TURKEY'S POTENTIAL AS AN ENERGY HUB: TO WHAT EXTENT CAN IT FULFILL ITS POTENTIAL AS A PROVIDER OF ENERGY SECURITY FOR EUROPE?

by

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Submitted to the Institute of Social Sciences

In partial fulfillment of

the requirements for the degree of

Master of Arts

Sabancı University

June 2016

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ABSTRACT

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M.A. Thesis, June 2016

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Keywords: EU energy security, gas market, energy hub, diversification, energy corridor, dependency

With increasing geostrategic uncertainties for Eurasia, the EU's energy security has become an increasingly pressing concern, and the question has arisen whether countries positioned as energy "bridges" or "corridors," i.e. over which the greater volume of gas is transported, such as Turkey, can advance to a role of regional energy trading hubs to offset threats and develop further advantage by making available spare capacity for trade and emergencies. This thesis will examine Turkey's potential for advancing its status to that of an energy trading hub by examining major oil and gas pipelines, storage capacities, legal and regulatory frameworks, the long-term and spot pricing mechanism and the prospects for LNG in meeting future demand. The projected likelihood of Turkey being able to take on spare capacity is examined with reference to availability from regional energy exporters. Turkey's shortcomings in meeting the prerequisites for becoming a hub are discussed and recommendations made for how this can be achieved.

ÖZET

TÜRKİYE'NİN ENERJİ MERKEZİ OLMA POTANSİYELİ: AVRUPA ENERJİ GÜVENLİĞİNE POTANSİYEL ENERJİ TEDARİKÇİSİ OLARAK NE DERECEDE KATKIDA BULUNABİLİR?

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Avrupa Çalışmaları Yüksek Lisans Programı, Tez 2016

Danışman: Yrd. Doç. Dr. Emre Hatipoğlu

Anahtar kelimeler: AB enerji güvenliği, doğal gaz piyasası, enerji merkezi, çeşitlilik, enerji koridoru, bağımlılık

Avrasya'da artan jeo-stratejik belirsizlikler nedeniyle Avrupa enerji güvenliği giderek artan bir endişe konusu haline gelmiştir. Bu çerçevede enerji koridoru ya da enerji köprüsü olma rolünde olan Türkiye gibi ülkelerin, potansiyel tehlike ve acil durumlarda kullanıma açık ek kapasite yaratılması yoluyla bölgesel enerji ticaret merkezi olma rolüne geçip geçmeyecekleri sorusu ortaya çıkmaktadır. Ayrıca bu tezde Türkiye'nin enerji merkezi olma statüsüne, belli başlı petrol ve doğal gaz boru hatları başta olmak üzere, depolama kapasitesi, kanuni ve gerekli mevzuat değerlendirilerek, uzun dönem spot fiyat mekanizması ve son olarak, likit doğal gazın gelecekteki potansiyel katkısı ele alınarak irdelenmiştir. Bölgedeki enerji ihraç eden ülkelerin mevcut durumları, Türkiye'nin ek kapasite yaratabilme yetisi ve mevcut koşullar çerçevesinde öngörülüp değerlendirilmiş olup, Türkiye'nin enerji merkezi ülke olma yolundaki temel eksiklikler ve bu konudaki önkoşullar tartışılıp, eksikliklerin nasıl giderilebileceği konusunda tavsiyelerde bulunulmuştur.

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

LIST OF SYMBOLS AND ABBREVIATIONS

BCM: Billion Cubic Meters

BOTAŞ: Petroleum Pipeline Cooperation

BP: British Petroleum

BTE: Baku-Tbilisi-Erzurum

BTC: Baku-Tbilisi-Ceyhan Pipeline

EC: European Commission

ECT: Energy Charter Treaty

EFET: European Federation of Energy Traders

EIA: U.S. Energy Information Administration

EMRA: Energy Market Regulatory Authority

EU: European Union

IEA: International Energy Agency

INOGATE: Interstate Oil and Gas Transportation

ITGI: Turkey-Greece-Italy

KRG: Kurdish Regional Government

LNG: Liquefied Natural Gas

MCM: Million Cubic Meters

NRA: National Regulatory Authority

SOCAR: the State Oil Company of Azerbaijan

TANAP: Trans Anatolian Pipeline

TAP: Trans Adriatic Pipeline

TCM: Trillion Cubic Meters

TSO: Transmission System Operators

INTRODUCTION

With its geostrategic importance and its proximity to major global oil and gas fields in the Middle Eastern and Caspian region, Turkey has become a major energy transit country in the region with diverse supply routes and sources as well as an established strength in energy security. Indeed, operational oil and gas pipelines such as Baku-Tbilisi-Ceyhan, Baku-Tbilisi-Erzurum and those under construction such as Trans-Anatolian pipeline (TANAP), in addition to its two main straits in the Bosporus and Dardanelles, have caused researchers such as Erdoğdu[1], Müftüler Baç and Başkan[2] to suggest that Turkey is not only an energy transit country, but in fact an energy hub that is only likely to grow in significance in future years. However, other scholars have suggested that Turkey needs to overcome certain difficulties in order to become an energy hub in the region, and some, such as Winrow[3], Yılmaz[4] and Iseri[5], see Turkey as just an energy corridor or energy transit country rather than an energy hub. Even though a substantial percentage of the world's energy supply has passed through Turkey in recent years, it can be suggested that Turkey still has certain prerequisites to fulfill in pursuing its intention to become an energy hub.

Turkey's very first natural gas reserves were discovered in 1976. Since then, overall consumption has increased not only for industrial and household consumption but also for natural gas utilized for electricity generation which soon resulted in the need to import supplies. By 1984 Turkey had signed a memorandum of understanding with the USSR to import natural gas, and by 1986, an agreement covering twenty-five years was

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[1] Erdoğdu E., (2014), Turkey's Energy Strategy and its Role in the EU's Southern Gas Corridor. Instituto Affari Internazionali

[2] Müftüler-Baç, M., & Başkan, D "the Future of Energy Security for Europe: Turkey's Role as an Energy Corridor" (2011, March). http://ipc.sabanciuniv.edu/en/publication/the-future-of-energy-security-for-europe-turkeys-role-as-an-energy-corridor/

[3] Winrow, G., "Turkey: An Emerging Energy Transit State and Possible Energy Hub", The International Spectator, Italian Journal of International Affairs, 2011,

[4] Yılmaz, B. (2012, February). The Role of Turkey in the European Energy Market. http://ipc.sabanciuniv.edu/en/publication/the-role-of-turkey-in-the-european-energy-market/

[5] Iseri E., and Almaz A., (2013), Turkey's Energy Strategy and the Southern Gas Corridor

signed between the Turkish Petroleum Pipeline Corporation (BOTAŞ) and Soyuzgazexport, Russia's state gas export company, later GAZPROM Export, to carry gas through the Russia-Turkey West Pipeline. Turkey also signed an agreement to import LNG and natural gas from Algeria by means of marine transportation in 1986. With an aim of creating a framework for the natural gas sector which would prove competitive and encourage a transparent market structure, a new law was enacted in 2001. [6] According to the International Energy Agency, in 2012 Turkey imported 89.3% of its oil in 2012 and 98% of its natural gas in 2011, which makes Turkey heavily dependent on outside resources for its energy needs. Therefore, the diversification of energy sources and routes in addition to a secure energy supply has become an important issue for Turkey. To this end Turkey constructed its first pipelines between 1977 and 1987 at Kirkuk-Ceyhan on the Mediterranean coast. [7]It would be appropriate to consider some of these major oil and natural gas pipelines, whether operational or under construction, in order to better grasp Turkey's position in the region. These lines enable an evaluation of whether Turkey is an energy hub country or rather a major energy transit country and place the conclusions of the skeptics, Winrow[8], Yılmaz[9] and Iseri[10], in context.

The idea of whether Turkey can be designated an energy corridor and an energy hub has been thoroughly debated in the literature, however, it is not yet clear what constitutes an energy hub or energy corridor. Distinguishing between these two ambiguous concepts, which are often used interchangeably in the literature, is of the utmost importance in determining the role Turkey could play as a potential energy hub country in the region. As a common delivery point, a gas hub serves both the buyers and the sellers as an entry and exit point to trade and transfer gas.[11] It can be claimed that Turkey needs plentiful

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[6] General Directorate of Petroleum Affairs, BOTAS http://www.pigm.gov.tr/ - http://www.botas.gov.tr/

[7] Ozturk M., and Yüksel Y.E., Ozek N., (2011), A Bridge Between East and West: Turkey's Natural Gas Policy, Elsevier

[8] Winrow, G., "Turkey: An Emerging Energy Transit State and Possible Energy Hub", The International Spectator, Italian Journal of International Affairs, 2011,

[9] Yılmaz, B. (2012, February). The Role of Turkey in the European Energy Market http://ipc.sabanciuniv.edu/en/publication/the-role-of-turkey-in-the-european-energy-market/

[10] Iseri E., and Almaz A., (2013), Turkey's Energy Strategy and the Southern Gas Corridor

[11] Karbuz, S., " Turkey as an energy hub", OME, 2016, p.2

gas from numerous suppliers with volumes way above the country's current consumption so as to create a gas surplus, which can be re-exported through hub channels. energy hub, therefore, requires a mixture of a variety of sources whereby no party has the ability to override the wishes of any other party. Above all, an energy hub offers both financial as well as physical trading which covers LNG, pipelines and well-constructed storage capacity. [12] In the case of an energy corridor country, on the other hand, a variety of gas and oil pipelines pass between hydrocarbon rich East to the energy hungry West as a natural bridge; however, while corridor countries also receive transit fees, they have no right to re-export oil and gas that pass through their territory.[13] Turkey's position as an energy corridor means that in energy negotiations it remains a 'price-taking' rather than a 'price-setting' country, determining neither the prices charged nor quantities granted for energy importing countries.

Given Turkey's strategic importance, the elevation of its status to that of an energy hub could potentially boost the prospect for Turkey to better provide energy security both at home and for the EU market. Since Turkey's accession negations with the EU have reached a stalemate and the EU's energy acquis is blocked for an indefinite period of time, a carefully constructed framework for the designation of a gas hub should be proposed. Commercial and political complications that impede Turkey's becoming a genuine energy trading hub also need to be resolved with an aim of better serving this ambition as well as enhancing the overall prospect for eventual EU accession in the long-term.[14]

The outline of this thesis is as follows: in chapter one the major natural gas and oil pipelines are examined in order to establish the viability of Turkey's objective of

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http://www.ikv.org.tr/images/files/Sohbet_Karbuz_Sunum.pdf

[12] Roberts, J., "Turkey as a Regional Energy Hub", Insight Turkey, 2010, P. 42

http://file.insightturkey.com/Files/Pdf/insight_turkey_vol_12_no_3_2010_roberts.pdf

[13] Bilgin, M., " Turkey's Energy Strategy: What difference deos it maket to become enery transit corridor, hub, or center", UNISCI discussion paper, 2010, p. 114

https://www.ucm.es/data/cont/media/www/pag-72504/UNISCI%20DP%2023%20-%20BILGIN.pdf

[14]Winrow, G., " Problems and Progress for the "Fourth Corridor": the Positions and the Role oF Turkey in Gas Transit Europe", OIES, 2009

https://www.oxfordenergy.org/publications/problems-and-prospects-for-the-fourth-corridor-the-position-and-role-of-turkey-in-gas-transit-to-europe/

becoming an energy hub; in chapter two the reasons underlying why Turkey aspires to become an energy hub are evaluated, a framework that better clarifies the concept of an energy hub is proposed based on a template established by the European Federation of Energy Traders (EFET), and the major shortcomings that stand against Turkey's goal are described and solutions recommended; in chapter three future projections based on the current capacity of regional energy exporters, KRG, Qatar, Israel, Cyprus and Azerbaijan, are formulated with regard to creating spare capacity for trade, a vital prerequisite for becoming an energy hub; Turkey's potential for providing energy security for the European Union (EU) gas market is evaluated in chapter four within the framework of EU energy policy.

The main research question which this thesis aims to answer is whether Turkey can become an energy hub for the region and it can play play a significant role in helping to improve the EU's energy security. This will be addressed by focusing particularly on Turkey's currently operational as well as projected oil and natural gas pipelines so as to explore the reasons why Turkey can, through diversifying energy routes and sources, overcome impediments to meeting the requirements to reach this aspiration.

CHAPTER 1

MAJOR NATURAL OIL AND GAS PIPELINES IN TURKEY

Kirkuk Ceyhan Oil Pipeline

The first part of a crude oil pipeline constructed in Turkey was the Kirkuk-Ceyhan line in 1977 and its second was constructed in 1987. Currently, both pipelines carry up to 350,000 barrels a day, although operational capacity reaches 600,000 barrels per day at full capacity.[15] Even though Iraq has the third largest oil reserves in the world, due to the Iraq-Iran war and the American- British invasion in 2003, the transportation of oil from Iraq has stalled several times. [16]As Iraqi officials stated in the Iraqi newspaper *Rudaw* on January 2014, in the year 2013 alone the Kirkuk-Ceyhan pipeline was attacked more than fifty times, which caused the interruption of oil exported to the Ceyhan Terminal. As can be seen from the Kirkuk-Ceyhan pipeline map below, the pipeline routes pass through some of the most dangerous territory in the region. The line passes through not only Iraq but also South-East Turkey which makes it vulnerable to the threat from the Kurdistan Workers' Party (PKK) and many projects attached to the line have consequently been hampered. Such uncertainties, as well as economic and political turmoil and the uncertain future of Iraq, are unlikely to be resolved anytime soon; therefore, while Iraq initially looks like an attractive option for diversifying energy resources and routes for Turkey, the gas transported from Iraq is not a viable option for the time being since supply is unreliable for all the above mentioned reasons. Consequently, oil and gas from Iraq is not a sustainable option for securing the region's energy supply nor can it fulfill Turkey's desire to become an energy hub in the region.[17]

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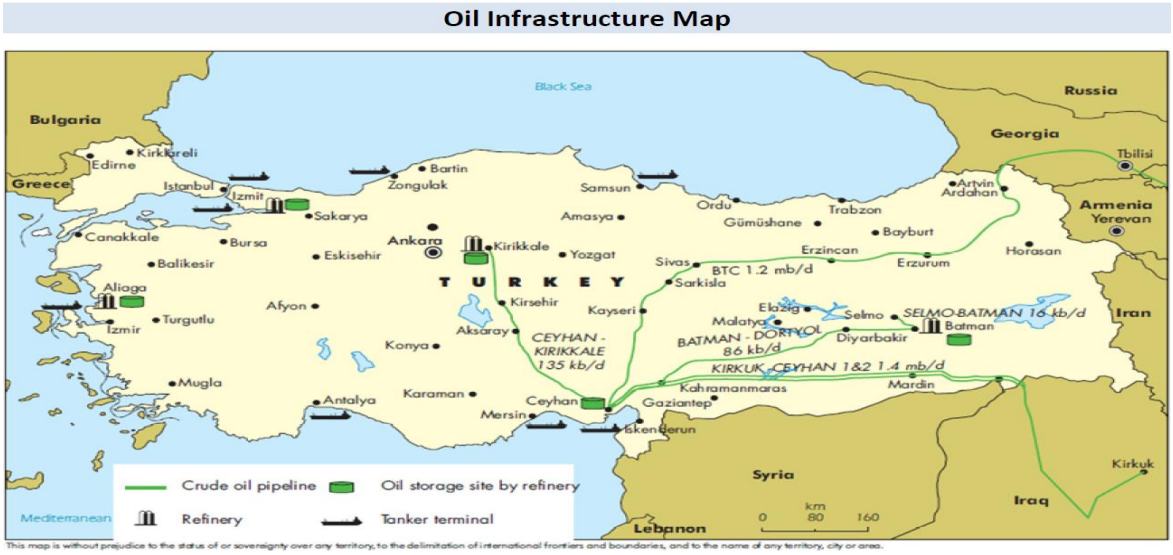
[15] Fandrich, D., Iden, M., " Attacks Shuts Down 970 km Transnational Oil Pipeline", Pipeline Technology Journal, 2016

http://www.pipeline-journal.net/news/attack-shuts-down-970-km-kirkuk-ceyhan-transnational-oil-pipeline

[16] Yılmaz B., (2012), "The Role of Turkey in the European Energy Market", MEDAC, P.12

[17] Evin. A.O., (2012), "Energy and Turkey's Neighbourhood: Post Soviet Transformations and Transatlantic Interest", Lynne Reiner.

Figure 1: Kirkuk-Ceyhan Oil Pipeline



Source: Valeura Energy Inc.

Baku-Tbilisi-Ceyhan Oil Pipeline

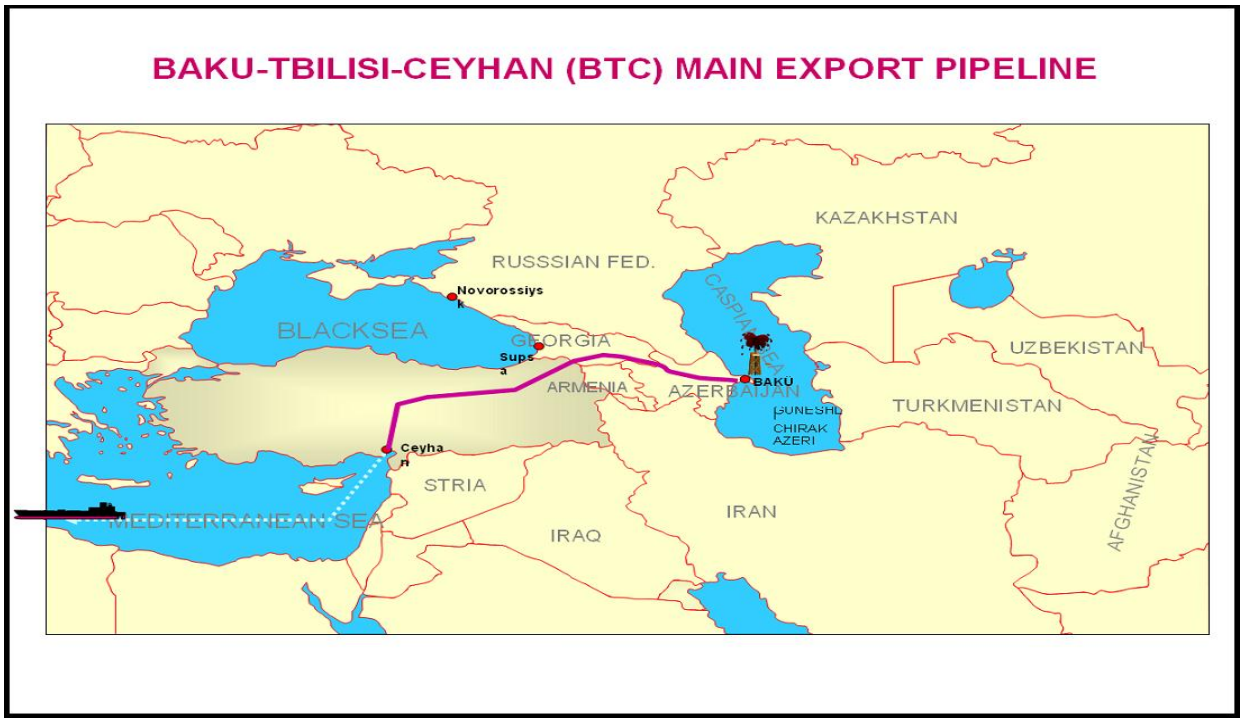
With an initial total capacity of one million barrels of oil a day and with its 1768 km long pipeline, the second longest of its kind, the Baku-Tbilisi-Ceyhan (BTC)'s inauguration ceremony took place in 2006. This project was perceived as a milestone in creating an environment for the east-west energy corridor that would help the landlocked Azerbaijan to transport oil to the West, particularly to Europe. The pipeline extends from Azeri-Chirag-Gunaşli fields to Tbilisi-Georgia and ends in Ceyhan Terminal. [18]As can be seen from the map below, the pipeline bypasses the Black Sea and therefore reduces the dependency on Russian co-operation and diversifying energy routes. As of 2006, Kazakhstan also joined the BTC, and planned to carry crude oil by shipping it through the Caspian Sea, from where Kazak crude oil would be pumped directly to the BTC pipeline and transported to Ceyhan. [19]

[18] İpek P., (2006), "The Aftermath of Baku-Tbilisi- Ceyhan Pipeline: Challenges Ahead for Turkey, Perceptions".

[19] Evin, op. cit., p.8

According to BP Azerbaijan's data, the current capacity of BTC is around 1.2 million barrels per day, representing a 20 percent increase over the initial capacity.[20] With the BTC pipeline, only 1.5% of the total world oil demand has been met. In this regard, one can suggest that the amount of crude oil that has been transported by the pipeline is not substantial enough in terms of volume to turn Turkey into an energy hub. On the other hand, with the construction of the BTC pipeline it can be claimed that strategic dependence on oil in the region, particularly for Middle Eastern and Russian oil demand, will be diminished for both Turkey and Europe, and therefore it contributes to the energy security of all parties that are in real need of meeting high energy demands.

Figure 2: Baku-Tbilisi-Ceyhan Pipeline



Source: Petroleum Pipeline Corporation

Samsun Ceyhan Pipeline

Turkey has two major straits through which super oil tankers can pass: the Bosporus and the Dardanelles. As of 2012, 3.7% of total world oil supply had to be shipped through these straits in order to reach to the world energy market. However, these

[20] http://www.bp.com/en_az/caspian/operationsprojects/pipelines/BTC.html

vessels carry hazardous liquids that threaten the environment and are putting the Bosporus and Dardanelles at risk. Most of the super tankers and vessels carry Russian and Kazak oil through the Black Sea. In order to reduce environmental risks and the cost of the transportation cost in the long run, Turkey and Russia signed an agreement in 2006 to construct Samsun-Ceyhan oil pipeline.

