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THE ROLE OF TRANSANATOLIAN NATURAL GAS PIPELINE IN THE EUROPEAN UNION ENERGY SUPPLY SECURITY

MASTER'S THESIS

Ziya Suleymanli

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Assoc. Prof. Dr. Elif Nuroglu

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ABSTRACT

Securing the supply of energy is one of the fundamental priorities of the European Union (EU) dating back to the creation of the European Coal and Steel Community (ECSC) in 1951. However, the EU's dependence on external energy sources to meet its energy needs reveals that European energy supply security is a never-ending story. Considering growing energy demand, political instability in some energy producer countries and environmental threats, this thesis examines the EU's diversification strategy through the construction of alternative pipelines and energy routes. The aim of this thesis is twofold. Firstly, through an examination of the Trans-Anatolian gas pipeline (TANAP), which is a natural gas pipeline transmitting the natural gas from Azerbaijan through Georgia and Turkey, this thesis tries to understand the rationale behind the EU's ambitions to diversify its energy suppliers and routes. After that, this thesis analyzes the TANAP with the research question being whether the implications of it will lead to enhancement in European energy supply security in both political as well as economic terms.

Key Words: *Energy Supply Security*, *TANAP*, *EU Energy Policy*, *Energy Dependency*

ÖZET

Avrupa Birliği'nin (AB) temel önceliklerinden biri olmakla birlikte enerji arz güvenliğini sağlama meselesi Avrupa Kömür ve Çelik Topluluğu'nun (AKÇT) kurulduğu 1951 yılından günümüze değin güncelliğini korumaktadır. AB'nin uluslararası enerji alanında hala kırılgan bir pozisyonda olması meselenin güncelliğini koruduğunu ortaya koymaktadır. Bu tez kapsamında gittikçe artan enerji talebi, bölgesel siyasi belirsizlikler ve çevresel tehlikeler göz önünce bulundurularak Avrupa Birliği'nin farklı rotalar ve boru hatlarının inşası ile uygulamakta olduğu enerji kaynaklarını çeşitlendirme stratejisi incelenecektir.

Bu bağlamda Trans Anadolu Doğalgaz Boru Hattı'nı inceleyecen bu çalışma, ilk olarak AB'nin farklı enerji kaynakları ve rotaları bulma, bir diğer ifadeyle enerji kaynaklarını farklılaştırma stratejisinin altında yatan nedenleri inceleyecektir. Ayrıca TANAP projesinin AB'nin enerji arz güvenliğini hem ekonomik hem de politik yönleri açısından arttırıp arttırmayacağı tartışılacaktır.

Anahtar Kelimeler: *TANAP, Avrupa Birliği, Enerji Politikası, Enerji Arz Güvenliği, Enerji Bağımlılığı*

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LIST OF ABBREVIATIONS

CCP **:** Common Commercial Policy (CCP)

CET **:** Common External Tariff

EAEC **:** European Atomic Energy Community

EC **:** The European Community (EC)

ECSC **:** European Coal and Steel Community

EEC **:** The European Economic Community

EU **:** The European Union

MENA **:** Middle East and North Africa

OECD **:** The Organisation for Economic Cooperation and Development

OPEC **:** Organization of Petroleum Exporting Countries

RES **:** Renewable Energy Resources

SCP **:** South Caucasus Pipeline

TAP **:** Trans-Adriatic Pipeline

TANAP **:** Trans-Anatolian Natural Gas Pipeline Project

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CHAPTER 1: INTRODUCTION

1.1 Statement of the Problem

As a major trading power in the world with a population of over 500 million, securing the supply of energy is a matter of concern for the European Union (EU) . This is because the EU has to import a considerable amount of energy from the third countries to meet its growing energy needs. This means that the economic and social welfare of the EU members highly depends on the stable and sustainable access to energy sources. At this point, the diversification of the energy sources and routes is essential to ensure the EU's energy supply security.

Considering the aforementioned challenges stemming from the EU's energy dependency and other external trends, this thesis deals with the problems regarding the EU's situation vis-à-vis energy and importance of the diversification to secure the energy supply. With this aim, this thesis focuses on the Southern Gas Corridor, specifically the Trans-Anatolian gas pipeline (TANAP), which is a natural gas pipeline transmitting the natural gas from Azerbaijan through Georgia and Turkey, to understand the rationale behind the EU's ambition to develop new projects in the field of energy.

1.2 Scope and Objective of the Thesis

This study aims to analyze the importance of energy supply security in the EU context, in light of the growing demand for energy, and geopolitical and environmental concerns. With this aim, the EU's natural gas dependency and evaluation of the Southern Gas Corridor concept will be covered to understand the EU's ambition to realize the Trans-Anatolian gas pipeline project (TANAP). By doing so, this study intends to explain the rationale behind the high levels of attention for the new gas pipelines in the EU.

This thesis includes five chapters. Problem statement, scope and objective of the study, theoretical background and methodology are given in the first chapter.

By realizing the necessity of conceptualizing energy supply security, Chapter 2 attempts to define and understand the concept of energy supply security and its dimensions.

In Chapter 3,the EU's vision regarding energy supply security is presented. With this aim, the EU's current situation, historical development of its energy policies, recent priorities and supply structure of the natural gas are presented.

In Chapter 4, the TANAP is examined in order to understand the implications of the project and the relationship between the realization of this project and the concept of energy supply security. Lastly, discussion, limitations and suggestions for further researches are given in Chapter 5.

1.3 Research Questions

Since this thesis is descriptive, the research questions are chosen as a guide to develop the structure of the thesis and discuss the selected case study in a comprehensive way at the end of the study. In other words, since there will be no hypothesized relationship within the context of this study, research questions aim at connecting ideas to unveil the potential cause/effect relationship regarding the EU's energy policies, energy supply security concept and realization of the TANAP project. With this regard, this thesis tries to answer the following questions:

RQ1: What is the EU's current situation vis-à-vis energy?

RQ2: How does the EU develop its energy policy in order to ensure supply security and sustainability?

RQ3:What does the energy supply security mean in the European context?

RQ4: What is the importance of the TANAP Project for the EU's energy supply?

RQ5: To what extent will the TANAP Project make a difference in the EU's energy market?

1.4 Theoretical Background and Methodology

Growing demand for the energy, high level of dependence on the third countries to meet this demand, unstable prices in the energy market, concerns regarding the increasingly aggressive tone of Russia and lessons from the recent disputes between Russia and Ukraine over the natural gas prices raised the concerns over the energy supply security within the EU. As a response, several ambitious projects have been drawn by the EU over the last few years. At this point, the Southern Gas Corridor (SGC) was marked a significant Project for the EU to ensure energy supply security.

Bearing in mind the aforementioned issues, this study tries to understand the central motivation behind the development of these projects by utilizing the energy supply security concept. To develop a theoretical perspective, these projects were considered as a part of the EU's diversification strategy. Traditionally, strategies of the states to secure the energy supply are basically analyzed from two traditional perspectives: liberalism and realism.

The first perspective, liberalism, focuses on the 'interdependence'. From the lens of this concept, security will be higher when the chain consists of interconnected terms which are part of the whole process (Månsson, 2014). In other words, the interdependency occurs when the consumer and producers become co-owners of the other parts in the system (Nye, 1982). Such a relationship means that the producer holds shares in the downstream and distribution companies of the consumer country, while consumer owns shares in the upstream, in the producer company (Ebel, 2002). Since both parties have common interests and the chain indestructible, security occurs through the interdependence (Nye, 1982). Thus, the liberal approach sees interdependence as a solution for security.

By applying this logic to the European energy market, we can say that the EU's energy policy is liberal in some sense. However, the system is not only based on the relationship between the producer and consumer countries in the energy field. There are also transit countries. For the EU's energy imports, the transit countries have significant importance in the chain. These countries can forge their strategic weight given its geographical advantages.

The second perspective, realism, focuses on alternative sources and routes as a way of securing the energy supply. Realism accepts the international system as anarchic and competitive due to the lack of a common authority (Keohane and Nye, 1977). Since the system is anarchic and very competitive, states have to rely on 'self-help' to ensure their security by protecting their self-interests (Nye, 2005). According to Waltz (1979), the nature of the system pushes the states or organizations to create various strategies in order to increase their level of security.

Besides the internal ones, these strategies could also be external which means a balance of power through developing alliances or organizations (Ebel, 2002). Geographical elements play a decisive role in the development of these alliances. In the context of energy security, this approach refers to the idea that creating alternatives in terms of sources and routes is necessary since relying on another country would be risky in a chaotic and competitive system (Moran and Russel, 2009). This approach to energy security concept are not only found in academic debates. When we look at the TANAP project, we can see the reflections of realist theory since the project aims at diversification of the energy routes and sources. In other words, by establishing different routes and alliances, the EU is embracing the energy security concept to solve its dependence on a certain supplier. The TANAP project was designed as a solution to create alternatives with the aim of ensuring the EU's energy supply security through the diversification strategy.

By applying this perspective to the EU's energy policy, this study will use the descriptive case study method. This method is mainly employed to bring an explanation to a specific problem by indicating the related concepts and issues which can be linked with the selected question or problem. In other words, the main aim of descriptive

studies are to describe a specific problem or phenomenon and its characteristics. Therefore, descriptive researches often use observations as a way to collect the data.

1.5 Data Sources

This study is utilized from the use of primary, secondary and lastly tertiary literature sources. Tertiary sources are used to make clear the complexities of the EU's energy policy. The official websites and archives of the European Union Institutions; including the European Commission (EC), the Council, Eurostat (European Statistical Office) and several related Directorates are among the tertiary sources of the study.

Regarding the primary sources, research papers published by the private corporations and international agencies were also employed. Since the EU law and policies in energy chapter may be complicated to understand, secondary sources from the relevant literature were also considered during the research stage. Especially, to understand the evolution, implementation and implications of the TANAP Project, journal articles and reviews are utilized by the study.

CHAPTER 2: ENERGY SUPPLY SECURITY

As an important component of the modern life, energy has always had a crucial role in economic, social and cultural aspects of the society. Regarding our daily routines and basic needs, such as transportation, communication, lighting and heating, we are all dependent to the energy. Since it is one of the major inputs for the industrial production, economic growth and sustainable development also cannot be achieved without energy. Considering its vital functions in the human history, this chapter starts with a brief definition of energy.

In line with the growing demand for energy, not only in developed and industrialized societies, but also in developing ones, energy supply is becoming a key issue for states' and their energy policies. Thus, after a definition of energy, the concept of energy demand and supply is covered in this chapter. This is followed by vulnerabilities and threats in energy supply, and conceptualizing the energy supply security as well as dimensions of supply security.

2.1 Defining the Energy

Energy can be understood as a capacity of system for doing work in the broad sense. It can be derived from through the chemical or physical resources to enable working of any system (Goldthau and Witte, 2009). A strict definition may be impossible for understanding the concept of energy since it is found in various forms; including nuclear energy, electrical energy, chemical, solar, mechanical, thermal or electromagnetic (Sovacool, 2011). Regardless of its form and source, energy has been the basis of life throughout the human history.

With the development of technology, energy has become the primary component of the social welfare and economic growth (Strange, 2004). Due to its scarcity,

however, the energy sector has a complex nature which has a potential to create new alliances and rivalries (Helm, 2005). At this point, energy demand and supply are two important terms to understand the critical role of energy in today's modern societies.

2.2 Energy Demand and Supply in the World

According to the statistics, global energy demand is on the constant rise and this trend will continue in the future. This makes clear that energy demand and supply will be the important topic of discussion in all over the world. In 2018, global energy demand increase grew by 2.3%. This increase was marked its fastest pace for the last ten years. This is mostly because the emerging economies and their economic and industrial performance pushed the world's demand for fossil fuels. As shown in figure 2.1, China has a big share in acceleration in global energy consumption and it is the biggest consumer in energy market in the last ten years. Energy consumption in Europe, especially in Germany and France also increased over the time, mainly triggered by the industrial growth.

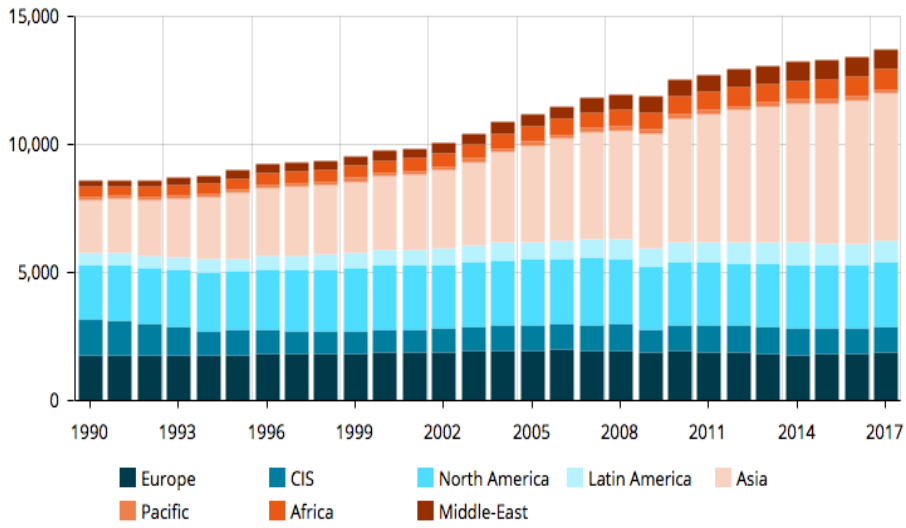

Figure 2.1: Global Energy Demand between 1990 and 2017. Source: Enerdata, Global Energy Statistical Yearbook, 2018

One should also point out that the increase in energy consumption is linked with the demand for natural gas since it makes 45 percent of the total rise in demand (see

figure 2.2). Figure 2.2 shows that natural gas provided the major increase regarding energy consumption between 1992 and 2017. Renewable energy and oil followed the natural gas in terms of increment to energy consumption (IEA, 2018)

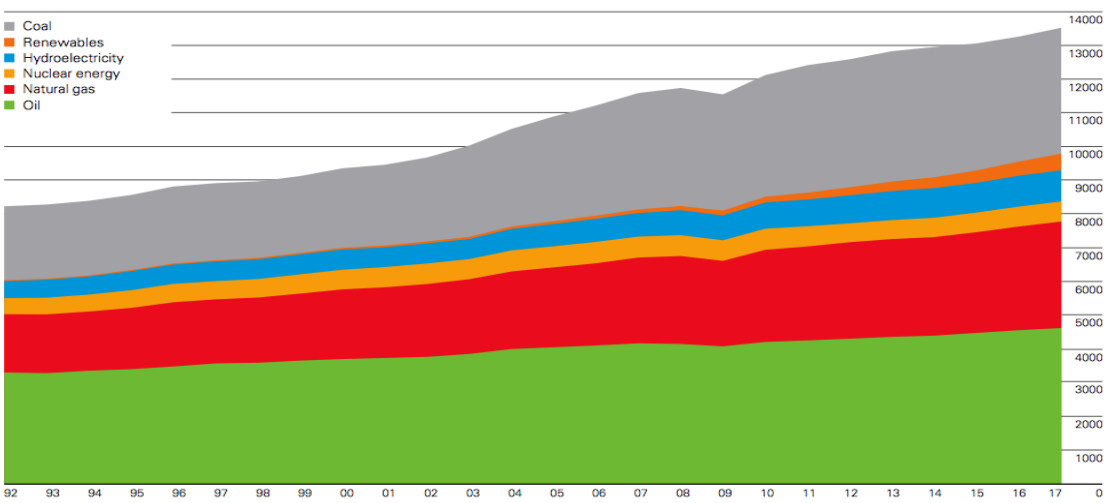

Figure 2.2: World Consumption by Energy Type. Source: IEA, 2018

In the future, it is expected that petroleum and natural gas will be the most used energy types (see in figure 2.2). Figure 2.3 also shows that natural gas demand will increase almost three times.

