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**Iran after the (Potential)  
Nuclear Deal:  
What's Next for the  
Country's Natural Gas  
Market?**

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Eni Enrico Mattei

# **Energy: Resources and Markets**

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**Iran after the (Potential) Nuclear Deal:**

**What's Next for the Country's Natural Gas Market?**

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## **Summary**

Iran is the perennial “elephant in the room” of international gas trade. The country could well become, one day, a major game changer of international gas markets but today its potential still remains fundamentally untapped due to a number of geopolitical and commercial reasons. Iran owns the first largest proven gas reserves in the world, but since 1997 it is basically a net-importer of gas. This paradoxical situation is due to a number of internal and external factors, which will be widely discussed in the paper. However, the main cause of the current under-exploitation of Iran’s gas resources is certainly linked to the international isolation of the country due to the well-known international dispute over its nuclear program. For this reason, if the positive outcome of the recent nuclear talks turn into a complete nuclear deal, great opportunities will likely open up in Iran also with regard to the gas market. The aim of this paper is to analyze the country’s gas outlook in the aftermath of a potential nuclear deal, looking at the potential production trends, at the potential export options, but also at the political and commercial barriers that such a development will likely have to face. In fact, a full resolution of the nuclear issue will unlikely automatically change the Iranian gas market in the short term, as a number of commercial issues will continue to remain on the table. In other words, the “elephant” will need a bit of time to move. However, it is sure that its movement will ultimately have a profound and long-lasting impact on international gas markets.

**Keywords:** Iran gas market, International gas markets, World energy outlook, Nuclear talks

**JEL Classification:** Q40, Q42, Q48

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## **Introduction**

Iran is the perennial “elephant in the room” of international gas trade, a country which could, one day, become a major game changer of international gas markets but the potential of which still remains today fundamentally untapped due to a number of geopolitical and commercial reasons. Among the others, the main reason of the current under-exploitation of Iran’s natural gas resources is clearly linked to the difficult political relations evolved over the last decades between the country and the West. However, the history of international relations has shown several times that relations between major actors in the international system could rapidly shift if the political willingness to do so is there. An example of these sudden shifts is the rapprochement between the United States (US) and China occurred in the early 1970s after a great diplomatic effort of the US Secretary of State Henry Kissinger. Furthermore, the more recent political developments in the southern shore of the Mediterranean clearly exemplify the need to be able “to think the unthinkable”, particularly when dealing with the Middle East and North Africa (MENA) region. No one would be able to predict the Arab Spring and its rapid development, but the turmoil actually occurred, radically changing the geopolitical equilibrium of the region in a structural dimension.

The dynamism of international relations exemplified by these two different historical moments could now be well applied also to Iran and its relations with the other actors of the international system (and notably the US). As a matter of fact, the presidents of the US and Iran talked for the first time since 1979 when Barack Obama called Hassan Rouhani on September 27, 2013 -when the Iranian leader was heading to the JFK airport in New York after having addressed the UN General Assembly-. Moreover, after years of frustration and impasse in negotiations between Iran and six world powers (the five permanent members of the UN Security Council plus Germany, known as the P5+1), an interim deal on the Iranian nuclear program was finally reached in Geneva on November 24, 2013.

Under the terms of this six-month deal, Iran and the P5 + 1 agreed to a series of steps to be carried out while a conclusive agreement is negotiated. On the one hand, Iran has agreed to a number of points, including: a) Halting enrichment of uranium above 5

percent purity; b) “Neutralise” its stockpile of near-20 percent-enriched uranium, either by diluting it to less than 5 percent or converting it to a form which cannot be further enriched; c) Not build any more enrichment facilities; d) Not increase its stockpile of 3.5 percent low-enriched uranium; e) Provide daily access to Natanz and Fordo sites to International Atomic Energy Agency inspectors and access to other facilities, mines and mills. On the other hand, the P5+1 has agreed to: a) Provide “limited, temporary, targeted, and reversible [sanctions] relief”; b) Not impose further nuclear-related sanctions if Iran meets its commitments; c) Transfer US\$4.2bn to Iran in instalments from sales of its oil.

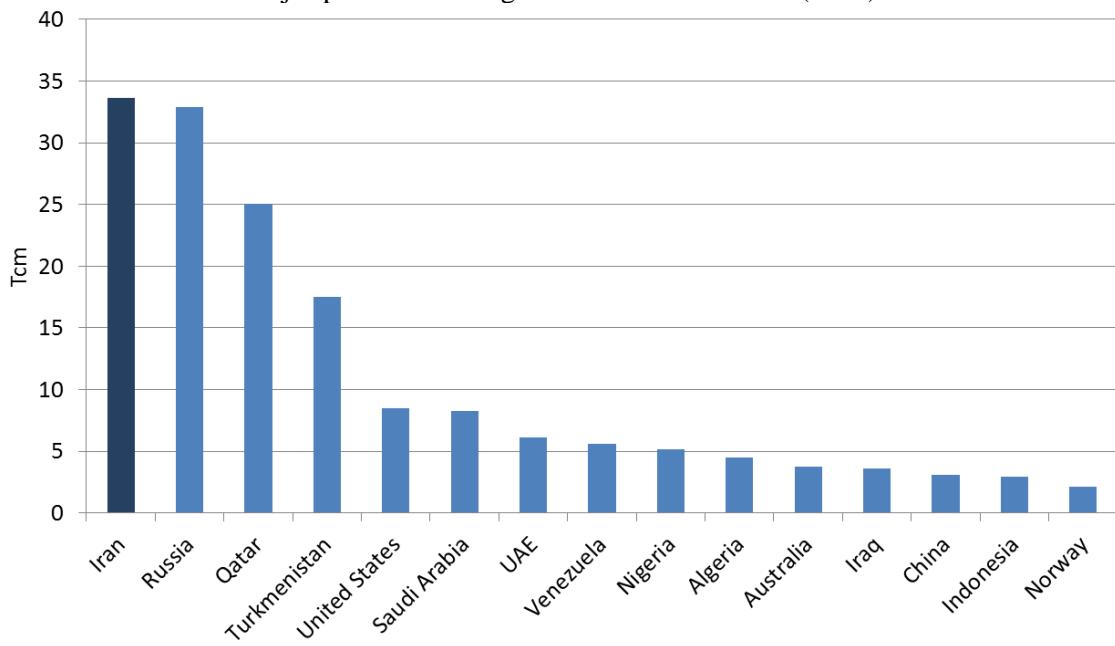
This occurrence certainly represented just a first step toward a truly complete resolution of the Iranian nuclear issue, but it could be seen as a positive sign for the future. If these recent developments will have a resolute follow up, great opportunities could open up in Iran, also with regard to the natural gas sector.