Presently, the Samsun Ceyhan Pipeline project is on hold due to the disagreement between the parties. The Minister of Energy and Natural Resource of Turkey, Taner Yıldız, stated on CNN Turk on 15th of April 2013 that "The Samsun-Ceyhan oil pipeline project is important for Turkey, but the country's political principles are above all". Upon the completion of the project, there will be certain benefits that Turkey will enjoy. First of all, the number of ships that goes through the Bosporus will be lessened. As a result of this, the environment will be affected positively. As Yılmaz (2012:13) points out, "the amount of oil transported through the strait of Istanbul has increased dramatically from 60 million tons in 1996 to almost 150 million of tons in 2007". This increase shows us how important it is to have such a project so as to mitigate against environmental consequences that may be irrevocable for the Turkish Straits. However, we can also conclude that once this project is complete and becomes operational, it will increase the Turkish dependency on Russian oil and in this regard, the Turkey's desire for being an energy hub in the region will be hindered.

Trans Anatolian Gas Pipeline (TANAP), Trans Adriatic Pipeline (TAP)

In 2012, Turkey and Azerbaijan signed an agreement to construct a new pipeline that would carry Azeri gas to Turkey. The project is expected to be completed in 2018 and is projected to carry16 billion cubic meters (bcm) of natural gas, 10 bcm of which will be transported to Europe and 6 bcm of which will be used by Turkey. [21]

The TANAP official website states that the volume of gas that will be exported is expected to increase in 2023 to the level of 23bcm and the volume of gas to be transported will be 31 bcm as of 2030. Looking at the initial volume of gas to be transferred via Turkey, we can see that it is nowhere near enough to fulfil the current

[21] Erdoğdu E., (2014), Turkey's Energy Strategy and its Role in the EU's Southern Gas Corridor. Instituto Affari Internazionali

European and Turkish energy demand; however, doubling the volume within one decade would certainly help to meet the expectations of both the European and the Turkish energy market. On the other hand, in 2013 British Petroleum (BP) and the State Oil Company of Azerbaijan Republic (SOCAR) signed an agreement on another natural gas pipeline called Trans-Adriatic Pipeline (TAP), which is estimated to cost around 5 billion USD. This pipeline will transfer Azerbaijani natural gas to the European Market. The main source of gas will come from the second Shah Deniz in the Caspian Sea. As can be seen from the map below, the pipeline will connect Azerbaijan to Georgia and from Georgia it will extend to the Turkey-EU border where it will reach its final destination: Europe. Both Trans-Anatolian pipeline (TANAP) and Trans-Adriatic Pipeline (TAP) will constitute the Southern Gas Corridor. It is estimated that in the future TANAP will be able to carry more natural gas due to the possibility of carrying Iraqi gas. When political stability returns to Iraq, Iraqi gas can be connected to the TANAP grid and therefore this normalization process would increase the supply of gas. Iraq, Turkey and eventually Europe would benefit from this diversified energy supply. Nevertheless, the political tension seems set to continue for the foreseeable future and the possibility of realizing this project currently seems slim due to the Iraq's internal security problems.[22]

Once the Southern Gas Corridor becomes operational, both Turkish and Azerbaijani relations with Europe are likely to be strengthened and therefore, with TANAP, Turkey's position in accession negotiations towards becoming a member of the European Union (EU) is likely to improve. As stated by Erdoğdu "the TANAP and TAP projects mean the pipeline will no longer be used by Europe as a bargaining tool in its policies towards Azerbaijan and Turkey, but will instead give more power to Azerbaijan and Turkey in their relations with the EU". [23]

Another important point is that with the TANAP project Turkey will secure the right to re-export as much as 750 million cubic meters of excess gas reserves to other countries annually, and Greece in particular is likely to be a major recipient of such reserves. Azerbaijan allows Turkey to re-export its gas and to profit from this incentive, while

[22] Erdoğdu E., (2014), P. 1-16

[23] Ibid, P.12

Russia and Iran do not.[24] Therefore Turkey will not only profit from the transit fees of the transportation of gas across its land but also may benefit from the re- exportation of gas. For this reason, on completion of TANAP, Turkey will become one of the major energy transit states in the region. Nevertheless, to become a major energy hub, Turkey will have to continue to develop its energy commitments, and build bigger storage facilities and terminals, for instance. Indeed, the annual progress report written by the European Commission in 2013 specifically states that in the field of gas, Turkey cannot yet be considered an energy hub. The report remarks that "no progress can be reported on a transparent gas transit regime" and concludes by stating that "a functioning competitive market and progress in legislative alignment in the natural gas sector are still lacking"[25]. Liberalizing the gas market, making its practices more transparent and developing a strong infrastructure would strengthen Turkey's hand in fulfilling the basic requirements for becoming a genuine energy hub. Nevertheless, it would be over-ambitious to claim that TANAP will play a major role in both energy security and diversification of energy sources in the short term with a projected volume of only 16 bcm. Only by increasing the amount of gas transported to the level of 31 bcm in 2030, supported by Turkmen or Iraqi gas, which would increase the volume to such a level, would Turkey's position become stronger, particularly when we consider the fact that in 2015 OECD-Europe consumed 453,4 bcm of natural gas, according to the data provided by BP Statistical Review of World Energy June 2016.[26]

[24] Winrow G.M., (2013)., The Southern Gas Corridor and Turkey's Role as Energy Transit State Energy Hub, Insight Turkey

[25] EU Commission, (2013) Turkey Annual Progress Report, P.36

[26] http://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2016/bp-statistical-review-of-world-energy-2016-full-report.pdf

Figure 3: Southern Corridor-TANAP-TAP

Sources: The European Institute

Nabucco Gas Pipeline

The Initial steps were taken by BOTAŞ (Turkey) and its counterparts TRANSGAS (Romania), BULGARGAZ (Bulgaria), MOL (Hungary) and lastly OMV Gas (Austria) back in 2002 to construct a new pipeline called Nabucco, whose name comes from a famous opera of Verdi. The pipeline was projected to carry Azeri and Turkmen gas to the Western European market by 2015, with an expected volume of 25 to 30 bcm annually. Additionally, not only Caspian gas but also in the long term Iraqi gas may have been transported by using a pipeline constructed by the Nabucco project. Another important step was taken among the partner countries in 2009 to complete Nabucco's construction by as early as 2015 so as to transfer natural gas to the Western European market. [27]

With the announcement of the Nabucco project, the international community, particularly the EU and the USA, showed great support for the project's implementation, believing it would safeguard Europe's energy security, as well as Turkey's. The project has been perceived as an alternative to Russian supremacy in the region as the Nabucco project would diminish dependence on Russian gas by diversifying gas sources and its transportation routes. Müftüler Baç and Başkan state

[27] Ozturk et al., (2013), p.4293

that the "Nabucco project would make a bigger difference to the energy security of the EU by diminishing Europe's dependence on Russian gas and to Turkey's role as an 'energy hub".[28] More than just proclaiming Turkey to be a potential energy hub, it can be further suggested that, in terms of securing energy supply sources, Turkey's position in its EU accession negotiations would certainly be improved. An expected volume of 25 to 30 bcm of gas would bring Turkey nowhere near its ambition to become an energy hub given the fact that when the project was announced in 2009, the EU consumed 464.4 bcm of gas. Consequently while one-third of gas still comes from Russia, the proposed volume of gas would not have significantly altered the way the EU's gas portfolio was set even if the project had come online as planned.

However, the project was halted in 2010 and ended officially in 2013, due to lack of adequate volumes of gas and inflexibility as well as unwillingness among stakeholders to take further steps to complete the project on time. With this failure, Turkey's ambition to become a genuine energy transit country was severely harmed: "when the EC lost Nabucco, Turkey lost its chance to show the decisiveness of transit countries in the energy market". [29]

It can be concluded that if Nabucco had been operational, this opportunity would have strengthened Turkey's hand by increasing the transit revenues and the royalties of the country. Also, Turkey's bargaining power with the EU in opening an energy chapter would have been stronger and Turkey would have been in a better position to become a major energy transit state in the region.

In the event of energy shortages, Turkey's gas storage facilities would not be sufficient to meet the demands of the energy importing countries, nor would Turkey have any say in determining the price of the gas. In this regard, Turkey's current energy policy will not be able to meet the prerequisite conditions to become an energy hub. The cancellation of the Nabucco project has derailed, for the time being, Turkey's chances in this regard.

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[28] Baç M.M., Başkan D., The Future of Energy Security for Europe: Turkey's Role as an Energy Corridor, p.370

[29] Okumuş O., (2013), What did Turkey Lose When EU Lost Nabucco, P. 1

Figure 4: Nabucco Gas Pipeline

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Source: Eurodialog.org

The Blue Stream Gas Pipeline

Energy cooperation between Russia and Turkey began in 1997. Initially, the Blue Stream pipeline was planned to consist of three different parts. The pipeline starts in the Russian town of Izobilnoye in the Black Sea, goes under the Black Sea to the Turkish town of Durusu and reaches its final destination in Ankara. Currently, Russia is planning to extend this pipeline route either to Ceyhan or to Izmir. The volume of natural gas that has been transferred via this pipeline remains low compared to other major pipelines. As of 2004, the transported gas was approximately 3.2 bcm and in 2005, reached4.5 bcm. However, since then, the volume of natural gas imported from Russia has increased exponentially, reaching the level of 26.7 bcm in 2013. [30]

The pie chart below indicates which countries supply Turkey's natural gas needs. As of 2012, 58% of Turkey's natural gas demand was met by Russia. It is evident that Turkey is heavily dependent on Russia in terms of its natural gas consumption. In this respect, we can suggest that any country that is heavily dependent on a particular country for its energy needs will necessarily be dependent on that supplier country to such an extent that the energy demanding country will have no stake in determining or challenging the

[30] Ozturk et al., (2013), p.4292

supplier country in terms of settling price and supply levels. In this sense, Turkey can be considered to be in a weak position by not diversifying its energy sources. Unless Turkey can reduce its dependency on Russia, the country's desire to become an energy hub will not be realized and will only remain part of its strategic plan.

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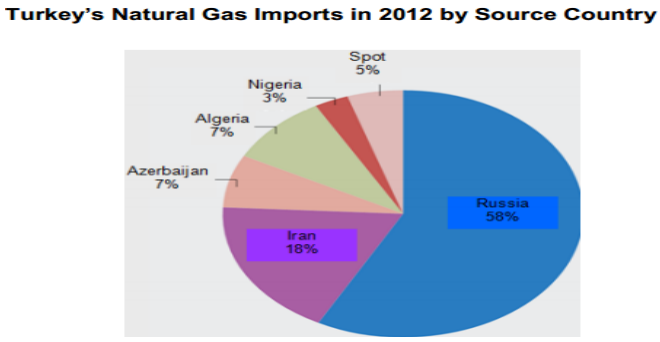
Figure 5: Turkey's Natural Gas Imports



Source: EMRA, Natural Gas Sector Report, 2012

Figure 6: Blue Stream Pipeline

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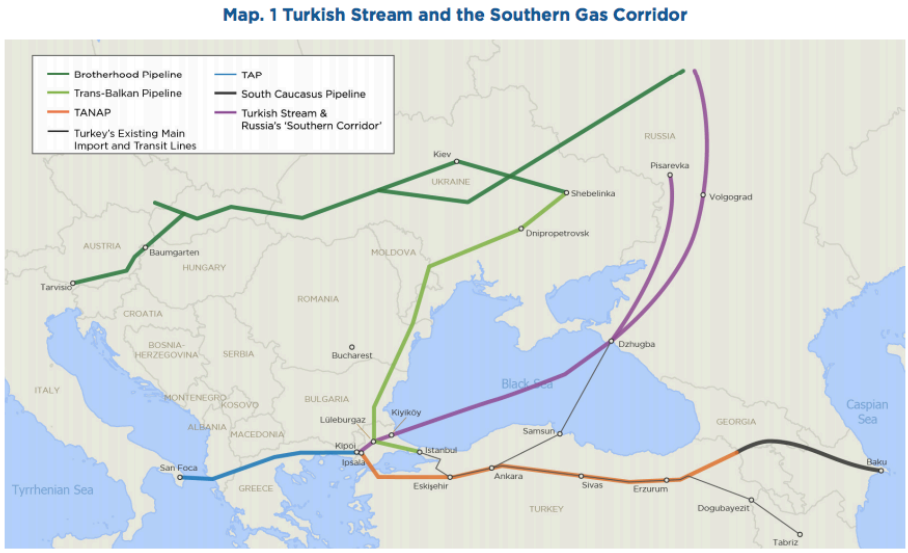
Sources: Gazprom, Blue Stream Pipeline (bcm)

Turkish Stream Gas Pipeline

Figure 7: Turkish Stream/ Southern Gas Corridor



Source: Atlantic Council.

The announcement made by Russian President Vladimir Putin on December 2nd 2014 cancelling the long planned pipeline South Stream project and instead proposing a major pipeline dubbed the Turkish Stream came as a complete surprise. With this proposal Russia intended to bypass Ukraine and carry natural gas both to Turkey as well as to the EU. [31] The unexpected U-turn by the Russian government to suspend the South Stream pipeline and the controversial decision to launch a brand new pipeline have raised eyebrows in the surrounding region, primarily in the EU. It has raised the question of whether this project is commercially viable, physically possible and financially sound, particularly for Russia and Turkey, since such an exorbitantly costly pipeline project has been planned with financing from Russia's Gazprom, in collaboration with Turkish Petroleum Pipeline Corporation (BOTAŞ) only, with no other stakeholders involved. Furthermore, transportation arrangements in Europe, and the signing of purchase contracts[32] have not yet been finalized.

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[31] Roberts, J., " The Impact of Turkish Stream On European Energy Security and the Southern Gas Corridor", Atlantic Council, (July 2015)

[32] Pourzitakis, S., "The Energy Security Dilemma of Turkish Stream", Carnegie Europe, (July 28, 2015)

The eventual volume of the Turkish Stream has maintained the same capacity of the South Stream of which 14 bcm is intended to supply Turkey, and the rest, 49 bcm, for EU consumption. Initially, pipelines will be laid in four strings and each with a capacity of 15.75 bcm. The first string will feed the Turkish gas market at Kıyıkoy in the European part of Turkey and the remainder, three pipelines, will carry gas to Western Europe, reaching Ipsala near the Turkish-Greek border.[33]

With the South Stream project, the plan was to deliver gas to the various states in the EU such as Bulgaria, Hungary, Slovenia, Italy and Austria. Nevertheless, with the Turkish Stream, it was projected that Russia would deliver gas to the Turkish-Greek border and from that point on it would be left to EU countries to deliver gas where needed.[34] Additionally, the Bulgarian approach towards the South Stream project during the implementation of the project phases changed considerably on account of pressure that came from other EU states and EU institutions. The Kremlin's desire not to include Bulgaria in any stage of the Turkish Stream project was interpreted as a way of punishing the Bulgarian authority. In considering these issues, Russia's approach towards Ukraine and to some other Eastern European states has clearly been changed according to Moscow's red lines and priorities with regard to the Turkish Stream.

During the Soviet era Ukraine had been a reliable transit route for Russia, even after the breakup of the USSR. At the end of 2013, Russia's Gazprom sent over 82 bcm of natural gas to the EU market via Ukraine. However, gas conflicts between the parties emerged from time to time especially disagreement over gas prices which increased tensions to such a level that in both 2006 and 2009 Russia decided to cut off the gas. The crisis that erupted between Kiev and Moscow resulted in a two-week long gas disruption in Eastern and Central Europe in 2009. This event raised the question of whether Russia as a major supply source could be a reliable supply partner and whether Ukraine should be regarded as a reliable supply route.

Ukraine, as a result, has responded to the crises by reducing its heavy reliance on Russian gas. On the other hand Moscow has decided to terminate gas exports to the EU

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[33] Sartori, N., "The Turkish Route for Europe", About Oil and Energy, (March 16, 2015)

[34] Hafner, M. and Tagliapietra, S., "Turkish Stream and the EU Security of Gas Supply: What's Next?." Review of Environment, Energy and Economics, Fondazione Eni Enrico Mattei, (2015), P.3

market via Ukraine from 2019 and bypass Ukrainian territory by launching a strategy of diversifying its gas routes, such as via the Turkish Stream and Nord Stream pipelines to circumvent Ukraine. Despite both parties' hasty attempts to defuse the situation, the Oxford Institute for Energy Studies' Jonathan Stern asserts that it is not within the bounds of possibility to phase out gas transition between Russia and Ukraine, at least not until 2020, due to existing contracts with major European countries. Regarding the possibility of phasing out the gas supply in 2019 between Russia and Ukraine, the head of the Strategic Energy & Economic Company, Michael Lynch, claims that, " if you've got customers and a line through Ukraine— and an oil price of 50USD— you're not going to cut off the gas".[35] Considering the fact that Russia exports approximately seventy percent of its gas to the EU market, any failure of future gas contracts would devastate Russia's heavily hydrocarbon-based economy. Therefore, it would be plausible to predict that the Kremlin would do everything in their power to secure their market in Europe.

Although Russia defended the Turkish Stream from the point of view that once it was completed the pipeline would have a profound impact on the EU's overall energy security. The EU has been extremely doubtful about both parties' intentions, and therefore initiated a policy of diversification of supply source as part of the third energy package strategy. From the EU point of view, the Turkish Stream has meant "an attempt to thwart the Southern Gas Corridor— hence the EU's objection to Greek Plans to back the project."[36] Furthermore, following the downing of the Russian air force jet near the Syrian-Turkish border in November 2015, the future viability of the Turkish Stream has changed from a potentially game-changing pipeline to victim of regional tension identical to Nabucco or the South Stream pipeline projects. As prominent energy security expert John Roberts puts it, "Russia's ambitious project for its Turkish Stream gas pipeline across the Black Sea looks set to become the next casualty of the war of

[35] Roberts, J., " The Impact of Turkish Stream On European Energy Security and the Southern Gas Corridor", Atlantic Council, (July 2015), P.13

[36] Pourzıtakis, S., "The Energy Security Dilemma of Turkish Stream", Carnegie Europe, (July 28, 2015)

words between Russian President Putin and Turkish President Recep Tayyip Erdogan".[37]

Subsequently, while Russia has not yet openly announced that the Turkish Stream has been frozen for an unknown period of time, the Kremlin has stated that priority will be given to the construction of the Nord Stream II pipeline, which could be interpreted as demonstrating that the Turkish Stream has been put on hold for the time being as part of Russia's retaliation towards Turkey. Russia, prior to the unfortunate event, spent over 1.8bn on pipelines for the first and second strings to be laid under the seabed of the Black Sea. In addition to that, Gazprom spent almost 400 million USD[38] for pipe-laying vessels, as well as on the cost of ceasing operations, which would mean writing-off a considerable expense unless the project is revitalized and tension between the parties settles down.

If Russia totally abandons the Turkish Stream project, and would therefore no longer be willing to supply Turkey's constantly growing energy needs, Turkey would need to have alternative options in order to overcome energy shortages. In 2013, a contract signed with the KRG with an initial delivery of 4bcm until 2017,[39] is one of the primary examples of Turkey's initial steps towards reducing Russia's dominant position in the Turkish gas portfolio.

Overall the Turkish Stream would likely increase Russian presence in both the Turkish and South- East European gas mixture. Countries such as Greece, Bulgaria or Romania claim that with the availability of the Turkish Stream there is the possibility of the creation of a European regional gas hub given the large volume of gas which would flood to the EU market from the South-Eastern borders. However, this approach is not plausible since dependence on Russian gas has already reached approximately thirty percent and with the realization of the Turkish Stream this volume will increase exponentially to a level at which Russia's supremacy in the European gas market will be strongly felt. It can be claimed that Russia's supremacy in the region would only

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[37] Roberts, J., " Turkish Stream Set to Fall Victim to Putin-Erdogan Confrontation", Natural Gas Europe, (December 3, 2015)

[38] Ibid, P. 1

[39] Ibid,

create an energy corridor rather than an energy-trading hub, since an energy hub requires a mixture of a variety of sources whereby no party has the ability to override the wishes of any other party. Above all, if the Turkish Stream project comes into existence and an additional 50 bcm of Russian gas flows into the EU gas market, it is likely that the success of the Southern Gas Corridor and its aim of diversification of supply source, confirmed by the third energy package, would likely be jeopardized and the Kremlin's interests served.

