

Energy Geopolitics with Emphasis on Iran Gas Potential to Promote Europe Energy Security

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Abstract

Due to geographic importance, India, China and European states are the largest potential natural gas markets of Iran. Iran natural gas and gas condensate production reached to 6.5 million barrels until February 2019. This gas will be received by Europe, finally. Europe depends on gas import from Russia, a matter that concerns gas importing states. Europe security strategy is focused on decrease in the level of dependence on Russia which is emphasized by Europe security perspectives. The research is intended to investigate these issues: what is Europe strategy to provide its energy security? And how do Iran's gas resources affect Iran and Europe relations? The research hypothesis is that Europe is intended to develop its relation with Iran in order to decrease in Europe energy dependence on Russia. The research is based on descriptive-analytic method and also it is applied in terms of its goal. The research results show that Iran is the only state that can end Russia dominance on Europe energy supply, and European states can reconsider Iran's role to promote Europe energy security and to decrease in the EU dependence on Russia.

Keywords: Energy Geopolitics, Gas Security, Iran, Europe.

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1. Introduction

Energy as a geopolitical variant has special place in world arena and affects the relation among the states and also the power level of the states. Energy resources and also energy transmission lines have been also at the focal point of the states. In today's world, the most important energy types are oil, gas and coal which occupy important place in energy supply (Veisi,2009: 50). Energy as a basement of the development and survival of the nations has important role regarding population growth of the world and improving life standards in the 21th century. For this reason, economic and technologic evolutions in developed and developing states have brought dependence on energy resources, in a way that disruption in energy supply brings disruption in economic and social situation and also survival of the states. In as a result, secure energy supply is one of the most important security issues (Aminian,2013:83).

Contradictory understandings of the energy security by energy exporting countries and energy importing countries is a significant challenge. While energy importers focus on security of supply, meaning "sustainable energy production and uninterrupted oil and gas deliveries from energy exporters, producers are concerned with security of demand, implying stable revenues and guarantees of demand security from energy consuming nations" (Yenikeeff,2006:1).

Energy resources are a key element of the States' geography, therefore energy geopolitics analyses, among others, the influence of factors such as the location of energy supply and demand centres, transit routes or energy prices. It is vital understand the energy Geopolitics, in such a way as to incorporate the interests of States, as it can have a huge impact on the effectiveness of the national strategy and on economic growth (Campos & Patricio Fernandes,2017:25).

Geographically located at the junction of the Middle East, Central Asia, and South Asia; Iran borders Armenia, Azerbaijan and Turkmenistan to the north, Afghanistan and Pakistan to the east and Turkey and Iraq to the west. In addition, it borders the Persian Gulf and the Caspian Sea, which together constitute the richest energy region of the world in terms of oil and natural gas resources. Energy-wise Iran has about 7%of the world's mineral resources and possesses 10%of the global proven oil reserves and 16%of the world's natural resources (Maleki,2007:106). As a result of its central location in Eurasia and its rich oil and natural gas reserves, Iran is one of the pivotal countries of energy geopolitics (Balamir Coskun,2009:179-180).

So, one of the most important factors in Iran's relation with great powers is energy factor. If Iran takes friendly foreign policy towards the West and industrialized states, energy geopolitics will have positive role in national security of Iran (Golafrouz,2015:200). The Gulf alone holds more than half of the world's fossil energy reserves (Jafari Valdani,1998:12). Beside of energy resources redundancy, Persian Gulf is a transmission route from the west to the east, and any change in geopolitical situation of the region will spill over into the world (Valigholizadeh & Zaki,2008:26). Locating at the energy region as a factor of influence has strategic importance (Ezzati & Golafrouz,2013:45). Iran by having the richest oil and gas resources seeks secure market and long term demand for its energy resources. Iran has had the largest investment on gas and it has been becoming a gas power to decrease in dependence on oil export. Among gas importing states, European States have special place to Iran. Mutually, European States intend to diversify energy import markets to decrease in dependence on import from Russia, and Iran which has excellent position and redundant resource is one of the Europe's options (Mahdian and Fakhri,2012:46).

The EU economic approach to Persian Gulf has prevented Europeans engagement and geopolitical presence in high level in the region and also has Disregard for political reform in region. Today, gas is one of the most important geographic resources in the world and the states compete for it. Hence, the most of the Europeans States depends on the world gas resources, and regarding that Europe imports its gas needs from Russia, it is intended to diversify its import markets. So, Iran by having plentiful gas resources can be a proper supplier of gas for Europe which promote Europe energy security. The research is intended to investigate these issues: what is Europe strategy to provide its energy security? And how do Iran's gas resources affect Iran and Europe relations? The research hypothesis is that Europe is intended to develop its relation with Iran in order to decrease in its energy dependence on Russia.

2. Conceptual Background

energy Geopolitics studies the role of energy and its facets in politics and power and also in international relations (Hafeznia 2006:102-3). Energy is a rare resource and has geopolitical importance, namely paves the way for the advancement of interests in power games (Mojtahedzadeh,2011:26). Energy geopolitics gained momentum after the 1990s, when global resources mainly fossil fuels, became scarce in the face of growing world demand for

energy. At the same time, with the end of the Cold War, new concepts emerged and concern for energy security began to gain prominence in the world's discourse. In 1996, John V. Mitchell, Peter Beck and Michael Grubb captured the changes of the global energy geopolitical situation after the Cold War in the book *The New Energy Geopolitics*, advocating that energy geopolitics was "new". According to them (Mitchell, J. et al,1996:2-3 quoted in Yu and Dai,2012:97), this was due to a number of factors, including: (1) with the end of the Cold War major constraints on the free action of the United States in the Middle East and other regions of the world was lifted; (2) international energy trade was transformed by Russian oil and gas resources, and by the integration into the world system of other former Soviet countries; (3) the importance of natural gas increased with the development of technology and its share in the energy sector (Campos & Patrício Fernandes,2017:29-30).

however, only a few authors have attempted to clarify the concept of energy Geopolitics. One of them was Philip Andrews-Speed (2016), who pointed out that "energy geopolitics refers to the study of national security and international politics in the context of the global energy scene. For this author, the key factors to the energy Geopolitics embrace the "instability in oil-producing regions due to domestic, regional and international factors, the rise of national oil companies, resource nationalism, reserve depletion among traditional suppliers, and the opening of new sea routes, to name a few" (Speed,2016).

Luke Kerr Oliveira (2015), in his analysis of the energy geopolitics of emerging economies, contends that the Geopolitics of Energy can be understood as the analysis of all the geopolitical and strategic elements that influence the control of energy reserves, exploration technologies, energy infrastructure, transport and end use of the energy resources (Oliveira,2015: 6). In Oliveira's definition of the concept, the variables of the analysis of energy geopolitics are: (1) the geographic location and distribution of the main reserves of energy resources and of certain types of energy resources; (2) the geographic location of the exporting and importing countries and of the large consumer and producers centres; (3) the role of geopolitical and strategic disputes of energy resources between importing and exporters States or disputes between large energy consumers; and (4) the strategies adopted by countries, group of countries or major powers to ensure their own Energy security or influence other countries in the energy field. In turn, Contant and Gold (Lorentz and Rodriguez,2016) emphasize variables such

as geographic location, supply lines, technology and processing facilities and factors that impact supply and demand, such as the analysis of reserves, processing, new discoveries, increased consumption and research, and energy technology (Campos & Patricio Fernandes,2017:30).

Energy security refers to production and consumption of energy (in particular oil and gas) continuously, in a way that there is no obstacle in extracting, producing and transporting. Energy security includes different issues like increase in the world demand and higher dependence on production markets, security of supply, transmit and protection of pipelines, secure energy resources, fair energy prices, climate changes and environmental degradation resulted from fossil fuels and alternative energies. Imbalance between energy supply and demand threatens energy security of the world. Hence, security of energy is an essential issue for modern economies, and they depend on energy import and their long term economic planning depends on stability of access to energy (Mehrabi & et.al,2013:38). So, energy security is an important factor in economic-political behaviors of the states and international security policies (Ebingher, 2007:2).

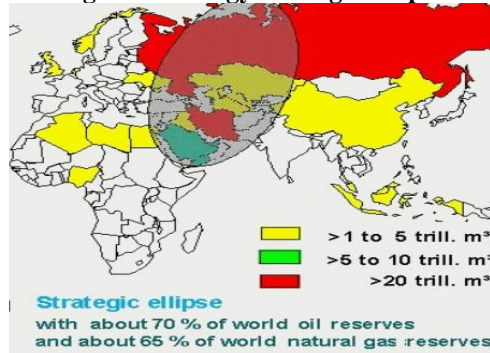
Central to the study of energy geopolitics is the concept of energy security. There is no universal concept of energy security. In fact, there is a multiplicity of concepts. The International Energy Agency (IEA), the pioneer institution in energy security issues, defines energy security as “the uninterrupted availability of energy sources at an affordable price” (IEA, 2017). Energy security is a global challenge and a priority to the international agenda. The dependence and the effects of excessive consumption of fossil fuels have led to the development of cleaner and more sustainable strategies, involving more and more actors. National and international institutions play a key role in implementing these strategies. The European Union, for example, has been one of the main institutions to encourage Member-States to increase the share of renewable energy in national energy mixes and developing more green technology. In addition, the citizens themselves are important actors in terms of energy efficiency, since small changes in behaviour on a daily basis, such as choosing a more efficient household appliance, for example, can have a great impact in the future of the energy scenario (Campos & Patrício Fernandes,2017:31).

energy security has different meanings in different places. For countries that are highly dependent on imported oil and gas, energy security concerns tend to focus on supply. In contrast, security of demand is primarily an issue for

countries with economies based on exported oil and gas. In other words, energy security for energy exporting countries refers to continuous access to international energy markets for the sale of energy resources, while energy security for importing countries refers to assured access to a continuous supply of energy at affordable prices in order to maintain economic growth and social progress (Alsaad,2014). This is the most significant difference between the energy security perceptions of energy importers and energy exporters (Energy Charter Secretariat,2015). Simply put, energy security may imply stable energy flows for energy importers, but stable energy revenues for exporter countries. The oil crisis of the 1970s exemplified stability of energy flows, whereas the political and economic developments of the 2010s emphasized stability of energy incomes (Aydin & Azhgaliyeva, 2019:3-4).

