

(2020 February)

**The Role of Turkey in The  
European Union's Energy  
Security: Geopolitical Issues  
with Turkish Perspectives**

**By**

**Canturk Tasdemir**

**DEPARTMENT OF INTERNATIONAL RELATIONS  
GRADUATE SCHOOL  
HANKUK UNIVERSITY OF FOREIGN STUDIES**



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**By**

**Canturk Tasdemir**

**Under the direction**

**Of**

**Professor**

**Kang Yoo Duk**

**A dissertation submitted to the committee of the  
Graduate School of Foreign Studies in partial  
fulfillment of the requirements for the degree of  
Master**

**(2020 February)**



이 논문을 Canturk Tasdemir의 석사학위 논문으로 인정함.

2020 年 1 月 日

심사위원장 김응운 (인)

심사위원 오종진 (인)

심사위원 강유덕 (인)

한국의국어대학교 대학원



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## Abbreviations

EU: European Union

TANAP: Trans-Anatolian Natural Gas Pipeline

TAP: Trans-Adriatic Pipeline

SCP: South Caucasian Pipeline

Turkish Stream: TS

North Stream: NS

NG: Natural Gas

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# I. INTRODUCTION

## 1. Research Background

Energy security is an important issue for most countries. Every country tries to secure its energy in several ways. For instance, many countries seek to develop their energy sources or search for possible energy sources to import. The European Union countries also attach importance to the energy issue because energy deficit causes significant problems. If countries have energy deficit, electricity production from external energy sources will decrease due to the insufficiency of energy capacity. Also, they will have some problems with house heating and industrial development. So, The European Union has prepared a policy regarding energy security. The EU energy policy is based on principles that are convenience, security of energy and delivery of energy.

According to these principles, firstly competitiveness is an important part of the EU energy policy. Energy prices should be cheaper than other choices. High-quality energy and suitable price can be competitive. Several countries have natural gas sources with different prices and quality. So, the EU members should choose the convenient energy source to import for ensuring its energy security. The other part is the security of supply. The EU countries should not obtain natural gas from only one source because political or technical problems between countries can cause a blockage of supply. For these reasons, the EU members need to diversify choices of energy supply and find a dependable partner. The last part of the principle is sustainability. In this part, the reserve is the most important for supplying energy because rich energy sources should be explored to supply energy for a long time. These principles direct the EU countries to decide the supply of energy so appropriate decisions can be made for the EU's future when it comes to the steady demand of energy.

The EU countries prepare the projects with important decisions of the EU's policy regarding energy security because the EU countries depend on natural

gas and they do not have enough natural gas sources. Also, Norway's natural gas is not enough for all the EU members. A sudden lack of natural gas can cause a big problem in Europe because industries need natural gas to convert into electricity or natural gas is required heating houses especially during the winter season. In addition to Norway's natural gas source, the Eurasia region (such as Russia, Azerbaijan, and Turkmenistan) has significant natural gas and oil sources. The present natural gas pipeline through Ukraine lost importance due to political tensions with Russia, therefore, new natural gas pipelines are required for the EU. The EU members and other countries in the Eurasia region need to work together for other alternative projects. In this way, the EU can provide its energy securely with appropriate energy projects.

Turkey has locational importance to achieve the EU's energy projects because all the pipelines pass through Turkey. Hence, the EU needs to cooperate with Turkey for them. In this way, Turkey will have important role in supplying natural gas to the EU countries. With the establishment of new pipelines, Turkey can also gain an opportunity to import its energy demand like EU countries.

Turkey and the EU can cooperate in energy projects with both Russia and Azerbaijan. There are already existing pipelines from Azerbaijan and Russia which go through the EU-Turkey border. Therefore, the EU countries will get the opportunity to import natural gas from them. Also, the EU is planning another project regarding Turkmenistan's natural gas because only Azerbaijan-Turkmenistan natural gas pipeline have not been completed yet. After all projects are completed, demand from EU countries are expected to grow at a large rate.

## **2. Research Questions**

This study has three research questions on the EU-Turkey cooperation in Energy Security. They are the central questions of the study and they can help the readers to focus on the study.

**2.1 What is the role of Turkey in the European Union's energy policy, particularly in energy security?**

Energy is one part of the relations between Turkey and the EU. Also, Turkey has a geopolitical advantage due to its location because Turkey connects the Asian and European continents. Turkey is a potential transit country to contribute to EU countries' energy security. For the energy part, natural gas is an important demand in the EU countries so natural gas pipelines through Turkey will be used to supply the natural gas towards the EU countries.

**2.2 What is Turkey's perspective in the cooperation of energy projects with the European Union?**

Turkey has an important location and due to the energy cooperation between Turkey and the EU, Turkey has the perspective that a strong Turkey can provide more strength to the EU. In other words if Turkey becomes economically sustainable, capabilities for energy cooperation between the EU members can flow easily. Hence, the EU needs to cooperate with economically developed and strong Turkey to achieve these projects. Since 2000, Turkey's economy dramatically developed and Turkey succeeded in several areas regarding the construction industry.

**2.3 Does the cooperation with the European Union provide opportunities to Turkey for its development?**

Both of them depend on external energy sources for their demands, as such energy imports have been increasing over the years. Due to the cooperation in energy projects, Turkey also gets the opportunity to secure its energy demand to

develop its industry and contribute to Turkey's domestic economy. Moreover, these energy projects can make Turkey a key country in its region. For instance, Turkey will transmit natural gas from Asian continent to the European continent.

### **3. Methodology**

In this thesis, the role of Turkey regarding the EU's energy security is explained with the appropriate energy projects which were done with several countries. EU countries use natural gas for various usages. For instance, industries and cities need to use it to manufacture good and services. The usage of natural gas in the EU countries is significant in reality, so the statistics of the natural gas usage is used for explaining the situation. Also, possible usage of natural gas in the EU countries is used for future prediction. After the usage of natural gas in the EU countries is analyzed, natural gas reserves around these countries are examined. Countries with rich natural gas reserves are determined for cooperation with the EU. Qualitative analysis was done with official documents of both the EU and Turkey as well as academic and policy papers. This analysis examines the recent Turkey agenda regarding its energy infrastructure and development.

Turkey is located between the EU members and natural gas-rich countries, so Turkey has an important geopolitical advantage to collaborate with the EU countries for energy security. Turkey also uses natural gas in different areas like the EU countries. Both of them focus on bilateral interests. Bilateral interests band them together to do the energy projects. Ongoing natural gas projects are analyzed in terms of supplying the amount of natural gas towards the EU countries. Hence, Turkey's importance can be shown to the EU. After the determination of the EU-Turkey energy cooperation, the SWOT analysis is used to show the relation of both sides objectively. In the SWOT analysis, it can be seen that strengths, weaknesses, opportunities, and threats of Turkey and the EU are examined.

#### 4. Literature Review

Some researchers discussed the EU's energy security and others have seen Turkey as a transit country in its region. There are three main sections to describe the situation to be understood clearly. They are the EU's energy security, potential natural gas-rich countries and Turkey's importance as an energy hub.

Firstly, the EU's energy demand and its energy production were analyzed in some researches. The EU members need to secure their energy according to the EU's energy policy. Diversification of energy imports is a good way for the EU members because some problems can block energy transit. For instance, the Ukrainian issue is one of them. Since 2014, Russia has had a political problem with Ukraine and Russia transmits natural gas to the EU countries through Ukraine. However, from that time, Russia and EU countries tried to establish an alternative pipeline. At the moment two pipelines are discussed. One of them passes through Turkey.

Aoun (2015) discussed the energy production change from 2000 to 2012. The research shows that the usage of domestic natural gas percentage in EU members decreased dramatically from 51% to 33%. So, it can be said that the EU countries' natural gas imports may increase as much as other energy imports. Therefore, they need to cooperate with other countries to secure their energy demand. Turkey can be an appropriate energy hub for them to contribute to its energy security.

Rather, Belkin, Nichol, and Woehrel (2013) examined the EU's energy security regarding the diversification of natural gas sources. The main idea of this research is that the EU countries should supply their natural gas demand from various sources to secure its energy. Also, it supports Turkey's role in the EU's energy security as well because several countries can supply its natural gas through Turkey.

Tagliapietra and Zachmann (2014) examined the energy imports of the EU after the Ukraine crisis happened. For the EU's energy security, Turkey has an important role to supply natural gas via Russia, Azerbaijan, and Turkmenistan. So, Turkey and the EU countries will develop their relations in energy cooperation.

Secondly, the natural gas reserves around Turkey are examined to explain Turkey's geopolitical role in the EU's energy security. Several countries can cooperate with Turkey to export their natural gas to the EU. In this way, they can benefit from the natural gas trade and Turkey can be a proper energy hub.

Muftuler (2011) discussed Turkey's role as a natural gas transit country in its region. The researcher claims that the EU's natural gas import from Russia will increase by 2030. Also, alternative natural gas-rich countries are available to make Turkey locationally important countries such as Turkmenistan and Azerbaijan. Turkey's cooperation with these countries can contribute to the EU's energy demand.

Ratner (2010) examined the natural gas reserves and consumption of it in the world. The natural gas-rich countries around Turkey are included for Turkey's role in its region. They are Russia, Turkmenistan, Iran, and Iraq. These countries can transmit their natural gas through Turkey to the EU members.

Lastly, Turkey's role was considered for the EU because the EU does not depend on Russia's natural gas according to its policy, so alternative countries can decrease the EU's energy dependence with Russia. Turkey is the candidate country as an energy hub.

Campos (2017) criticized the EU's natural gas import from different countries. In this research, the statistics show that the EU's natural gas import from Russia is 37.5% in all imports in 2014. There is a recommendation that the EU should diversify its energy supply not to depend on only Russia. So, Turkey will have an important role to contribute to the EU's energy security with several projects.

Barysch (2007) examined the alternative natural gas suppliers for the EU countries not to depend on only Russian gas regarding energy. In this way, Turkey can be an energy hub for the EU to cooperate with other countries holding natural gas reserves. For instance, Azerbaijan and Turkmenistan can transmit their natural gas through Turkey.

These three main parts show that the EU members need to provide their energy demands. Turkey is the most strategic country to cooperate in energy. Turkey can work on the natural gas transit issue with the EU countries and the natural gas-rich countries. All parties agree to collaborate in this issue due to the common interest because with possible agreement all of them can benefit from the natural gas trade.

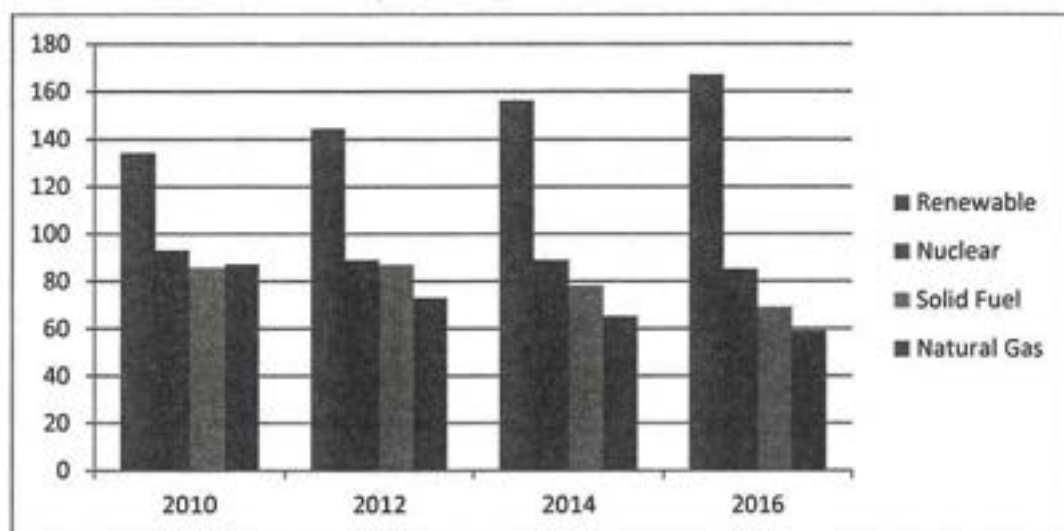
## **II. THE EUROPEAN UNION'S ENERGY SECURITY**

The countries in the EU have an energy plan to decrease the deficit. All of them try to use renewable energy in each area such as solar, wind, hydroelectric and so on. However, renewable energy is not enough for the EU's energy security because these kinds of types have not high efficiency. In other words, they produce electricity lower than natural gas power plants. While the industries are developing in these countries, governments search for alternative ways to find the source in a short time. In this chapter, the EU's energy plan will be discussed with sections to analyze the production and consumption of energy with the EU's energy policy. Then, the possible energy sources are examined to show the EU's energy cooperation for its energy security.