The Role of The Southern Gas Corridor: A Genuine Attempt to Diversify away from Russia's Dominance in The Region

A continuing decline in conventional gas production in Europe combined with increasingly costly gas imports from Russia have meant that the Caspian region will remain one of the most promising sources of natural gas for the EU. The plan to bring Caspian gas to the EU market has been on the agenda for about a decade but due to faltering commitments and various obstacles, this has not been fully accomplished. However, in November 2009, at the European Commission (EC) summit in Prague a policy initiative called "Southern Corridor- New Silk Road" was launched with the aim of facilitating the flow of Caspian and Middle Eastern gas to the European gas market in order to diminish reliance on Russian natural gas. At this summit, "An EU Energy Security and Solidarity Action Plan" identified potential partner countries that would supply energy to the EU market. Countries located in the Caspian region (Turkmenistan, Kazakhstan, Georgia, Azerbaijan and Turkey) and Middle Eastern countries (Iran and Iraq) along with neighbouring North African countries were projected to be major energy supplier countries to the EU market.[40]

Originally three major natural gas pipelines were planned to bring Caspian gas to the EU energy market, the very first of which was the introduction of the Nabucco pipeline. The EU enthusiastically backed this pipeline since it would bypass Russia. Although Nabucco was on the agenda since 2002, this scheme would have been projected to be part of the Southern Gas Corridor. A second plan aimed to connect Caspian gas to the EU by an interconnector that was intended to be constructed between Turkey-Greece

[40] Cutler, R.M., "The Role of the Southern Gas Corridor In Prospects for European Energy Security", Institute of European, Russian and Eurasian Studies, Carleton University, P. 29

and Italy (ITGI). The third step would have been to construct the White stream pipeline, an undersea project that was aimed at connecting Georgia to the Balkans. However, both the Nabucco plan and the White Stream projects were withdrawn and ITGI's first phase was installed and has been operational for some time: the second phase of ITGI, connecting Greece to Italy was replaced by the Trans Adriatic Project.[41]

Although some analytical references state that the South Stream project was part of the Southern Gas Corridor project, this project has never been part of the initiative. On the contrary, it was introduced to compete with the Nabucco pipeline and therefore rendered construction of the Trans Caspian Pipeline unnecessary and prevented a transit gas route between Central Asia and Europe from being realized. In the 1990's the Kremlin had used much the same geopolitical tactic in the construction of the Blue Stream pipeline, which has proven to be successful despite the fact that its initial planned capacity was underutilized and that it was not the best financially viable option.[42]

Turkey's Role in the Southern Gas Corridor: A Prospect for Diversification

Until very recently most energy scenarios were based on the assumption that the consumption of natural gas in the EU market will increase in the coming years and decades. Due to weak economic performance and better promotion of renewables, combined with a fierce competition with cheaper coal, the EU's gas consumption has not been robust in recent years. Although in 2008 and the following years consumption was too low to confirm the above scenario's assumption, according to the International Energy Agency's New Policies Scenario, Europe's gas imports would reach to 400 bcm by 2040 while in 2013 it was 260bcm.[43] Therefore, the source of supply from the Caspian region has become an issue of some urgency, allowing for the Southern Corridor strategy to be a useful tool for EU's energy security objectives. Since most EU countries have been heavily dependent Russian sources for their gas imports, at this

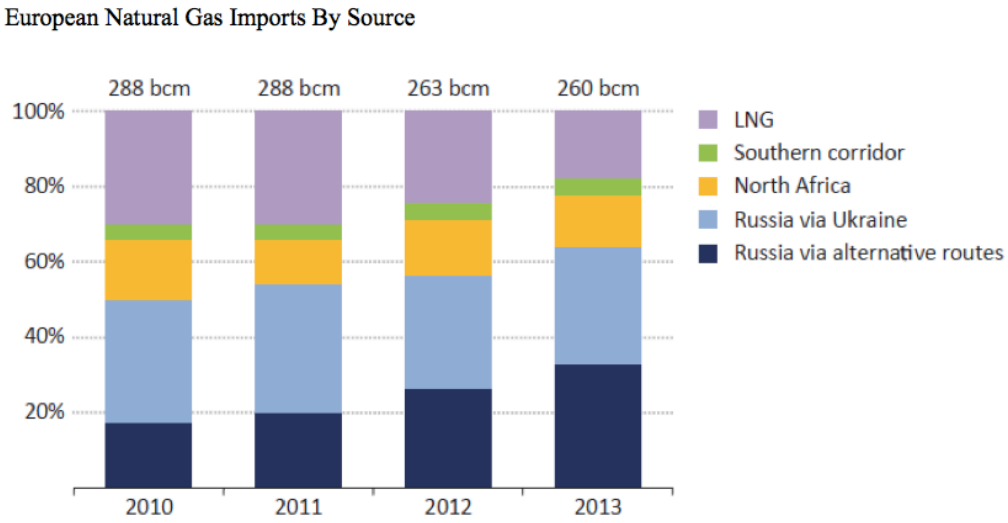
[41] Çağaptay, S., "The Geopolitics of Natural Gas, Turkey's Energy Policy and the Future of Natural Gas", Center for Energy Studies, Rice University's Baker Institute, P. 24

[42] Cutler, op. cit., p. 31

[43] World Energy Outlook 2014, International Energy Agency, P. 160

point Turkey's position in the region has moved to the forefront of the political agenda as a new and proactive partner that would offer the ideal ground for secure, affordable energy for the EU market. Having ambitions to become an energy hub in the region, Turkey would do well to work diligently to cooperate on energy issues that would provide Europe with "a reliable alternative supple route and offer Turkey the opportunity to prove that it is an indispensable partner for the EU".[44]

Figure 8: European Natural Gas Imports



Source: World Energy Outlook, IEA, 2014.

Turkey's geostrategic position is, as Richert states, "sitting on the only transit route substantially free of Russia".[45] Several pipelines such as the Baku-Tbilisi-Ceyhan (BTC) oil pipeline and the Baku-Tbilisi-Erzurum (BTE) gas pipeline have been constructed to connect the Azerbaijani Caspian Sea to the EU energy market. Although the 1700 km long BTC pipeline has facilitated oil exports from the Azeri-Chirag-Guneshli field all the way from Georgia to Turkey, it carries less than 1.5% of global oil demand; but with the BTC pipeline, the EU has "gained access to valuable new crude

[44] Öğütçü., M. "Turkey and the Challenging Dynamics of World Energy: Towards Cleaner and Smarter Energy", Insight Turkey(2010), p.75

[45] Richert, J., "Is Turkey's Leadership Over Before It Began?", PIC-Mercator Policy Brief, Istanbul Policy Center (2015), P.4

oil supplies that did not pass through Russia".[46] As the former US secretary of energy, Bill Richardson pointed out, "This is not just another oil and gas deal, and this is not just another pipeline. […] It is a strategic vision for the future of the Caspian region".[47] The BTC has signalled a shift to Azerbaijani sources and created hopes for other projects to come online. With the BTC as a source of inspiration, combined with disappointment about the deceased Nabucco project, in 2012, the Trans-Anatolian pipeline (TANAP) and Trans-Adriatic Pipeline (TAP) duel project has been suggested as an alternative, which has so far proven to be successful in bringing Shah Deniz gas to the Turkish border.

Major oil and natural gas pipelines in Turkey, whether they are operational or under construction, not only have helped Turkey to diversify its own imported energy sources but also assisted Turkey in its quest to become an energy hub, extending Turkey's horizons in its energy relations with neighboring countries.

In light of these circumstances, to better grasp Turkey's position as a provider of energy security for Europe and therefore positioning itself as a net beneficiary energy corridor country, I will take a closer look at the prominent features of current energy suppliers and will address the salient aspects of each that would overlap with Turkey's desire to be an energy hub in the region.

Turkmenistan

Turkmenistan is included in this survey because it is considered to be a potential supplier in future. According to the BP statistical review 2015, Turkmenistan holds the 4th largest gas reserves in the world after Russia, Iran and Qatar, having a total of 9.3% of the reserve. With the recent discovery of the second biggest Galkynysh gas field, Turkmenistan's gas reserves are estimated to reach 17.5 trillion cubic meters (tcm).[48] It can be claimed that Turkmenistan has emerged as a Caspian energy power in the region.

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[46] Cutler., R. and Korchemkin., K., "The Great Game for Gas in the Caspian, Europe Opens the Southern Corridor", Intelligence Unit, The Economist (2013), P. 5

[47] Ibid., P.5

[48] BP Statistical Review 2015, P.20 https://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-full-report.pdf

Among all the other major energy supplying countries, it is believed that Turkmenistan potentially has the greatest reserves to boost the gas production for Caspian gas consumers, in particular European consumers. A key intention of Europe has been to access Turkmen gas through a subsea pipeline that cross Caspian Sea as part of the Southern Gas Corridor project. Currently, Turkmenistan exports gas to Iran, Russia, China and Kazakhstan; however, with the construction of the Trans Caspian pipeline Turkmenistan can potentially link to the Southern Corridor in order to export to the EU gas market.[49] In 2011, the Trans Caspian pipeline system was introduced to connect the EU with Turkmenistan and Azerbaijan to bring a new source of gas to the Europe. A 300km pipeline system would prove to be less costly and technically problematic as other projects that stretch thousands of miles over continents. It is reported that 30 bcm of gas can be exported through the Trans Caspian pipeline to Europe. Nevertheless, there has been very little progress since the project was proposed due primarily to a lack of interest from the Turkmen side.

Nonetheless, there are territorial as well as diplomatic barriers which need to be overcome for the Trans Caspian pipeline to be realized. First of all, Russia and Iran have not favored this project from the very beginning since Russia claims that any infrastructural project that would involve the Caspian Sea needs to be approved by the five littoral states of the Caspian Sea, namely Iran, Azerbaijan, Russia, Turkmenistan and lastly, Kazakhstan. Secondly, the more challenging hurdles for the construction of this pipeline have been related to the financial aspect of the project. As Cutler and Korchemkin clearly point out, "A sizeable barrier to the project is Turkmenistan's policy to leave the financing construction of pipeline export routes to those that wants its gas".[50] Because the countries involved in this project have not resolved this financial aspect of the project, it could be understood that one of the main pillars of the Southern Gas Corridor will not be realized until the major energy companies, the EU, and transit countries shoulder the responsibility of bringing the project to fruition.[51]

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[49] Akhundzada, E., "Turkey as an Energy Hub: Opportunities and Challenges", 2015, p. 113

[50] Cutler and Korchemkin, op. cit., p. 21

[51] Ibid., P. 22

Its highly unlikely that the three major impediments outlined above will be resolved anytime soon, which further strengthens the idea that the Trans-Caspian pipeline project intended to connect Turkmen gas to the EU is more the result of wishful-thinking than the reality on the ground.

Turkmenistan has prioritized its gas market expansion towards China with the recently constructed Central Asia-China gas pipeline with a volume of 30 bcm. This improvement could be interpreted as meaning that the incumbent government in Turkmenistan is seeking an eastward expansion as a feasible strategy to strengthen its position in the region. Back in 2013, when the former EU Energy Commissioner Günther H. Oettinger requested a meeting with the Turkmen President Berdymukhamedov, he was refused, and no interest in further integration in gas trading with the EU has been evident. This unwillingness of the Turkmen side can be linked to two major reasons: first, political pressure from the Kremlin might increase if Turkmenistan threatens Russia's supremacy in the EU natural gas market and second, successful implementation of the Central Asia-China pipeline has satisfied Turkmenbashi to such an extent that Turkmenistan does not seek other parties having secured a significant market with China for the time being. Senior Advisor of the Bureau of Energy Resources for the US Department of State, Daniel Stein, clearly explains the reluctance of the Turkmen government to work with the EU, explaining the underlying reasons as follows, "The problem is that while the Chinese are able to say to the Turkmens, 'we need your gas; we will build you a pipeline,' Europe does not have the resources and is ambivalent about challenging Russia."[52] Overall, the Trans-Caspian pipeline does not represent a physically deliverable and commercially attractive prospect for both Turkey and the EU, thus this pipeline project does not represent the most viable option. Whether this project will ever be realized, therefore, remains to be seen in the years ahead.

[52] Fitzpatrick, C. A., " TCP Shelved, Tapı Stalled; Shake-Up ın Turkmenistan's Oil and Gas Ministries", Naturalgas Europe, (2013)
http://www.naturalgaseurope.com/turkmenistans-oil-gas-ministry-shakeup

Azerbaijan

With proven reserves of 1.2 tcm of natural gas and 7 bn barrels of crude oil, Azerbaijan is one of the major gas and oil suppliers to the Turkish energy market. [53] The largest portion of crude oil production comes from the offshore Azeri-Guneshli-Chirag field, which is 100km away from the capital city, Baku. Although oil production peaked in 2010 at one million b/d, since then production has been decreasing and has stood at around 863,000 b/d as of 2012, and 848.000 b/d in 2014, according to BP statistics.

Turkey's historically strong ties with Azerbaijan have further strengthened close bilateral energy relations which led, in the 1990's, to the idea of transporting Azeri crude oil to Turkey. When Azerbaijan was seeking an opportunity to leave Moscow's orbit and orient itself towards the West, the realization of BTC pipeline in 2006 formed a backbone for initial cooperation. The BTC has proven to be a successful part of the east-west energy corridor. In parallel to the BTC oil pipeline, the Baku-Tbilisi-Erzurum (BTE) gas pipeline was constructed in 2007. The BTE pipeline, as Kardaş points out, "not only allowed Turkey to have access to cheaper gas, but also equipped Ankara with a hedge against Moscow and Tehran".[54] Thanks to the development of Stage I of the Shah Deniz project, Azerbaijan has started to export gas to Turkey via Georgia through the South Caucasus Pipeline. Additionally, the development of the Shah Deniz II project will boost Azeri gas volume and it is estimated that production is likely to be doubled in the coming years.[55]With another 1841 km long gas pipeline project, the TANAP will be carrying a total of 16 bcm of gas, of which 6bcm will be used by Turkey's domestic consumers and the rest, 10bcm, will be transported to the EU gas market through the TAP project. [56] Although insignificant in terms of volume, Azerbaijan has granted Turkey the right to re-export 1 bcm of Azeri gas limited to Greece, meaning that other than Greece, Turkey cannot use the given the re-exportation right to sell to third countries that might be in dire need of gas during peak times.

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[53] BP Statistical Review 2015, P.6

[54] Kardaş, Ş., "The Turkey Azerbaijan Energy Relationship in the Context of the Southern Corridor", Istituto Affari Internazionali, March 2014, P.6

[55] Akhundzada, op. cit., p. 111

[56] Aras, B., "Turkish-Azerbaijani Energy Relations", Global Turkey in Europe, Policy Brief 15, April 2015

The Shah Deniz field will be important in diversifying EU supply sources and will remain an important part of the Southern Gas Corridor project, but, given the volume of the gas that will be transported, it can be claimed that it is not going to be a major game-changer. Due to political turmoil and uncertainty in the Middle Eastern sources; however, and the lack of desire from the Turkmen administration to bring Trans Caspian pipeline online, the Shah Deniz Stage II project has become a cornerstone and the "enabler" of the Southern Gas Corridor.[57] To an increasing extent, Azerbaijan has played a critical role in the Southern Gas Corridor by introducing new projects and working with international energy companies and thus creating an environment for Turkey to achieve its target of becoming an energy hub in the region. Consequently, other sources in the Middle East and Caspian region have to be deployed to strengthen the Southern Gas Corridor project and provide an alternative project to hedge against Russia's dominance in the EU gas market. In this regard, Turkey has to take a more proactive role in bringing other significant energy projects to the table in order to benefit from its central role as an energy bridge and to increase its potential to become a hub for both energy supplier and consumer countries.

Iraq

Although proven gas reserves in Iraq vary in volume according to different institutions, namely IEA and U.S. Energy Information Administration, Iraq is still considered one of the largest holders of natural gas and oil, with a volume of 3.6tcf of gas and 150bn of crude oil.[58] Almost two-thirds of the reserves remain in the southern part of the country while the rest of the resources lie in the North of the country, in the Iraqi Kurdistan Region. Since these enormous untapped resources are conveniently located near Turkey, Turkish energy companies have been working in the exploration of Iraqi gas and oil for over a decade and Turkey's friendly relations with the Kurdistan Regional Government (KRG) have reached an all time high. Turkey's first oil pipeline with Iraq has been operating since 1973; nonetheless on many occasions there have been attacks on the pipeline infrastructure.

[57] Kardaş, op. cit., p.6

[58] BP Statistical Review 2015, P.6-20

In 2009, former Prime Minister of Iraq, Nouri el-Maliki, stated that Iraq could supply the Nabucco pipeline with 15 bcm of gas. This created the hope that the Southern Gas Corridor through Iraq could potentially supply the EU gas market. However, there has been almost no progress towards this goal. Degeneration of domestic electricity infrastructure and disagreement over how to share the energy revenues has damaged the relationship between Baghdad and the KRG, by which Turkey has been adversely affected.[59] Since then, further friction between the parties has been on the rise.

Traditionally, the Turkish government preferred to sign contracts with the central government of Iraq. However, in recent years, due to the fissure between Ankara and Baghdad, Turkey has shown more inclination towards deepening energy ties with the KRG that would bolster Ankara's desire to become a gas hub in the region, which has further enflamed the rivalry. To further elaborate, in one of the international energy conferences that took place in Erbil, former Turkish Petroleum Pipeline Corporation manager Palaz asserted " Turkey was eager to purchase northern Iraqi gas for export to Europe".[60] Nevertheless, Baghdad has thwarted Turkey's attempt to enhance energy co-operation with the KRG and even prevented the Energy Minister of Turkey to land at Erbil airport in an attempt to block further cooperation between Ankara and Erbil. In this regard, Turkey has to employ a pro-active foreign policy and undertake a constructive mediation role to ease tensions. It is clear that neither Turkey nor Iraq will be benefitting from internal rivalry and instability. By contrast, Turkey's mediating role would boost the role that Iraq can play in the Southern Gas Corridor on condition that political order improves in Iraq.

The Eastern Mediterranean: The Republic of Cyrus and Israel

In 2011, Texas-based Noble Energy announced that the volume of untapped reserves in the Exclusive Economic Zone of Cyprus could reach up to 5 to 8 trillion cubic meters, which could easily put the region in the top ranks of the largest gas reserves category.[61] Turkey's coastal town Ceyhan could potentially be a promising energy corridor, through which Cypriot gas can be delivered to the EU gas market given the close

[59] Cutler , op. cit., P.39

[60] Çağaptay, op. cit., p. 27

[61] Çağaptay, op. cit., p. 28

proximity of the reserves. Nevertheless, considering the political dispute that divides the north and south, the potential to become one of the major gas suppliers of the Southern Gas Corridor project has been undermined and it is unlikely that there will be any resolution to the dispute any time soon. Turkey has remained the only country that recognizes Northern Cyprus as a legally separate entity and independent state. Conversely, the Republic of Cyrus continues to claim that the country "represents the people of Cyprus as a whole, including Turkish Cypriots".[62] For Greek Cypriots, among all the other options, the most financially feasible and economically viable option for bringing its gas to the lucrative European market remains the construction of a short pipeline through Turkey. The former Energy Minister of Turkey, Taner Yıldız, remarked on the potential project by saying, "a pipeline that would carry Cypriot gas to Europe via Turkey could be built, just like the way we carry water to Cyprus with pipelines".[63] However, unless Turkey resolves the dispute with the Republic of Cyprus through diplomatic channels, the potential for Cyprus to become one of the suppliers of the Southern Gas Corridor will be shelved for an unknown period of time.

As one of the potential newcomers to the Caspian "Great Game," Israel, with the newly discovered Leviathan (535bcm) and Tamar (285bcm) fields is promising supply sources of gas with these discoveries likely to prove a game-changer in the Southern Gas Corridor project. Owing to the revolution in Egypt, Israel was about to face severe gas shortages that were unanticipated before the newly found untapped gas reserves offshore in the Eastern Mediterranean. This timely discovery has facilitated Israel's energy supply security in times of very high fuel costs.

The relationship between Turkey and Israel after the Mavi Marmara incident has deteriorated to the lowest point in recent history. As a result, Israel and the Republic of Cyrus have inked a maritime border agreement with the aim of finding an alternative route to Turkey in terms of gas transportation. Despite all the conflicting views with Turkey, for Israel, Ceyhan still appears to be the most commercially sound option through which gas can be transported to Europe through its existing infrastructure. In other words, given Israel's financial strengths and capacity to access capital,

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[62] Ibid., P. 28

[63] Cutler, op. cit., p. 38

transportation of their additional gas through existing Ceyhan pipelines to EU is the most viable option for both parties.

Overall, energy co-operation would be a constructive catalyst for reconciling Turkey and Israel. Furthermore, trilateral co-operation between Turkey-Israel and Cyprus, as improbable as it may sound, would promote a secure energy source for the region and for Europe, as well as strengthen Turkey's hand in the Southern Gas Corridor as a major energy corridor country.

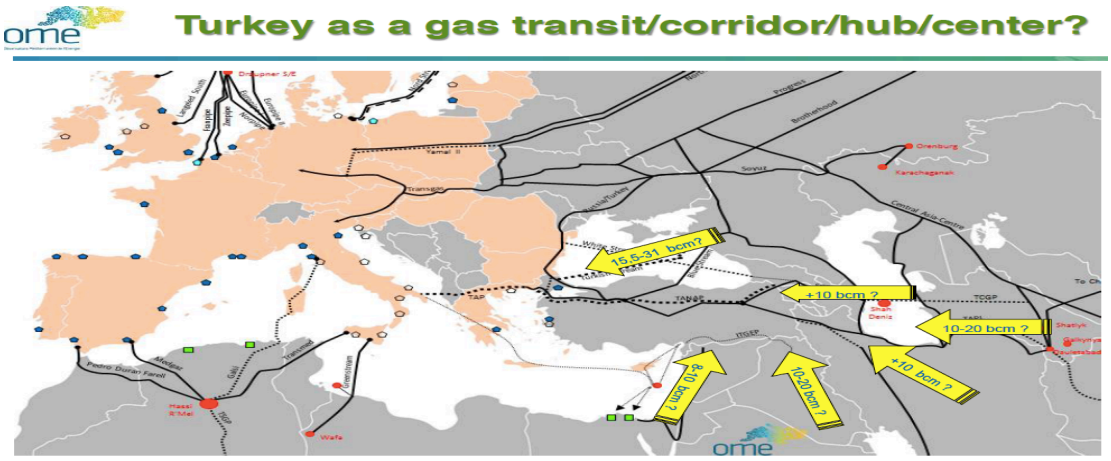
CHAPTER 2

THE REQUIREMENTS NEEDED FOR AN ENERGY HUB

Turkey's Ambition To Be An Energy Hub: Risks And Benefits

The designation of Turkey as an "energy corridor" and "energy hub" has been extensively debated in the literature over the years. What makes a country a hub or a corridor, however, remains ambiguous particularly since these two concepts have been used interchangeably in the literature. There needs to be a clear definition for what truly makes a city or a country a corridor or an energy hub. Therefore, distinguishing the differences between an energy 'transit or corridor state' and an 'energy hub' carries the utmost importance to better define the role a country can play regarding the energy arena in the region. For example, although some scholars such as Bilgin (2011)[64] notes that having the right of re-export is part of the requirement for an energy hub, for others, such as Winrow (2011),[65] the right of re-export to third countries is perceived as an attribute of a transit state, which creates the impression that the subject is still open to discussion among academics and with no clear framework as yet defined.

Figure 9: Turkey as a Gas Transit/ Corridor/ Hub Center?



[64] Bilgin, M., "Energy and Turkey's Foreign Policy: State Strategy, Regional Cooperation and Private Sector Involvement", Turkish Policy Quarterly, 2011

[65] Winrow, G., "Turkey: An Emerging Energy Transit State and Possible Energy Hub", The International Spectator, Italian Journal of International Affairs, 2011,

Countries in Eastern and Central Europe, such as Greece, Bulgaria and Italy envisage their position as 'the hub of Europe'. For instance, a pipeline that will serve as an interconnector between Turkey-Greece-Italy (ITGI) created the idea in the eyes of the Greek government that Greece will be serving as a potential gas hub, which, as a multi-sourced gas import project, will carry 15 bcm of gas to the EU market, serving the EU's diversification policy by securing supply sources from Caspian countries and the Eastern Mediterranean.[66] Additionally, the role of Greece is expected to be strengthened once the TAP pipeline project is realized and connected to the TANAP, which would serve as a route for Azerbaijani gas to reach the European gas hub at Baumgarten, Austria. Additionally, the transport of liquefied gas to the gas market through regasification terminals is another reason why the Greek government has claimed that Greece is becoming a gas hub for the EU.

