COMPLIANCE OF TURKISH LOGISTICS SECTOR WITH THE EUROPEAN UNION: AN ENERGY PERSPECTIVE

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ABSTRACT

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Master's Program in Logistics Management

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Today, the need for energy resources at the global level and the importance of this issue are increasing day by day. Globally increasing energy demand and limited resources not only increase the importance that countries attach to this issue, but also its supply and security. The importance attached to energy by EU countries, one of the most important representatives of the developed world, is even higher due to their foreign dependency in terms of energy. In this respect, energy becomes much more important for EU countries. The European Union and Turkey always need energy in order to continue their development. At the global level, the management of energy resources and the sustainability planning of resources continue under the leadership of developed countries. However, foreign trade transactions, which have shown a complex appearance in recent years, have increased the importance of logistics, and

it has become necessary for countries to develop and integrate the aforementioned policies and strategies with their logistics strategies. In this study, the energy policies and energy resources of the European Union and Turkey, which have been reflected from the past to the present, have been analyzed within these countries, and the issue of energy, global energy resources and the current importance of logistics and supply security have been emphasized.

Keywords: Energy, Energy Policies, EU Energy Policies, Turkey Energy Policies .

ÖZET

TÜRK LOJİSTİK SEKTÖRÜNÜN AVRUPA BİRLİĞİ'NE UYUMU: ENERJİ PERSPEKTİFİ

Zengin, Zümrüt Pınar

Lojistik Yönetimi Yüksek Lisans Programı

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Günümüzde küresel düzeyde enerji kaynaklarına olan ihtiyaç ve bu konuya olan önem git gide artmaktadır. Küresel olarak artan enerji talebi ve sınırlı kaynaklar, ülkelerin bu konuya verdikleri önemi arttırmanın yanında, temini ve güvenliği de ayrıca önemli olmaktadır. Gelişmiş dünyanın en önemli temsilcilerinden AB ülkelerinin enerji konusuna verdikleri önem, enerji açısından dışa bağımlılıkları dolayısıyla daha da fazladır. Bu açıdan enerji, AB ülkeleri için çok daha önemli hale gelmektedir. Avrupa Birliği ve Türkiye, gelişmesini devam ettirebilmek için enerjiye her daim ihtiyaç duymaktadır. Küresel seviyede, enerji kaynaklarının yönetimi ve kaynakların sürdürülebilirlik planlamaları gelişmiş ülkelerin öncülüğünde devam etmektedir. Bununla birlikte, son yıllarda kompleks bir görünüm sergileyen dış ticaret işlemleri lojistiğin önemini arttırmış, ülkelerin sözü edilen politika ve stratejileri mutlaka lojistik stratejileriyle geliştirmesi ve entegre etmesi zorunluluğu ortaya çıkmıştır. Bu çalışmada ,bu ülkeler dahilinde, Avrupa Birliği'nin ve Türkiye'nin geçmişten günümüze yansıyan enerji politikaları ve enerji kaynakları

analiz edilmiş, enerji konusu, küresel enerji kaynakları ve lojistiğin günümüzdeki önemi ile arz güvenliği üzerinde durulmuştur.

Anahtar Kelimeler: Enerji, Enerji Politikaları, AB Enerji Politikaları, Türkiye Enerji Politikaları .

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LIST OF ABBREVIATIONS

BOTAŞ: Petroleum Transport Joint Stock Company byPipelines

CBRT: Central Bank of the Republic of Turkey

EU: European Union

EAEC: European Atomic Energy Community

EEC: European Economic Community

ECSC: European Coal and Steel Community

EMRA : Energy Market Supervision Agency

INOGATE : Interstate Oil and Gas Transport to Europe

IEA: International Energy Agency

LPG: Liquefied petroleum gas

LNG: Liquefied natural gas

MENR: Ministry of Energy and Natural Resources

SEERF: Southeast European Energy Regulatory Forum

TEN-E: Trans European Energy Networks

TANAP: Trans-Anatolian Natural Gas Pipeline Project

TACIS : Technical Assistance to the Commonwealth of Inependent States

TRACERA: Europe-Caucasus-Asia Transport Corridor

USA : United States of America

CHAPTER 1: INTRODUCTION

Since the world and humanity exist, energy has always occupied an important place as an indispensable element of life. In the history of humanity, energy and energy resources have been used in various ways. At first, the energy obtained from muscle power entered our lives. Energy studies carried out with human power until the industrial revolution were quickly replaced by machines and technology after the industrial revolution. With the industrialization movement of the world, the rapidly turning towards mechanization and the increasing technology, energy has rapidly increased its importance. By the 21st century, energy has risen to a position that will be the key point for the necessity of the continuity of life.

We can say that energy is the basis of all wars in the history of the world. Today, social welfare, economy and sustainable development of countries depend on energy and energy resources. In the 21st century, where world politics is shaped around energy, there is a great competition among countries to have energy resources.

Petroleum, natural gas, coal, nuclear energy and renewable energy constitute today's energy sources. The rapid progress of the industry in the 21st century has increased the need for energy and has brought the energy consumption of oil and natural gas, which is the most preferred in today's energy, to the first place. In the European Union (EU), energy is important in terms of economic and social life. EU member states are insufficient in terms of the most used non-renewable energy resources in the world such as oil and natural gas. However, the energy consumption of these countries is quite high. Therefore, the EU ranks first in the world in terms of foreign dependency. Due to its energy needs, the EU has had to develop international relations with the countries where these resources are most abundant.

In this context, the concept of logistics, which is the advanced expression of the concept of transportation, has become one of the most important tools that play a role in the improvement of economic indicators today. Logistics; It provides added value to countries in economic, social, psychological, cultural, strategic, military and political fields and is given more importance by countries in order to have a say in the global arena. The importance of the logistics sector is also increasing in Turkey, where the growth potential is quite high. In this context, like other countries, Turkey has started to make more efforts to increase its logistics performance.

Foreign trade, especially exports, is of great importance for countries to increase their economic growth rates and get a larger share from global markets. Satisfactory levels of exports and sustainability depend on countries exporting high value-added products and increasing product and market diversity. However, foreign trade transactions, which have shown a complex appearance in recent years, have increased the importance of logistics, and it has become necessary for countries to develop and integrate the aforementioned policies and strategies with their logistics strategies.

In the new business world, transportation regulations, globalization of markets, globalization of production and supply processes, increasing material flow and storage needs, competitive conditions, difficulty in providing cost advantage, increasing use of outsourcing, increasing importance of changing customer expectations, logistics to ensure and secure customer satisfaction. concept has come to the fore, therefore the importance of logistics has increased.

All types of sea, rail, road and air transportation and combined transportation can be used in transportation activities carried out to all parts of the world, including European, Middle Eastern and Asian countries that are geographically close to Turkey. Located on historically important trade and transportation corridors, where three continents converge, Turkey's convenient location for transportation activities allows the use of different transportation modes and diverse transportation routes in the country's imports and exports. In the realization of Turkey's foreign trade targets, it should be taken into consideration that the physical logistics and transportation infrastructure, as well as the legal logistics and transportation infrastructure, are necessary conditions that enable the geographical advantage to be used at the highest level, as well as the geographical advantage. It is important to provide good service with competitive costs in the international logistics sector where competition is valid in the global sense.

Turkey is a key country for Europe, which has 38 countries with a GNP of 21.32 trillion dollars and a population of 597.6 million, considering its dynamic economy, strategic location, proximity to emerging new economies and its regional role. Economic data shows that Turkey is in an important position in terms of the European Union (EU). According to the report published by the European Statistical Office (Eurostat), the EU reached a total trade volume of 9 trillion 591 billion euros in 2016,

while Turkey realized 66.7 billion euros in exports and 78.01 billion euros in imports, making it the EU's 5th largest trade volume. continued to be a partner. In the last five years, $323 billion worth of goods have been sold to the EU, where one of every two products is transported. On average, 43 percent of exports were made to the EU. The countries to which Turkey exports the most in 2016; EU countries such as Germany (1 billion 137 million dollars), England (784 million dollars) and Italy (653 million dollars). In terms of imports, Germany became the second country with the highest export volume with 1 billion 668 million dollars. High-tech automotive and employment warehouse textile took the lead in exports.

With this study, it is aimed to examine the European Union energy policies, Turkey harmonization and logistics connection. In this context;

In the first part of the thesis, the concept of energy, the concept of global energy, the concept of logistics, its importance in the global world are emphasized.

In the second part of the thesis, the concept of energy policy, the concept of global energy policies, the concept of logistics and its historical development, the global view of logistics and the development of the logistics sector in Turkey are emphasized.

In the third part of the thesis, the concept of energy and security of supply and non-renewable energy resources are emphasized.

In the 4th chapter of the thesis, the basic principles of the EU's energy policy and its logistics connection, its development process are examined and the importance of the logistics sector in Turkey, renewable energy resources and logistics connections are discussed.

In the 5th chapter of the thesis, Turkey's compliance with the EU energy policy and its compliance with the logistics sector were examined.

In the 6th chapter of the thesis, the connection of the logistics and energy sector in Turkey is discussed. The examination of energy pipelines, which is an important issue in EU and Turkey relations, is also included in the scope of this study.

In the discussion and conclusion part of the thesis, a general evaluation will be made in the light of the research done in the previous parts of the study, and inferences and

suggestions will be made regarding the harmonization of Turkey's energy policy with the EU's energy policy and the logistics connection.

1. The Concept Of Energy Policy

Energy policies are the decision-making and implementation process in many issues such as the acquisition, use and control of energy in terms of countries. Energy policies are not only about producing energy, but also a series of chain decisions that cover its distribution. Today, due to the global need for energy, the energy policies of countries can directly affect other countries. Some countries with limited opportunities to produce energy can play an important role in determining the global energy policy by playing important functions in distribution.

Energy use is one of the driving factors of the social development of countries. Energy resources are the most important and vital inputs of our daily life, and energy and industrial products are the most important and vital inputs of our production. For this reason, those who undertake the management of the country and the energy field have to supply the energy needed by the society and the economy in uninterrupted, reliable, timely, clean and cheap ways, to provide them at the most affordable prices and to diversify these sources in terms of energy supply security. The concept of "sustainable development" has come to the fore in order to ensure that classical energy sources and backward technologies do not cause irreversible damage to the natural environment and that the people's access to energy, which is one of the most basic rights, is provided under the most appropriate conditions. Parallel to this, in developed societies, plans based on energy supply and energy production have started to be replaced by energy security models that take into account resource diversity and geopolitical realities, with a planning approach that carefully considers the energy-economy-ecology balance.

Energy policy generally consists of the institutional structure where decisions about technology, economy and energy are taken, and it includes supply and demand management in the short term and planning activities in the long term (Bayraç, 1999). In addition to the scarcity of energy resources and the gradual decrease in their reserves, the greenhouse effect and climate changes as a result of global warming require the production of national and international energy policies that also take into account the interests of future generations.

Continuously predicting the factors affecting energy supply and demand with scientific and real methods, updating them in line with global changes and revising them when necessary are an important prerequisite for effective energy policies (Pamir, 2006).

One of the priority issues that should be taken into account when determining energy policies is the determination of the energy resources potential of the country in a healthy and scientific way. After determining the country's energy resources potential; A strategy can be developed on issues such as how these resources will be developed, in which areas the domestic or foreign private sector's contribution is needed, and whether imports are necessary. In conditions where import is deemed unavoidable or should be used periodically; resource diversity should be considered as one of the most important requirements of energy policy.

A vital requirement of energy policies is to make sound energy demand forecasts. Key parameters on which energy demand forecasts should be based.The main ones are; economic growth (capital accumulation, employment, increase in work efficiency, etc.), population (growth rate, migration, effective working population, etc.), energy prices, technological developments, energy policies (tax policies, incentives, etc.) and energy saving consumer behavior. Using scientific and realistic methods.It is the prerequisite of a correct energy policy that it is foreseen and constantly updated and revised when necessary in line with the developments both in the world and in the country.

One of the most vital requirements in the process of determining energy policies is planning. Planning; It is the regulation of resources, production and consumption in line with needs. This arrangement is possible by estimating the consumption correctly and determining the energy and financial resources to be used in the facilities that will provide the production according to this estimate. However, it necessitates that it be produced and consumed on time, uninterruptedly and with a reasonable spare capacity.

Today, global energy policies are determined by fossil fuels and mainly oil and natural gas. The areas that determine the basis of these policies are the Middle East, Central Asia and Caspian regions, which have the most important reserves.

From fossil fuels in the world, oil and natural gas deposits, coal.It is not evenly distributed according to the regions as much as its reserves. While countries have a large amount of oil and natural gas deposits, developed countries that consume the most oil and gas have little or no reserves.

Today, 87% of the world's total energy production is met by fossil fuels, 6% by renewable resources and 7% by nuclear energy. Fossil resources (38.7% coal, 18.3% natural gas, 7.5% oil) account for approximately 64.5% of the world's electrical energy production (BP, 2008).