Considering the world-class size of the country’s natural gas reserves, such a shift could well make Iran a real game-changer of international gas markets. In order to fully understand this potential the first section of the paper will present an accurate analysis of Iran’s natural gas market fundamentals, focusing on the reserves, on the current levels of production and consumption, and on the current trade dynamics. The second section of the paper will widely discuss the main commercial and political barriers to the development of the country’s natural gas market, such as the country’s petroleum legal framework, the country’s system of energy subsidies and the international sanctions affecting the country. The third section of the paper will finally present an outlook of Iran’s natural gas market in the aftermath of a potential nuclear deal, discussing both the prospects for the domestic market and the various export opportunities, but always taking into account the commercial issues that will need to be resolved in order to allow a sustainable development of the country’s natural gas resources.

## 1. Iran's Gas Market: Reserves, Production, Consumption, Trade

Iran owns the first largest proven natural gas reserves in the world (Fig. 1), estimated at 33.6 trillion cubic metres (Tcm)<sup>1</sup>. Eighty percent of Iranian natural gas reserves are located in non-associated fields, and most of these reserves have not been developed yet.

**FIGURE 1**  
Major proven natural gas reserves in the world (2012)



Source: own elaboration on British Petroleum (2013).

Iran's natural gas reserves are predominantly located in the offshore Persian Gulf, although significant associated natural gas production originates from the country's

<sup>1</sup> There are problems in assessing comparative natural gas reserves estimates. In fact, the former Soviet republics use a different accounting system for proven natural gas reserves with respect to the Western accounting system. Specifically, in the Western accounting system proven natural gas reserves are defined as those that are *technically* and *economically* recoverable, while in the former Soviet republics' accounting system they are defined as those that are just *technically* recoverable. Considering this difference, BP converted for the first time in 2013 all the former Soviet republics' numbers to the Western accounting system, and thus revised down Russia's natural gas reserves to 32.9 Tcm at the end of 2012 versus an unrevised number of 44.6 Tcm at the end of 2011. On this basis Iran could thus be considered as the first country by proven natural gas reserves in the world. However, other sources continue to take into account the former Soviet republics' accounting system. This is the case of the Oil and Gas Journal (according to which Russia holds 47.8 Tcm of proven gas reserves), the US Energy Information Administration (according to which Russia holds 47.8 Tcm of proven gas reserves), and OPEC (according to which Russia holds 48.7 Tcm of proven gas reserves). For further information please refer to: Wall Street Journal (2013).

onshore oil fields. The three major natural gas fields in the country are South Pars, North Pars and Kish.

The giant offshore South Pars field (which constitutes, together with Qatar's North Field -its geological extension-, the world's largest natural gas field) is the country's largest natural gas field (Fig. 2). South Pars' natural gas reserves are estimated at 10-14 Tcm and thus represent over 35 percent of Iran's total natural gas reserves<sup>2</sup>. The field, which was discovered in 1990 by the National Iranian Oil Company (NIOC), has a 24-phase development scheme spanning 20 years. Natural gas production in the field started in December 2002, with an initial level of 10 billion cubic metres (Bcm) of natural gas production per year. This initial level has rapidly increased over the last decade, up to the current level of 102 Bcm of natural gas production per year<sup>3</sup>. Moreover, a total of 18 Bcm of natural gas per year is expected to be added at the production of South Pars, with the addition of Phases 12, 15 and 16 projected to come online by the end of 2014<sup>4</sup>. The entire project is managed by Pars Oil & Gas Corporation (POGC), a subsidiary of NIOC<sup>5</sup>. Each of the 24 phases has a combination of natural gas with condensate and/or natural gas liquids production. The main share of South Pars' natural gas production is currently allocated to the domestic market for consumption and reinjection into oil fields<sup>6</sup>. However, South Pars is set to become the bulk of Iran's future natural gas exports.

North Pars is Iran's second-largest natural gas field, with an estimated 1.3-1.4 Tcm of natural gas reserves<sup>7</sup>. A deal was finalised in mid-2007 between the China National Offshore Oil Corporation (CNOOC) and Iran's POGC for the development of the field and the construction of an integrated 20-million-tonnes-per-year (t/y) LNG facility<sup>8</sup>. However, the Chinese company proved unwilling to commit financially and eventually pulled out in 2012. The risk and political cost of doing business in Iran was one direct

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<sup>2</sup> Energy Information Administration (2013).

<sup>3</sup> Figure provided by Roknoddin Javadi, Iran's Deputy Oil Minister and Managing Director of NIOC.

<sup>4</sup> Energy Intelligence (2014).

<sup>5</sup> Yong (2013).

<sup>6</sup> Contracts for the first ten phases were awarded prior to 2002; half of these came online between 2002 and 2005. Phases 5-10, which were managed by PetroPars, experienced repeated delays, and gradually come online between 2012 and 2013.

<sup>7</sup> Energy Information Administration (2013).

<sup>8</sup> Middle East Economic Survey (2012).

reason, as well as a realisation by CNOOC that it would need a liquefaction technology-skilled partner, at a time when no-one was to be found for Iranian business. For this reason this project is not likely to come online anytime soon.

Kish is Iran's third-largest natural gas field, with an estimated 1.3 Tcm of natural gas reserves<sup>9</sup>. With regard to this field, a joint integrated development with Oman has been suggested in the past, where some of the natural gas would supply the Omani market and some would be liquefied at its existing facilities. However, because of repeated contractual disagreements among companies involved in the development of this field, as well as the infrastructure required (which includes the construction of a natural gas processing plant, gas pipelines, and a new power plant), the first phase of this field is unlikely to come online before 2020<sup>10</sup>.

