



Oil & Gas

**Balance of the decade,
prospects and challenges
of the sector in Argentina.**



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Introduction

An analysis of the decade 2005-2015 traces the evolution of the Oil & Gas sector in Argentina facing major challenges to recover the lost self-supply.

This document is aimed at explaining the behavior and general performance of the oil & gas industry over the last ten years (Section I) as well as its short-term perspectives (Section II). Whereas for the purposes of Section I, data reflecting the changing environment of the industry during the 2005-2015 period was obtained from public sources, for the purposes of Section II, KPMG gathered information on the short and medium term perspectives of the key players of the sector. As it may be concluded, **the main concerns of the industry are the increase in production, the financing sources, the prices, and the development of unconventional resources.**

In general terms, from 2003 to 2013, international commodity markets recorded unprecedented increases in prices triggered by

emerging economies, which grew at high rates (or at Chinese rates, a term coined to refer to the increase experienced by such Asian country) and exercised pressure on the demand for food products and production supplies, which offered an opportunity for the Argentine oil & gas industry that was not fully exploited during the period at issue. The past decade has seen those events come to an end, with the consequent impact on the oil & gas industry, mainly as regards exploration and extraction projects already initiated (where sales price were overestimated) and the production of conventional and unconventional hydrocarbons. This is particularly important since the Argentine's energy matrix is highly dependent upon hydrocarbons (by over 80%), which hinders the economic development of the sector, making it more costly.