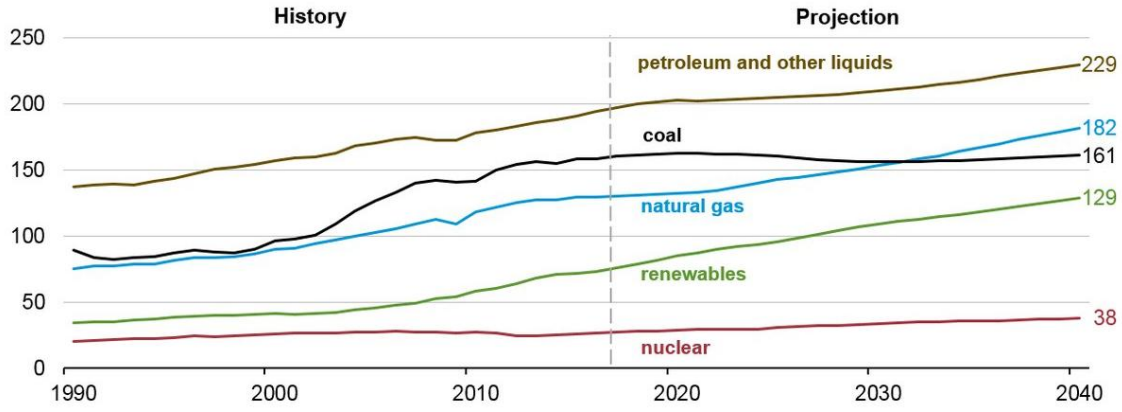

Figure 2.3: Future Projection for the World's Energy Consumption. Source: EIA, International Energy Outlook 2018

2.3 Conceptualizing the Energy Supply Security

As it was stated before, the rise in global demand for energy, on the one hand, environmental and political threats, on the other, make the energy supply a matter of concern in all industrialized countries. Thus, need for sustainable policies and solutions has gained importance in all over the world. While supplier countries have concerns regarding the security of demand and their profits, consuming countries are facing with the import dependency dilemma since many indicators of supply security have been raising questions about the conjuncture of energy market (Chester, 2010). Accordingly, energy supply security is now in the forefront as a concept that requires particular attention.

However, before conceptualizing energy supply security, a definition for energy security concept is needed. Despite the critical role of energy security both in action and policy, there is no clear and strict definition to characterize it. The reason for this ambiguity is that different countries have different needs and priorities regarding the energy due to their different positions vis-a-vis energy (Chester, 2010; Mitchell, 2002). As another reason, Valentine (2011) emphasizes that the legal definition of the term is still in process. He argues that energy security has became an umbrella term to define various policy goals despite the fact that it includes many unique components considered as important by the specific conjuncture of that society. Thus, definitions of the security on energy field vary in both the academic literature and governments' agendas.

According to Walzer (2012), energy security means the persistence of the energy supply relative to demand from the society. For von Hirschhausen (2005), energy security can be defined as 'a condition where various risks and challenges stemming from the dependency on import, political and economical instability in transit or supplier countries, are mastered at affordable prices and costs' (von Hirschhausen, 2005). Thus, energy security refers the availability of energy resources with affordable prices and feasibility of the ways to reach different kinds of them without any

interruption (Mulle-Kraenner, 2008). In other words, energy security is defined as the possibility to reach energy resources in a secure and feasible manner.

As a long-term challenge, energy security is facing with the problem of managing long term investments to supply energy while trying to consider economic growth targets and sustainability (Chester, 2010). The short term energy security, on the other hand, deals with the question of how the energy system reacts sudden changes and fluctuations in the energy supply-demand balance (Matsumoto, Doumpos, & Andriosopoulos, 2018).

The ambiguity regarding the energy security is also found in the policy level due to the different situation, geopolitical choices, needs and priorities of the states as stated before. For instance, the main priority of the United States on energy security is decreasing the vulnerability to political changes, which has lead policy makers to invite for energy independence and increasing the proportion of renewable energy in both production and consumption (Sovacool, 2016).

As another example, Brazil, political figures support and encourage the enhancement of the share of imports in fossil fuel and decrease the proportion of renewable energy products as a main strategy to sustain energy security (Cherp and Jewell, 2011). This difference can be explained by the fact that Brazil has already its own energy dependence. Several energy dependent countries, on the other, advocate the significance of protecting the economy against the discontinuance of energy supplies, by promoting the price increase during the times of scarcity (Sovacool and Brown, 2010). For some, the main vision of energy security refers to the enhancing role of nuclear energy as a way to increase the energy security (Sovacool, 2016). There are also other countries that are concerned with the possibility of hazards and accidents due to widespread use of the nuclear energy (Cherp and Jewell, 2011).

According to the EU, energy security refers to the providence of future-needed energy in affordable circumstances from local or accessible and stable external resources (Baghdad, 2006).

Despite the variety of definitions and visions on energy security, it is clear that durability, sustainability and affordability of energy supplies are crucial in modern economies. However, it is also true that the availability of energy sources do not exhibit uniformity instead it changes from the states and states which makes clear the importance of diversification of energy sources.

2.4 Energy Supply Security

In a broader sense, energy supply security can be defined as the obtainment of energy without any time delay, with affordable price and without significant damages to the environment (Winzer, 2012; Baghdad, 2006).

It is also noteworthy to point out that demand for energy requires security while energy supply requires security of demand in a reciprocal relationship (Bohi, et.al, 1999). This logical can be explained in economic sense. Countries that requires energy for production and consumption wish an economically acceptable and stable energy supply, therefore they are interested in supply dimension of energy security (Winzer, 2012). On the other hand, countries that export energy products want a notable demand to fulfill, thus they want to make sure about energy demand (Andrews, 2005). At this point it should be stated that these different expectations do not refer to competing interests.

2.4.1 Dimensions of Energy Supply Security

The vital role of energy in every stage of human activity takes the energy supply to a critical point in our increasingly industrialized world. Thus, energy supply security is a matter of concern which can be evaluated from different standpoints. To evaluate and measure energy supply security, the availability, affordability and accesibility are often used as main indicators regardless of the type of energy. As a first dimension, the availability of energy source holds critical importance due to disproportionate presence of fossil fuels sources in the world (Jakubowski, et.al, 2011).

The security of energy supply depends on the capacity and size of the energy source. This dimension also takes into consideration the sustainable and reliable energy sources to ensure the long-term security (Bohi and Toman, 1993). Affordability of energy supply refers to obtaining the energy at reasonable price. Economically obtained energy also affects the growth of national and global economies in a positive way (von Hirschhausen, 2005). The literature on energy security reveals that increased energy prices can cause the standstill in business activities and international trade volume (Correlje and van der Linde, 2006)

The last dimension, accesibility, focuses on the obtainment of energy from a domestic or external source without any interruption. It is noteworthy to point out that these dimensions cannot be evaluated separately when developing an integrative approach regarding the energy supply security. In other words, available, affordable and accesible energy holds a critical importance in order to ensure energy supply security.

Despite the fuziness of energy security and energy supply security to define them, the literature also agrees on the idea that energy security is concerned with risks (Rutherford et al., 2007; Winzer, 2012). From this perspective, energy supply security focuses on several risks including geological, geopolitical, economic, technical and environmental.

Geopolitical risks are related to the exhaustion of energy source. Technical risks refer to the poor maintenance of any technical component of the energy source which can be resulted in failure in energy transferring. Economic risks concern disparities between supply and demand. Geopolitical risks include the possibility of the interruption due to terrorist attacks, war, improper regulations or other political instabilities (Sovacool, 2016). Lastly, environmental risks are linked with the possibility of damage or pollution that may result in supply challenges.

Another approach to describe the risks of energy supply is developed by Winzer (2012). For this approach dimensions of energy supply security can be listed as follows: the source of risk, the scope of the impact, the speed of threat, the spread of threats, the singularity of threats and the sureness of threats.

To explain risks and analyze the case study in line with these benchmarks and dimensions would be impossible within the scope of this thesis since this requires a technical background and comprehensive knowledge regarding the energy infrastructures and organization systems. However, figure 2.4 is given to provide an overview to the dimensions of the energy security and related measures.

Table 2.1: Measures of Energy Security. Source: Winzer, 2012

	Measure for Energy Security	**Sources of risk**	**Scope of impacts**	**Speed of impacts**	**Size of impacts**	**Sustension of impacts**	**Spread of impacts**	**Singularity of impacts**	**Sureness of impacts**
0	**Electricity SAIDI including all events**	-Natural -Technical -Human	Electricity commodity continuity	-Fast	Phase changes	- Transient -Sustained	-Local -National -Global	-Unique -Infrequent -Frequent	Deterministic –Stochastic -Heuristic - Unknown
1	**Electricity SAIDI excl. except. events**	**Technical Unexcept Natural**	Electricity commodity continuity	-Fast	Phase changes	- Transient -Sustained	-Local -National -Global	**-Frequent**	**Deterministic - Stochastic**
2	**Heat SAIDI**	-Natural -Technical -Human	**Heating service continuity**	-Fast	Phase changes	- Transient -Sustained	-Local -National -Global	-Unique -Infrequent -Frequent	Deterministic –Stochastic -Heuristic - Unknown
3	**GDP loss caused by Ele.SAIDI**	-Natural -Technical -Human	**Electricity commodity continuity**	-Fast	Phase changes	- Transient -Sustained	-Local -National -Global	-Unique -Infrequent -Frequent	Deterministic -Stochastic -Heuristic - Unknown
4	**CO2 per capita**	-Natural -Technical -Human	**Electricity environmental continuity**	-Fast	**Gradual changes Phase changes**	- **Sustained Permanent**	**-Global**	**-Unique**	Deterministic -Stochastic -Heuristic
5	**Renewable energy potential**	-Natural -Technical -Human	Electricity commodity continuity	**Constant**	Phase changes	**Permanent**	-Local -National -Global	**-Unique**	Deterministic -Stochastic -Heuristic - Unknown
6	**Electricity SAIR trend**	-Natural -Technical -Human	Electricity commodity continuity	**--Slow**	Phase changes	- **Sustained Permanent**	-Local -National -Global	**-Unique - Infrequent**	Deterministic -Stochastic -Heuristic - Unknown
7	**Electricity price trend**	-Natural -Technical -Human	Electricity commodity continuity	**-Slow**	**Gradual changes**	- **Sustained Permanent**	-Local -National -Global	**-Unique - Infrequent**	Deterministic -Stochastic -Heuristic - Unknown
8	**Electricity price volatility**	-Natural -Technical -Human	Electricity commodity continuity	-Fast	**Gradual changes**	- Transient -Sustained	-Local -National -Global	-Unique -Infrequent -Frequent	Deterministic -Stochastic -Heuristic - Unknown

CHAPTER 3: ENERGY SUPPLY SECURITY IN THE EU

This chapter starts with an analysis regarding the current situation of the EU vis-à-vis Energy. Then, EU's energy policy and its historical development are subsequently covered. After that, the concept of the energy security supply in the EU context is discussed. Lastly, the crucial role of the natural gas in EU's energy supply security will be covered with the focus on The Southern Gas Corridor. By discussing the EU's energy situation, policies and the concept of the energy security supply in the European context, this chapter offers a groundwork to understand the importance of the TANAP Project, which is the case study of this thesis.

3.1 The EU's situation vis-à-vis Energy

The most prominent feature of the EU energy market stems from its mixture of various kinds of energy sources. In the EU energy market, the major energy source is oil. This is followed by gas, coal, nuclear energy and renewable sources.

While the EU gives so much importance to be self-sufficient in the area of energy, it needs third countries to meet the member states' growing energy demands. With some exceptions, the EU is considered as a net importer of the crucial energy products. Within imported energy products, crude oil holds the biggest proportion with a share of 70%, according to data obtained in 2018. This followed by natural gas, which has a share of 20%.

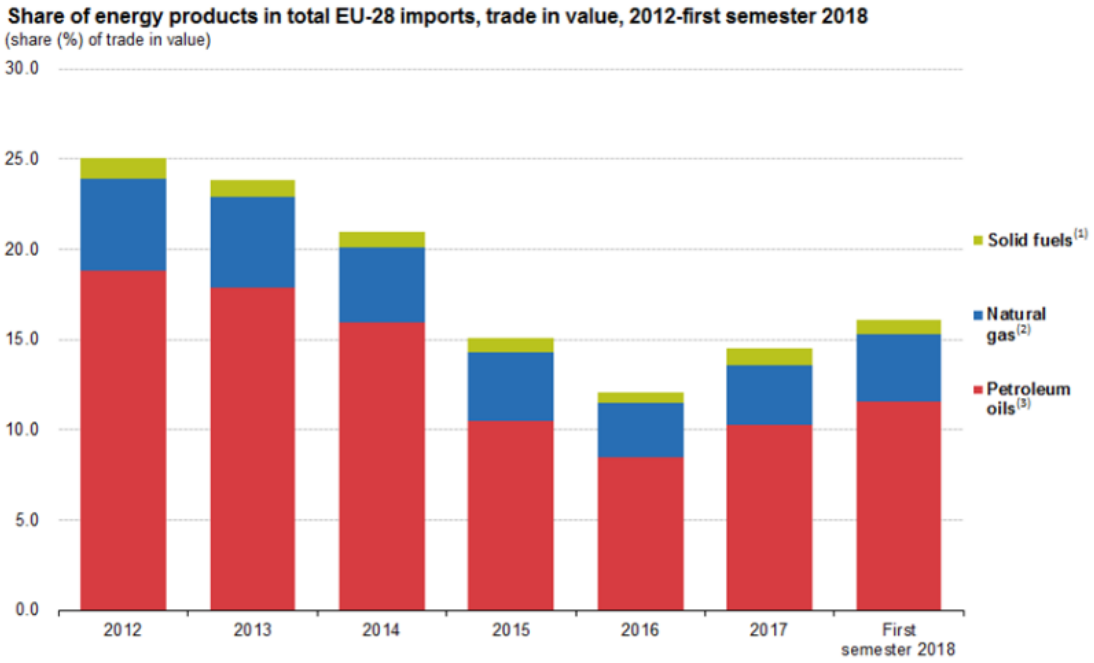

Figure 3.1: Energy Imports in the EU. Source: Eurostat, 2018

Figure 3.1 shows the key energy products and their shares in total import in EU-28. While the total import for these three energy products dropped down to %12, in a two-year period, the figure reached %16. The figure also reveals that the petroleum oils hold the biggest share and the divergence regarding the proportions between these key energy products is highly distinctive.

