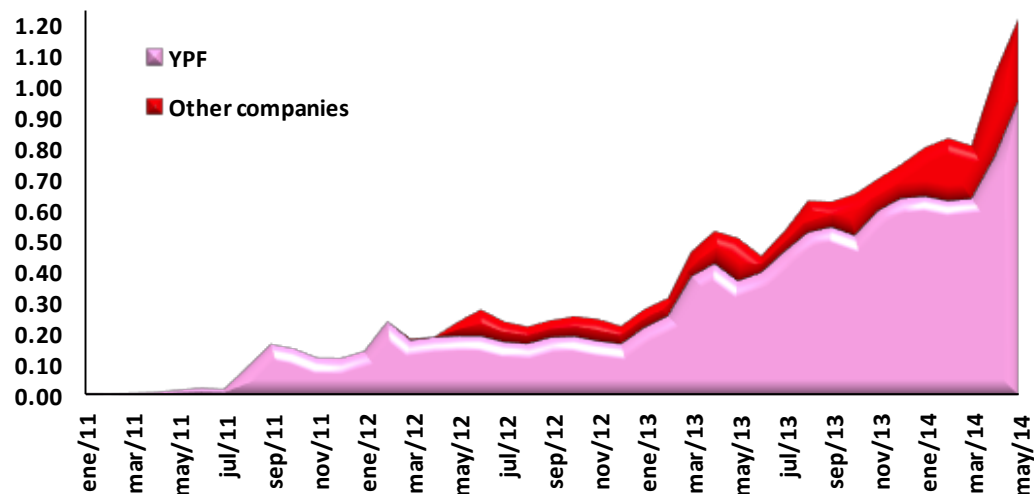
13,090 bopd

43.0 MMcfd (1.22 MMcmd)

YPF as Operator explains 88.3% of gross shale oil output, and 78.2% of shale gas output (mainly associated gas to shale oil)

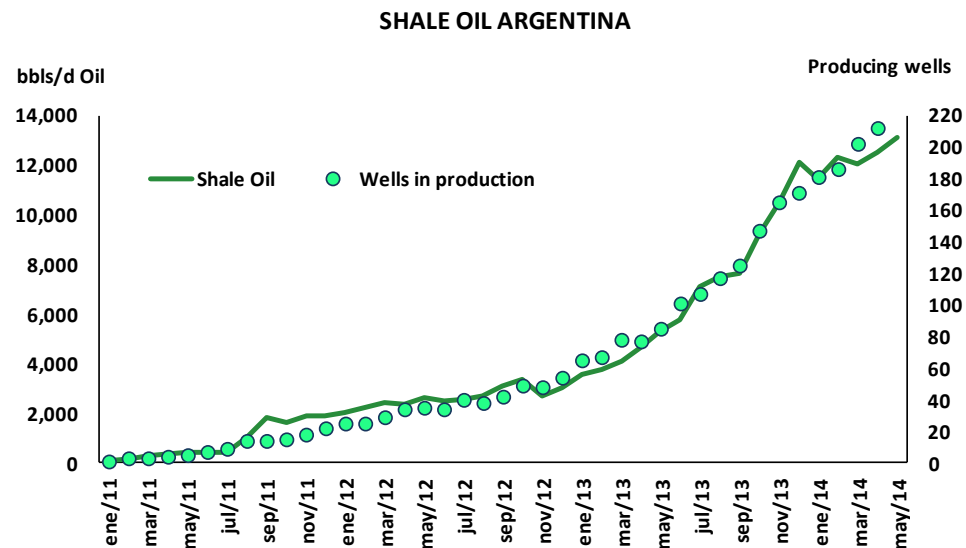
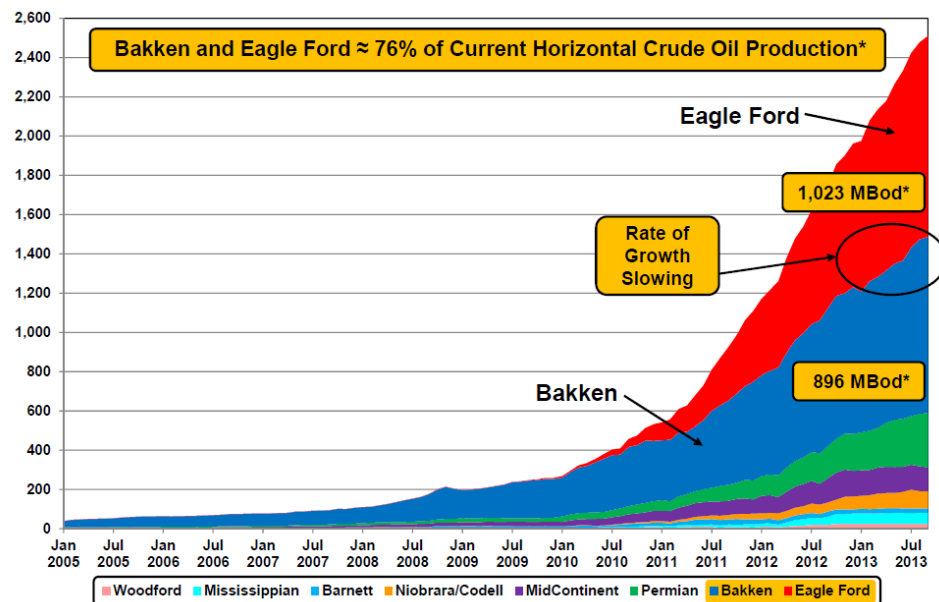
SHALE GAS PRODUCTION IN ARGENTINA