In line with the current level of technology and the predictions made, In the next 30 years, it is estimated that a very important part of the world's general energy demand, such as 88%, will be met by fossil resources.

Today, 46% of the oil produced in the world is subject to interregional trade, and this rate is expected to increase to 63% in 2030. In terms of natural gas, it is thought that both the amount to be produced will increase and the percentage transported between regions will increase from 15% to 26% in 2030 (IEA, 2006)

Coal is one of the fossil resources used in energy production. It is widely used in the world due to its ease of production, consumption and reliability. It is used as a fuel. Today, the global energy demand about 25% is provided from coal sources. However, in terms of global markets, coal is generally the preferred fuel type from a local-regional perspective.

In the energy market, not only reserves, but also these resources to consumers through which roads and pipelines pass through the safety of the routes is also of great importance for consumers (Pamir, 2006). For this reason, both supply-demand and trade routes must be secured together.

Developed countries want to enter these markets where energy resources are more, but consumption is less, and to strengthen their energy security policies by preserving their position in the energy world. For this, using its technologies and financial resource advantages; It forces the developing countries to impose a series of sanctions with thesis such as globalization, new world order, clash of civilizations or with the definitions of new security understanding.

1.1 History Of Global Energy Policies

When the history of the energy policies of the countries is examined, the countries have entered into geopolitical researches and searches, desiring to increase and diversify their energy resources and to manage their existing resources with the most effective and efficient methods as possible. Countries, with the aim of maintaining their dominance in the energy field, in this sense, they tried to establish a mutual balance of power. In addition, economically strong countries establish relations with countries that are dependent on them and are rich in energy as a resource, in line with their political goals, and in line with this benefit, they make their countries dependent on them.(Sevim, 2011)

When we examine the global policies in the processes from the industrial revolution to the present, we see especially the world states where the competition between countries is concluded with wars. For this purpose, states set out with their plans to position themselves as the world leader, and to achieve this goal only energy have decided that they will realize it by owning the resources. This is the main reason for many wars and crises in the last century. The common reason for the First World War, the Second World War, the Korean Crisis, the First Gulf Operation, the Second Gulf Operation is the desire of the states to have effective energy resources in the world.(Sevim, 2011)

Until the 20th century, coal was preferred as an energy source. But after this century, the transition process from coal to oil, which was known as rock oil when it was first discovered, was started. In this period, there were crises and pains among the countries of the world. In the period when oil started to reach its peak as an energy source, the country that obtained and represented the political and economic power of this energy source was England. After England, the USA followed it.(Sevim, 2011)

The twentieth century can be considered as a period completely dominated by petroleum technologies. However, it is clear that around 95% of the world's oil resources have been discovered, the annual oil production amounts of most of the oil producing countries have reached their peak, and when the annual consumption amounts are taken into account, it is clear that the oil century has partially come to an end. (Sevim, 2011)

Lord Fisher, who served as an admiral in the British army in the 1800s, aimed to replace oil with coal and therefore began to develop various strategies. First, by emphasizing the use of oil instead of coal in navy ships, it took a step with this idea, aiming to raise awareness of oil and position it. About 25 years after this development, the British gave a serious impetus to their work in this field and the first oil resource in the Persian Gulf was obtained by the Angolo-Persian oil company. Thus, in 1908, England started to produce oil in Iran. While the British government achieved serious success in this field, the USA continued to be positioned as a country on which the sun never sets for a while and did not start any work in the oil field. The USA, unaware that oil could be used as a strategic tool at that time, tried to maintain its existing conditions.(Sevim, 2011)

Germany, which has become a country of science and technology among the countries of the world, intensified its breakthroughs and investments in industry and technology between 1850 and 1913. Accordingly, Germany's need for energy has gradually increased. Therefore, the German government began to realize the importance and value of oil in this field.(Sevim, 2011)

Based on this purpose, the German government took its first project with the idea of dominating the oil reserves in the Middle East, and developed the Berlin-Baghdad railway project to facilitate and ensure this. In addition, Germany was given a very attractive opportunity and they were given the opportunity to carry out all kinds of mineral exploration works in an extremely large area of the railway. As a result of these developments, the beginning of great rivalries emerged between England and Germany on the way to dominate the Baghdad oil. As a result, this rivalry led the two countries to the First World War between 1914-1918. Thus, the countries of the world through the First World War the idea that energy security must be reconciled with political and economic forces has been globalized. The first world war, the energy power of countries it is the first war for the purpose of seizing.(Sevim, 2011)

Although oil constituted an important part of the formation process of the First World War, the problem of access to coal resources further triggered this war. A significant part of the coal production, which is accepted as the primary energy source in the world, belonged to the British Government. Meanwhile, the demand for coal is in Germany, France, USA.This increase has made these countries more aggressive in

seizing the dominance of the British in this area. In the 1900s, Germany's coal production was higher than that of France, and the difference between these two countries gradually increased, and Germany made a significant difference to France. The reason for this important difference between Germany and France was that Germany controlled the resources in the Alsace-Lorraine region. Thus, the process of oil sharing problem started between these two countries. Just as the reason for the start of the first world war was to gain control over energy resources, the same effect continued at the end of the war. During the First World War, Germany aimed to reach the energy resources in Baku. However, since the region in question was included under British control, Germany could not achieve its goal. Here we analyze that the energy gap between Germany and France the First World War, which started with the aim of gaining dominance, continued with the conflict between Germany and England in the Middle East region.(Sevim, 2011)

In the new business world, transportation regulations, globalization of markets, globalization of production and supply processes, increasing material flow and storage needs, competitive conditions, difficulty in providing cost advantage, increasing use of outsourcing, increasing importance of changing customer expectations, logistics to ensure and secure customer satisfaction. concept has come to the fore, therefore the importance of logistics has increased.

1.2 The Concept Of Logistics And The Historical Devvelopment Of Logistics

The concept of logistics, which is a level-developed expression of the concept of transportation in the past, is to take the product from the point of production, to keep it in warehouses, to stock it, to deliver the product to the desired places and as desired, and to do all these works in the most efficient and fastest way (Çevik and Kaya, 2010).Logistics activity includes transportation, information flow, communication channels and post-transport storage operations between the exporting country and company and the importing country and company (Vallee, 2011).

The history of logistics, which is a military-based concept, goes back thousands of years. As a branch of science, in the early 1900s, strategy started with the distribution of agricultural products in the context of providing time utility and place utility (Douglas , 1998). With the implementation of the Fordist production system in the USA and Europe in the first quarter of the 1900s, the transportation, supply and

delivery of raw materials, semi-processed and processed products began to be of great importance (Tutar , 2009).

Countries' development options depend on the type of export role they take in the global economy and their ability to transform into a high-value industrial environment. For a country to be globally competitive, its industries must be able to produce at a level equal to or higher than its foreign competitors. Quality freight transportation at low costs is one of the main determinants of the economic competitiveness of countries, as it directly affects the efficiency of production chains. Low stock levels, short lead times and low transportation costs, which are indispensable for the profitability and competitiveness of institutions, directly affect the competitiveness of the national logistics sector. For example; Activating inland regions through port connections will reduce supply and distribution network costs and will facilitate firms' access to the market. For this reason, one of the most important elements of national competition is a well-functioning logistics system. (T.R. Ministry of Development, 2019)

In the new business world, the concept of logistics has come to the fore in the fields of transportation regulations, computer technology and communication, and the importance of logistics has increased due to the following reasons (Demir, 2013)

• With the globalization of markets, the increase in storage and material flows between the point of production and the market

• Increasing material flow and storage needs with the globalization of production and supply processes

• It becomes more difficult to gain cost advantage in other processes under difficult competitive conditions.

• The need to provide the right material flow to the right place at the right time to gain competitive advantage

• With the increase in the use of outsourcing, the need for fast and accurate flow of materials, services and information between processes

• Decreased product cycle times due to the increasing importance of changing customer expectations, and the need for faster material, service and information flows

• Increasing material, service and information flow needs due to supply chain components being in different geographical regions.

• New generation services (such as fast shipping, order tracking, returning unsatisfied-returned product from the address) needed to ensure and secure customer satisfaction.

Although there are studies in the literature on the logistics sector and competitiveness, no study aiming to determine the relationship between competitiveness indices and logistics performance index has been found in the literature research. However, some studies aiming to measure the relationship between various development indicators and the logistics performance of countries are as follows:

In the study conducted by Burmaoğlu (2012), the effect of innovation indicators for 2009 on logistics performance in EU countries was analyzed. With the correlation analysis, it has been concluded that human resources and intellectual assets have a positive effect on the logistics performance of the countries. (Burmaoğlu, 2012)

Çekerol and Kurnaz (2011) ,examined the effects of the global crisis on the logistics sector. It has been stated that the logistics performance of companies that reduce their costs, improve their information infrastructure and reduce the need for qualified personnel will increase in and after the crisis. Çekerol, G. Ş. ve Kurnaz, N. (2011).

Founou (2002) , also examined the effect of using information technologies in logistics management on competition. As a result, the use of information technologies in the logistics sector increases efficiency and competitiveness. (Founou, 2002)

In the study conducted by Sandberg and Abrahamsson (2011), The importance of logistics in terms of sustainable competitiveness has been researched, as a result, the effective use of logistics activities and information technologies increases competitiveness and makes it sustainable. (Sandberg and Abrahamsson, 2011)

1.3 Global Outlook Of The Logistics Industry

Although the provisions of the Trade Facilitation Agreement are aimed at the movement of goods, all components of international logistics are at the center of every step to be taken to facilitate trade. Availability of physical logistics infrastructure, logistics legislation, customs clearance, etc. All of these components are also at the center of the regulations to be made to facilitate trade. Improvements aimed at reducing

time loss and costs by increasing transparency and efficiency in international trade also directly cover the global supply chain. A fact to be noticed here is the general acceptance that the Trade Facilitation Agreement is largely composed of regulations to be made by the state, since the regulations regarding the movement of goods are related to the public order and the logistics activities are related to the private sector. However, it is not possible due to the nature of the goods to be exempted from the improvements made by the state for the movement of goods within the scope of the Trade Facilitation Agreement, and the logistics activities, which are a "service" given to the goods in question. States can control the movement of goods by controlling the customs gates, as well as the incentives, regulations, competition conditions regulations, etc. they will bring to the logistics sector. It also manages the logistics sector with vehicles. In this context, the global success of the Trade Facilitation Agreement is largely based on the correct formulation and implementation of the rules that outline the logistics sector, in which the private sector is active, in other words, the logistics assuming a role that supports and enables the free and fast movement of goods. (UTIKAT, 2019)

Especially in the last two centuries, global logistics movements have found new ways for themselves due to the damage caused by human beings to the environment. Departing Vladivostok on August 22, 2018, the 3,600 TEU Venta Maersk sailed 37 days later, on September 6, 2018, to St. Arrived in Petersburg. Russia aims to increase the transports on the Arctic Ocean, which has lost 40% of its glacier mass in the last 30 years due to global warming, to 80 million tons in 2024 . On 20 September 2019, Germany announced the Climate Action Plan 2030. According to the plan, the carbon emissions of companies in the transportation and construction sectors will be priced. (UTIKAT, 2019)

The importance of the logistics sector is also increasing in Turkey, where the growth potential is quite high. In this context, Turkey, like other countries, has started to make more efforts to increase its logistics performance and to climb higher in the Logistics Performance Index. Turkey is in the 12th position in the world in terms of the export data ranking of the transportation sector (WTO, 2013). This situation reveals the strategic importance of the logistics sector in terms of the development of the Turkish economy. Turkey will have a monopoly in terms of countries that can provide logistics services in its immediate vicinity due to its geographical location. However, national

producers and exporters who will benefit from logistics services due to its population and economic power will benefit, the access time and cost of Turkish products to foreign markets will decrease, and export demand will be positively affected (Çevik and Kaya, 2010)

1.4. Development Of Logistics Sector In Turkey

The logistics industry, which has been developing rapidly in recent years, is of great importance both in terms of its growth potential and the fundamental role it will play in Turkey's achievement of many economic goals. The worldwide volume of logistics services, including transportation, warehousing, packaging, customs clearance and access to the final consumer, is increasing. It is seen that the trade activities of countries with developed logistics infrastructure are more effective and efficient. (Ministry of Development, 2013)

Turkey has a high potential and logistics infrastructure with its manpower potential, suitable geographical location and relatively affordable cost structure (YASED, 2012). There are 3 thousand companies operating in the Turkish logistics sector. There are many Turkish logistics companies that are influential in global markets with investments made in the near geographical regions of the USA, Europe and Turkey recently. The share of the sector in GDP is around 15 percent, and its share in public investments is 46 percent. In Turkey, 500 thousand people are employed in the logistics sector, together with the sub-sectors.(Afatoğlu, 2013)

Logistics has become an increasingly important sector in terms of providing competitive advantage in Turkey. Despite the crisis in Europe and the internal conflict and political tension in Syria after the Arab Spring, Turkey has managed to achieve growth figures in the logistics sector. With a fleet of more than 50 thousand vehicles and a business volume of 80 billion liras and the potential to triple this in the near future, logistics, which is among the most important sectors of Turkey, sets stronger targets for the future with land, air, sea and railway modes. (Afatoğlu, 2013)

The most important goal of Turkey regarding the logistics sector is to increase the share of the logistics sector in GNP, as in developed countries, in parallel with the economic growth rate, and to be among the first 15 countries in the Logistics Performance Index. In this context, in the Tenth Five-Year Development Plan, “by

ensuring that Turkey becomes a regional power in logistics; Reducing logistics costs, developing trade and increasing competitiveness" was stated as the main objective (Ministry of Development, 2013)

However, considering the lower costs of transportation, storage, inventory management and customs clearance in logistics; It is aimed to shorten the transit transportation time, to increase the undamaged delivery rate, to increase the level of customer service by emphasizing the factors of reliability and speed. In addition, in the Plan, the provision of cargo and passenger transportation services in an effective, efficient, economical, environmentally friendly and safe manner; In freight transportation, it has been accepted as a principle to increase the shares of railway and seaway by developing combined transportation applications, to increase quality and safety, to switch to corridor approach in transportation planning, to increase the equipment of customs. (Gözüçık, 2013)

The SWOT analysis of Turkey's logistics sector in terms of European relations is as follows.