The world demand for energy is increasing due to increase in life quality standards (Coyle & Simmons,2014:27). Economic and sufficient energy likes blood in modern civilization veins, for this reason, fluctuations in oil and other fuels prices worries the world leaders. Global demand for energy is increasing in particular in the states like China and India. IEA put that the need for energy will increase up to 50 percent until 2030. If use of oil continues with current trend, the world resources will be finished 42 years later. Specialists believe that it takes some decades to be finished world oil resources, and the states should benefit from the time to find a long term and suitable strategy for energy issue. So, energy crisis and the following consequences are among the most important threats that the states are faced (Yazdani & Touiserkani,2011:150). Economically geographical, Central Eurasian energy resources are among valuable resources for Eastern and Western states and it is also an option in the way of diversification of energy import which not only it has not been decreased during the time, but also increase in demand in line with capital accumulation and increase in demand have made inevitable increase in supply of energy. Meanwhile, Caspian Sea oil and gas potentialities have received many attentions and this is in a situation that the most of Central Eurasian energy resources have not been developed (Yazdani & Touiserkani,2011:157). Figure 1 shows energy strategic ellipse.

Figure 1: Energy Strategic Ellipse

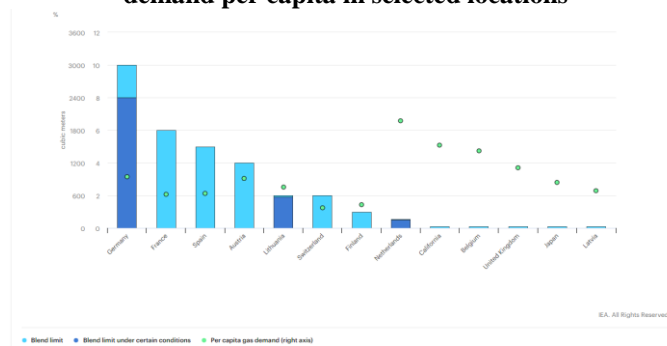


Source: (<http://www.cambridgeforecast.org>)

This region is one of the most important gravity centers in international geopolitical relations which have 61.5 percent of the world oil, and Saudi Arabia and Iran share of 22 and 11.5 percent of the world oil, respectively (EIA,2009:10).

Decrease in oil and gas reserves is a fact that has been accepted by world markets (Derakhshan,2012:160). So, energy crisis has become to a great problem for the states. An energy crisis results from price shock which is manifested by increase in energy prices (Emadzadeh & et.al,2003:99).

Figure 2: Current limits on hydrogen blending in natural gas networks and gas demand per capita in selected locations



Source:(IEA,2019)

Based on the conceptual framework presented above, the concept of the energy geopolitics, as outlined in this article, is the study of the interactions between all the actors involved in the global energy scenario, as well as the influence of energy and all the variables.

3. The Research Method

The research is descriptive-analytic in terms of its nature and is applied in terms of its goal. Beside of accurate imagination from energy geopolitics, the role of energy in Iran and European States relations will be investigated. Data gathering procedure is based on library findings and statistics of energy related institutions.

First, political and economic contexts are analyzed in relation to geographical areas defined by energy resource information. The next stage explains the interaction between policy decisions and actions and the existence of energy resources as well as the potential of energy resources in interstate relations. Investigating energy communications at international, global or regional level:

- Classification of leading countries by proven reserves of natural gas.
- Collect quantitative and qualitative data on energy scarcity, export and import of energy resources, especially gas, and some policy decisions.
- Analyze the competition of powers to obtain energy resources.
- Analysis of sanctions on countries selling energy resources of Iran.
- Aspects of European energy security have been analyzed in relevant policy decisions, especially with Russia
- Using maps, energy transmission routes, especially gas, have been identified.

This article seeks to emphasize the critical importance of factors such as the need, acquisition and use of energy resources in the formulation and implementation of international policies. This article seeks to determine which country is the best option for EU gas supplies in the next decade. In this regard, the present paper attempts to collect a set of data and, using an efficient and effective analytical method, reveal the facts / events related to geopolitical energy and energy security at international level, in particular the EU energy security. Make. This theoretical scheme is closely linked to the shaping of national and international policies. This serves as an alternative to a more accurate and realistic representation of the ways geopolitics and economics interact with geoeconomics.

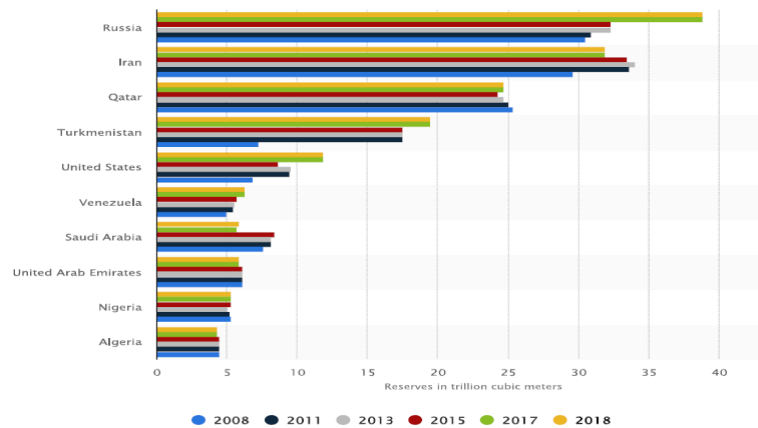
As the first epistemological approach, our priority was to seek a set of scientific criteria that could be met by geoeconomic studies that could be analyzed on the basis of a series of international events affected by energy resources.

4. The Research Findings

4-1. Potential Gas Superpower

Fossil fuels share of 80 percent of energy needs of the world. Nuclear energy and hydroelectricity and renewable energies share 6, 6 and 1 percent in supplying energy of the world, respectively. Based on the forecasts, fossil fuels will be dominant forms of energy until 3 decades later and oil producer states situation will be promoted at least for 3 decades later. It is forecasted a growth in Persian Gulf oil produce from 24.4 million barrels per day in 2005 to 49.8 million barrels per day in 2020, namely up to 14 percent increase in Persian Gulf share. Oil produce and export, the role of economic growth and population growth, investment rate and the level of risk appetite are among the factors which show that oil is not mere economic goods, but it is a modern and security factor (Karimi Soltan Ahmadi,2010:142-3).

Figure 3: Leading countries by proved reserves of natural gas from 2008 to 2018

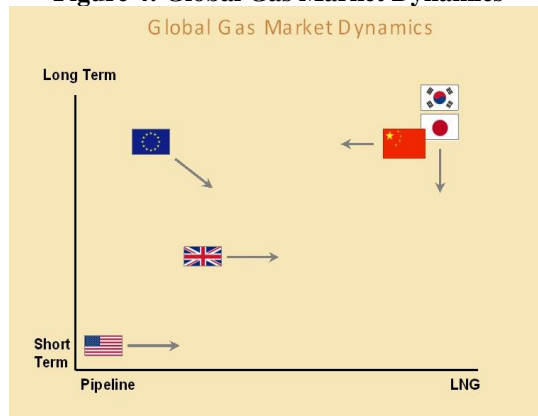


Source: (BP, Statistical,2020)

At least, until 20 years later Persian Gulf will be the heart of energy pole of the world. Persian Gulf and Caspian Sea are located at a region called energy strategic ellipse. Persian Gulf region is important than Caspian Sea in terms of energy reserves. The estimates show that until 2015, about 65-70 percent of the world oil reserves and 35-40 percent of world gas reserves was in Persian Gulf region. OPEC members produce about 43 percent crude oil of the world and the members share of two third of the world oil reserves, and Persian Gulf share of two third of these reserves (Karimi

Soltan Ahmadi,2010:142-3). In this relation, the EU dependence on imported energy is about 50 percent, and if fundamental changes are not occurred in the domain of energy consume, the dependency rate will be increased to 75 percent. During this period, the EU dependence on the Middle East gas is about 40 percent that will increase up to 66 percent, until 2030 (www.dni.gov). In this situation, Persian Gulf resources will attract more attention of great powers.

