Uncertain Transition and New Challenges

In a context of rising global prices and uncertainty for the change in the US administration, Argentina is undergoing a complex transition and restructuring process, involving some major variables in the sector, to revert the energy deficit. Some key aspects.

Introduction

Year 2017 starts in a different scenario from the one present in the last few years. Energy commodities prices have been dropping significantly since 2014 with respect to the cycle of price hikes that took place between 2003 and 2014, when oil and gas prices soared sharply. Oil prices, which had increased by 233% between 2003 and 2014 (average WTI, Dubai and Brent price), plummeted by 58% between that last year and the first nine months of 2016; natural gas, which had increased by 53% (between 2003 and 2014), decreased similarly over the last two years; and coal prices, which had increased by 131% over the above mentioned period, dropped by 22% (see KPMG's report entitled “Oil & Gas - Argentine industry balance, perspectives and challenges for 2005-2015”). The last month of 2016 showed a significant rise in oil prices (reaching US$ 54/bbl on average), as a result of the OPEC agreement to reduce production, which would include other Non-OPEC countries such as Russia, Mexico and Oman. According to this organization, the oil market will reach a new price balance during the second half of 2017.

However, and despite this changing trend in international oil prices, the world economy has failed to take off, and the sustained growth process needed to recover the lost ground and provide predictability remains to be seen. All of this takes place amid a still uncertain international scenario where restrictions to crude oil supply, military actions in the Middle East (essentially, the north of Syria), the OPEC’s and other oil producing country’s position, and the change in the USA administration in 2017 (first world producer and consumer of hydrocarbons) represent some of the most important factors influencing decisions on global energy policies and the sector’s mid-term perspectives. Besides, there are some doubts as to the fate of the nuclear control agreement entered into by USA and Iran, another big oil producer that is now back in the global market.

The constant increases that took place over the last decade were primarily fueled by the growth of emerging economies (particularly that of the BRICS - Brazil, Russia, India, China and South Africa) and their pressure on the international demand for inputs, which boosted the price of most commodities. Statistics about changes in oil and gas prices and the imports made by these countries reflect such circumstances. The recent reduction in the economic growth of emerging economies, the boom in US shale production and the OPEC countries’ reaction thereto have caused the inverse effect on prices, mainly of oil, over the last years, thus generating a gradual excess in the supply which would impact the status quo and future expectations of both businessmen and investors. It is evident that in these scenarios, the one in which the cycle of international price hikes started as from 2003

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1 China, for example, is one of the major importers of the world (they import around 10% of total global exports) and one of the largest consumers of oilseeds (46%), minerals (60%) and fuel (10%).
and the current one, Argentina has performed a central role as producer and exporter of commodities (primary production accounts for almost 6% of the GDP and about 25% of exports) and because it is historically affected by external fluctuation. The country experienced a high growth during the referred cycle of price hikes, supported by the improvement in the terms of trade, which brought about a competitive advantage in international markets. Nevertheless, this growth would then come to a standstill as a result of different events of both domestic and foreign nature.

The lack of investments and an economic growth model strongly dependent on consumption, ended up restricting supply and generating a sharp increase in domestic prices. The currency devaluations conducted in 2014 and 2016 (the first one by 50% taking 1 US dollar to ARS 8.10 from the previous ARS 5.5, and the last one by more than 60% taking the US dollar to around ARS15 from the previous average of ARS 9.2), which were triggered by inflation, pressures on the demand of foreign currency, and lack of confidence, and the slowdown of emerging countries’ growth, a sharp and constant drop in national exports (primarily due to the decrease in international commodities prices), and a significant energy deficit must be added to the previously described scenario. As explained in the report published in February 2016, those events were critical to the performance of the oil & gas industry over the last decade.

In a 10-year term (from 2005 to 2015) Argentina, a country that used to export energy, became a net importer of it. Such change was the result of a significant decrease in the production of oil and gas (which started towards the end of the 90s and which became apparent in 2004 when the government was forced to create the so called National Energy Plan), and of the great imbalance generated by the policies applied to supply (unprofitable prices and uncertainty that discouraged investments) and to demand (high rates that fostered excessive consumption). As a result of this process, Argentina’s trade balance was impaired due to the significant increase in imports of gas and energy (primarily from other countries of the region such as Bolivia, Uruguay and Paraguay, and other non-regional countries such as Qatar and Trinidad and Tobago). Actions to promote supply (subsidized local prices) and rearrange demand (adjusting gas and energy rates for industrial and household consumption) were taken in an effort to mitigate such an adverse scenario. Despite these macroeconomic adjustments, recovering and improving the competitiveness of productive sectors, primarily the energy sector, remains the great future challenge (with improvements in both general and specific regulatory and tax aspects).