1.4.1. Swot Analysis Of The Logistics Sector In Turkey

Strengths

- With its geo-strategic importance, Turkey is a center on the way from the developing Middle East and Turkish republics to Europe.
- The presence of multinational logistics companies in the country offers local companies the opportunity to benefit from their technical knowledge and experience.
- Turkey has one of the largest truck fleets in Europe and a developed road transport sector.
- Labor costs are low.

Weaknesses

- Price-oriented competition forces companies that provide high-quality services and negatively affects profit margins, especially in truck transportation.
- Informal activity in the sector leads to unfair competition.

- There is a need for modernization, especially in the railway and seaway infrastructure.
- Qualified personnel are insufficient in companies.
- The preference of rail transport is relatively low.

Opportunities

- International trade is increasing.
- Turkey's possible EU membership will increase the trade volume even more.
- There is a suitable topography for the construction of new ports.
- The size of the sector is significantly small compared to EU countries and the market is not yet saturated.
- The European Caucasus-Asia corridor (TRECECA), one of the most important of the 10 main transportation corridors that the EU has determined within itself, passes directly through Turkey.
- Logistics technologies are developing rapidly.

Threats

- Quotas, visa restrictions and customs document obligations, especially in truck transportation, are high.
- Greece in maritime transport and Bulgaria in land transport pose a threat as important competitors.
- There is a high investment requirement for logistics infrastructure. There is a risk that this investment may not be made on time or that the need for this investment will deter potential investors from entering the market.
- Increases in oil prices.
- Global economic crisis.

Logistics is the most important source of competitiveness of a firm (and therefore the country) in parallel with its comparative advantage in global markets. (Lambert , 1998). Competition at the global level in recent years has forced companies to prepare and deliver their products faster. Today, in an environment where production costs are close to each other, the importance of logistics services and strategies is increasing in terms of being able to compete. It is possible to get ahead in international markets with the adaptations to be made on logistics activities. Therefore, the most important way

to increase and maintain market share and profit in such a competitive environment is effective logistics activities. (Kara, 2009)

Other reasons for the importance of the logistics function in business management can be listed as follows. (Kobu, 1999)

• Increase in transport distances and costs; With globalization, the borders have disappeared and the world has become a market. Although we cannot produce everything, we can reach everything produced thanks to logistics.

•As production technologies reach the saturation point in many areas, managers turn to logistics in order to reduce costs; The purpose of enterprises is to produce goods and services, while doing this, they have to consider efficiency. Obtaining the highest output from the factors of production is their main task.

• Just in time supply, kanban etc. in stock control. widespread use of systems; Making quality production by reducing costs no longer separates one business from another. The important point is that the desired product is produced at the desired time, if necessary, with zero stock.

•The rapid increase in product types with the necessity of meeting the developing and changing consumer demands; People can change their wants and needs differently and quickly due to their psychology. Achieving this speed of change is facilitated by logistics.

•The widespread use of computers and the development of communication systems; Undoubtedly, the development of technology has increased the importance of logistics as well as affecting everything.

•Recycling of used material for environmental protection; The sustainability of natural resources, which is one of the production factors used to produce goods and services, is important and this is provided by reverse logistics activities.

•The proliferation of large international production and sales firms; the world is a market. Logistics is a newly developing field and its importance is increasing day by day. When we look at the historical development of the concept of logistics base, it is seen that it is sea and airport centered in the initial stage. (Kara, 2009)

CHAPTER 2: THE CONCEPT OF ENERGY AND SECURITY OF SUPPLY

Since the world and humanity exist, energy has always occupied an important place as an indispensable element of life. In the history of humanity, energy and energy resources have been used in various ways. In the beginning, the energy obtained from the body power entered our lives. Insufficient physical strength due to the increase in needs over time has directed human beings to energy sources. Energy, which directly affects the development of societies, is indispensable in every period of life, and its existence is needed for the continuation of life. Energy, which is needed in many fields such as industry, heating, transportation and used in different ways, becomes a part of dailylife.

By the 21st century, energy has risen to a position that will be the key point for the necessity of the continuity of life. Countries have become their first priority to meet the increasing energy demand in order to ensure the welfare of their societies, their sustainability, and their military and economic existence. Countries have started to reconstruct their technologies and policies on increasing energy demands.(Bahar, 2016)

Throughout history and in the present day of globalization, states have become dependent on each other due to their efforts to develop their economies. The energy issue, which is one of the first lines of these dependencies, also reveals the importance of energy security. Due to the increasing dependency over time, important problems that may occur in security of supply cause serious problems both economically and socially. Therefore, energy supply security has an important place in general security studies.

2.1 Definition And Importance Of Energy

Energy has been of vital importance since the existence of humanity. Energy, which was initially used for the needs of shelter, heating and feeding, has become the basic element of more needs as human beings develop, produce and discover new things.

Energy is defined as a special product purchased by a consumer, a priority need for

sustaining life, and a strategic product that can be redistributed. Based on these characteristics of energy; It is also possible to define it as a "product" economically, a "strategic product" politically, a "weapon" or "intervention tool" in international politics.(Jacques and Lesourne, 2008)

Energy has kept its place in our lives by increasing its importance as the most fundamental phenomenon in order to sustain life from the history of humanity to the present. All countries are developing projects and policies on how to provide the energy they need in a healthy way. In the 21st century, the most important building block of the social welfare and sustainable development of countries is energy. Due to this position of energy, there is a fierce competition between countries.

The sustainability of the economic growth of the states increases in direct proportion to the energy resources they have. However, the uneven distribution of natural energy resources in the world is not the same for the economic sustainability of every state. For this reason, the basis of cold and hot wars in the world is to have energy resources and to keep energy resources under control.

2.2 Energy Supply Security

There is a direct and strong relationship between the energy security of countries and their national security. For this reason, energy security is one of the most discussed topics in both international and national arenas. (Sevim, 2009)

The concept of energy security is a concept that requires the evaluation of many possibilities together, from possible terrorist attacks on the infrastructure of energy production, transmission and distribution systems, interruptions due to investment deficiencies, obstacles caused by hurricanes to embargoes, strikes to lockouts, civil war to occupation. For this reason, in the evaluations made on issues such as energy policies and security of supply, it is necessary to consider many issues together, from the geographical distribution of energy resources to their costs, from transportation routes to increasing trends in demand, from import dependencies of large consumers to military doctrines developed to procure these resources. (Sevim, 2010) and (Pamir, 2007)

Energy supply; It is the amount of energy produced within the country in order to meet the energy demand. In a world where foreign dependency is a problem for countries,

self-sufficiency of energy production is important. Countries that are poor in terms of natural gas, oil and coal, which are non-renewable energy sources that make up the majority of energy consumption in the world, cannot get rid of their foreign-dependent economies by importing energy. (Gökçe, 2013)

There are generally two different approaches to the concept of energy security. One of these approaches focuses on energy and the other on security. The energy-based definition of energy security includes the concepts of availability, accessibility and acceptability of energy resources. The security-oriented definition of energy security includes the physical protection of facilities in the energy exploration, development, generation, transmission, conversion, distribution, marketing and consumption network against all kinds of attacks (Ediger, 2007). Within the scope of these perspectives, the energy-weighted definition of the concept of energy security can be expressed in different ways. Some of these expressions are below;

- energy security; Providing energy continuously from reliable, clean and various sources in appropriate quantities and at affordable prices and consuming it with high efficiency,

- energy security; access to sufficient energy resources from a consistent price and a stable source, through means of transport that is not actually threatened, and within the framework of fair distribution,

- energy security; rational and efficient use of energy in the world,

- energy security; It can be defined as the continuous availability of energy services that the economy needs (Sevim, 2009)

The best way to ensure energy supply security for energy importing countries is to ensure supply diversity. Ensuring the diversity of energy supply is at the center of energy strategies. There are two main factors in ensuring energy supply security. The first of these is the diversification of the energy sources used and the other is the diversification of the regions where the said energy sources are provided. (Uğurlu, 2009)

In addition to the fact that resources such as coal, oil and natural gas are exhaustible resources, there has been no problem in the reserves of these resources in recent years,

as a result of finding new reserves with advanced technological opportunities, increasing production and energy efficiency and exploration activities due to the increase in prices. The main problem is that these resources are found due to the uneven distribution in the world, the expenditures made during their production and delivery to the consumer are high and supply security is affected by this. (Pamir, 2005)

2.3 World Energy Resources

We need to divide the world's energy resources into two as non-renewable (fossil) and renewable energy resources. Since the Industrial Revolution, the gradual development of heavy industry has led to a concentration on fossil resources. Although fossil energy resources are a non-renewable energy source and are not expected to be in the near future, it is predicted that they will enter a risky situation in the increasing energy demand. The fact that fossil energy sources do not have a homogeneous distribution over the world causes the energy competition in the rising energy demand to turn into an energy war over time.

Countries need to meet the increasing energy demand in order to ensure their sustainable development and social welfare. Since there is a close relationship between energy consumption and development, we can say that energy is one of the basic inputs of economic and social development.(Karluk, 2002)

In order to meet the increasing energy demands of countries, the use of renewable energy sources, which is another energy source as well as fossil energy use, has a very important place. Countries aim to ensure that they take an important place in energy production by obtaining maximum efficiency through their developing technologies.

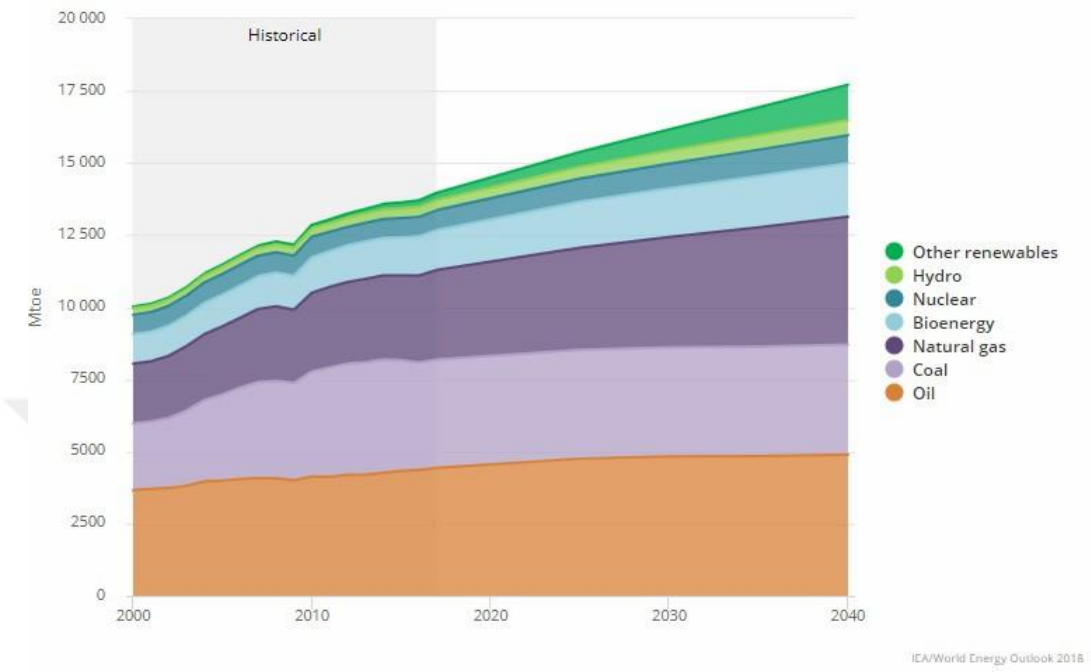
2.4 Fossil Energy Resources

Fossil fuels are fuels formed by the dissolution of living remains such as dead plants and animals by staying in an oxygen-free environment for millions of years. Although the oldest of these is coal, resources such as oil, natural gas, nuclear energy and their main materials such as thorium and uranium are fossil fuels. These resources are non-renewable and exhaustible energy resources in a short time. For this reason, fossil fuels are also called non-renewable energy sources.