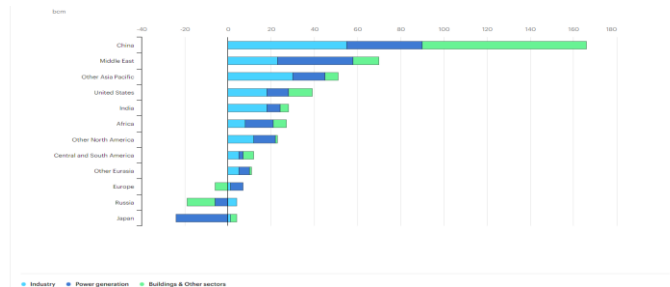
Figure 4: Global Gas Market Dynamics



Source: (CIEP,2008)

Finally, as we expect the sellers’ market to continue for the foreseeable future, the main challenge for Europe will be to capture as many new supplies as possible, be it as LNG or by pipeline. The market will not have the luxury to choose, even if there was such a thing as an optimal balance (CIEP,2008:55).

Figure 5: World natural gas consumption growth for selected countries and regions, 2018-2024



(Source: IEA,2019)

Table 1. Top 10 Gas Reserving Sates in 2017

Rank	Billion Cubic Feet	Country
1	Russia	1.688
2	Iran	1.91
3	Qatar	850
4	The US	339
5	Saudi Arabia	311
6	Turkmenistan	266
7	UAE	215
8	Venezuela	203
9	Nigeria	193
10	China	192

Source: (EIA,2018)

As table 1 shows, Iran, Russia and Qatar have the biggest gas reserves, and these states can be effective on the world mainstreams and make other states dependent to themselves in line with their national interest. It should be cleared that Iranian politicians should benefit from the resources in a way that it guarantees the state survival, not alternatives to export oil and gas, because Europeans needs Iranian gas resources, and Iran can benefit from these resources to control the sanctions and promotion of economic situation of the country.

Figure 6: Gas Exporting Countries Forum

Source: (CIEP,2008:31)

Regarding the figure 6, Russia (7.165 Billion Cubic Feet), Qatar (4.861 Billion Cubic Feet), Norway (4.165 Billion Cubic Feet), Canada (2.91

Billion Cubic Feet), Netherlands (700 Billion Cubic Feet), the US, Algeria, Turkmenistan, Malaysia, Australia, Germany, Indonesia, Nigeria, Trinidad and Tobago and Bolivia are the top 15 exporter of gas. Iran is ranked 23th in gas export with 0.313 Billion Cubic Feet. Iran is ranked among top three gas reserving states, but is ranked 23th in gas export.

Table 2. The states with oil and gas reserves in the Middle east

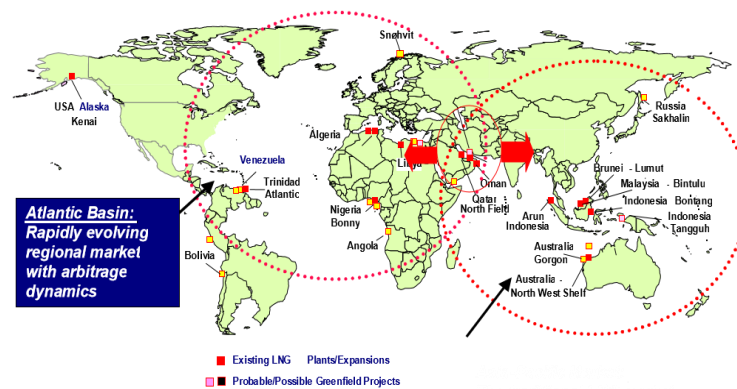
No.	Country	Oil Reserve (Billion Barrels)	Gas Reserving States (thousand barrels per day)
1	Saudi Arabia	266	12090
2	Iran	158	4669
3	Iraq	143	4462
4	Kuwait	102	2928
5	UAE	98	3721
6	Qatar	25	2068

Source: (BP Statistical review, 2017)

After Russia, Iran and Qatar are ranked in second and third ranks, respectively with more than 44 Billion Cubic Feet and 25 percent of the world gas reserves. Iran has 17.5 percent of the world natural gas reserves with more than 28.8 Billion Cubic Feet, and Qatar has 14.4 percent of the world natural gas reserves with more than 25.60 Billion Cubic Feet (BP, 2008:22). Also, North Dome of Qatar gas field is the world biggest gas field which has 380 Billion Cubic Feet in place gas and 239 Billion Cubic Feet recoverable gas. South Pars Gas Field has 280 Billion Cubic Feet gas, and even some estimates forecasted about 500 Billion Cubic Feet gas and 17 Billion barrels' liquids for this field (Azari & Ebrahimi,2007:149-50). Based on IEA, the world gas reserves by 1.6 percent annual growth will reach to 152.7 Trillion Cubic Feet as an alternative for oil. From 178.3 Trillion Cubic Feet of the world proven reserves, Persian Gulf region host 73.2 Trillion Cubic Feet, namely 41 percent of the world gas reserves. In current millennium, natural gas has strategic importance as an economic and primary good for petrochemicals. Petrochemical industries produce different essential and consumer goods (Lawrence,1981:33). Regarding that the natural gas is a pure energy, global demand for it has been increasing, and based on some estimates demand for natural gas is more than oil in the world, and the demand for natural gas will be increased from 100 Trillion

Cubic Feet in 2010 to 182 Trillion Cubic Feet in 2030. Regarding that gas export requires huge investment in establishment of infrastructures and transition in liquid form and also energy transmission lines, the investment in these states is increased.

Figure 7: Geography of the natural gas market



Source: (CIEP,2008:31)

4-2. The Role of International Sanctions on Iranian Gas Exports

Energy and foreign policy are often inextricably intertwined, but the ability for policymakers to use energy resources as a tool of targeted foreign policy leverage, or even dominance, is misguided. Very rarely do energy resources alone matter enough to override the many economic, political, security and philosophical disputes that underpin relations between and among countries. Energy can certainly be used as one tool among many to implement a strategy to influence another actor's behavior. Indeed, energy is one of the sectors targeted in our many sanctions regimes against North Korea, Iran, Russia and Venezuela (even when done through financial sanctions). But in each of those cases, the sanctioning of energy investments or resources as part of a broader strategy has yielded mixed and inconclusive results to the crises or stand-offs we face in each country (Ladislaw,2018:5).

After more than two weeks of negotiations, Iran and the P5+1 namely, the US, Russia, China, the UK, France and Germany, announced on July 14, 2015 that they had reached a Long Term Joint Comprehensive Plan of Action (JCPOA) which would scale back Iran's nuclear capabilities for more than ten years. In return, the P5+1 committed to significant easing of

the sanctions on Iran's energy (mainly oil) and banking sectors, albeit only after the IAEA issued its final report, scheduled for December 2015, verifying Tehran's compliance with the obligations under the JCPOA. Although Washington cautioned that the sanctions could be reimposed if Iran went back on its pledge or did not adhere to the terms of agreement, the agreement set the ball rolling for unravelling of the sanctions that had taken a huge toll on the country's economy, signalling the return of Iran to the international community. Already, reports of contracts with European and Asian firms being signed are emerging, but even as some American companies were said to be getting ready to head back to Iran, the new US administration under President Donald Trump imposed sanctions on dozens of Iran-linked individuals and entities following an Iranian ballistic missile test, which include financial and banking sectors and will freeze the US assets of the entities, both Iranian and others, that have assisted Iran's programme, with threats of more sanctions to follow. However, the new sanctions did not mention the nuclear deal and therefore does not have a bearing – at least at the time of writing – on non-US companies interested in Iran's energy sector. However, Iran will have to overcome several challenges before it can resume its status as a leading energy producer and exporter. More importantly, Iran's return occurred at a time when the energy market is oversupplied (Dadwal,2017:63).

With the advent of shale oil from the US as well as from new sources, leading to an oversupply of the oil market and the resultant plunge in prices, the Iranian government has the option of turning to its natural gas resources to earn revenue, and position itself as a major energy power player. A section of the government, the moderate section, are of the opinion that establishing linkages through gas export pipelines with regional and international markets is a key foreign policy strategy in order to strengthen its bargaining power in the global political arena. By making importing countries dependent on Iranian supplies, Iran would be in a position to have the advantage in future negotiations (Hassanzadeh,2014:127). In fact, one of the main reasons for pushing for the gas pipeline project to Pakistan and India (IPI) was to maintain its relevance as a major energy supplier in the international energy market.

With the removal of sanctions on Iran related to its nuclear program, expectations have increased that Iran could serve as a future natural gas supplier to Europe. Iran possesses the second largest natural gas reserves in the globe and its physical proximity to Europe endows it with the capacity

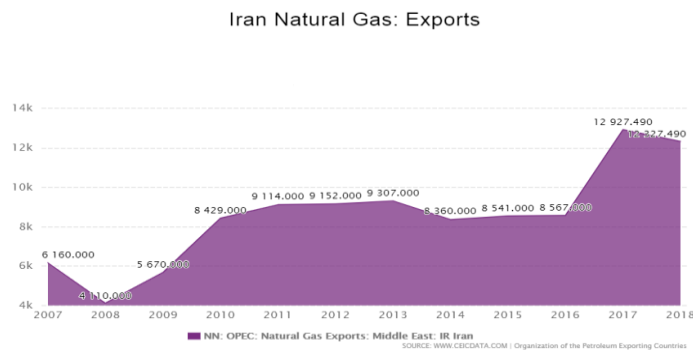
to reach markets there by pipeline. In fact, EU policy documents reflect this anticipation. In April, the EU's foreign policy arm the Directorate General for External Policies published a study of the EU's natural gas import options in light of the Ukraine crisis and concluded "Iran is a credible alternative to Russia." (Brown & Shaffer,2016:20).