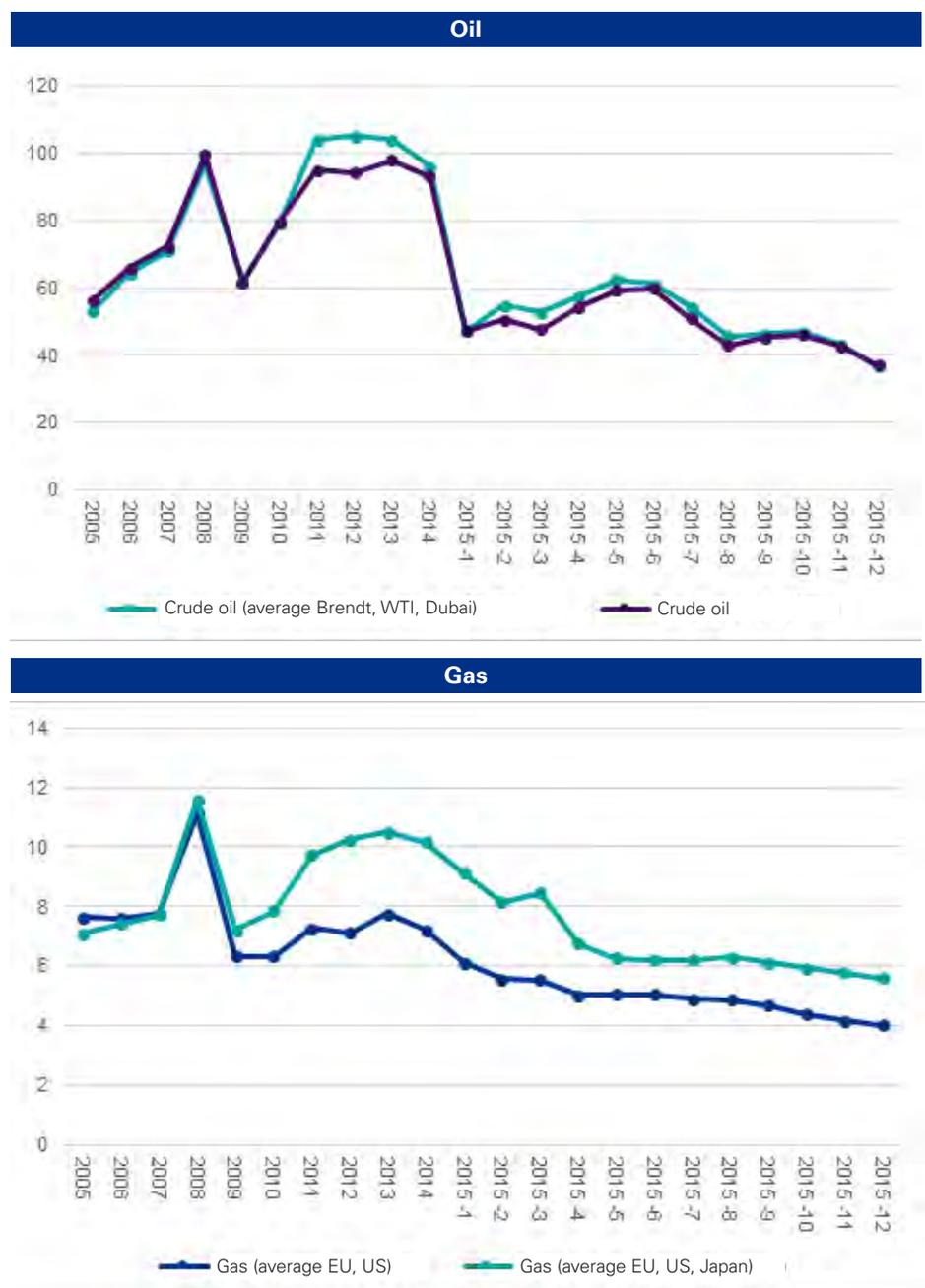
The past ten years: 2005-2015

The cycle of increases in the prices of the main energy commodities, which began in 2003, jointly with the shock in the prices of other commodities, such as soy and some minerals, and started to record a downward trend during 2013, showed the development potential and perspectives of commodities, producers, and exporters. Indeed, it is worth highlighting that the period running from 2003 to 2013, oil and gas were some of the energy commodities recording the highest increases in prices: 260% in the case of oil (an average of WTI, Brent, and Dubai prices), and 122% in the case of gas (an average of gas prices in the US, EU, and Japan). Over the last two years (2014-2015), following the downward trend shown by external prices, both commodities have suffered drops, accounting for 51% in the case of oil, and 36% in the case of gas (compared to the values traded in 2013).

The first figure in this report (*Figure 1*) shows the changes in international oil and gas prices over the last ten years as well as their recent behavior from January to December 2015. As it may be seen, the period was marked by an acceleration and slowdown in international oil and gas prices. After experiencing significant increases during 2005-2011 (crude oil price grew by 94% on average)¹, the prices of both hydrocarbons became

¹ Average oil (Brent, WTI, and Dubai) and gas (US and EU) prices. However, it is worth mentioning that, indeed, the US gas prices recorded a marked drop during this period, from USD 6 per MMBtu to USD 4 per MMBtu (amongst other reasons, due to the exploitation of unconventional hydrocarbons in that country during 2005, and its subsequent impact on supply).

Figure 1
Changes in oil & gas prices during 2005-2015.
 (Stated in dollars per barrel/MMbtu)



Source: prepared by KPMG based on World Bank data, 2015.

stagnant, and started to show sharp drops compared to the average for 2014 and 2015. Accordingly, although oil and gas prices recorded small drops in the first case (compared to 2011), in 2015, they showed sudden drops of 51% and 30%, respectively (also compared to 2011). In terms of figures, oil and gas average

prices recorded in 2011 had reached USD 104 (USD 95 for WTI) per barrel, and USD 7.2 per MMBtu, respectively. In early 2015, these figures had dropped to USD 47.11 per barrel (USD 47.27 for WTI) and USD 6.11 per MMBtu, and in late October to USD 46.9 (USD 46.20 for WTI) per barrel and USD 4.37 per MMBtu. The latest data confirm

this trend: in December 2015, the price per barrel of crude oil continued to fall, until it reached USD 36 (USD 37.2 for WTI), whereas in January 2016, it broke the barrier of USD 30 (WTI reached USD 29 per barrel). As it may be seen, statistics are clear. The prices of these goods, which are highly tradable in international markets, show a downward trend not likely to be reverted in the short-term that is due to multiple geopolitical and market factors, such as an excessive global supply resulting in pressures that cause prices to fall. However, other market specialists (such as the International Energy Agency) estimate that by year end, prices may experience a recovery.

As most analysts point out, this cycle of increases and drops may be explained by two particular international situations. Firstly, by the unprecedented increase experienced by emerging countries, such as China, which, as a whole, grew at an average rate of 6% from 2003 to 2013 (10% in the case of China). Secondly, and most closely associated with the aforementioned

factor, the pressure exerted by these countries on the international demand for certain consumer goods (some minerals, soy, and soy oil, just to name a few) and on the supplies necessary for production. This affected the price of commodities, since demand was increased to such an extent that it highly exceeded

The decade was marked by a period of acceleration and deceleration of world prices.

global supply. However, the recent slowdown in the economic growth of the Asian giant and of the remaining emerging economies has had an inverse effect on the prices of the main commodities compared to the effect that had taken place since 2003, thus resulting in a gradual oversupply of these goods at the global level, and a proportional drop in prices. Indeed, in a prior report², it was evidenced that empirically changes in the prices of oil, gas, and carbon during the period under analysis were highly associated with the changes in the imports of the Asian giant as well as other factors, such as the strengthening of the dollar, the oversupply triggered by the increase in the production of *shale* in the US, and the recovery of some oil-producing Middle East countries, such as Libya and Iran. This highlights the incidence of this country in the events unfolded, which at present, also includes the moderation in the behavior of international prices and the moderate

growth rates forecasted for China by 2020 (6%).

Historically, Argentina has been a raw material producer and exporter. Around 6% of its GDP, and 25% of its exports are explained by the production of commodities, which reveals to a great extent the close link between the changes in the economic growth of the country and the fluctuations in external markets. In the 2005-2015 period, which covers most of the cycle of increases in external prices, the national average growth of GDP was in line with the average recorded by emerging countries (around 5%).