Million cubic meters/day

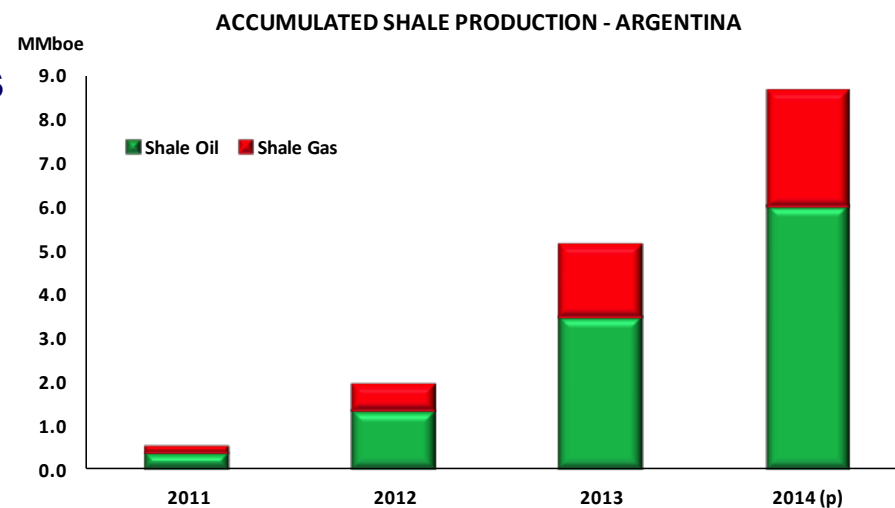
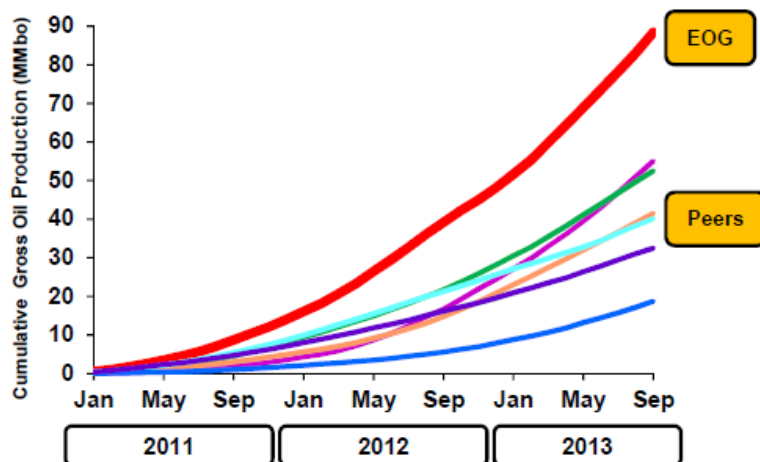