### **1. The European Union's Energy Production Including Renewable Energy**

The EU countries try to improve their energy to develop the industry and provide the energy demand in daily life. There are several energy types for EU members. The most important energy type is renewable energy because renewable energy power plants work continuously under the proper weather condition. All of them try to increase renewable energy plants to secure their energy. However, renewable energy is not enough for the countries due to low efficiency. Different types of energy production are required to hit the mark regarding energy security. These energy types are mainly nuclear, solid fuel and natural gas. The EU members try to use alternative energy sources to produce their energy even if the sources are not adequate. Thus, all methods are tried for their energy plan. The production of energy in several types is shown in figure 2.1.

Figure 2.1: Development of the production of primary energy (by fuel type), EU-28, 2010-2016 (100, based on tons of oil equivalent)



Source: Eurostat

([https://ec.europa.eu/eurostat/statistics-explained/index.php/Energy\\_production\\_and\\_imports](https://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_production_and_imports))

According to figure 2.1, the EU members' energy production is pointed out from 2010 to 2016. There are four main energy types. The production of renewable energy only increased and others decreased slightly. It shows that the EU members consider renewable energy more than the other energy types. There are two reasons to use renewable energy. The first one is that European countries have renewable energy technology. Another reason is that the installation costs are paid off within a certain time. Furthermore, the production of other energy types depends on the reserve. Due to the decrease in reserve in these energy types, the increase in their production is impossible. So, renewable energy use can be increased to eliminate the energy deficit. The renewable energy share in all energy consumption was analyzed to signify the importance of it in the EU's energy security. So, energy import's percentage can be determined in these countries.

All of the EU members started to use renewable energy because it is reliable and plentiful with the proper technology. The renewable energy has various types such as solar, wind, hydroelectric and geothermal. In this way, they can have different kinds of renewable energy to produce their own and cheap energy. Also, renewable energy is the cleanest energy in the world. Every country wants to provide its demand from renewable energy sources.

Table 2.1: Share of renewables in gross inland energy consumption, 2017 (%)

EU-28	Renewable Energy
Belgium	13.9
Bulgaria	7.2
Czechia	10.3
Denmark	32.8
Germany	13.3
Estonia	18.4
Ireland	9
Greece	12
Spain	13
France	10.4
Croatia	21.4
Italy	18.1
Cyprus	6.5
Latvia	42.5
Lithuania	21.2
Luxembourg	6.3
Hungary	11.1
Malta	5.3
Netherlands	5.5
Austria	28.9
Poland	8.5

Portugal	20.1
Romania	18.1
Slovenia	15.9
Slovakia	9.2
Finland	34.7
Sweden	41.2
United Kingdom	9.8

Source: Eurostat

([https://ec.europa.eu/eurostat/statistics-explained/index.php/Renewable\\_energy\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php/Renewable_energy_statistics))

The table 2.1 shows that the EU members' renewable energy consumption percentage in gross inland consumption. According to the table, in Latvia and Sweden, renewable energy usage is above 40%. In Denmark and Finland, renewable energy usage is above 30%. Other countries' renewable energy usage is below 30%. It can be said that every EU members need to import external energy sources to secure their energy. Renewable energy is used only to decrease dependence on another countries due to importing energy. The EU members increase the usage of renewable energy year after year to diversify energy.

However, the dependence of external energy sources continues for their demand. Primary energy sources still represent a big portion of Eu's energy consumption. It is why the EU has developed its energy security plan and tried to deal with geopolitical issues in its neighborhood. This will be argued in the next section.

#### 1.1 The Privilege of the Natural Gas compared to Other External Energy Sources

For the EU's energy security, the natural gas import is important and convenient because the price is not expensive. Also, the usage of natural gas is

better than the other energy sources for the environment. The natural gas power plants give low greenhouse gas emissions to the environment. Also, the efficiency of a natural gas power plant is higher than coal and oil power plants. So, natural gas power plants are friendly for the environment. Possible energy deficit of the EU can be eliminated by the natural gas with proper pipeline projects because natural gas is compressed and it can be transmitted in a large quantity by the proper pipelines. These features are significant for the usage in the EU members.

The natural gas is seen as clean in the research of the WGC Paris 2015 World Gas Conference. The natural gas is also fuel like oil and gives CO<sub>2</sub> to the environment. So, the natural gas was discussed with its features in detail. According to the Conference, natural gas was compared with the other fuels. The natural gas is clean energy and it is available in the world like fuels and coals. However, natural gas has advantages compared to other external energy sources. "The specific features are low sulfur dioxide, low nitrogen oxides, low particulate matters and low carbon dioxides."<sup>1</sup>

With these appropriate features of natural gas, the EU members can reduce air pollution due to low emissions. So, the usage areas of natural gas can be increased with innovation.

Natural gas is used in several areas nowadays below:

Electricity: It is used to produce electricity in the power plants.

Hydrogen: natural gas can be used to produce the hydrogen.

Transportation: natural gas is the alternative of petrol and diesel in the automobiles.

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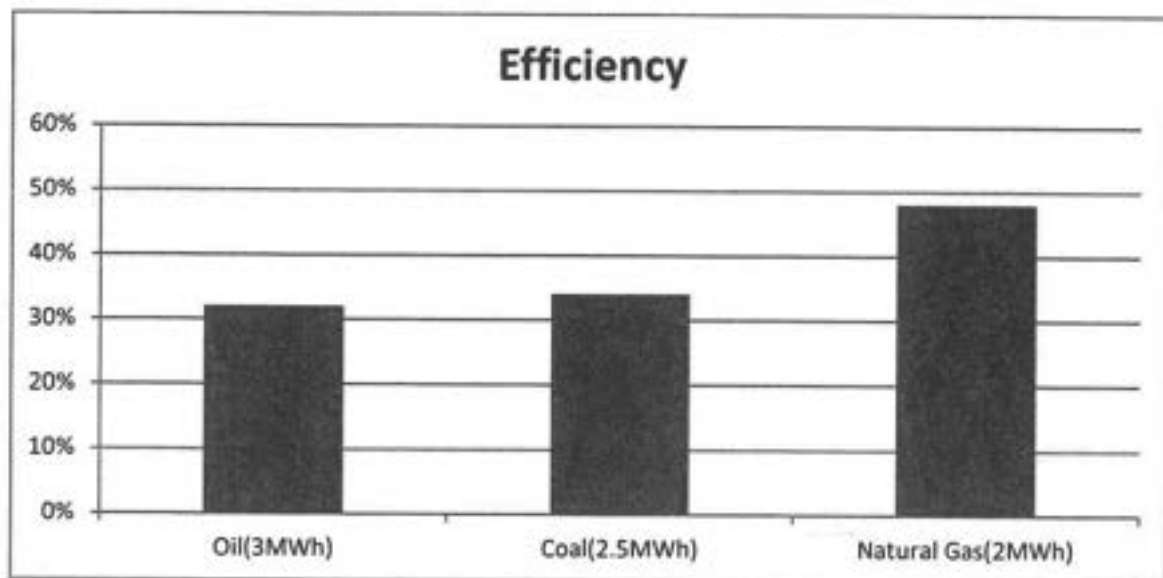
<sup>1</sup> Maria-Claria Aoun and Aurelie Faure, 2015, Is Natural Gas Green Enough for the Environment and Energy, Clingendael International Energy Programme/ Institut Français des Relations Internationales, pp. 4-5

Domestic use: house heating, water heating, cooking, etc.

These usages areas show that everybody can use natural gas in their daily

The natural gas is a proper energy compared to oil and coal due to low emission. EU members consider air pollution with fossil fuels. Also, efficiency is the other criterion for energy. Each energy source has a different efficiency. So, they can use the energy source economically with a high-efficiency rate. The statistics were prepared to show the efficiency of three external energy sources below.

Figure 2.2: The efficiencies of the three external energy sources for 1MWh electricity production



Source: Gas Terra

(Gas Terra, 2010, Natural Gas, Part of an Efficient Sustainable Energy Future)

According to Figure 2.2, three external energy sources were used to produce electricity separately. The results show that natural gas provides maximum efficiency compared to others. Also, another important measure is pollution.

Natural gas is cleaner than other external energy sources because it gives fewer emissions to the environment. Natural gas has better environmental performance than coal and oil plants. In these external energy sources, the EU members can easily consider importing natural gas from the natural gas-rich countries to eliminate the energy deficit. They can take a step for protecting the environment as well because the natural gas is the cleanest external energy sources in this group.

## **2. The European Union's Dependence on the Natural Gas**

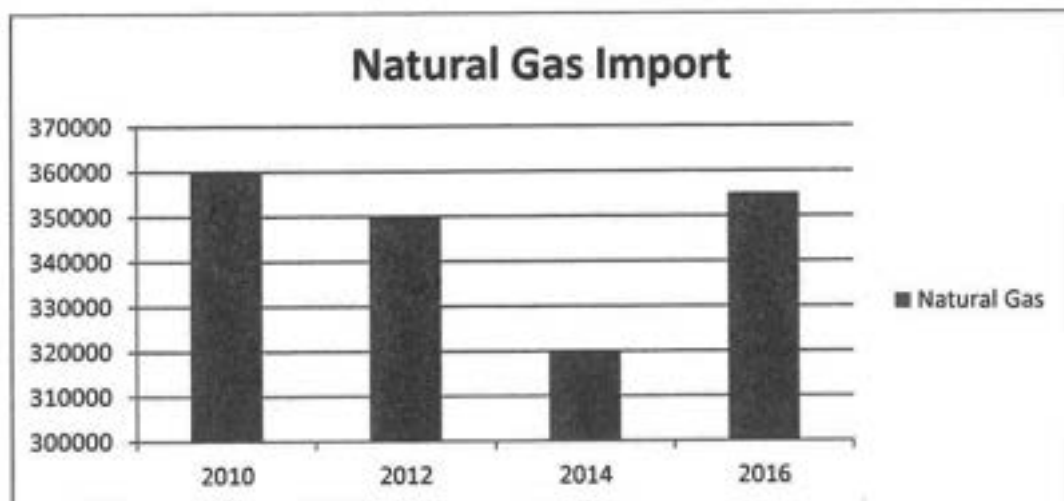
The EU members attach importance to the natural gas imports because they depend on the external energy sources for development and the imports of natural gas increase year by year.

\*The EU's production of fossil fuels continues to decrease year by year. For instance, gas production in 2014 decreased by 11.2% from the 2013 level. It means that their dependence on natural gas can increase due to the low production rate<sup>2</sup>.

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<sup>2</sup> Ana Campos, 2017, The main challenges to the EU's security of supply, Trans European Policy Studies Association, pp. 1

Figure 2.3: Imports of natural gas of the EU-28 from 2010 to 2016 (kilo tonne of oil equivalent)

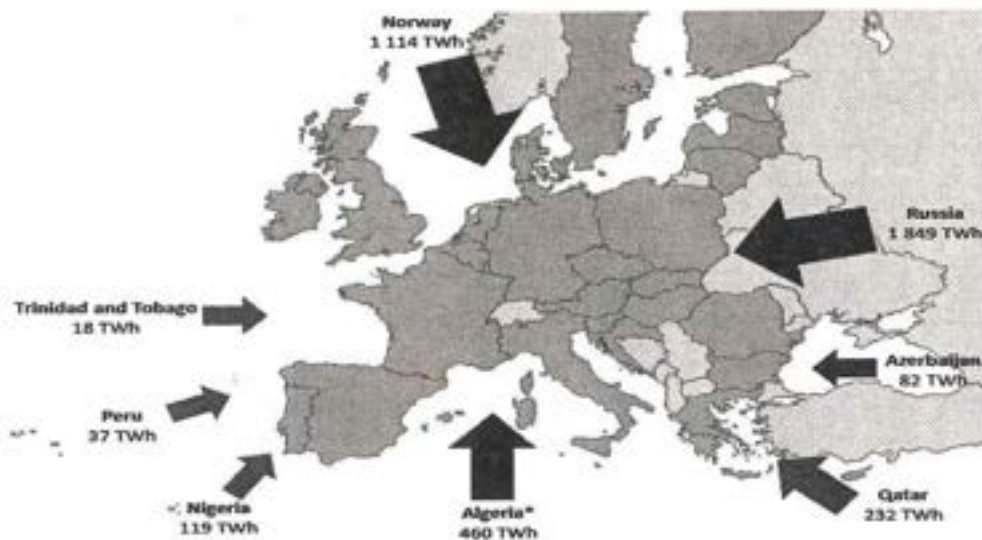


Source: Eurostat

([https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy\\_statistics\\_-\\_an\\_overview](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview))

According to figure 2.3, the EU members' natural gas imports are shown from 2010 to 2016. From 2010 to 2014, natural gas imports decreased. However, since 2014 the natural gas import has increased for the EU demand. It means that the EU members will not give up using natural gas in the future for their industrial development. For these countries' energy security, they do not import natural gas from one country and several countries around them have enough natural gas sources to supply in the two ways. One of them is the pipeline method. The feature of the natural gas is that it can be compressed and supplied in a small size pipeline. So, they started to cooperate with several countries to import natural gas with appropriate pipelines. The other is the liquefied natural gas form (LNG). For this form, the ships are used to transit the natural gas to them. Both of them are still available now and they work to secure the energy of the EU. The EU's natural gas imports from other countries are shown in a map below.