Regarding the main suppliers of the EU's gas demand, Russia, Norway and, Algeria come to the forefront as can be seen in Figure 3.2.

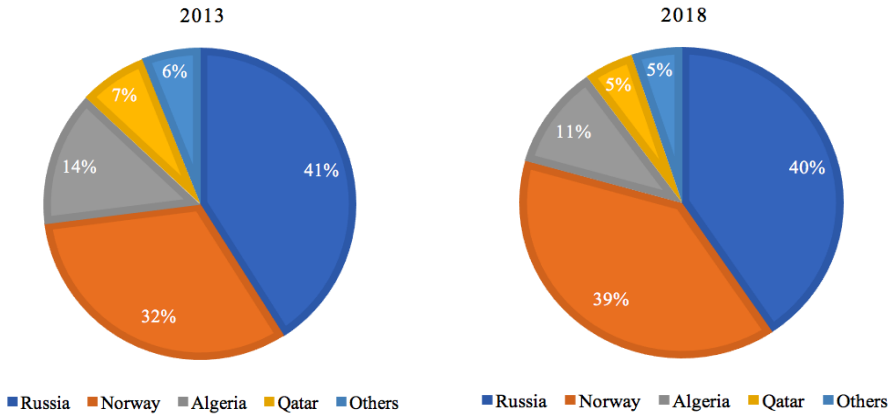

Figure 3.2: EU Natural Gas Imports. Source:Eurostat, 2018

For petroleum oil, 3.3 shows that Russia's dominance in the import of this product is less than the import of natural gas, with a share of 28% in the year of 2018. However, as a single supplier, Russia still takes the lion's share of the EU imports while Norway is the second exporter with a share of 11%.

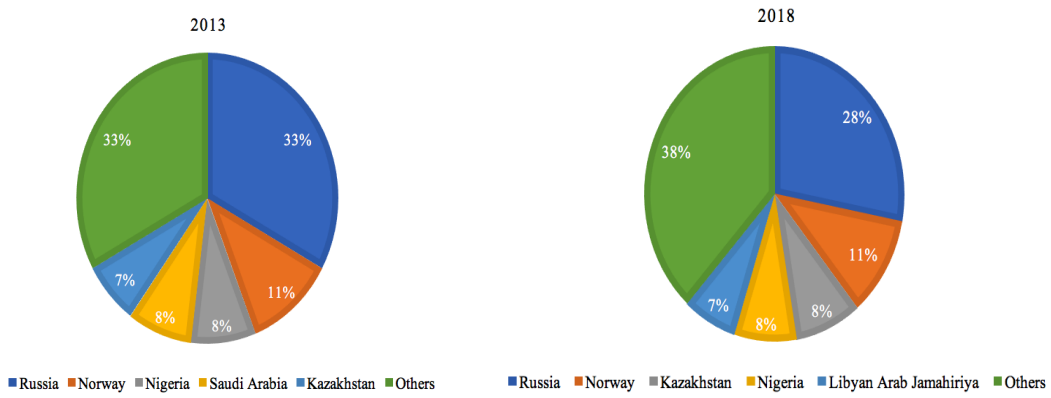

Figure 3.3: Extra-EU imports of petroleum oil from main suppliers. Source: Eurostat, 2018

Nuclear energy also holds an important place in the energy use of several member states. 42% of the total primary energy consumption in France, 35% of the total energy used in Sweden, 26% in Lithuania, 24% in Bulgaria and Slovakia, 21% in Belgium and 21% in Belgium is met by the nuclear energy usage (Çınar, 2008).

To sum up, Russia is the primary trading partner of the EU for imports of natural gas, solid fuels as well as crude oil. Norway, on the other, comes as a second for imports of natural gas and crude oil. While it is clear that EU does not meet its energy demand and its dependency is a high concern for its future situation. This dependency does not follow a similar pattern between the individual member states. Figure 3.4 shows the diversity of the member states' energy dependency and the change of the ratios from 2000 to 2016.

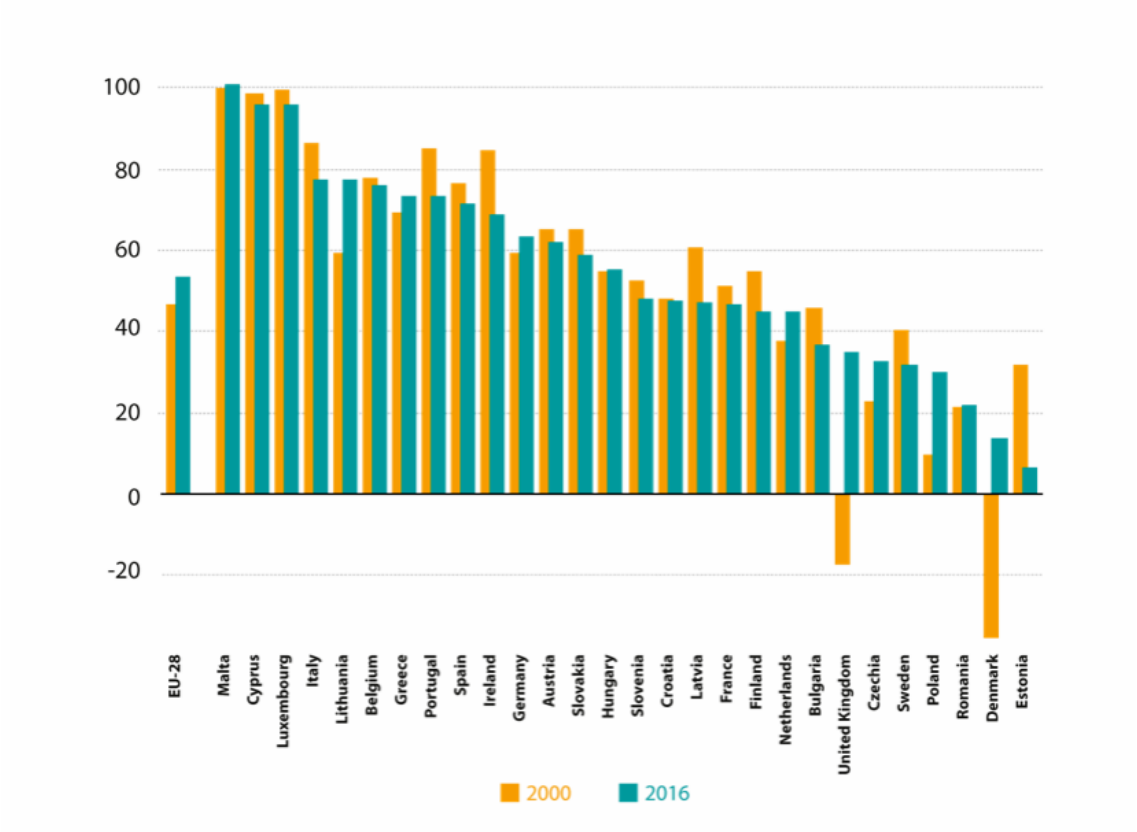

Figure 3.4: EU Energy Dependency Rate: SourceEuropean Commission, 2017

For the total 28 countries, the overall dependency rate was measured as 54% in the year of 2016. While Malta is on the first rank with a dependency rate of over 90%, this rate for Denmark is below 20%. It is also noteworthy to point that the overall dependency rate of the Union has increased by %7 since 2000. As another significant pattern, Figure 3.4 reveals that the dependency ratio of the member states cannot be attributed to the population or the development of their economy. In other words, the figure makes it clear that energy dependency is not an issue that can be explained by a visible factor.

Considering the differences between the member states, we can divide member states into three categories based on their capability to meet their energy needs from their own sources.

1. There are several member states with very high self-sufficiency in energy and less than 20% dependence on foreign energy, such as Denmark, England, and Poland.

2. The ones with a high level of dependence on energy in the EU. Almost 80% of the total energy needs are imported by EU member states such as Ireland, Italy, Portugal and Spain.

3. There is also a group of EU member small island states such as Malta, Southern Cyprus, as well as Luxembourg, which are entirely dependent on imports due to their geographical location and characteristics.

Other member states are divided among these three groups. For some member states, the situation is even more striking. Namely; a group of member states, including Sweden, Latvia, Finland etc., make gas imports from only one source: Russia (Türbedar, 2003).

Likewise, Latvia, Estonia, Lithuania and Southern Cyprus import coal from a single country. Similarly, Greece, Austria, and Hungary, make 80% of the total gas imports from the same producer. Russia, Lithuania, Slovakia, and Poland meet more than 95% of oil imports from a single producer (Güneş and Teker, 2010).

Looking at the current situation of the EU in meeting its energy needs, it can be seen that the EU members are not only dependent on foreign sources in energy, but also have to import from certain producer countries such as Russia and Algeria, which decreases energy supply diversity (Turan, 2010).

Despite the disparity of the dependency level between the member states, the overall picture shows that the EU-28 is confronted with the fact that energy imports are very high and the dependency on foreign sources increases day by day. The EU's domestic energy sources are insufficient to meet its energy consumption. This fact is forcing the EU to take serious measures in the field of energy and develop comprehensive and dynamic energy policies (Ediger et al., 2012).

3.2 EU Energy Policies

In line with the growing need for the energy, importance of the development of energy policies and other mechanisms in the governmental level became a necessity not only for the countries who suffer from energy shortage but also for the others since the climate change, regional conflicts, unstable prices and other threats require comprehensive and sustainable future projections in the energy field. Accordingly, decisions on how to monitor and distribute energy sources gain importance by bringing necessity for implementing state-level policies and developing institutional mechanisms.

Considering its dependency for the energy products and the aforementioned threats, the EU has been giving special importance for developing effective and dynamic energy policies with the aim of reducing disparities between the member states, increasing efficiency and sustainability of the energy sources and finding new solutions and ways to diversify its sources and routes (Chalvatzis and Ioannidis, 2017). Thus, as a shared competence, the EU energy policy has a long history which dates back to the early days of the European Economic Community (EEC).

3.2.1 Historical Development of the EU's Energy Policy

As an extensively studied topic, the literature on the EU energy policy is abundant and the main focus of these studies is its historical background and legislative framework which was constantly evolved until this day. Moreover, the liberalization of the European energy market with a specific focus on the Single Market is widely researched by scholars (Andoura et al., 2010; Eikeland, 2004; Goldthau and Sitter, 2015). However, within the limitations of this thesis historical evolution of the EU's energy policies is covered.

Historically, energy policy is the main stone of the European integration which was created by the establishment of the European Steel and Coal Community (ESCS) in the year 1951 by the original six. With the creation of it, the responsibility to manage

the coal and steel production was given to the ECSC (Matláry, 1997). After signing the Rome Treaty, the management of natural gas, petroleum and electricity was given to the European Atomic Energy Community (EAEC) In other words, with the establishment of these supranational institutions, member states started to share their competences in the energy area (Nugent, 2010).

During the 1950s, member states had not experienced any issue with consuming energy despite their need for importing the oil (Maltby, 2013). During the early years of the integration, member states avoided transferring further competences since they were still hesitant to share their sovereignty with another entity (Wallace, et.al, 2015). In other words, the early attempts for the functioning of common energy policy were not revolutionary since national priorities and benefits were on the table.

However, following the crisis in the coal industry, several targets and common mechanisms were developed in 1958 (Martin & El-Agraa, 2007). The oil crisis in 1973 increased the speed and enthusiasm for developing a common policy to deal with energy problems as stated by the Council resolution of 1974 (Goldthau and Sitter, 2015). Another significant step came with the launch of the Single European Act which was signed in 1987 with the aim of completing the single market by eliminating remaining obstacles within the Union. As a part of this goal, the Single European Act changed the decision-making procedures to facilitate integration in many fields and gave new competencies to the Union (Matlary, 1997).

At the same time, external development at the end of the 1980s including the dissolution of the Soviet Union called for immediate action regarding further cooperation in the supranational level (Cini and Borragan, 2010). For the energy policy, this development meant that there was a need to formulate a new perspective to deal with the changing structure of the region. With the collapse of the Soviet Union, the EU has started expanding towards the Central and Eastern European countries, by negotiating energy with the energy supplying countries and regions, especially with Russia (Youngs, 2009).

Additionally, the increasing attention to the environmental policy and the Gulf Crisis required a strategic perspective to deal with the threats and ambiguity in the energy sector (Mulle-Kraenner, 2008). In light with these, the EU's energy policy was

formulated based on the following priorities: competitiveness, which envisaged the elimination of obstacles in the market; sustainability, which considers the environmental problems and future projections, and lastly security of energy supply (Goldthau and Sitter, 2015).

Since the beginning of the 1990s, it has been seen that community research, demonstration projects and innovative programs, which have been carried out for thirty years since the beginning of the 1990s, were not enough to disseminate this energy, and that a policy framework is required, which combines these efforts with the law and support mechanisms and incentives to accelerate the introduction of renewable energy into the market (Baghdat, 2006).

To this end, the Council of Europe and its Parliament accepted the White Paper to set out a strategy and action plan in the area of energy, in 1997. The paper sets out concrete objectives that promote the development of renewable energies. In 2006, a green paper of the European Commission developed these by introducing three considerations for the EU's energy policy, namely, sustainability, competitiveness and security. In 2007, this was followed by a proposal titled 'Energy for a Changing World'.

In order to develop a long-term action plan for security concerns in European energy market, the European Commission published 'the European Energy Security' in the year 2014 (COM/2014/0330 final). This strategy aims to increase energy efficiency and production by developing internal energy market and strengthening the EU's external relations in the area of energy. As a part of this action plan, diversification of energy sources were also seen as a priority to increase the level of energy supply security. This objective refers to the increment in renewable energy sources and establishment of new partnerships in the Caspian Basin region.

3.2.2 European Energy Union

In February 2015, the Commission has adopted the new strategy titled '"A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy" for 'European Energy Union'. This newly adopted strategy built on three significant dimension of energy: security, sustainability and lastly, competitiveness (the European

Commission, 2015). In this regard, the EU's subsequent actions and instruments focused on developing renewable energy sources and accelerating the establishment of alternative routes and cheaper sources.