While indeed sanctions removal will facilitate Iran increasing its gas production and export prospects, significant export to Europe is still many years away. The main obstacle slowing Iran's entry into Europe's gas markets is the need to produce more gas. Iran is a significant natural gas producer, generating 160 billion cubic meters a year, third globally behind just Russia and the United States. Its output constitutes about 35 percent of annual EU gas consumption. However, despite its vast production, Iran is a net gas importer, importing gas from Turkmenistan and Azerbaijan, while it exports a bit less to Turkey and Armenia. And, these existing exports are not stable. Iran frequently cuts gas supplies to Turkey, often creating shortages there, due to domestic gas shortages, especially during winter. The most recent extended gas disruption from Iran to Turkey was on December 9, when Iran halved its gas supplies to Turkey (uk.reuters.com).

Iran's export prospects are hindered by its domestic consumption. Iran's energy fuel mix is unique: natural gas comprises a larger proportion of its total fuel mix than any other country in the world. Iran's high natural gas consumption rate is due in part to its very low domestic gas prices and thus low energy efficiency. But, in part the high gas consumption is a reflection of policy that encourages utilization of gas. An additional further impediment to Iranian gas export to Europe is Moscow's anticipated response. Russia would take steps to block Tehran's entry into European markets, as it has done in the past. In 2007, when Tehran inaugurated gas supplies to neighboring Armenia, Russia's Gazprom immediately bought up the pipeline project within Armenia and built it with a small circumference to preempt its future use for transiting gas to European markets. Moscow and Tehran could also find themselves competing for gas market share in neighboring Turkey, further complicating their relations (Brown & Shaffer, 2016:21). Last but not least, as underlined by several Iranian officials, the Iranian nuclear programme may end up being a peaceful programme after all. This path comprises a variety of scenarios. First of all, it is highly probable that if Iran starts to satisfy domestic energy needs through nuclear energy, it could help to increase Iranian gas and oil exports to third parties. In general, using nuclear fuels involves cutting the import costs of

alternative fuels and also means cutting the share of energy needs that must be met by oil and gas. 86.5% of the total installed capacity of power plants in Iran uses fossil fuels, which is not economically sustainable and causes long-term environmental degradation. As stated by Ghorashi, “the diversification of energy generation by various energy sources is a secure method of planning national energy policy, in which the NPP hold a substantial unavoidable share.” To secure Iran’s sustainable energy development, a 15,000 MW nuclear power plant is projected to be constructed within 30 years. According to Ghorashi, this prediction well-justifies the Iranian parliament’s resolution to require the government to plan for the installation of a 20,000 MW nuclear power plant within 30 years (Ghorashi,2007:1647). In this case, replacing fossil fuels with nuclear fuels will help Iran to generate more capacity for oil and natural gas exports and to benefit from economic development. In sum, a peaceful nuclear programme, which aims at constructing nuclear power plants to generate energy for domestic use, will be the best-case scenario. In this case, Iran will have more surplus oil and natural gas reserves to ease both Asian and European states’ concerns about diversifying their energy suppliers. Second, as a result of the diplomatic approach to Iran and to prevent tensions with the US throughout the nuclear negotiations, Iran might see the EU as one of its most preferred energy partners. Furthermore, the confirmation of Iran’s nuclear programme as a peaceful one will pave the way for the end of economic sanctions and ease the US’ European and Asian allies’ dilemma of purchasing Iranian oil and gas at the expense of their relations with the US (Balamir Coskun,2009:195).

Figure 8: Iran Natural Gas: Exports



Source: (www.ceicdata.com,2020)

4-3. Iranian Natural Gas and Energy Geopolitics

Iran is known as the most important state in the Persian Gulf and also a key and main player in energy geopolitics. So, beside of geopolitical value, it has special geoeconomic capabilities. Among the Middle East states, Iran has about 40 percent (38.49 percent) of gas resources and about 20 percent (18.32 percent) of crude oil resources, and it is seemed to be one of the most important energy partners of the EU. The need of Europeans to Iran's gas resources and Iran's need to the EU market is a necessity that has political and economic interest for the two sides (Mahdian,2010:126).

If Iran is elimination from Europe gas pipeline projects (like the case of Nabucco), not only Europe will be faced with problems to meet gas needs, but also the possibility of gas transmission through Iran's territory will be challenged and Qatar and Turkmenistan gas transmission thorough Iran will be suspended. In this situation, beside of energy import from Iran, transmission of gas thorough Iran to Europe will be suspended (Seifi,2009: 18). Iran is the most economic and the closet route to transmit energy of the region, and railway network of Iran can transit about 20 million tones of goods which can be increased to 200 million tones. From the other hand, Iran has a key role in main routes of the region like Silk Road, Trans-Asian railway, Trasca and North-South corridor. Iran and Central Asian economies have complementary nature and there is a huge potentiality for growth (Ezzati,2013:16-7).

Figure 9: Geoeconomic Location of Iran



Source: (Golkarami & et.al,2018:49)

For years, the sanctions imposed on Iran had only a limited impact on the country as several countries continued to do business with the Islamic Republic. However, two factors eventually led Iran to the negotiating table to thrash out an agreement that would be palatable to both parties, viz., Iran and the Western countries led by the US – Iran’s increasing economic problems due, in part, to decades of sanctions, and the over-supply of oil and gas in the energy market due to the shale revolution and the consequent fall in oil prices. On the other hand, for the US, the prospect of energy independence, and the return of Iran to the international community would allow Washington more leverage over Saudi Arabia. Moreover, for years, the EU has been looking for alternative supply options to Russian gas, and Iran has the wherewithal to become a reliable alternative to Russia as a gas supplier to Europe. In April 2015, the EU’s Directorate-General for External Policies published a study of natural gas import options in light of the Ukraine crisis and concluded that “Iran is a credible alternative to Russia (Shaffer,2015). Although there is no pipeline network that currently fully connects the Iranian gas grid to Europe, several options already exist. It is already connected to Turkey via the Tabriz-Ankara pipeline. This section transports gas from the South Pars gas field to the city of Bazargan at the border of Turkey. Iran is strongly bidding for the continuation of the pipeline network with the construction of the ‘Persian Pipeline’: a 3,300 km network system which crosses Turkey before reaching Italy where it splits into a northern and southern section, transporting gas to Germany, Austria, Switzerland, France and Spain. The capacity of the Persian Pipeline is estimated at around 37-40 bcm per year and would require foreign investments of around \$7 billion. The route would bypass Russian territory and allow the EU to import 25-30 bcm per year, that is, equal to Russian gas export to Italy and Germany. Another long-term energy delivery option for Iran to Europe would be via LNG at an estimated export capacity of up to 10 bcm a year with supply being transported through a pipeline system to the Omani LNG hub and then shipped via cargos to the Mediterranean seaports (Shirvani,2015).

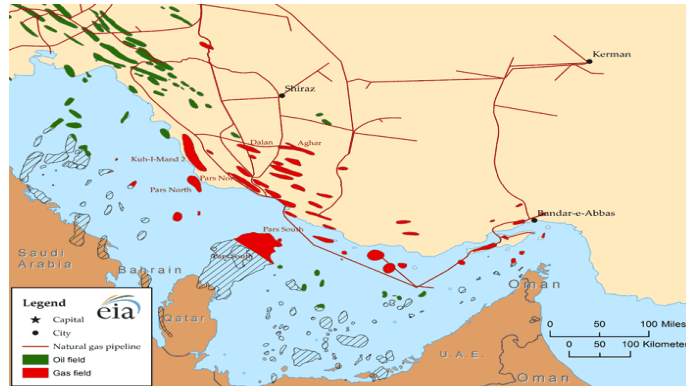
For Iran, entering the European gas market is important. Huge gas reserves exist in the Iranian sector of the Caspian Sea, which however, are located in the deepest point of the Caspian and Iran does not have the required advanced technology for extraction. Therefore, Iran is eager to attract European energy companies into its energy sector. Some of the potential routes that are being considered are through a pipeline that would pass

through Turkey which imports about 9 bcm a year. Iranian gas supplies could be connected with Turkey's TransAnatolian Pipeline (TANAP) to Europe, although negotiations with the TANAP consortium have not been held. Russian firms have also expressed interest in Iran's gas development projects, with reports that Gazprom has recently signed a letter of intent with NIGC. Iran too has welcomed Russian participation in the \$2.5 billion construction of a pipeline known as IGAT-9, a 35 bcm a year line that plans to supply gas from the South Pars field to Europe via Turkey. At the same time, Iran is also looking at LNG shipment to Europe once they acquire the technology (Dadwal,2017:74).

For both sides, this could become a win-win situation. Establishing itself as the EU's long-term gas supplier would be a highly lucrative avenue worth exploring, particularly as the recent fall in oil prices is having an impact on the government's budget. On the other hand, for the EU, decoupling from Russia's gas supply monopoly would be possible by obtaining Iranian gas, thereby solving its main energy supply dilemma. According to a study by the European Parliament, Iran's export capacity is more than 150 bcm per year, which could eventually rival Gazprom's export volumes of 140 bcm per year to the EU (Shirvani,2015).