Two of the main drivers of this growth were the improvements in terms of the Argentine trade (due to the boost and the pressures generated by emerging countries on the demand for commodities and their international prices), and a depreciated exchange rate, which translated into a competitive advantage that substantially increased exports and international reserves during most of this decade. However, other internal and external events occurred during the same period, which contrary to the other events, had a negative impact on the country's development perspectives. Amongst these events, the most outstanding are the devaluation of the peso against the US dollar that took place in 2014 (around 50%), which could not translate into a higher competitiveness due to domestic inflation, the slowdown of emerging countries over the last two years, a marked drop in national exports, and a significant energy deficit resulting from the drop in international prices (which on the one hand, reduced foreign revenues from

² "Four important matters in the oil and gas industry for 2015", KPMG Argentina, 2015.

the agribusiness sector, but, on the other, reduced the costs of energy). This last issue is important, because it was the result of a government policy that aimed at encouraging internal consumption, had a negative impact on tax accounts (partly explaining a public deficit that at present, has reached 5% of GDP) and inflation.

In this context, the oil and gas industry has been affected since 2011, when Argentina turned from an exporter to a net importer (mainly of gas). Although it may be said that the first signs of decline in production over the last twenty years first appeared by the end of the 1990 decade, the poorer performance of the sector did not become evident until 2004, when the government was forced to develop the so-called National Energy Plan. By then, the disparity generated by public policies on supply, with unprofitable prices and an uncertain environment that discouraged investments, and on demand, based on subsidized tariffs that promoted consumption, led

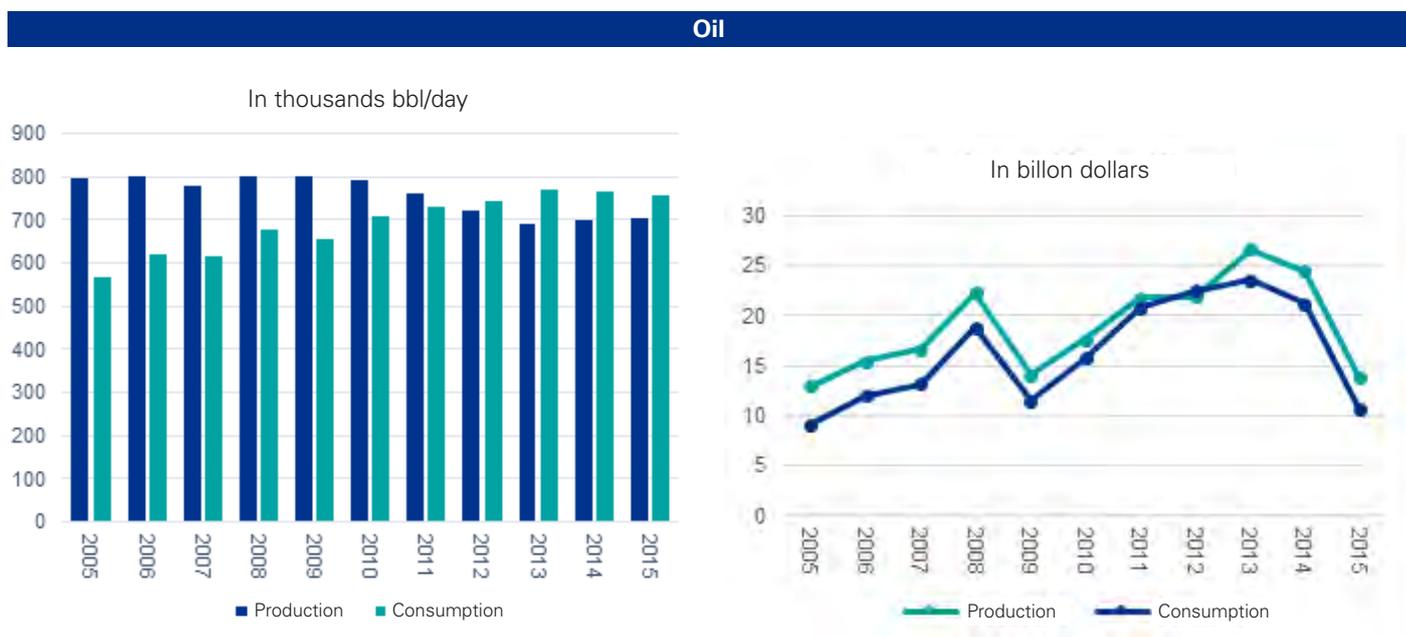
the country to slow the pace of investment, hydrocarbon production, and export levels. As a result of this situation, in the same year (2011), the country started to import gas and electricity from countries in the region, such as Bolivia, Uruguay, Paraguay, and Brazil, and outside the region, such as Qatar, and Trinidad and Tobago. The direct consequence, as mentioned above, was the gradual deterioration of the sector balance of trade, a strong impact on fiscal accounts, and the reduction in the Central Bank's international reserves built up by the exports of soy and other grains, which after 2013 have been severely affected by the significant decrease in dollar amounts exported due to the recent fall in international prices.