Map 2.1: The European Union's natural gas imports

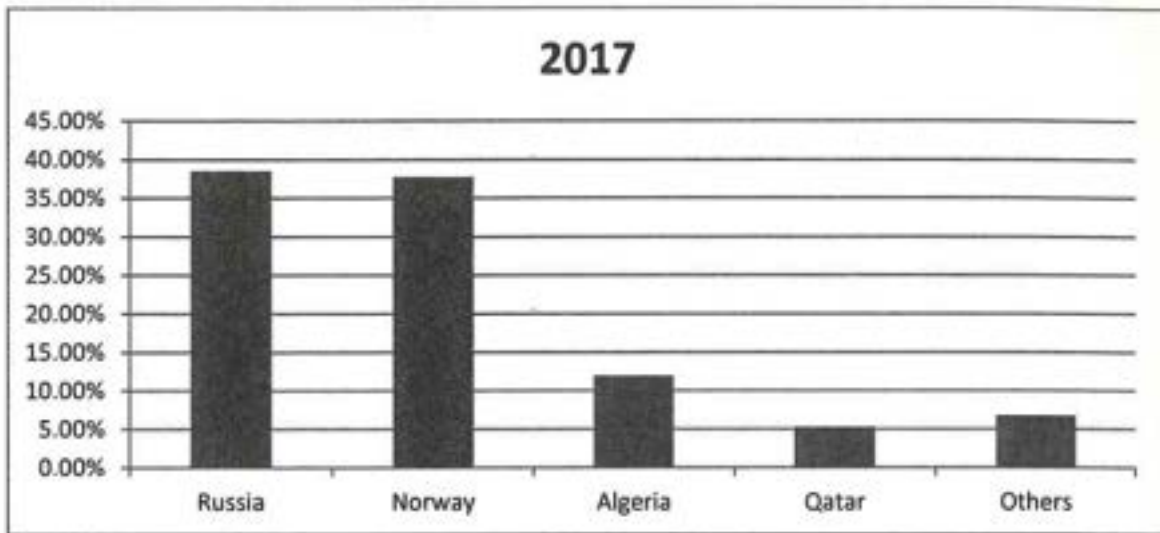


Source: BP Statistical Review of World Energy, June 2018

(<https://www.gasinfocus.com/en/indicator/imports-of-natural-gas-into-the-european-union/>)

According to the map of the natural gas supply, several countries export natural gas to the EU. Norway, Russia, Azerbaijan, and Algeria supply the natural gas by the pipelines. On the other hand, Trinidad and Tobago, Peru, Nigeria, and Qatar supply the LNG toward the EU. The main aim of the EU countries is that they do not want to depend on only one country. So, the EU imports natural gas from different countries in a different form of it. So, the EU members can diversify the natural gas suppliers for their energy security. Natural gas can be transmitted by different forms for example liquefied natural gas. Qatar transmits the natural gas in the LNG (liquefied natural gas) forms to them.

Figure 2.4: European Union Imports of Natural Gas from Main Trading Partners (2017)

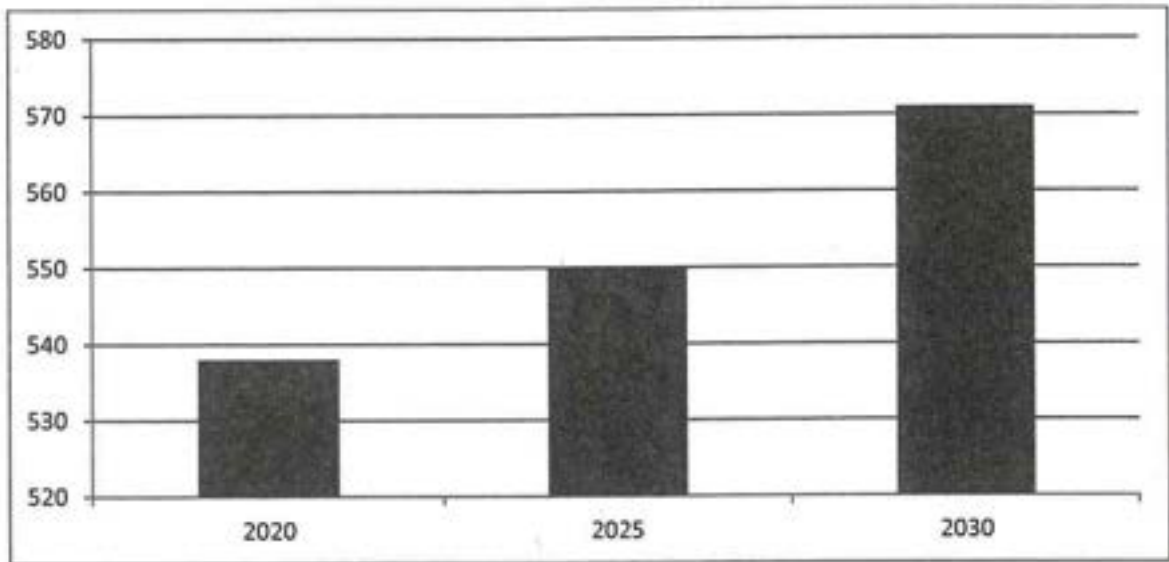


Source: Eurostat

([https://ec.europa.eu/eurostat/statisticsexplained/index.php/EU\\_imports\\_of\\_energy\\_products\\_-\\_recent\\_developments](https://ec.europa.eu/eurostat/statisticsexplained/index.php/EU_imports_of_energy_products_-_recent_developments))

According to 2.4, it shows that the EU imports natural gas from several countries. However, Russia is the most important partner with the EU in terms of natural gas and imported natural gas from Russia increases compared to other countries. Even though the EU countries try to import natural gas from different countries, the fact is that Russia is the number one in the EU's natural gas import. The EU members have the opportunity to import natural gas from other countries by pipelines not to depend on mostly Russian natural gas. For instance, Turkmenistan and Azerbaijan's natural gas reserves are appropriate to provide their energy demand. So, the EU members can make energy projects with Turkey for their demand. These two countries have the potential to transmit natural gas to them and Turkey is in the middle between the EU member and them.

Figure 2.5: Natural Gas Usage in the EU until 2030(bcm)



Source: Eurostat

(Sami Andoura and Clementine d'Outremont, 2013, *The Role of Gas in the External Dimension of the EU Energy Transition*, Jacques Delors Institute)

According to the estimation in the Eurostat analysis, the natural gas imports of the EU members are assumed to increase continuously until 2030. It means that they need to cooperate with other countries for energy projects. LNG form or normal form of natural gas is required for them. Also, Small pipelines can be used for natural gas because it is compressed. Nowadays, the pipelines from Russia and Azerbaijan to the EU members are going to be ready to supply the natural gas. So, with the two ways, there is a potential of natural gas import's increase for the EU members in the future. This estimation can actualize with proper energy cooperation.

### 3. The European Union's Proper Steps Regarding Energy Deficit

The EU members worked on energy security in 2010. The main aim is to protect their energy security in the future and also their environment with a choice of the appropriate external energy source. The strategy was specified with the EU members in the European Commission. Three basic topics were considered for the 2020 energy strategy. There is competitive, sustainable and secure energy<sup>3</sup>. According to this energy strategy, the EU's plan was arranged in three main chapters that are contribution of energy to the EU, sustainability and continuity and energy in the future.

All EU members are responsible for energy security to reach the 2020 target. This is based on energy security and air pollution because they need to increase industry capacity and live under good air conditions. In this way, they consider renewable energy mostly for these two targets. For a low-carbon energy system, the natural gas was considered in the European Union Commission. The 2011-2020 energy strategy was planned for them.

The natural gas was mentioned in the European Commission report as an important energy source in the world. The natural gas can play an important role in decrease the carbon emission compared to other fossil fuels because natural gas is the cleanest fossil fuel. So, it is a key element for the EU. Not only the environment but also the energy demand is significant for the EU members because the industry needs the energy to be developed. The next-generation natural gas power plants have high efficiency. It is easy to prefer natural gas for them because they care about the efficiency of energy power plants. Economically they can produce more electricity as they use natural gas. With innovation, the efficiency of the natural gas power plant can be increased as much as possible. The natural gas is a good choice as energy in the transportation system because nowadays transporters use oil and it causes air

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<sup>3</sup> European Commission (2011), Stocktaking Document Towards a New Strategy for Europe

pollution due to high emission rate. As the EU members consider the environment, it is better to increase the natural gas the usage of the transportation system instead of oil and it was also mentioned in the European Commission. The technology provides the usage of natural gas in transportation. So, the EU can change the fossil fuel for buses and cars. The increased usage of natural gas instead of oil in the buses can decrease air pollution due to the emissions. Also, the number of electric cars increases nowadays and the electricity consumption is assumed to increase in the future. Electricity from the natural gas power plants can be produced for the electricity demand of the EU members.

#### **4. Possible Countries to Contribute to The European Union's Energy Security**

The usage of natural gas in the world is becoming increasingly widespread. Every country uses natural gas because it is cheap and environmentally friendly. The EU members are obliged to cooperate with different countries to ensure their energy security.

The countries increase their natural gas production for two main aims. One of them is that they want to eliminate the energy deficit while they are producing natural gas. Another one is that natural gas is an important external energy source to export to other countries. They can get income from selling natural gas. The countries which produce natural gas and the amount of natural gas production are pointed out below.

Table 2.2: World Natural Gas Production 2012-2040 (trillion cubic feet)

Country	2012	2020	2025	2030	2035	2040	Average annual percentage change
USA	24	28.7	30.4	32.9	34	35.3	1.4
Canada	6.1	5.8	6.6	7.2	7.9	8.6	1.2
Europe	10.3	8.7	9.1	10.1	11.1	11.9	0.5
Russia	21.8	21.9	23.4	25.9	29.3	31.8	1.4
Central Asia	6.7	7	7	7.3	8.1	9.1	1.1
Iran	5.6	7.4	8.7	10.1	11.4	12.4	2.9
Qatar	5.5	5.8	7.0	7.6	8	8.4	1.5
China	3.7	7.2	11.1	11.4	16.7	18.7	6
Other Asia	10.9	11.1	11.4	12.2	13.4	14.6	1

Source: US. Energy Information Administration, 2016, International Energy Outlook ([https://www.eia.gov/outlooks/ieo/pdf/nat\\_gas.pdf](https://www.eia.gov/outlooks/ieo/pdf/nat_gas.pdf))

According to the 2.2 table, the countries were examined regarding the production of natural gas from 2012 to 2040. Most countries' natural gas production is predicted to increase during the period. However, the EU members' natural gas production has fluctuated. It means that their natural gas demand will be provided from other countries. They can ensure their natural gas demand in two ways from the natural gas-rich countries. The most common way is the LNG form. For instance, They can import LNG from the USA, Qatar, and China. Also, the pipeline is available to provide natural gas but the construction is necessary

to transit the natural gas. So, with the proper natural gas pipelines, the EU members can get the natural gas from Russia, Azerbaijan, Iraq and central Asia countries such as Turkmenistan. Political issues sometimes block the natural gas import because the sanctions are effective for countries. For instance, Iran has important natural gas reserves and ready to supply to the EU members but there is USA sanction against Iran. So, the EU members cannot import natural gas from Iran until sanctions are removed.

### **III. TURKEY AS AN ENERGY HUB FOR THE EUROPEAN UNION ON NATURAL GAS**

#### **1. Turkey's Energy Market and Role of Energy Market Regulatory Authority on Natural Gas**

Turkey is located at between Europe and Asia. Turkey is mostly in Asian territory. Due to its location, Turkey has an important advantage to provide its energy demand because "Turkey is nearby to more than 75% of the world's proven oil and gas reserves"<sup>4</sup>.

Turkey's domestic energy is inadequate and Turkey needs to provide its energy demand for development. Turkey has an aim for energy security. It aims to diversify its energy supply, increase the renewable energy sources and invest in nuclear energy and contribute to EU members' energy security.

The Country imports a certain part of its energy demand like most countries in the world and natural gas has an important place in the energy imports. "Turkey has authority regarding the energy which is the Energy Market Regulatory Authority (EMRA). Turkey's natural gas demand and distribution of it are controlled by EMRA."<sup>5</sup>

This institution makes necessary arrangements for Turkey's energy demand. The amount of natural gas demand and its price are important criteria for EMRA. Turkey's natural gas consumption is also analyzed by EMRA and the essential assumption is done for the future. Turkey's natural gas consumption and the importance of it is underlined by the table below.