To understand the EU's strategy to boosting its energy supply security and its renewable energy policy, priorities as well as current situation of the member states in terms of the use of renewable energy sources are covered in the following part. Then, the diversification strategy of the EU is briefly outlined. Since these are the most concrete inputs of the new strategy the focus is given to them to understand the evolving nature of the energy supply security concept in the EU.

3.2.2.1 Renewable Energy in the EU

Renewable energy sources are helpful for reducing import dependency and increasing the security of energy sources. In the EU, the focus was given to renewable energy sources after the adoption a White Paper of December, 1997. It was poposed by the Commission to codify several concrete objectives with the aim of boosting the use and and consumption of the renewable energy within the Union. At that time, renewable energy accounted for about 6% of the gross energy consumption of the Community. The White Paper has set goals for each renewable energy technology, and was effective until the year 2003. The aim of the White Paper is to double this rate to 12% in 2010. This target has been reached, and renewable energy accounted for 18% of the gross energy in the EU as of 2018 (Youngs, 2009).

These early actions can be considered as a starting point which was effective for the EU's focus on a common and determined policy to disseminate renewable energy sources (RES). Four main concerns are given for the growing importance of renewable energy sources (RES) (De Gunther, 2009):

1. Energy import dependence,
2. Welding safety,
3. Climate change caused by people,
4. The threat of abduction of the future global technology market,

With the Maastricht Treaty and Amsterdam Treaties, which were signed in 1992 and 1997 respectively, issues on the energy supply security are evaluated in depth. The Intergovernmental Panel on Climate Change (IPPC) which was held in 1990s, and in 1997 adoption of the Kyoto Protocol increased the environmental dimension of the energy at the Union level. With these steps, member states acknowledged the importance of the joint solutions to deal with the existing and future challenges in energy issues by addressing them on the global and regional level (Goldthau and Sitter, 2015).

According to the Kyoto Protocol, which sets out legal obligations to reduce global greenhouse gas emissions after 2000, the EU has agreed that it will provide a reduction of 8%. In addition to the regulatory frameworks, investments on renewable energy should be considered at the EU level (Baghdat, 2006).

It is seen that the EU is among the successful countries in the production of renewable energy. It is stated that the EU should provide at least 20% of the total energy demands of each member country from renewable energy sources by 2020 (in accordance with the 20-20-20 objectives). The Council of Europe has updated this objective by 27% in October 2014, for 2030 (Goldthau and Sitter, 2015).

Three years after the White Paper, a complementary Green Paper for energy resource security has been accepted. The statement declared that 50% of the EU energy is dependent on imports and if no precautions are taken, this dependency will reach 70% in the next 20-30 years. The energy import dependence will be more sensitive to the price fluctuations and, in the short term, will have negative effects on national economies and trade balances (Youngs, 2009).

The EU's long-term energy supply strategy and security should be established in a way that ensures the well-being of people by considering environmental effects and targets regarding the sustainable development. In 2002, the Commission was also concluded that renewable energy sources have significant potential in increasing resource security in Europe, but it will require significant political and economic efforts to increase its use.

In order to achieve this goal, many countries have implemented important incentive policies since the 2000s. Thus, the share of renewable energy resources in gross final energy consumption has reached 17.5% as of 2017. Table 3.1 shows that the highest rate was in Sweden with 54.5%. This country was followed by Finland with 41%, and Montenegro with 40% (Eurostat, 2018).

Table 3.1: Share of energy from renewable sources. Source: Eurostat, 2018

	2004	2014	2015	2016	2017	2020 target
EU	8.5	16.2	16.7	17.0	17.5	20
Belgium	1.9	8.0	7.9	8.6	9.1	13
Bulgaria	9.4	18.0	18.2	18.8	18.7	16
Czech	6.9	15.0	15.0	14.9	14.8	13
Denmark	14.9	29.7	31.4	32.6	35.8	30
Germany	6.2	14.4	14.9	14.9	15.5	18
Estonia	18.4	26.2	28.4	28.6	29.2	25
Ireland	2.4	8.7	9.1	9.3	10.7	16
Greece	6.9	15.4	15.4	15.1	16.3*	18
Spain	8.3	16.1	16.2	17.4	17.5	20
France	9.5	14.8	15.2	15.9	16.3	23
Croatia	23.5	27.8	29.0	28.3	27.3	20
Italy	6.3	17.1	17.5	17.4	18.3	17
Cyprus	3.1	8.9	9.4	9.3	9.9	13
Latvia	32.8	38.6	37.5	37.1	39.0	40
Lithuania	17.2	23.6	25.8	25.6	25.8	23
Luxembourg	0.9	4.5	5.0	5.4	6.4	11
Hungary	4.4	14.6	14.4	14.3	13.3	13
Malta	0.1	4.7	5.1	6.2	7.2	10
Netherlands	2.0	5.5	5.7	5.9	6.6	14
Austria	22.7	33.2	32.8	33.0	32.6	34
Poland	6.9	11.5	11.7	11.3	10.9	15
Portugal	19.2	27.0	28.0	28.4	28.1	31
Romania	16.2	24.8	24.8	25.0	24.5	24
Slovenia	16.1	21.5	21.9	21.3	21.5	25
Slovakia	6.4	11.7	12.9	12.0	11.5	14
Finland	29.2	38.8	39.3	39.0	41.0	38
Sweden	38.7	52.4	53.6	53.8	54.5	49
United Kingdom	1.1	6.5	8.4	9.2	10.2	15
Albania	29.6	31.5	34.4	37.1	34.6	38
Montenegro	:	44.1	43.1	41.5	40.0	33
North Macedonia	15.7	19.6	19.5	18.0	19.7	28
Serbia	12.7	22.9	21.9	21.0	20.6	27
Turkey	16.2	13.6	13.6	13.7	13.2	:

Due to the differing resource potentials of the EU members and the differences in the costs of renewable technology, a single support tool is not sufficient for the development of renewable energy resources. For this reason, countries use combinations of these different incentive mechanisms, both according to the market structure and the type of energy to be used.

3.2.2.2 Incentives for Renewable Energy Production

The main incentives for renewable energy production are as follows: fixed price guarantee, premium system, mandatory quota and green certificate applications, various tax incentives and investment loans. These incentives consist of direct expenditures under the public legal entity.

The tariff guarantee application, which is the main incentive policy of the EU and varies according to the countries, is accepted as the most effective and minimum cost incentive mechanism by the Commission. The price is determined according to the produced kWh of the electricity and differentiated in line with the selected technology. In this respect, high technologies such as solar investment and maintenance costs benefit from a higher rate of guarantee than wind.

In the tariff guarantee model, implemented successfully in Germany, Spain, and Denmark, the price is determined to be very close to the cost of production. By doing this, investors are provided with a guarantee of high security against the price fluctuations and appropriate purchase costs for the actual project costs. The tariff guarantee has two different applications. The first one is a guarantee of a fixed price that is not dependent on the market price. The second is a premium guarantee that depends on the market price.

Fixed Price Guarantee is a long-term purchase agreement used to accelerate renewable energy investments. With this method, governments guarantee energy intake from producers if they produce energy above the market price. The amount of energy to be taken depends on the type of the source and its economic applicability. In addition, a long-term price guarantee is provided for 10 to 30 years with the aim of eliminating sales and price risks for the investors (Brown et al., 2013; 3).

As the initial installation costs are high in the use of renewable energy sources (RES), the fixed price guarantee application is usually given in the periods when the production facilities are first activated. Thanks to the reduced costs and the decrease in the fixed tariff price, the financial burden on governments is decreasing. A fixed price guarantee system is used in several member states including, Lithuania, Hungary, Bulgaria and Germany. For example, in Germany, electricity generation from these sources is supported in line with a purchase guaranteed tariff, which is determined by the type, installed power and commissioning date of the power plant. Tariff guarantee is 3.47-12.67eurocent / kWh for hydroelectric power plants, 6.07-8.87 euro cents / kWh for landfill gas, 7.71-11.55 eurocent / kWh for biomass, 10.40- 15.84 eurocent / kWh for geothermal, 3.50-13.00 eurocent / kWh for wind and 29.37-39.14 eurocent / kWh for solar energy (Deloitte, 2011).

In Premium Guarantee Application, unlike the fixed price guarantee, the manufacturer is paid a premium above the market price instead of a fixed price. If the market price exceeds the determined minimum price, no premium payment is made (Deloitte, 2011). In Denmark, Spain, Estonia and Slovenia, a fixed premium guarantee is given, while the Czech Republic guarantees a premium over the project. In Spain, premiums vary by hourly market.

Investment Loans are generally granted with a low-interest rate and depend on the installed kWh. Attractive loans to investments in the EU also play significant role for boosting renewable energy sources. This application, which contributes to the solution of the high capital cost problem, has been used effectively in Germany since the 1990s. Because of the advantages of reducing the burden on the public budget and spreading the cost over time, there are some problems in dealing with those who do not pay the loan, although they are politically feasible (Youngs, 2009).

Subsidies refer to grants of the state in the form of goods, money or services to persons or institutions. In this context, the state finances a certain percentage of the investment cost to support renewable energy production. Tax incentives are also used to reduce the costs of producers in the renewable energy production process to increase revenues from the investments. Tax incentives are among the commonly used types of

incentives. They are defined as measures that alleviate or eliminate the tax burden in the priority sectors. These incentives can be applied in each stage of production, investment and consumption. Moreover, studies have shown that tax incentives are very effective in reducing the initial costs of renewable energy technologies and accelerating access to the energy market. In the EU, tax incentives (exceptions, reductions, low rates, etc.) have been used as complementary policies since the 2000s (the European Commission, 2012).

The main tax incentives consist of exemptions, deductions, depreciation regime, forward and backward losses, tax breaks and tax deferences. In addition, taxation of fossil fuels with higher taxes or with additional taxes such as carbon tax also constitutes the tax measures (Aslani et al., 2013).

In terms of income tax advantages, 40% of the expenditures on renewable energy capital expenditures (machinery, equipment, land and fixtures, etc.) for renewable energy in Belgium and 50% of the cost of renewable energy equipment in France can still be deducted from income and corporate tax base. There are minimum and maximum investment requirements to benefit from investment allowance in Ireland. In some countries, security / performance certificate is required to benefit from the discount (Artigues & Rio, 2014). Instead of a reduction in investment or production, some countries apply for a direct income tax exemption. In the Czech Republic, earnings from energy sales to the grid are exempt from income tax for 5 years. In Luxembourg, electricity sales from low-capacity solar panels are exempted from the income tax.

Accelerated depreciation is possible in renewable energy investments. While power plants are generally depreciated over a period of 20-30 years, this period can be reduced to 15 years with accelerated depreciation. R & D expenditures for renewable energy technologies can be deducted from the income tax base. In addition, there are three different real estate tax incentives for renewable energy, exception, discount, and return. EU countries prefer more exemptions or reductions (Aguirre & Ibikunle, 2014).

The aforementioned incentives are used in order to ensure the stability of the country's economy and eliminate the imbalances in the markets that require strict

regulations. They follow the state policies by monitoring the market activities and the behavior of the private sector and act as a referee (Aguirre & Ibikunle, 2014).

One of the most important mechanisms to support wider use and production of the renewable energy is the implementation of the Renewable Portfolio Standard. In the 1970s, more technological R&D policies were introduced for the promotion of renewable energy resources, and this has been replaced by the renewable portfolio standard since the 2000s. Today, it is considered that it will be effective in attracting large pollutants to the renewable energy sector thanks to the implementation of other incentive policies (Aguirre & Ibikunle, 2014).

The renewable portfolio standard is a quantity-based incentive tool. For the production of a certain percentage of energy from these sources, mandatory targets or quotas are placed in the producers. Renewable energy certificates are produced for this purpose. It is also possible to evaluate these certificates as a kind of environmental credit because it is also possible to trade. The ability to purchase and sell the certificates allows the parties that do not fill the quota to reach their quotas by purchasing the certificate, while those who produce above their quota allow them to generate additional income by selling the certificates. The value of green certificates is generally formed by the supply and demand conditions (Brown, 2013).

The main disadvantage of the renewable portfolio standard is that as the price is determined by the market, it leads to uncertainty about future electricity prices for producers. To avoid this, lower and upper limits are often placed at prices to compensate for losses caused by market fluctuations. Another disadvantage is that it does not allow price differentiation for different renewable energy sources technologies. This encourages the development of low-cost renewable energy technologies while preventing the development of high-cost technologies at the beginning. In 1998, the Netherlands became the first participant of this renewable portfolio standard. Several other countries including England, Belgium and Poland also became the part of of this portfolio (Aguirre & Ibikunle, 2014).

In the promotion of renewable energies; alternative policy options such as public procurement, bidding system and net measurement, account and invoice system are also

used. The purpose of the tender system is to increase the competitiveness of renewable energies. In this method, especially for large scale projects, electricity management undertakes to purchase electricity at a price above the market price in accordance with the agreement with the winning company. In this highly cost-effective method, the cost of investment to society is very low, since it will win the lowest bidder renewable energy tender.

However, the limited effectiveness of this system is a significant disadvantage. In practice, it is difficult for renewable energy producers to run profitable power plants and offer projects with very low prices. France and the UK abandoned the tender system in 2000 and 2003 respectively. However, it is seen that some countries are still implementing this system (Brown, 2013).

In another method, known as net measurement application, consumers are provided with the opportunity to produce their own electricity from renewable sources and to sell the surplus to the national grid at a higher rate. Due to the narrow scale of participants, its effectiveness considered relatively low. In addition to this, the investment security of this method is quite low due to the fluctuation of the purchase price of the electricity surplus (Brown, 2013).

3.2.2.3 Alternative Routes

In the year 2006, gas crisis between Russia and Ukraine made clear the ever-present risks for the EU's energy supply security. Accordingly, the European Commission (EC) re-defined the energy policy of the Union by offering new mechanisms and solutions. When the Lisbon Treaty came into effect in 2009, the focus of the EU energy policy became more decisive through the inclusive approach for crucial issues including; energy security, energy supply and competitiveness of the European market. The legislative provisions of the Treaty which have the capacity to arbitrate energy security in several aspects have been central for this shift. The new legal framework gave the EU the right of intervention in the trade field and competition issues by facilitating or restricting imports and exports of energy.

In the year 2010, the EC reviewed and updated the Union's energy policy. Increasing the energy productivity, and building a new relationship by reinforcing international energy affairs, ensuring the secure and economic energy and utilizing technological developments were among the foremost priorities of the new strategy (European Commission, 2010).