In addition to South Pars, North Pars and Kish there are other promising natural gas fields that could further boost Iran's production. In fact, an important share of the current natural gas production of Iran is derived from the south of the country, notably from the Tabnak field (850 Bcm of reserves; production capacity of 19 Bcm/y), the Kangan-Nar fields (670 Bcm of reserves; production capacity of 35.8 Bcm/y) and the Dalan and Aghar fields (370 Bcm of reserves; production capacity of 14 Bcm/y)<sup>11</sup>.

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<sup>9</sup> *Ibidem*.

<sup>10</sup> Iran plans to drill 12 wells in the first phase of Kish natural gas field development plan by end-2014.

<sup>11</sup> Energy Information Administration (2013).

**FIGURE 2**  
Iran's oil and gas infrastructure

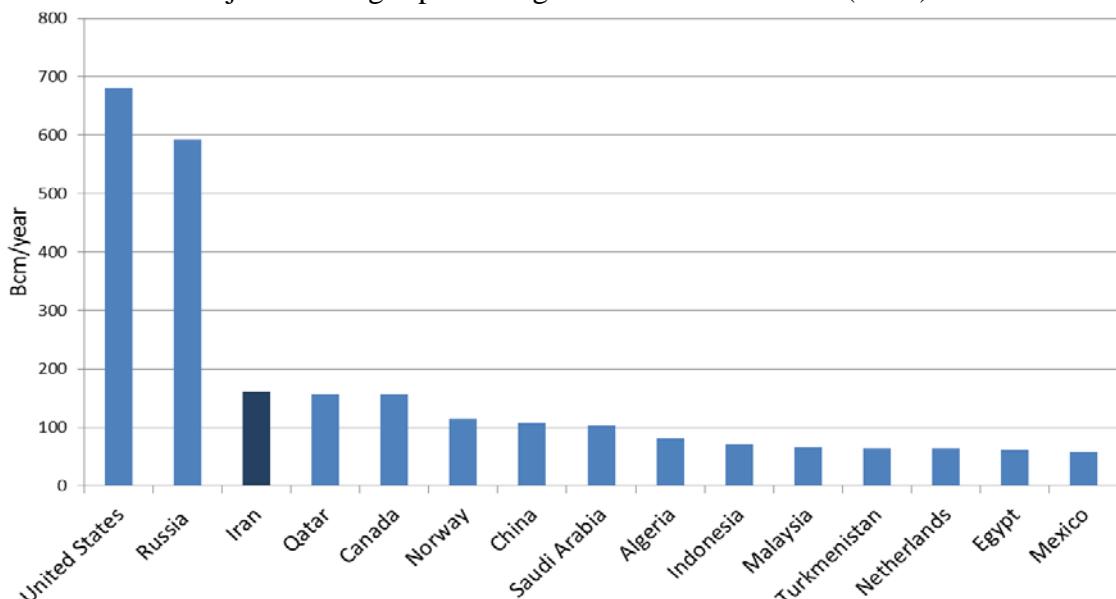


Source: Central Intelligence Agency (2012).

In terms of natural gas production, Iran ranks as third natural gas producing country in the world after the US and Russia (Fig. 3), but its production level remains far behind its potential. In fact, in 2012 Iran produced 160 Bcm of natural gas, while the US produced 680 Bcm and Russia produced 590 Bcm<sup>12</sup>. This figure is mainly due to the fact that Iran first began producing natural gas over 30 years ago, but it failed to institute an organised development plan until the late 1990s. Over the last two decades natural gas production has increased at a rapid rate in the country, but the international sanctions progressively imposed on the country -among other factors that will be widely discussed in the second section of the paper- considerably decelerated Iran's natural gas production outlook.

<sup>12</sup> Unless otherwise stated, all energy statistics in this paper refer to: BP (2013).

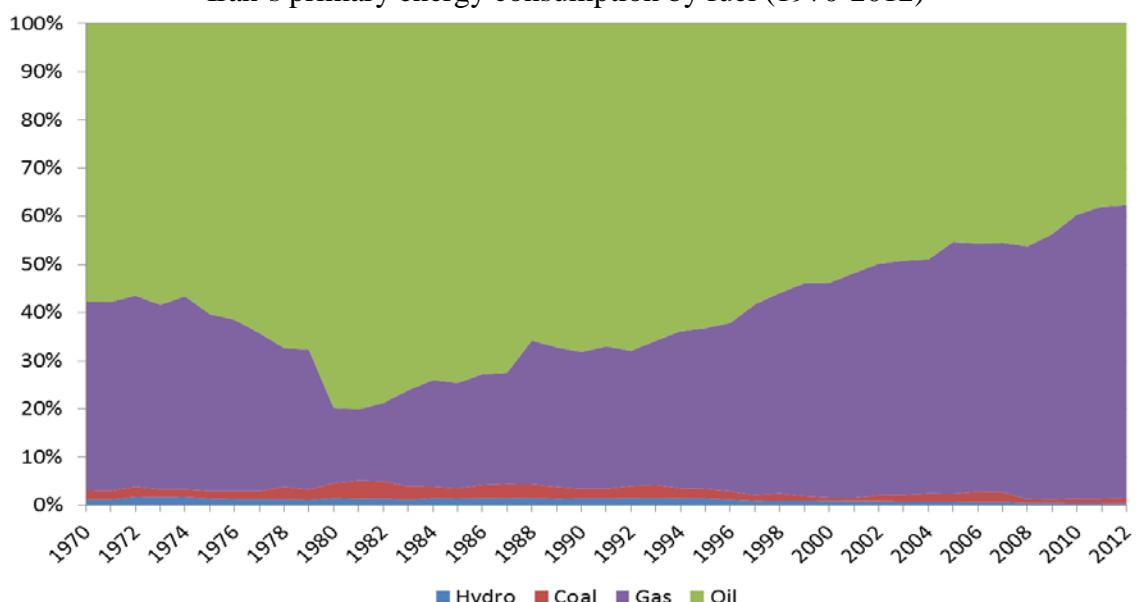
**FIGURE 3**  
Major natural gas producing countries in the world (2012)



Source: own elaboration on British Petroleum (2013).

In terms of natural gas consumption, Iran consumed 156 Bcm in 2012: a level almost equal to its natural gas production. This high level of natural gas consumption is justified by an energy policy that since the 1980s has promoted a switch of the country's energy mix from oil to natural gas (Fig. 4).