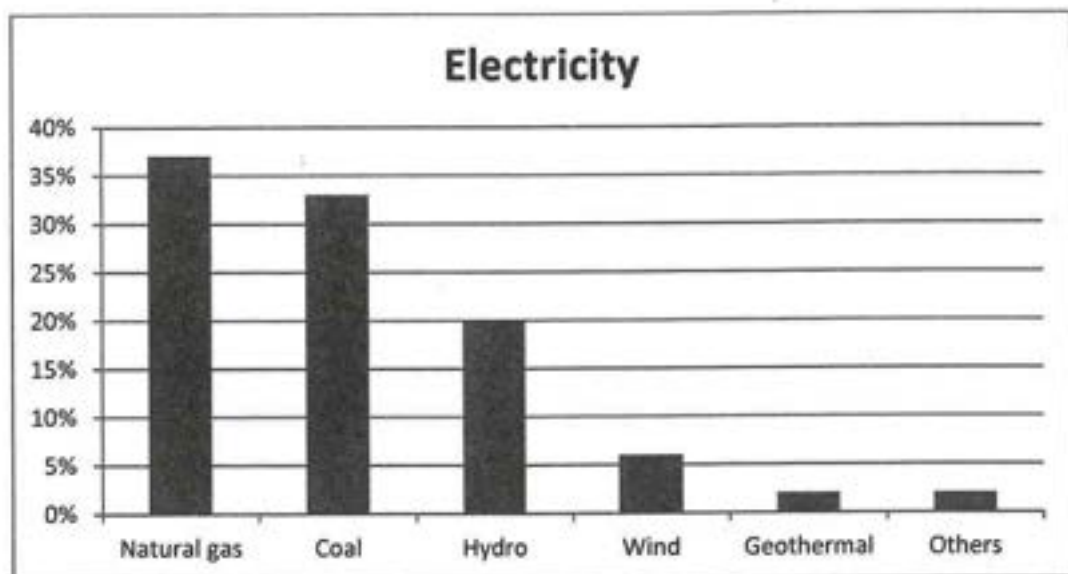
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<sup>4</sup> Zeynel Tunc and Aslı Kehale Altunyuva, 2018, Turkish Energy Market, Paksoy, pp. 7

<sup>5</sup> Koray Kalaycioglu (2017), Network Regulations Group, Natural Gas Regulation Department of Turkey

In Turkey, different external energy sources are used to generate electricity. A study in 2018 shows these energy sources below.

Figure 3.1: Energy sources were used in Turkey to generate electricity

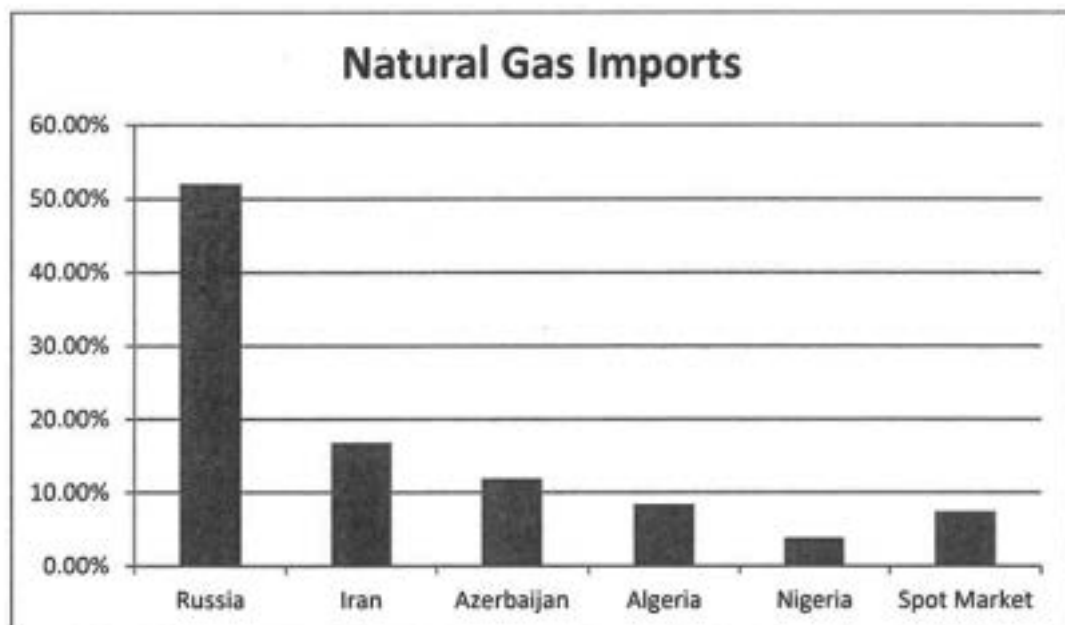


Source: Zeynel Tunc and Aslı Kehale Altunyuva, 2018, Turkish Energy Market, Paksoy, ([www.paksoy.av.tr](http://www.paksoy.av.tr))

According to figure 3.1, several external energy sources were used in Turkey for electricity. Mostly natural gas was used in all sources. Natural gas is an important source for Turkey because the deficit of electricity can cause serious problems in Turkey. It can be assumed that Turkey will not give up from natural gas import. Coal also takes place in electricity production. However, Turkey cannot utilize sufficiently from renewable energy sources in electricity production.

One of Turkey's aims is the diversification of energy supply for energy. Turkey imports its natural gas demand from various countries. The research on natural gas imports is below.

Figure 3.2: Turkey's Natural Gas Imports in 2017



Source: Zeynel Tunc and Aslı Kehale Altunyuva, 2018, Turkish Energy Market, Paksoy, [www.paksoy.av.tr](http://www.paksoy.av.tr)

According to figure 3.2, countries exporting natural gas to Turkey were shown. Turkey imported above 50% natural gas from Russia. Russia is an important energy partner for Turkey because it contributes to Turkey's energy security with natural gas export. However, Turkey needs to import its energy demand with possible countries. In this way, Turkey can reach its aim in energy subject.

Table 3.1: Annually Natural Gas Consumption in Turkey from 2007 to 2017

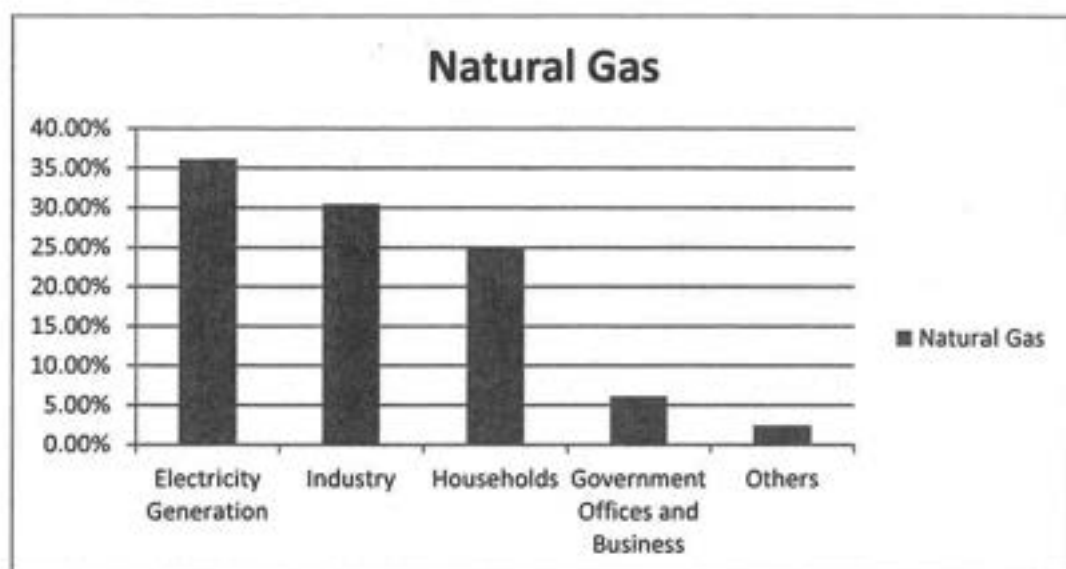
Year	Consumption(million sm3)	Change from the previous year(%)
2007	35,395	14.24
2008	36,865	4.15
2009	35,219	-4.47
2010	37,411	6.22
2011	43,697	16.80
2012	45,242	3.53
2013	45,918	1.5
2014	48,717	6.1
2015	47,999	-1.47
2016	46,395	-3.34
2017	54,000	12.08

Source: Koray Kalaycioglu, 2017, Network Regulations Group, Natural Gas Regulation Department-EMRA of Turkey

According to table 3.1, Turkey's change in natural gas consumption is seen year by year. Even though in some years Turkey's natural gas consumption decreased slightly, from 2007 to 2017 Turkey's natural gas consumption increased dramatically. It can be said that Turkey's natural gas imports can increase in the future due to its usage areas because Turkey uses this external energy source in different areas.

From electricity generation to household, natural gas is used in almost every area. Turkey prefers to use natural gas for several reasons. For instance, natural gas is environmentally friendly and cheaper than other external energy sources.

Figure 3.3: Turkey's Natural Gas Consumption by Sector in 2016



Source: Koray Kalaycioglu, 2017, Network Regulations Group, Natural Gas Regulation Department-EMRA of Turkey

According to figure 3.3, the sectors' natural gas consumption was analyzed by EMRA. Turkey mostly used natural gas to generate electricity because Turkey's sources are not enough for producing electricity. The second sector was the industry. Turkish industry depends on the energy for working and it provides energy demand from natural gas. Then, households need natural gas in Turkey. Natural gas pipelines were constructed in all Turkish cities and natural gas is used in house heating of Turkish cities. These sectors are quite important for Turkey's development because nowadays Turkey focuses on industrial development and natural gas is necessary for it. Also, coal was used in house heating in the past and it polluted the air due to high emission rates. However, Turkey's energy policy changed regarding the environment. So, Turkey will continue to use the natural gas for house heating system in all cities.

## 2. Turkey's Energy Plan for Providing its Natural Gas Demand

Turkey has few fossil fuel sources and mostly import it from other countries. Turkey started to import natural gas firstly in 1986 and the consumption of it began in 1987<sup>6</sup>. "The consumption of natural gas increased until now. Nowadays, Turkey has 98% natural gas dependency due to its energy demand"<sup>7</sup>. Therefore, the country has to find new natural gas sources and import the natural gas from different countries for energy security.

### 2.1 Discovery of Natural Gas Reserves Inside and Around Turkey

Turkey aggravated for searching natural gas reserves to provide own energy and cooperating with other countries. It is estimated that there are significant natural gas reserves in the north-west and south-east part of Turkey. Turkey works with foreigner companies to explore its natural gas sources. During Turkey's natural gas exploration work, the small natural gas reserve was found in the north-east part of Turkey in 2019. So, Turkey continues to find new natural gas reserves inside the country. However, seas are also important for natural gas reserves. Turkey is a peninsula and needs to benefit from possible fossil fuel reserves. Turkey assumes that Black and Mediterranean Seas have also significant natural gas reserves and the country has natural gas exploration rights on its continental shelf. The last technology drilling ships which were made in South Korea are being used in both seas for natural gas reserves.

Turkey also cooperates with North Cyprus Turkish Republic (NCTR) for searching natural gas reserves. Turkey does this cooperation for two reasons. One of them is that the country needs to protect its brother country's rights

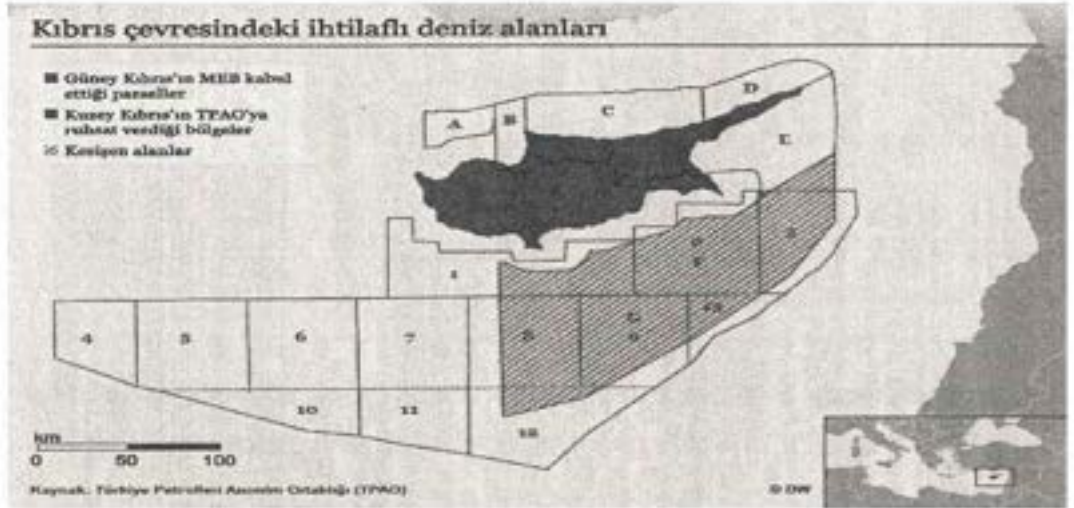
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<sup>6</sup> Gürçan Gülen, İzak Atiyas, and Tamer Çetin, 2012, *Reforming Turkish Energy Markets: Political Economy, Regulation and Competition in the Search for Energy Policy* (New York: Springer-Verlag)

<sup>7</sup> Emre Tuncalp, 2015, *Turkish Policy Quarterly*, Volume 14 Number 3, Sider Global Advisors, Washington D.C), pp. 68

because the two countries have the same nation. Another reason is that Turkey aims to use some part of natural gas in this region.