Another long-term energy delivery option for Iran to Europe would be via LNG. Iran is planning to construct smaller LNG production, including floating LNG (FLNG) units, and hopes to export gas to Europe, either through Oman or directly as LNG. France's Total is reportedly in talks to buy a stake in Iran's partly-built LNG export facility and is planning to commit \$2 billion to develop the 11th phase of the South Pars field by the summer of 2017, provided that no new US sanctions are imposed (Vukmanovic & Felix,2017). In gas sector, Iran with 6.1168 Trillion Cubic Feet shares of 15.9 percent of the world gas reserves that will be lasted for 100 years later (BP,2012:22).

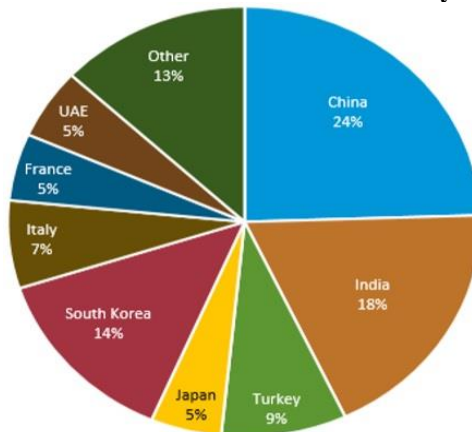
Figure 10: The main Gas Fields of Iran



Source: (EIA,2018)

As Figure 10 shows, the main gas fields of Iran are as follows: North and South Pars, Imand Mountain 2, Dalan and Aghaz. Iran oil and gas export reached to 2.5 million barrels per day in 2017 which is more than the world average about 0.2 million barrels per day. China and India imported about 43 percent Iran energy export, and South Korea and Turkey share have been increased during the time. Iran continued to export its oil after JCPOA. Before 2011 and 2012 sanctions on Iran, Europeans had bought and processed crude oil from Iran, but they stopped oil import from Iran in 2012. In 2016 and 2017 some European states started to import oil and gas from Iran including Croatia, France, Greek, Italy, Malta, Netherlands, Poland and Spain (Ansari & Ghorbani Sepher,2020:125).

Figure 11: Iranian Crude Oil and Condensate by Destination



Source: (EIA,2018)

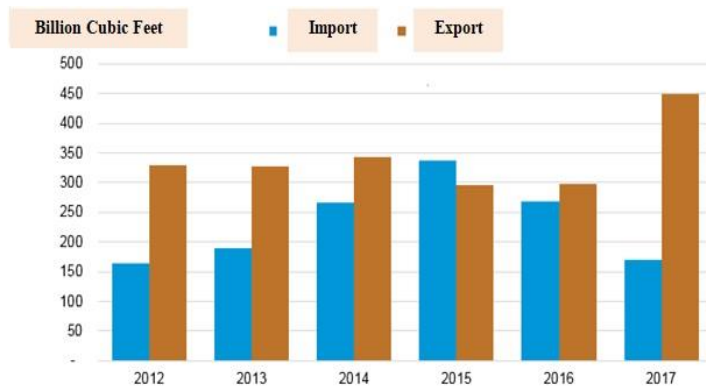
Figure 12: Natural Gas Production in Iran, 2007-2017



Source: (EIA,2018)

As figure 12 shows, Iran gas production have been increased from 6 trillion cubic feet in 2007 to 9.5 trillion cubic feet in 2017 that its highest amount is related to supplying, oil recycling and exploring, respectively.

Figure 13: Iran’s Natural Gas Pipeline Imports and Exports (2012-17)



Source: (EIA, 2018)

As figure 13 shows, Iran gas import increased from 2012 to 2014 and reached to 34 Billion Cubic Feet and also reached to 350 Billion Cubic Feet in 2015. The trend was descending in 2016 and 2017 and reached to less than 200 Billion Cubic Feet. Also, Iran gas export increased from 2012 to 2014 and reached to 350 Billion Cubic Feet and reached to less than 300 Billion Cubic Feet in 2015 and 2016. In 2017 the trend was ascending and reached to 450 Billion Cubic Feet.

First, it will need \$100 billion to rebuild its gas industry. More importantly, it will need the technology to not only get the longneglected fields to ramp

up production above the current 173 bcm, but also to construct LNG liquefaction plants. Currently, Iran has only a half-built LNG export plant. Moreover, Iran lacks the pipeline network required for exports. In the fourth 5-Year National Develop Plan (2005-2009), the country had plans to produce 70 million tonnes of LNG from the South Pars, North Pars, Ferdosi and Golshan gas fields by launching six LNG production facilities. However, all of these projects were cancelled after the withdrawal of several international oil companies, including France's Total, Spain's Repsol, the UK and Holland's Royal Dutch Shell, Malaysia's Petronas and Petrofield LNG Co., China's SINOC group and CEPA as well as Poland's PGNiG. However, with the departure of the Western firms, the inability of Iranian and Chinese contractors, who had agreed to provide the requisite technology, were unable to complete the projects and, as a result, Iran's LNG projects were delayed. Now, with Total reportedly in talks to buy a large stake in Iran's partly-built LNG export facility in South Pars, Tehran is hopeful that the ability to produce and export LNG will be possible in the near future (Dadwal,2017:77).

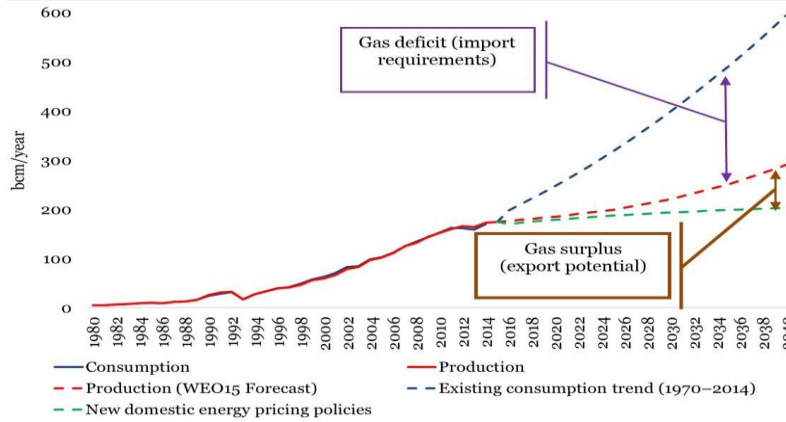
No doubt there is strong support for the entry of Iranian gas into the market, particularly from Europe, which sees Iran as a viable alternative to Russian supplies. As the EU's energy commissioner, Miguel Arias Cañete, said, if all concerns over Iran's nuclear programme are fully addressed, there could be growing cooperation between the EU and Iran, including on energy matters, which would allow investments in Iran by EU firms, which in turn, would open up additional sources of energy supply. Nevertheless, it is unlikely that Iranian gas will be flowing to Europe anytime soon (Katakey et al,2015).

A lifting of sanctions on the Iranian oil and gas industry would also have a number of geopolitical ramifications. Despite Russia's apparent support for Iran, many issues of strategic competition between Tehran and Moscow may resurface, including in the sphere of gas markets, with Moscow taking steps to block Tehran's entry into European markets, as it had done in 2007, when Tehran inaugurated gas supplies to Armenia, prompting Gazprom to build the pipeline project within Armenia with a small circumference to preempt its future use for transiting gas to European markets (Dadwal,2017: 78).

Finally, there is no guarantee that the sanctions will be lifted in the near future. Although the sanctions were lifted in January 2016 after Iran dismantled significant elements of its nuclear programme, Iran is not

completely out of the woods. After Iran tested a ballistic missile at the end of January 2017, the current US administration under Donald Trump, enacted new sanctions on Iran a week later. Some 25 individuals and companies connected to Iran's ballistic missile programme and those providing support to Iran's Islamic Revolutionary Guard Corps linked to the programme were slapped with bans on banking transfers. However, the new sanctions strike at specific companies and arms traders from Iran to Lebanon and China, and despite Mr Trump's declaration that he was considering scrapping the JCPOA or the nuclear deal itself, it continues to stand, although the US has hinted that it may impose more sanctions. Therefore, as of now, Iran is gearing up to increasing its natural gas (and oil) production to pre-sanctions levels, with several European oil and gas companies showing interest in doing business with the Islamic Republic. But the prospect of millions of barrels of Iranian gas entering the market at a time when the market is over-supplied could stave off a price recovery for a longer time. Hence, Iran would, in all likelihood, be able to develop significant export capacity only in the long term, that is, beyond 2020, while LNG exports could take even longer. However, Iran's limited gas exports are not the problem. In fact, from a macro-economic point of view, it may be more valuable for Iran to export gas and energy in other forms, such as electricity or products of gas-based industries such as petrochemicals, steel, cement and aluminium. The main problem is with Iran's domestic pricing regime and low energy efficiency. Although Iran has attempted some price correction through subsidy reforms with some success, residential and also industrial consumption remains high. Therefore, in order to achieve its potential, the government will have to draft a comprehensive strategy for the gas sector and related industries. An appropriate gas pricing strategy will be one of the success factors. Furthermore, Tehran has to attract the latest technologies to all subsectors of the gas value chain (from upstream to midstream and downstream), gas-based industries and most importantly, energy efficiency. If all of the above are addressed, Iran will be on its way to becoming a significant hub for energy production and energy-related exports on an international scale, provided it succeeds in overcoming the challenges of meeting domestic requirements and an over-supplied market (Dadwal,2017:82-83).