After the industrial revolution, the importance of energy resources has emerged with the industrial revolution of the world. The period in which coal had an indispensable position left its place to oil with the rapidly developing technology. Together with the oil crises that the world experienced in 1973-1979, they experienced great difficulties due to their dependence on oil resources. Especially after the oil crises, countries have turned to alternative energy sources, and the most important source affecting that period was the energy produced from Nuclear Resources. Despite all these searches and orientations, it is seen that fossil resources take the biggest share in the primary energy consumption pie in the world. (Satman, 2006). The shares of non-renewable energy resources in the world, which are depleted over time and whose use changes over the years in order to meet the needs, are shown in Table 2.1.

Table 1. World total primary energy demand by energy source, 2000-2040 foresight

(Source: IEA, 2018)



Coal, natural gas, oil are the most consumed fossil resources in the world and cause serious environmental problems such as global warming, acid rain, excessive carbon dioxide emissions and air pollution. The increase in the need for energy due to the economic developments in the world causes the depletion of non-renewable energy resources over time.

According to the studies, it is thought that 25 percent of coal, 65 percent of natural gas and 85 percent of oil will be exhausted by 2030 regarding the reserves of these resources.(Şentürk, 2009).

Fossil resources, which have an important strategic position with their large share of energy, maintain their position as the main source in the great energy war of the 21st century. For the energy war that the world is going through, we should examine fossil energy sources as coal, natural gas and oil sources.

2.4.1 Coal

Generally, plant parts or plant materials accumulate and precipitate in the swamp environment and are buried underground by geological processes. With the industrial revolution that increased underground, it entered human life very quickly and had an important position. Although it has left its position to oil and natural gas, which are other fossil resources, with the increasing technology, it still has an important position in today's energy trend.

According to the studies carried out by the World Energy Council (WEC), there will be no shortage of resources related to coal resources in the world. Considering the coal resources in the world, USA (237 million tons), Russia (157 million tons), China (115 million tons) take the first three places, respectively. Due to greenhouse gas emissions, coal thermal power plants do not appear as long-term investment sources in energy policies. In particular, China is investing in coal power plants to meet the demand for its increasing energy needs. However, coal will have an increasing importance in the coming years with the rapidly developing technology. Coal has created a source to obtain energy in different ways with the developing technology. The aim of the Converting coal to liquid fuel system, developed in line with these studies, is to obtain liquid fuel from coal. Although it has reached a certain capacity, it is not common in the world. The system is widely used in South Africa, meeting about 30% of its gasoline and diesel needs. In addition, it is aimed to gasify the coal underground with

the Underground coal gasification (UCG) system. Especially the USA, India and European countries are making long-term investments by producing projects on this system. Coal resources will increase its position among resources in the coming years if it is provided to participate in energy production with alternative productions with increasing technology.(Durmuşoğlu, 2016)

2.4.2 Natural Gas

The formation of natural gas is similar to oil. Hydrocarbons are formed by the transformation of animal and plant remains underground as a result of many years. Another form of this hydrocarbon is natural gas. It is usually found in coal and oil deposits and is mined with a similar technology.

Natural gas is an energy resource that has gained a significant usage capacity in the last quarter century. It was discovered during oil production, but it was considered a worthless by-product and burned in vain. Natural gas has risen to an important position with the problem experienced in oil production, increasing energy demand and developing technology. It has a rapidly increasing trend with its low damage to the environment and flexibility of use. It has become widespread in the world, especially with the developing countries focusing on the use of natural gas.(Durmuşoğlu, 2016)

It is claimed that natural gas will be the fossil resource that will experience the greatest increase in world energy demand. It is estimated that world energy demand will increase by 1.6% on average until 2030. Natural gas will cover approximately 21%of the total energy increase. (Energy Report, 2013)

Russia takes the first place in the world with its natural gas reserve ratio. Central Asian countries also have large unproduced natural gas reserves. In addition to these reserves, countries such as the USA and Qatar also have very large reserves with their liquefied natural gas (LNG) resources. The USA opened a new dimension in natural gas with its newly discovered "Shale Gas". Although it does not have the expected share in production for now, it is suggested that the USA will be the largest producer with the area it will occupy in the future. In the light of all these developments, it is foreseen that Russia will maintain its leadership with 856 billion m3 in the world in 2035, while the USA will be in the second place with 800 billion m3 and China will be in the third place with 318 billion m3. (UEA, 2012)

2.4.3 Oil

The word petroleum is derived from the Greek-Latin words “petra” meaning stone and “oleum” meaning oil. Oil; gasoline, diesel, fuel oil etc. it is a word used not to describe a specific fuel, but to express crude oil that is found in its natural state and extracted from underground (PMO, 2004).

It is accepted that oil is formed on the animals and plants that collapsed to the bottom of the sea millions of years ago, with the help of bacteria under the appropriate temperature and pressure, in this airless environment, by the accumulation of natural events and by the help of bacteria. (Bayraç, 1999)

When crude oil was first introduced to the commercial market on a large scale in the United States in the 19th century, it began to be measured in barrels because it was stored in wooden barrels. As a result, 1 barrel = 159 liters or 42 US gallons, and 1 ton is considered as 7.33 barrels. (Yücel, 1994)

By refining crude oil; refinery fuel gas, liquefied petroleum gas (LPG), naphtha, normal gasoline, super gasoline, unleaded gasoline, paraffin, solvent, jet fuel, kerosene, diesel, heating oil, fuel oil, asphalt, mineral oil, etc. products are obtained (PIGM, 2000)

The most important and leading fossil energy source in the world energy supply is oil. It is expected that oil will maintain this important position for many years. Fossil resources have a rate of 87.7% among the increasing energy consumption in the world. Petroleum resources occupy the first place among fossil resource consumption, covering 36.8% of the fossil resource consumption rate. (İşcan, 2002)

The world oil industry was controlled by the USA (especially the Rockefeller Monopoly) until World War I. Later, the power of the large oil companies with the vertical integration structure of private companies, also called “Seven Sisters”, increased. II. After the World War II, the weight of big oil companies in the market decreased due to factors such as the change in the balance of power between the Middle Eastern states and the nationalization of Iranian oil resources. (Bayraç, 2005)

In order to protect the interests of oil exporting countries, OPEC was established in 1960 and negotiations began between states, companies and markets between 1969 and 1973. As a result of the rapid growth of the world economy in the 1960s, the

increase in its dependence on oil increased OPEC's bargaining share. (Bayrac, 2005)

The first oil crisis, which emerged with the effect of the Arab-Israeli War in 1973, changed the world oil security structure and state-company-market relations. Accordingly, in order to increase the US oil security; It has started to follow new policies with the idea of reducing oil demand, seeking partners with which it can cooperate, and being active in the oil sector by using military force. (Yergin, 2003)

After 1973, the markets started to come to the fore, oil companies directed their exploration and production activities to non-OPEC fields, and oil importing countries began to give more importance to the use of alternative energy sources. After the shock created by the 1973-1974 oil crisis in industrialized countries, various measures were taken to quickly put into effect the adaptation policies required in a similar crisis period and to reduce the dependence of the economies on oil, and within this framework, the IEA (International Energy Agency) was established. (Bayraç, 1999)

The proven reserves of petroleum, one of the fossil fuel reserves, are around 1.7 trillion barrels, which corresponds to an average of 52 years of consumption. About 37 percent of the remainder of the producible oil reserves is at sea, 60 percent is on land, and the remainder is in the Arctic. The Organization of Petroleum Exporting Countries (OPEC) countries constitute 76.6 percent of the global reserve total. The highest reserve ratio is in South and Central America.(Altıntaş, 2018)

The global distribution of globally proven oil reserves for 2019 is shown in Figure 2.2. When the distribution ratios of oil reserves according to the regions in the figure are examined, it is seen that the Middle East has the highest reserves. Central and South America has the second highest amount of reserves, and North America takes the third place.

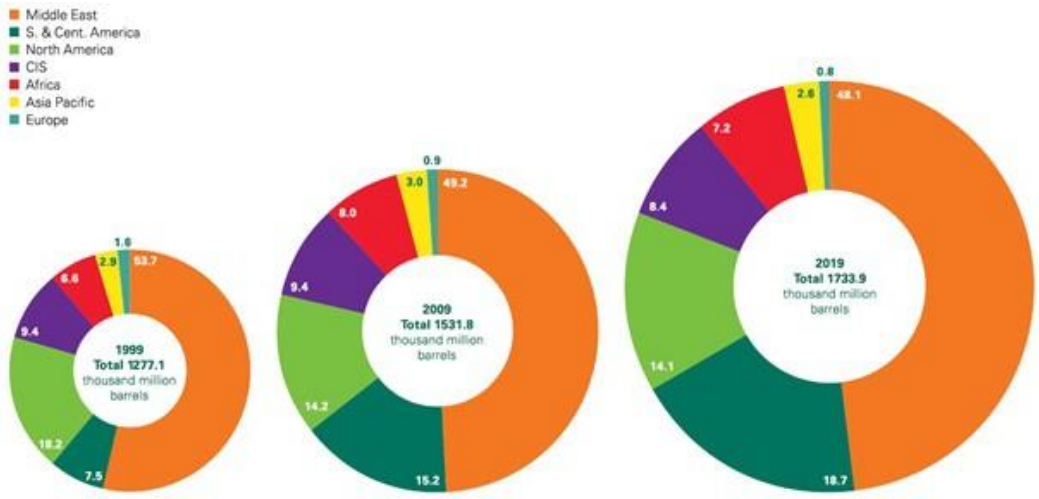


Figure 1. Global Distribution of Proven Oil Reserves (Source: Statistical Review of World Energy ,2020)

According to the "2020 World Energy Report" published by BP, the Middle East is still the region with the most oil reserves with 48.1% in the global distribution of proven oil reserves. in Venezuela (17.5%). Saudi Arabia (17.2%) and Canada (9.8%) follow. (Dünya Enerji Raporu,2020)

2.5 Renewable Energy Sources

The main subject of the energy war in the world has been to meet the increasing energy demand in the most healthy way and to maintain the country's welfare and sustainable development. In particular, being strong in this competition over fossil resources is directly proportional to the efficiency to be achieved in energy equality. The more the dependency on fossil fuels decreases, the more prosperous countries will be in energy diplomacy. For this reason, countries are in great competition to provide energy diversity in order to meet the increasing energy demand while fighting an energy war over fossil resources.

The continuous increase in energy prices in the increasing energy demand due to the political developments in the world, the fact that fossil fuels will run out after a certain period of time and fossil fuel production is expensive, necessitate the determination of alternative energy sources and the use of these sources with high efficiency.(Etemoglu and İşman, 2004)

In this necessity, natural resources such as wind, water and sun that nature offers to people provide important opportunities for people to create alternative energy sources.

2.5.1 Hydraulic Energy

Hydraulic energy is a type of energy based on the power of water. Benefiting from water power started with water mills in the first ages before Christ and maintains its position as an indispensable source of energy to this day.(Ataman, 2007)

Hydraulic energy, which has a great potential, is utilized below its current potential. Nevertheless, the fact that hydraulic energy has a share of approximately 15.9% of world electricity production clearly shows its importance. Although the installation cost is high, hydroelectric power plants are the energy insurance of the countries due to the reasons such as being able to be done with domestic means, obtaining energy from water from a renewable resource, long technical life and low maintenance costs.(Ministry of Energy and Natural Resources, 2012)

2.1.1 Solar Energy

The sun is a mass of hot gases millions of kilometers from the earth. The sun is the main source for the world's life resources and all indirect and direct energy resources. The first studies on electricity generation from solar energy were with the first solar cells made in 1950.