Against this backdrop, the development of the national and international O&G industry, and the issues it will face in 2017 are crucial to understand the industry’s future. KPMG’s reports “Oil and gas - balance of a decade, perspectives and challenges faced by the industry in Argentina (2005-2015)” and “Four important matters in the O&G industry for 2015” state that the stagnation experienced by emerging countries, and its impact on commodities prices were the two main issues the industry had to face, along with insufficient local production and investments. This document, which highlights the important matters in the 2017 agenda, restates the question as to how investment, production and price variables will evolve in the sector, always bearing in mind the influence and share of unconventional hydrocarbons and renewables in the national energy matrix (primary, secondary and electrical).

1. Local and International Prices

The slowdown, drop and partial recovery of international energy commodities prices are one of the recent milestones that have had the greatest impact on the oil and gas industry over the past few years. After certain stable growth between 2003 and 2011 (not considering the collapse of 2009 triggered by the international financial meltdown), the average international oil price\(^2\) remained stable

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\(^2\) Resulting from the average benchmarks Brent, Dubai and WTI.
in 2012 (around US$ 100/bbl\(^3\)) to then drop to US$ 50/bbl in 2015, and US$ 30/bbl in January 2016, starting a path towards recovery during the first half of that year when it reached US$ 40/bbl. Currently, it would be around US$ 55/bbl as a result of the production agreement entered into by the OPEC countries.

Gas prices behaved similarly, though showing some recovery in 2010-2013, they dropped from an average of US$ 11/MMBTU\(^4\) in 2008 to about US$ 5/MMBTU in 2015 and US$ 3.3/MMBTU during the first nine months of 2016\(^5\) (see Figure No. 1). All other commodities behaved similarly.

**Figure No. 1**

*Price changes in major energy commodities (oil and gas)*

*(US$ per barrel and per MMBTU)*

One of the factors explaining recent changes in international prices is the impact of the economic growth of emerging countries. The difference between growth perspectives and the actual growth experienced is one of the main hurdles faced by commodities producers. According to the IMF’s statistics, in 2013 emerging economies were expected to grow by at least 6% by 2018; nowadays, such figure has been reduced to 4% by 2021. The difference between these growth projections has serious implications. Firstly, it involves an important slowdown in the growth of emerging economies resulting in a proportional decrease in the demand of imports; and secondly, it results in an excess of supply promoted by global investments which were made based on previous projections and which now impair the profitability of most of the projects started.

In this regard, some major exploration/exploitation projects in the Argentine territory, particularly in Vaca Muerta, have been put on hold due to the current and recent trend of international hydrocarbon prices. This project, focused on the exploration and exploitation of unconventional resources, is the most important project of the industry as it involves considerable investments (according to some official data, between 2010 and 2015, the oil field attracted around US$ 15 billion and another US$100

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\(^3\) US$/bbl = US dollars per barrel.

\(^4\) Price resulting from the average of natural gas prices in USA and Europe (US$/MMBTU = US dollars per MMBTU).

\(^5\) Shale gas production and exports by USA have also been key in price drops.
billion of direct investments are expected over the next 35 years)\(^6\). The main problem faced by this project is related to the estimated price used to evaluate its technical and financial feasibility, which is now well above the actual value prevailing in international markets. Something similar takes place in other projects for the exploitation of other oil fields, such as Los Molles, Bandurria South, Center and North, and the San Jorge Gulf or Chaco, as this scenario of low prices will keep forcing oil companies to retract some of its investments, primarily those in which the balance between costs and revenues may be reached at a price far above the one noted/expected. Paradoxically, this may turn out to be rather productive for large integrated companies with solid cash flows and higher budgets, which are less exposed to prices and have greater leverage (primarily in shale production).