Stagnant shale oil output compared to December 2013, despite incorporating 62 new wells to production

Shale production at initial stages in Argentina

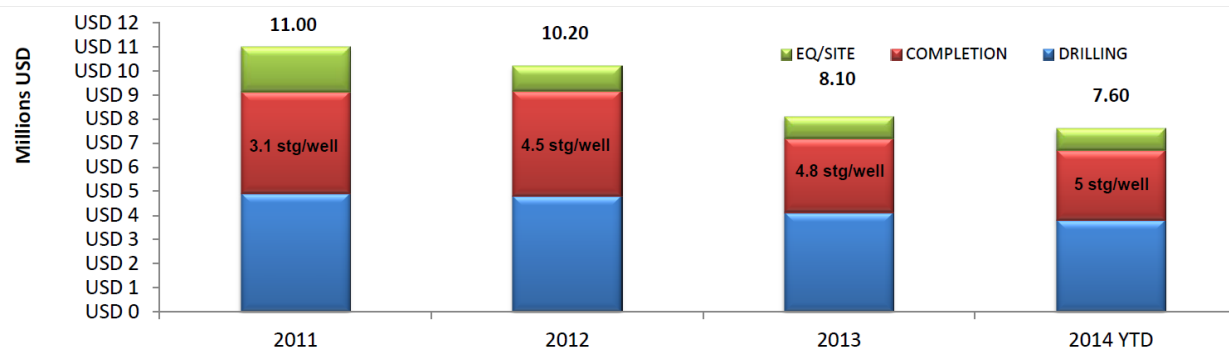


US accumulated shale production all basins



Different strategies define different potential markets for equipment and services

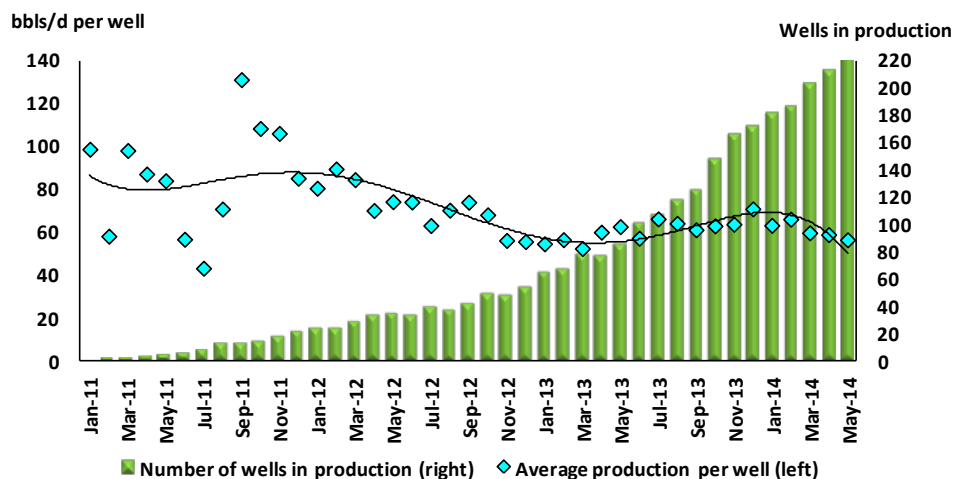
- Differing strategies between YPF and rest of Operators
- YPF: reducing costs on vertical black oil shale wells