As a result of the search for energy diversity, which increased with the oil crisis in the world, studies on solar energy were emphasized. Solar energy, which has the ability to reach every point of the world, creates a great potential. It is remarkable and an important development for the future that Saudi Arabia aims to meet all of its energy demand with solar energy in the coming years and to allocate all of its current oil resources to export.(Durmuşoğlu, 2016)

2.1.1 Wind Energy

Wind is formed by the heating caused by the sun on the earth and the pressure differences that occur and cause the movements of the air. It has been observed that utilizing wind energy dates back to ancient times in human history. Wind energy was used especially with simple windmills. Windmills, which are widely used in Europe, were especially used in France and England in the 12th century.(Akova, 2008)

The movement of the propellers mounted on towers with a maxim um size of 30 meters or more into electrical energy. This system, which encounters basic problems and counter-arguments such as the inability to store the energy obtained and the loss of birds by windmills on their migration routes, has an increasing trend.(Durmuşoğlu, 2016)

Countries such as China, USA and Germany obtain a significant amount of energy from wind resources. Despite all the opposition, the wind turbines in the Navar region of Spain have increased the capacity to meet one-fourth of the country's electricity under good wind conditions. We can see the investments made by Spain and other developed countries in wind resources as an example of the fact that wind energy will come to a position that will increase gradually in the existing energy competition. (Durmusoglu, 2016)

2.1.2 Geothermal Energy

The word geothermal derives from the Greek words geo (earth) and therme (heat) and means ground heat or earth heat. (Ataman, 2007) Electricity was produced from steam in Larderello, Italy in 1904, for the first time from geothermal sources. (Uğurlu, 2006) However, the electrical energy obtained from geothermal resources in the world is around 1%. Since the sources are not suitable for electrical energy, geothermal energy will remain as an energy type that is not included in the energy competition and is mostly used for tourism purposes.(Durmuşoğlu, 2016)

2.1.3 Nuclear Energy

Energy is the leading condition of economic activities in all developed and developing countries. The importance of energy will increase day by day in the coming years. As an alternative to depleting fossil resources, new energy sources should be emphasized and the increasing energy needs should be supplied from other sources. Nuclear energy is one of the alternative energy sources in meeting the increasing energy need in our country, which is deprived of fossil energy resources. Nuclear energy is an energy that occupies the public a lot these days.

The word nuclear is an adjective form of the English nuclear noun. Nuclear refers to the meaning of nuclear, related to the nucleus (Collins-Metro, 1995). Therefore, nuclear energy can also be expressed as atomic energy, nuclear energy, similarly. The

term was first heard in the world during World War II. The beginning of the studies on the bombs dropped on the cities of Hiroshima, Japan on August 6, 1945, and Nagasaki on August 9, 1945 dates back to the beginning of the 20th century. Rutherford, Hans, Strasman, Oppenheimer and Einstein were the first scientists to work on this energy source. (Karabulut, 1999)

The first work on nuclear energy in the world started with the establishment of the Obninsk Nuclear Power Plant, which was established for commercial purposes in the Soviet Union in 1954. Especially with the oil crises in the 1970s, countries turned to nuclear energy. Rapidly increasing nuclear energy, Three Mile Island in the USA, Chernobyl in Russia and the latest Fukushima Daiichi nuclear power plant accidents, the countries of the world have turned to new nuclear energy programs in uneasiness.(Durmuşoğlu, 2016)

With the effect of this trend, electricity generation from nuclear energy, which was 13.5% in 2011, decreased to 11% in 2012. Nevertheless, the fact that Germany obtains 67% of the country's electricity production from nuclear energy and that countries such as the USA, France and Russia obtain large energy production from nuclear energy show its important position in energy production. Russia's St. At the Ministerial Conference held in St. Petersburg on 19 June 2013, Yukiya Amano, Director General of the International Atomic Energy Agency (IAEA), put forward the idea that "nuclear energy will have an important and increasing contribution to sustainable development in the coming years". It draws attention as an important point of view regarding the future of nuclear energy and its position in the energy war.(Durmuşoğlu, 2016)

CHAPTER 3: THE FUNDAMENTAL PRINCIPLES OF THE EUROPEAN UNION'S ENERGY POLICY AND THE CONTRIBUTIONS OF TURKISH LOGISTICS

The Community, which was established by the union of the Federal Republic of Germany, the Netherlands, Italy, France, Luxembourg and Belgium, laid the foundation of the first common energy policies with the European Coal and Steel Community (ECSC) established in 1951 in the field of coal and steel. Six years later, with the signing of the Treaties establishing the European Atomic Energy Community (EAEC) and the European Economic Community (EEC) in 1958, the energy policy, which took its first shape in the 1950s, developed gradually, influenced by the global developments, the expansion and deepening dynamics of the Community.

3.1.1. EU Energy Policy Between 1950-1970

The energy policy of the European Union started with the European Coal and Steel Community (ECSC), which was established with the Paris Agreement in 1951, which also forms the basis of the Union. At that time, coal met two-thirds of the totalenergy demand, while the share of oil was only 10%. Later, with the Treaty of Rome signed in 1957, the European Atomic Energy Community (EAET) was established. The aim of the EAEC was to increase cooperation in the development of nuclear power and to enable high research in this field. Both Treaties basically aimed to create free and fully integrated markets in these sectors. Oil, natural gas and electricity were given the responsibility of the European Economic Community (EEC), which was established in the same year. Since then, energy policy has evolved in parallel with economic integration. (Yorkan, 2009)

The Group, which was successful in the coal sector in the first years, lost this success day by day after 1958. Confidence of the member states of the ECSC, which could not develop the necessary and sufficient solution in a timely manner in the face of the problem of coal production in excess of the demand, was shaken. The reasons for the failures in the coal system are the Community countries' violation of the rules that must be followed or their failure to comply with the rules regularly and their attempts to produce unilateral solutions to the problems. In addition, competition in the energy sector has also been effective due to the increase in the use of new energy resources such as oil and the cheapness of sea transportation. The resulting competitive

environment encouraged the Union countries to implement different options. For example, while Italy was planning to import American coal under favorable conditions, it also carried out studies to obtain oil from the Middle East. (Keskin,2007)

In the 1960s, it was noticed that there were deficiencies in the field of energy and some efforts were made in this direction. To this end, the Commission made attempts to create a common energy policy during this period and issued a number of directives for the member states to comply with it, and some protocols were signed by them. In the 1970s, the energy policy of the Union was exposed to external shocks with the oil crisis. (Yorkan ,2009)

Efforts to develop a common energy policy within the Union have generally been negotiated in treaties for the development of the EEC. Although efforts to develop a common energy policy are being discussed on supranational grounds, member states have refrained from transferring their sovereignty to any higher institution regarding energy policy. (Martin and El-Agraa, 2007)

3.1.2. EU Energy Policy Between 1970-1986

Before the first Oil Crisis in 1973, the countries that formed the Union were inefficient in energy consumption and were excessively dependent on imports. With the oil crisis in October 1973, the Union realized the necessity of developing a strategy to prevent the fluctuation of energy supply due to external shocks. The crisis in the 70s forced the EU to invest in energy substitution and savings in order to reduce foreign dependency, and to invest in selected export sectors for the production of the goods imported by these countries in order to improve their foreign trade balance with oil exporting countries (Keskin, 2007). This situation, which was seen together with the oil crisis, caused structural changes in the EU and investment shifted towards certain directions.

The oil crisis also had significant positive effects. With the crisis, the use of renewable energy (solar, geothermal, wind, etc.) in electricity production has been tried by various countries. In addition, primary energy resources are not endless, one day these resources will run out; Therefore, it has been realized that resources should be used efficiently. (Aydin, 2007)

The developments after the oil crisis paved the way for the EU to understand the importance of establishing a common energy policy and to add this policy to the EU

agenda. (Aydın, 2004) As a matter of fact, the European Council adopted the “New Energy Policy Strategy” in 1974. (Yorkan, 2009) Structural changes planned to be made until 1986 were determined in the adopted strategy. The first of these strategies was determined as energy diversification by substituting oil in the long term in order to reduce excessive dependence on oil, and the necessity of using coal as the primary substitute for oil was stated. In line with this purpose, the EU has primarily sought to use its own coal reserves more effectively. In order to increase oil and natural gas exploration and extraction activities in the North Sea, companies within the Union were supported and it was aimed that the Union would have its own oil and gas resources. (Keskin, 2007)

In the 1980s, the Commission focused on establishing and liberalizing the "Single Market" in the energy sector. In this context, it has been understood that the existing markets that are fragmented between countries need to be integrated and the internal energy market has become the focus of increasing competition. In these dates, the issue of the environment has also started to be important. It has been understood that the existing energy system, from energy production to consumption, harms the environment, and how the system can be improved to protect the environment has been discussed.

The year 1986 was an important turning point in the energy policy adventure of the EU. On September 16, 1986, with the Council decision, the policies to be implemented until 1995 were determined and the targets to be reached in 1995 were determined. Accordingly, it has been reported that the aim of the new energy policy is to deliver sufficient and reliable energy supply to consumers in reasonable economic conditions. It has been emphasized that short-term fluctuations may occur in the energy markets and that the EU energy policy should be more resistant to these fluctuations. In order to increase the energy supply security of the Union and not be affected by short-term fluctuations, its own energy resources should be developed within reasonable economic conditions; It has been stated that geographical diversification (source country diversification) should increase in energy supplied from abroad and that the types of energy used should also be diversified. It was emphasized that a single price policy should be applied in all energy types and the pricing policy determined by the Council should be implemented. The idea of unifying the internal energy market was stated and it was explained that environmental factors should not be ignored in the

development of energy policies (Eur-Lex, 1986). Accordingly, the objectives of the new energy strategy are; energy supply security, protection of the environment and the creation of the internal energy market. (Sharp, 2007; Martin and El-Agraa, 2007).

3.1.3. EU Energy Policy Between 1986-1995

With the disintegration of the Soviet Union in the early 90s, the EU took some steps regarding energy security. In this period, the Energy Charter Treaty was put forward and measures were developed to increase security of supply, increase efficiency in the production-transport-distribution and use of energy, and protect the environment. During the same period, TACIS (Technical Assistance to the Commonwealth of Independent States, 1993);TRACERA (Europe-Caucasus-Asia Transport Corridor, 1995); It has tried to ensure the security of energy resources by implementing many programs such as INOGATE (1995) and SEERF (Southeast European Energy Regulatory Forum) (Yorkan, 2009)

Although the policies of combining environment and energy markets in the early 90s seemed to be important policies before, they became more important in the energy policies of the EU and became the subjects discussed at the Union level. Although the aims that the EU wanted to achieve in the energy policy between 1986-1995 were determined in the document published by the Commission in 1986, with the Gulf War and the developments in the domestic energy market at that time, the energy policies and the aims to be achieved in this direction should be revised. has been necessary. Accordingly, the Commission published the Green Book and the White Book in 1995 and 1996, respectively. (Lyons, 1998)

In the Green Book published under the name of "For a European Union Energy Policy" at the beginning of 1995, it was emphasized that the new energy policies cover all the citizens of the Union. Future projections have been made in the said document; It has been stated that there may be an increase in electricity demand in the coming years, the current rate of energy dependency of the Union is 50%, and this rate may climb to 70% in 2020. In the plan, a distinction was made between long and short term energy supply security and it was emphasized that energy investments could only be reasonable in the long run. Emphasizing the importance of coal once again, it has been evaluated that coal is still the most important instrument in controlling free market

prices. In addition, the importance of making maximum use of internal resources and the contribution of international cooperation and coordination to energy policy were mentioned. (European Commission, 1995)

In the White Paper titled “An Energy Policy for the European Union” published in December 1995, the general issues mentioned in the Green Paper were repeated. Bringing a coherent view of the environmental dimension of energy; It is aimed to create a consistent perspective in relations outside the union. It was stated in the document dated 23 November 1995 that the energy policy decisions determined should be followed throughout the Union and that cooperation and coordination should be ensured during the implementation phase.(European Commission, 1995)

3.2 Today’s Energy Policy Of The European Union

In the 21st century, the Commission published the Green Paper with the name “Towards a European Strategy for the Security of Energy Supply” on 29 November 2000. In this book, it is stated that the increase in oil prices in the world has increased the energy dependence of the EU; It has been stated that oil is an important indicator in determining prices in energy markets, and therefore, price increases are experienced in other types of energy. (European Commission, 2000)

The Green Paper states that the EU's long-term energy policy: While the long-term strategy of the European Union considers environmental concerns and adopts sustainable development, on the other hand, energy at a price level that is reasonable for all consumers for the uninterrupted supply of energy products on the market for the well-being of citizens and the smooth functioning of the economy. should be aimed at ensuring security of supply; explained as. (European Commission, 2000)

In the Green Paper, some policies have been developed in order to reach the long-term energy policy of the Union stated above. (European Commission, 2000). These policies are expressed below (European Commission, 2000):

• It has been stated that the member states are dependent on each other to stand up to climate change and form the internal energy market, and the necessity of establishing an integrated energy policy has been declared.

• The necessity of changing consumer behavior by using tools such as taxes has been expressed. In this way, it is predicted that reducing the use of fossil fuels will also have

a positive impact on the environment. It was emphasized that deterrent sanctions should be applied to consumers who use energy types that harm the environment, such as taxation or fees.

• The necessity of combating global warming as one of the priorities of the Union focused on. It has been stated that advances in the use of new or renewable energy types will be one of the important tools that can be used in this regard.