**FIGURE 4**  
Iran's primary energy consumption by fuel (1970-2012)



Source: own elaboration on British Petroleum (2013).

In fact, from 15 percent in 1980, natural gas use has expanded to account for 60 percent of the Iran's primary energy consumption in 2012. The logic behind this trend is clearly linked to two factors: the first is that it is easier to export oil rather than natural gas (both technically and geo-strategically). The second is that oil exports are far more lucrative (and thus far more beneficial for a country's budget) than natural gas. To conclude, if this trend is summed-up with the fact that Iran's primary energy consumption has grown from 40 Mtoe in 1980 to 234 Mtoe in 2012 it is easier to explain the country's booming natural gas consumption (from 7 Bcm in 1980 to 156 Bcm in 2012).

But how this energy policy could effectively be promoted in the country? Essentially, the switch from oil to natural gas has been driven by two factors: infrastructure development and energy subsidies. Firstly, over the last decades Iran's domestic natural gas consumption has been heavily promoted and backed up by efforts to extend the pipeline network to every major city and industrial centre in the country. This infrastructural development has paved the way for a growing use of natural gas in the country's residential, industrial and power sectors. Secondly, energy subsidies have also played a major role in increasing Iran's natural gas consumption. As Jalilvand (2013) outlined: «Based on the revolution's theme of social justice and in an attempt to promote economic diversification and industrialization, Iran initiated the redistribution of incomes from oil revenues. Natural gas -besides food, fuel and electricity- was provided for the Iranian people at highly subsidized prices for the past several decades. With US\$80.8 billion or 22.6 percent of the GDP, in 2010 Iran's subsidies were both in absolute and relative terms the largest throughout the Middle East and North Africa.»<sup>13</sup> The country embarked on an ambitious subsidy reform in 2010, but its effectiveness still remains to be verified.

Although Iran's domestic natural gas consumption has been growing in the residential, industrial and power sectors, domestically-produced natural gas is also central to Iran's plans to increase crude oil production through EOR (enhanced oil recovery) techniques<sup>14</sup>. Only in 2011, Iran reinjected more than 35 Bcm of natural gas in its oilfields to help boost oil production. Furthermore, according to NIOC, Iran will

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<sup>13</sup> Jalilvand (2013), pp. 14-15.

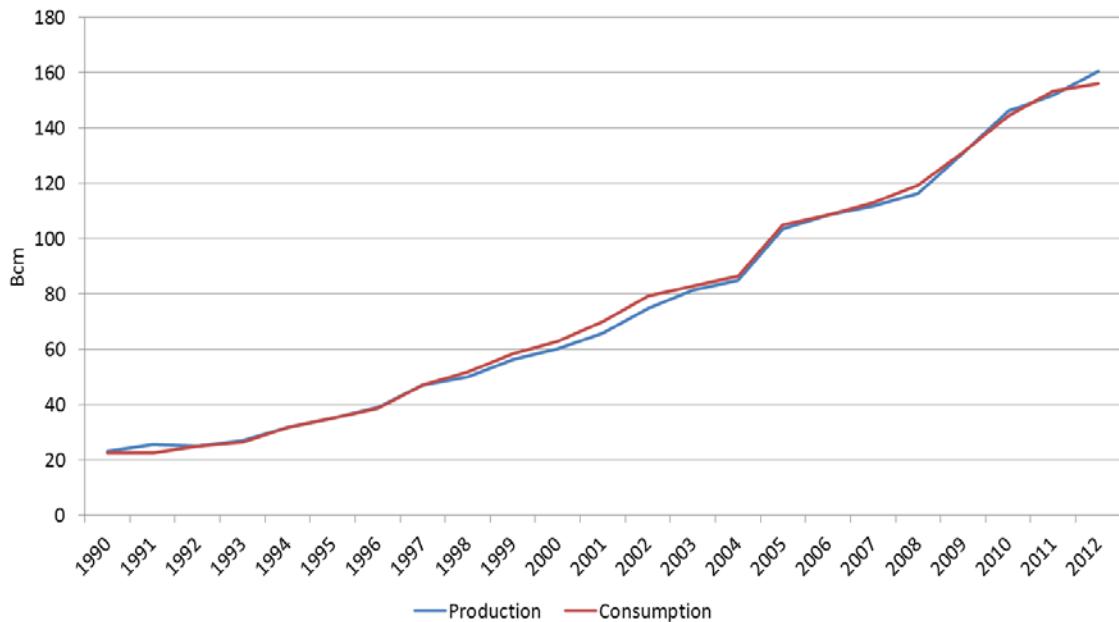
<sup>14</sup> Platts (2013).

significantly raise reinjection levels of natural gas into its oil fields to a level of 80 Bcm/y in the next decade<sup>15</sup>.

As a result of these trends, Iran's domestic natural gas consumption is expected to grow around 7 percent annually over the next decade<sup>16</sup>. This figure represents a tangible threat to Iran's natural gas market, as the potential for shortfalls in natural gas supply will increase as domestic natural gas consumption will continue to grow and domestic natural gas projects will continue to face delays.

This threat is based on the precarious equilibrium on which the Iranian natural gas market has developed over the last decades. In fact, since the 1990s Iran's natural gas production has basically equalled the country's natural gas consumption (Fig. 5).

**FIGURE 5**  
Iran's natural gas production and consumption (1990-2012)



Source: own elaboration on British Petroleum (2013).

Notwithstanding this precarious equilibrium, over the last decades Iran committed itself to export natural gas to Turkey, Armenia and Azerbaijan.

Iran exports natural gas to Turkey via the Tabriz-Dogubayazit pipeline for a volume that amounted to 7.5 Bcm in 2012. Of this export, the vast majority is incorporated into the

<sup>15</sup> Energy Information Administration (2013).

<sup>16</sup> Energy Information Administration (2012).

Turkish central pipeline network and further distributed as necessary. Turkey receives approximately 20 percent of its natural gas imports from Iran, making Iran Turkey's second largest source of natural gas imports after Russia, which has about a 60 percent share of Turkey's natural gas imports<sup>17</sup>.