As shown in *Figure 2*, local hydrocarbon production has decreased in the last ten years, gas production being the most affected. While oil production decreased from 800,000 barrels per day in 2005 to 700,000 barrels per day on estimate by the end of 2015 (i.e., a decrease of approximately 12%), natural gas

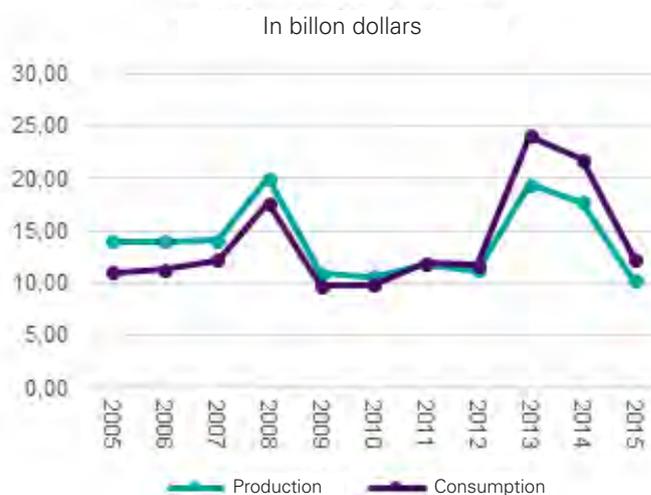
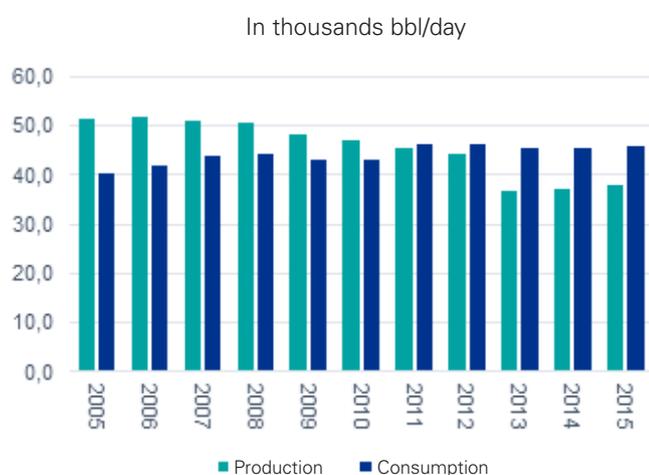
production has dropped by 26%, from 51,000 million cubic meters produced in 2005 to 38,000 million cubic meters on estimate by the end of 2015. Regardless of the variations in prices over the same period, the value of output measured in dollars showed a similar behavior to that of the quantities. With regard to domestic consumption, the same figure shows that since 2011, in the case of gas, and 2012, in the case of oil, Argentina begins to experience a shortfall in supply³. As it may be seen, the gas example is the most emblematic. In 2011, domestic consumption of natural gas exceeded its production by around 600 million cubic meters, a figure that would increase in 2012, 2013 and 2014 to reach a production deficit of around

3 Accordingly, the freeze of electric energy consumption tariffs, together with the subsidy policy are two of the main drivers of the energy deficit, since, on the one hand, they discouraged domestic production and investment across the sector value chain, and, on the other, promoted irresponsible consumption. As an example, according to World Bank data, electric energy consumption per inhabitant increased by 21% between 2005 and 2012, from 2400 kw/h to 2900 kw/h per inhabitant per year.

Figure 2
Changes in oil and gas production and consumption. 2005-2015.
 (In quantities produced and in dollars)



Gas



Fuente: Prepared by KPMG based on U.S. Energy Information Administration (EIA) and Business Monitor International (BMI) data, 2015.

8,000⁴ million cubic meters in 2015. If these figures are taken to monetary values, it may be seen that unlike oil, where production and consumption values have followed a similar pattern, since 2012, gas consumption in dollars has been increasingly outperforming production, until in 2015 a deficit ranging from US\$ 2,000 to US\$ 3,000⁵ million could be reached (this, in turn, triggered by the lack of foresight in terms of energy, and energy imports –e.g. liquefied gas– at a high cost).

As noted above, the recent fall in international prices, coupled with internal policies make up two of the main factors that help explain the decrease in the local supply of hydrocarbons as well as the rising of a yellow light for most mining projects. One of the most important formations in Argentina, Vaca Muerta, destined to the production

⁴ This value arises from the difference between production figures and gas consumption in cubic meters, as estimated by Business Monitor International (BMI) for the 2015-2024 period.