Figure 14: Iran’s natural gas consumption and production



Source: (Chyong,2016:59)

However, should further policy reforms of energy subsidies be implemented thereby moderating gas consumption and creating spare capacity which could be exported (compare red with green lines: figure 6), we could reasonably expect that most of Iran’s new gas production would be sold to neighbouring countries and to its domestic customers. For example, the domestic market can take most of gas coming from the South Pars (Iran’s largest offshore gas field, accounting for ca. 40 percent of its entire proved gas reserves). Gas coming from new South Pars phases 12, 15 and 16 will most likely consumed by Iran’s power sector while gas coming from other South Pars projects could potential be exported to neighbouring countries via pipelines (Adolff et al,2015).

Therefore, it looks likes that Iran will become (in a rather optimistic scenario) a regional pipeline gas supplier with marginal volumes sold as LNG and any sustainable volume that may come out of Iran to the international markets depends on (i) Iran’s growth in gas (Chyong,2016:60-61).

4-4. Europe Dependence on Iran’s Gas and the Role of Russia in this Relation

From a fuel that was used in regionally disconnected markets, natural gas was projected to take over as the fuel of choice for many consuming nations across the world. Its versatility and the fact that its carbon emissions are lower than either coal or oil, makes it well placed to be the ‘bridge’ or transition fuel between fossil fuels and renewables. Between 1990 and 2010, the share of gas witnessed a rise in demand, particularly in the emerging markets of the Asia-Pacific region, including China, and the West Asian countries, partly due to increasing environmental concerns as well as

abundant supplies. In fact, natural gas succeeded in increasing its market share by 60 percent during this period. But although the International Energy Agency (IEA) remains optimistic over the future of gas, the dilemma for gas producers and exporters is two-fold: how to make gas more competitive and thereby increase its share in national energy baskets as against coal; and second, to increase its share in the transport sector vis-à-vis the current leader oil and future electric vehicles (EVs) (Dadwal,2017: 177).

In the 2000s Russia was aiming for strategic control over energy infrastructure in Eurasia and Europe. (Cohen,2009:93). Pipelines are essential to Russia (see Figure 15) and it has worked to enhance its role in exports to Europe. This could also be seen as thwarting projects that would reduce its role in exports to Europe. As both a transit country and an importer of Russian gas, Ukraine brought pipeline politics to the fore in 2006 when it tried to align with the West instead of Russia. This led to a Russian-Ukrainian dispute over gas pricing and unpaid debts, in which Russia referred to its action in cutting off gas supplies as helping Ukraine to 'adapt to the market' (Cohen,2009:93). Ukraine's leverage at the time was that Russia needed it for its exports to Europe, since about 80 per cent of Russia's exports to Europe went through pipelines in Ukraine. As a consequence, 'pipeline politics...was elevated to the geopolitical level. According to the Russian Energy Strategy to 2030, from 2009, Russia's aim has been to increase its exports to Asia and export directly to customers, thereby avoiding the problems associated with transit countries such as Ukraine. When the Nord Stream pipeline opened in 2012, Ukraine became less important as a transit route. Russia has a number of gas export projects planned, including an additional pipeline in the Baltic, Nord Stream 2. However, the intention may not be to complete all of them, at least according to one Finnish analysis. Chapter 4 delves further into Nord Stream 2 and its consequences for transatlantic relations (Rossbach,2018: 37).

Figure 15: Major Russian pipelines and installations



Source: (Rossbach,2018:38)

Europe is one of the largest natural gas markets in the world, and it is the world’s largest import market (Goldthau,2013:6).

Preoccupation with the security of European gas supplies has been steadily increasing over the past decade due to a complex set of causes:

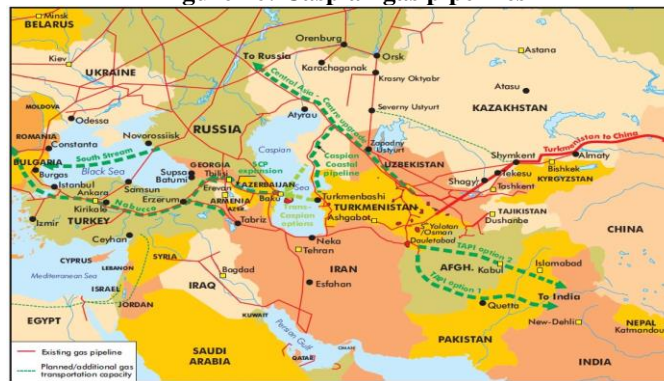
- The enlargement process has brought into the Union countries that are highly (in some cases, wholly) dependent on a single supplier, i.e., Russia.
- Projects to bring additional gas by pipelines from sources different from Russia have not made the expected progress.
- Recurrent conflict in gas relations between Russia and Ukraine led to two interruptions in gas flows to the EU, in 2006 and again in 2009.
- The Russian occupation of Crimea and covert military intervention in Eastern Ukraine since 2014 has raised questions on the reliability of all Russian gas supply routes, including pipelines that do not cross Ukraine (Luciani,2016,116).

In January 2006, Russia stopped gas transmission through Ukraine to Europe which alarm sounded for Europe. This was repeated by Russia in January 2009 which was confirmed the necessity of diversification strategy for Europe. Baytex Energy transmission line between Azerbaijan and Turkey paved the way for the project of Nabucco. Nabucco gas pipeline international includes Turkey, Austria, Bulgaria, Romania, Hungary and Germany. The operator intends to find stable, secure and safe resource to supply gas needs of Europe. Nabucco exploring project characterized two great potential gas suppliers including Azerbaijan, Turkmenistan,

Kazakhstan and the Middle East states including Iran, Iraq and Egypt. Geopolitical investigations by Nabucco showed that Turkmenistan and Kazakhstan depend on Russia to export gas to Europe, which increase in Europe dependency on Russia. Also, Turkmenistan and Kazakhstan were inclined to export their gas to China. But, Iran has some Appropriate indices to supply Europe's gas needs. These are as follows:

1. Iran and Europe pipeline connections lack of Europe and Caspian Sea and the Middle East geopolitical challenges;
2. Iran gas reserves is not comparable with Azerbaijan, Egypt, Iraq and Kazakhstan;
3. Geographic distance make investments economic;
4. Iran-Europe transmission line passes through only one country, but Azerbaijan, Egypt, Turkmenistan and Kazakhstan transmission lines to Europe pass through two, three and two to four country, respectively;
5. Iran is the most secure route from view point of geopolitical indices;
6. Iran gas production costs are lower than other gas producers which increase in European bargaining power to set the prices.

Figure 16: Caspian gas pipelines



Source: (IEA/OECD, 2010)

Europe's Market Importance for Iran

Europe's market is important and vital for Iran for the following reasons:

1. It is a developed, stable, secure and permanent market;
2. Europe dependence on Iran's gas resources promotes Iran national security;
3. Joining the Europe market compensates deficiencies in joint gas filed with Qatar.

Problems faced Iran to join Nabucco

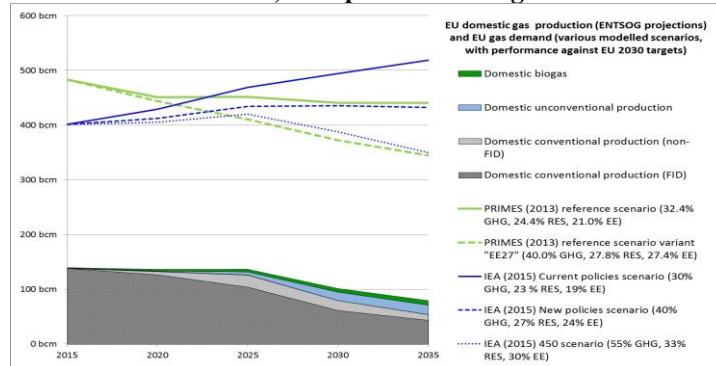
Some problems faced Iran to join Nabucco as follows:

- 1.Trust building in Iran nuclear program is the first challenge in the way of Iran-Europe to strategic cooperation;
- 2.Iran's guarantee to stable production of gas to supply Europe needs;
- 3.Iran-Turkey agreement on tariffs and the share of Ankara from total exported gas;
- 4.Agreement with Nabucco on price and duration of the treaty;
- 5.Exceeding from Azerbaijan and competition with Gazprom;
- 6.Resistance against Russia possible indirect pressures.