Local prices have followed a trend different from international prices. As it may be noted in Figure No. 1, in addition to the sector’s decline over the last few years, the implementation of certain domestic measures to stimulate production resulted in a local price structure unaffected, at least partially, by fluctuations in foreign markets capable of offsetting their effects (i.e. it was possible to offset losses derived from collapsing international prices, retain oil investments, and revert the negative trend in hydrocarbons production as well as the energy deficit. As from 2015, the local average price for oil declined from US$ 73/bbl (2014) to US$ 68/bbl, whereas international markets showed an average price of US$ 50.75/bbl (down from the US$ 96 average price in 2014). This policy to support or mitigate drops in crude oil prices continued in force in 2016. By September 2016, the local price for a barrel of crude oil was US$ 60 (average); while such price in foreign markets had reached US$ 40. Towards the end of the year, the average domestic price is still around such amount. In the meantime, it is expected that during the early months of 2017, in light of the statements of the Ministry of Energy at the Oil Day, the companies of this industry together with the administration may set a new domestic price for crude oil below the current one so that, once in line with the international price, the latter may be used as benchmark.

The price of locally produced gas, while following a trend similar to that of oil barrels, has just recently shown some convergence with international prices, which is quite logical, from the local standpoint, as the industry needs a higher number of incentive policies aimed at increasing production and fighting the energy deficit. Tax and concession related changes have been introduced as part of this same plan to support the industry, particularly as regards the production of unconventional hydrocarbons. These changes include a new hydrocarbons law (Law No. 27007)\(^7\) and the gas production stimulus program applied in the Vaca Muerta region, consisting in subsidizing the price of resources extracted in that area, taking into account the high costs of exploitation (prices are set on a number similar to the cost of importing a unit of LNG).

### 2. Production and Investment

Despite the trend in international prices and their impact on the profitability of the already started projects, production and operating costs have not decreased as sharply\(^8\), which represents a central problem for the sector from the local as well as international standpoint. In Argentina, hydrocarbons production has been decreasing since the late 90s due to the imbalance resulting from the dissimilar policies applied to the supply and demand, which retracted investments significantly and reverted the

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\(^6\) "Vaca Muerta atrajo US$ 15.000 millones en los últimos cuatro años". El Cronista, December 9, 2015.

\(^7\) In general terms, the amendment to Hydrocarbons Law No. 17319 (or Law No. 27007 of 2014) extends concessions (particularly for those exploiting unconventional oil fields), keeps the royalties that must be paid by companies, promotes investment, and turns into law Executive Order No. 929/2013 (Investment promotion regime for hydrocarbons exploitation), the main purpose of which is to promote investments in the oil sector by exempting companies from the payment of export duties and by authorizing the transfer of foreign currency abroad for projects involving investments of at least US$250 million.

\(^8\) In the case of shale, for example, costs have dropped more sharply (a YPF’s report highlights that drilling costs have been reduced by 32% in a single year of operations at Vaca Muerta).
growth trend of the O&G industry, showing negative rates once again, as it had not been seen since the early 80s. Due to this decline, in 2011 Argentina had to start importing what it used to generate: gas and energy, and most of the revenue from exports, primarily agricultural exports, were allocated to the purchase of energy.

Figure No. 2 shows the trend of oil and gas production over the last 16 years. As noted, while oil production started to decline strongly as from 2001, reaching the average for the last 16 years in 2007 (235 million bbl/year) and surpassing that value during the subsequent years (until reaching 201 million of bbl/year in 2015); gas production declined as from 2007, reaching the average for the last 16 years in 2010 (303 million boe/year and falling below that value over the last five years until reaching 276 million boe/year in 2015). In the years when those hydrocarbons reached the above mentioned average, the barrels lost in 2015 accounted for 14% of oil and 9% of gas. Although specialized sources believe 2016 will show some recovery, it will be a slight one, as it represents a simple trend fueled by the sector’s positive expectations due to the change in administration and the potential new measures that may be implemented.

**Figure No. 2**

Oil and gas production and productivity 2000-2016
*(In thousands/millions of barrel of oil equivalent per year)*

Productivity levels, which show the performance of the local industry with respect to the labor demanded (i.e. the amount of product generated by one single person per year) collapsed from the 60,000 barrels of oil equivalent (boe) produced per person in 2005 to barely over 26,000 boe in 2015 (and around 25,000 boe in 2016), i.e. a 56% drop. Such a sharp collapse during that period was

Note: 2016 data are estimations only.