6 years after this document, an energy strategy for Europe was formulated in the Green Paper named "A European Strategy for Sustainable, Competitive and Secure Energy" published on March 8, 2006. Problems experienced according to this strategy (European Commission, 2006):

• In order to meet the energy demand expected to increase in the future, an urgent investment of around 10 trillion euros is required in the energy sector,

• The energy import dependency of the Union is increasing, and almost all of the imports are made from only 3 countries (Russia, Norway, Algeria),

• Global energy demand has also increased, and energy prices have risen in parallel,

• Climate change continues to increase,

• It has been determined that the Union has not yet been able to create a fully competitive internal energy market 100%.

In the Green Paper, it is stated that all economic regions of the world are obliged to ensure their energy security, to keep economic conditions in balance and to fight against climate change. The importance of accessing energy in the daily lives of Europeans was emphasized. It was emphasized that Europe has common responsibilities in order to meet these obligations. It has been determined that there are some common policy tools to act with a common responsibility. Demand management in energy, development of renewable energy sources and development of low carbon technologies are some of these tools.(EuropeanCommission, 2006)

It was emphasized in the document in question that urgent action should be taken. It is necessary to develop innovations and innovations in the energy sector; It has been stated that it is necessary to ensure diversity in energy supply, both in the source country, energy type and in the transit regions. It has been stated that the achievement

of these goals will also contribute to economic growth, the opening of new business areas, security and environmental issues.(European Commission, 2006)

In this direction, the Gr een Book suggested that studies should be carried out in 6 basic areas. These areas are; competitiveness and internal energy market, energy diversification, solidarity, sustainable development, innovation and technology, and finally foreign policy. (European Commission, 2006)

The European Commission lastly revised the Union's energy policy in the document numbered COM (2010) 639 titled "A Strategy for Competitive, Sustainable and Secure Energy" on 10 November 2010 (European Commission, 2010). In this document, it is stated that the new energy strategy focuses on 5 key priorities.

The first of these priorities is to ensure efficiency in energy. In order to achieve this priority, policies such as increasing the energy storage and accumulation potential of the Union, establishing industrial competition by providing industrial efficiency, and designing national energy efficiency plans have been determined.(European Commission, 2010)

The second priority was identified as building an integrated European energy market. For this, the necessity of measures such as the timely and precise implementation of the internal energy market legislation, the design of the European energy infrastructure for the years 2020-2030, the modernization of the procedures and market rules for the development of the infrastructure, and the development of an accurate financial framework have been explained. (European Commission, 2010)

Thirdly, providing reliable and economical energy for citizens and business circles has been identified as another priority. It has been stated that this aim can be achieved by making energy policy more consumer-friendly and by continuing its developments on energy safety and security.(European Commission, 2010)

The fourth priority is to disseminate Europe's leadership in technology and innovation. It was stated that technological plans should be put into practice without wasting time and that a long-term technological competition should be secured.(European Commission, 2010)

The fifth target set in document 639 is to strengthen the external dimension of the EU energy market. In order to achieve this aim, policies such as ensuring the integration

cooperation with key partners, supporting nuclear safety, energy security and simulating energy standards have been adopted.(European Commission, 2010)

3.3 Fundamental Principles Of The EU's Energy Policy And Logistics Connection

In line with the individual objectives that form the basis of the EU's energy policy, providing cheaper energy, providing high quality and uninterrupted service are the main targets of the EU energy policy.

Establishing a competitive, transparent and fully integrated internal market in the electricity and natural gas sectors of the EU energy policy; It is based on three basic principles: protecting the environment, combating global climate change, and finally ensuring energy supply security. In addition to these, we can count on increasing energy savings and efficiency, investing in clean energy technologies and developing a common energy foreign policy. (Yorkan ,2009)

Energy is actively used in many sectors. One of them is the logistics sector. The logistics sector, which has developed visibly globally today, is one of the vital points of economic development. Logistics refers to a process. In this process, the flow of goods, services, energy, information and other resources is organized and kept under control. This sector is extremely important for many production and sales sectors. The delivery of raw materials to the manufacturing companies and the delivery of these products to the customers by passing through certain stages are carried out through logistics activities. (Sezer and Abasiz, 2017).

3.3.1. Completion of the Internal Energy Market

The ultimate goal of the EU's economic integration process is to create an Internal Market where companies from all member states can compete on equal terms. To achieve this goal, the existence of a common competition policy is essential. The Competition Policy basically aims to create an effective and fair competition environment, the smooth functioning of the European market and the consumers to benefit from the free market. In this way, it is aimed to increase efficiency, reach more diverse and high-quality products at lower prices, and increase technological innovations. (İktisadi Kalkınma Vakfı, 2019).

The first domestic energy market started with the coal market established by the ECSC

agreement. Since then, there has been no restriction on coal trade between member states. This is also the first example of a competitive approach in the energy market. There does not appear to be a problem in the coal and oil sectors in the full establishment of the internal energy market at the Union level. The main problem is experienced in the electricity and natural gas sectors. Since the 1980s, the EU has aimed to establish an internal energy market in both these sectors. In order to establish a fully integrated, transparent, efficient and competitive common market in these sectors, importance was given to liberalization in both sectors, strengthening existing supply interconnections and adding new ones, and developing an effective demand and crisis management. (Yorkan, 2009)

Liberalization in the electricity and natural gas sectors first started with the 1996 Electricity and 1998 Natural Gas Directives, which came into force by the Commission in the 1990s. These Directives focused on the criteria for unbundling activities such as generation, transport and distribution in vertically integrated monopoly markets, access to networks and opening markets to competition. With the Directives published for the second time after 2000, these aims were renewed and the full treatment of competition was emphasized by emphasizing the missing issues. With these Directives, it was requested that the electricity and gas sectors of all members should be fully opened to competition by 2007. Despite the fact that almost all of the two sectors have opened up to competition, problems still persist. Especially in the electricity sector, we can count the problems such as the dominant market shares of the existing generation companies, the inability to achieve harmony in the determination of fee tariffs, and the fact that the criteria related to the regulation are not fully met in all member states. With liberalization, consumers can decide for themselves from whom they will get their electricity, get better service and buy electricity at lower prices. Likewise, this applies to natural gas. (Yorkan, 2009)

The interconnection of natural gas and electricity networks is of utmost importance in establishing and effectively functioning a fully integrated energy single market in the electricity and natural gas sectors. For this, the EU has tried to integrate energy markets

from the very beginning. However, since the structure of the energy sectors of the member states is different, this has not been fully achieved yet. To serve this purpose, the EU has developed a project called TEN-E (Trans European Energy Networks). Within the framework of TEN-E, it is not only possible to unite the electricity and natural gas sectors of the member states, but also to integrate the electricity sectors of the South East European countries, North African countries and Russia, as well as the natural gas sectors of the Caspian Region, Central Asia and Middle East countries, which are also in the same states, into their own sector. It wants to achieve broader goals in integration by trying to integrate it. (Yorkan, 2009)

Although the EU has achieved some success within the scope of the TEN-E project, it has not yet reached the desired target. For this, investments continue and studies are carried out rapidly. The region that the Union has given priority recently is the South East Europe region. The Union has established an Energy Community Treaty here to establish an integrated regional electricity and gas market and to integrate these markets into its internal energy market. With this Treaty, the EU lays the groundwork for not only the interconnection of South East European countries with its own energy single market, but also for the integration of the Middle East and Caspian Region with its own domestic market. (Yorkan, 2009)

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An effective crisis and demand management is vital for the effective functioning of the energy market. What is necessary in crisis management is to have stock keeping systems for emergencies in case of a possible power cut. The oil and natural gas stockholding systems developed by the EU protect the Union against a supply problem. With a decision taken by the Commission in 2002, the oil stock holding

period of the member states was determined to be equivalent to 120 days of consumption. In addition, it is obligatory to establish a stock keeping institution in each member state. Currently, the EU's average oil stock holding period is 114 days. The average storage times of both oil and gas seem to be quite close to the target figures set by the Commission. For this reason, it is not possible for the market to take too much risk in a possible crisis. It should also be noted that this stock-keeping period differs for each member state, in some countries the figures may be above the average, while in others it may fall below. However, the Commission has provided a facility that member states can use each other's warehouses. Therefore, in a possible emergency, the requesting country will be able to use the warehouse of another member state. This shows that a common policy has developed in crisis management. When we look at demand management, the EU is making serious investments to increase energy efficiency and savings. Dependence on external resources will decrease as the demand for energy efficiency and savings will decrease. This will help both the energy market to function more effectively and the security of supply under control.(Yorkan, 2009)

Priority has been given to 6 titles in order to gain competitive advantage in the logistics sector. These; (Ministry of Development, 2013):

• Establishing strategy and institutional structuring in logistics

• Improvement of logistics infrastructure in cities

• Ensuring efficiency in customs procedures

• Completion of major transportation infrastructure investments

• Increasing the competitiveness of companies operating in the sector (R&D, innovation, mergers)

• It can be listed as supporting domestic logistics structuring with foreign structuring.

3.3.2 Connection of Turkey's Highway Fleet with Renewable Energy Resources

Energy is a factor in the production process and is a prerequisite for economic growth. Development processes in all countries generally depend on the energy sector and the global energy demand is increasing day by day. Energy production and energy consumption play an important role in the development process as they affect both

aggregate supply and aggregate demand. (Apergis and Payne, 2009)

Energy is actively used in many sectors. One of them is the logistics sector. The logistics sector, which has developed visibly globally today, is one of the vital points of economic development. Logistics refers to a process. In this process, the flow of goods, services, energy, information and other resources is organized and kept under control. This sector is extremely important for many production and sales sectors. The delivery of raw materials to the manufacturing companies and the delivery of these products to the customers by passing through certain stages are carried out through logistics activities. (Sezer and Abasiz, 2017).

Logistics is a broad-framed activity. This sector, which is usually mentioned with transportation activities, has started to be applied with other activities today. Therefore, there are many service activities in the logistics sector. Some of these core services include shipping, customs clearance, warehousing, handling, insurance, packaging, stocks and inventory management, customer relationship management, and customer-specific services (El-Berishy , 2013).

The most important process in the logistics sector is the transportation activity. Transportation activities are the determinants of the logistics sector and these two activities are in constant interaction (Saidi ,2020). The highest share in transportation activities belongs to highways (Park, 2020). Therefore, the most used energy type in logistics activities belongs to primary energy sources, and fossil energy among these sources (IEA, 2019).

The increasing prevalence of logistics activities also causes an increase in energy consumption. Therefore, the transition to renewable energy sources for this sector will also prevent resource consumption. There is energy consumption in the transportation sector in Turkey. It is observed this sector and this consumption level is increasing gradually. Since fossil fuels are in the state of non-renewable energy, this may cause great problems in the future in terms of energy amount. Therefore, it is of great importance to carry out the necessary studies to increase the production and consumption of renewable energy sources rather than non-renewable energy.

3.3.3 Importance of Logistics Sector in Turkey's Geopolitical Power Analysis and EU Connection

Turkey, which gives the message "Turkey will be a logistics base", is a transit country between Europe, Central Asia and the Middle East; strengthens its infrastructure with new sea, land, rail, air and pipeline transportation projects. At the same time, investments for intermodal transportation are accelerated with the support of TCDD and the privatization of ports (Yıldıztekin, 2018).

According to the Strategic Plan of the General Directorate of Highways (2017-2021); In passenger and freight transportation, 89.2% of passenger transportation and 89.8% of freight transportation are carried out by road as of 2015. Within the framework of the Tenth Development Plan for the Period of 2014-2018, taking into account the corridor approach on the north-south line, continuing the construction of corridors that will improve trade with neighboring countries, providing ease of access to new markets, giving importance to projects that will connect the EU's transportation networks, and Turkey with the "Transformation from Transport to Logistics Programme". Strengthening the international position of Turkey in logistics, reducing the logistics cost burden in the total cost of industrial products, shortening the transportation time of final products to consumption markets were determined as the objectives of the program. Within the framework of the 2023 vision, the construction of highways is to continue 8000 km2 by making a model of public-private cooperation. In addition, it is aimed to establish smart transportation systems for smart vehicles. (Ulaştırma ve Altyapı Bakanlığı, 2021).

The policies within the scope of the Tenth Development Plan (2014 - 2018) “Transformation Program from Transport to Logistics” (Wolff and Yıldız, 2018) are as follows: - Road and railway connections of main ports and completion of highway investments in corridors connecting to border gates, - Heavy traffic in the road network Divided road and BSK investments are made in areas with heavy vehicle traffic.

The policies mentioned above are for the formation of the "Logistics Highway Network", taking into account the ports, border gates and international corridors. It is aimed to use logistics centers effectively. The construction of bridges and tunnels has been accelerated. Yavuz Sultan Selim Bridge and Eurasia Tunnel have been completed in the Marmara Region. The construction of the project, which includes the Çanakkale

Bosphorus Bridge and the railway on it, has begun.(Ulaştırma ve Altyapı Bakanlığı, 2021).