⁵ As in the case of the estimate of the production deficit for 2015 (see foot note No. 4 above), these values arise from the difference between gas production and consumption in dollars (by using the US and EU gas average prices), as estimated by Business Monitor International (BMI) for the 2015-2024 period.

of unconventional sources (*shale*), has encountered this problem, mainly because the YPF-Chevron agreement, the most important agreement in the industry that would entail an investment of US\$ 15,000 million for the production of unconventional oil and gas, made its cash flows and projections by estimating an average price of US\$ 80-US\$ 100 per oil barrel. Given that the average price of a barrel has dropped from US\$ 96 in 2014 to less than US\$ 40 in December 2015 (averaging US\$ 30 in January 2016), it is logical that the development of this and other projects (Los Molles, Golfo de San Jorge, among others) may be currently delayed, which hinders industry growth in the foreseeable future, and has a negative impact on the perspectives for self-sufficiency and on the expected moderation in the external purchases of energy. However, Argentina's potential in the field of unconventional resources continues to attract the attention of the world's leading producers. This is evidenced by the agreement between YPF, Pan American Energy, and Wintershall for the development of South, Central and

North Bandurria concessions, or the recently announced agreement between YPF and Dow Argentina for the development of El Orejano block in Neuquén, where *shale* gas will be produced (with an estimated investment of US\$ 850 million accumulated in 2016). According to the reports prepared by the EIA⁶, Argentina, which would have technically recoverable reserves estimated at 21,000 billion cubic meters of gas, and around 27,000 million barrels of oil, stands out as the 3rd potential producer of unconventional hydrocarbons in the world, only behind China and the US, which is extremely important for the country's energy future. The effectiveness of some legacy policies of the previous government, and other implemented by the current government is also worth mentioning. Among the first ones, it is worth highlighting the policy implemented to stimulate production by keeping the domestic price of crude oil above international

⁶ EIA, "World Shale Gas Resources: An initial assessment of 14 regions outside United States (April 2011)"; and EIA/ARI, "World Shale Gas and Shale Oil Resources assessment: Energy Information Administration-Advanced Resources International"; (June 2013).



prices (until January 2016, US\$ 67 and US\$ 55, in average, for light and heavy oil, respectively). Among the second ones, the lifting of restrictions on the purchase of foreign currency and the resulting unification of the foreign exchange market, the removal of limits to wire transfers and payments abroad, the elimination of mandatory deposits in foreign currency (investments) and, finally, the tariff increases applied as from 2016 to the consumption of energy and gas aimed at restructuring subsidies, which up to December 2015 had not been modified.

Against this backdrop, the country urgently needs to rearrange public accounts and the sector's structure in order to improve their mid-term performance and to reduce dependence on foreign energy, which only worsens the present

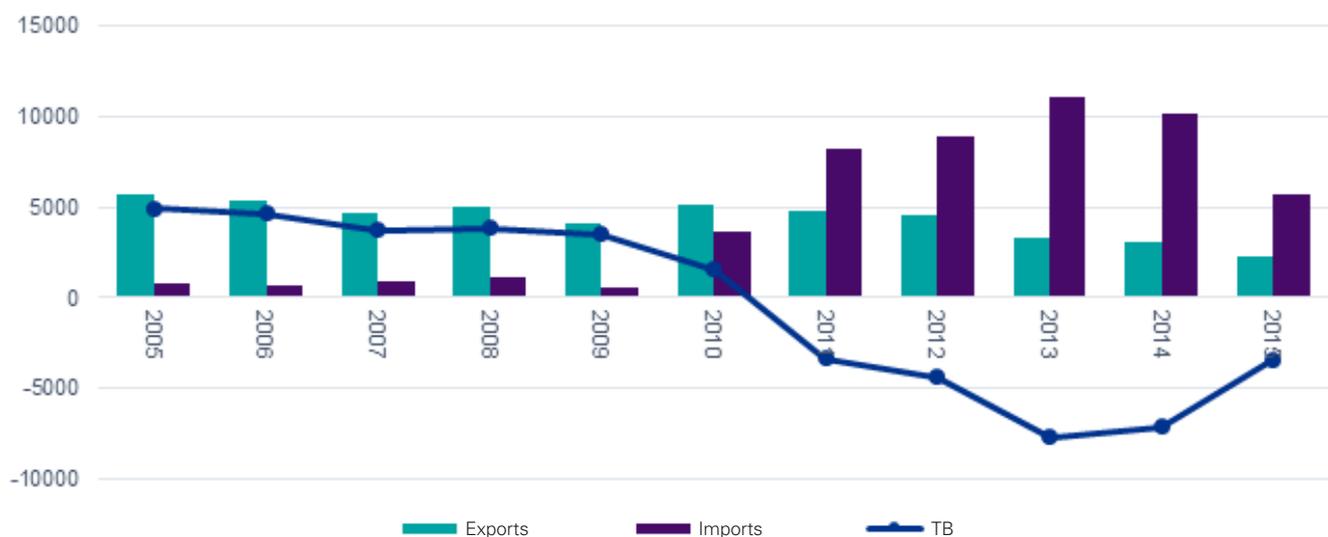
situation by depleting reserves amid falling prices and exports. The potential of *shale* has acted as a booster leading the previous administration to enact a new hydrocarbons law⁷, nationalize YPF in 2012, enter into price agreements with producers in 2014 and 2015, improve the wellhead price of gas, reduce the tax rates applied to the transfer of fuel by up to 20%, cut export withholdings, and, finally, subsidize oil production. This way, the authorities had hoped to offset any loss the industry may suffer as a

result of falling international prices. These stimulus policies worked as withholdings to oil investments and sought to revert, in the mid-term, the negative trend registered in the national production of hydrocarbons as well as the deficit in the energy account.