9 Between 1998 and 2003, oil extracting activities dropped at an annual average rate of 1%. In contrast, over the six previous years (1992-1997), activities grew at an annual average rate of 9%.

10 Barrels per year (bbl/year).

11 Barrels of oil equivalent per year (boe/year).
primarily triggered by the lack of incentives to investment, despite the opportunities existing in external markets (i.e. emerging countries pressure on international demand and the resulting increase of oil and gas prices, versus the restrictions set in the domestic market and those of a development model upheld by demand -consumption- and not related to supply -investment). The decrease in productivity levels and their recent trend were indicating a sharp decline in the returns of any project which, in turn, have contributed to the recession and atomization experienced in the sector which, despite the large volumes of natural reserves to be exploited, has failed to find the economic and financial conditions that may warrant their development.

The industry has adapted to changing market conditions, primarily to low prices. In this regard, an extra effort is being made to reduce drilling costs while maintaining production levels, even when specialists argue that the potential development of oil fields such as Vaca Muerta require a price significantly higher than the current one (around US$70 per barrel). According to estimates, the average cost of a well in that area is around US$15 million, but it has been reduced to US$ 10 million\(^{12}\). If it is considered that the cost of an unconventional well in the USA is close to US$7 million, the gap to be covered clearly represents what must be done so that the local industry may be truly competitive. Some of the improvement factors that affect the local cost of drilling include labor, (according to experts, 70% more staff is used in a well in Argentina than in any similar well in the USA)\(^{13}\) transport and logistics. The government has moved forward in the negotiation of a collective bargaining agreement applicable to the Vaca Muerta area, whereby certain circumstances may be modified (particularly those related to “taxi hours” -time needed to come and go from homes to wells, definition of peripheral work, working days, and tax issues) to improve productivity levels in that region.

![Figure No. 3](image.png)

**Figure No. 3**

Price - investments ratio in the O&G industry 2005-2016

Note: in order to estimate the local price of crude oil for 2016, the average monthly data up to the first half of the year was considered. The investment allocated for 2016 is the one projected by the Secretary of Energy.

Source: Prepared by KPMG based on the data bases of the Ministry of Energy and Mining (MINEM).

However, and in line with the sector’s development, investments decreased over the last few years. As noted in Figure No. 3, which shows changes in that variable and in that of local oil prices over the last few years, the former has copied almost perfectly the trend of the latter throughout the 2005-2016 period.

\(^{12}\) “YPF anunció una baja en costo de producción de Vaca Muerta a US$ 10 millones por pozo”. Agencia TELAM, September 13, 2016.

\(^{13}\) “Las petroleras reducen costos para convivir con bajos precios del crudo”. Agencia TELAM, October 9, 2016.
period, showing the influence of prices in the sector’s development. In this regard, it might be argued that the political decision of setting local prices of oil barrels and gas over international prices as from 2015 (reaching US$ 67 and US$ 55, for light and heavy oil, respectively; i.e. an average of US$ 60 and US$ 5.83 per MMBTU for new gas - 2015 benchmark price) represents an effective protection for those products higher than 100%, that seeks to mitigate the decline in investments which started in the previous year and which was jeopardizing the development of promissory extraction projects (primarily shale) and the reduction of the energy deficit (with the related flow of dollars from the import of energy).

3. Unconventional Resources

Countries who discovered unconventional hydrocarbons in their territories have started their development by implementing domestic policies that seek to foster their exploration and production. The USA is the most successful example which also managed to consolidate its leadership in the area. They were pioneers in shale production (the most common type of hydrocarbon extracted using unconventional methods) and in allocating physical and human resources to optimize extraction techniques without distorting the sector’s profitability. As a result, the decline in O&G production has been halted, imports were gradually reduced, and they managed to position themselves as the major global shale producer, which partially explains the decline in prices.

Shale oil production has boomed in the USA in the last decade, more precisely between 2009 and 2012, when the production of unconventional oil grew by 40% (annual average) from 590,000 bbl/day to over 2 million bbl/day. In 2014, the USA produced an average of 4 million bbl/day of shale oil and in 2015 that figure amounted to 4.9 million bbl/day. However, according to the EIA’s projections, daily production is expected to drop to 4.2 million barrels in 2016 driven by low prices and a significant decline in investment, which would represent a 14% drop year over year. As to the country’s total oil production, this resource accounts for around 50% and it is expected that this trend may continue up to 2020, although at a declining trend.