Iran also exports natural gas to Armenia and Azerbaijan, albeit with minor volumes (a total of 1 Bcm in 2012). Armenia uses the majority of the Iranian natural gas it imported to produce electricity at the Hrazden power plant. In return, excess base-load electricity generated from the Armenian Nuclear Power Plant (ANPP) is exported to Iran. Armenia supplies 3 kilowatt-hours of electricity for every cubic meter of natural gas it receives from Iran. Armenia receives about 20 percent of its natural gas imports from Iran<sup>18</sup>. Iran also exports natural gas to the isolated Azerbaijani exclave of Nakhchivan via the Salmas-Nakhchivan pipeline. In exchange, Azerbaijan exports natural gas to Iran's northern provinces via the Astara-Kazi-Magomed pipeline. Nakhchivan's only supply source of natural gas is Iran.

In order to maintain these commitments and in order to satisfy its own domestic demand (particularly in winter time), Iran has to import natural gas from Turkmenistan. By importing about 9 Bcm of natural gas (data of 2012) Iran accounts for about 30 percent of all Turkmen natural gas exports. This long-lasting natural gas relationship was further enhanced in 2010, with the completion of the Dauletabad-Hasheminejad pipeline. Imports of Turkmen natural gas are currently essential to Iran's ability to meet both seasonal peak demand and industrial demand in northern Iran.

In this overall situation, Iran basically emerged to be a net-importer of natural gas since 1997. This paradoxical situation is mainly due to a long-lasting situation of under-development of Iran's natural gas sector. A situation generated by a series of barriers of geopolitical and commercial nature that will be widely explained in the next section.

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<sup>17</sup> Tagliapietra (2014).

<sup>18</sup> Energy Information Administration (2013).

## **2. The Political and Commercial Barriers to the Development of Iran's Gas Market**

As far as geopolitics is concerned, the key issue is surely represented by the difficult relations established between Iran and the West after the Iranian Revolution of 1979 and -more recently- after that Iran refused to suspend its uranium enrichment program. Since 1979 the US imposed sanctions against Iran to influence the country's policies and expanded them in 1995 to include firms dealing with the Iranian government. In 2006, the United Nations (UN) Security Council passed Resolution 1696<sup>19</sup> and imposed sanctions after that Iran refused to suspend its uranium enrichment program, which Western governments fear is intended for developing the capability to produce nuclear weapons (Iran counters that its nuclear program is for civilian purposes, including generating electricity and medical purposes). Since 2006 the UN has adopted several rounds of sanctions against Iran, but due to Chinese and Russian opposition, however, Iran's energy sector has not been affected by the UN sanctions. For this reason, the US and the EU have imposed unilateral sanctions targeting Iran's energy sector. These sanctions target investments in oil, gas and petrochemicals exports of refined petroleum products, and business dealings with the Iranian Republican Guard Corps.

Notwithstanding this unfavorable international political climate, the Iranian government began to open up the oil and gas sector to foreign investment from the mid-1990s. The role of foreign players has always been controversial, however, and the arrival of a conservative government in 2005 considerably clouded prospects, notably because of its nuclear ambitions. US sanctions have effectively complicated the task of attracting investors in the past and the addition of further EU and UN sanctions since 2007 have made European and Asian companies -for a long time willing to overlook political and operational difficulties in order to gain access to Iran's undoubted potential- unwilling to commit to investments and bid for new projects until the future direction of the international dispute becomes clearer. As Jalilvand (2013) outlined: «There is some evidence that the post-2010 EU- and US- sanctions directly targeting Iran's energy sector have significantly increased the impact on natural gas development. By the end of June 2010, all Western companies had announced that they would leave the Iranian

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<sup>19</sup> United Nations (2006).

market. This move had a serious effect on the development of LNG projects as Chinese and Russian expertise could not provide substitute for Western technologies. Iran's LNG projects had previously encountered various problems and since 2010 effectively failed to progress. Further, European-Iranian energy cooperation is impossible until sanctions are lifted and political relations improve.»<sup>20</sup>

With regard to the commercial barriers to the development of Iran's natural gas sector, the key issue is surely represented by the petroleum legal framework of the country. In order to fully understand the legal schemes currently adopted in the country's hydrocarbon sector, it might be useful to provide a quick summary of their historical evolution<sup>21</sup>.

Iran represented the dawn of the oil industry in the Middle East. In fact, the country emerged as the first oil producer in the region after the commodity was first discovered on May, 26 1908 by the company of William Knox D'Arcy, a British pioneer that agreed to fund a search for oil in Persia in 1900. In order to get the permission to carry out the exploration activities, D'Arcy negotiated with the Mozaffar al-Din Shah Qajar a sixty year concession covering 1,200,000 km<sup>2</sup>. The concession stipulated that D'Arcy would have the oil rights to the entire territories of Iran except for five provinces in the Northern part of the country, which were the traditional preserve of Russia. In exchange the Iranian government was given 16 percent of the oil company's annual profits. In 1909 D'Arcy was appointed as director of the newly established Anglo-Persian Oil Company (APOC) and in 1913, shortly before World War I, he carried out a negotiation with a new customer, Winston Churchill, who was at that time First Lord of the Admiralty. Churchill sought to modernize Britain's navy by abandoning the use of coal in favor of oil. In order to do so, Churchill also wanted to free Britain from its reliance on the Standard Oil and Royal Dutch-Shell oil companies<sup>22</sup>. In exchange for secure oil

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<sup>20</sup> Jalilvand (2013), p. 13.

<sup>21</sup> This historical section is mainly based on information provided in a major study on the history of Iran's petroleum legal framework by Shahri (2010).

<sup>22</sup> The transition of oil from a commercial commodity to a strategic resource central to states engaged in national security planning is a fundamental theme of Daniel Yergin's bestseller "The Prize". In fact, the title of the book is taken from a passage from the first volume of Winston Churchill's "World Crisis" (1923), describing the «great gamble» of the British Admiralty in deciding to convert the British fleet to oil in the absence of an assured supply. The consequence: «If we required it we must carry it by sea in peace and war from distant countries...Mastery itself was the prize of the venture.»

supplies for its ships, the British government injected new capital into APOC and, in doing so, acquired a controlling interest in the company. In 1935 APOC was renamed the Anglo-Iranian Oil Company and in 1954 it became the British Petroleum Company, one of the antecedents of the modern British Petroleum.