In another case, Bulgaria expects to have interconnectors with Greece and Romania, and has been receiving natural gas from Russia and transporting it to the Turkish gas market. This along with ongoing short-term storage facility construction near the Bulgarian-Turkish border has to a certain extent created a level of justification for being defined as a gas hub. It can still be argued, however, that the Bulgarian government's claim that they have become "the gas hub of Eastern and Central Europe"[67] is questionable, given that some of the prerequisite requirements for being a genuine gas hub remain unfulfilled.

The realization of the TAP and TANAP project may contribute to the development of another gas transportation hub in Southern Europe by allowing countries such as Italy to reach energy consumers in the region such as Switzerland, which would further extend the number of countries that receive gas from TAP. Italy also imports gas both from Algeria and Libya— currently on hold— and re-exports it to the Austrian market.

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[66] http://www.edison.it/en/itgi-pipeline

[67] Roberts, J., "Turkey as a Regional Energy Hub", Insight Turkey, P,39-48, 2010

Figure 10: ITGI Pipeline

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Source: Edison

In order to reach final energy consumers in different parts of the world, energy producing countries might need to utilize infrastructure, which crosses from one state to another. When 'energy transit states' are passed through to reach a final destination, the energy producing country have to pay transit fees as compensation, but might offer discounts in its overall energy fees. Gareth Winrow describes these as "good transit states," whereas a transit country may not fulfil the requirements previously signed contracts by "break[-ing] agreements to demand higher transit fees or press for energy to be supplied at a discount price and they may illegally tap into hydrocarbons crossing their territory"[68], which he has dubbed 'bad transit states'.

All these developments in the countries of Eastern and Southern Europe have contributed to the process of becoming an energy hub. A carefully constructed

[68] Ibid, P.81

framework for being designated a hub, as well as the benefits it would bring, therefore, should be explained to better grasp the ambition to become an energy hub.

In the following, a comprehensive overview of an energy hub will be elaborated upon, and the infrastructural, commercial and political complications that hinder Turkey's progress towards becoming an energy trading hub will be analyzed.

The term 'hub' is defined as "the central and most important part of an area, system, activity etc., which all the other parts are connected to".[69] A energy trading hub in its most basic definition can be described as, "a place where energy is bought and sold" and in terms of the benefits, " a hub offers the possibility to do financial trading on one side and physical trading on the other; this includes storage, LNG, and pipelines".[70]

The basic requirements for a country to be considered an energy hub are clearly described by Iseri et al. as "a central market place where […] pipelines, storage facilities, refineries, terminals, petrochemical units and other energy related businesses may be located which offer jobs and boost the local economy" [71]. Although operational pipelines have contributed to the Turkish economy through transit fees and job creation, according to Iseri's definition Turkey does not really have sufficient storage facilities, terminals and units that would allow it to be identified as a major energy hub country. Given the current state of affairs, it is more suitable to describe Turkey as an energy transit country.

The Institutional Constraints Against Turkey Becoming An Energy Hub

The Regulatory Bottleneck In The Turkish Gas Market: BOTAS & EMRA

To utilize its unique geographic position and to establish a natural gas hub in the region, Turkey needs to take measures to improve its status, to move further away from being an energy transit corridor towards becoming an energy hub. First of all, among all the other measures, the regulatory environment is a major hindrance that stands against Turkey's ambition to be an energy hub. Until 2001, the gas market was controlled by

[69] http://www.ldoceonline.com/dictionary/hub

[70] Roberts, J., " Turkey as a Regional Energy Hub", İnsight Turkey, 2010, p-39-48

[71] Iseri E., and Almaz A., (2013), Turkey's Energy Strategy and the Southern Gas Corridor

the Petroleum Pipeline Cooperation (BOTAŞ). As a vertically integrated company, BOTAŞ has dominated the market structure and been responsible for a variety of operations such as: transmission, importation, wholesale as well as gas storage and lastly, LNG operation. Since the enactment of law 4646 in 2001, private companies have been allowed to import gas, which encouraged market liberalization. Currently, however, only seven private companies import natural gas, accounting for twenty percent of overall consumption, and the remaining eighty per cent of natural gas sales to the end user is still controlled by the BOTAS. These seven companies import capacity was equal to 10 bcm in 2015, while the volume for BOTAŞ was above 30 bcm, which could be interpreted as indicating that the import volume of private companies is nowhere close to BOTAŞ's capacity which has created unfair competition among the stakeholders.[72] Currently, no clear timeframe has yet been identified for exactly when market liberalization requirements would be fulfilled by the government. The fact that BOTAŞ determines the reference price of gas and is controlled by the public authority, Energy Market Regulatory Authority (EMRA), it leaves no doubt that significant steps need to be taken in regard to transparency, which would demonstrate Turkey's sincerity in opening its gas market to fair competition. Although the establishment of EMRA has brought somewhat new developments to the regulatory environment, especially to the secondary legislation, criticism over political influence in the decision making process has cast light on the importance of preserving the impartiality of institutions for effective and sophisticated market conditions. [73]

In defining the main problems in the regulatory framework and the current state of BOTAŞ, as Roberts notes, "should the Turkish gas market evolve into an open market, in which suppliers were free to strike their own deals with consumers, then, indeed, Turkey would become a true hub".[74] These characteristics demonstrate the very nature of the monopolistic gas market structure in Turkey where prices are not settled according to the principles of supply and demand but rather implemented weakly based on the likely benefits to the monopoly. Due to the heavy control of the policy makers

[72] Ozdıl, "Natural Gas Trading Hub in Turkey", EnerjiIQ, 2015 http://ceenenerji.com.tr/en/natural-gas-trading-hub-in-turkey/

[73] Ibid,

[74] Op. cit., Roberts, 2010, p.44

improved market conditions will not be realized in the years ahead as long as the current methods remain unchanged.[75]

In comparing the prices publicized by BOTAŞ and Western European hub prices, it can be inferred that consumers in Turkey paid around fifteen to twenty percent more, which, again, raises the vitality of gas-to-gas competition and market liberalization. Therefore, once the long-planned liberalization of the Turkish gas market is implemented, in line with the development of free pricing and gas-to-gas competition, many more players would be able to join the gas market, resulting in lower prices.

The Utilization of the Italian Model in the Turkish Gas Market Structure

One prominent example of market liberalization which BOTAŞ could follow would be one already initiated successfully in Italy, whereby it would hold responsibility for external supply, while the internal market would be left in the hands of different gas providers. According to Zaimler, the process of changing hands in the gas industry would require approximately ten years on the condition that "gas companies in the domestic market have to have greater independence from the gas supplier".[76] As yet the monopolistic structure of BOTAŞ has created a situation in which no price can be determined by other smaller suppliers, preventing competition in gas pricing. Therefore, a major overhaul in the field of regulation needs to be implemented, starting with the lowering of BOTAŞ' approximately 80% of market share.

It should also be noted that the gas market can only be liberalized and became transparent and competitive when BOTAŞ is unbundled into four bodies of import, transmission, storage and sales as was envisaged by the natural gas law, 4646.[77] Once the issue of unbundling is completed the currently established competition structure and access to the gas market by private companies will be significantly improved, paving the way for a better prepared energy market for Turkey that would ease its transition from being a corridor to a genuine energy hub. The issue of unbundling of BOTAŞ should have been completed years befor but there has still not been any significant step

[75] Op. cit., Ozdıl, 2015

[76] Ibid, P.45

[77] www.petform.org.tr

taken towards this long-planned gas market structure. Therefore, the model that has been used in Italy could be recommended as one of the most promising alternatives that could potentially work well for the Turkish gas market structure.

Inadequate Gas Storage and Physical Infrastructure

A second area in which Turkey needs to work toward change is the improvement of gas storage and other physical infrastructure, such as pipeline networking. Almost ninety-eight per cent (source) of natural gas consumed in Turkey is imported, making Turkey heavily reliant on the gas exporting countries of Russia, Iran, Azerbaijan, Nigeria and lastly Algeria. During the cold winter period, Turkey needs an extra volume of gas to meet demand at peak times, creating the problem of security of supply due to the lack of infrastructure and enough storage facility. Specifically in November 2015, the escalation of tensions between Russia and Turkey due the downed Russian jet, once again, has raised the question of whether Turkey can cope with the challenges of gas interruption that might stem from political conflict or any other technical problem.

Turkey has two main operational gas storage facilities, one of which is in Silivri and owned by Turkish Petroleum. It is in the northwestern part of Marmara region, with a capacity of 2.67 bcm and a withdrawal rate of 20 million cubic meters (MCM) of capacity, way below the necessary level to change Turkey's current energy bridge or corridor status into that of a hub. The expansion of the current capacity withdrawal to 30 mcm is planned for 2017. The second gas storage facility is in the province of Aksaray- Sultanhanı with a total volume of 1.5 bcm, which is owned by BOTAŞ. Although it is not yet operational, in the province of Central Anotolia, another project is underway in Tuz Gölü, which is projected to provide a capacity of 480 mcm once completed.[78] The Turkish Ministry of Energy and Natural Resources also has plans to invest in extra storage capacity to increase Turkey's resilience, at least to a degree of ten per cent in excess of domestic consumption in the years ahead.

Considering the LNG storage facilities, a private Turkish company Egegaz owns a capacity of 5.5 bcm in Izmir, on the West part of Turkey. The significance of the relative lack of storage capacity for the domestic energy security, however, cannot be

[78] http://aaenergyterminal.com/searchdetail.php?newsid=7116706

denied, considering the strategic implications of gas shortages nationwide in times of major crises. The role that this facility would play is likely to remain minor since the plant is unconnected to the infrastructure that would serve the whole country. For this reason, additional capacity that is evenly spread geographically, and well-connected to the national networks, is required to better supply the country as a whole.

In 2015, the second biggest growth rate of natural gas consumption after China was that of Turkey, making Turkey vulnerable to internal as well as external energy shocks. Countries such as Ukraine with 34 bcm of storage capacity, Italy 16 bcm, the Netherlands and Germany 10 and 24 bcm, respectively, while the storage facilities in Turkey lag behind these countries which consume similar volumes of gas. Concerning the benefits provided by underground storage facilities, Tim Boersma, fellow and acting director of the Brookings Institution's Energy Security and Climate Initiative, notes "It provides flexibility, and can be commercially interesting, provided there is enough variation between seasonal gas prices".[79] Given the capacity of the gas storage facilities currently operational in Turkey, it can be suggested that the country is nowhere near meeting the demands of a country that consumed approximately 50 bcm of gas in 2015.

The Ukrainian ambassador to Turkey, Sergiy Korsunsky, has recently come up with a proposal to strengthen relations with Turkey for whom spare gas storage capacity can be made available, suggesting that "We guarantee that whatever you put in you will receive it back whenever you need it. We have a spare capacity of at least 17-18 bcm. We recommended to BOTAŞ that Turkey can put approximately 17-18 bcm of gas into storage. Then, if market conditions are favorable, Turkey can sell it to Europe. If it's unfavorable, you can consume it or keep it".[80] In an interview with the state news agency, the Anadolu, he further elaborated on the challenges that Turkey would likely face in the near-term by noting, "It would be good if you have bigger storage. Unfortunately, Turkey does not have this geology on its territory. I think this is a problem and that is why we are working with Turkey to allow Turkish companies to use our storage in Western Ukraine. We don't have a deal yet but Ukraine's Naftogaz and

[79] http://aaenergyterminal.com/searchdetail.php?newsid=7116706

[80] http://aaenergyterminal.com/news.php?newsid=8349240

Turkish BOTAŞ are holding discussions".[81] Presently, Turkey's storage capacity can only meet five per cent of its gas consumption. Although, the Ukrainian Ambassador's proposal might meet Turkey's current need in the short-term, from the energy security point of view Turkey should be aiming to have around 10 bcm of storage capacity in the middle term.

Besides the problem of inadequate storage capacity, price fluctuations as well as changes in seasonal demand have also put a strain on Turkey to the extent that the construction of additional gas pipelines has become one of the prerequisites for meeting these and other similar unpredictable challenges. A high-pressure natural gas transmission network that has been established in Turkey with a length of 15,000 kilometers is far smaller than many of the world's biggest gas consuming economies. For instance, the U.S. has a 850,000 kilometer-long pipeline network, and the state of Texas, which has a similar land area to Turkey, has above 50,000 kilometers of pipeline infrastructure [82] , which clearly demonstrates that Turkey's pipeline network infrastructure is inadequate for a country of its size, and represents a hindrance to Turkey realizing its full economic potential.

Securing gas supply in peak times and in times of gas disruption requires advanced storage facilities. It should also be noted that for a country pursuing the goal of becoming a hub also necessitates spare capacity in which energy-consuming countries can trust. Unless Turkey constructs storage facilities along with extensive additional pipelines, which Turkey would use instead of Russian pipelines, the lack of these improvements would remain impediments that would shelve Turkey's goal of becoming an energy hub. It has been suggested, however, that one possible remedy to this problem in the short term is to recognize that because the storage facilities in Turkey belong to the state and continue to be run by the state, to overcome the capacity shortages and increase the overall resilience of the Turkish gas market, private companies should be encouraged to take part in building new facilities.[83]

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[81] Ibid.,

[82] Akhundzada, E., "Turkey as an Energy Hub: Opportunities and Challenges", Hazar Strateji Institute, 2014 http://www.hazar.org/blogdetail/blog/turkey_as_an_energy_hub_opportunities_and_challenges_796.aspx

[83] Ibid,

The Constraint Brought about by Gas Contract Agreements and of Re-Exportation:

Thirdly, due to the nature of conventional natural gas agreements, which have been based on long-term, oil indexed and take-or-pay terms, Turkey has also been forced to pay for gas, which it has not consumed. This contradicts the energy hub requirement of being "a place where energy is bought and sold".[84] Additionally, Turkey has to have the right to re-export gas under any circumstances. In reality, however, Turkey has no rights in this regard with the exception of the gas contracts agreed with Azerbaijan. One limitation to this arrangement is that this contract stipulates that Turkey can only re-export gas to Greece at a maximum of 750 mcm. The main reason why Turkey has not been able to secure more significant re-export rights is related to the fact that energy producer countries, namely Russia and Iran, do not like the fact that Turkey could profit from gas which originates from their territories. [85]

Overall, being an energy hub has numerous necessary preconditions that must be fulfilled. Turkey, therefore, has to secure the right to re-export gas and build bigger storage facilities and terminals, establish a more transparent gas transit regime, bring about a functioning competitive gas market, liberalize the gas market and develop a strong infrastructure in order to lay the foundation for the establishment of a genuine energy hub.

In addition to these preconditions, some other conditions might be met to strengthen Turkey's hand in achieving its ambition to become a hub. Firstly, the weight of gas-to-gas competition should be internalized. Secondly, a transition towards flexible and dynamic market contracts, varying from short-term to spots and hub pricing, should be integrated and supported with a new legal and regulatory framework. Thirdly, a greater volume of LNG should be facilitated and integrated into the system to balance the risks associated with pipeline-based gas.

Once Turkey overcomes these major hurdles and becomes a genuine energy trading hub in the region, it would be able to take a more influential role in regional energy

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[84] Roberts, J., "Turkey as a Regional Energy Hub", Insight Turkey, 2010, P. 41

[85] Winrow, G.M., "The Southern Gas Corridor and Turkey's Role as an Energy Transit State and Energy Hub", Insight Turkey, Winter 2013, P-160

geopolitics and its international standing will also be enhanced and strengthened, which eventually would contribute to the overall energy security of both Turkey and the EU.

As long as Turkey fails to reduce its dependency on Russian natural gas, liberalize its natural gas market, build better storage facilities and increase its funding for building transfer units, its hopes of becoming a physical energy hub country will not be realized.

Turkey's successful advancement to the status of gas hub can only be realized with a deregulated gas market created on the premise of a transparent gas market structure along with broad liquidity and flexibility as well as based on a solid market culture and committed political will. Additionally, multiple gas supplies, with the help of larger financial players, and the provision of non-discriminatory access to gas storage would help to elevate Turkey's current status as energy corridor to that of an energy hub.

Implications of the EFET's Gas Hub Development Study for Turkey: Strengths and Weaknesses

The study undertaken by the European Federation of Energy Traders (EFET) in 2014, which was the one of the first of its kind, has shed light on the ambiguous framework of the energy hub, corridor and energy center concepts by developing a model based on the experiences of EFET members. This regards identifying what makes a country an energy hub by providing individual assessments, guidelines and recommendations with an aim of supporting the development of gas hubs in the EU.[86] With this initiative, Transmission System Operators (TSO's) and National Regulatory Authorities (NRA's) will have the chance to look at the weaknesses and strengths of their position in comparison to all other hub candidates and thereby would be able to make an effort to create more balanced market conditions. The European Federation of Energy Traders states that their study has not yet been completed and they will "continue to work on other market-opening measures in addition to hub design".[87] The ambitious model is intended to inspire the creation of a virtual trading point, which later on would turn into

[86]http://www.efet.org/Cms_Data/Contents/EFET/Folders/Documents/PressRoom/PressStatements/2006Today/~contents/QDB22MZARUA6H6P4/EFET-PR-95-EFET-update-of-gas-hub-assessments.pdf

[87]http://www.efet.org/Cms_Data/Contents/EFET/Folders/Documents/EnergyMarkets/VTP_Assessment/~contents/3WAJGMFN7MDJYZ2Q/GHD-Study_summary-ppt_part-1.pdf

a benchmark for existing hubs and new comers, creating a baseline for "new hubs [attempting] to reinvent services to market."[88]

The European Federation of Energy Traders (EFET) has been assessing the ranking of many countries out of twenty conditions comprising of regulatory, TSO as well as market conditions with a study called "European Gas Hub Development Study (EGHDS)". According to the EGHDS' study of 2015, the score for Turkey out of twenty was only 5.5,[89] which meant that Turkey is far from fulfilling the requirements of an energy hub. In the following table, requirements that need to be met for an energy hub are scored in different categories in which regulatory rules are equal to six points, TSO is seven and the other seven marks are given for the best market conditions.

Figure 11: NBP-Score 20

NBP – Score 20

EFET

Responsible party	What should be done	Comments	Score
NRA	Establish a consultation mechanism	UNC governance, transmission workstreams	1
TSO	Entry-exit system established	Entry-exit with single VTP	1
TSO	Title Transfer		1
TSO	Cashout rules		1
TSO	Accessible to non-physical traders		1
TSO	Firmness of hub	Fully firm through OTD market	2
TSO	Credit arrangements non punitive		1
NRA	Resolve market structural issues (defined role for historical player)	Previously instituted, no longer required	1
NRA	Role of Hub operator	TSO role in Transp Licence; APX in Fin Reg	2
NRA	Agree regulatory jurisdiction if cross border	Single jurisdiction under Ofgem	1
Market	Establish a reference price at the hub for contract settlement	SMP clearly defined on every day	1
Market	Standardised contract	NBP 97	1
Market	PRAs at the hub	Platts, ICIS Heren, Argus	2
Market	Market makers		1
Market	Brokers	Several brokers through Traypoirt	1
NRA	Establishment of exchange	ICE	1
Market	Index becomes reliable and used as benchmark	NBP – globally traded	1

[88] Ibid., P. 6

[89] http://www.efet.org/Cms_Data/Contents/EFET/Folders/Documents/EnergyMarkets/VTP_Assessment/~contents/7RZ2F2A9MBWRUQLV/Individual-Hub-Assessments_part-2.pdf

Figure 12: Turkey-EFET

Turkey – Score 5½

Responsible party	What should be done	Comments	Score
NRA	Establish a consultation mechanism	Petform+EFET	1
TSO	Entry-exit system established	Under discussion	0
TSO	Title Transfer		1
TSO	Cashout rules		1
TSO	Accessible to non-physical traders	?	
TSO	Firmness of hub	?	
TSO	Credit arrangements non punitive	?	
NRA	Resolve market structural issues (defined role for historical player)	?	
NRA	Role of Hub operator	BOTAS	½
NRA	Agree regulatory jurisdiction if cross border		1
Market	Establish a reference price at the hub for contract settlement		
Market	Standardised contract	Proposed, unclear if adopted	½
Market	PRAs at the hub	Limited	½
Market	Market makers		0
Market	Brokers		0
NRA	Establishment of exchange		0
Market	Index becomes reliable and used as benchmark		0

The conditions presented in the table above show the details of Turkey's overall score of 5.5. Turkey was successful in establishing a consultation mechanism, which is named Petform and working in conjunction with The European Federation of Energy Traders (EFET). Regarding the role of hub operator, which is run in Turkey by BOTAŞ, Turkey got only a half point out of two meaning that there is a room for growth for this requirement. Additionally, both for standardized contracts and PRA's at the hub, Turkey met only 50% of the requirements for each. These also have to be evaluated and improved.[90] On account of the other numerous conditions mentioned in the EFET's list, for which Turkey scored zero are shortcomings which cause the country to lose 14,5 points out of a potential total of 20. This should be interpreted to mean that progress towards a liquid trading hub is still a distant goal for Turkey. Clearly if Turkey wishes to take full advantage of its potential, it would need to be more conscientious in addressing its shortcomings.

[90] Ibid.

A useful comparison would be one of the best-scoring countries, Austria, the achievements of which can be viewed in the following table.