In light of the recent trend in oil and gas prices, unconventional hydrocarbons represent a clear solution for countries who have suffered a significant reduction of conventional reserves (such as USA, Colombia, Australia and Mexico), or a potentially profitable project for all other countries (particularly for those that have not been able to develop the hydrocarbons sector due to the lack of investments or that face many difficulties in funding an energy matrix strongly dependent on fossil fuels).

The major deposits of unconventional hydrocarbons (primarily shale) discovered in Argentina, with estimated and technically recoverable reserves of around 21,000 billion M³ of gas and around 27 billion bbl of oil, are crucial for the country’s energy future, and positions Argentina as one of the countries with higher production potential (Argentina is the third potential producer of unconventional resources of the world, behind China and the USA)\(^\text{14}\). In fact, it is estimated that in Vaca Muerta only, the main formation in Argentine territory of this type of resource, there are recoverable resources that would represent around 16 billion of bbl of oil and around 8,600 billion M³ of gas (or 41% of recoverable shale gas for the entire country). In addition, it is important to consider the significant resources of conventional oil and gas, which involve a great challenge and a remarkable opportunity to attain energy self-sufficiency in the future.

It is to note that the investments needed and costs that must be incurred to extract unconventional resources are significantly higher than those involved in the production of conventional resources;

therefore, it is paramount to design policies that may improve the business environment, promote investments and counteract the negative effects of a low-price scenario. The exploitation of unconventional resources seems a sound and novelty solution to the gap in energy supply of a country who went from the self-provisioning attained in the 90s to the current dependency on energy imports. Such imbalance might be regarded as transitory as Argentina has sufficient resources, infrastructure and experience in hydrocarbons to face the challenges of a domestic market where major world players are acting.

In this context, Argentina needs to improve its performance in the energy sector to balance its business and tax accounts and, essentially, to reduce the amount of dollars allocated to the importation of energy. The potential of unconventional resources has acted as an important enticement for the government to enact a new hydrocarbons law in 2014, whereby YPF was nationalized, and to implement other mechanisms to foster investments and production. Some of these measure include improving local oil and gas prices, and the recent changes in tariffs which put an end to years of unprofitable prices in the generation, distribution and transportation stages of gas and energy for industrial and residential use. These policies have been implemented amid serious economic imbalances generated by the energy deficit, primarily in the industry. However, the low price of energy commodities, partially derived from the increase in the production of unconventional oil and gas in the USA over the last few years, and from a sluggish international demand, is darkening the sector’s development perspectives, particularly those related to investments for unconventional projects.

Finally, it is worth noting that the exploitation of unconventional oil resources, unlike the conventional one, involves a thorough study of the bedrock so that companies may design the best fracture strategy to maximize the amount of resources extracted. Consequently, the exploration and exploitation period for unconventional hydrocarbons is longer. Argentina, for example, is undergoing the latter stage (i.e., bedrock study) and, therefore, the benchmark applied is merely circumstantial as companies are more interested in acquiring know-how, which is obtained during the performance of pilot tests. Accordingly, oil companies located in the national territory are more focused on the long term behavior of international prices than on their mid and short term behavior, as well as on changes in local prices, and on the gaps they have to cope with due to local policies and measures distorting such prices, which sooner or later, will have to be eliminated to let prices rise and converge into the market. Consequently, international prices suggest that exploiting shale in the Argentine territory is expensive; however, in the domestic market where prices are set locally, it can still be produced within a margin where it is appropriate to be focused on obtaining know-how. In the short run, activities will show no strong signals of having taken off, as it is quite expensive for companies to move to more intensive and higher scale production stages. Nevertheless, the bedrock study process will continue though at a slower pace.

4. Renewable Resources

It is known that if fossil fuels do not start being replaced by other fuels, they will become a restriction to the world economic development due to their finite nature. In addition, according to some statistics data from the European Commission (Emissions Database for Global Atmospheric Research), over the last 35 years the world has increased CO2 emissions by 80% as a result of fossil fuels consumption, and Argentina increased them by 92% over that same period (1980 - 2015). Together with those rises, countries have increased their dependence on such fuels for their energy matrix, which goes against all international agreements seeking to increase renewable energy’s share in the

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15 However, such a scenario has acted as an incentive for non-renewable energy companies in general, as they are forced to operate amid low prices and to streamline their production costs so as to conduct business with lower profitability margins.