After World War I, the Iranian media and Reza Shah objected to the D'Arcy concession because little money was paid to the Iranian government in comparison with the huge economic and strategic benefits being achieved by the British government. The concession was thus brought to a premature end and in 1933 another concession came into force. This concession was agreed for another sixty years (1933-1993) and it introduces better conditions for the Iranian government<sup>23</sup>. In 1937 a second sixty-year concession -with comparable terms and conditions to the 1933 agreement- was also given to the Americans. In the following decades growing financial inequalities and widespread poverty gave rise to a nationalistic movement in Iran pioneered by Mohammad Mosadegh which culminated in the nationalization of the Iranian oil industry in 1951. For the first time in the history of Iran, the country was legally considered the owner of its petroleum wealth. However, the plans for nationalization and Iranian ownership of its oil assets were brought to an early end in 1953 through a US-British backed military coup that installed the pro-Western Shah Mohammad Reza Pahlavi as a new head of state.

With the new government of Reza Pahlavi, negotiations started and they finally resulted in an agreement with a consortium consisting of seven major American oil companies and British Petroleum as its shareholders. The contract, a complicated document attempting to reconcile its concessionary nature with the Iranian Nationalization Act, finally made the consortium an agent working on behalf of NIOC for a period of 25 years extendable to another 15 years.

Four years after the Consortium agreement, the first petroleum law of the Iranian history was drafted and finally approved. The new law did not address the territories already granted to the consortium and it was rather a legal background to further cooperation with other international oil companies (IOCs) for attracting much needed investment and technology. The law prescribed joint ventures with government

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<sup>23</sup> Malek (2010).

participation (through a minimum share for NIOC participation in any of the ventures at 30 percent). Until 1974, based on this law, a number of joint operating agreements (JOAs) and producing sharing agreements (PSAs) between Iran and IOCs were struck.

The 1957 law was finally abolished in 1974, when the National Iranian Parliament passed a new petroleum law. This law was mainly aimed at adapting the Iranian petroleum sector to the new international reality emerging from the 1973 oil shock. This event obviously elevated the bargaining position of the Iranian government which seized the historical opportunity to create a more efficient contractual regime with higher government takes and maximum control. For the first time NIOC was permitted to attract investments only through service contracts, a contractual mechanism on which foreign companies are merely contractors which receive remuneration in return for the services they provide and are not entitled to any oil neither in the reservoir nor at well-head<sup>24</sup>. On the basis of this law, PSAs were not anymore a valid contractual regime in Iran. However, the consortium remained in force and unaffected by Parliamentary legislations until the 1979 Islamic Revolution.

As Iran's experience in the first half of the 20<sup>th</sup> century showed foreign investments and activities as primarily exploitative, the Islamic Constitution of 1979 was shaped by the desire to strictly control the terms of any agreement with foreign companies<sup>25</sup>. The Constitution makes specific reference to natural resources -and inevitably to the oil and gas industry- in three articles: Art. 44, Art. 45 and Art. 81. These provisions shape the country's current petroleum legal framework and for this reasons they will be analysed in detail here below.

According to Art. 44: «The economy of the Islamic Republic of Iran is to consist of three sectors: state, cooperative, and private, and is to be based on systematic and sound planning. The state sector is to include all large-scale and mother industries, foreign trade, major minerals, banking, insurance, power generation, (...) and the like; all these will be publicly owned and administered by the State. (...).»<sup>26</sup> This article not only indicates the nationalization of all the country's major industries, but it also forbids any

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<sup>24</sup> Yong (2013).

<sup>25</sup> Jalilvand (2013), p. 19.

<sup>26</sup> "The Constitution of Islamic Republic of Iran", English version available online at the Iran Chamber Society website (<http://www.iranchamber.com/>).

form of private ownership and private participation in the sectors indicated, as it uses the words «owned and controlled by the state».

According to Art. 45: «Public wealth and property, such as uncultivated or abandoned land, mineral deposits, seas, (...), shall be at the disposal of the Islamic government for it to utilize in accordance with the public interest.»<sup>27</sup> As outlined by Shahri (2010) «This article regards natural resources as “Anfal”, an Islamic concept mentioned in the Quran meaning public wealth and property. According to the Quran, “Anfal” belongs to God and the Prophet; Art. 45 leaves “Anfal” to the government, which is to use it in the best interest of the public. Based on Shia Islamic teachings, “Anfal” cannot be sold or transferred to anyone; Art. 45 thus serves as a serious impediment to any private entity, foreign or domestic, gaining ownership of any kind of Iran's oil, gas and mineral wealth.»<sup>28</sup>

According to Art. 81: «The granting of concessions to foreigners for the formation of companies or institutions dealing with commerce, industry, agriculture, services or mineral extraction, is absolutely forbidden.»<sup>29</sup> This article forbids the concessionary system completely and for this factor is often used as a reason why PSAs, JOAs or joint ventures are not legally possible in Iran. In other words, the Iranian government is the only authority which can legitimately deal with natural resources.

Following the Revolution and the new dictates of the Islamic Constitution, the NIOC took control of Iran's petroleum industry and canceled Iran's international oil agreements. In 1980 the exploration, production, sale, and export of oil were delegated to the Ministry of Petroleum. Initially Iran's post-revolutionary oil policy was based on foreign currency requirements and the long-term preservation of the natural resource.

Following the Iran-Iraq War, however, this policy was replaced by a more aggressive approach: maximizing exports and accelerating economic growth. From 1979 until 1998, Iran did not sign any oil agreements with foreign oil companies. Early in the first administration of President Mohammad Khatami (in office from 1997 to 2005), the government paid special attention to developing the country's oil and gas industry. Oil

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<sup>27</sup> *Ibidem.*

<sup>28</sup> Shahri (2010), p. 120.

<sup>29</sup> “The Constitution of Islamic Republic of Iran”, *op. cit.*

was defined as inter-generational capital and an indispensable foundation of economic development. Thus, between 1997 and 2004 Iran invested more than US\$40 billion in expanding the capacity of existing oil fields and discovering and exploring new fields and deposits<sup>30</sup>. These projects were financed either in the form of joint investments with foreign companies or domestic contractors or through direct investment by the NIOC.