Figure 13: Austria-EFET

Austria VTP (CEGH) – Score 14

EFET

Responsible party	What should be done	Comments	Score
NRA	Establish a consultation mechanism	Frequent CEGH consultation	1
TSO	Entry-exit system established	VTP but limited transfer between transit /domestic	½
TSO	Title Transfer		1
TSO	Cashout rules		1
TSO	Accessible to non-physical traders	Limited arrangements for non-physical traders	0
TSO	Firmness of hub	Firmness limited	1
TSO	Credit arrangements non punitive	Mandatory exchange prohibits smaller cos	½
NRA	Resolve market structural issues (defined role for historical player)	None	0
NRA	Role of Hub operator	Complex split role CEGH / AGCS / GCA / WB	1
NRA	Agree regulatory jurisdiction if cross border	Single jurisdiction under Econtrol	1
Market	Establish a reference price at the hub for contract settlement	Price established by market/deemed	1
Market	Standardised contract	EFET appendix	1
Market	PRAs at the hub		2
Market	Market makers		1
Market	Brokers	Several brokers through Trayport	1
NRA	Establishment of exchange	Wiener Borse	1
Market	Index becomes reliable and used as benchmark	Not requested	0

Major Energy Hub Cities in Europe: What Rotterdam & Baumgarten Offer As Major Gas Trading Hubs

Offering an excellent location for international gas trading along with its state of the art infrastructure and numerous gas supply routes, Baumgarten in Austria has been a unique connection point between liquid and illiquid markets. The Central European Gas Hub in Baumgarten, established in 2005, has been serving as one of the largest stations in Central Europe.[91] With its 20 billion cubic meters (bcm) of high storage capacity within a 400 km radius it assures high flexibility as well as supply security for Central

[91] Austria Strives for Major Role in EU Gas Trade", Natural Gas Europe, 2 July 2014 http://www.naturalgaseurope.com/austria-strives-for-major-eu-role-in-gas-trade

European gas consumers.[92] What makes Baumgarten so different is related to the interconnection point where the gas hub receives gas from various sources and these supplies are re-routed to other gas consuming countries via a number of pipeline systems covering various regions. Moreover, the facilities at the Baumgarten gas hub are able to receive, meter, as well as test and compress natural gas at the station.

As one of the most advanced dispatch centers and with its transmission and distribution system operators, it can be viewed in the figure 9, Baumgarten handles great volumes of gas for various countries such as Italy, Slovenia and Croatia through the Trans-Austria Gasleitung (TAG) pipeline and Süd-Ost-Leitung (SOL) pipeline to Hungary through the Hungaria-Austria-Gasleitung (HAG) pipeline, to Slovakia through the March-Baumgarten-Gasleitung pipeline and lastly, to Germany and France through the West-Austria-Gasleitung (WAG) and the Penta-West Pipeline (PW).[93]

Figure 14: Baumgarten Hub

Source: Gas Connect Austria

The continuous flow of gas supplied mainly by Russia, Norway as well as from other countries arrive at the Baumgarten Hub and from there are directed through the

[92] Weinstabl, M., " Central European Gas Hub",CEGH, 7th Gas Forum 26 September 2012 https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/1738181/0633975ABB577B9CE053C92FA8C06338.PDF

[93] Gas Connect Austria, General Information http://www.gasconnect.at/en/Fuer-Kunden/Sales Transmission%20neu/Allgemeine-Information%20neu

aforementioned pipelines transiting to the various destinations in Hungary, Slovenia, Germany and Italy with a total length of approximately 2.000 kilometers of underground and undersea pipelines.[94]

According to the statistics given by the Austrian OMV, a volume of approximately 46 bcm of natural gas was transported through these pipelines in 2014 and increased to around 57 bcm in 2015.[95] According to OMV Gas & Power, currently over a hundred million cubic meters of gas is being transported through Baumgarten every day. Almost one-third of gas imported to the Baumgarten gas station is from Russia, only one-sixth of which is retained for domestic consumption. According to the BP Statistical Review of World Energy 2015, Austria consumed around 7.9 bcm of gas in 2014, while exported 46 bcm.[96] Clearly these figures demonstrate what can be considered a benchmark for a successfully operating modern gas hub. Ceyhan, which is, among other stations, currently handling only for domestic consumption, would do well to emulate this increase in volume to rise to gas hub status.

Since 2012, after meticulous upgrading, Baumgarten, once a physical point only, has become a virtual trading point, a new system that has brought more liquidity. This means that competition is stimulated among newcomers to the gas market with the aim of providing better prices for end users.[97] Overall, an energy hub operating as a virtual trading point has the following characteristics: implementation of market-based pricing, free access to the market for all participants, and an effectively functioning trading system that fosters hub-to-hub trading.

European Hub for Oil and Gas: Rotterdam

Rotterdam, as a European hub for production distribution and arrival point and one of the largest industrial as well as logistic clusters, guarantees all source of energy

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[94] OMV Group, Transport, Natural Gas of Europe
http://www.omv.com/hse2006_en/html/transport.html

[95] Ibid.,

[96] "Austria Strives for Major Role in EU Gas Trade", Natural Gas Europe, 2 July 2014
http://www.naturalgaseurope.com/austria-strives-for-major-eu-role-in-gas-trade

[97] Haenschh, M., "Austrian Natural Gas Hub Finally Becomes Virtual Trading Point", ICIS, 31 December 2012
http://www.icis.com/resources/news/2012/12/31/9627377/austrian-natural-gas-hub-finally-becomes-virtual-trading-point/

commodities to come together. As a European gateway for oil and gas transition, Rotterdam provides a perfect location with its economy of scale and reliable services. Thanks to the half-century experience of well-developed knowledge in the sector, Rotterdam has laid a foundation for game changing innovations and research & development in the gas and oil sector.

The total length of transmission network in Netherlands is around 12.050 kilometers and overall gas storage capacities reaching at 13.3 bcm as of 2015. Gas storage facilities are distributed in different parts of the country in places like Norg, Alkmar, Epe, Bergermeer, Grijpskerk.

According to the figures provided in 2015 by the Dutch Ministry of Economic Affairs of Energy Market Directorate, the total volume of export reached at 58 bcm.[98] While the Netherlands consumed 31.8 bcm of gas, produced 43 bcm as of 2015, according to the BP statistical review of world energy 2016[99].

The Netherlands has been one of the key gas producers and the main distribution center for the Northwestern Europe for the last fifty years. Although, it is estimated that the production in one of the major gas production fields in Netherlands' Groningen field is set to continue in decades to come, the total production has been declining. Apart from Groningen field, numerous other offshore and onshore gas fields contribute to the overall gas production. According to the projection figured out by the Dutch Energy Market Directorate, the overall production in 2020 is expected to be 39 bcm while this number precipitates in volume to 26 bcm by 2025 reaching at total volume of 12 bcm in 2030.[100] However, it should be noted that having large volume of gas reserves is not a requirement for an energy hub but rather great volume of gas that would flow to the hub center is a vital component, which has been the case for Baumgarten.

With its liberalized market and the number of players actively in the gas sector, high transmission network supported with underground storage reservoirs, and having the

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[98] Role of Natural Gas in the Netherlands, Energy Market Directorate, P.2, https://www.unece.org/fileadmin/DAM/energy/se/pp/geg/gif5_19Jan2015/s2_6_vantHof.pdf

[99] https://www.bp.com/content/dam/bp/pdf/energy-economics/energy-outlook-2016/bp-energy-outlook-2016.pdf

[100] Role of Natural Gas in the Netherlands, Energy Market Directorate, P.9 https://www.unece.org/fileadmin/DAM/energy/se/pp/geg/gif5_19Jan2015/s2_6_vantHof.pdf

largest Title Transfer Facility (TFF) and well functioning APX-Endex gas exchange, Rotterdam provides optimum ground for an energy hub.[101] As a well-established gas-trading hub, Rotterdam is linked to the global gas market and operates as a producer, and trader. Currently, many of the gas consumer countries in Northwestern Europe has been benefiting from TTF as a virtual trading hub and a benchmark that allows gas to be transferred to another party, which outpaces other trading centers. The system ensures the balance between supply and demand, and buyers can take delivery at anytime while vendor can supply gas any point to the network. Advanced level of networking and transfer facilities is a must to provide safe and secure supply to the end user.

Additionally, the establishment of secure, transparent electronic trading environment that allows energy exchanges has necessitated the need in this field, which has fulfilled by forming APX-Endex serving as spot and future market for energy exchanges. The establishment of APX-Endex has contributed to the integration of gas market in the EU. Virtual trading point created through APX-Endex and TFF as benchmarks of a gas trading hub should be benefitted and similar system operator should be established in Ceyhan port for integrated, consolidated energy exchanges. Therefore, the facilitation of development of integrated and liberalized gas market that ensures the balance between supply and demand and functions in line with other major gas hubs in Europe would help Ceyhan port to elevate its position from solely serving a transit point where gas and oil transported.

[101] The Dutch Gas Hub, Publication of Ministry of Economic Affairs, The Netherland, P.25, 26

CHAPTER 3

TURKEY'S ABILITY TO CREATE SPARE CAPACITY TO OFFER AN ALTERNATIVE OPTION FOR THE EUROPEAN GAS MARKET

The Evolution Of The Natural Gas Market In Turkey

In 1976, the very first natural gas reserves were discovered in the province of Kırklareli. Due to electricity shortages and in order to meet the increasing energy demand, Turkey considered alternative energy sources, one of which was natural gas. Since then, overall consumption has increased not only for industrial and household consumption but also for natural gas utilized for electricity generation. Although energy relations between the European countries and the USSR date back to 1960, it was only in the 1980's that Turkey decided to benefit from such a valuable commodity. Subsequently a memorandum of understanding between Turkey and USSR was signed in 1984 to import natural gas. By the year 1986, an agreement covering twenty-five years was signed between BOTAŞ and Soyuzgazexport, which carries the gas through a 842 kilometer-long pipeline named the Russia-Turkey West Pipeline. Turkey also signed an agreement to import liquefied natural gas (LNG) and natural gas from Algeria through marine transportation in 1986. By 1988 Ankara was the first city whose residents were able to use natural gas in their homes; this was later introduced in Istanbul and Bursa in 1992. With an aim of creating a framework for the natural gas sector which would prove competitive and encourage a transparent market structure, law no: 4646 was enacted in 2001. [102] Considering the overall energy mixture of Turkey in the generation of electricity, natural gas is the "most used fuel type", followed by coal, hydropower and oil. [103]

The analysis in this section will be based on current discoveries and potential improvements in the field of energy in the region that surrounds Turkey. Firstly, Turkey's neighboring country, Iraqi Kurdish Regional Government (KRG), will be closely analyzed in terms of perils and pitfalls that the country presently faces,

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[102] General Directorate of Petroleum Affairs, BOTAS http://www.pigm.gov.tr/ - http://www.botas.gov.tr/

[103] Bilgin, M., "Turkey's Energy Strategy: What Difference Does It Make To Become An Energy Corridor, Hu bor Center?" UNISCI Discussion Papers, May, 2010, P. 113- 128

requirements will be elaborated on regarding the role that would likely play in Turkey's energy future and how it would serve Turkey's strategic ambition to become an energy hub. Secondly, the future of liquefied natural gas (LNG) in Turkey will be examined and the main requirements which eventually would contribute to the understanding of the potential role that LNG can play in the medium and long-term in Turkey's energy mixture will be demonstrated. The importance of Qatar as well as other newcomers to the LNG business will be detailed and the estimated spare capacity will be shown with the view that Turkey could serve as a potential energy hub country between energy producing and energy consuming countries. Thirdly, newly developed offshore gas fields surrounding the Mediterranean will be considered. Additionally, the spare capacity that Leviathan and Tamar would make available to Turkey and the EU gas market will be studied with the aim of grasping the prospects for Israel's gas fields fulfilling Turkey's ambition to create a regional natural gas hub.

Why Turkey Is The Best Option for the KRG's Oil Export Strategy

As the world's fifth and thirteenth biggest oil and natural gas reserve holders, Iraq's potential to meet the increasing demand of the Asian market has become increasingly evident in recent years.[104] Iraq has two major production centers, comprising the Northern, and Southern and Central fields, which constitute 21 percent and 79 percent of total oil production capacity, respectively.[105] It is estimated by the IEA that the area that the Kurdish Regional Government (KRG) controls contains around four billion barrels of oil but the whole region still remains under-explored. While the KRG is in control of the Northern fields, the Southern and Central fields are under the control of the central government. This classification simply reflects the current geography and politics in Iraq and is not an argument for supporting the Kurdish Regional Government (KRG) breaking away from Iraq.

Given the fact that the production fields in Iraq are mainly land-locked, to expand Iraq's oil output, exportation will require secure transnational pipelines. However, transnational pipelines carry various risks that have be taken into account, especially in

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[104] World Energy Outlook, International Energy Agency, 2012, P. 420, 439

[105] Bowlus, J.V., " Pipeline Partners: Expanding and Securing Iraq's Future Oil Exports", Global Relations Forum, 2015, p. 3

the face of the threat of Islamic State (IS) and the global oil supply glut that has resulted in a collapse in oil prices.[106] Therefore, the limitations that the Kurdish Regional Government (KRG) faces due to the happenstance of its geography could be overcome by mutually beneficial commercial ties with Turkey, which would strengthen relations between the parties and potentially secure the KRG's capacity to transport oil to the world market.

One might suggest that the KRG has to diversify its export routes in order to seek an alternative option so as not to be heavily dependent on a particular source. Given the current geography of the area controlled by the KRG, options that are available are for the KRG to export its oil through Iran, Jordan and Syria.

Constructing an oil pipeline between the KRG and Iran, because of its economic viability and geographic logic, is not feasible considering that the KRG's primary oil market is Europe. Assuming that the pipeline is constructed from the KRG to Iran, exporting oil from the Persian Gulf to the potential Asian market requires shipment, which eventually would cost more than Mediterranean pipeline routes.[107] Additionally, in recent years the relationship between the KRG and Iran has been uncooperative and is unlikely to recover to a credible energy relationship anytime soon. Apparently, the Iranian option is not on the table for the KRG's administration.

The ongoing conflict and constant threat of Islamic State has created the outcome that Syria is also an impossible partner in years ahead. Even before the Syrian war, despite the Iraq Petroleum Company (IPC) pipeline that passed through Syrian land in between 1930's to 1960's proving to be a successful case in the region, in the years following Iraq's heavy dependence on this pipeline it was used for political leverage by Syria over the Ba'ath regime of Iraq and subsequently resulted in the closure of the pipeline.[108] Presuming that even if Syria and Iraq end the terror of IS and settle the internal conflict in their home countries, the possibility of exporting Iraq's Kurdish Regional Government (KRG) oil through Syria or even Jordan do not look like promising alternatives since tribal groups in the Western Anbar province of Iraq have attacked the

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[106] "Issue Brief: Iraq's Oil Sector", Center on Global Energy Policy, SIPA, Columbia, 2015

[107] Ibid, p.8

[108] Ibid,

Kirkuk-Ceyhan Pipeline hundreds of times. Therefore, a new pipeline on this route would not only suffer from exorbitantly high capital expenses of construction but would also likely be exposed to security threats.

The most financially sound and physically secure option for the KRG's oil and gas transportation routes for exporting its hydrocarbons is to construct a pipeline parallel to the Khurmala-Ceyhan pipeline with the same volume of Kirkuk-Ceyhan. By building a pipeline on this stated line, it will be a cost effective option given the elevation variability in the region as well as overall expenditure on protecting already existing pipeline. With this pipeline, the total volume of oil would reach 1.5 mbpd from a volume of 800.000 mbpd.[109] Also expense of establishing security forces will be less costly since the new pipeline will be laid near the existing pipeline. In this regard, it can be claimed that Ankara would serve as an indispensible partner for Erbil, especially in comparison with other available partners for securely transporting its gas and oil to Europe or elsewhere through Mediterranean routes. Other than during the Gulf War and UN sanctions on Iraq's government from 1990 to 1996, Turkey has never shut down the Kirkuk Ceyhan pipeline and has been a reliable partner. Even if the pipeline between the states is attacked or sabotaged by ISIS or any other terrorist organization, Turkey would act swiftly to repair and re-open it within a matter of days, which again serves to support the notion that Turkey still stands as the best available option for the region. On the 8th of May, despite Baghdad's attempts to prevent oil and gas sales, a tanker carrying Kurdish Regional Government (KRG)'s oil embarked from the Turkish coastal town of Ceyhan, anchored in Trieste, and reached the European refineries through the Transalpine Pipeline.[110] Turkey's incumbent government has been having a tough time with the central government of Iraq for allowing the KRG to export oil through the Ceyhan pipeline; however, the KRG has put a great deal of effort in establishing an image of itself as " Turkey's buffer- and investor-friendly"[111]. Although Baghdad has

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[109] Bowlus, J.V., " Pipeline Partners: Expanding and Securing Iraq's Future Oil Exports", Global Relations Forum, 2015, p. 9

[110] Pflüger, F., "Kurdish Oil Will Find Its Way Out", Energypost, (2016) http://www.energypost.eu/kurdish-oil-will-find-way/

[111] Miller, K., "Strange Bedfellows", The Majalia, January 2, 2013 http://eng.majalla.com/2013/01/article55236788/print/

attempted to prevent the sale of the KRG's oil and gas, it seems this approach is doomed to fail given the increasing need for energy both in the region and the world. Thanks to its abundant fossil fuel reserves, the KRG 's economy continues to expand, which will likely give the KRG's administration the upper hand in dealing with the Central government.

Once bitter and conflicting views between Turkey and the KRG started to change when the first Turkish premier visited and opened the International Airport in Erbil. This intensified relationship can be viewed as having been the result of natural gas "surg[-ing] to the center of several geopolitical tussles taking place in and around the Middle East".[112] Especially considering Turkish and Kurdish historical mutual enmity both at home and in the region, this change has been suspiciously questioned: "one of the single most interesting shifts in today's political climate is the transformation of Turkey's relationship with Iraq's Kurdistan Regional Government".[113] In 2010, the KRG's influential energy minister Hawrami announced that the parties agreed on supplying the Turkish gas market with up to 60 bcm of natural gas starting from 2015 once details that were on the table were agreed upon. It can be claimed that by the year 2020, it is likely that the Kurdish Regional Government (KRG) would supply Turkey with up to 10 bcm of gas and it is also estimated that this volume would increase up to 27 to 30 bcm until 2035 with the condition that ongoing long-running regional conflicts are resolved and investment conditions improve.

With an estimated 2.8 to 5.7 trillion cubic meters of natural gas reserves[114] above Norway's overall gas reserves, the KRG insists on "market-based commercialization"[115] of its oil and gas. Since the enactment of oil and gas laws of the Kurdistan Region of Iraq in 2007, despite the ongoing argument whether it is constitutional or not, and increasingly intensifying antagonism between the parties, as Pflüger rightly asserts, "energy almost always makes its way to where it is needed. National and ideological borders hardly play a role when it comes to international energy trade."[116] From the

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[112] Ibid.,

[113] Ibid,

[114] World Energy Outlook, International Energy Agency, 2012, P. 430

[115] Pflüger, op. cit.,

[116] Ibid.,

perspective of Turkey, their policy orientation, at least recently, has consistently been that, "if there is no interference, Turkey won't turn down its neighbor's inexpensive oil".[117]

Given the KRG's potential for supplying gas to Turkey, one third of Turkey's currently consumed gas would be supplied by KRG in the years ahead as long as the required investment in infrastructure is delivered, its obsolete facilities are renewed and antagonism between Erbil and Baghdad are settled with the help of Ankara's further strategic planning.[118]

By 2020, total production of gas could reach to up to 12 bcm and in 2030 there is a very high probability that this volume could get to the level of 32 bcm.[119] The KRG has planned to export gas from 2020 at the latest, starting with 10 bcm and reaching to 20 bcm within a decade, which would be a relatively cost-competitive source of gas supply for the EU market, particularly given the fact that the importance of natural gas in the overall energy mix has increased from a marginal role to central stage in recent years, especially for electricity generation.[120] Therefore, it can be claimed that gas will be replacing oil for power generation, freeing up oil resources for export. This trend would be a win-win solution for Iraq's oil and gas sector problems by providing greater funds to the state budget that would be available for investment in the renovation of its crippling infrastructure.

Due to the fight between Erbil and Baghdad, the Iraqi government has cut off the KRG's budget, and the KRG has been constantly looking for ways to increase its revenue by exporting its petroleum products to the world oil market. That being the case, "Turkey holds all the leverage over Kurdistan; whereas it can import oil from global markets, Kurdistan's economic survival relies upon accessing consumers via Turkey"[121], as pointed out by Nicholas Borroz on the topic of the vitality of Turkey for

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[117] Ibid.,

[118] Wahab, B.A., "Iraq and KRG Energy Policies: Actors, Challanges and Opportunities", The American University of Iraq Sulaimani, May 2014, P.34

[119] WEO, 2012, P.441

[120] Ibid., P.449

[121] Borroz, N., " Turkey's Energy Strategy: Kurdistan over Iraq", Turkish Policy Quarterly, 50th Issue, Volume 13 Number 2, Summer 2014, P.107

the future prospects of KRG's economy. Natural gas consumption in the overall energy mix is set to increase in Turkey and it is estimated by the Turkish Ministry of Energy that in 2023 Turkey would need approximately 70 bcm of gas[122], which clearly reveals the reason why Turkey has been proactive both commercially and diplomatically with KRG. With the cooperation of the KRG, Turkey would get spare capacity of 10 bcm in the short term once technical problems are resolved, with the prospect of this increasing to 20 bcm in the long term.

The Role of LNG

Since the first shipment of liquefied natural gas (LNG) from Algeria to the UK market in 1964, the volume of LNG imported all around the world has increased substantially, reaching 241 million tons per annum as of 2014.[123] Re-gasification capacity also surged to 202.7 bcm in 2014, according to the figure provided by the Group of LNG importers. As a result, the traditional pipeline based natural gas transportation has come under scrutiny with the introduction of this pioneering alternative, which has paved the way for a new method of natural gas transportation. The World LNG report points out that currently, nineteen countries export and twenty-nine countries import LNG.[124] Since 2000, overall growth in LNG has been seven percent and presently, the share of LNG in total natural gas consumption accounts for ten percent.

Gas reserves in the world are not distributed evenly, therefore accessibility to pipeline systems is very limited due to geographic difficulties. For countries that have no prospect of getting connected to a pipeline system and are very far away from natural gas exporting countries, LNG offers greater flexibility in the transportation of gas. Secondly, it should also be noted that construction of transnational pipelines is a costly business, not to mention the physical security issues that arise from pipelines being an easy target in times of conflict between neighboring countries. For this reason, LNG offers greater security. Another point is that LNG offers an alternative by making it easier to diversify sources in the energy mix, which overall strengthens energy security. Lastly, in recent years, LNG has increasingly sold at spot markets which proves the fact

[122] Ibid., p 105

[123] World LNG Report, International Gas Union, 2015, p.7

[124] Ibid, p.14

that LNG can benefit at any stage of the value chain and therefore, in times of gas shortages due to any unexpected circumstances, LNG would likely become the most promising alternative by creating plenty of room for manoeuvre.