Besides the rules and strategies for its Single Market, the EU has also developed diverse external policies to ensure safe, cheap and sustainable energy within the Union. At this point, diversification of the sources and routes are among the primary strategies to guarantee energy supply security of the EU. Thus, the external energy policy of the EU is implemented in several ways.

Firstly, via developing multiple programs and dialogue mechanisms the EU aims to resolve the disputes and problems between the producer and transit countries. Construction of the multiple pipeline projects in order to ensure the diversity of the sources constitutes the significant part of the external energy policy within the EU. Additionally, energy policy is used by the EU to support its other policies in the region. For instance, considering the relationship between the stability and economic investments, certain projects are intentionally implemented in countries to provide them stability (Yorkan, 2009).

Regarding the energy security supply, EU external energy policy intends the building of sweeping partnerships with its neighbors in South-Eastern Europe and North Africa which are considered as significant resources in terms of gas as well as oil reserves. Within the framework of its neighbourhood policy, the EU works to create an integrated energy market based on regulatory convergence. For similar purpose, the EU has also committed itself through the mechanism "energy dialogue, trade liberation, infrastructure development, and networking.

There is no doubt that the EU's policy in the energy field, which constitutes a specific legal order, has constantly evolving and changing character. On the one hand, efforts continue to establish an energy policy and to further develop the policy. Under these conditions, the EU, on the other hand, strives to develop a more efficient energy

policy by providing a balance between the member states and the Union (Rzayeva, 2013).

3.3 Energy Security &Supply in the EU

As one of the three pillars of the EU's renewed energy policy, securing the energy supply refers to the vital aim for the member states alongside the other two pillars: efficiency and sustainability (European Commission (EC) 2008). The EU's interpretation and the definitions of the general literature show similarities regarding the concept of energy security or energy supply security.

In the context of energy policies, the EU's environmental security issues and threats are also associated with the definition of energy security. It is noteworthy to point that this typical attribution gives a clue to understand and analyze EU's energy security behavior in general. Contrary to the general perspective which accepts the state as a main actor and decision maker in energy policies, it is acknowledged that energy security has a broader dimension and should be integrated with environmental security issues (Austvik, 2004).

During the 1990s, the EU's strategy and vision on energy supply security has changed for two reasons. The EU's aspiration to find alternative sources for the Middle East has transformed its energy supply security in terms of geographical characteristics. The diversification policy of the Union became more clear and effective from this date. Due to unstability of the Middle East the EU decided to focus on the Russian and Commonweath of Independant States (CIS) since this region was seen more secure and stable in comparison to the Middle East (Dağdemir, 2007). In other words, the energy security supply strategy was evaluated by the EU in a broader political context as a matter of course.

Secondly, the LNG import infrastructure attracted significant investments to facilitate gas imports from the Persian Gulf because of the anticipation regarding the further decline in domestic gas production in the 1990s. However, in the mid-2000s, this trend began to reverse resulting in the exceptional growth of oil and gas production in the northern part of America. For the EU energy supply security, this trend has raised

a serious concern since the independent USA has lost its interest to secure international energy sources in the Persian Gulf Region (Goldthau and Sitter, 2015).

3.4 Role of Natural Gas in EU's Energy Supply Security

While the concept of energy supply security has been historically associated with the oil sources, as an important component of the energy consumption the natural gas supply has gained vital importance over the years (Victor et al., 2006).

Energy consumption statistics reveal that natural gas is the fastest growing fossil fuel, with a residual growth in consumption around 1.6 % annum since 2008. It is also expected that this trend will remain the same until 2035, adding 31% increase to global energy consumption (EIA, 2011).

The low-carbon intensity of natural gas makes it attractive for some countries because of its efficiency and lower capital costs in comparison to other main energy sources such as coal and oil (EIA, 2011). As a result, it has become a popular energy source in the EU, especially in industrial manufacturing. To understand the role of natural gas in the EU's energy supply security, its share in overall consumption and total import would be illustrative.

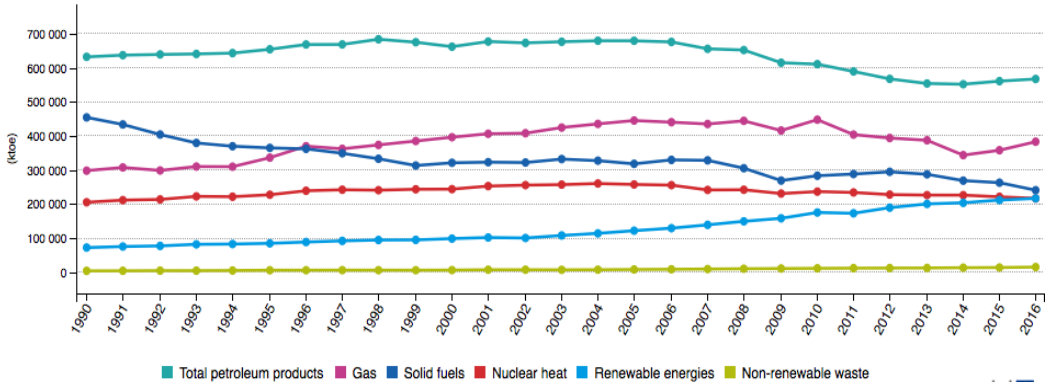

Figure 3.5: Energy Consumption by Fuel, EU-28: Source: Eurostat, 2017

Figure 3.5 shows that the consumption of oil is followed by the consumption of gas in EU-28.

3.4.1 Consumption Trends of Natural Gas

By looking at the cumulated data in the EU, Figure 3.6 shows that there is an ongoing increase in natural gas consumption since the year 2004. In comparison to the year 2016, natural gas consumption of the EU-28 increased by 3.7%. In 2017, the amount of total natural gas consumption by the EU-28 was 457.2 million tonnes of oil.

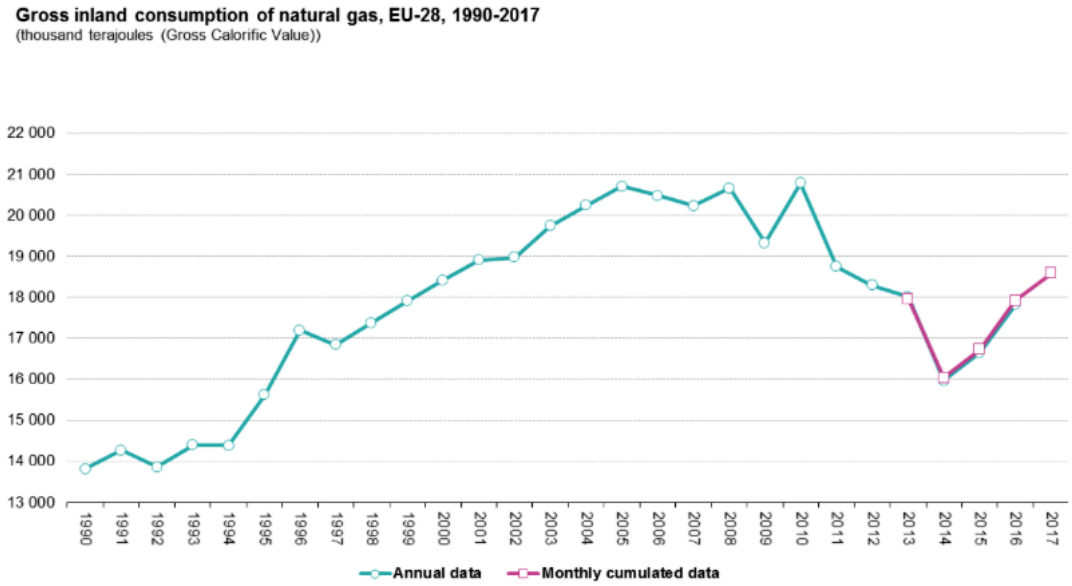

Figure 3.6: Gross inland consumption of natural gas in EU-28. Source: Eurostat, 2018

3.4.2 Supply Structure

While the EU experienced a decline in 2018 in consumption as stated before, such a change does not mean so much in terms of the natural gas supply security because of the supply structure of it. At this point, comparing the natural gas production with the imports and the dependency rate of the EU would be useful to grasp the critical role of the natural gas in EU energy policy.

3.4.2.1 Natural Gas Production

Figure 3.7 shows that, in the year 2017, the EU's production in natural gas had a decrease of nearly 0.6% in comparison to 2016, with total of 4.774 thousand terajoules. While some member states experienced a significant decrease regarding the natural gas consumption; including Spain and Bulgaria with a decrease of 36.9 and 21.3 respectively, a notable increase in natural gas production occurred in Slovakia and France.

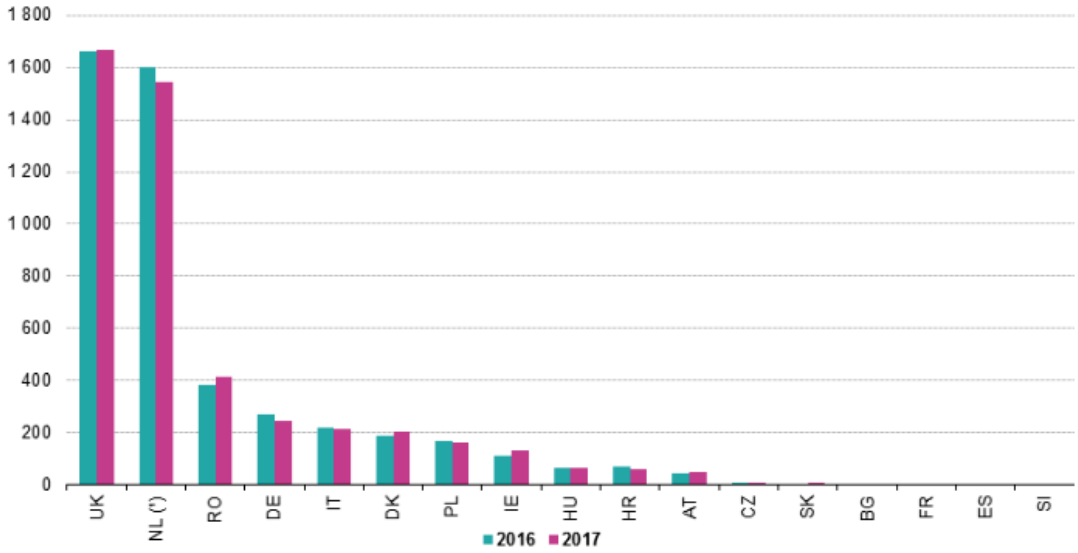

Figure 3.7: Primary production of natural gas by producing country. Source: Eurostat, 2018

3.4.2.2 Natural gas imports

Figure 3.8 illustrates the change in imports and exports of natural gas between 2016 and 2017 by focusing country of origin and destination. It is noteworthy to point out that total imports of natural gas had a considerable increase in 2017, which was about 6.8% to total of 27. 242 thousand terajoules.

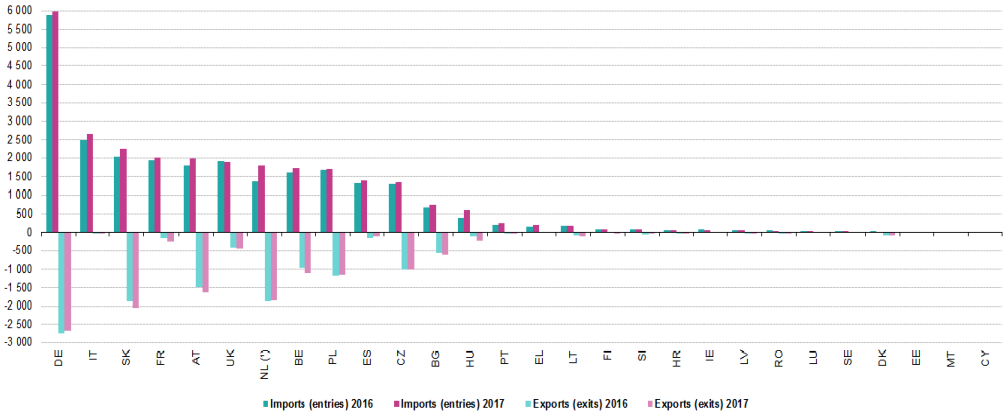

Figure 3.8: Imports and exports of natural gas by origin and destination. Source: Eurostat, 2018

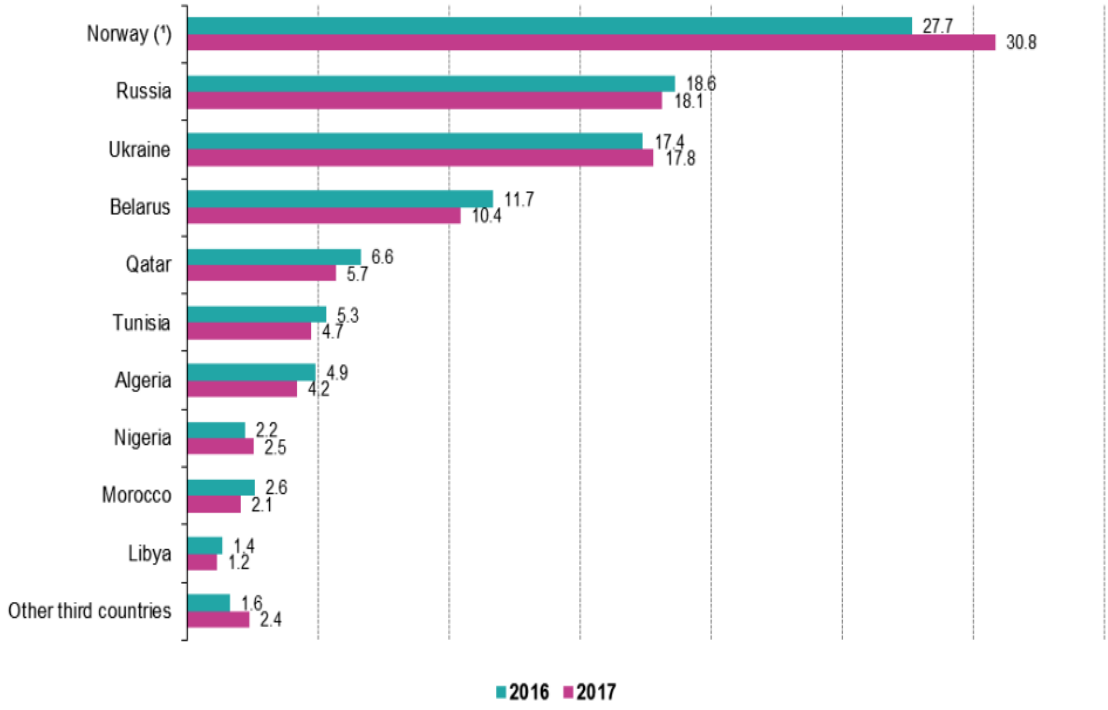

Figure 3.9: Extra-EU imports of natural gas by country of origin. Source: Eurostat, 2018

Considering the natural gas production and import shares of the EU, it can be seen that the EU needs third countries to meet its energy needs. The figure makes this clear since the overall natural gas dependency in the EU is 74.4%, according to the European Commission's 2017 statistics. It should be also pointed out that in 19 EU members natural gas dependency was reported as higher than 90%.