According to the General Directorate of State Railways; When all of the logistics centers that will turn Turkey into the logistics base of the region are put into service, the Turkish Logistics sector will gain 34 million tons of additional transportation and a 10 million m2 open area, stock area, container stock and handling area.

Logistics Centers opened for operation:

- Samsun (Gelemen)
- İstanbul (Halkalı)
- Eskişehir (Hasanbey)
- Denizli (Kaklık)
- İzmit (Köseköy)
- Uşak
- Balıkesir(Gökköy)
- Kahramanmaraş (Türkoğlu)
- Erzurum (Palandöken) finished, not opened yet

Other under construction: Istanbul (Yeşilbayır), Şırnak (Habur), Kayseri (Boğazköprü), Sivas, Bitlis (Tatvan), Mardin, Karaman. (Devlet Demiryolları, 2020) Our country has a great potential in terms of sea routes. 8333 km. The fact that we are among the countries with the most coasts among European countries with our long coasts reveals its strategic importance.

Air transport sector in Turkey is developing rapidly compared to other modes of transport. In our country, there are 55 airports open to scheduled flights under the supervision of the Ministry of Transport, Maritime Affairs and Communications, General Directorate of State Airports Authority. In addition to these, there are also military airports. According to the data of the General Directorate of Civil Aviation; As of the end of 2017, THY has a large fleet with 304 aircraft. Among the other 12 airline passenger and cargo companies with the highest number of aircraft, Pegasus 66 is Güneş Ekspres Aviation A.Ş. 52, Onur Air 24, MNG Airlines 7, Atlas Jet 24, Hürkuş 7, ULS Airlines Cargo 3 aircraft (Sivil Havacılık Genel Müdürlüğü, 2020)

3.3.3 European Union Energy Supply Security

Turkey can play a role as an important logistics transit point to reduce the European Union's dependence on Russia, which threatens its energy security. For example, it can store the natural gas it receives from different suppliers and transmit it to Europe in line with their demands.

Thanks to the geography it is in, Turkey is at the crossroads of the Asian, European and African continents, and is a country of geopolitical strategic importance. In particular, it is an important bridge between the Middle East geography and energy-supplying regions such as Russia, which hosts a large part of the world's energy resources, and the EU, which is highly dependent on foreign energy. It is expected that Turkey, taking advantage of this advantageous position, acts pragmatically and cooperates with the countries in the region, to follow policies aimed at providing energy transfer through its territory. Naturally, in an environment where energy competition heats up, some opportunities and threats arise for Turkey. Especially after the recent energy discoveries in the Eastern Mediterranean, the region has become much more important. Therefore, it is considered that the Eastern Mediterranean and Cyprus will continue to be important elements of Turkish foreign policy for a long time.(Erdem and Yenilmez, 2020)

After the natural gas cuts it suffered through Ukraine in 2006 and 2009, the EU started to look for ways to overcome possible crises in the future. Considering the regions with oil and natural gas resources that can meet the EU's energy needs and the need to create alternative energy transmission routes; Turkey, which is seen as a politically and economically stable actor, stands out as an important bridge country thanks to its geographical location. As a matter of fact, the signing of the Turkish Stream project as an alternative to the South Stream project by Russia and the TANAP agreement with Azerbaijan in the near future reinforces Turkey's prominence. Therefore, Turkey, located at the center of Europe, Russia, the Caspian Basin, the Middle East and the Eastern Mediterranean, is considered to be a candidate to become an important energy distribution center in the region.(Erdem and Yenilmez, 2020)

Energy supply security is one of the main themes of both global capital movements and national and international policies. The EU, which was the world's third largest energy consumer after the USA and China in 2008, is also one of the most important actors in the international energy market, as an important oil and natural gas importer.

With the effect of the enlargement process, the EU's dependence on imports in the field of energy is increasing day by day. Dependence on imports in energy brings along the problem of energy supply security.(Oner, 2017)

The EU, which currently meets half of its total energy demand from abroad, will become foreign-dependent by around 70% in 2030. The fact that energy consumption is increasing day by day and domestic production is unable to respond to this consumption threatens the energy supply security of the EU. The rapid increase in the demand for external resources and the uninterrupted delivery of these resources to its own energy market forces the Union to take measures for supply security. (Yorkan, 2009)

Ensuring sufficient and safe energy supply, which is a prerequisite for the EU to achieve its social and economic goals, is the most basic objective of the EU Energy Policy. The need to develop effective countermeasures against the crises, which were frequently experienced in the world energy markets after 1973 and negatively affected the economies of EU member countries, especially due to oil, has been the most important driving force behind the creation of the EU Energy Policy. (Kesbiç and Şimşek, 2001)

At the Community level, the problem of security of supply in energy first came to the fore with the oil crisis in the 1970s. Then, at the beginning of the 1990s, the disintegration of the Soviet Empire, the Gulf Wars and the events of September 11 were serious factors affecting the supply security of the Union as well as affecting global energy security. But beyond that, the 2006 Russia-Ukraine Crisis showed how serious the problem of energy supply security of the Union is. As it will be remembered, the crisis affected not only Ukraine but also many European countries. Even for a short time, there were cuts of 30% in the natural gas of many member states risky for itself and began to seek alternative suppliers and transit countries. Again, the second Ukraine-Russia crisis at the beginning of 2009 prompted the EU to produce urgent solutions for security of supply. (Yorkan, 2009)

The EU's energy supply security problem has increased with the Central and Eastern European Enlargement process in 2004. The main reason for this increase is the high dependency of the new states joining the Union in energy. In addition, with the decrease in natural gas and oil reserves in the North Sea and the decrease in coal production, the EU's dependence on energy imports is increasing; therefore, the energy

security risk is on the rise in a parallel course. (İşcan, 2007)

The enlargement policy of the Union has also been an important factor affecting the security of supply. The recent enlargement of the Union has increased its dependence on foreign sources, especially on a single source, Russia. After the number of members increased to 27, dependence on Russia for natural gas increased by 7% – while the EU-15 was 19% dependent on Russia, the EU-27 became dependent on 26%. While this figure will remain at 34% for the EU-15 in 2010, it is estimated to be 46% for the EU-27. Another factor that increases foreign dependency is undoubtedly the increase in demand for natural gas. The reasons such as containing less CO2 emissions compared to other fossil fuels, being more preferred in electricity generation and easy use were effective in this increase in demand. (Yorkan, 2009)

Apart from these, the increasing pressures of developing economies such as China, India and Latin American countries on global demand, especially due to internal factors such as increasing energy prices, the Union's fragmented domestic energy market, the adherence to national energy policies of member countries and the inability to develop a common foreign energy policy. External factors such as the ongoing political instability in productive regions such as the Middle East, the latest developments in the Caucasus, the energy policy of Russia with a high market share, terrorist attacks against infrastructure, and global warming have also become threatening the supply security of the Union. (Yorkan, 2009)

The EU attaches great importance to its bilateral relations with Russia regarding energy supply security. Although there has not been a decrease in the amount of natural gas imported from Russia in recent years, the Russia-Ukraine crisis in 2006 created a doubt in the EU about whether Russia is a reliable source country. It is stated by European official authorities that Russia uses its reserves as a political weapon or as an element of blackmail. (Baghdat, 2006) The EU has sought measures against this attitude of Russia; ; as well as trying to turn to different sources.

Constructing multiple pipeline projects for the transportation of oil and natural gas; In this way, it tries to provide route diversity. The EU wants to unify its energy markets, thus trying to create a safer energy infrastructure.

European official authorities that Russia uses its reserves as a political weapon or as an element of blackmail. (Baghdat, 2006) The EU has sought measures against this attitude of Russia; ; as well as trying to turn to different sources.

The Union, which wants to guarantee the energy supply security, contributes to the development of the dialogue with the source and transit countries by developing bilateral and multiple programs in order to solve the problems experienced. Constructing multiple pipeline projects for the transportation of oil and natural gas; In this way, it tries to provide route diversity. The EU wants to unify its energy markets, thus trying to create a safer energy infrastructure. It develops some projects in order to ensure stability in producer countries, and makes various investments to improve the energy infrastructure of member states and producer countries. (Yorkan, 2009)

Due to the rising energy demand in the world, it attaches great importance to relations with producing countries in order to prevent the current imported energy from going to other regions and to find new sources. 20% of annual natural gas consumption is stored to be used in any emergency. The International Energy Agency (IEA) has an opinion on the storage of petroleum (İşcan, 2007). In addition, the rate of renewable energy consumption in final energy consumption is tried to be increased, thus, energy security is tried to be increased by reducing energy imports by replacing external energy with renewable energy.

3.3.4 Factors for Environmental Protection

Although the economic objectives were influential in the emergence of the European Union, the European Union, which has grown over the years and whose number of members has increased, wanted to create multi-faceted common policies in order to increase its power worldwide and to ensure harmony within the Union. One of these common policies is environmental policies.

There are some reasons that lead the European Union to create a common environmental policy; The increasing pressure on the environment in Europe, the serious decrease in natural resources, the increase in destructions such as floods, droughts, forest fires, the continuous increase in carbon dioxide emissions from urban living areas and transportation vehicles, the decrease in living standards especially in

urban settlements due to pollution and noise every year. Problems such as the production of billions of tons of waste and an average increase of 10% per year have made it obligatory to determine environmental policies throughout the Union (Ulukent, 2010).

EU environmental policy has been shaped by some objectives: Eliminating, reducing and preventing pollution, directing development with environmental relations, preventing the use of natural resources in a way that would harm the ecological balance, and seeking solutions to environmental problems in an international framework (Bayram, 2011; Altıkat and Torun , 2011).

The Union has tried to take measures and implement policies over the years in order for individuals to live in a better environment and to leave a better environment for future generations. Measures and policies are analyzed in two parts as the period of the Second World War-1970 and the period after 1970.

The environmental policy of the European Union started to take shape after the 1970s, various action programs were created within the framework of the policies determined by adopting various principles, and a conscious environmental policy was tried to be formed in the light of these programs. (Cokgezen, 2007)

The environmental policies of the European Economic Community between 1957 and 1972 are defined as a series of trivial measures. The European Economic Community's focus on the common market and economic growth targets as a priority is expressed as the biggest reason for the absence of any clear statement on the environment in the 1958 Rome Treaty. (Burchell and Lightfoot, 2001)

The United Nations Conference on the Human Environment, held in Stockholm in 1972, which was another important conference on the environment in these years, is considered a major turning point in the development of the European Union's environmental policy. After the conference, the European Environmental Policy began by pointing out the concerns of society and science about the "Limits to Growth" published by the "Club of Rome" in 1973. (Scheuer, 2005)

Along with all these developments, at the summit held in Paris in 1972, environmental policies were discussed at the level of governments for the first time within the European Community. In this context, the first step of the preparation of the

environmental action plan has been taken in order to determine the community environmental policy. At this summit, the aim of the community environmental policy was determined as improving the quality of the living environment and living conditions.

The concept of "green", which managed to enter the transportation sector in the late 1980s, created awareness about the environmental problems created by transportation systems. In the early 1990s, researches started to be carried out on minimizing the damage to the environment by using environmentally friendly technologies in logistics applications. The transportation sector is an important contributor to environmental degradation. Around 24% of total greenhouse gas emissions worldwide are due to logistics activities. The word green became a slogan in the transportation industry in the late 1980s and early 1990s.

The concept of green is a new concept that deals with goods produced and distributed in a sustainable way, which is integrated with logistics and takes into account the environmental and social factors called "green logistics", and aims to measure the environmental effects of different distribution strategies, reduce energy use in logistics activities, reduce waste and manage its operation. an application area.

With the Single European Act, which was signed in 1986 and entered into force in 1987, radical changes were made in the Treaty of Rome, which officially started the European Union single market and European Political Cooperation. With these radical changes, a new process related to environmental policy has started.

Environmental title:

• Conservation of the environment, protection and upgrading the environmental policy,

• Working for the protection of people's health,

• It aims to ensure the careful and rational use of natural resources. The environmental activities of the Group within this scope:

• Taking action as a preventative,

• Taking measures by giving priority to the source of the damage to the environment,
• It was founded on the principles of “Polluter Pays” (SEA, 1986)

With the Maastricht Treaty, which was signed in 1992 and entered into force in 1993, the European Community was renamed the European Union, adding new dimensions to the European Communities and a new legal structure was organized.

Another important issue that should be stated in the Maastricht Treaty regarding the environment is that the principle of sustainability in environmental policies came to the fore for the first time. In this context, in the 2nd article, which includes the basic principles of the Union, it is the d uty of the community to "balance economic development activities, sustainable, non-inflationary and environmentally friendly growth, a high degree of integrity of economic performances, a high level of employment and social protection, and raising the standard and quality of life". (TEU, 1992)

In the Amsterdam Agreement, which was signed by the European Union member states in 1997 and entered into force in 1999, important issues were emphasized, although no major changes were made on the environmental policies that had been determined before.