Since 1964, knowhow and specialization have accumulated in the LNG field. In the past, due to its relatively higher cost and price concerns, LNG had not drawn the attention of countries that were consuming natural gas. Due to production (liquefying the gas for shipment afterward at the terminal turning into gas form) and transportation difficulties and having linked to oil prices, LNG has been relatively costlier than pipeline based natural gas and, therefore, LNG has not been on top of the list of major gas importing countries of the world. However, in recent years price reforms in natural gas, especially in short term-spot market prices, has attracted a great deal of attention. Recent developments in the energy world have caused downward pressure on LNG prices, which have occurred due to several reasons. Firstly, the shale boom in the U.S. has attributed to the creation of a gas glut; and this excessive supply of gas has resulted in lower prices at the Henry Hub spot gas market. Secondly, the collapse of oil prices for the last eighteen months, which hit as low as thirty USD on 12th January 2016[125], has pushed overall LNG prices to a reasonable level since the majority of LNG contracts have been signed on the basis of oil-indexed-long-term contracts. It should be expected that in the years ahead LNG is likely to become a matter of interest for various stakeholders. Countries such as Poland, Estonia and other Baltic states in the EU have invested in the construction of LNG terminals and other facilities as part of their energy diversification policy.

Qatar's Potential in Helping Turkey to Diversify Its Energy Mix Through LNG

Qatar has the third largest volume of natural gas reserves after Russia and Iran and is one of the biggest LNG exporters in the world. Qatar has 24.5 tcm of gas reserves, which is equal to 13.1% of world proven gas reserves.[126] Given Russia's total gas reserve of 32.3 tcm and its vast land, and considering Qatar's far smaller territory and

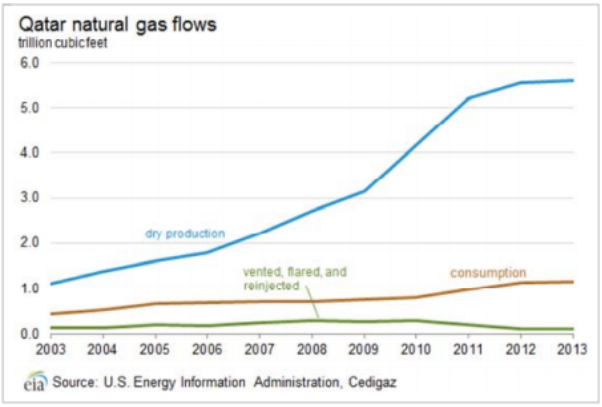
[125] Puko, T., and Scheck, J., " U.S. Oil Settles Above 30 USD a Barrel, After Dipping Below for First Time Since 2003", The Wall Street Journal, (Jan. 12, 2016) http://www.wsj.com/articles/oil-flirts-with-30-a-barrel-level-1452572527

[126] BP Statistical Review of World Energy 2016, P.20 BP Statistical Review of World Energy 2016, P.22

the volume of gas that is available, the significance of its reserve can better be understood.

As of 2015, Qatar produced 181.4 bcm of natural gas.[127] The steady increase in the volume of gas produced, particularly for the last ten year period, has shown both increasing demand in gas as well as Qatar's ability to meet the growing need for gas all around the world between 2003 to 2013. As can be seen in the figure below, although domestic consumption since 2003 has been considerably stable, the overall production, indicated in blue in the figure below, increased at a staggering rate.

Figure 15: Qatar Gas Flows



In recent years Turkey has procured a volume of 1.2 bcm of LNG from Qatar through the spot market. In an interview with the Qatari ambassador to Turkey, Salem Mubarak Al-Shafi, he pointed out that Turkey and Qatar signed a memorandum of understanding (MoU) on the 2nd December 2015, agreeing on long-term LNG trade between the parties. Answering the question of Turkey's potential importing capacity, the ambassador clearly stated that LNG export volume very much hinges on the technical capacities of both countries. [128]

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[127] BP Statistical Review of World Energy 2016, P.22
http://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2016/bp-statistical-review-of-world-energy-2016-full-report.pdf

[128] Cagatay, G., and Erdogan, H., "Qatari LNG to Turkey depends on tech. Ability: Qatar Amb", aaenergy terminal, Anadolu News Agency, (March 25th, 2016)
http://aaenergyterminal.com/searchdetail.php?newsid=7869578

Turkey, in terms of both its price compatibility and energy security, should expand its overall LNG investments in the middle and long term. Given Turkey's heavy reliance on Russia, which accounted for approximately 55%, Qatar stands as one of the most promising LNG suppliers among all the other LNG providing countries in helping Turkey to diversify its supply sources away from Russia. Although constructing a LNG terminal, especially in the short-run, is not an easy task and requires large amounts of capital, a progressive increase in the LNG cargo shipment as a percentage of the total volume of gas imported should be an a chief target. Therefore, lessons learned from major pioneering LNG terminals constructed in Spain, France and the UK should be examined and for the benefit of improving Turkish storage capacity.

LNG's Potential: Natural Gas Mixture in Turkey

Turkey has two liquefied natural gas (LNG) terminals, one operated by BOTAŞ at Marmara Ereğli terminal and the other belonging to Egegaz and operated in İzmir Aliağa. As of 2014, Turkey imported 7.3 bcm of LNG from two major sources, namely: Nigeria, which has accounted for 1.2 bcm and the rest, 6.1 bcm, provided by Algeria. Given that Turkey consumed approximately 50 bcm of gas in 2015, 7.2 bcm of LNG has not been a substantial component in Turkey's gas mixture and there is therefore room for growth in establishing a stronger LNG market.

There is no logic for transferring gas from Qatar to Turkey with a pipeline due to regional security concerns; rather it can be suggested that importing gas in the form of LNG is the best option available. This choice is both economically feasible and physically viable for both parties on condition that Turkey builds up new LNG terminals and increases the volume of gas storage in the middle term and that Turkey clearly sees the benefit of improving its energy security through the diversification of gas sources.

The benefits of increasing the volume of LNG for Turkey's gas market

1. Advantages of short term-spot market pricing,
2. The overall cost of pipeline-based gas has increasingly closed the gap on the cost of short-term- spot market based prices. The gap between short-term contracts with oil-pegged long-term contracts has diminished, especially in times of low oil prices. This has allowed companies to benefit from spot market

pricing, once traded exclusively inflexible contracts, and altered the old pricing conventions. [129]

3. Transportation of LNG is dependent on shipment of natural gas, which makes much easier to import gas from variable sources in comparison with pipeline based transportation. The spot market offers greater flexibility both in terms of the prices and volume of gas needed for peak times especially in hard weather conditions. Additionally, it is expected that by 2020 the U.S. would be ready to provide a substantial volume of LNG to the world gas market, in particular to the EU and Asian market, and this development would undoubtedly be a game changer in the gas business.[130] Furthermore, LNG imported by the U.S. prior to the shale revolution has also been freed up for sale to other major gas consumer countries.
4. In light of recent developments, with its strong economy, political stability and proximity to major LNG consumer Asian countries, Australia is likely to play a profound role in the LNG business in the years ahead. [131]
5. Additionally, newly found enormous gas fields in West Africa, namely in Tanzania and Mozambique, have created euphoria for the region. These current developments have attributed to the gas glut that has resulted in lower gas prices. The fact that most of the contracts are inked on long-term- oil pegged – inflexible terms, coupled with the historically low level of the oil price, has further pulled down the cost of LNG. It can be suggested that LNG is no longer considered a high-priced source of gas for many countries given the circumstances that have created the gas glut.[132]

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[129] World LNG Report, International Gas Union, 2015, p.16
http://www.igu.org/sites/default/files/node-page-field_file/IGU-World%20LNG%20Report-2015%20Edition.pdf

[130] Ebinger, C., et al, "Liquid Markets: Assessing the Case for U.S. Exports of Liquefied Natural Gas", Brookings, 2012
http://www.brookings.edu/~/media/research/files/reports/2012/5/02-lng-exports-ebinger/0502_lng_exports_ebinger.pdf

[131] World LNG Report, International Gas Union, 2015, p.15
http://www.igu.org/sites/default/files/node-page-field_file/IGU-World%20LNG%20Report-2015%20Edition.pdf

[132] Johnson, K., "The Looming Gas Glut", Foreign Policy, October 21, 2014
http://foreignpolicy.com/2014/10/21/the-looming-gas-glut/

Finally, it is prerequisite for Turkey to strengthen its gas storage capacity. Currently, 2.5 bcm volume of gas in Silivri and 1.5 bcm of gas in Aksaray can be stored and this storage capacity is undoubtedly insufficient for a country that consumes 50 bcm of gas annually. In the short to medium term, at least 10 bcm of storage capacity should be targeted with the aim of securing gas in times of shortage as well as supporting gas-demanding countries in case of gas supply disruption.

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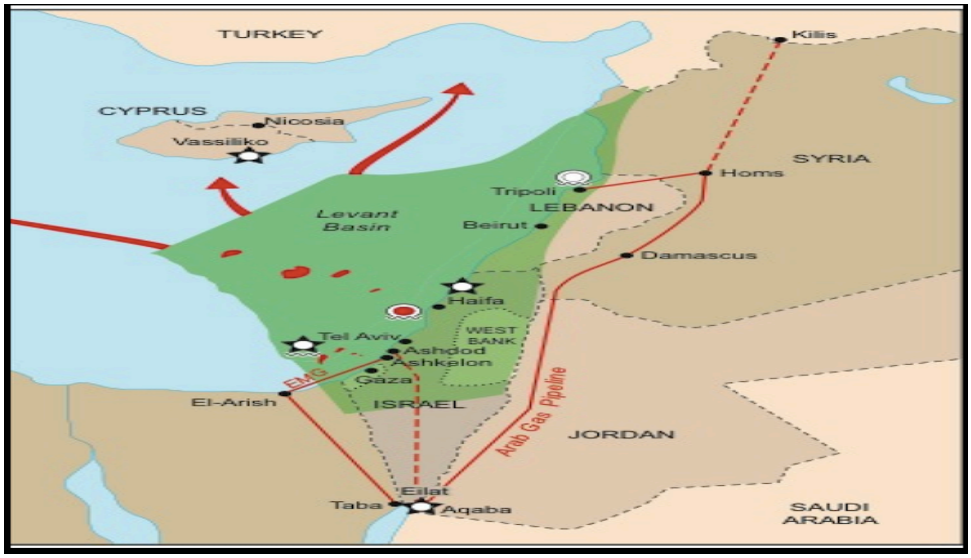
Israel: Becoming an Energy Power in the Region

Figure 16: Gas Fields in Israel



Source: Oxford Institute for Energy Studies

Israel, a neighbor with the potential to be a major source of gas supply in the years ahead in the East Mediterranean, has taken further steps towards mending fences with Turkey, which has resulted in a draft agreement for Turkey to buy gas from Israel. Commenting on the talks between Turkey and Israel, former U.S. Ambassador Matthew Bryza said, "Erdogan is sending a political signal in the form of an economic partnership with Israel to blunt any fears that Russia could cut off the gas supply".[133]This view is worthy of consideration especially given the acrimonious split between Turkey and Russia which has led the way for Ankara to search for alternative

[133] Srivasta, M., and Reed, J., "Russia Rift pushes Turkey to Mend Fences with Israel", Financial Times, December 18, (2015)
https://next.ft.com/content/540f87f8-a58f-11e5-97e1-a754d5d9538c

gas sources in case of gas supply disruption, with the aim of moving towards the goal of achieving diversification of gas supply sources.[134]

Full restoration of ties between Turkey and Israel may take much longer than the period of time many experts anticipate, however, increasing energy ties would further strengthen the relationship. As Cagaptay states, " a pipeline would be a huge deal, meaning that the next time the Turkish-Israeli relationship faces a political shock like in 2010, that pipeline would keep them together, given its political, economic, and commercial ramifications".[135] Turkey would shore up its relationship with the U.S. and NATO counties in times of high tension arising from the ongoing Syrian war, and Israel would tighten its relationship with its Muslim neighbours, in particular Turkey, Jordan and Egypt. Moreover, " Ankara has an interest now in showing the Russians it has other options to get natural gas"[136] as Cagaptay rightly puts it, and indeed, "earlier, diversifying energy supplies was a long-term need that Turkey had. With the crises with Russia, this has become a pressing need".[137]

The partnership of Edeltech and the Turkish Zorlu Enerji group, which have already become partners with the Dorah Energy plants in Israel, have agreed to buy 1.3 billion USD worth of gas for an eighteen year period, according to Reuters. This agreement can be interpreted as a signal of trust in Israel's promising Leviathan and Tamar gas fields. It has been agreed that prices are pegged to the cost of electricity production.[138]

Despite it appearing overly ambitious, an early estimate by the Israeli energy ministry, anticipated that, by 2023 onward, a volume of 6 bcm would likely be provided, on the assumption that political tensions are set aside and potential business plans are put in place.

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[134] Idiz, S., " Turkey-Israel Ties May be Linked to Gas Pipeline", Al-Monitor-Pulse, February 4, (2014) http://www.al-monitor.com/pulse/originals/2014/02/turkey-israel-pipeline.html

[135] Johnson, K., " A Gas Powered Rapprochement Between Turkey and Israel", Foreign Policy, December 18, (2015) http://foreignpolicy.com/2015/12/18/a-gas-powered-rapprochement-between-turkey-and-israel/

[136] Ibid.,

[137] Ibid.,

[138] Tova, C., " Israel's Leviathan Partners Sell Gas to Turkish Energy Groups in $1.3b Deal", Jan 31, (2016) http://www.haaretz.com/israel-news/business/1.700517

Different scenarios are on the table regarding how Israel would be able to export gas to the EU market. Among the variety of potential projects, the most commercially viable and economically sound option would be to construct a shared liquefied natural gas (LNG) facility with Cyprus as well as an underwater pipeline to Turkey. This dual strategy would benefit Turkey, Israel and Cyprus[139] and would give the parties flexibility in transporting gas to a greater number destinations. The potential pipeline to Turkey would feed the EU market, while a LNG facility would provide liquid gas to the Far-Asian market. It is argued that onshore LNG terminal on Israeli land would be the first potential option, but given the physical security and potential environmental problems, this proposal has to be shelved and replaced with either a shared LNG facility with Cyprus or a floating LNG terminal off the Israeli cost.[140]

At a conference in Ankara, the Foreign Ministry of Israel's special energy envoy headed by Michael Lotem, clearly stated the position of Israel in an agreement with Turkey over a potential pipeline by saying, "Israel's door is open to such [a] deal".[141] He further commented on the viability of potential projects by pointing out that "a pipeline to Turkey [is] low cost when you compare it to other options to export the gas to further flung destinations."[142] To show the sincere interest of Turkey to commit to further deepening ties with Israel in energy relations, former energy minister Taner Yıldız highlighted in 2013 that, "Turkey is interested in Israeli gas".[143] Once such a project comes online, Turkey's heavy reliance on Russia as well as its dependence on Iran and Azerbaijan would be diminished as a percentage of overall supply, even if this is not initially to a significant degree. Such a concerted effort between Turkey and Israel would send a message to EU countries, specifically to Cyprus, that all parties would benefit in cooperating with Turkey.

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[139] Dombey, D., " In the pipeline: an Israeli-Turkish Reconciliation", Financial Times, April 12, (2013) http://blogs.ft.com/the-world/2013/04/in-the-pipeline-an-israeli-turkish-reconciliation/

[140] Bryza, M., " Israel-Turkey Pipeline Can Fix Eastern Mediterranean", Bloomberg, (2014) http://www.bloombergview.com/articles/2014-01-20/israel-turkey-pipeline-can-fix-eastern-mediterranean

[141] Dombey, D., " In the pipeline: an Israeli-Turkish Reconciliation", Financial Times, (April 12, 2013) https://next.ft.com/content/022f357a-5b98-3eed-8148-14f9c6143b84

[142] Ibid.,

[143] Reed, J., "Israel Set to Become Major Gas Exporter", Financial Times, 6, (2013) https://next.ft.com/content/82e01bda-4518-11e3-b98b-00144feabdc0

By exporting gas either in the form of LNG or through pipelines, gas transportation between Turkey and Israel would transcend the commercial aspect of the project. If this project were to be realized, it would not only serve to strengthen the strategic partnership with Israel but also would help Turkey to diversify its overall gas portfolio and further increase the overall gas volume in the Turkish gas market. An estimated capacity of 6 bcm of natural gas coming from Israel, with a potential of increase afterward, would serve Turkey's purpose in achieving the set target of becoming a genuine energy-trading hub in the region. Other than Turkey's own gas consumption, gas supply surplus is needed both for enlarging its storage capacity as well as for the creation of a market that would serve to set natural gas pricing, a prerogative of the utmost importance for a trading hub. As "Israel is on the threshold of becoming a major energy power"[144] in the region, recognizing the economic imperative of a pipeline in a very volatile region would serve as a catalyst for strategic partnership with game-changing consequences.

[144] Ibid.,

CHAPTER 4

TURKEY'S POTENTIAL FOR PROVIDING ENERGY SECURITY FOR THE EU GAS MARKET

The stock of fossil fuels available for consumption as a primary resource to create energy is limited. For Europe in particular, managing scarce resources wisely is crucial since, as the second biggest economy in the world, Europe consumes one fifth of the world's total energy. Considering the fact that Europe has insignificant amount of its own energy resources, the need for a sustainable and efficient as well as secure energy policy has become more vital for Europe. However, so far the European Union has been unable to create a common energy policy that solves the energy problem at various levels.

As stated by Helm, "The EU has never had an explicit energy policy in the way that it has, for example, had an agricultural, industrial, or competition policy".[145] Having said that, in spite of its secondary position when compared with other important policies such as the common agricultural policy, energy has never really been off the European agenda

After the Second World War, having established that energy resources had been a major factor in World War II, a European Coal and Steel Community (ECSC) was established with the Paris Treaty in 1951. Later on, the six founding member states of the ECSC signed an agreement in 1957 establishing the European Atomic Energy (EURATOM). Thus with the introduction of the very first European treaty, we see that Europe attached great importance to the energy issue. With the beginning of the 1973 oil crises, European countries collaboratively started to understand the importance of having a common energy policy and began seeking for alternative energy resources.

The Council Resolution of 17 September 1974 concerning a new energy policy strategy for the Community stated its common will to create diversified energy resources, including nuclear energy, to meet increasing demand. The second aim was to find new ways to improve security of supply. With this resolution, it became evident that

[145] Helm, D., "European Energy Policy", New College, Oxford, P. 556

community level energy integration in the realm of energy security was needed. Even though, the community level cooperation among the European states was projected in the resolution, energy was still perceived as a national sector. As stated by the European Commission (2012), the reason why Europe lacks a genuine energy market is because a "market of 500 million consumers has yet to become a reality, as the development of cross-border energy businesses is still being hampered by a raft of national rules." [146]In this regard, the constitutive element of a common European energy policy, which would strengthen the EU's hand in securing energy supply, was hindered by strong opposition of various national governments. Hence, it would be appropriate to clarify what the boundaries of energy security are.

Despite the fact that various energy security definitions exist, the International Energy Agency (IAE) defines it as "the uninterrupted availability of energy sources at an affordable price" and divides that definition into parts. Firstly, the IEA states that "long-term energy security mainly deals with timely investment to supply energy in line with economic developments and environmental needs". When it comes to the more immediate term, the IEA states that "short-term energy security focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance".[147] European Union needs to find alternatives so as to secure its energy supply.

Despite the process of creating a common energy policy, the EU was slow until the 1990's. During these years, the importance of creating common EU energy policies have never been realized, which resulted in some fundamental changes in the way that Europe handled the energy policy with different approaches. Next, the major energy policies implemented in the EU will briefly examined in order to better grasp the key energy challenges for Europe.

Energy Charter Treaty

The Energy Charter Treaty (ECT) was signed in 1994 and the EU and its member states, in total 51 countries, were the signatories of the treaty excluding the USA and

[146] The European Union Explained, "Sustainable, Secure and Affordable Energy for Europeans", EU Commission, 2012 https://ec.europa.eu/energy/sites/ener/files/documents/energy.pdf

[147] World Energy Outlook, International Energy Agency, P.24

Canada. The Energy Charter Treaty aimed at establishing a multilateral framework for cross-border co-operations in the energy industry covering all aspects of commercial energy activities such as trade, transit, investments and energy efficiency. The charter Treaty established cooperation among the member states with a legally binding agreement. The treaty also aimed to promote the East-West cooperation in the field of industry and provide legal guarantees. The Treaty created a framework for an international cooperation among the industrialized countries and the EU countries with the purpose of supporting the Eastern European countries to reach to their potential. The treaty also promoted efficiency and sustainable development in the realm of energy.

In the treaty, provisions in the field of sovereignty, transparency, competition, environment and taxation were set out. With sovereignty, member state countries can exercise their autonomy in accordance with the International law stating that flows of investments and technologies are mutually beneficial.

In other words, each member country is free to decide whether and how its national energy resources are developed. The treaty also promotes transparency regarding the operations of energy products and materials. So, the contracting parties are required to nominate an inquiry to request an information law, decisions and law. In addition, the Treaty promoted the idea of competition so that all parties must involve in case if any market distortion occurs. The Treaty requires the contracting parties to reduce harmful environmental effects caused by energy use and therefore, the ‘polluter pays’ principle was put in place. According to the Treaty's provisions concerning taxation, direct taxation remains in the hands of national governments as long as it is agreed bilaterally.

White Paper (1995): An Energy Policy for the European Union

The case for a Community energy policy was first introduced by White paper in 1995. Even though the previous treaties provided roles at Community level in the field of energy, neither of them came up with a coherent policy. From its last experiences, the commission concluded that in order to have a harmonious energy policy within the Union, a sound and coherent energy policy needs to be introduced at Community level. Only with the implication of a coherent energy policy by the member states level and the community level, benefits can be maximized. Therefore, it is clearly indicated in the paper that an effective energy policy can only be achieved at Community level.

There are 3 main objectives defined by the White Paper and this was a five year working program defined by the Commission to be achieved;

- overall competitiveness,
- security of energy supply,
- environmental protection.[148]

Green Paper (2000): Towards a European Strategy for the Security of Energy Supply[149]

The Green Paper was written based on the fact that the Europe's incrementally increasing energy demand would increase its energy reliance from outside sources since the capacity of generation of energy of Europe is limited. As stated in the Green Paper (2000), unless necessary measures were taken by the EU, its energy dependence might increase in the next 20 or 30 years of time to the level of 70% of its total energy demand. This level of energy dependence, no doubt, will be felt in all the sectors of the economy. The amount of energy exported to the EU in 1999 was equal to 240 billion euro, which was equal to 6% of the total import of the Union.