16 The industry, transport, and energy generation are the sectors that contribute most to the increase in such emissions.
energy mix. However, and although it is true that the recent exploitation of unconventional hydrocarbons and the discovery that there would be plenty of them in many countries has greatly collaborated in the delay of renewable energies (which enables fossil fuels to find some relief in the gap prices and opportunity cost of using either fossil or renewable fuels), there are many countries engaged in reducing the use of fossil fuels and replacing them with cleaner renewable energy.

A clear example of this trend is the Paris Climate Agreement, entered into by 195 member countries of the UN and ratified, up to November 2016, by 96 of them plus the EU (which together account for 55% of the global emissions of greenhouse effect gases). This agreement, which has recently become effective and seeks to prevent that average global temperatures increase over 2°C above pre-industrial levels, thus limiting gas emissions, may represent a turning point. In fact, the OPEC estimates that thanks to this agreement, hydrocarbons demand might reach its record high in around 15 years in response to a growing demand for substitute energies and to the fact that the main consumers of fossil fuels, automobiles, would be rapidly adapting to alternative fuels. Nevertheless, such predictions depend heavily on compliance with such agreement (and on the percentage of application) as well as on the extent to which alternative fuels are applied in the global automotive industry.

While Argentina is among those countries, we have not been able to reduce oil incidence in our energy matrix. In fact, ever since 1998, the country has a legal framework in place that seeks to promote renewable energies. A clear example is Law No. 25019, which sets forth a promotion regime for wind and solar energy. The renewable energies law No. 26190, was enacted in 2006 and sought to supplement the previous law by including, apart from the mostly known renewable energies, geothermal energy, tidal power, hydropower, biomass, and biogas. Among its purposes, the goal of including an 8% of renewable energies in the generation process of all the energy consumed locally, is highlighted. According to specialists, improving renewable energies’ production and contribution is crucial because of five factors: 1) they are sustainable (a mix of those energies would enable, in the short run, to generate part of the energy required); 2) they are safe (they may solve the current energy deficit at competitive prices with no risk of collapse); 3) they are economic (they generate currencies savings); 4) they may foster the development of the national industry, and 5) they are green energies.

According to a study conducted by KPMG Argentina en 2014, only 2% of the electrical energy produced derives from renewable sources. Some of the main reasons to explain this poor performance is lack of financing and a deficient regulatory framework, which will try to be remedied by the recent update of the renewable energies law, by means of Law No. 27191/2015 aimed at encouraging the generation of electrical energy using renewable energies. In this version, the 8% share of renewable energies in the power generation matrix towards 2017 is updated, and a progressive growth of such share in power generation is set forth until reaching 20% in 2025.

In order to attract capitals that may invest in the sector and help meet the goals set in the new legislation, The Ministry of Energy and Mining published in May 2016 a call for bids to add 1000 MW of clean energy to the national energy matrix (RenovAR) receiving 123 bids for 6366 MW. Some of the awarded projects (17) included wind power generation (70%), solar power (23%) and biogas (7%), with average generation prices that reached US$ 69.50; US$ 76.25 and US$ 177 per MW/h, respectively. These data will allow to measure the growing interest of the private sector in renewable energy related projects also boosted by a series of tax benefits provided for by the new Law No. 27191, such as: an early VAT refund regime, an accelerated amortization system for goods and works allocated to such projects, tax loss offsets, tax and import duties exemptions, among others. In fact, immediately after publication of the awarded projects, the Ministry of Energy and Mining called for a

17 According to the National Energy Department, in 1970 the national energy matrix was composed of 71% oil, 18% natural gas and 11% other. In 2014, natural gas accounted for 50%, while oil and other sources accounted for 35% and 15%, respectively. Other sources include hydropower (4.5%), nuclear energy (3%), bagasse (1%), and other (6.5%).

new round of bids, the RenovAr 1.5 to award those wind and solar projects that were left outside the first call. During this process, the Ministry received 47 bids for a total of 2,486 MW (1561 MW for wind projects and 925 MW for solar projects), and 30 projects were selected (accounting for an increase in capacity of 1,281.5 MW). Out of the bids awarded, 10 relate to wind projects (765.4 MW) and 20 to solar developments (516.2 MW). The average price was of US$ 54 per MWh, even improving the economic offers received at the RenovAr1. Taking into account the projects awarded in both rounds, Argentina acquired in 2016, a total of 2,423.5 MW of renewable energies. This trend is expected to continue by means of the new rounds to be organized in 2017.