Map 3.1: Cyprus' Natural Gas Reserves



Source: Deutsche Welle News, (Discovery of natural gas around Cyprus) 2019 (<https://www.dw.com/tr/k%C4%B1br%C4%B1sa%C3%A7%C4%B1klar%C4%B1ndaki-en-b%C3%BCy%C3%BCk-do%C4%9Falgaz-rezervi-ke%C5%9Ffedildi/a-47731821>)

According to map 3.1, there are natural gas reserves from part 1 to part 12. Turkey-North Cyprus and South Cyprus claim natural gas rights in the 2,3,8,9,14 blocs. North Cyprus allowed Turkey to search the natural gas in its reserves. Not only Turkey but also other countries search the natural gas in these natural gas reserves such as Italy, France, and the United States of America.

Turkey still goes on for natural gas exploration work. However, it is not enough for Turkey's energy demand. So, Turkey tries to increase the amount of natural gas import and diversify natural gas suppliers.

## 2.2 The Ways of Reaching Natural Gas-Rich Countries

Turkey is a country without important natural gas reserves. Turkey uses natural gas since 1986 and the amount of natural gas use increases continuously. Almost all of this natural gas use was imported from natural gas-rich countries. Turkey became a dependent country in energy and needs to protect its energy security. Until now, Turkey did not get any results yet in its natural gas exploration work. So, it is seen that Turkey will still import natural gas from them. Turkey needs to import natural gas from Natural gas-rich countries to protect its energy market and to ensure the increase of natural gas demand year to year. Turkey collaborates with these countries to provide its natural gas demand because Turkey needs to diversify natural gas imports not to only depend on a few countries. There are two important methods for providing natural gas for Turkey's demand. One of them is the transit of natural gas through pipelines. The other is the transit of liquefied natural gas (LNG) by vessels but one is not another's an alternative way. Each one has significance in providing countries' natural gas demand. LNG has an advantage for supplying natural gas in urgent need compared to pipelines.

### 3. The Natural Gas Sources in the Countries Around Turkey

Turkey is located between Asia and Europe continents and it has a geographically important position for the energy sources. So, Turkey can cooperate with several countries to provide energy demands due to its important position. In this way, Turkey can provide its energy demand and contribute to the EU's energy security. If proper natural gas pipelines are constructed, Turkey can import its energy demand and provide natural to the EU members as well. For transmitting natural gas, another method is the liquefaction of natural gas. Some countries are located far away from Turkey and they have important natural gas reserves. So, Turkey can import natural gas with LNG form by ships.

### 3.1 The countries supplying LNG form to Turkey

Turkey imports liquefied natural gas mostly from three countries. These countries are Qatar, Nigeria, and Algeria. All of the important natural gas reserves for LNG form.

#### 3.1.1 Qatar

Qatar is the number one country for LNG export in the world due to natural gas reserves and the country has good political relations with Turkey. Due to important political relations between Qatar and Turkey, Turkey ensures its natural gas demand from Qatar by LNG ships.

"In 2015, Qatar proved its energy reserves in the world at 872 trillion cubic feet, according to the Oil Gas Journal"<sup>8</sup>.

Table 3.2: The top 10 countries with their natural gas reserves in 2015

Country	Trillion cubic feet
Russia	1688
Iran	1201
Qatar	872
United States	338
Saudi Arabia	294
Turkmenistan	265
United Arab Emirates	215
Venezuela	197
Nigeria	180
China	164

<sup>8</sup> Oil&Gas Journal, 2015, Worldwide Look at Reserves and Production, U.S. Energy Information Administration

Source: U.S Energy Information Administration, Oil&Gas Journal-Qatar Part

([https://www.eia.gov/beta/international/analysis\\_includes/countries\\_long/Qatar/qatar.pdf](https://www.eia.gov/beta/international/analysis_includes/countries_long/Qatar/qatar.pdf))

According to table 3.2, the countries' natural gas reserves in 2015 are shown. Qatar holds natural gas reserve as a third country in the world. They can ensure their energy demands by the significant reserve. Also, they have enough reserves to export to the countries. Nowadays, Turkey developed relations with Qatar not only for energy but also for investment. In this way, Turkey got an important chance for its energy demand due to a positive relationship. Even though Qatar is not in the list of Turkey's top 5 natural gas suppliers, it can be assumed that Turkey will increase its external energy import from Qatar in the future.

Table 3.3: Qatar's dry natural gas production and consumption in 2013(billion cubic feet)

Proved natural gas reserves,2013	Dry natural gas production,2013	Dry natural gas consumption,2013
871,585	5,598	1,168

Source: U.S Energy Information Administration, Oil Gas Journal-Qatar Part

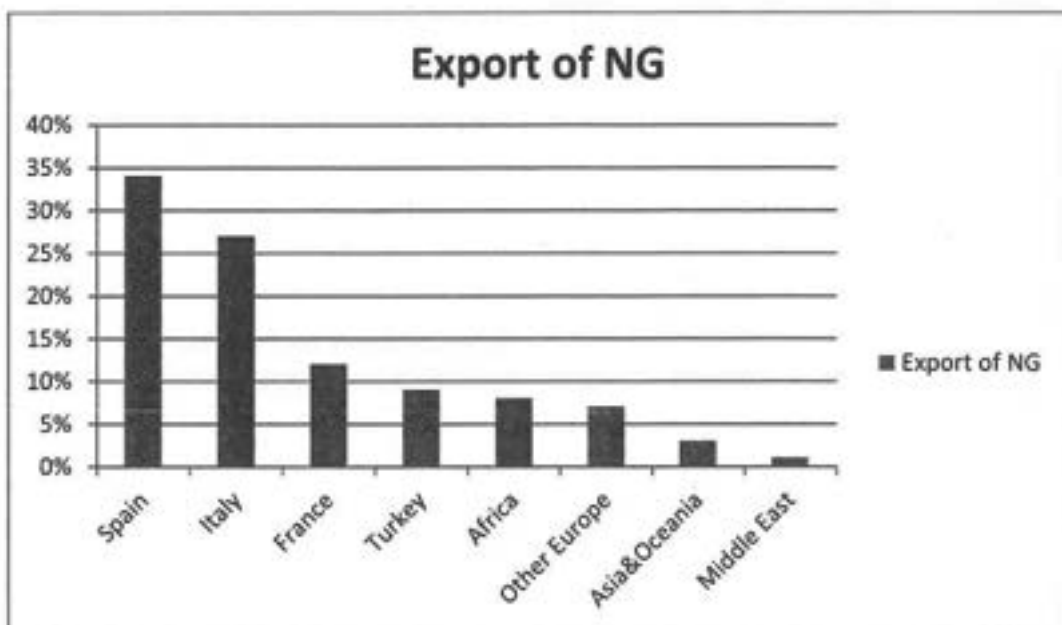
([https://www.eia.gov/beta/international/analysis\\_includes/countries\\_long/Qatar/qatar.pdf](https://www.eia.gov/beta/international/analysis_includes/countries_long/Qatar/qatar.pdf))

According to table 3.3, Qatar has significant reserves and its dry natural gas production amount was more than its energy consumption amount in 2013. So, Qatar can sell its external energy source to other countries for economic gain.

### 3.1.2 Algeria

Algeria has important reserves in Africa and the second-largest supplier to Europe. Algeria cooperated with Spain and Italy for natural gas transit. The country exports natural gas to Italy via Tunisia and to Spain via Morocco. So, the Europe continent can provide natural gas by pipelines. However, the countries' natural gas production slowly decreases due to delaying energy projects. Turkey also imports some of its energy demand from this country by LNG ships.

Figure 3.4: Algeria's natural gas import by destination in 2013



Source: BP Statistical Review, 2014

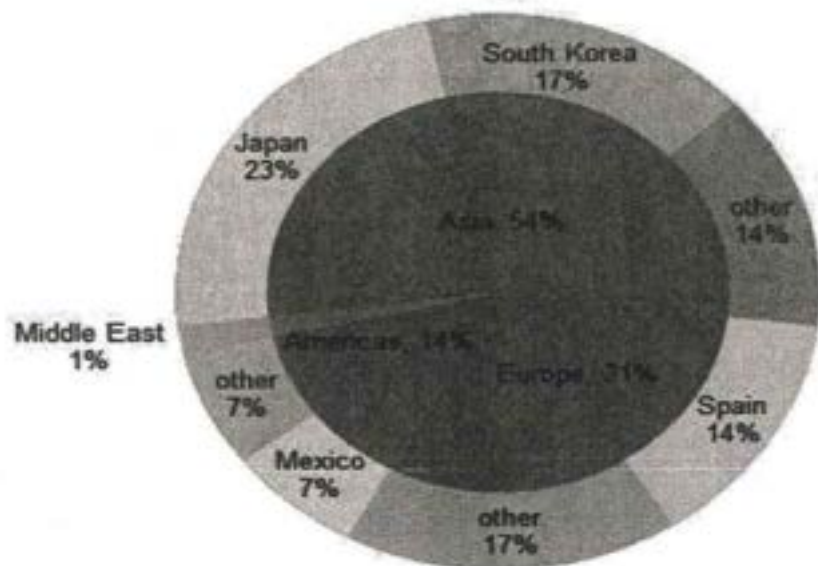
([http://www.iberglobal.com/files/2016/argelia\\_eia.pdf](http://www.iberglobal.com/files/2016/argelia_eia.pdf))

According to figure 3.4, Algeria supplied its natural gas to several countries. However, Algeria mostly focuses on Europe countries due to built natural gas pipelines. Turkey also benefits from Algeria's natural gas after France. But the supplying method is different. Turkey uses LNG ships for providing it.

### 3.1.3 Nigeria

"Nigeria had 180 trillion cubic feet natural gas reserves in 2015 January."<sup>9</sup> So, the country has important energy sources in the world and largest in Africa Continent. Also, Nigeria is in the top 5 LNG exporters in the world.

Figure 3.5: Nigeria's exports of LNG, by destination in 2013



Source: U.S Energy Information Administration, 2014, BP Statistical Review of World Energy

(<http://www.eisourcebook.org/cms/January%202016/Nigeria%20Country%20Analysis%20Brief.pdf>)

According to figure 3.5, Nigeria exported its natural gas mostly to Asian countries at 54% such as Japan and South Korea by LNG ships. Especially Japan increased the natural gas imports from this country after the Fukushima nuclear incident happened in 2011. After Asian countries, Europe countries

<sup>9</sup> Oil&Gas Journal, 2015, Worldwide Look at Reserves and Production, U.S. Energy Information Administration

imported their natural gas at 31%. Turkey also belongs to the Europe part. Lastly, America imported natural gas from Nigeria at 14%.

These three countries supply their natural gas to Turkey by LNG ships. However, Turkey mostly imports its energy Russia demand by natural gas pipelines from Russia and there may be other suppliers in the future.

### 3.2 The countries supplying natural gas with pipelines to Turkey

#### 3.2.1 Russia

Russia has important natural gas reserves compared to other countries and its economy is based on export of it. It exports its natural gas to the countries in Europe and Asia. \*According to Oil and Gas Journal, Russia has 1,688 trillion cubic feet natural gas<sup>10</sup>. Due to its significant natural gas reserves, natural gas exports constitute an important part of Russia's economy. In 2016, several companies worked in the natural gas production area and they have produced a significant natural gas. The information relative to its companies and natural gas production is showed below.

Table 3.4: Russia's natural gas production by the company in 2016

Russia's company name	Production of natural gas amount in trillion cubic feet
Gazprom	14.8
Novatek	2.4
Rosneft	2.4
Lukoil	0.7
Surgutneftegaz	0.3
PSA operators	1
Others	1

<sup>10</sup> Oil & Gas Journal, 2016, Worldwide Look at Reserves and Production, p. 22., U.S. Energy Information Administration

Total	22.6
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Source: U.S. Energy Information Administration, 2016, Eastern Bloc Research

<https://www.eia.gov/beta/international/analysis.php?iso=RUS>

According to table 3.4, Russia's companies producing natural gas are examined. The statistics show that Gazprom produced natural gas with a noticeable difference. Other companies produced a small amount of natural gas compared Gazprom. So, the countries can cooperate with Gazprom to import Russia's natural gas. Russia exports its natural gas with several natural gas pipelines.

Table 3.5: Operating natural gas pipelines of Russia

Name of Pipelines	Capacity (Trillion cubic feet per year)	Markets
Yamal-Europe	1.2	Poland, Germany and northern Europe via Belarus
Blue Stream	0.6	Turkey via the Black Sea
North Stream	1.9	Germany and northern Europe via the Baltic Sea
Sakhalin-Khabarovsk-Vladivostok	0.2	Eastern Russia with potential export to Asia

Source: U.S Energy Information Administration, based on Gazprom, Gazprom Export, Sakhalin Energy, World Gas Intelligence, Nefte Compass and Argus FSU.