Russian Obstacles on the Way of Iran to Join Gas Markets

Moscow has always tried to keep Iran at a distance from European gas markets and encouraged Iran engagement in International Peace Institute gas pipelines with China. Moscow encourages Iran to take East based approaches and to neglect the West. Iran which has rich and low costed gas resources is the best supplier of Europeans gas demands. Possibly, Europe chooses Azerbaijan and Iraq as its main gas suppliers at the first step, but finally Europe will choose Iran. Europe knows this principle that if it wants to revitalize its dominance on the world, it would take independent role in the world. Europe knows Persian Gulf region as one of the most important geostrategic and geo-economic regions in the world (Hafiznia,2010:199). The EU is one of the biggest energy consumers in the world. Regarding the increasing energy prices, energy has great importance for the EU. The EU as the biggest oil and gas importer in the world with 29 percent knows geo-economic region of Persian Gulf as its energy supplier and goods importer regarding the high level of incomes of the regional states and nations (Blumental,2005:157). More than 50 percent of EU energy needs supplies by import. Regarding the different estimates, the EU should import its 90 percent oil needs and its 70 percent of gas needs in 2020. So, the EU should import main part of its needs from Persian Gulf and North Africa regions (Jong,2008:174).

Figure 17: EU domestic gas production (ENTSOG projections) and EU gas demand (various modelled scenarios, with performance against EU 2030 targets)



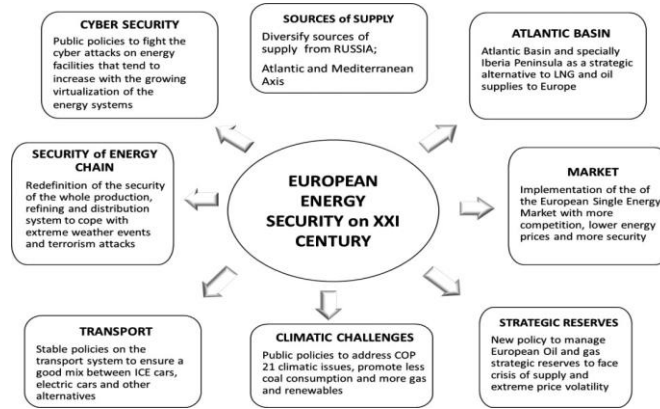
Source: (European Commission,2016)

It is undeniable that we need a new conceptual framework able to respond to a new string of threats and, in this regard, it is important to identify key elements that are suitable for building a consistent energy security architecture of the European Union in the 21st century. It is our belief that the European Union needs to redefine its concept of energy security to face the new challenges identified above. For the European Union it is crucial, besides many other factors, to ensure two crucial components:

- (1). Avoid the excessive dependency of energy on Russia specially in Eastern and Central Europe by redefining the role of the Atlantic Basin and building an alternative Axis of supply able to minimize the risks of Russia use of energy as a “geopolitical weapon”;
- (2). Reduce the costs of energy across Europe through the real implementation of the Common Single Energy Market breaking the barriers for the flow of energy between the Iberia Peninsula and the rest of Europe, building cross-border links, building and linking a common network of pipelines and electric grids across Europe, fostering the competition, creating conditions for further diversification of supply and more energy security;

Figure 18 characterizes the main issues related to a European energy security architecture for the 21st century (Costa Silva,2017:57).

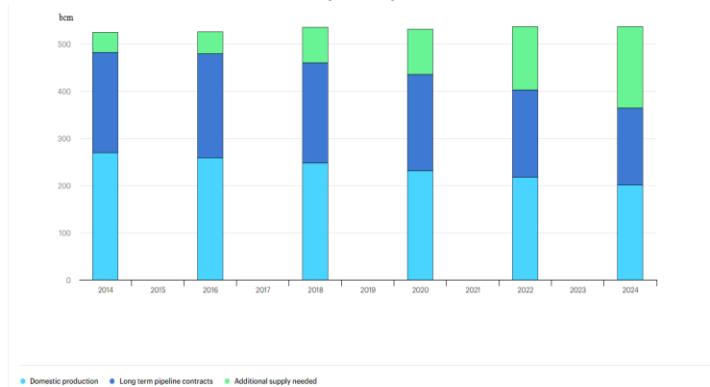
Figure 18: European Energy Security on 21st Century



Source: (Costa Silva,2017:57)

While European gas consumption is set to remain almost flat in the coming years, domestic production is set to fall at an average rate of 3.5% per year, primarily driven by the Groningen phase-out in the Netherlands and declining production in the North Sea. This structural decline in domestic production, combined with the expiry of several long term pipeline contracts, opens opportunities for new sources of supply, including natural Gas (IEA,2019).

Figure 19: Domestic production and contracted pipeline vs import needs, Europe, 2014-2024



Source: (IEA,2019)

Russia sees itself as an energy superpower. Each state that can control energy resources will be able to use energy factor as a tool in its foreign policy (Dehghani Firouzabadi & Mousavi,2011:61-3). Russia has developed its dominance on energy transmission lines networks, ports, infrastructures and other energy assets in Central Asia and Eastern Europe, and has

developed its foreign policy by increase in prices of energy of these states. When these states sell their energy assets to non-Russian corporations, they face with Russia's sanctions. The regional states fear from Russia's intervention in their internal affairs using energy factor (Farajirad & Salehi Doat Abadi,2017:41). Some poor countries depend on Russia's oil and gas resources, and use of energy as a political tool is a prominent tool for Russia whom tries to promote its position in negotiations and political dialogues to close the oil and gas stream to these states. So, Moscow tries to use energy factor to realize its political and economic projects (Ortung & Overland,2010:75).

Based on official documents of Russia, the main goal of Russia's energy politics is resulted from its internal policies. Based on Russian state decree which include its energy policies, fossil fuels which is exported to European and Asian states, creates stable economic growth, increase in Russians life standards, and promote Russia's economy. It is said that Russia use of oil and gas export as a political tool and power mechanism against new independent states, in other words Russia tries to develop its influence to other states using energy (Houtari,2011:121).

Beside of energy politics, Russia has tried to engage in energy arrangements of Persian Gulf. Unlike the US Arab-centered approach, Russia has the potential and ability to balance between Iran and Arab states and also between Shi'a and Sunni worlds. So, Russia tries to facilitate participation of all sides and coordinate their policies with itself by taking moderate policy in Israel-Palestine conflict and Iran and Arab states challenges in particular Iran's nuclear case and Syria civil war (Zarei,2012:67). Russia technologic-nuclear cooperation with Iran, not only has brought some economic benefits for Russia, but also has promoted its political weight in regional and global affairs (Ibid:68). One of problems faced Russia is lack of direct access to the region which has weakened its functions. Russia and China strategy is based on "soft power balance" regarding the military superiority of the US and NATO and European supports. Based on this strategy, Russia's policy has been economic and political influence in Persian Gulf region. Rather, Iran is interested in Russia's presence in Persian Gulf region to diversify infra-regional forces presence and to establish strategic balance among powers, and to control the US and the EU in Persian Gulf region. So, Iran follows Russia's participation in Persian Gulf oil and gas projects and in particular in Iran and also challenge the US using Russia as its alliance. Russia as the world biggest gas supplier knows

how to fear Europeans and regarding its superiority in the domain of energy resources tries to challenge the US using the block of gas exporting states (Escobar,2007:20). Russia has dictated oil prices to Europeans which will increase in the EU economic dependence on political wills of Moscow (Komnarsant,2007:19).

4-5. European Energy Security and Iranian Gas

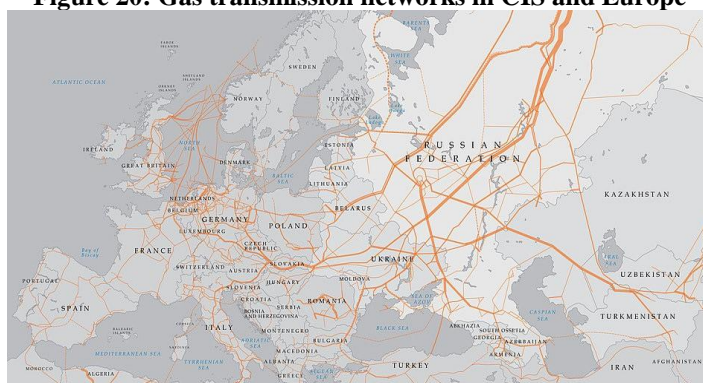
On the demand side of the energy equation, the EU is the world's second largest energy market after the US with over 450 million consumers. Thus, sustainable, competitive and secure energy is considered as one of the basic pillars of European energy security. Even though the starting point of European energy security policy has to deal with demand management, diversity in energy supply sources has been the second driver of the European energy security strategy. Diversity means both diversity in energy suppliers and diversity in energy transport, distribution and import routes. On the supply side, as predicted in the 2006 Green Paper entitled A European Strategy for Sustainable, Competitive and Secure Energy, in the next 20 to 30 years, around 70%of the EU's energy requirements will be met externally. (A European Strategy for Sustainable, 2008). The rising import dependency of the EU on external suppliers has highlighted the Union's vulnerability with regard to its energy supplies (Balamir Coskun, 2009:187-188).

Collectively, EU member states are the world's largest energy importer, importing about 55% of their energy supply—approximately 84% of their oil and 64% of their natural gas (European Commission, 2011). EU member states increasingly rely on natural gas, particularly to reach ambitious targets to reduce carbon dioxide and greenhouse gas emissions. Natural gas comprised 24% of the EU's primary energy consumption in 2011, a number that is expected to grow to almost 30% by 2030 (Eurogas,2010). Oil made up about 37%, coal almost 18%, and nuclear 12% of the EU primary energy supply. Coal use rose between 2011 and 2012, in part supplied by increased U.S. coal exports. The European Commission forecasts that the EU will import over 80% of its natural gas needs by 2030. Analysts note that recent policy decisions, such as a 2011 German announcement that it would phase out use of its nuclear power plants by 2020 and possible prohibitions on shale gas development by some EU members, could mean a more rapid rise in Europe's dependence on natural gas imports (Coordinator et al,2013:5).