Final Considerations

The main challenges faced by the Argentine oil and gas industry, both current and future, were described in this report. Although these matters are essential for the sector's performance, they are not the only aspects to be considered. The agenda should also include: 1) the need to have qualified human resources; 2) financing difficulties for investment projects; 3) hedging contracts in a low-price scenario; 4) the environmental impact; 5) legal certainty; 6) the need to have larger investments in infrastructure, not only for the development of unconventional resources, but also for their distribution and transportation; 7) a detailed analysis of price formation (taking into account the price at which these resources may be extracted in Argentina and how the activity should be financed), and 8) a deep analysis of the relationship between investment, production and internal prices.

The behavior of energy commodities prices over the last decade has boosted the production of national hydrocarbons until local policies (which privileged domestic consumption and discouraged investments) started to hamper their performance. Such disparity between the positive signals of the external market and the domestic limitations should have promoted the change to alternative energies and to a greater development of renewable fuels; however, this was not the case. On the contrary, over the last few years, the energy needs of Argentina became a concern. Today, the hopes are focused on the exploration and exploitation of unconventional resources, as ours is one of the five countries holding the greater amount of (unproven) reserves, according to the EIA. As previously mentioned, the Argentine government has implemented policies and incentive measures and has entered into agreements with foreign companies to design a fit environment where the industry may grow.

Moreover, the development of the renewable resources vital to diversify the energy matrix and to help revert climate change found a solid starting point last year with the enactment of Law No. 27191 (aimed at promoting power generation derived from renewable sources), and in 2016 with the recent call for bids to add 1000 MW derived from these sources. It is worth noting that the national government received 123 bids for a total of 6,366 MW, which in the mid-term will surely contribute to the reduction of energy imports (which account for around 15% of the latest totals) and to the process to replace fossil fuels with alternative ones (which is already taking place under the RenovAR 1 and 1.5 programs).

Besides, measures are being implemented to improve local market conditions and to attract new investments. Some of these measures include: i) the elimination of restrictions to capital transfers; ii) a flexible exchange rate more fit to the prevailing circumstances and the recovery of international resources; iii) the debt negotiation with holdouts designed to return to international credit markets; iv) setting an inflation target of a single digit for the next 4 years; v) the elimination of export duties and import tariffs; and vi) the creation of the National Agency for the Promotion of Investments and International Trade (which, in turn, involves the creation of a new regulatory framework designed to promote investments and trade based, for example, on the new law of public-private participation, a four-year plan to eliminate the primary tax deficit reducing the volume of subsidies, public expenditure and transfers), and the relaunching of the INDEC (National Statistics Bureau).
Moreover, it would be advisable to implement a diversification strategy to extract and produce hydrocarbons and to produce energy in general. Firstly, because allocating all resources to the exploitation of unconventional resources, if successful, would only be profitable in the future. Secondly, because, according to the EIA, over 2.5 billion bbl and around 370 billion M^3 of gas, and 2.2 billion bbl of oil and 1217 thousand billion M^3 of gas would still remain unexploited in our country in proven conventional fields and in gas reservoirs yet to be discovered. Finally, because the production of renewable energy not only contributes to the diversification of the energy supply, but is also far more sustainable over time than any other type of energy; and this is the path the entire world should follow. In other words, Argentina’s challenge to overcome its energy gap is to be smart enough to design strategies that may foster an increase in the production of conventional and renewable resources in the short and mid run, while continuing developing unconventional resources, the maximum yield of which will be seen in the long run, taking into account the potential of Vaca Muerta and other great shale fields located within the Argentine territory.

In accordance with the foregoing, the short term evolution of the global O&G industry will be more related to stock accumulation and use and to market expectations regarding the consistency of those trends over time, which will be crucial to have an impact of the most sensitive variables such as investment, production and prices. As regards the local scenario, we must add the good development perspectives expected and announced for unconventional hydrocarbon resources as well as for renewable resources which are also part of the national energy matrix.

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