3.5 An Overview to the Challenges in the EU Gas Supply Security

As stated before, the consumption of natural gas is on the rise as of 2019. The domestic share of natural gas supply is not enough to meet the EU's growing energy needs. At this point, the main priority of the EU is not to be dependent on external sources. The EU also aims to be able to create alternative energy sources as well as alternative routes and pipelines to diversify its energy supply. The need of the EU to diversify its energy sources is closely linked with the political, economic and environmental challenges and threats.

It is clear that environmental challenges rise to a significant extent in energy vulnerability. In line with the growing threats in environmental level, carbon economy and climate change have gained prominence in European energy policy. Specifically, production of shale gas has further increased environmental concerns due to the expected impacts on different ecosystems including water, air and soil (Ruble, 2017).

In addition to the environmental challenges, dependence on a few suppliers constitute another threat for energy supply security. In this context, it is clear that dependence on Russian gas raises serious concerns in the EU. Previous crisis between Ukraine and Russia, discontinuances of Russian gas in the past and recently experienced Crimean crisis in 2014 have contributed to the existing concerns about the Russian gas dominance in the European energy market (Goldthau and Sitter, 2015). To understand the rationale behind the anxiety about Russian gas, an historical outlook would be beneficial.

Within the Cold War environment, energy trade has been considered as one of the least impulses for the continents to get assembled; indeed, some reviewers called it "secret integration" (Högselius, 2013). Following the collapse of the Soviet Union, energy trade between the East and West has grown considerably. With the time, Russia became the main gas supplier of the European countries given its geographical advantages and existing extraction facilities and reserves. As of 2019, Russia is the

major energy supplier of the EU. Besides the natural gas, Russia also shares the highest percentage regarding the imported fossil fuel sources.

At this point, concern regarding the energy security is becoming more concrete due to over-reliance to the Russian energy sources. In spite of the fact that the trade partnership with Russia has become interdependent, by the middle of 2000s, the EU documents mentioned trade with Russia as a threat to security and highlighted that energy relations should be more diverse. The gas crossing between Russia and Europe in 2006 and 2009, which caused a temporary disruption to Russia's flow to Europe, accelerated the securitization of European discourses. The Eastern enlargement of the EU have further increased these concerns since the new members are more suspicious of Moscow's policies for the more vulnerable and historic reasons for Russia's gas supply cuts (Aslanlı & Isayev, 2019).

Moreover, following the Russo-Georgian war of 2008, Brussels and Moscow were regarded as rivals due to their common interests and passions for Central Asian gas supplies. In the EU, Russia's distrust as the supplier of energy reached its maximum point after the crisis in Ukraine. The supply of Russian gas over Ukraine did not stop at the crisis, but the EU reorganized its energy security strategy with the launch of its new 'Energy Union Strategy' in 2014.

The major danger to EU energy security might be considered as the fossil fuels (Kustova 2015: 291). It corresponds to above the two thirds of Russia's earnings that come from exporting activities. Even though a high portion of this revenue comes from oil, gas sales also hold a significant place which is above the 15% of the total earnings from exporting. This amount is a highly considerable, especially for the period after the Ukraine crisis (Westphal, 2014).

During this period, Russia has fallen in a deep economic recession as a result of the reduced oil prices and certain sanctions that are determined and applied by the EU. Giving up on the revenues coming from the EU's gas sales, Gazprom has used the sources of the government effectively. The Russian government make a sacrifice by giving up on the funds, to be able to provide machine services, and to be able to pay pensions/salaries of its workers. As a result of this, as Russia would be started to be

considered as an unreliable provider by both its Western and European consumers, this action is expected to create long-term effects (Ibrahim, 2018).

One of the major dynamics of the EU and Russia relationship might be considered as the trade of gas between these two entities. Actually, gas-based relationship is a small but a highly critic element of the balance between the EU and Russia. It has already been shown that oil trade is more important in terms of income. It is clear that the recent progress in the industry have lessened the critical importance of Russia's exports to the EU. When expanding the investigations onto other factors rather than energy, the impact of gas trading seems to be at the average level (Aalto, 2007).

There is no doubt that the EU is in a more stronger position than Russia in terms of the general economical figures. For this reason, Russia has no incentive to increase the trade wars in the energy sector in the EU and the basic income of the state, as well as a trade war that can be used in other areas where Russia is located. Here, rivalry with the EU seems to be quite difficult. Within a more minimal context, this was already clear based on the EU sanctions and Russian sanctions that come after the Ukraine crisis (Dreger et al. 2016).

In the past decade, Russia has used gas sales to obtain advantage within the Commonwealth. Moreover, Gazprom has changed its tariff for several member states, mainly from the Eastern-Central Europe. Besides Russia, political instability in the Middle East also raises the concerns regarding the European energy supply security. This instability is the result of ongoing conflicts and tensions, and a variety of political tensions and divisions. As a result, concerns over the region raise serious questions regarding the energy supply from this region.

3.6 Evaluation of the EU's Southern Gas Corridor Concept

The previous data regarding the EU's situation in natural gas consumption and imports show that natural gas holds an important place in the EU's energy profile. It is also clear that the EU is not an independent entity in terms of meeting its energy demands. Thus,

the security of natural gas supplies has rarely been far off the political agenda in the European Union. Accordingly, diversification of the resources has vital importance for the energy supply security of the EU. In this context, projects regarding the new gas pipelines evoke high levels of attention in the EU and gained much more importance over the years.

In energy policies, diversification refers to a significant component of energy security since the risks and problems linked to the energy supply can be solved with the diversification of the suppliers. When the suppliers are diversified in the import of the energy product, the risks and threats that might arise from one supplier are decreased. Overall, diversification of the resources increases reliability, affordability, and sustainability of energy policies. When it comes to the energy policy of the Union, one might say that the EU cannot be considered as a good example since three suppliers prove %80 of its gas supply.

By realizing this risk and importance of the diversification, EU energy policy is increasingly becoming more diversification-oriented. This is why the importance of the Caspian Basin has increased over the time for the EU as a significant and valuable option for ensuring energy supply security by diversifying gas sources. In the following part of the study, before analyzing the Southern Gas Corridor, the Caspian Region and its vital importance for the EU's energy balance and supply security is covered. Then, a piece of information is given regarding the 'Southern Gas Corridor' concept (Khan, 2018).

3.6.1 An Overview to the Caspian Region

Russia, Iran, Turkmenistan, Uzbekistan Azerbaijan, Kazakhstan are the main energy producers in the Caspian Region. However, the Russian Federation and Iran, that are the leading energy procuders both in the region and world, do not share significant reserves in the region. Many problems in the Eurasian region and especially in the Caspian coast are caused by Russia and Iran because of their self-perceived positions in the Caspian region as liberators (Pala and Engür, 1998). The Caspian region consists of four countries. These are Kazakhstan, Turkmenistan, Azerbaijan, and Uzbekistan. The

northwestern part of this region was left to Russia by Kazakhstan. However, the region is still considered in the territory of Kazakhstan (Pala, 2008).

The Caspian region has been under the sovereignty of the Soviet Union for many years. For this reason, it has remained as a virgin soil. Therefore, the region holds the potential to hold crucial role in the expected oil crises for the upcoming periods since the rich fossil resources at the bottom have still remained untouched. However, in the long term, great oil wars are expected to be experienced in this region. Since the region is capable of meeting the oil demand of the world. Only through this region, a big global competition is expected to occur in the future (Yazar, 2011).

The oil struggle in the Caspian region continues for many areas. These are political, economic, social, and legal aspects. The existence of oil in the region is known since the 8th century. Meanwhile, oil extraction started in the 15th century. Azerbaijan is the country that extracts this oil today. The oil in the region was only used in gas lamps during the first years. At first, it was taken out of the shallow wells. In 1825, the number of oil wells was 120. In 1840, 133 wells were extracted. In 1860, 2272 oil wells were extracted. In 1872, a legal regulation was made. After this legal regulation, oil has become an important commercial vehicle (Err, 2016).

The Caspian region has been a very important oil center since then. Even Marco Polo talked about oil here in his novel. In his book titled “Travels”, he mentioned the importance of oil in Baku. Marco Polo was very impressed by Baku and its commercial understanding. In 1889, the Nobel Brothers built a pipeline in the same area. This first pipeline was 70 km long. The first dynamite in history was used to make the tunnel in this region (Pala, 2008; 148). The infrastructure of the European region in terms of natural gas resources may be seen below.

In the period of the Soviet Union, oil was not given enough importance. There was no competitive environment in the world. After the Soviets collapsed, the competition has increased in the Caspian region, in terms of the countries that wanted to take a share from the oil resources. The legal process has started during these discussions. Oil debates were mostly experienced in the Caspian region. The country that dominates this region will have the power to rule the world energy market. At the

same time, the route through which the extracted oil was delivered to the world was also a matter of debate (Yücel, 2008).

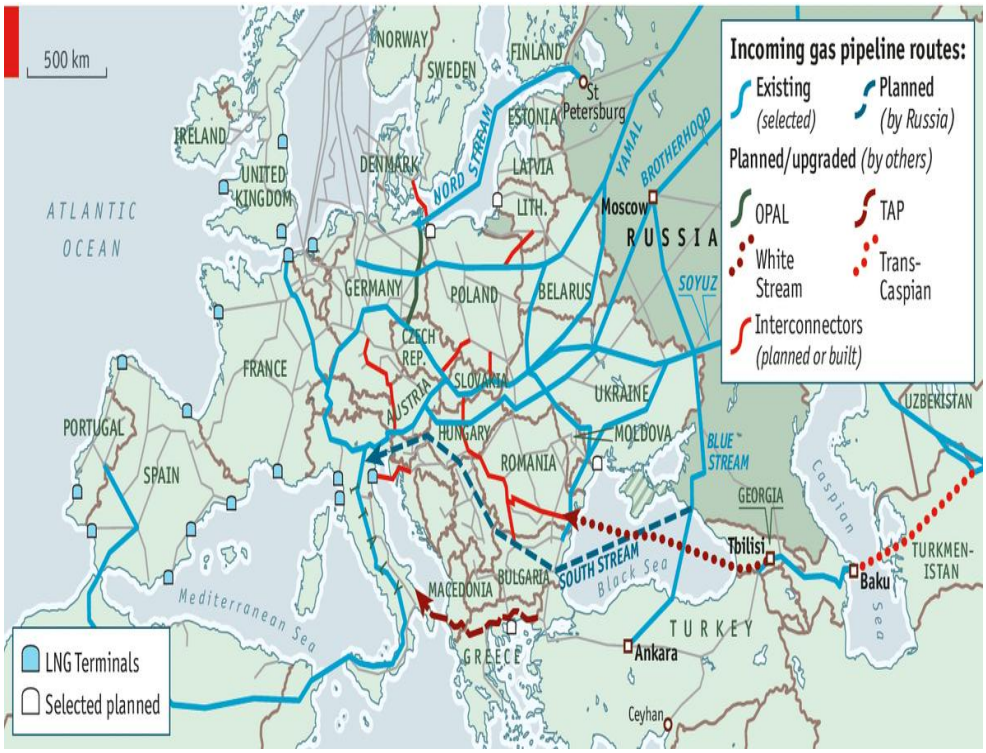

Figure 3.10: European Natural Gas Infrastructure: Source: https://www.tanap.com/, 2019

After the collapse of the Soviet Union, the ideological competition was replaced by economic competition. Many independent countries have been established in the surrounding region. Oil deposits in the region have begun to attract the attention of many countries. For this reason, the Caucasus has become a strategic region in the area. Its geostrategic importance can be listed as follows (Toprak, 2013):

1. It is the gateway to Central Asia,
2. It is a gateway to the Western market,
3. There are a lot of oil deposits in the region,
4. It is a geopolitical connection to the Mediterranean and Basra Gulf in terms of the Russian State.

All countries in this region have become an important country in the world energy market. Consequently, large companies that cause energy wars in the world have started to claim right in this region. These companies are directing the foreign policy of many states. In recent years, the competition between oil and energy resources in the world has started to be experienced in this region. Stated otherwise, chess of the 21st century will be played here (Brzezinski, 1998).

Caspian gas reserves made the countries in this region strategically important countries. Although the reserves in the region have not yet been fulfilled their potential, they are still in an important place. The identified natural gas reserves of the four countries in this region correspond to nearly 9% of the total natural gas reserves in the world. It is necessary to build new pipelines where the oil lines are present. The majority of the old pipelines pour oil into Russia. At that point, ways to make a new pipeline map constitutes the new agenda of the world (Yücel, 2008).

A new reserve has been added to the oil and natural gas reserves in the Caspian region. According to the new findings, this region is also rich in hydrocarbons. In the coming period, this region will now be like the Persian Gulf. Energy reserves in this region are now in third place in the world (Borombaeva, 2002).

As the largest source of the world economy, the Caspian region is seen as fossil fuel. It is estimated that the increasing energy demand in Europe and Asia will be met with energy resources from the Caspian region. Therefore, many countries have attempted to identify the undetected energy deposits in the region, as soon as it is possible. In fact, the fact that the entire transportation sector in the world is using fossil fuel creates as sense of urgency for the countries in the region. In the next 20 years, 15 billion barrels of oil will be planted in the world (IEA, 2001).

In the near future, Azerbaijan and Kazakhstan will gain great importance in terms of oil. Likewise, Turkmenistan and Uzbekistan will have an important position in terms of natural gas. In this respect, it has become a rich country in terms of natural gas as well as oil. In the upcoming years, Azerbaijan will become a very important country, both strategically and geo-strategically. At the same time, the big and powerful countries of the world will turn their attention to this country (IEA, 2011). A map of the

Caspian region may be seen below to better capture the roles and strategic positions of the countries (Figure 3.11).

Figure 3.11:The Caspian Region.Source:Nations Online, 2019

At this point, the EU's policy towards the Central Asia should also be mentioned. According to Erdoğan (2011), for a long time, the EU was not able to develop a comprehensive strategy in the region for several reasons (Erdoğan, 2011). This is mainly because that Central Asia was seen as a passive transit route, or a geopolitical vacuum to be filled by external powers, rather than an active actor or shaper (Melwin, 2008). Moreover, countries in the region were slightly integrated into the global economy and trade.