<https://www.eia.gov/beta/international/analysis.php?iso=RUS>

According to table 3.5, important natural gas pipelines have been built with different countries' cooperation. Each pipeline has a different capacity due to the markets. It can be said that Turkey and some European countries depend on Russian natural gas.

### 3.3 The countries around the Caspian Sea

Caspian Sea countries have natural gas-rich reserves. These countries are Azerbaijan, Turkmenistan, and Kazakhstan. They use their energy sources for their energy demand and also they export the natural gas for additional income. The cooperation can be done with these countries in the field of energy. The proved natural gas reserves of them are examined below.

Table 3.6: The proven natural gas reserves in Caspian Sea countries, 2005

Countries	Natural Gas Reserves (TCF)	Possible Additional Gas
Azerbaijan	48	35
Kazakhstan	106	88
Turkmenistan	102	159

Source: BP, Statistical Review of World Energy June 2006; Penwell Publishing Company. Oil & Gas Journal, December 19, 2006; Energy Information Administration U.S.

(<https://www.econstor.eu/obitstream/10419/54651/1/682444715.pdf>)

According to table 3.6, the significant natural gas reserves of Caspian Sea countries are analyzed. These countries have an important chance to use it for their economy if they increase natural gas production annually because mostly every country uses natural gas in the world. They are also willing to export their natural gas to other countries needing this energy to use in their development.

The various natural gas reserves around Turkey are important on both sides because these reserves are large enough to decrease their energy deficit. Turkey can cooperate with EU members to contribute to the EU's energy security which is significantly necessary for the development. As long as countries are supplying and demanding natural gas, cooperation in the field of energy is suitable for all parties because the main issue is the trade that buyers and sellers are both pleased.

#### **4. The Mutual Benefit Resulting From Cooperation on Natural Gas**

The EU members' natural gas consumption in the second chapter and Turkey's natural gas consumption in this chapter were analyzed. "EU members' natural gas consumption 5% from 2000 to 2011. Also, Turkey's natural gas consumption increased by 127% between 2000 and 2009 year"<sup>11</sup>. These statistics show that two parties depend on natural gas and it can be predicted that they will increase the import of natural gas in the future due to their development. The two parties can cooperate in the field of energy due to the common interest which is natural gas. Natural gas-rich countries and the other countries depending on natural gas can go ahead with natural gas trade. So, this trade may help to develop relations between Turkey and the EU. Different cooperation can be carried out on natural gas transmit. First one is the pipeline construction. Two parties can benefit from common pipelines at the same time. In this way, natural gas can be transmitted via Turkey. The other choice is the LNG form. Both parties can cooperate to convert natural gas to LNG and use it for their energy demand. Allied countries such as Qatar and Turkey can cooperate for the production of LNG to transmit toward EU members. In addition to the transmit of natural gas, natural gas exploration is also important for both parties because it is estimated that in the seas around Turkey the such Black Sea and the Mediterranean Sea have natural

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<sup>11</sup> Sami Andoura, 2015, What potential for cooperation between Turkey and the EU on Diversification of Gas Supply?, Instituto Affari Internazionali, pp. 4

gas reserves. Possible cooperation can be seen in the future due to exploding natural gas reserves around Turkey. For instance, some countries including Turkey work separately to explore natural gas reserves because the availability of significant natural gas reserves around Cyprus island is estimated. However, until not it has not been proven yet. At the end of exploration work, both parties can make common cause with natural gas reserves. Thus, Turkey can be an energy hub for EU members due to its geographical location because it is close to Central Asia, the Middle East and Europe. The countries in Central Asia and the Middle East have important external energy sources such as natural gas which is the necessary import part of the EU.

## **IV. The Cooperation Between The European Union and Turkey in Energy Projects**

### **1. The Importance of Turkey's Geographical Location for Cooperating with European Union in Energy**

#### **1.1 Turkey's location for reaching natural gas sources**

Turkey is located strategically in an important area. The country is between the countries that consume natural gas in Europe and produce natural gas in the Middle East, Central Asia including Russia. With statistical data, the countries in the Middle East and Central Asia involving Russia holds 47% of world energy sources and natural gas consumption of EU members is 17% of global natural gas consumption<sup>12</sup>. As Turkey is close to these energy sources, this location makes Turkey politically and economically important country in its region. So, Turkey has a key role in transmitting natural gas from suppliers to consumers to continue natural gas trade. Turkey and EU members depend on natural gas for their regular development. Turkey can contribute to the energy security of EU members if the country cooperates with EU members in natural gas trade through Turkey.

#### **1.2 The Ways for delivering natural gas to EU members**

Turkey has initiated various energy projects to ensure its energy security as well as to transit natural gas to EU members at the same time. First, natural gas pipelines are used to deliver Russia, Azerbaijan, and Turkmenistan natural gas toward EU members. Turkey constructed some natural gas pipelines in cooperation with EU members and energy suppliers. For instance, Turkish Stream and TANAP projects are got ready for EU members' energy demand.

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<sup>12</sup> Ole Gunnar Austvik and Gulmira Rzayeva, 2016, Turkey in the Geopolitics of Natural Gas, Harvard Kennedy School, pp. 10

Second, LNG is another option to transit natural gas toward EU members because natural gas pipelines are not enough for ensuring EU energy security. So, countries try to diversify ways to send their natural gas. For instance, Russia, Qatar, and Algeria are important LNG suppliers in the world. "Turkey can cooperate with EU members in LNG trade due to its locational advantage. Bosphorus strait connects the Black Sea with the Mediterranean Sea. Every year 10,000 tankers pass through Bosphorus strait with tanker traffics grows continuously"<sup>13</sup>. This statistic shows that energy trade around Turkey seems to be further increased. EU members can use this route to providing their natural gas demand.

### 1.3 Advantage of energy cooperation on Turkey

Turkey is ready to fulfill its duty in energy cooperation with the EU because Turkey wants to get revenues from natural gas trade. After energy cooperation is done, Turkey will receive a fee that is based on the amount of passing natural gas through Turkey's pipelines. Furthermore, Turkey is going to be a strategically important country for the EU as the country contributes to the EU's energy security. So, Turkey can use its advantage to make decisions geopolitically in its region and improve its trade with EU.

## 2. Arguments Regarding Natural Gas

Even if Turkey has achieved locational superiority by signing the immigrant agreement, Turkey has significant importance because it has a natural gas pipeline. Turkey will become an indispensable partner for the EU because the EU will get some of its natural gas demand via Turkey. As Turkey became a bridge between Asia and Europe, it can play a key role to send natural gas from Asia countries to the EU countries.

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<sup>13</sup> Katinka Barysch, 2007, Turkey's role in European energy security, Centre for European Reform, [www.cer.org.uk](http://www.cer.org.uk), pp. 3

Ole Frahm, Katharina Hoffmann and Dirk Lehmkuhl (2018) discussed Turkey's energy policy with the EU. The EU is collaborating with Turkey to get an increasing demand for natural gas. Trans Anatolian Natural Gas Pipeline (TANAP) was designed to connect Azerbaijan's external energy fields via Georgia and Turkey to Greece where the pipeline will conjoin with the Trans Adriatic Pipeline(TAP) ending in Italy is critical for supplying the EU market. Turkey also attempts to connect via Azerbaijan to energy sources from Central Asia countries for example Kazakhstan. In 2014, Turkey established the trilateral mechanism with Turkmenistan and Azerbaijan to build the potential natural gas pipeline from the Caspian Sea countries to the EU members. However, until now there is not any development in the natural gas line from Turkmenistan to Azerbaijan.

Ole Gunnar Austvik and Gulmira Rzayeva (2016) discussed the location of Turkey as an energy hub regarding natural gas. Turkey is located strategically located between natural gas rich countries and natural gas importing countries. With Azerbaijan's natural gas reserves, Turkey will become an important energy hub with the Turkish stream. Turkish Stream project was established by Russia and Turkey to supply natural gas demand of east Europe. Thus, Turkey became an important country in energy for the EU.

Katinka Barysch (2007) argued Turkey's role for EU's energy security. Turkey can able to contribute to EU energy security as a possible energy hub. Additionally, the EU searches alternative natural gas suppliers to diversify the number of countries. So, the EU can achieve its energy security with Turkey. To achieve it, Turkey is the most convenient country to agree regarding natural gas.

### 3. The European Union's Energy Projects Involving Caspian Sea via Turkey

The energy cooperation between Turkey and the EU lasts from the beginning of 2000. Two parties have a common interest in energy and both of them still increase the natural gas consumption to ensure energy security. Turkey can be a transit country for natural gas trade if natural gas-rich countries nearby Turkey such as Azerbaijan, Turkmenistan, Iran, and Iraq. These countries try to export their external energy to EU members via Turkey and EU diversifies choices of natural gas import not to depend on only Russian gas. Furthermore, Turkey wants to enhance the importance of its strategic location due to proper energy projects with natural gas-rich countries.

#### 3.1 Nabucco Project

Turkey and EU members collaborated for energy in 2002. \*Austria, Hungary, Bulgaria, Romania and Turkey joined at Nabucco project containing natural gas pipelines with a capacity of 31 billion cubic meters per year to transit natural gas from Azerbaijan, Turkmenistan, Iran and Egypt to EU members. In 2011, five transit countries and Nabucco consortium signed the project support agreement<sup>14</sup>. For the EU's energy security Turkey, EU members and the USA supported this Nabucco project. The Nabucco project was supported for dependence on energy by the EU and the USA. Turkey supported this project to contribute to its locational importance. The Nabucco project affecting several countries' economies positively is detailly showed on a map below. It can help readers to imagine the importance of the project.

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<sup>14</sup> Simone Tagliapietra, Fondazione Eni Enrico Mattei and Istanbul Policy Center, 2014, The EU-Turkey energy relations after 2014 Ukraine crisis. Enhancing the partnership in a rapidly changing environment, pp. 3

Map 4.1: Nabucco pipeline project for transmitting natural gas to EU via Turkey



Source: European Dialogue, 2015

([http://www.google.de/imgres?imgurl=http://eurodialogue.org/files/fckeditor\\_files/NabuccoPipelinemap.gif&imgrefurl=http://eurodialogue.org/NabuccoMap&h=564&w=800&tbnid=I5GhNF4C83Oa1M:&zoom=1&tbnh=94&tbnw=134&usq=\\_\\_Lh8VBI5ZTPHPmpZ8FbTgNo5UEK4=&docid=x2r4jwUU0B3r7M](http://www.google.de/imgres?imgurl=http://eurodialogue.org/files/fckeditor_files/NabuccoPipelinemap.gif&imgrefurl=http://eurodialogue.org/NabuccoMap&h=564&w=800&tbnid=I5GhNF4C83Oa1M:&zoom=1&tbnh=94&tbnw=134&usq=__Lh8VBI5ZTPHPmpZ8FbTgNo5UEK4=&docid=x2r4jwUU0B3r7M), Accessed on 02 May 2015.)

According to map 4.1, a detailed map shows transit routes of natural gas with the connections. First, the natural gas pipeline is thought to be constructed between Azerbaijan and Turkmenistan to transit Turkmenistan gas to EU members. Also, some parts of the pipeline in Turkey were waited to be done at the same time. Turkey is can be seen as an energy hub for Europe because Iran, Azerbaijan, and Turkmenistan natural gas were planned to deliver to EU members through Turkey. At that time Iran was not boycotted by the United Nations. All these countries were chosen to decrease EU's dependence on Russian gas. So, EU members would become less risky on energy.

However, the Nabucco project failed due to some commercial and financial reasons. As Halfer (2012) explained these situations with proper reasons that are a market analysis was not enough for the buyers, a project of natural gas pipelines was convenient because large-size pipelines were decided with

uncertain demand, it was not able to compete with South Stream Project via Ukraine, generally, mid-size companies joined at the Nabucco project. They were responsible to borrow money from the banks.<sup>15</sup>

Due to these reasons, this project was not sustainable to continue and Ukraine's natural gas pipelines were well-built to contribute to the EU's energy security. So, the Nabucco project was canceled and ready pipelines were decided to use regularly.

### 3.2 Ukraine-Russia Crisis

Ukraine is an important destination to deliver Russian gas to EU members. Even though the North Stream pipeline was completed, South Stream was still important for Germany, Central, and Eastern Europe before the Ukraine-Russian crisis happened. In June 2014, some parts of South Stream were under construction and stopped by the EU due to the continuity of uncertainty in Ukraine<sup>16</sup>. So, EU members started to focus on other energy projects to ensure their external energy demand because natural gas supply can be stopped by Russia in the future if the relationship between the two countries is not improved.

They tried to find a new energy transit routes from natural gas-rich countries. So, Turkey was thought to be a good energy hub for EU. In this way, they set up a dialogue with Turkey in the field of energy. Turkey can become a key country to transit natural gas to EU members.