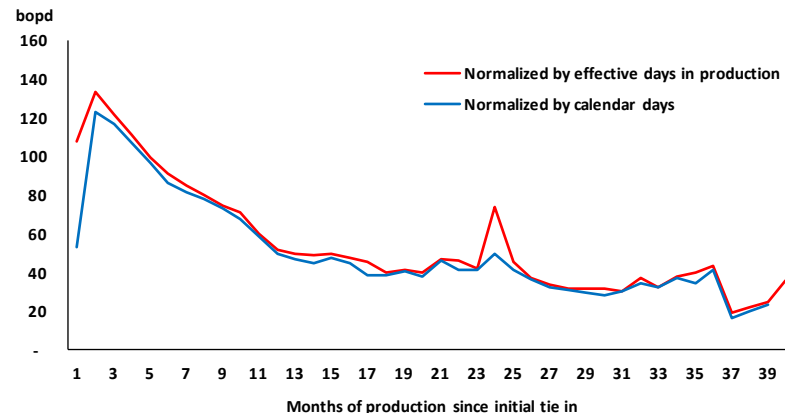
- Other Operators focusing in assessing wet gas shale play with expensive horizontal wells until they define which type of development strategy will be implemented
 - Shale gas oriented; deeper wells
 - 15+ stages of fracs per well compared to 5 stages per vertical well
 - Very high pressure while drilling, testing and initial production (9,000 psi)

Productivity of shale oil still low, requires increases and horizontal wells

SHALE OIL PRODUCTIVITY - WELLS IN EFFECTIVE PRODUCTION

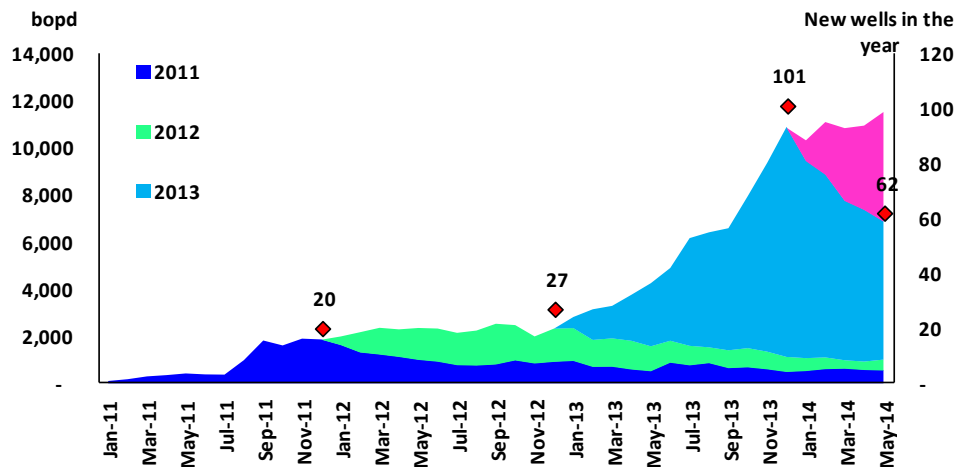


YPF - NORMALIZED SHALE OIL PRODUCTION CURVES -

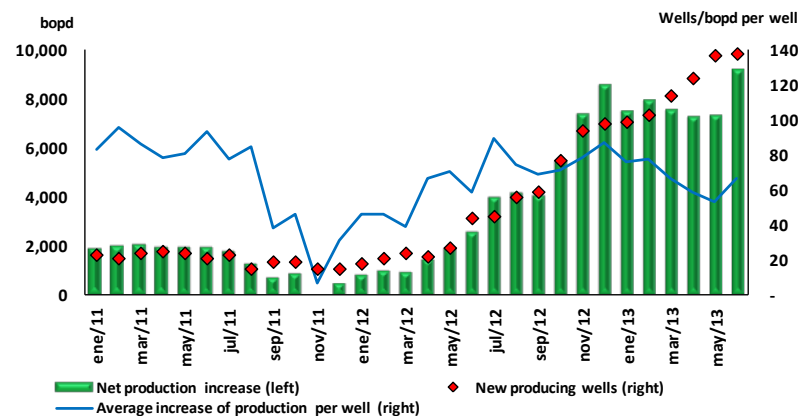


Accelerated decline of wells drilled in 2013 campaign; Loss of incremental contribution by 2014 wells; Better performance by a group of wells drilled by YPF in past 3 months at Northwest of Loma Campana