The last two significant items are those referring to foreign trade and investments. As noted in the last chart (*Figure 3*), the balance of trade resulting from international transactions (BC) showed a surplus up to 2011, when the country stopped exporting energy and started importing it. By 2011, the amounts collected by the Central Bank from net exports of energy had exceeded US\$ 4 billion, during 2005-2006, and had almost reached that same amount in 2007-2008. In fact, ever since the 90s, the domestic production of hydrocarbons enabled

7 In general terms the amendment to the Hydrocarbons Law No. 17319 (or Law No. 27007 of 2014) extends concessions (particularly for those who exploit non-conventional oil fields), keeps royalties, fosters investments, and turns Executive Order No. 929/2013 (Promotion regime for the investment in hydrocarbons exploitation) into Law seeking to promote investments in the oil sector by eliminating the payment of export duties and authorizing payments abroad in foreign currency if related to investments of at least US\$ 250 million.

Figure 3
International trade of oil and gas. 2005-2015.
(In million dollars)



Source: data obtained from the National Secretary of Energy and private estimates.

self-provisioning, and, in relative terms, the level of exports reached enabled access to less expensive energy not only for homes but for the industry and other sectors as well. Focused on attaining energy self-provisioning and the growing demand for imported oil and gas, the sector's trade surplus started to decrease significantly. In 2010, it slumped by 56%, from US\$ 3.5 billion in 2009 to US\$ 1.5 billion in 2010. In the years that followed, the deficits recorded exceeded US\$ 3 billion in 2011, US\$ 4 billion in 2012, and US\$ 7 billion in 2013 and 2014. In 2015, and thanks to the collapse of international prices, it is estimated that the country imported energy for around US\$ 6 billion; therefore, the trade deficit exceeded US\$ 3 billion. In addition, imported energy over the last few years has accounted for 15% of total national imports, which represents a strong decrease in the international reserves of the country (which must be used to pay for the purchase of energy) as well as in the bases of

growth, as all economic sectors depend on energy.

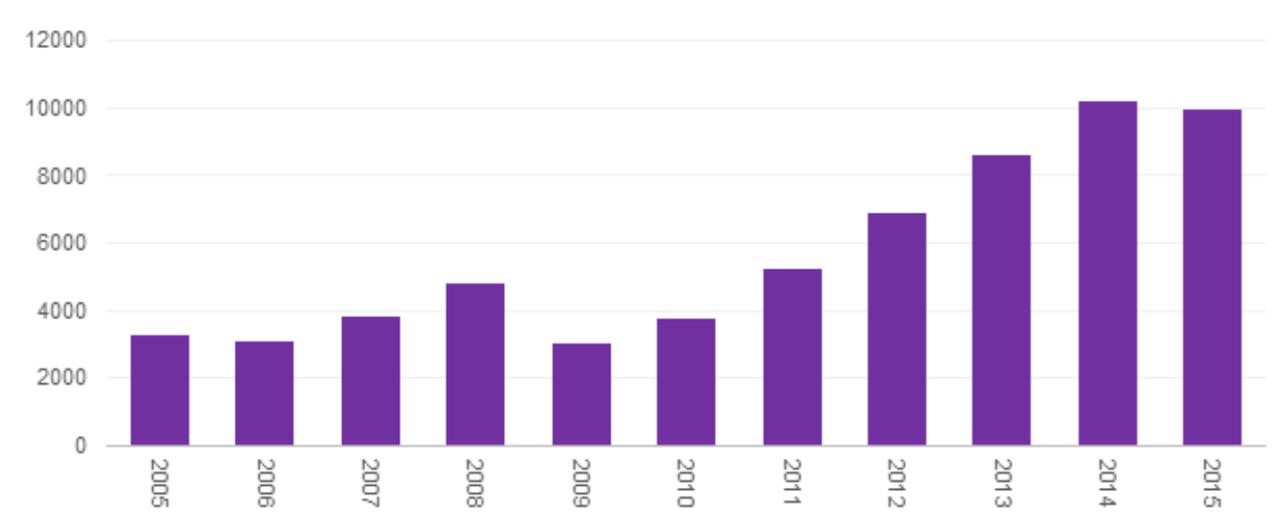
As to investments in equipment and other assets⁸, they have increased significantly over the period under analysis (*Figure 4*). After a significant drop in 2009, investments grew by 24% in 2010 to exceed US\$ 3.7 billion. Ever since then, investments have increased consistently by around 28% and reached US\$ 10 billion in 2014. It is estimated that a similar amount has been reached in 2015.