The Treaty on the European Union in the article 2 and 6 state that, a long-term strategy for energy supply and security needs ensure the following:

- Energy products availability on the market should be uninterrupted,
- Energy products should be affordable both for individuals and industry,
- Environmental concerns should be respected,
- Working towards sustainable development should be identified.

INOGATE (Interstate Oil and Gas Transportation)

INOGATE was introduced in 1995 as a technical energy cooperation program mechanism between European Union (EU), Eastern Europe, the Central Asia and the Caucasus. This project was particularly concerned with natural gas and oil pipelines that

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[148] An Energy Policy for the EU, White Paper, EU Commission, 1995
http://europa.eu/documentation/official-docs/white-papers/pdf/energy_white_paper_com_95_682.pdf

[149] "Green Paper - Towards a European strategy for the security of energy supply", The EU Commission
http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52000DC0769

were running from the Caucasus and Eastern Europe to the EU market. The program started in 1995 and expanded in 2004 with Baku Initiative framework and it has evolved with broader partnership in the realm of energy and concentrated in four key topics:

- convergence of energy markets on the basis of EU principles,
- enhancing energy security,
- supporting sustainable energy development,
- attracting investment towards energy projects of common and regional interest.[150]

The vision of this energy cooperation program described by the INOGATE status report 2011 and states that "Ultimately, INOGATE's vision is to support the cooperation of the EU and the INOGATE Partner Countries to secure, clean, sustainable, adequate and reliable energy resources for their citizens at affordable prices".[151]

Energy 2020- A Strategy for Competitive, Sustainable and Secure Energy

The Europeanization of energy policy is seen as a key to solving the European energy problem. Considering the rising energy prices in recent years and increasing dependence on particular sources jeopardize the whole European economy and its competitiveness in the world economy. Regarding the climate change issue, the challenges that the world facing today is immense and fighting against the climate change requires a solid and strong cooperation between nations. Additionally, it is stated by the Energy Commission that in the coming years, Europe will need one trillion Euro so as to repair its old energy infrastructure and install new capacities to cope with the rising energy demand. Therefore, in order to meet the challenges that the energy field poses today, the European Union has come up with the 2020 strategies. This ambitious and robust strategy aims at setting rules for the integrated European Energy Market.

In 2007, the European Council adopted a very assertive and ambitious target for 2020,

- Reducing greenhouse gas emission by 20% (compare to 1990 level),

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[150] Inogate Program, Annual Report 2011, P.8
http://www.enpi-info.eu/files/publications/Inogate_AR_2011_WEB_EN.pdf

[151] Ibid, P. 9

- Increasing the renewable energy level in total energy consumption by 20%,
- Improving the energy efficiency level by 20% in 2020.

Energy 2020 strategy is based on five priorities;

"1. Achieving an energy-efficient Europe,

2. Building a truly pan-European integrated energy market,

3. Empowering consumers and achieving the highest level of safety and security,

4. Extending Europe's leadership in energy technology and innovation,

5. Strengthening the external dimension of the EU energy Market".[152]

Once the above-mentioned targets are met by the year 2020, all the citizens of the EU will benefit from mode affordable, secure energy with a low level of green house gas emission. Moreover, the creation of alternative sources of energy and investment in technological innovation in energy field will enhance the EU's hand in coping with its energy challenges.

Green Paper COM (2006): A European Strategy for Sustainable, Competitive and Secure Energy

The Green Paper plays a fundamental role in creating an energy policy for the EU. It is well known that in order to achieve economic, environmental as well as social goals, energy challenges need to be overcome. Hence, the paper focuses on three major objectives:

- Sustainability; reducing greenhouse gas emission and introducing renewable energy to increase efficiency
- Security of supply; managing demand and supply of energy needs of the Union
- Competitiveness; creating an integrated market that would provide affordable energy prices for consumers of the Union. [153]

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[152] Energy 2020- A Strategy for Competitive, Sustainable and Secure Energy, The EU Commission, 2010. P.7

http://www.eib.org/epec/ee/documents/energy-2020.pdf

[153] Green Paper: A European Strategy for sustainable, competitive and secure energy

This Green Paper has been perceived as a landmark improvement for Europe in advancing its common energy policy by gathering a disparate energy policy into a form that would shape incoming energy policies.

The Green Paper puts forward suggestions and options that could form the basis for the shape and direction of the EU's future energy policy. This document was important in identifying the major characteristics of the EU's energy outlook and the projected changes.

The Energy Security Challenges Faced by the EU and Turkey

As one of the world's major energy consumers, the European Union encounters certain challenges in securing its energy demand. The EU's main challenges of security of supply can be named as the following:

- rapid increase in energy demand,
- energy resources competition,
- political instability of energy producing countries,
- fragmented energy market within the EU,
- green house gas emissions. [154]

Should these main energy challenges described above be solved, it would guarantee the security of Europe's energy supply. However, as long as the energy security issues were approached at a national level rather than the EU level, the ultimate goals of the energy security strategy could not be realized. In this regard, the failure to speak with one voice at the EU level would undermine any strategies pursued by the Union.

When it comes to the Turkey's energy supply challenges, the country faces many of the same challenges as the EU. However, there are some specific differences facing Turkey. Like Europe, it has a high dependency on imported energy resources but it also faces problems with:

- trustworthiness of energy suppliers, and

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http://europa.eu/documents/comm/green_papers/pdf/com2006_105_en.pdf

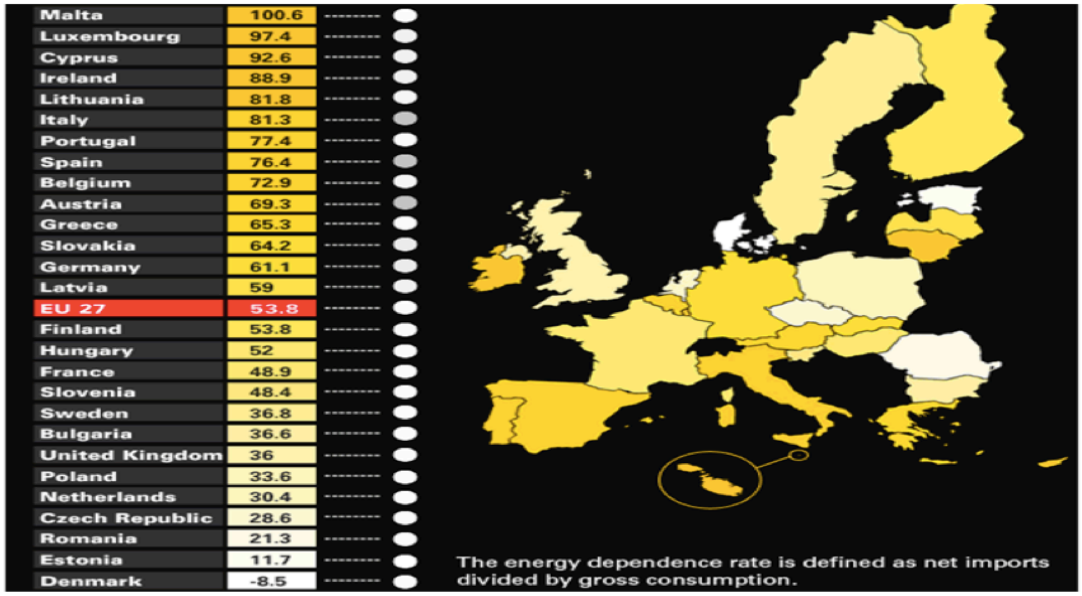
[154] Ratner at al., "Europe's Energy Security: Options and Challenges to Natural Gas Supply Diversification", Congressional Research Service, 2013

https://www.fas.org/sgp/crs/row/R42405.pdf

- energy sector investment and renovation of infrastructure.[155]

Despite differences, once the challenges of a rapidly increasing energy demand and higher energy dependency on fossil fuels are taken into consideration, we can see that Turkey and the EU face similar difficulties. The European Commission's 'European Energy Security Strategy' paper (2014) states that EU imports meet 53.8 % of its total energy demand (see table 1). In terms of crude oil, EU imports reach 90% of the total usage, whereas its dependency in natural gas is about 66%. Solid and nuclear fuel imports are 42% and 40% respectively as of 2013. Given these percentages of the primary energy sources, the EU's heavy dependency on imports puts its energy supply security at risk and makes it vulnerable to the external shocks. This is particularly valid for Eastern Europe and the Baltic region.

Figure 17: Energy Dependence Rate in the EU



Sources: The Institute of International and European Affairs,

Another joint challenge that Turkey and the EU face is the fact that their energy infrastructure faces obsolescence and needs to be renovated. Further, both Turkey and

[155] Balat, M., " Security of Energy Supply in Turkey: Challenges and Solutions", Elsevier, 2010 https://wiki.zirve.edu.tr/sandbox/groups/economicsandadministrativesciences/wiki/78a0c/attachments/dce0a/week12required1.pdf

the EU need new energy investment in order to increase their storage capacity level so as to cope in the event of any energy shortages. As Balat (2010) puts it, "Turkey needs to spend $128 billion on energy investment by the end of the 2020, including $91

billion on new power generation facilities, to keep pace with its rapid growth economy".[156] Similarly, the Energy Commission states that in the coming years Europe would need one trillion euro so as to repair its old energy infrastructure and install new capacities to cope with the rising energy demand. In order to meet the challenges that the energy field poses today, the European Union and Turkey need to come up with ambitious and robust strategies.

Figure 18: Gas Flows to Europe

TABLE: Gas flows to Europe unit: billion cubic meters	**2010**	**2011**	**2012**	**2013***
Imports from Russia to Europe	144.5	156.6	148.0	167.2
Transit through Ukraine	*93.9*	*99.1*	*78.9*	*82.3*
Total European imports from sources other than Russia:				
- imports from North Africa	71.6	56.5	60.4	48.5
- imports from Iran, Azerbaijan	12.3	12.0	11.6	13.0
- LNG imports	86.7	86.2	63.7	45.8

Source: International Energy Agency

Overall, the EU came a long way towards creating a common energy policy but it still remains fragmented due to the Member State divisions on different economic and political interest. However, the creations of internal energy market, combating with climate change and the security of energy supply have become a common energy policy that all the Member States have agreed upon. Additionally, the liberalization of energy market as well as improving the energy grids and infrastructure have also become the priority within the Member States in order to increase the competitiveness, which would reduce the energy bills of an ordinary European citizen.

[156] Ibid, P. 2003

It is only through integrated and common energy policy pursued by the EU that these formidable challenges can be achieved. The renovation of obsolete energy systems, innovation on energy technology and the generation of energy through renewable system require tremendous financial allocations. Hence, without the European cooperation, public funds cannot be channeled towards achieving these goals. In this regard, from White Paper to Green Paper and from Energy and Climate goals for 2030 to Energy Roadmap 2050, the EU has taken a step forward in achieving greater coordination and collaboration among the Member States. It became evident that competitive, sustainable and secure energy can only be guaranteed through a genuine common European energy policy. Therefore, the solution lies in the hands of the Member States to pursue a coherent European energy policy.

As a result of economic expansion, social growth and enlargement, the EU's energy demand has risen steadily in the last two decades. Given the fact that the EU Member States have limited energy resources as well as noting that, as of 2013, 90% of crude oil and 66% of natural gas was imported, the security of energy supply emerges as a main challenge for the EU. In this respect the diversification of its energy sources and routes, energy saving and increasing the percentages of renewable energy in total energy consumption have been suggested as solutions to meet the security of energy supply challenges. Energy saving and renewable energy sources are related to internal energy market in the EU; however, diversification of its external energy sources, suppliers and supply routes must also be tackled. In this regard, Turkey provides alternative routes to the EU's energy market to meet the demand of its energy needs. We have seen that crude oil pipelines such as Baku-Tbilisi-Ceyhan (BTC), Kirkuk-Yumurtalık and natural gas pipelines such as Baku-Tbilisi-Erzurum (BTE), the Blue Stream and the ongoing Trans-Anatolian pipeline (TANAP) project may to be alternative sources in securing the energy needs of the EU. As a result, Turkey may play an important role in securing energy for the European market via diversification; nevertheless, Turkey is not an indispensable partner for Europe. As long as Turkey's dependency on Russian gas increases, which is the current case, and as long as the volume of natural gas and crude oil that is carried through the country to Europe do not meet the European energy demand, Turkey's ability to act as security for the EU's energy market will remain low. Additionally, a fragmented energy market as well as different economic and geostrategic approaches of the member states currently prevents the EU from pursuing a

common energy policy, which would strengthen the European hand in the world energy market. For these reasons, Turkey as an energy transit country does not seem to be irreplaceable partner in securing the energy supply for the EU.

CONCLUSION

This thesis has addressed the question of whether Turkey can fulfil its potential as a provider of energy security for Europe by investigating major oil and gas pipelines to which Turkey is connected, or benefitting; utilized a framework for the definition of an energy trading hub to clarify ambiguities between definitions for an energy hub as opposed to an energy bridge or corridor, and the prerequisites for meeting the definition were discussed. The shortcomings or impediments to Turkey's aspirations were explored, and recommendations put forward. Additionally projections were made concerning the potential energy export countries which would increase Turkey's overall spare capacity, upon which Turkey could improve its status as a potential energy trading hub. Finally, the question of whether Turkey could serve as a key player in securing the EU's energy security was considered, and the conclusion drawn that, given the major obstacles elaborated upon in the second chapter, unless these are solved, Turkey would remain an energy bridge or corridor rather than advance to the status of energy hub.

Current tensions between Russia- Ukraine, the continuing tensions in the Middle East and the sanctions imposed on Iran by the West mean that Turkey, as one of the better performing economies in the region, is in many respects well positioned as a country able to provide a secure energy supply. Neither Turkey and Europe nor other countries that consume Middle Eastern or Caspian energy sources expect to see any serious regional threat to the security of energy supply. Therefore, Turkey has emerged as a strategic player in the regional energy market due to its relatively stable economic and political position. However, while Turkey may play a significant role in the region as a transit state, its chances of becoming a genuine energy hub remain limited due to the reasons outlined above. Turkey's position as an energy corridor means that in energy negotiations it remains a 'price-taking' rather than a 'price-setting' country, determining neither the prices charged nor quantities granted for energy importing countries. Turkey's successful advancement to the status of gas hub can only be realized with transparency, broad liquidity and flexibility, a deregulated gas market created on the premise of political will and market culture, and the provision of non-discriminatory access to gas storage as well as to multiple gas supplies with the help of larger financial players. The attraction of foreign direct investment in the energy sector in Turkey is

handicapped by Turkey's policy not to liberalize its gas market, which can be considered another hindrance to becoming a fully price-competitive country.

As long as Turkey fails to reduce its dependency on Russian natural gas, liberalize its natural gas market, build better storage facilities and increase its funding for building transfer units, its hopes of becoming a physical energy hub country will not be realized. Indeed, the fulfillment of these requirements will still not secure the conditions for the country to become an energy hub; without hub status Turkey will remain unable to influence energy prices and its role in EU energy security will remain relatively minor. Many of the pressing challenges that stand in the way of Turkey becoming a genuine energy hub in the region can be overcome provided that the following requirements are fulfilled. Firstly, the weight of gas-to-gas competition should be internalized; secondly, a transition towards flexible and dynamic markets contracts varying from short-term to spots and hub pricing should be integrated and supported with a new legal and regulatory framework; and thirdly, a greater volume of liquefied natural gas should be utilized and integrated into the system to balance the risks associated with pipeline-based gas.

The main motive for Turkey should not be solely based upon security of energy supply but should also aim to increase the volume of gas stored in the country as well as work towards its main goal of becoming an energy trading hub by creating a portfolio created with an additional spare capacity that includes as many sources as are available. Regarding the question of whether Turkey would be able to create a spare capacity to offer as an alternative option for the EU gas market, based on current discoveries and potential improvements, the projection made in chapter three suggests that about twenty five to thirty bcm of gas could be available by around 2030 with the assumption that the undergoing TANAP project becomes operational; Cyprus and Israel find common ground and construct a seabed pipeline connecting Turkey; the Kurdish Regional Government (KRG) comes to a final agreement with the central government over control of oil in the KRG region; and lastly that the overall LNG capacity in Turkey increases to a level that can balance pipeline-based gas in the long run. Once an extra volume of twenty five to thirty bcm of gas has become available with the support of well-established storage facilities, Turkey's current energy corridor position would likely be elevated.

Although numerous conditions for achieving the requirements of an energy hub have been described in detail, the underlying reasons why Turkey should be endeavouring to fulfil these need to be further clarified. Firstly, being a genuine energy hub would help Turkey to become more influential in its surrounding region. Secondly, Turkey's international standing in the world arena will be enhanced and this would strengthen Turkey's credentials for not only being an economic and military power but also a key regional state contributing to the region's overall energy security. Turkey would also be in a better position to decide which role it would ultimately play in regional energy geopolitics. To this end, it has a significant potential role in a) offering the EU additional energy security, by offering a gas surplus, with storage capacity that can be utilized during peak or crisis periods; b) offering through gas-to-gas competition, with its liberalized market, benefits to end-users as well as potentially opening up a new gas market where new-comers can offer competitive pricing; and c) offering those EU gas consumers with a heavy dependence on Russian supplies the possibility of relief from the perceived political leverage created by Russia's supremacy in the market. Only once it has secured the position in the region that connects East and West as well as North and South, and having become a genuine energy hub in the region, could Turkey's long journey to accession to the EU be facilitated. The current stalemate between Turkey and the EU looks set to continue on its now half-century long journey of mutual distrust, and any improvement in the prospects for success remain to be seen.

Among all other impediments to Turkey's ambition, the regulatory environment is the most significant. To take advantage of its unique geographic position and establish itself a natural gas hub in the region, Turkey needs to take measures to improve its status, moving away from its status as an energy transit corridor and towards that of an energy hub. Once the long-planned liberalization of the Turkish gas market is implemented, in line with the development of free pricing and gas-to-gas competition, many more private companies would be able to contribute to the increase of gas volume to surplus levels, similar to that of Baumgarten.

Therefore, a major overhaul in the field of regulation needs to be implemented, starting with the lowering of BOTAŞ' approximately eighty percent market share. It should also be noted that the gas market can only be liberalized and became transparent and competitive when BOTAŞ is unbundled into the four bodies elaborated upon in chapter 2.

A second area in which Turkey needs to work toward change is the improvement of gas storage and other physical infrastructure, such as pipeline networking. With the consumption of approximately 50 bcm of gas in 2015 in Turkey, the currently operational gas storage facilities in Turkey are inadequate, nowhere near meeting the demands of its own potential peak needs. Besides the problem of inadequate storage capacity, price fluctuations as well as changes in seasonal demand have also put a strain on Turkey to the extent that the construction of additional gas pipelines has become one of the prerequisites for meeting these and other similarly unpredictable circumstances.

A third hindrance is the nature of the conventional natural gas agreement itself. As long as Turkey practices the inflexible long-term, oil-pegged, and take-or-pay contracts, with the many complications they bring, the gas hub requirement of being "a place where energy is bought and sold"[157] will not be realized.

These obstacles should be interpreted to mean that progress towards becoming a liquid trading hub is still a distant goal for Turkey. If Turkey wishes to take full advantage of its potential, it would clearly need to be more conscientious in addressing its shortcomings.

[157] Roberts, J., "Turkey as a Regional Energy Hub", Insight Turkey, 2010, P. 41

BIBLIOGRAPHY

A Strategy for Competitive, Sustainable and Secure Energy-Energy 2020. European Commisson, (2011).

Ayat, K. (2014, JANUARY 7). *Cyprus Determination to Become a Regional Energy Hub.* Retrieved from Natural Gas Europe: http://www.naturalgaseurope.com/pdfs/whitepaperpdfs/CYPRUS%20Karen%20Ayat%20January%202014.pdf

Akhundzada, E. (2014, April 23). *Turkey As An Energy Hub: Opportunities and Challanges* . Retrieved from HAZAR: http://www.hazar.org/blogdetail/blog/turkey_as_an_energy_hub_opportunities_and_challenges_796.aspx

Al-Khatteeb, L. (2015, November). *ıraq 2016: Reality Bites.* Retrieved from Brookings: http://www.brookings.edu/research/articles/2015/11/25-iraq-in-2016-alkhatteeb

Aras, B. (2014, April). *Turkish-Azerbaijani Energy Relations.* Retrieved from Global Turkey: http://research.sabanciuniv.edu/24598/1/GTE_PB_15-1.pdf

"Austria Strives for Major Role in EU Gas Trade", Natural Gas Europe, 2 July 2014 http://www.naturalgaseurope.com/austria-strives-for-major-eu-role-in-gas-trade

Butler, N. (2013, October). *The Turkish choice – rhetoric or relevance* . Retrieved from Financial Times: http://blogs.ft.com/nick-butler/2013/10/02/the-turkish-choice-rhetoric-or-relevance/

Babalı, T. (2010). *Regional Energy Equations and Turkish Foreign Policy: The Middle East and the CIS.* Retrieved from Insight Turkey: http://files.setav.org/uploads/Pdf/13-tuncay03.pdf

Balat, M. (2010, February). *Security of Energy Suply in Turkey: Challanges and Solutions*. Retrieved from Energy Conversion and Management - ELSEVIER.

Barysch, K. (2007). *Turkey's role in European energy security* . Retrieved from Center for European Reforms: https://www.cer.org.uk/sites/default/files/publications/attachments/pdf/2011/essay_turkey_energy_12dec07-1381.pdf

Bilgin, M. (n.d.). *energy and Turkey's Foreign Policy: State Strategy, Regional Cooperation and Private Sector Involvement* . Retrieved from Turkish Policy : http://turkishpolicy.com/Files/ArticlePDF/energy-and-turkeys-foreign-policy-the-link-between-state-strategy-regional-cooperation-and-private-sector-involvement-summer-2010-en.pdf

Bilgin, M. (2010, May). *Turkey's Energy Strategy: What Difference Does It Make To Become An Energy Transit Corrdior, Hub Or Center?* Retrieved from UNISCI Discussion Paper: http://www.redalyc.org/pdf/767/76715004007.pdf

Birol, F. E. (2013). *Turkish Energy Strategy in the 21st Centrury.* Task Force , GIFGRF-Global Relations Forum.