YPF - SHALE OIL OUTPUT BY YEAR OF TIE-IN TO PRODUCTION

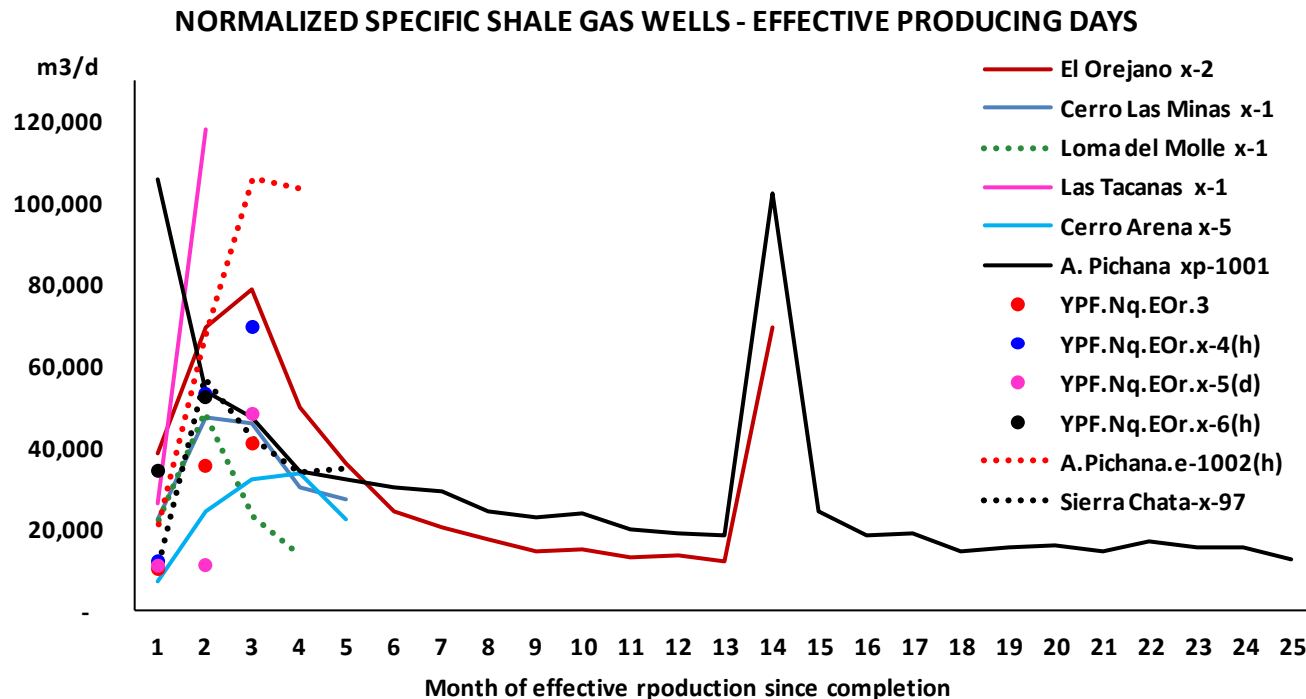


SHALE OIL BY YPF - YEAR-ON-YEAR VARIATION



Vaca Muerta - Production of specific shale gas wells

- Analysis considering average production per month of operation of each specific shale gas well
- Very few shale gas wells
- Some wells with very good initial production rates