Investments in the sector were fueled by different drivers such as the nationalization of YPF in 2012 (whereby the State could start recovering from years of delayed investments), the start of non-conventional E&E activities in the *Vaca Muerta* area, province of

Neuquén, based on the YPF–Chevron agreement entered into in 2013, and, although already ended, the upwards trend in international energy prices, which fostered the design and implementation of new exploration and production projects worldwide, including Argentina, but which are currently contributing to the excessive global offer that pushes prices even further down.

8 It includes: wells, batteries and plants abandonment, well conversion, pumping equipment, gas pipelines, other facilities, environment, civil works, oil pipelines, drilling works, plants, gathering networks, repairs, software, LACT units and other investments.

Figure 4
Investments in equipment and other assets. 2005-2015.
(In million dollars)



Source: Data prepared by us based on the database of the National Secretary of Energy, 2015.

Sector's perspectives and challenges

Having described the sector's evolution over the 2005-2015 period, and taking into account the uncertainties present in the international as well as local scenario that may have an impact on the market's operations and development, it is worth analyzing the future perspectives of the oil and gas business in Argentina, the productive structure of which has been basically designed to work in the mid and, essentially, long term. **KPMG Argentina gathered information from different sources of the market regarding four pillars critical to the future of the de la industry.** Our main conclusions are described below.

Increasing the production of oil and gas

The country needs to boost production of Oil & Gas, and for such purposes, it is necessary to promote and increase local as well as international investments within the framework of a more favorable business environment and greater certainty regarding market rules. The decisions taken by the new Argentine administration over the first month in office, such as the lifting of restrictions to the acquisition of foreign currency and to the remittance of foreign currency abroad, have been well received in the sector. Such decisions evidence a positive trend that fosters greater stability in major macroeconomic variables for the industry over the mid-term. Tax incentives are also expected to be restructured, in line with this new reality, and return on investments are expected to be collected earlier amid stronger legal certainty in the national, provincial and municipal levels. In addition, the regional energy complementation process will continue to move forward.

Sources of finance

Multiple financing sources are necessary. However, during this initial stage where all macroeconomic changes taking place in the country must be consolidated first, the main source of financing will be companies themselves, who will assume risks supported by their own capital or by reinvesting profits, as long as they result from an enhanced cost-revenue equation. Some alternative sources of finance in the short term might be the sale of assets or new corporate investors. Syndicated loans from banks, multilateral credits, and debt issuance might also be used during this stage.

Priorities for investment and development: conventional or non-conventional resources?

Development and investment plans must be kept for both resources; however, that depends on the evolution of the present national and global economic scenario. It is estimated that an annual investment of around US\$ 20 billion will be needed to recover the self-provisioning capacity lost, and that a significant portion of such investment might come from abroad as FDI. Investments must also be made in infrastructure to keep pace with the sector's growth. Investment decisions in the sector will accelerate if the country's business environment is improved, if macroeconomic factors are stabilized, if stronger legal certainty is provided for investments, and if the downwards trend in international oil prices is modified. As to conventional resources, oil production and reserves might be increased in a relatively short period by adding new technologies. Investments in conventional resources

Final considerations

might, in turn, leverage investments in non-conventional resources, which might be supplemented with a new policy of tax incentives. Non-conventional resources represent a great opportunity for the country in long run. Although their development might take from 5 to 10 years, some positive signs might be seen in 3-years' time, particularly in the gas market. Finally, Argentina's major international competitor in non-conventional resources is the USA; therefore, local production costs should be competitive in order to attract global investments which are now geared towards the north.

Domestic prices

While domestic prices should ideally match international prices, this will hardly occur in the short run because of the latest slump in international prices, particularly those of oil barrel. Moreover, such alignment is expected to be smoothly and to be part of a process designed to stabilize major economic variables in the industry, which would facilitate the arrival of well-needed local and international investments.

In this current landscape featuring needs as well as opportunities, the country has initiated a positive process to realign macroeconomic accounts and restructure the energy sector, while seeking to improve its performance in the mid-term and reduce dependence on imports that keep on eroding the BCRA's international reserves. Argentina has a huge undeveloped energy potential and, undoubtedly, both national and international companies operating in the country would be willing to assume the necessary risks to take advantage of all opportunities. All industry players agree on the need of injecting productive investments to revert the sector's stagnation; therefore, all decisions taken by the government, particularly those focused on reaching a price agreement to improve the sector's profitability, which will in turn have an impact on investments, will be crucial to recover the lost trust and the predictability of a business whose results are always seen in the mid and long term.