Bourgeot, R. (2013, March). *Russia-Turkey: A Relationship Shaped by Energy* . Retrieved from Russie.Nei.Vision: https://www.ifri.org/sites/default/files/atoms/files/ifriremibourgeotrussiaturkeyengmarch2013.pdf

Bowlus, J. V. (2015, November). *Pipeline Partners: Expanding And Securing Iraq's Future Oil Exports.* Retrieved from Global Relations Forum-Policy Paper 2: http://www.gif.org.tr/Documents/Pipeline%20Partners_John_Bowlus.pdf

Borroz, N. (2014). *Don't Expect an Israel-Turkey Pipeline.* Retrieved from the Jerusalem review: https://thejerusalemreview.com/2014/02/05/dont-expect-an-israel-turkey-pipeline/

Borroz, N. (2014). *Turkey's Energy Strategy: Kurdistan Over Iraq.* Turkish Policy Quarterly .

Bryza, M. (2014, 01 21). *Israel-Turkey Pipeline Can Fix Eastern Mediterranean*. Retrieved from Bloomberg: https://www.bloomberg.com/view/articles/2014-01-20/israel-turkey-pipeline-can-fix-eastern-mediterranean

BP Statistical Review of World Energy 2016, http://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2016/bp-statistical-review-of-world-energy-2016-full-report.pdf

Cagaptay, S. (2013, December). *Turkey's Energy Policy and the Future of Natural Gas.* Retrieved from Harvard Kennedy Scholl, Belfer Center: http://bakerinstitute.org/research/turkeys-energy-policy-and-future-natural-gas/

Cerhozi, H. (2016). What's Next for Turkey after the Cancellation of TurkStream? *Russian Insider* .

Cohen, T. (2016). *Israel Leviathen Partners Sell Gas to Turkish Groups.* Retrieved from http://www.haaretz.com/israel-news/business/1.700517

Cutler, R. M., & Korchemkin, M. (2013). *The Great Game for Gas in the Caspian.* Retrieved from the Economist: http://www.eiu.com/public/topical_report.aspx?campaignid=CaspianGas13

Cutler, R. M. (2014). *The Role of the Southern Gas Corridor In Prospects for European Energy Security* . Retrieved from Hazar Energy Institute: http://www.hazar.org/UserFiles/yayinlar/caspian_report/Caspian_Report_6/The_Role_of_The_Southern_Gas_Corridor_in_Prospects_for_European_Energy_Security.pdf

Dempsey, J. (2014, July). *Guaranteeing Europe's Energy Supply.* Retrieved from Carnegie Europe: http://carnegieeurope.eu/publications/?fa=55808

Dereli, Z. (2012). *FPC Briefing: Turkey's Pivotal Role in Energy Supply.* Retrieved from The Foreign Policy Centre: http://fpc.org.uk/fsblob/1533.pdf

Dombey, D. (2013, April 12). *In the Pipeline: an Israeli-Turkish Reconciliation* . Retrieved from Financial Times: https://next.ft.com/content/4a3d52da-a500-11e5-a91e-162b86790c58

Ebinger, C., et al, "Liquid Markets: Assessing the Case for U.S. Exports of Liquefied Natural Gas", Brookings, (2012) http://www.brookings.edu/~/media/research/files/reports/2012/5/02-lng-exports-ebinger/0502_lng_exports_ebinger.pdf

European Union Explained-Energy. European Commission, (2012).

European Energy Security Strategy. EU Commission, (2014).

Erdoğdu, E. (2014). *Turkey's Energy Strategy and its Role in the EU's Southern Gas Corridor.* Retrieved from IAI-: http://www.isn.ethz.ch/Digital-Library/Publications/Detail/?id=177393

Evin, A. (2012). *Energy and Turkey's Neighbourhood: Post Soviet Transformation and Transatlantic Interests.* Retrieved from Lynne Rienner:

https://www.rienner.com/title/Turkey_and_Its_Neighbors_Foreign_Relations_in_Transition

Efe, H. (2011). *Turkey's Role as an Energy Corridor and Its Impact on Stability ın the South Caucasus.* Retrieved from USAK: http://www.usak.org.tr/images_upload/files/oaka%2012%206.pdf

EIA. (2015). *Russia.* Retrieved from the US Energy İnformation Administration: http://energypolicy.columbia.edu/on-the-record/paris-cop21-commentary

Fully-fledged Southern Gas Corridor by 2020: European gas race between Iran and Turkmenistan. (2015). Retrieved from Cetral Europe Energy Partners: http://www.ceep.be/southern-gas-corridor-european-gas-iran-turkmenistan/

Fackrell, B. E. (2013, Summer). *Turkey and Regional Energy Security on the Road to 2023.* Retrieved from Turkish Policy Quarterly: http://turkishpolicy.com/Files/ArticlePDF/turkey-and-regional-energy-security-on-the-road-to-2023-summer-2013-en.pdf

Fotiou, E., & Triantaphyllou, D. (2010). *The EU and Turkey in Energy Diplomacy.* Retrieved from Insight Turkey.

IEA. *Worl Enery Outlook 2015.* Paris: International Energy Agency.

IEA. (2012). *World Energy Outlook 2012.* Paris: International Energy Agency.

Idız, S. (2014, February 4). *Turkey-Israel Ties May be Linked to Gas Pipeline.* Retrieved from Al-Monitor: http://www.al-monitor.com/pulse/originals/2014/02/turkey-israel-pipeline.html

Iserı, E. (2013). *Turkey's Energy Strategy and the Southern Gas Corridor* . Retrieved from selected works: https://works.bepress.com/emre_iseri/26/

ITGI Pipeline . (2016). Retrieved from Edison : http://www.edison.it/en/itgi-pipeline

Hafner, M. (2015). *Turkish Stream and the EU Security of Gas Supply: What's Next?* Retrieved from Review of Environment Energy and Economics: http://www.feem.it/getpage.aspx?id=7532

Hasanov, M. (2014). *Some Remarks on Economic Benefits of TANAP for Turkey.* Retrieved from HASEN: http://www.hazar.org/content/yayinlar/some_remarks_on_economic_benefits_of_tanap_for_turkey_876.aspx

Haenschh, M., "Austrian Natural Gas Hub Finally Becomes Virtual Trading Point", ICIS, 31 December 2012 http://www.icis.com/resources/news/2012/12/31/9627377/austrian-natural-gas-hub-finally-becomes-virtual-trading-point/

Helm, D. (2005). European Energy Policy: Securing Supplies and Meeting the Challanges of Climate Change. Retrieved from New College : Oxford.

Helm, D. R. (2013). *European Energy Policy: the Place of Energy in the EU.* Retrieved from University of Oxford.

Hoffman, M. TAP's Role in European Energy Security. Turkish Policy Quarterly.

Hisarcıklıoğlu, M. R. (n.d.). *THE GLOBAL ENERGY CHALLENGES AND TURKEY: PRIVATE SECTOR PERSPECTIVE.* Retrieved from Turkish Policy Quarterly- Volume

) Number 2: http://www.esiweb.org/pdf/esi_turkey_tpq_vol9_no2_rifat-hisarciklioglu.pdf

Johnson, K., (2014, October 21) “The Looming Gas Glut”, Foreign Policy, http://foreignpolicy.com/2014/10/21/the-looming-gas-glut/

Johnson, K. (2015, December 18). *A Gas-Powered Reapproachment Between Turkey and Israel.* Retrieved from Foreign Policy Magazine: http://foreignpolicy.com/2015/12/18/a-gas-powered-rapprochement-between-turkey-and-israel/

Kardaş, Ş. (2011-12, Winter). *Turkey-Russia Energy Relations.* Retrieved from International Journal: https://www.academia.edu/2324990/Turkey-Russia_energy_relations

Kardaş, Ş. (2014, March). *The Turkey-Azerbaijan Energy Partnership in the Context of the Southern Corridor* . Retrieved from IAI: http://www.iai.it/en/pubblicazioni/turkey-azerbaijan-energy-partnership-context-southern-corridor

Kusznir, J. (2015). The Southern Gas Corridor: Initiated by the EU, Completed by Others? TANAP, TAP, and the Redirection of the South Stream Pipeline. Retrieved from Caucasus Analytical Digest, EHT Zuric: http://www.css.ethz.ch/content/dam/ethz/special-interest/gess/cis/center-for-securities-studies/pdfs/CAD-69-6-10.pdf

Kaysı, H. (2011). *Energy Security of the European Union and Turkey's Role.* Retrieved from Anakara Avrupa Çalışmalarai Dergisi: http://dergiler.ankara.edu.tr/dergiler/16/1616/17399.pdf

Karbuz, S. (2014). *Mediterranean Energy Perpectives.* Retrieved from OME: https://inis.iaea.org/search/searchsinglerecord.aspx?recordsFor=SingleRecord&RN=46133793

Karbuz, S. (2016, February). *Turkey as an Energy Hub.* Retrieved from OME : http://www.ikv.org.tr/images/files/Sohbet_Karbuz_Sunum.pdf

Khudairi, M. (2016). *A Revamp Prompted by Oil Prices.* The Oil & Gas Year-IRAQ 2016.

Krane, J., & Temzelides, L. (2014). *Kurdish Oil And U.S. Leverage In Iraq.* Retrieved from FORBES: http://www.forbes.com/sites/thebakersinstitute/2014/09/09/kurdish-oil-and-us-leverage-in-iraq/#510666ee5c4e

Macit, F. (n.d.). *Caspian Energy Outlook.* Retrieved from Caspian Strategy Institute: http://www.hazar.org/UserFiles/yayinlar/raporlar/2014.05.27_Caspian_Energy_Outlook/caspian_energy_rapor.pdf

Makovsky, A. (2015, May). *Turkey's Growing Energy Ties with Moscow* . Retrieved from Center for American Progress: https://www.americanprogress.org/issues/security/report/2015/05/06/112511/turkeys-growing-energy-ties-with-moscow/

Metais, R. (2013, 03). *Ensuring Energy Security in Europe: The EU between a Market-based and a Geopolitical Approach.* Retrieved from College of Europe: https://www.coleurope.eu/sites/default/files/uploads/page/edp_3_2013_metais.pdf

Miller, K. (2013). *Straneg Bedfellows* . Retrieved from The Majalla : http://eng.majalla.com/2013/01/article55236788

Miriello, C., & Polo, M. (2014, December). *The Development of Gas Hubs in Euope.* Retrieved from IEFF-Working Paper Series-Bocconi.

Müftüler-Baç, M., & Başkan, D. (2011, March). *the Future of Energy Security for Europe: turkey's Role as an Energy Corridor.* Retrieved from IPC: http://ipc.sabanciuniv.edu/en/publication/the-future-of-energy-security-for-europe-turkeys-role-as-an-energy-corridor/

Pflüger, F. (2014). *Kurdish Oil Will Find Its Way Out.* Retrieved from Energy Post : http://www.energypost.eu/kurdish-oil-will-find-way/

Pourzitakis, S. (2015). *The Energy Security Dilemma of Turkish Stream.* Retrieved from Carnegie Europe: http://carnegieeurope.eu/strategiceurope/?fa=60861

Raval, A. (2016). *Commodities explained: Iran's return to the global oil market.* Retrieved from Financial Times: https://next.ft.com/content/665cc13c-c02e-11e5-9fdb-87b8d15baec2

Ratner, M., Belkin, P., Nichol, J., & Steven, W. (2012). *Europe's Energy Security: Options and Challenges to Natural Gas Supply Diversification* . Retrieved from Congressional Reserach Service: https://www.fas.org/sgp/crs/row/R42405.pdf

Reed, J. (2013). *Israel Set to Become Major Gas Exporter.* Retrieved from Oilprice: http://oilprice.com/Energy/Natural-Gas/Israeli-Set-To-Become-Major-Exporter-Of-Natural-Gas.html

Richert, j. (2014). *The Ukrainian Crisis and Turkish Energy Leadership: Time to Act for Reducing Long-Term Risks.* Retrieved from Hurriyet Daily News: http://www.hurriyetdailynews.com/the-ukrainian-crisis-and-turkish-energy-leadership-

time-to-act-for-reducing-long-term-risks.aspx?pageID=238&nID=64624&NewsCatID=396

Richert, J. (2015, January). *Is Turkey's Enegery Leadership Over Before It Began?* Retrieved from IPC-Sabancı University: http://ipc.sabanciuniv.edu/wp-content/uploads/2015/01/RICHERT.pdf

Roberts, J. (2015, April). *Analysis: Turkey pivotal to future of European gas supplies.* Retrieved from Financial Times: https://next.ft.com/content/2c4b25f8-c81b-11e4-8210-00144feab7de

Roberts, J. (2010). *Turkey as a Regional Energy Hub.* Retrieved from Insight Turkey .

Roberts, J. (2015). *Turkish Stream Set To Fall Victim To Putin-Erdogan Confrontation.* Retrieved from naturalgas europe: http://www.naturalgaseurope.com/turkish-stream-set-to-fall-victim-to-putin-erdogan-confrontation-26910

Roberts, J. (2015, July). *The Impact of Turkish Stream on European Energy Security and the Southern Gas Corridor.* Retrieved from Atlantic Council: http://www.atlanticcouncil.org/publications/reports/the-impact-of-turkish-stream-on-european-energy-security-and-the-southern-gas-corridor

Roberts, J. (2012). *The Turkish Gate: Energy Transit and Security Issues.* Retrieved from Turkish Policy Quarterly: http://edoc.bibliothek.unihalle.de/servlets/MCRFileNodeServlet/HALCoRe_derivate_00005904/esi_turkey_tpq_id_13.pdf

Russia halts Turkish Stream project over downed jet. (2015, December). Retrieved from RT: https://www.rt.com/business/324230-gazprom-turkish-stream-cancellation/

Rzayeva, G. (2014). *Natural Gas in the Turkish Domestic Energy Market.* Retrieved from Oxford Institute for Energy Studies : https://www.oxfordenergy.org/wpcms/wp-content/uploads/2014/02/NG-82.pdf

Sabadus, A. (2014, July). *Southern Gas Corridor and The Potential for Genuine Diversification* . Retrieved from HAZAR: http://www.hazar.org/content/yayinlar/southern_gas_corridor_and_the_potential_for_genuine_diversification_866.aspx

Sartori, N. (2015). *The Turkish Route for Europe.* Retrieved from ABO-About Oil and Energy: http://www.abo.net/oilportal/topic/view.do?contentId=2401402

SIPA. *Isssue Brief: Iraq's Oil Sector.* 2014, Columbia-Center on Global Energy Policy, New York.

Shaffer, B. (2006). *Turkey's Energy Policies in a Tight Global Energy Market.* Retrieved from Insight Turkey: http://belfercenter.hks.harvard.edu/files/insight_turkey_shaffer_energy.pdf

Shaffer, B. (2006). *Turkey's Energy Policies in a Tight Global Energy Market.* Retrieved from Insight Turkey: http://belfercenter.hks.harvard.edu/files/insight_turkey_shaffer_energy.pdf

Sözen, A., & Nalbant, M. (2007). Situation of Turkey's Energy Indicators Among the EU Member States . Retrieved from Energy Policy.

Srivastava, M. (2015, December 18). *Russia Rift Pushes Turkey To Mend Fences with Israel.* Retrieved from Financial Times: https://next.ft.com/content/540f87f8-a58f-11e5-97e1-a754d5d9538c

Stegen, K. S., & Kusznir, J. (2015). *Outcomes and strategies in the 'New Great Game': China and the Caspian states emerge as winners*. Retrieved from Journal of Eurasia Studies: http://www.sciencedirect.com/science/article/pii/S1879366515000032

Tagliapietra, S. (2014, November). *http://www.bosphorusenergyclub.org/building-tomorrows-europe-the-role-of-an-eu-energy-union/.* Retrieved from Fondazione Eni Enrico Mattei: http://www.bosphorusenergyclub.org/building-tomorrows-europe-the-role-of-an-eu-energy-union/

Tagliapietra, S. (2014). *Rethinking the EU-Turkey Energy Cooperation.* Retrieved from Fondazione Eni Enrico Mattei: https://www.researchgate.net/publication/253236921_Rethinking_the_EU-Turkey_Energy_Cooperation

Tagliapietra, S. (2014). Turkey as a Regional Natural Gas Hub: Myth or Reality? An Analysis of the Regional Gas Market Outlook, beyond the Mainstream Rhetoric. Retrieved from Fondazione Eni Enrico Mattei: http://www.feem.it/getpage.aspx?id=6055&sez=Publications&padre=73

Tagliapietra, S. (2014). *The EU-Turkey Energy Relations After the 2014 Ukraine Crisis. Enhancing The Partnership in a Rapidly Changing Environment.* Retrieved from Fondaziona Eni Enrico Mattei: http://www.feem.it/getpage.aspx?id=6679&sez=Publications&padre=73

Tagliapietra, S. (2013). *towards a new Eastern Mediterranean Energy Corridor.* Retrieved from Fondazione Eni Enrico Mattei: http://www.feem.it/userfiles/attach/2013215105594NDL2013-012.pdf

Tanchum, M. (2014). TANAP and the Semi-Encirclement of Iran: Progress and Paradoxes in Turkey's Energy Diplomacy. Turkish Policy Quarterly.

Telli, A. (n.d.). *A Bridge Between East And West: Turkey's Energy Policy* . Retrieved from Wise Man Center for Strategic Studies : http://www.bilgesam.org/Images/Dokumanlar/0-142-2014091859guvenlik-31.pdf

Temizer, M. (2016). *Qatar LNG: Far more than plan B for Turkey.* Retrieved from AA Energy Terminal: http://aaenergyterminal.com/news.php?newsid=6963310

Tsereteli, M. (n.d.). *Connecting Caspian Gas To Europe: No Large Scale Infrastructure Development In Near Future.* Retrieved from Turkish Policy Quarterly- Volume 9 Number 2: http://www.esiweb.org/pdf/esi_turkey_tpq_vol9_no2_mamuka-tsereteli.pdf

Tunçalp, E. (2014). Turkey's Natural Gas Strategy: Balancing Geopolitical Goals & Market Realities. Turkish Policy Quarterly.

Turkey Plans to Build a Pipeline From Israel. (2015). Retrieved from Natural Gas Europe: http://www.naturalgaseurope.com/turkey-plans-to-build-a-pipeline-from-israel-27244

Turkey's Energy Profile And Strategy. (2016). Retrieved from Ministry of Foreign Affairs: http://www.mfa.gov.tr/turkeys-energy-strategy.en.mfa

Okumuş, O. (2013). *What did turkey Lose When EU Lost Nabucco?* Retrieved from al Monitor: http://www.al-monitor.com/pulse/originals/2013/07/eu-nabucco.html

Öğütçü, M. (2013). *The Game Changers in the World Energy: Geopolitical Implications.* Retrieved from Turkish Policy Quarterly : http://turkishpolicy.com/Files/ArticlePDF/the-game-changers-in-world-energy-geopolitical-implications-fall-2013-en.pdf

Öğütçü, M. (2010). *Turkey and Changing Dynamics of World Energy: Towards Cleaner and Smarter Energy.* Retrieved from Insight Turkey: http://file.insightturkey.com/Files/Pdf/insight_turkey_vol_12_no_3_2010_ogutcu.pdf

Öğütçü, M. (2010). *Turkey and the Changing Dynamics of World Energy: Towards Cleaner and Smarter Energy.* Retrieved from Insight Turkey: http://www.globalresourcespartnership.com/turkey-and-the-changing-dynamics-of-world-energy-towards-cleaner-and-smarter-energy/

Özdemir, V. (2008). *Turkey's Role İn the European Energy Security.* Retrieved from http://www.isn.ethz.ch/Digital-Library/Publications/Detail/?ots591=eb06339b-2726-928e-0216-1b3f15392dd8&lng=en&id=110776

Özdil, E. (2015). *Natural Gas Trading Hub İn Turkey.* Retrieved from Energy IQ: http://ceenenerji.com.tr/en/natural-gas-trading-hub-in-turkey/

Vatansever, A., Greene, S., & Millhone, J. (2014, 07). *Russia's Neglected Energy Reserves.* Retrieved from Carnegie Endowment: http://carnegieendowment.org/files/russia_energy_reserve.pdf

Vatansever, A. (2011, January). *A Russia Solution to Europe's Energy Problem.* Retrieved from Carnegie Endowment for International Peace: http://carnegieeurope.eu/publications/?fa=42258

Vatansever, A. (2011, March). *The Risk of a Russian-Turkish Energy Bargain.* Retrieved from Carnegie Endowment for International Peace: http://carnegie.ru/publications/?fa=43351

Wahab, B. A. (2014). Iraq and KRG Energy Policies: Actors, Challanges, Opportunites. The American University of Iraq.

Weinstabl, M., " Central European Gas Hub",CEGH, 7th Gas Forum 26 September 2012ttps: //www.energy community.org/portal/page/portal/ENC_HOME/DOCS/1738181/0633975ABB577B9CE053C92FA8C06338.PDF

Winrow, G. M. (2013). *The Southern Gas Corridor and Turkey's Role as an Energy Transit State and Energy Hub.* Retrieved from Insight Turkey: http://file.insightturkey.com/Files/Pdf/insight-turkey-vol_15_no_1_2013_winrow.pdf

Winrow, G. (2011, September). *Turkey: An Emerging Energy Transit State and Possible Energy Hub.* Retrieved from http://www.tandfonline.com/doi/abs/10.1080/03932729.2011.601118#.V0DL9ZN94_U

Wiscnetwork. (2011). Turkey's Energy Strategy And Latest Developments In The Context Of The "4 Sisters" Pipeline Projects

World LNG Report, International Gas Union, 2015 http://www.igu.org/sites/default/files/node-page-field_file/IGU-World%20LNG%20Report-2015%20Edition.pdf

Yılmaz, B. (2012, February). *The Role of Turkey in the European Energy Market.* Retrieved from MEDAC: http://ipc.sabanciuniv.edu/en/publication/the-role-of-turkey-in-the-european-energy-market/

Yüksel, Y. E., & Ozek , N. (2011, September). *A Bridge Between East and West: Turkey's Natural Gas Policy.* Retrieved from ELSEVI**ER**- Renewable and Sustainable Energy Reviews.