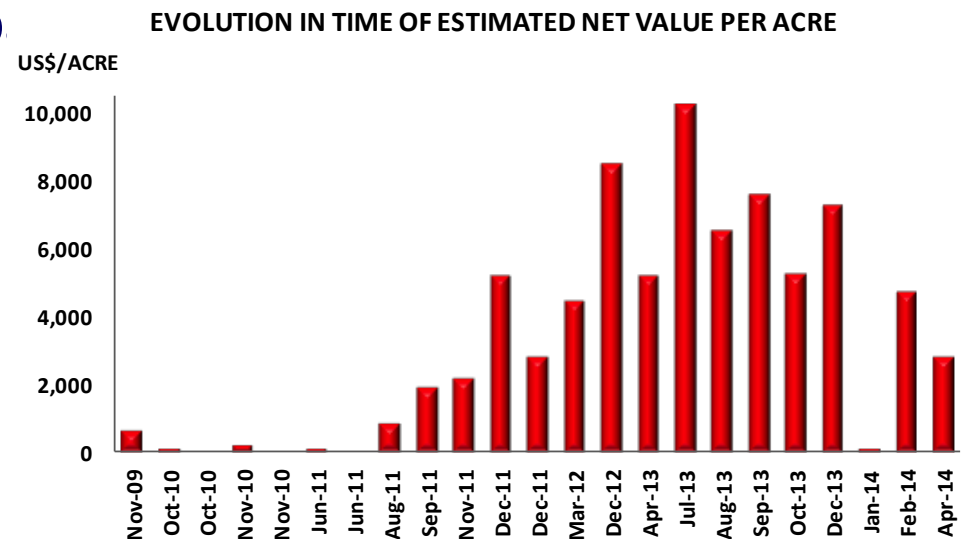


Remaining obstacles

Repsol issue	Settlement reached; payment in bonds in May
Prices of oil and gas	Resumption of increases of domestic price of oil and subsidies for gas at 7.5 US\$/MMBTU
Rigs and fracking crews	Imports authorized; bureaucratic restrictions; growing fleet ; not enough for Upside case
Labor	Lack of qualified personnel; Union activism and high salaries
Local content	Political pressure; difficulties in accomplishing by domestic suppliers
Regulatory framework	Consensus to establish stable rules; negative precedents; need to increase production
Players	Good base of qualified companies; especially majors; lack of domestic capital

Recent agreements in Unconventional

- Agreement with Chevron implicitly valuing Vaca Muerta play at a 10,300 US\$/acre
- Dow into a financial deal with YPF for shale gas
- Wintershall in private deal for shale oil with GyP Neuquen
- Large deal between Shell and Total
- Recent deal by YPF selling p
- Pluspetrol
- MOU by Petronas with YPF



Gas and Power companies

- **Government decided to partially reduce subsidies**
- **Unclear scheme**
- **Government will fund additional income to companies, either through increases on tariffs, or financing of investments, or direct subsidies to companies**
- **Government decided to secure financial capacity of companies**
- **First decision to “do something with the sector”**
 - Increases in tariffs for gas transportation and distribution companies
 - Expected increases for power utilities and generators

Potential scenarios

- **More intervention by Government in the short term is leading to more aggressive incentives, though a turnaround should be expected for mid term**
 - **Further Radicalization – Low probability**
 - Turn the E&P business into service contracts based on Decree 1277?
Forced reinvestments?
 - Political control at YPF by politicians and unions (has not happened)
 - **Soft improvement – High probability**
 - Provide for higher oil and gas prices in exchange for reinvestment?
 - Maintain concessions with companies
 - Some associations for future shale development and domestic financing for YPF

The settlement with Repsol and influence on rest of the industry

- **Important recovery on valuations for publicly traded E&P and energy companies with activity in Argentina**
- **Impressive interest by Investment Funds and Banks**
- **Potential financial turmoil in Argentina remains as the main risk for companies; However, Neuquen basin oil price already recovered to pre devaluation level, and gas prices have been maintained**
- **Project for a new Hydrocarbons Law favored by YPF, may close the access to prospective acreage inducing partnerships with YPF**
- **Potential opportunity to position, as a negative scenario for investments in E&P business is not sustainable**

Potential E&P Scenarios

- **Transition may lead to more aggressive incentives and turnaround with new Administration by December 2015**
- **Potential for higher tariffs to reduce subsidies**
- ***Imports of energy affect Argentine economy, and prevent resumption of growth***
 - Next two years may be influenced by macroeconomic disorder
- **Increasing domestic production of oil and gas demands a significant effort in attracting oil and gas investors**
- ***Need for a drastic change; Potential turnaround under a new Government***
- **Companies under “assessment mode” positioning for a potential change in political environment**

Some Conclusions on E&P Business Environment in Argentina

- **Implicit recognition of wrong policies and need to increase production through moderate incentive programs to provide for higher prices**
- **Expected domestic oil and gas prices to continue increasing, as well as increases of income for utilities**
- **YPF is strongly supported by Government**
- ***2014 and 2015 represent transition years into a future improved E&P business framework, as economy continues to be affected by expensive imported energy***