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<sup>15</sup> Hafner. M, 2012, Russian Strategy on Infrastructure and Gas Flows to Europe, Polinares Working Paper N.73, p.41

<sup>16</sup> Christian Hubner, 2014, European Energy Supply Security in Light of the Ukraine Crisis, Konrad-Adenauer-Stiftung Facts&Findings, pp. 3-4

### 3.3 Seeking New Solutions to Natural Gas Pipelines via Turkey

EU members are trying to find new natural gas markets for the necessity of their development. Turkey can play a role to provide natural gas to them as an energy hub. Possible ways are examined below.

#### 3.3.1 Kurdistan Region of Iraq's Natural Gas Reserves

Iraq's natural gas reserve is being discovered and Kurdistan Region of Iraq holds important natural gas reserve. "This region estimated its natural gas reserves between 3 and 6 trillion cubic meters"<sup>17</sup>. "This amount of natural gas can be compared with Azerbaijan's natural gas reserves around 1.3 trillion cubic meters"<sup>18</sup>. These statistics show that EU can import natural gas from Kurdistan region more than from Azerbaijan. Turkey is the neighbor of the Kurdistan region and has good energy relations with it. So, EU members can cooperate with Turkey and the Kurdistan region of Iraq in the field of energy. However, energy diplomacy is required to achieve cooperation due to political issues including territory between two parties. These issues can be seen as a barrier to cooperation. After proper diplomacy is done, EU members can benefit from natural gas in the Kurdistan region as well as the Kurdistan government can get good income with natural gas trade.

#### 3.3.2 Israeli's Natural Gas Reserves

Israel also has significant natural gas reserves and EU members' interest in its natural gas to import and lessen Russian gas dependency. "A Turkish company, Turcas Petrol, designed proper natural gas pipelines from Israel to EU through Turkey with a capacity of 16 bcm/year. It can be split up between Turkish market

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<sup>17</sup> Official estimation of Kurdistan regional Government in Simone Tagliapietra, Fondazione Eni Enrico Mattei and Istanbul Policy Center, 2014, The EU-Turkey energy relations after 2014 Ukraine crisis. Enhancing the partnership in a rapidly changing environment

<sup>18</sup> British Petroleum, 2013, Statistical Review of World Energy

with 6 bcm/year and EU market with 10 bcm/year<sup>19</sup>. Israeli can transit its natural gas via Turkey territory which is the closest way to deliver natural gas. Even though the project is valuable for the EU, there is a certain disagreement between Turkey and Israeli due to the Cyprus energy zone. Also, nowadays, Turkey and Israeli have diplomatically problems and they are seen not to be solved in a short time. So, EU members do not focus on detailed this project too much instead of the Caspian Sea.

### 3.3.3 Azerbaijan's Natural Gas Reserves

EU members consider Turkey's other neighbors such as Azerbaijan. They want to cooperate with it in the field of energy due to having common interests with Turkey. So, they can achieve in any cooperation of energy transit. Azerbaijan is also willing to export its natural gas to EU members to gain the income of natural gas sales. In this way, the EU can diversify natural gas imports to their energy security. Azerbaijan's natural gas project was an important part of Nabucco and if it is done, EU members can reach Turkmenistan gas with a proper natural gas pipeline between Azerbaijan and Turkmenistan.

### 3.3.4 Decreasing Importance of South Stream Natural Gas Pipeline

After the Russia-Ukraine crisis has happened, EU members started to find a new route to get Russian gas in another way which can be possible through because the problem between both parties continue and nobody knows when it will finish. Black sea is one of the choices and it is thought to get natural gas through Turkey. This situation is also acceptable for Russia and Turkey because Russia does not want to have any relationship with Ukraine in energy and it increases the importance of Turkey's location. So, Every country can concentrate on a new energy project from Russia to the EU via Turkey.

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<sup>19</sup> Simone Tagliapietra, Fondazione Eni Enrico Mattei and Istanbul Policy Center, 2014, The EU-Turkey energy relations after 2014 Ukraine crisis. Enhancing the partnership in a rapidly changing environment, pp. 42

#### **4. The European Union-Turkey Natural Gas Pipelines**

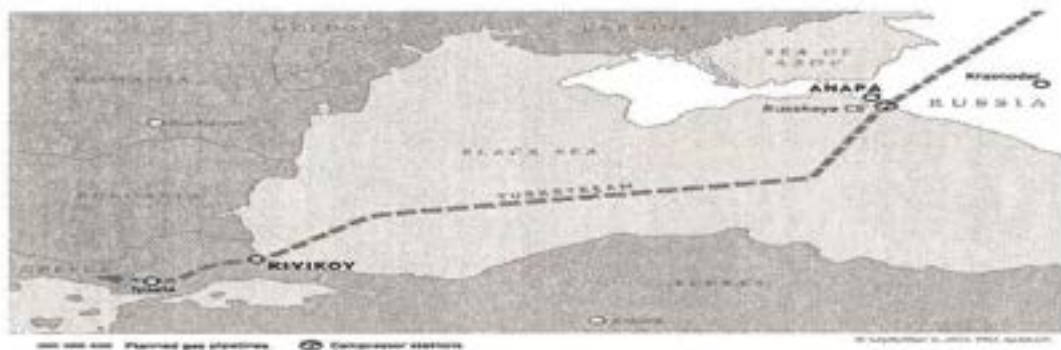
Turkey has joined in energy projects to provide its demand and to transit natural gas to EU members. The natural gas demands of EU members and Turkey were examined in previous chapters with natural gas-rich countries around Turkey. Both of them depend on natural gas and they have to care about it. Natural gas imports of two parties slightly increase year by year and they need to protect their markets by using natural gas in every area. Turkey and EU members, as well as natural gas-rich countries, take bright natural gas cooperation because they want to gain income with a trade of external energy sources. So, Turkey set up a dialogue to cooperate with countries in the field of energy. The natural gas pipelines are required to be constructed to transit natural gas from natural gas-rich countries to EU members through Turkey. Turkey is the candidate country for the energy hub.

The EU needs to select the specific energy hub because additional demand for the natural gas and the political disagreement can cause the problem regarding energy security. The EU has decided on Turkey as an energy hub. So, Turkey became the new energy hub of the EU. Turkey and the EU cooperated in several projects regarding energy security. The basic policy of the EU energy projects is to contribute energy security with increasing the number of countries which have natural gas reserves.

##### **4.1 Turkish Stream Natural Gas Pipeline Project**

Turkish Stream Natural Gas Pipeline Project, which is a joint project of Russia and Turkey has a great significance. This project, which will provide the demand of Turkey's changing natural gas, is also going to be connected to the natural gas pipeline with the EU and at the same time, it contributes to the EU's natural gas demand. Many states expect to benefit greatly from this project. Turkish Stream is the another project against to natural gas pipeline in Ukraine. This project will retain its importance as long as the problems between Ukraine and Russia last.

## Map 4.2: The Route of Turkish Stream



Source: Gazprom

(<http://www.gazprom.com/press/news/2016/december/article295329/>)

The natural gas problem of Turkey was greatly solved with the previous construction of Blue Stream. The Blue Stream natural gas project has important to be a reference for the similar natural gas projects. However, new natural gas pipelines are required due to the increasing demand of natural gas in Turkey. Another project of the natural gas pipeline was thought by Russia and Turkey to provide the lack of Turkey's natural gas demand. At the same time, a new natural gas line has been designed because the EU countries are also willing to join this project for their natural gas demand. This natural gas pipeline as called the Turkish Stream. The Turkish Stream natural gas pipeline project has great importance for Turkey and the EU.

### 1. TANAP Natural Gas Pipeline Project

The Trans-Anatolian Natural Gas Pipeline(TANAP) is the important energy project to contribute to Turkey's energy hub for EU countries. Also it has importance for Azerbaijan's economy cause the project starts from this country. After the construction of TANAP, Azerbaijan will export its natural gas to the EU countries in the middle of 2019. Turkey also can use Azerbaijan's natural gas to

diversify external sources. This project was also supported by the European countries because they do not want to depend on Russia.

TANAP was signed On 26 June 2012 between Turkey and Azerbaijan. It is planned to transport the 16 bcm natural gas annually by TANAP. The groundbreaking ceremony of the TANAP project was done in the Selim District of Kars on March 17, 2015, with Turkey, Azerbaijan, and Georgia. Turkish part of TANAP Project was completed in June 2018<sup>20</sup>. "Aim of this project is that TANAP will transport 2 billion cubic meters in 2019 to Turkey and it is going to be increased to 6 billion cubic meters natural gas in 2021"<sup>21</sup>.

"TANAP is not only for Turkey but also important for EU countries because due to this project 10 billion cubic meters of natural gas will deliver to Europe via Turkey after it is completed"<sup>22</sup>. The TANAP project will run through several Turkish cities and Greek Border to send the natural gas to the EU countries with Trans Adriatic Pipeline(TAP).

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<sup>20</sup> TANAP, <https://www.tanap.com/>

<sup>21</sup> [https://www.azernews.az/oil\\_and\\_gas/147151.html](https://www.azernews.az/oil_and_gas/147151.html)

<sup>22</sup> TANAP, <https://www.tanap.com/>

Map 4.3: The Route of TANAP Project



Source: TANAP Projects' Executive Summary (2016)

(<https://www.miga.org/sites/default/files/archive/Documents/SPGDisclosures/TANAP%20Executive%20Summary%20of%20ESIA%20and%20Supporting%20Environmental%20and%20Social%20Safeguards.pdf>)

Aim of the TANAP Project not only brings Azerbaijan's gas to Turkey and the EU countries but also can connect with other areas of the Caspian Sea. Turkmenistan has important natural gas reserves and it can be transported to the EU countries through Azerbaijan. The TANAP project will provide an important contribution to the development of Azerbaijan's economy. Also, it will have an important role to contribute to demand of natural gas for Turkey and the European countries.

## 5. The SWOT Method

Turkey has strategic objectives as many countries do in the world. One of them is a natural gas issue. Turkey collaborates with members of the European Union on natural gas using the importance of its geographical location. The SWOT method is used to assess this cooperation objectively. SWOT is a framework to

clarify the internal and external factors on an objective plan. It is one of the famous analysis methods to examine the strategic aims of Turkey in energy transmit.

Table 5.1: SWOT Method of Turkey's Gas Demand to Energy Cooperation with European Union

SWOT	Positive	Negative
<b>Internal</b>	<p><u>Strength:</u></p> <ol style="list-style-type: none"> <li>1. Importance of location</li> <li>2. Being in the top ten military power with an independent defense industry</li> <li>3. Strong government for international energy project</li> </ol>	<p><u>Weakness:</u></p> <ol style="list-style-type: none"> <li>1. The regular and irregular refugee problem</li> <li>2. Increase of population</li> </ol>
<b>External</b>	<p><u>Opportunity:</u></p> <ol style="list-style-type: none"> <li>1. Reaching to the energy suppliers</li> <li>2. Close to EU members and shortest distance on natural gas transit</li> <li>3. Being as a member of international</li> </ol>	<p><u>Threat:</u></p> <ol style="list-style-type: none"> <li>1. Depending on the external energy sources</li> <li>2. Relationship with Israel and Greece</li> <li>3. A neighbor with unsafe countries</li> </ol>

	organizations.	
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## 1.2 The parts of SWOT Analysis

### 1.2.1 Internal positive part: Strength

#### 1.2.1.1 Importance of location

Turkey is geographically important because it is where Europe and Asia are adjacent. Turkey constructed the energy pipeline to become an energy hub of the EU. Since the EU countries all depend on natural gas, Turkey is imperative to the EU. Turkey is one of the most important countries to contribute to the EU's energy security because Turkey is a bridge between EU members and natural gas-rich countries.

#### 1.2.1.2 Military power

Military power is the most important thing for the countries. If the country is not safe, it cannot manage any energy project. So, every country needs to attach importance to the defense force. The most powerful countries are shown below. This information can examine the security of the country with data. Data will help to understand how the country is strong and capable to carry out the energy project with the EU members and natural gas-rich countries.

Table 5.2 The most powerful militaries in 2019 (A perfect PwrIndex score is 0.0000)

Countries	PwrIndex score
The USA	0.0615
Russia	0.0639
China	0.0673
India	0.1065

France	0.1584
Japan	0.1707
South Korea	0.1761
UK	0.1797
Turkey	0.2089
Germany	0.2097

Source: Military Strength Ranking

(<https://www.globalfirepower.com/countries-listing.asp>)

According to table 5.2, Turkey is the 9th strongest country in the world and it has enough capacity to protect the country completely. With its power, it can counteract any illegal groups inside and outside of Turkey. So, Turkey can secure natural gas pipelines. It is important not only for inside the security but also for the external energy reserves around Turkey. Due to its power, Turkey has been searching to explore the natural gas reserves around it.