In the early 2000s, this trend began to change for two reasons: developments in world politics and energy resources inside the region (Melwin, 2008). Following the 9/11 attacks, the EU needed to review its policy for Central Asia due to international

security challenges. Accordingly, the EU has decided to increase its political, economic and civic engagement in the region (Erdoğan, 2011). In line with this vision, 'EU and Central Asia: Strategy for a New Partnership' was adopted in 2007 as the Union's first strategy in the region (Melwin, 2008). The EU's first policy towards Central Asia was based on soft power (Erdoğan, 2011). Through this strategy, the EU was able to increase its presence not only in the areas of economy and trade but also on other policy areas including human rights, democracy and good governance which can be evaluated as positive chance for countries in the region.

3.6.2 The Importance of Azerbaijani Gas for the EU

It is clear that Azerbaijani gas has crucial importance for the EU for several reasons. As stated before, in response to fears surrounding the distribution of Russian gas via Ukraine, the EU's new energy security strategy (2014) gives high priority to the diversification of gas supplies and reducing the danger of overreliance on a single supplier. In line with these priorities, in 2016, the EU launched a new regional programme, which provides different kinds of supports for Eastern Partnership countries, including Azerbaijan (Bosce, 2019).

First of all, the gradual increase of natural gas production on the offshore territory of the country made Azerbaijan a crucial supplier of natural gas in the region, thus further reinforced Azerbaijan's strategic importance for the European energy market (Strimbovschi, 2016). This is mainly because that reaching energy from the Caspian region means the decline of Russia's dominance in the region, in other words, the expiration of the EU's overreliance on Russian gas to meet its growing demands.

Secondly, Azerbaijan's relations with the EU places the country a more advantageous position in comparison to Russia. At this point, an outlook to increasingly growing relations between the two partners makes clear Azerbaijan's strategic importance for the EU energy market (Van Gils, 2017). The bilateral relations between the EU and Azerbaijan have started in 1999 with the Partnership and Cooperation Agreement (Van Gils, 2018). Therefore, Azerbaijan enjoys different kinds of capacity building and support mechanisms of the EU, for example, the Port of Baku and its free-

trade zone (Bosce, 2019). Trade relations are also very intense between the two parties since the EU is the biggest export and import market for the country. At the same time, thanks to its advantageous location Azerbaijan has significant transportation links between the East and West.

Moreover, the government of Azerbaijan encourages positive and interdependent relations with transit countries, especially neighbouring countries including Turkey and Georgia. Azerbaijan is also mindful of its other neighbours like Iran and Russia (Shirinov, 2011). Accordingly, the EU considers Azerbaijan as a significant player to ensure the strategic and economic stability in the Caspian and Caucasus region (Strimbovschi, 2016).

To summarize, despite Azerbaijan is a much smaller country than Russia, its structured and consistent relations with the EU and other countries in the region, its favorable location and market-friendly policies make the country a strategic player for the EU's energy supply and security (Van Gills, 2018).

3.6.3 The Southern Gas Corridor

The European Commission has pointed its priorities for natural gas infrastructures which are to supply gas in a secure way whether from external or internal sources (Commission, 2008). With this aim, the Southern Gas Corridor (SGC) was marked as one of the strategic priorities of the EU energy policy to ensure energy supply security. Considering its geographical closeness with the significant energy sources in the Middle East and Central Asia, the SGC a huge potential to diversify EU's energy supply. Several ambitious projects have been drawn over the last few years to realize the Southern Gas Corridor. These are; Nabucco Pipeline project, The Trans-Caspian pipeline Project, the Trans Adriatic Pipeline (TAP) and The Trans-Anatolian Gas Pipeline (TANAP) projects.

3.6.4 TANAP in the Offical EU Documents

In order to understand the importance of TANAP Project for the EU, official documents and strategy papers of the EU on Southern Gas Corrider should be examined. For instance, in 2008, the Green Paper 'Towards A Secure, Sustainable And Competitive European Energy Network' which was published by the European Commission, stated that to secure energy supply new import routes, notably from Central Asia and the Caspian as well as from the Middle East and Africa, would be needed. Accordingly, the paper saw the new Southern Gas Corridor as a solution and specified the high possibility that the role of the Caspian region in gas supplies would grow in the future (European Union, 2008).

It was also stated in a document given to the European Parliament by the European Commission in September 2013 that TANAP is a highly critical step in realizing the strategic Southern Gas Corridor Project (European Union, 2013c). Communication From The Commission To The European Parliament And The Council, which was published in 2013, TANAP was an important contribution to the goal of promoting greater European energy security through the southern energy corridor.

In 2016, The Opinion of the European Economic and Social Committee on the 'External dimension of the EU's energy policy, stated that TANAP, along with the Trans-Adriatic (TAP) pipeline, will be central part of the Connection of the Caspian Sea region with the EU and will open new possibilities for natural gas trade and contribute to the EU's diversification objective (European Union, 2016c).

A document published by Directorate-General for External Policies Policy Department, an affiliation of the European Parliament, in 2016 states that the proportion of the Azerbaijani Gas in the EU's energy important will increase significantly with TANAP, which eventually will decrease the overreliance to Russia (European Union, 2016b). Potential impact of TANAP on relations with Turkey is also covered in official EU statements. In the statement of the European Commission (2016), regarding the the EU-Turkey High Level Energy Dialogue, TANAP was described as the project that holds a vital importance for the EU's and Turkey's security of supply and for the realization of the Southern Gas Corridor.

The strategic importance of the TANAP was also highlighted by the EU's representatives. For instance, on the occasion of the official opening of the TANAP in Eskişehir, the European Commission Vice President Maroš Šefčovič in charge of the Energy Union said: *"By helping diversify our energy suppliers and routes, the Southern Gas Corridor is strategically important for the EU's energy security. We all stand to gain from this 'bridge' between the Caspian region and the EU market…"* (European Commission, 2017).

CHAPTER 4: THE TRANS-ANATOLIAN GAS PIPELINE (TANAP)

The Trans-Anatolian gas pipeline (TANAP), which is a natural gas pipeline transmitting the natural gas from Azerbaijan through Georgia and Turkey, is considered as the most important project for the EU's ambition to realize the Southern Gas Corridor. TANAP aims at sending the natural gas, which was produced in the Caspian Sea, to the Southern parts of Turkey, to be transported to Europe.

It is expected that TANAP Project will meet the natural gas needs of Europe and Turkey. In addition, the TANAP project, which aims to ensure gas diversity in the region, will further increase its strategic cooperation among the other pipelines in the region (Ünlü and Kabak, 2017).

The main objective of this project is to transport gas from Azerbaijan to Europe through Turkey. Pipeline Petroleum Transportation Joint Stock Company on behalf of Turkey (BOTAS) and Shah Deniz Consortium on behalf of the State Oil Company of Azerbaijan (SOCAR) signed the contract. It is reported that this agreement is a "Principle Agreement for the transmission of gas from the Shah Deniz II area of Azerbaijan to European markets." According to this, it was decided to carry out the project activities by SOCAR. It was later adopted by the Approval Act No. 6375 published in the Official Newspaper on 17 January 2013. June 26, 2012 the agreement was signed between Azerbaijan and Turkey (Republic of Turkey Ministry of Foreign Affairs, 2016).

Figure 4.1: TANAP Project. Source:TANAP, 2019

The TANAP pipeline will have a 1900 km length in Turkey. Regarding the route, TANAP joins the South Caucasus Pipeline (SCP) and the Trans-Adriatic Pipeline (TAP) to form the Southern Natural Gas Corridor (Toprak, 2013).

In the first instance, a gas flow of 16 billion m3 per year will be provided from the pipeline, and 6 billion m3 of gas will remain in Turkey. Gas transportation rates will be gradually increased each year, and gas transportation is aimed to increase to 31 billion m3 by 2026 (TANAP, 2016). In terms of the EU's energy supply security, the aforementioned capacity of the TANAP holds a significant potential to reduce the EU's dependence on Russian gas. To boost energy security, The Southern Gas Corridor will help countries in Central and South East Europe to expand and diversify their sources of gas. In order to do this they plan to expand infrastructure which will bring gas from the Caspian Basin, Central Asia, the Middle East and the Eastern Mediterranean Basin to the EU. Around 10 billion cubic meters (bcm) of gas, possibly rising to 80-100 bcm in the long term, will be possible when the 2019/2020 route opens. With the Southern Gas Corridor, there is a potential of meeting up to 20% of the EU's gas needs ('Turkey - EU High Level Energy Dialogue' Meeting, 2016).

At the beginning of the TANAP project, the total costs were estimated at $11.7 billion. Thanks to efficient project management, it was possible to complete the project for less than $7 billion (TANAP, 2019).

To feed the national gas network two gas output stations are used as temporary camps to accommodate workers at the project site (Düşen, 2012). EU gas deliveries from Turkey are conducted through three countries having the most suitable geographical locations, which are Iran, Iraq and Turkmenistan. The uncertain and risky environment that exists with these countries has been lost recently. In the most favorable routes of transmission of this rich field of production of natural gas pipelines in the Caspian region to the Middle East countries, is expected to pass through Turkey. Thus, Turkey's role in the natural gas sector stands out to be even more prominent in the international energy arena (Misiagiewicz, 2015).

TANAP transits an annual amount of 10 billion cubic meters (BCM) to Europe via Turkey since 2017. In the scope of the TANAP project, Turkey and Azerbaijan is one of the most important representatives in the field of energy, and this partnership is carried out with success so far. (Çıtak, 2016). The first four stages for the TANAP Project have been initiated in 2018 with the first gas flow. The annual capacity of 16 billion cubic meters in 2020 is expected to reach 23 billion cubic meters in 2023 and is expected to reach 31 billion cubic meters in 2026 (Baloğlu, 2010)[1].

It is known that the project employs a total of 13 thousand people during the peak periods. On the other hand, 80 percent of the pipes used for project are manufactured by a company in Turkey. TANAP line goes through 20 provinces and 67 districts. It creates an economic revival with the job opportunities it created in the regions it passes through. In this way, a positive socioeconomic impact can be mentioned. In addition, social responsibility projects are also signed in these regions. In this respect, it is possible to talk about a positive impact and creativity. TANAP has benefited many areas in Turkey (Bayraç, 2011).

In December 2013, Turkey's share in the TANAP consortium of BOTAŞ-TPAO has increased from 20% to 30%. As a result, the distribution on TANAP turns out to come 12% from BP, 58% from SOCAR and 30% from Turkey’s side. Thus, Turkey has become the second largest partner in the project (CNN Turk, 2016).

[1]Whether the gas carried to Europe with TANAP will have a cost advantage over the Russian Gas is also an important issue. However, any information related to prices is kept as a secret for various reasons (security, competition, trade secret).

This project aims to achieve the gas diversity in the region. It has made significant investments in Turkey and Azerbaijan regarding issues prior to the project. Strategic cooperation with the BTC Pipeline and BTE Natural Gas Line Projects has become more comprehensive with the signing of TANAP. TANAP is a serious project and it will also contribute to the strengthening of economic integration Turkey and Azerbaijan.

By this project, Turkey will avoid the Russian and Iranian monopoly in the market while supplying natural gas. TANAP is performed using only Turkey and Azerbaijan's financial and technological possibilities. This project is important in terms of being an initiative involving Turkish-Azeri cooperation. To go along with Turkey and Azerbaijan to Europe and other international markets has led the development of cooperation between the two countries to be monitored carefully by other countries (Aras et al., 2013: 995).

As stated before, the TANAP project increases the importance of Turkey, which has an active and critical role in the project, vis a vis the EU's energy supply security. However, at this point, whether Turkey is a more reliable and appropriate partner than Russia, and energy relations between Turkey and the EU should be focused on. It is clear that Turkey's membership negotiations with the EU and its already strong relationship in many areas from trade to legislation, have made the country more reliable and strategic partner than Russia. First of all, as a candidate country currently engaging in accession negotiations with the EU, Turkey has made important progress in aligning its legislation with the "acquis communautaire" (Yorkan, 2009).

Moreover, Turkey, a candidate country since 1999, has become an integral part of the EU not only in the energy field, but also in many fields such as trade, industry, law and civil society by Europeanisation and developing strong relations with member states (Tagliapietra, 2018). Although there are ups and downs in the EU-Turkey relations, it is obvious that Turkey with its ongoing practical and institutional relations based on membership prospects both the EU and Turkey abide is a more reliable partner

than Russia, which behaves aggressively in its territory (as in Ukrainian crises) and has distant relations with West (Koukoudakis, 2017).

However, these reasonings are not limited with Turkey being a more advantageous and reliable partner in TANAP project and the EU's energy supply security. Considering Turkey's ambitions to become a major energy hub in the region, it can be said that Turkey's cooperation is of critical importance for both the EU and Turkey. It is clear that TANAP has a strong potential to strengthen the geopolitical position of Turkey (Batten, 2014). Lastly, with growing energy consumption driven by rapid economic growth, Turkey has increasingly become dependent on energy imports. Besides, making Turkey an important transit country, TANAP could make it easier for Turkey to diversify its own energy imports (Koukoudakis, 2017).

All of these considerations, make it clear that energy will continue to be pivotal to the relationship between the EU and Turkey, by obviously proposing Turkey as a more reliable and easier partner than Russia.

TANAP has been shaped by the energy demands of the Western countries. Iran's and Russia's attempts to be a partner in this project can be considered as a result of the search for versatility and balance within the framework of energy strategies. Turkey's capacity in this line is important in terms of reducing the gas dependence on Russia and Iran. Iran has the largest natural gas reserves in the world. However, it is not possible to supply this natural gas to the world as a result of the embargoes applied on it. Russia does not only use its own resources, but also dominates Central Asian energy resources. In this respect, Russia has put a lot of effort into the implementation of TANAP both by investing resources and playing a strategic role in the region (Euractive, 2016: 2-3).

Table 4.1: Main Gas Pipelines in Eurasia. Source: Özdemir, et al. (2015)

Pipeline	**Controlling Body**	**Time Element**	**Entry**	**Exit and off-take**	**Capacity (BCM)**
Brotherhood& Trans-Balkan	Gazprom Naftogaz	Soviet Period	Russia	Ukraine, The Balkans	100
Trans-Siberian	Gazprom Naftogaz	Soviet Period	Russia	Europe Ukraine	32
Soyuz	Gazprom Naftogaz	Soviet Period	Central Asia Russia	Northern Europe Ukraine	32
Northern Lights	Gazprom Beltransgaz	Soviet Period	Russia	Europe Belarus	51
Yamal-Europe	Gazprom Beltransgaz EuroPolGaz	Operational since 1992	Russia	Germany Poland Belarus	32
Blue Stream	Gazprom ENI	Signed in 1997	Russia	Turkey	
Nord Stream	Gazprom Eon Ruhrgas Wintershall Gasunie GDF Seuz	2011	Russia	Europe	55
Central Asia Center	Turkmengas Uzbekneftegaz Kazmunaygaz	Soviet period	Turkmenistan	Russia	90
Trans Asia	Turkmengas Uzbekneftegaz Kazmunaygaz CNPC	Contemporary	Turkmenistan	China	55
Turkmenistan Iran	Turkmengas NIGC	Commissioned in 1997	Turkmenistan	Iran	18
Iran –Turkey	NIGC BOTAS	Operational since 1999	IRAN	Turkey	10
Azerbaijan-Russia	Gazprom SOCAR	2010	Azerbaijan	Russia	5
South Caucasus	Shah Deniz Consortium	2006	Azerbaijan	Turkey Georgia	8.8
Turkey – Greece	BOTAS DESFA	2007	Azerbaijan Turkey	Greece	7

It is useful to evaluate the possible effects of TANAP on the EU's energy supply security through the following aspects (Rzayeva, 2014):

1. Energy supply security,
2. Socio-economic impact,
3. Political and economic stability,
4. International relations perspective.