Consequently, energy security has emerged as one of the important security issues for the EU. The European Council reacted to the energy security issue by proposing a new Energy Plan for Europe (EPE) in April 2007, which will

eventually lead to a Common Energy Policy (CEP). On 23 January 2008, the European Commission released a plan to cut CO₂ emissions by at least 20% by 2020 and to set a binding 20% target for the use of renewable energy sources (Barosso, 2008). To ensure the security and sustainability of energy supplies for the Energy Plan for Europe, the EU plans to negotiate energy effectively as a united bloc, while diversifying supply and promoting competition (Balamir Coskun, 2009: 188).

Figure 20: Gas transmission networks in CIS and Europe



Source: (Gazprom website)

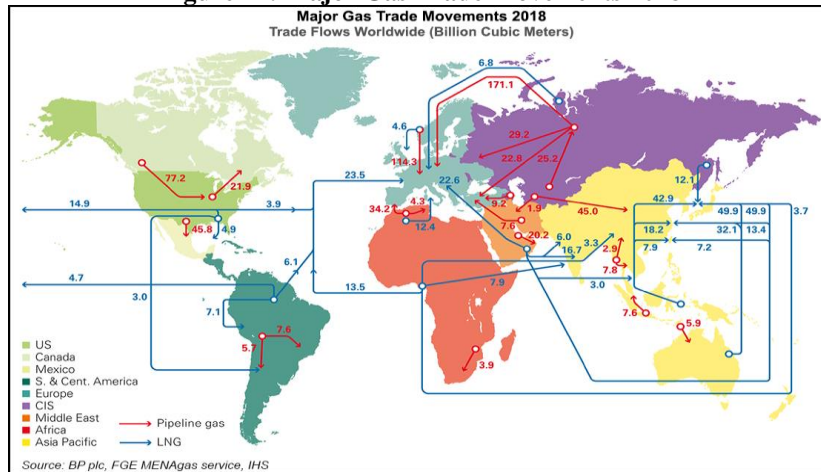
Iran natural gas and condensate gas production reached to 6.5 million barrels per day at end of February, 2018. This gas will be received by Europe, finally. Europe depends on gas import from Russia, a matter that concerns gas importing states. Europe security strategy is decrease in the level of dependence on Russia which is emphasized by Europe security perspectives. Iran has important location in energy transmission and has rich gas resources, and it is the best alternative to decrease in Europe dependence on Russia in the coming decade. Europe depends on Russia to supply its gas needs, and tries to decrease in its dependence by finding some alternatives. By using new technologies, energy transmission lines are not needed yet, and gas can be transmitted by gas ships. In coming decade, Iran will be entered in global and European energy markets, and will form its relations with other states based on gas. The three main gas pipeline routes from Iran to Europe are as follows:

1. Turkey Pipeline: Turkey has an excellent geographic location and can act as a corridor for gas transmission from Caucasus, Iran and even Russia. Iran can benefit from Turkey to transmit gas to Europe. Europeans do not trust Russians, because Russia has always used from energy as a pressure tool and sometimes closes gas stream toward Europe. Preliminary studies

have been finalized to build a gas transmission line to Europe. This line was forecasted to supply energy of Luristan, Kermanshah, Azerbaijan provinces and export to Europe. Until now, some parts of this pipeline has been built with the length of 5000 km. Total capacity of 9th gas transmission line is up to 32 Billion m³ (110 million m³ per day) and its length is about 1863 km from Asalouie in Bushehr province to Bazergan in West Azerbaijan province adjacent with Iran and Turkey border, and will have 17 booster stations which boost gas pressure during the route. This pipeline was started in 2008 and its capacity is about 11 million m³ per day. By operationalization of this pipeline, 50 million m³ and 60 million m³ per day will be exported to Turkey and Europe, respectively.

2. Armenia, Georgia and Ukraine Pipeline: this pipeline with the length of 5000 km, beside of the costs of pipeline, it has some additional costs like tariffs should be paid to the countries which the line passes through.

3. Persian Pipeline: Iran can export its gas through Iraq, Syria and Mediterranean Sea to Greece and Italy. Iran knows this pipeline which can export gas to Europe. The advantage of this pipeline is that it passes through gas consumer states instead of passing through the states territories which only transit gas, like the case of Eastern Europe. Europe is seeking gas resources to meet its needs, and Iran can export gas to Europe using Persian Pipeline. Syria will participate in this project. Iran prefers to transfer its gas to Greece using Persian Pipeline. Iraq is one of the challenges of this pipeline. In 2006, about 100 large scale attacks targeted pipelines, oil companies and workers and infrastructures by terrorist groups. Beside of fields, pumping stations and pipelines, operational and security personals were also attacked. Oil personals, extraction, supply and distribution infrastructures have been the main goal for terrorist attacks.

Figure 21: Major Gas Trade Movements 2018

Source: (BP,2019)

5. conclusion

Energy resources as one of the most important geopolitical factor in political system of the world, transmission from energy producing to energy consuming regions, control of energy resources, energy pipelines, production, process and transmit technologies and use of energy to keep global and regional hegemony and challenging rivals in international arena all have spatial or geo-economic facets which make energy an important geopolitical issue. Persian Gulf region provides an important geo-economic space for role playing of actors due to having rich energy resources. In this century, energy and in particular gas and oil play role as a geo-economic soul of development process, promotion of security and creation of regional and international conflicts, direct engagement of global great powers. Evolution from classic geo-strategic discourse to modern discourse has brought adaptation between geo-strategic and geo-economic regions in recent decades and the priority of economy on military issues in global arena. Permanent presence of global powers has caused Persian Gulf to be at the focal point of global conflicts.

With the emergence of geo-economic era in last decade of 20th century, energy centers have been considered by infra-regional and global energy consuming powers, hence, Persian Gulf region has been at the focal point of global powers as the world energy center. If India and Southeast Asian states, Eastern Europe and the EU needs are added to the world increasing oil demand, Persian Gulf region importance is more understood. The EU

strategy is Persian Gulf region rivalry and cooperation with the US, energy supply and balance with energy supply of Russia, economic relations, weapons export and military cooperation with the US to establish military bases. Russia strategy is based on soft power balance with the US, economic and technological cooperation, nuclear cooperation with Iran and investment in oil and gas resources of the regional states, in particular in Iran.

The research investigated these issues: what is Europe strategy to provide its energy security? And how do Iran's gas resources affect Iran and Europe relations? At the first step it should be noted that Russia will be one of main producers and exporters of energy in the world, but development of energy sector of Russia depends on the factors which is out of its influence like the case of the West sanctions on Russia energy sector and the EU regulations. So, Europeans are intended to find some alternatives to Russia's energy, so that they can promote energy security and in particular gas security. To do so, they have in mind some alternative states.

In the second step, regarding that the natural gas is a pure energy, global demand for it has been increasing, which is more manifested in Asian States. Based on the estimates, the demand for natural gas is more than oil in the world, and the demand for natural gas will be increased from 100 Trillion Cubic Feet in 2010 to 182 Trillion Cubic Feet in 2030. Regarding that gas export requires huge investment in establishment of infrastructures and transition in liquid form and also energy transmission lines, the investment in these states is increased. Increasing importance of environment for the world society, green parties and environmental activists' protests have caused gas to be considered as pure energy due to some accidents like damages in Japan nuclear reactors which challenged the East and Pacific Ocean region (North, Central and South America Continents). Also, the role of gas in petrochemicals and increase in petrochemical goods from 5 in Second World War to more than 5000 have emphasized on natural gas role. So, natural gas reserves of Persian Gulf will play an important role in future of global economy, and it will attract regional and global powers attentions at least for the next 100 years. In coming years, the US, Russia and China will be the top three players in the domain of gas and LNG markets. Shale gas reserves in the US which its extraction needs motivations in prices from one hand, and China increasing demand for LNG and Russia strategic policies as the main supplier of energy to Europe from the other hand will characterize gas prices all around the world. Other producers and consumers operationalize their strategies and

programs affected by the three great powers' behaviors. Most of them try to create and increase in LNG export and import capacities to benefit from their interests. Gas transit in the form of liquid gas bring from one hand security of supply and demand for producers and consumers through diversification of consumers and supply bases, and from other hand make use of energy in global competitions. Regarding that, all scenarios for increasing in LNG prices depends on trade through pipelines, development of LNG capacities for gas producers can be a logical and economic choice. It can be said that Iran is no longer "oil-based" state, but it will be "gas-based" state and can establish the biggest gas-based civilization in the world, and from strategic view point a state cannot be pioneer in oil and gas at the same time. Seeing Iran oil-based state is neglecting field facts. It seems that Europe is intended to develop its relation with Iran in the next decade in order to decrease in Europe energy dependence on Russia. Regarding that Iran has important location in energy transmission and has rich gas resources, it is the best alternative to decrease in Europe dependence on Russia in the coming decade

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