The exploitation of non-conventional resources appears as a solution to the energy provisioning problems of a country that, over the last twenty years, went from self-provisioning in the 90s to the present dependence on imported energy. Nevertheless, the investments and costs required to extract those resources are significantly higher than those needed to produce conventional resources, thus, it is essential to design policies focused on improving the business environment, fostering investments and counteracting the negative effects of the recent fall in international prices. Such complex situation might be regarded as temporary as Argentina has sufficient resources and significant experience on hydrocarbons to face these challenges in a domestic market where several of the major global players are present.

Despite delays in the sector's development, which may be triggered by external events, it is worth noting that despite such negative effects, the drop in international energy prices contributes to the country's trade balance by reducing the prices paid for energy in a context of decreasing exports and increasing imports. Nevertheless, it is essential to diversify the energy matrix even further by increasing the use and development of renewable energies, generating a foreseeable business environment, correcting market flaws and, as the current administration has resolved, restructuring subsidies to energy consumption tariffs. As to the latter, the Ministry of Energy has already provided details about the average percentage of tariff increase that residential and commercial users will have to pay in 2016, which might be well above 500% in the case of electric energy. However, the regulatory authorities have also announced the implementation of a *social tariff* that will be charged to those who meet certain requirements such as a *total family income* under or equal to AR\$12,000 per month. In addition, after YPF's nationalization in 2012, several policies have been implemented to boost hydrocarbons investment and production in a less favorable environment. Although some of these initiatives have already been discussed throughout this document, it is worth highlighting that they were aimed at promoting the domestic production of hydrocarbons.

The first measure worth pointing out is the one securing the domestic price of gas surplus at US\$ 7.5 per MMBTU. Along with agreements on oil prices, the latter measure seeks to promote the local production of hydrocarbons in an increasingly difficult international scenario, by improving the sector's profitability while moderating energy imports. Similarly, amendments to the old Hydrocarbons Law (No. 27007), passed in 2014, were designed to facilitate and foster the production

of non-conventional oil and gas, and to turn into law Executive Order No. 929, issued in 2013, to regulate the promotion of investments. Alongside with these initiatives, agreements have been signed to produce *shale* gas in the *Vaca Muerta* and *Los Molles* basins in Neuquén.

Finally, the economic and financial measures so far implemented by the new Argentine administration in office are positive for the sector, and are expected to be accompanied by policies that may stimulate production in accordance with the reality described in this report. These decisions will undoubtedly be an important stimulus to secure a mid to long term investment process involving local as well as international investments that will add to the recovery and development of the oil & gas industry moving forward.

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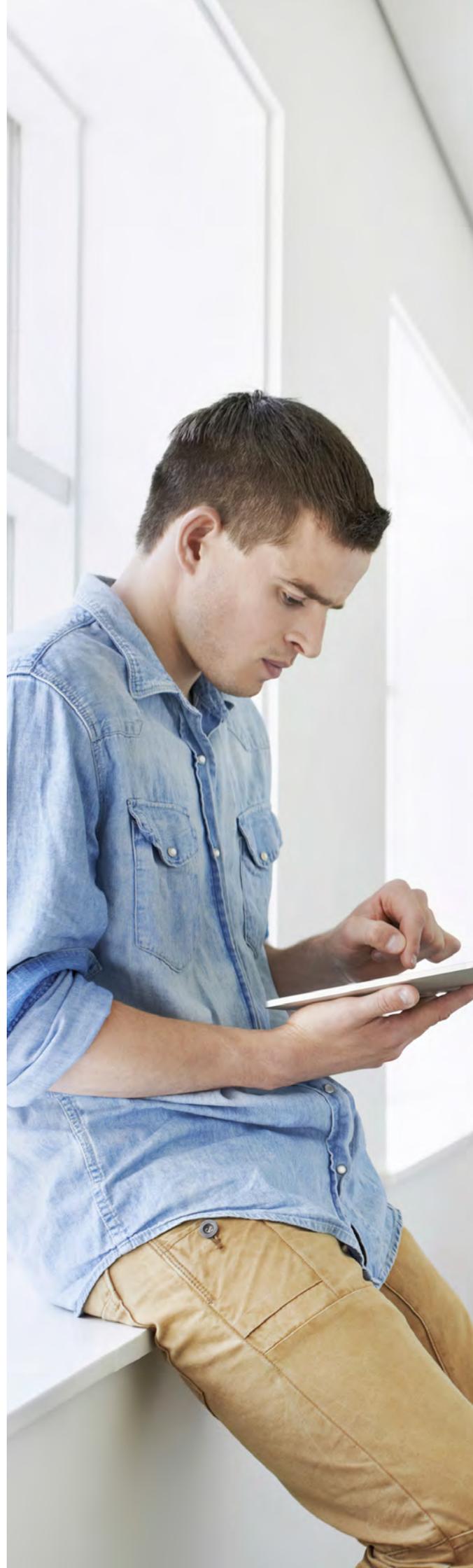
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