In accordance with the law, foreign investment in oil discovery was possible only in the form of buy-back service contracts, which still today represent the cornerstone of Iran's petroleum legal framework.

A buy-back service contract is defined as a contract between the NIOC and an international oil company (IOC), in which the IOC agrees to develop an oil or natural gas field and then to hand the field over to the NIOC once production starts. The IOC develops the field and NIOC then repays the costs, including capital expenditure (capex), operating expenditure (opex), and accrued bank charges. Additionally, the IOC receives a pre-agreed remuneration fee, normally by way of an entitlement to an amount of oil or gas from the development operation. By using a buy-back service contract framework, the NIOC has been able to meet Iran's strict constitutional provisions restricting foreign oil companies' involvement in Iranian oil and natural gas projects, since in the contract the IOC must hand the field back to the NIOC for production. Moreover, this policy has also enabled the NIOC to benefit from the IOCs' technical and financial capabilities, since the IOC is responsible for developing the field<sup>31</sup>.

Under the buy-back service contract system, IOCs are thus supposed to be paid in oil and natural gas from projects they develop with their own capital but then have to hand back the project to Iranian companies when completed and wait to be paid. This differs substantially from the generally used PSAs which normally allow foreign parties to own parts of the reserves and mandate share in costs and profits from development. This situation clearly represents a substantial disincentive for IOCs to get involved in Iran's oil and gas sector. In addition to this, it has happened that the buy-back system has kept IOCs like Italy's Eni waiting for multi-million dollar payments for projects they completed decades ago, while international sanctions make it still more difficult to get

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<sup>30</sup> Curtis and Hooglund (2008).

<sup>31</sup> Van Groenendaal and Mazraati (2006).

the oil from Iran. For all these reasons the buy-back service contracts are generally considered as highly unattractive by IOCs, which have thus been profoundly discouraged from investing in Iran's oil and gas sector over the last decades.

This situation concerning the petroleum legal framework currently in place in Iran, together with the international sanctions regime applied to the country over the last decades, represent the two key factors behind the under-exploitation of Iran's natural gas sector. However, this overall situation could well change in the near future, as the country seems to be embarking into a process of reform (also involving the legal framework of oil and gas sector) and opening-up to the international community after decades of closure and hostility -notably against the US-. The next section will provide an insight on these current evolutions, with the aim to understand whether they could ultimately have an impact on the future prospects of the country's natural gas market.

### **3. Iran After the (Potential) Nuclear Deal: What's Next for the Country's Gas Market?**

After 8 years of Mahmoud Ahmadinejad's ultra-conservative politics, on June 14, 2013 the Iranian people elected the moderate Hassan Rouhani as new President of the country. With this election the Iranian people called for a deep change, concerning both the internal and external dimensions of Iranian politics. In fact, Ahmadinejad's undiplomatic approach at home and internationally caused trouble domestically and estranged Iran abroad, resulting in social and political polarisation and economic hardship in the country. President Rouhani and the new government seemed to be willing to respond to this call for change of the Iranian people and immediately launched a series of initiatives aimed at improving the relations between the country and the West and at enhancing the difficult economic situation of the country.

As far as the international dimension is concerned, this action primarily targeted a normalization of the relations between Iran and the West, through a diplomatic activity aimed at overcoming years of frustration and impasse in negotiations between Iran and six world powers (the five permanent members of the UN Security Council plus Germany, known as the P5+1) on the key dossier on the table: the Iranian nuclear program. A first result of this new diplomatic activity arrived in Geneva on November 24, 2013, when a first deal on the Iranian nuclear program was finally reached. This occurrence certainly represents just a first step toward a truly complete resolution of the Iranian nuclear issue, which could finally lead to a full lifting of international sanctions in 2014.

As far as the domestic dimension is concerned, this action primarily targeted a series of reforms to reinvigorate the country's economy after years of decline. Among other things, this action has targeted the oil and gas sector, with the aim to make it more attractive for foreign investors in case international sanctions will be fully lifted in 2014. To this end, the new Oil Minister Bijan Namdar Zanganeh has proposed a reform of the country's petroleum legal framework with the aim of phase out the current buy-back scheme in favour of new schemes that could be more attractive for foreign investors. Just ahead the OPEC meeting of December 2013, the Minister stated that the new contract model for upstream investment is being studied and it will likely be

somewhere between the buy-back model and a more common production sharing agreement model. Zanganeh also stated that details of the new contract framework would be discussed at a conference that will likely take place in the second-half of 2014 in London, involving representatives of international oil companies and other experts<sup>32</sup>.

In a scenario on which a final deal on the Iranian nuclear program will be actually reached, and a reform of the petroleum legal framework will be really completed, the outlook of Iran's oil and gas sector could well dramatically change for the better.

In fact, in such a scenario IOCs will likely come back in Iran in order to re-start exploration and production activities ended after the international sanctions were imposed by the US and the EU on the country's oil and gas sector. A confirmation of this will is already arrived by the CEOs of various companies with a tradition of operations in Iran. For instance, Eni's CEO Paolo Scaroni stated in December 16, 2013: «If sanctions are lifted, we would be in a very good position to resume our activity in a country that holds the third- or fourth-largest reserves in the world. From a hydrocarbon point of view, Iran is a very interesting place to operate. [However], we never liked the Iranian buyback contract mechanism. We feel that [Oil] Minister Zanganeh is a man that we respect a lot, and revising this mechanism would make it more attractive to operate in Iran. If that is the case, we would be happy to resume our activities there, only, of course, when sanctions are relieved.»<sup>33</sup>

At this point the question is: how will all these developments reshape the country's natural gas market outlook?

#### *- The short term outlook*

In the short term, the hydrocarbon activities in the country will likely be focused on additional oil exploration, production and export. As Minister Zanganeh stated: «Our first priority is for enhanced oil recovery. It will be both for undeveloped and underdeveloped fields especially we prefer to start negotiations for enhanced oil recovery, for developed and existing fields.»<sup>34</sup> This plan implies that in the short term

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<sup>32</sup> Platts (2013) and Financial Times (2014).

<sup>33</sup> Petroleum Intelligence (2013).

<sup>34</sup> Platts (2013).

even more natural gas will need to be utilized for reinjection into oil fields in order to sustain a growing oil production.