Firstly, it is clear that having diverse gas sources constitutes a critical importance for the EU energy supply security. As stated before, the dependence on Russian gas raises serious concerns in the EU. The dominance of Russian gas in the European energy market became a more serious issue in light of the recent gas crises between Russia and Ukraine. Moreover, the Crimean crisis in 2014 has increased the existing anxiety regarding this issue. Considering this problem, both the Caspian region holds a significant potential to decrease the EU's dependence on Russian gas resources.

As it is seen in Table 4.1, currently there is a strong presence of Russia in Eurasia energy hub. However, it is expected that TANAP and other projects which are based on the Caspian region will change this picture in future.

Besides the need to diversify Europe's natural gas resources in the most appropriate way, the project is also important in terms of strengthening Turkey's role as a transit country. In addition, the project has strategic reasons behind the idea of establishing a southern energy corridor circulating around Russia. For instance, it offers new export opportunities and fixed income opportunities for Azerbaijan. It will also provide the desired diversity in foreign relations. Russia is still the number one supplier of natural gas to Turkey. After Russia, which is a monopoly in the gas industry, Turkey comes as Gazprom's second largest market. Now, however, by TANAP Project Turkey takes a firm step in the natural gas market. Russia may see projects as an alternative to the South Stream pipeline, and as a threat to European sovereignty (Alodali, Usta, 2017).

The TANAP project is important in terms of international energy economies and for the safety of energy transmission routes. Minimizing dependence on a single country is another important issue. It is also an important step in ensuring the diversity

of resources for the continuity of energy supply. Azerbaijan will further expand the field of action in terms of producing projects and activities without being dependent on Russia. TANAP is the project that will best meet the demand of Europe to differentiate its natural gas resources (Özdemir, et al., 2015).

The war that emerged in Ukraine in 2013 and then Russia annexed Crimea. This situation has negatively affected the course of relations between the Western world and Russia. During the Cold War period, the blocking movement came to the fore after this crisis. Following the outbreak of the Ukraine Crisis, the United States (USA) and the European Union (EU) decided to impose trade restrictions against Russia. Consequently, Russia used the energy trumps it had in response to the barracks. All these actions have shown that the conflicts and problems between different actors continue. First of all, the South Stream project, which is the gas project that Russia will transport to Europe through the Black Sea, has been canceled. As is known, Putin announced that Turkey had canceled the visit of the South Stream project, by also stating that the project will be the Turkish stream. These words had a big impact, especially in the European press. Here, one of the things discussed at that time was the difference between the South Stream and the Turkish Movement (Fischer, 2016).

According to Punsmann (2016), TANAP has also significant potential and benefits for Azerbaijan since it will enable Azeri gas to be sold through its own pipeline system without having to pay for the transit service which would then make Azeri gas price- competitive against Russian gas.

As another critical point, TANAP creates a connection between Turkey and Greece. Moreover, it is also expected that having a mix of gas resources from different countries will contribute the political influence of the EU in the region. The TANAP project also serves the interests of Central Asian countries. For instance, the TANAP pipeline will also make change regarding the Turkmenistan's dependence on Chinese and Russian gas (Huseynova,2014). This is also important for the EU since decreasing role of the Russia and China would increase the EU's role in the region. In other words, TANAP project holds a potential to promote a more active EU as a result of intensified engagement with Azerbaijan and Turkmenistan.

Besides these countries, TANAP also increases the transit role of Georgia (Furuncu, 2018). Moreover, TANAP also aims to intensify the national securities of Georgia and Azerbaijan. TANAP project has placed Turkey in a critical position in terms of EU energy supply security. Through the realization of TANAP project, Turkey's role as an energy transition country in terms of transit routes will be intensified. This has two significant implications for the EU-Turkey relations. The first implication is related to the Turkey's dependence on natural gas. It is true that Turkey is dependent on foreign gas to meet its energy needs. 99% of this need is taken from outside, while the rate of natural gas imported from Russia is 60%. From this point, reducing the dependence on foreign sources is of vital importance for Turkey.

The only way to reduce dependence on foreign energy is also related to Turkey in terms of increasing energy diversity. It is also politically inconvenient to supply all the energy needed from a single country. This argument is valid for both Turkey and for the European countries that deliver natural gas (Rzayeva, 2014). Turkey's decreasing dependence on the Russian natural gas would eventually effect its relations with the West in a positive way.

Secondly, Turkey's further integration with the EU would have positive effects in its accession process towards the EU membership. To comply with the EU energy acquis is of great importance not only for the EU negotiation process, but also in terms of Turkey's efforts to become an energy hub. Indeed, positive effects of cooperation in the energy field have already become apparent. For instance new mechanisms, including High-Level Dialogue between the EU and Turkey was launched to promote cooperation between the EU and Turkey in the energy field(the European Commission, 2017).

Despite its expected benefits in both the EU level, and regional/international level, there are several limitations to take into account within the project. Firstly, it is essential for the energy policies that are built on an infrastructure to take into account international law, the way in which the international economy operates, technological developments, stakeholders' strategies, current statistics and the geopolitical conjuncture (Batten, 2016). Achieving this may seem as difficult as solving an equation with many unknowns, but it is not impossible. What is important is to provide quantitative and

qualitative information for the specialization in the geopolitical, diplomatic and strategic areas as well as technical and technological information related to energy. Beyond this, new areas of expertise need to be established with a high energy-related potential (EIA, 2006).

Secondly, the development of permanent partnerships and cooperation opportunities in international activities require ambiguities to be reduced as much as possible. For this reason, a discourse should be developed, which clearly explains the interests (gains and losses) of stakeholders, and strategies should be built on this discourse (Kim and Blank, 2018). Areas of interest should be defined for all parties in the field of energy security (producers, consumers and transit countries, hegemon countries and investors).

The updated definitions of benefits should be concretized and the practices should be executed where the counterparts might clearly understand their earnings and losses. This condition is especially important for Turkey, which is in rapid investment needs. Sending mixed signals to counterparts in the field of investment or foreign policy will push them into confusion and it will be delayed or become impossible to reach the target of declared strategies (Erdal & Karakaya, 2002).

Besides these contributions, TANAP project is extremely significant for several member states. Figure 4.2 shows that several member states are more dependent on Russian gas than others. In this context, the TANAP project will bring more benefits to them, including Finland, Estonia, Latvia and Lithuania.

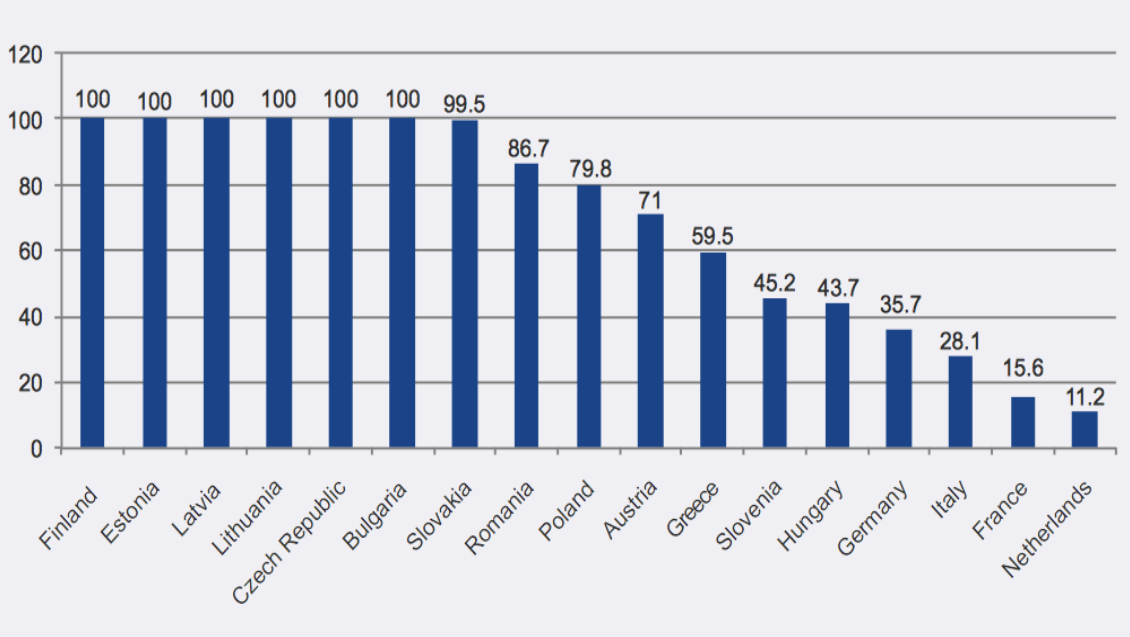

Figure 4.2: EU Member States' Dependency on Russian Gas. Source: Eurostat, 2016

Regarding the economical implications, TANAP will contribute the affordability of energy sources. By diversifying the energy sources, the EU also reduces the several risks including the price fluctuations.

To sum up, TANAP can be considered as a significant step to diversify the EU energy sources. By diversifying the energy sources, the EU's dependence on Russian gas will be reduced. Moreover, through the new partnerships with Turkey, Azerbaijan, Georgia and Turkmenistan, the regional influence of the EU will be further increased. Regarding the EU-Turkey relations, TANAP also holds a potential to re-energize the bilateral relations. While Turkey's alignment with the EU acquis in the energy field will be positively affected, Turkey's position as a transit hub will be also intensified with the realization of this project.

Lastly, TANAP project has a potential to contribute the trade relationships between the aforementioned countries. In result, it can be said that TANAP is not only revolutionary for the EU's energy supply security, there will be also other regional, political and economical effects both in the region and energy market in general.

CHAPTER 5: CONCLUSION AND DISCUSSION

The rise in global demand for energy, on the one hand, environmental and political threats, on the other, make the energy supply a matter of concern in our modern societies. Moreover, future projections predict that the global energy demand will increase day by day.

Sustainable policies and solutions have gained importance in all over the world. This trend is also prevailing in the European Union (the EU), since it the EU is highly dependent on external sources to meet its growing energy demands.

While to be self-sufficient in the area of energy has always been a priority for the EU, the growing need for the external energy and strong dependence on a few supplier countries reveals that European energy supply security is a never-ending story. In the EU context, energy security refers to the providence of future-needed energy in affordable and sustainable ways from local or external resources which are both accessible and stable in economic, geological and geopolitic terms. In line of this vision, the EU draws comprehensive strategies and develop different mechanisms in order to guarantee energy supply security in all member states. At this point, the diversification of the energy sources and routes is essential to ensure the EU's energy supply security.

Considering the aforementioned challenges stemming from the EU's energy dependency and other external trends, this thesis covers the problems regarding the EU's situation vis-à-vis energy and emphasizes the importance of the diversification of energy sources for supply security. With this aim, the Trans-Anatolian gas pipeline (TANAP), which is a natural gas pipeline transmitting the natural gas from Azerbaijan through Georgia and Turkey to Europe, is analyzed to understand the rationale behind the EU's ambition to develop new projects in the Caspian Region.

Regarding the general perspective of the EU, construction of this project can be explained by the realist assumptions. Realism accepts the international system as

anarchic and competitive due to the lack of a common authority (Keohane and Nye, 1977). Realists respond to the anarchic world system by assuming a "self-help" doctrine, believing they can rely on no one but themselves for security. Thus, creating various strategies in order to increase the level of security of any country or region can be explained by realist asuumptions.

Besides the internal ones, these strategies could also be external which means a balance of power through developing alliances or organizations (Ebel, 2002). At this point geographical elements are important since they play a decisive role in the development of external alliances. As stated before, in the context of energy security, this approach refers to the idea that creating alternatives in terms of sources and routes is necessary since relying on another country would be risky in a chaotic and competitive system (Moran and Russel, 2009).

In energy policies, diversification refers to a significant component of energy security since the risks and problems linked to the energy supply can be solved with the diversification of the suppliers. When the suppliers are diversified in energy imports, the risks and threats that might arise from one supplier are decreased. Overall, diversification of the resources increases reliability, affordability, and sustainability of energy policies. Construction of the multiple pipeline projects in order to ensure the diversity of the sources constitutes the major part of the EU's external energy policy.

This study shows that these assumptions are highly linked with the aforementioned assumptions of the realist perspective. It is clear that the TANAP project was designed as a solution to create alternatives with the aim of ensuring the EU's energy supply security through the diversification strategy. In other words, by developing this project and building new partnerships with several countries, the TANAP Project has embraced with the EU's energy supply security concept. Through the TANAP Project, the over-reliance on a single country, namely Russia, would be decreased. It is clear that the dominance of Russian gas in the European energy market is one of the main issues in European energy supply security. This problem has become more evident in 2006, after the gas crisis between Russia and Ukraine. Moreover, the Crimean crisis in 2014 has increased the existing anxiety regarding this issue. Considering this problem, both the Caspian region holds a significant potential to decrease the EU's dependence on Russian gas resources.

Moreover, energy policy is used by the EU to support its other policies in the region. For instance, considering the relationship between the stability and economic investments, certain projects are intentionally implemented in countries to provide them the stability (Yorkan, 2009). At this point, it is expected that TANAP has a big potential to provide stability and increase the EU's role in the region.

Secondly, Turkey's further integration with the EU might have positive effects in its accession process towards the EU membership. To comply with the EU energy acquis is of great importance not only for the EU negotiation process, but also in terms of Turkey's efforts to become an energy hub. This can be a driving force for the revitalization of Turkey-EU relations. Regarding the economic implications, TANAP will contribute the affordability of energy sources. By diversifying the energy sources, the EU also reduces the several risks including the price fluctuations.

Thus, it can be said that TANAP is not only a significant project for the EU's energy supply security, it is also critical for the regional, political and economic dynamics of the EU and the region as well.

LIMITATIONS AND FURTHER RESEARCH

Due to its research methods this study has several limitations. Further research should use empirical methods to analyze the implications of the TANAP projects. Moreover, TANAP project may be evaluated using another case study as a benchmark.

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