#### 1.2.1.3 Strong government for international energy projects

Turkey is governed by the single party government since 2002. The single party government can make a decision on energy projects without any obstacle in the council because it has political majority during long time. The government takes a bright view of natural gas transit projects to cooperate with EU members. They also want to extend the relations from trade partnership to energy partnership. Both parties do not have any disagreement on it because both of them think this togetherness is beneficial. They depend on natural gas and their natural gas imports increase year by year.

#### 1.2.2 External positive part: Opportunity

### 1.2.2.1 Reaching to the energy suppliers

Turkey is located near to natural gas-rich countries. Russia, Turkmenistan, Iran, Iraq, Azerbaijan, and Israel have possible natural gas reserves to supply their natural gas to another country. So, Turkey can import its natural gas demand from these countries and cooperate with any country on natural gas transit.

### 1.2.2.2 Close to EU members and shortest way on natural gas transit

EU members need to ensure their energy security and the cost is most important. Natural gas is cheaper compared to other external energy sources. However, the transit system should be chosen correctly. Turkey is a candidate country to be an energy hub due to its important location.

### 1.2.2.3 Being as a member of international organizations

Turkey is a member of several international organizations. For instance, NATO is one of them. Turkey works together with EU members in NATO. This togetherness can lead the way to cooperation. Turkey and EU members can enhance their relations in energy after important military cooperation with NATO.

## 1.2.3 Internal Negative part: Weakness

### 1.2.3.1 Refugee problem

The civil war happened in Syria since 2011 and Syrian territory is still not safe nowadays. Some of the Syrian refugees live out of camps and they live as a foreigner in Turkey. It can be assumed that Turkey's energy consumption was affected after 2011 because they need to use natural gas to live.

Map 5.1: Numbers of Syrian Refugees in Turkish cities in 2018



Source: General Directorate of Immigration Administration in Turkey

([https://reliefweb.int/sites/reliefweb.int/files/resources/Assessing%20the%20Development-Displacement%20Nexus%20in%20Turkey\\_FINAL.PDF](https://reliefweb.int/sites/reliefweb.int/files/resources/Assessing%20the%20Development-Displacement%20Nexus%20in%20Turkey_FINAL.PDF))

According to map 5.1, the Syrian refugees and the cities where they live in Turkey are shown. Since 2011 most of the Syrian people came to Turkey due to civil war in Syria. Some of them started to work and they still live in different Turkish cities. These refugees directly caused the more natural gas import in a short time.

### 1.2.3.2 Increase of population

The population of Turkey has increased the last decades and the increase of natural gas consumption depends on it. While Turkey's population is increasing, natural gas imports in Turkey also increase at the same time. So, Turkey needs to cooperate with natural gas-rich countries to ensure its demand. In this way,

Turkey has a chance to enhance its relations with EU members in the field of energy.

Table 5.3: Turkey's population from 2000 to 2018

Year	Population (million)
2000	63.2
2005	67.9
2010	72.3
2015	78.2
2016	79.5
2017	80.7
2018	81.9

Source: World Population Review -Turkey Population 2019

(<http://worldpopulationreview.com/countries/turkey-population/>)

According to table 5.3, Turkey's population increased year by year. This increase is a problem for energy consumption because in Turkey people use natural gas for heating houses and electricity. It directly affects the natural gas imports of the country. If the population's increase continues, Turkey will find a new project to provide natural gas more than the previous time.

#### 1.2.4 External negative part: Threat

##### 1.2.4.1 Depending on an external energy source

Every country's energy consumption increases due to development requirements. Turkey also increases its natural gas imports year by year because it has not any external energy source to use instead of importing it. So, the country cannot avoid importing natural gas from other countries and it completely depends on natural gas. In this way, Turkey needs to cooperate with natural gas-rich countries to ensure its energy security.

#### 1.2.4.2 Relationship with Israel and Greece

There are two important projects to transit natural gas to EU members. The first one is natural gas reserves around Cyprus Island. Significant natural gas reserves are estimated and it can contribute to EU members. However, Turkey and Greece disagree to explore the natural gas reserves due to a claim of infringement. If the problem between Turkey and Greece is solved, Turkey and EU members can get natural gas. The second one is Israel's natural gas. Israel wants to supply its natural gas to EU members through Turkey because it is the shortest way for it. However, it is seen impossible nowadays due to the relationship between Turkey and Israel. If Israel tries other ways except for Turkey, it will be not economic and they need to pay extra money for long way transit.

#### 1.2.4.3 A neighbor with unsafe countries

Turkey has neighbors which are EU members and Middle East countries. The country suffers from refugees due to the civil war in Syria. Also, there are other problems such as the insecurity situation in Iraq and possible war anxiety in Iran. These countries can cause a potential influx of refugees and Turkey can be compelled to host new refugees inside the country and some of them can cross the EU border to live there. Also, terrorist groups can destroy the energy lines in Turkey if Turkey does not take any important steps for its security. So, Turkey still consider on the safety of natural gas pipelines.

#### 1.3 Analysis of The SWOT method

The Swot method was applied to Turkey's energy cooperation with the EU members. Strength, weakness, opportunity and threat parts were examined to analysis the possibility of natural gas cooperation.

In strength part, Turkey has significant advantages to succeed the completion of energy projects from natural gas-rich countries to the EU members.

Importance of Turkey's location can make it an energy hub in its region. Also, security is necessary for the country to protect the energy line through Turkey. During to long time, Turkey was grappling with illegal groups inside and outside Turkey. For instance, Some groups were located in Syria, Iraq and Iran. However, due to independent defense industry, Turkey can provide security and it is on top 10 most strongest countries in the world. So, countries looking forward energy cooperation with Turkey do not care regarding security problem in Turkey. Another important thing for the strength part is the political structure. Turkey is directed by single party government and it helps Turkey to cooperate with EU members easily on natural gas projects because no body can bar single part government in the council. In this way, Turkey can discuss with any country for the energy cooperation if it is benefical for both sides.

In the weakness part, several situations affect Turkey to depend on natural gas and increase the import of it. Turkey's population increase year by year and it reached to 80 million people in a short time. So, consumption of natural gas increased due to change of Turkey's population. Not only population change but also refugee problem affected the natural gas import. Since 2011, lots of Syrian people came to Turkey to survive and some of them located in the refugee camps. Others still live in the cities and contunie their lives by working. This situation also caused natural gas consumption because in every city of Turkey natural gas is used for house heating and electricity generation. These factors make Turkey more dependent country on natural gas and the country needs to increase the natural gas import to avoid problems in the cities. This weak point compels Turkey on energy projects. The EU members also depend on natural gas like Turkey and they want to aline oneself with Turkey.

In the opportunity part, Turkey is able to cooperate with natural gas-rich countries because it is located around them. They also want to its natural gas to any country for economic gain from the natural gas trade. So, one natural gas line was constructed from Russia to Turkey for supplying natural gas. New project can be started between Turkey and natural gas-rich countries due to

energy demand. Also, Turkey is the candidate of energy hub for EU members as it uses locational advantage because possible energy project to EU members through Turkey is the shortest way and economic. So, they have to seize the opportunity to ensure EU's energy security in a short-term. Turkey and EU members are in the same organizations such as NATO. These togethernesses can help them to cooperate in another area. Turkey can increase relations with the EU on energy projects.

In the threat part, Turkey depends on natural gas because natural gas is used in any areas such as electricity generation in the industry and house heating. Also, Turkey does not any alternative external energy sources to replace. So, for the country's development natural gas is necessary. Turkey has to cooperate with EU members on natural gas projects. Otherwise, shortage of energy in Turkey can be happened. Moreover, Israel also has important natural gas reserves but Turkey disagree politically to cooperate on natural gas trade. However, EU members plan to construct possible natural gas pipelines from Israel to EU members through Turkey and Cyprus. It can not be actualized as long as political problems between Turkey and Israel persist. Another natural gas project is the reserves around Cyprus. If guarantor countries of Cyprus i.e England, Greece and Turkey agree to explore natural gas reserves evenly. Lastly, the security situation around Turkey is considered for energy projects' safety. Turkey's some neighbors are not safe and they still have city wars by illegal groups. Turkey cares about the security as much as EU members do. Recently, Turkey reached to 70% domestic rate in the defense industry especially the country has taken measures against to terrorist groups in Syria and Iraq. Also, possible refugee influx can cause the increase of natural gas consumption if Iran starts the war with any country.

## V. CONCLUSION

Turkey has a geographically important location and it can use the advantage of it with proper energy projects because the country is located between EU members and energy reserves-rich countries. EU members also have interest in possible energy projects with Turkey and this situation makes it an energy hub in its region.

The countries try to developed alternatives to eliminate the energy deficit. Some countries in the world are lucky for the external energy reserves because they can use it without importing from any country so they are independent in the field of energy. However, Turkey and the EU members depend on external energy source and they need to get the required energy from energy-rich countries. Different external energy types can be used for countries' energy security. However, EU members prefer a clean and cheap alternative to save the environment. Natural gas is suggested for countries to fulfill the requirements. It is convenient to use the available natural gas around EU members and Turkey.

The dependence on natural gas of EU members and Turkey increases year by year and they need to ensure energy security. Likewise, they can be a partner in any energy cooperation after the Ukrainian-Russian crisis since Russia wants to bypass Ukraine's natural gas transit by other projects. EU members also think of new natural gas projects except for Ukraine due to the continuity of the present crisis. Turkey also wants to increase natural gas consumption for its development. The country uses natural gas in every area but especially for electricity generation and house heating. New natural gas pipelines can be used by Turkey and the EU if they cooperate. There are important natural gas-rich countries such as Russia and Azerbaijan around Turkey, and energy cooperation is possible because natural gas-rich countries also want to sell their natural gas to EU members and Turkey.

Turkey made a point of energy security. The natural gas pipelines which were constructed in recent years by Turkey will provide natural gas not only to Turkey but also to EU countries. As in many countries, natural gas is used commonly in EU countries. Many problems can occur in the lack of natural gas because natural gas is used in various fields. The most important usage of natural gas is the industry because natural gas is needed throughout all production. Moreover, some of the electricity is provided by the conversion of natural gas. Another type of usage is that natural gas is used for heating houses. These kinds of usage make natural gas significant. Countries are greatly affected by the possible lack of natural gas. Turkey treasured the natural gas issue as it constructed several natural gas pipelines providing a unique asset to the rest of the Union. Another cooperation is LNG with several countries. For instance, Qatar is the number 1 country for the LNG trade and the country has good relations with Turkey. Therefore, EU members can cooperate with Turkey in the LNG trade to obtain natural gas from LNG countries which are too far. Lastly, natural gas exploration works go on around Cyprus island and huge natural gas reserves are estimated after drill. However, present problems should be solved with Turkey and Greece. If infringement is resolved, EU members can benefit from Cyprus' natural gas.

In all considerations and discussions, it is shown here how Turkey is important for the EU to ensure the union's energy security. Energy is the bilateral issue for both parties. They can plan a new energy project after TANAP and Turkish stream project were concluded.

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## Abstract

# EU에너지 안보에서 터키의 역할: 터키의 지정학적 관점으로

대부분의 국가들은 에너지 부족 현상에 대비하고자 한다. 일부 국가들은 에너지 비축량이 있기 때문에 다른 국가로부터 에너지를 수입할 필요 없이 바로 사용할 수 있고, 그렇기에 그 국가들은 에너지 분야에 있어 다른 나라에 의존할 필요가 없다. 그러나 터키와 EU 회원국들은 외부 에너지 의존율이 높기 때문에 에너지가 풍부한 다른 국가로부터 필요한 자원을 수입해야 한다.

국가의 에너지 수요를 충족하기 위한 다양한 종류의 에너지들이 있는데 여러 에너지들 중 EU 회원국들은 친환경적인 에너지를 선호한다. EU 회원국들의 요구를 충족시켜주는 에너지인 천연가스는 사용하기 편리하고, 파이프라인을 통해 터키와 EU 회원국들 사이에 쉽게 옮겨질 수 있다.

터키는 EU 회원국들과 러시아, 아제르바이잔, 투르크메니스탄 등 천연 가스가 풍부한 나라 사이에 위치하기 때문에, EU 회원국들의 에너지 수요를 충족시켜줄 수 있다. 터키와 EU 회원국들은 천연 가스에 의존하고 있고 그 의존성은 매년 높아지고 있다. 터키와 EU 회원국들은 나부코 프로젝트를 통해 천연가스에 관해 협력하였지만 몇가지 이유로 실패했다. 그러나 프로젝트 기간 등의 조건이 바뀌었고, 양 쪽 모두 자국의 수요를 위해 새로운 에너지 프로젝트를 계획할 수 있는 상황이다.

천연 가스 생산국들은 경제적 이익을 위해 천연 가스 판매를 원하고 있다. 이러한 상황들을 고려했을 때, 천연가스 생산국들과 EU 회원국들을 잇는 파이프라인을 건설하여 천연가스를 운반하는 프로젝트는 상호간에 큰 이익을 가져올 수 있다. 그리고 터키는 이 에너지 프로젝트에서 중추 역할을 수행할 것이다.