Moreover, in the short term Iran will likely make use of its natural gas resources to improve the competitiveness of its economy, through a larger share of power generation based on cheap natural gas and through further investments on compressed natural gas (CNG) vehicles, in a move to reduce the domestic consumption of oil, which could thus be freed-up for additional exports.

In this overall situation, it is thus very difficult to expect major volumes of additional natural gas exports from Iran in the short term. Most probably, a volume of 10 Bcm of natural gas per year will likely represent the only additional export volume of Iran in the short term. In fact, in March 2014 Iran signed a 25-year agreement to supply 10 Bcm of natural gas per year to Oman, starting by 2017<sup>35</sup>. The deal will require the construction of a 260 km-long subsea pipeline from Iran's Hormozgan Province to Oman's Sohar port on the other side of the Persian Gulf (Fig. 6).

**FIGURE 6**  
Proposed Iran-Oman natural gas export pipeline



Source: own elaboration (2014).

<sup>35</sup> Energy Intelligence (2014).

As part of the deal, the two countries have the option of forming a joint venture to export the natural gas. This detail is not surprising, as in the past the two countries - allies since long time- have discussed several times the opportunity of bringing Iran's natural gas to Oman's underutilized LNG export facility, thus establishing Oman as a new hub for future Iranian natural gas exports<sup>36</sup>. The current plan would consist in keeping about 30 percent of the natural gas exported to Oman as Iranian natural gas to be processed into LNG by Oman LNG under a tolling agreement, allowing it to market, for the very first time, what would be "Iranian LNG"<sup>37</sup>. This project would thus represent the first move of Iran into the global LNG markets.

#### *- The long term outlook*

In the longer term, Iran's natural gas resources will likely be intensively exploited with the aim to export major volumes to the international markets. At this point the question is: what will likely be the Iranian natural gas export strategy? Over the last decades a number of natural gas export projects have been discussed in Iran. As Jalilvand (2013) outlined, at least 15 projects have been put on the table: a pipeline to Bahrain, a pipeline to Kuwait, a pipeline to the United Arab Emirates, a pipeline to Syria, a pipeline to Iraq, a pipeline to Pakistan and India, a pipeline to Europe and 7 different LNG projects.

Among all these projects, over the last years Iran seemed to be particularly focused on the pipeline to Pakistan (a 22 Bcm/y pipeline projected to run from Assaluyeh in Iran to Nawabshah in Southern Pakistan) also because a major share of this pipeline's capacity is devoted to supply natural gas to Iran's domestic market itself (only 8 Bcm/y are supposed to be exported to Pakistan). As a matter of fact, Iran has already completed most of the 1,050 km leg from Assaluyeh to its border with Pakistan (Fig. 7). However, this project is advancing slowly as Pakistan is not fulfilling its side of the deal (Pakistan has for some time now been unable to move ahead with its segment of the pipeline due to a serious lack of funds)<sup>38</sup>. After having suggested that Iran would annul its natural gas export contract with Pakistan, Oil Minister Zanganeh stated in November 2013 that Iran is still prepared to supply natural gas to Pakistan if it shows signs of real progress

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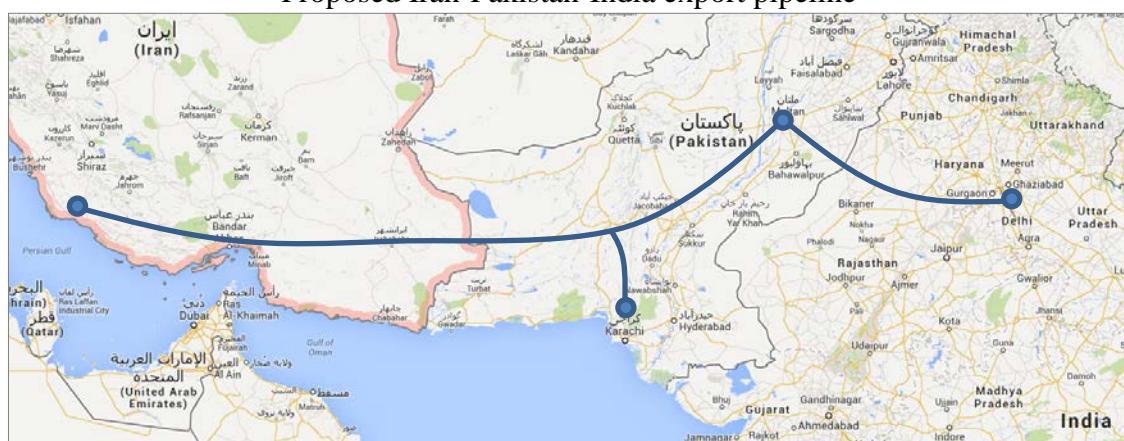
<sup>36</sup> *Ibidem*.

<sup>37</sup> Middle East Economic Survey (2013b).

<sup>38</sup> Middle East Economic Survey (2013a).

on its side of the project<sup>39</sup>. Accordingly to the resolution of this issue on the Pakistani side, the Iran-Pakistan pipeline could thus be seen as a front-runner project in the future Iranian natural gas export strategy. By the way, an added value of this project is the potential for extending the pipeline to India, a country that is set to dramatically increase its natural gas consumption and import requirements after 2030<sup>40</sup>. The overall project could thus well represent a major opportunity for Iran in the long term.

**FIGURE 7**  
Proposed Iran-Pakistan-India export pipeline



Source: own elaboration (2014).

However, this project will likely advance very slowly, as Iran will first need to ramp-up its natural gas production in order to provide the base for consistent additional natural gas exports. Such a development will require the involvement of IOCs in the country, an involvement that will unlikely occur -as previously described- without a new petroleum legal framework in the country. A full resolution of the nuclear issue will thus not automatically change the Iranian gas market outlook, albeit it will certainly represent the first essential step on the way that will lead Iran to the international natural gas markets.

In the introduction of this study we referred to Iran as the perennial “elephant in the room” of international gas trade. To conclude, we can thus close the ring by saying that the “elephant” will need a bit of time to move. However, albeit in the long term, it is sure that its movement will ultimately have a profound and long-lasting impact on international gas markets.

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<sup>39</sup> Middle East Economic Survey (2013b).

<sup>40</sup> International Energy Agency (2013c).

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