At the summit held in 2000, where the Nice Agreement was signed, the rules on the environment were made more specific; In a decision taken on the management of water resources, the principle of "qualified majority" has been adopted instead of "unanimity", which is the basis in the decision-making system of the Union, on issues that will directly or indirectly affect the asset levels of water resources.(Çamur and Aydın, 2017)

Another agreement that shapes the environmental policies of the European Union is the Lisbon Agreement, which was signed in 2007 and entered into force in 2009. With this agreement, the scope of the steps to be taken by the EU regarding the environment has been expanded and focused on the fact that the Union should not only take measures but also finance the environmental studies. (Mud and Aydin, 2017)

These aims of the EU have been adopted within the framework of the legal legislation and these aims have been emphasized in the basic agreements signed between the member states such as the Single European Act, the Maastricht Agreement, the

Amsterdam Agreement, and the Lisbon Agreement. In addition, in order to realize these goals in a planned manner, Environmental Action Plans, the seventh of which are currently in effect, have been created.

Environmental Action Programs, the first steps of which were taken at the summit held in Paris in 1972, are studies that are generally accepted as Council declarations, which are not legally binding, but which reveal politically specific intentions. The programs aim to combat pollution and integrate environmental issues into all activities (Durmaz, 2004). The Community has published a total of 7 Environmental Action Programs to date.

The first four environmental action plans were made for four-year periods. In the first four-year action plans, the target titles were 'prevention of pollution', in the fifth environmental action plan, it was "sustainable development and responsibility sharing", and in the sixth environmental action plan, "Environment 2010 is our Future Choice". (Cokgezen, 2007)

The Seventh Environmental Action Program (2013-2020) outlines its priority targets for 2020 and provides a long-term view of key issues for 2050. It was also founded on the understanding that the economic success and prosperity of Europeans depends on the health status of their natural capital. (Bruyninckx, 2014)

CHAPTER 4: TURKEY'S ENERGY POLICY AND THE IMPORTANCE OF THE LOGISTICS SECTOR IN TURKEY

4.1. Historical Process Of Turkish Energy Policy

Energy, which is an important element of the social and economic development of countries, is also an element of great importance for Turkey. It is seen that Turkey has some advantages at this point. The most important of these advantages is that it now has the ability to search and operate its own natural resources. Another very important advantage is that it is a complementary ring, especially in natural gas and oil, which are the most important energy sources. In this context, it is seen that it is an important country in terms of geo-political and geo-strategic aspects due to its proximity to large production and consumption areas in terms of the same natural resources. It is an important requirement for Turkey to carry out an active energy policy and complete infrastructure works (Ministry of Energy and Natural Resources, 2017) in order to fully benefit from the opportunities offered by this important position.

As a matter of fact, when we look at the aims of Turkey's energy policies, it is seen that the main pillars of Turkey's energy policy are "resource diversity", "environmental sensitivity" and "competitive structure"; In addition to these points, it is understood that it is an absolute necessity to carry out initiatives to implement "measures to prevent risks arising from energy imports" in cooperation. (Kaya, 2012)

Shortly after the War of Independence was won, a meeting known as the Izmir Economy Congress was held in Izmir in 1923 in order to understand the nature of the economic problems faced by the country and to seek solutions for them. Although detailed studies were carried out on various issues at this meeting, the energy issue was not discussed in a way that would constitute a policy. In 1923, when the Congress was convened, the prevailing view on energy in our country is to meet the energy need with domestic resources, especially coal, except for compulsory situations.(Demir, 1980)

As a result of the great desire for the industrialization of the country, the First Five-Year Industrial Plan was prepared and successfully implemented in the early 1930s, but the Second Five-Year Industrial Plan, which followed and completed it to a certain extent, started in 1939. It could not be completed due to the indirect effects of World

War II.

In the aforementioned Industrial Plans, it has been tried to determine the entire energy demand of the country, especially the issue of providing the energy needs of the factories foreseen to be established, and to determine in detail from which sources this demand, which is considered to be increasing gradually, can be met. Despite the fact that a perfect energy model or policy was not prepared in this period, due to very poor information about the potential of the country's resources, it is understood that the issue was still handled with a very realistic approach.(Demir, 1980)

During the First Plan period, seven types of fuel were used in Turkey, four of which were commercial (coal, lignite, petroleum products and hydraulic energy) and three were non-commercial (wood, manure and agricultural residues). When the First Plan is examined, the subjects of following the justified price policies in the energy sector, expanding the use of coke and coal gas in the cities, and making use of hydraulic resources are emphasized. During this period, electricity production increased by an average of 11.6 percent per year over the past ten years (DPT, 1963).

In the Second Plan period, it was based on reducing the amount of non-commercial fuels such as wood and dung and closing the gap by increasing the amount of commercial fuel consumption on the other hand (DPT, 1968). The solution proposed in the plan: It has been mentioned that the type of energy that will close this gap is coal when new ones are added to the known hard coal and lignite resources. In addition, when domestic natural gas and new oil fields can be produced, it is foreseen that this energy deficit will be met with crude oil and natural gas (DPT, 1973).

As a result of these efforts, which started in the 1950s and gained momentum, the first dam power plants were established in our country, and a rapid development began in energy production and consumption. Despite the adoption of a more liberal policy in the country's economy at the beginning of the 1950s, the state did not fail to protect the energy issue. However, as a result of the fact that an idea was not adopted due to political reasons in our country, which was trying to develop and develop in this period, it is seen that many problems that may increase in weight in the future began to sprout in the economic field. In particular, as a result of the rapid and uncontrolled transition to oil in energy use, changes that are not beneficial for the country showed themselves in the transportation system, besides, the consumption of petroleum products was encouraged in other parts of the economy, in housing and similar social

structures and facilities. However, after a temporary and partial recession in the early 1960s, investments in the field of energy continued rapidly.(Demir, 1980)

By 1973, the fact that there was an excess supply in the world markets caused the oil prices to remain low, in this regard, oil purchases did not have a large share in Turkey's imports, so no measures were taken, as a result, the country's socio-economic dependence on Petroleum was constantly increased.(Iron, 1980)

By 1980, 79.7 percent of the population became able to benefit from electricity. In the 1980s, a decrease was observed in hard coal production. An increase was observed in lignite production by TKİ in the following years. With the amendment in the Petroleum Law in 1983, oil exploration was encouraged, but the exploration efforts of some holdings in Turkey were unsuccessful due to cost. In general, oil exploration activities of domestic and foreign companies have been revived in these years. A total of 94 oil fields were discovered in Turkey and 46 of them were found after 1980. 13 of the 21 discovered natural gas fields were discovered after 1980.(Altıntaş,2018)

The 1990s passed primarily with privatization and infrastructure works aimed at meeting the requirements for the private sector's participation in energy investment. As a result of slow growth in energy production and rapid increase in demand, there has been an increase in Turkey's energy imports. The country's electrical energy demand has also increased rapidly. In addition, although the demand cannot be fully met during these periods, almost all of the country's population benefits from electricity. (Altintas, 2018)

By the 2000s, Turkey is now making significant contributions to worldwide projects that unite the west and the east; It has started to be accepted as a strong regional actor with the effective policies it has created in this regard. Thus, Turkey has become a country in a critical position that can take initiatives to contribute not only to its own national energy security, but also to the energy security of the region. For this, it is understood from the current and ongoing projects that Turkey maintains its energy diplomacy intensively and effectively.

Pipeline projects constitute the logistics infrastructure pillar of Turkey's energy policy.

Transit pipelines and projects carried out by Turkey for cooperation at the regional level and put on the agenda can be listed as follows (T.C. Enerji ve Tabii Kaynaklar Bakanlığı, 2018)

• Iraq-Turkey Crude Oil Pipeline

• Baku-Tiflis-Ceyhan Main Export Crude Oil Pipeline

• Trans-Anatolian Natural Gas Pipeline Project (TANAP)

• TurkStream Gas Pipeline Project • Russia – Turkey Natural Gas Pipeline (West Line)

• Blue Stream Gas Pipeline
• Eastern Anatolia Natural Gas Main Transmission Line (Iran – Turkey)
• Baku-Tiflis-Erzurum Natural Gas Pipeline

Turkey-Greece Natural Gas Interconnection

On energy, the main motivation source in Turkey's regional and international cooperation on energy, and in Turkey's regional and international cooperation, is not only the uninterrupted supply of energy, but also its quality. In addition, it is thought that this will enable the establishment of electricity supply security. On the other hand, in these collaborations, it is seen that Turkey aims to increase alternatives to energy resources and transportation opportunities, and it is expected to play a leading role in this regard. At this point, the social responsibility dimension of the issue should not be ignored. It is also of great importance to work to ensure that people living in geographies that do not have and/or cannot use natural resources have this opportunity. Based on all these, it can be said that Turkey's basic view of international projects in terms of energy policies is shaped on three principles. The first of these is the mutual win/win principle. The second is to contribute to the energy supply security of Turkey and the region. Finally, it is the support of projects that will support the peace process to be carried out at the regional level. It is stated that in practice, depending on all these principles, Turkey's energy policies are carried out in three different dimensions as bilateral relations, multilateral relations and relations with the EU (Ministry of Energy and Natural Resources, 2017)On energy, the main motivation source in Turkey's regional and international cooperation on energy, and in Turkey's regional and international cooperation, is not only the uninterrupted supply of energy, but also its quality. In addition, it is thought that this will enable the establishment of electricity supply security. On the other hand, in these collaborations, it is seen that Turkey aims to increase alternatives to energy resources and transportation opportunities, and it is expected to play a leading role in this regard. At this point, the social responsibility dimension of the issue should not be ignored. It is also of great importance to work to

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4.2 Today's Energy Policy Of Turkey

Energy, which is an important element of the social and economic development of countries, is also an element of great importance for Turkey. It is seen that Turkey has some advantages at this point. The most important of these advantages is that it now has the ability to search and operate its own natural resources. Another very important advantage is that it is a complementary ring, especially in natural gas and oil, which are the most important energy sources. In this context, it is seen that it is an important country in terms of geo-political and geo-strategic aspects due to its proximity to large production and consumption areas in terms of the same natural resources. It is an important requirement for Turkey to carry out an active energy policy and complete infrastructure works in order to fully benefit from the opportunities offered by this important position. (Ministry of Energy and Natural Resources, 2017)

Looking at Turkey's goals for energy policies, it is seen that the main pillars of Turkey's energy policy are "resource diversity", "environmental sensitivity" and "competitive structure"; In addition to these points, it is understood that it is an absolute necessity to carry out initiatives to implement. "measures to prevent risks arising from energy imports" in cooperation (Kaya, 2012)

It cannot be considered independent of external factors that determine Turkey's energy policies. As a matter of fact, these factors are "global and regional geo-political and geo-strategic developments"; "developments in energy and natural resource markets", "new technologies", "new energy sources", "changing environmental sensitivities", "changing direction of trade", "global and local macroeconomic developments",

changing preferences and values in production and consumption approaches. (Ministry of Energy and Natural Resources, 2017)

Turkey's ability to evaluate its current potential in the best way and to develop this potential in the most effective way through new investments depends on establishing cooperation at the regional and international level by taking these factors into account.

Due to its geopolitical position, our country has an important role in energy. In addition to being a major hydroelectric producer, our country is a transit country between the regions with fossil energy resources such as the Middle East, the Black Sea and the Caucasus, and the EU. Our country, which is advancing resolutely in line with the goal of full membership to the EU, aims at full harmonization with the EU in terms of energy. In this direction, it has made the necessary legal arrangements in many fields related to energy and has started its applications. The main priorities that are taken into consideration while creating Turkey's energy targets/policy are listed below:

- Accessibility of energy to consumers in terms of cost, time and quantity,

- Mobilizing public and private sector opportunities within free market practices,

- Reducing foreign dependency,

- Increasing the regional and global efficiency of our country in the field of energy,

- Ensuring the diversity of sources, routes and technologies,

- Ensuring maximum use of renewable resources,

- Increasing energy efficiency,

- Minimizing the negative effects on the environment in the production and use of energy and natural resources.(İncekara, 2019)

Turkey's energy policy by the Ministry of Energy and Natural Resources (MENR); It has been determined as "to meet the country's energy needs in a timely, sufficient, reliable, economic conditions and taking into account the environmental effects, in a way that will realize the intended economic growth, support and direct the social development moves". (Yılmaz and Bozkuş, 2018)

The "win/win" principle, which is accepted as an important principle in the development of energy policies, is an issue that Turkey also adopts and pays attention to develop policies by taking into account supply and demand security in this regard. Studies carried out to establish close relations with countries with high energy production and consumption and to provide a multi-faceted benefit are among the principles that shape Turkey's energy policy. Policies and strategies based on initiatives aiming to contribute to not only national but also regional supply stability, aim for Turkey to be accepted as an "energy corridor and terminal". To this end, collaborations are established for both the realization of pipeline projects and the establishment of facilities based on natural resources in question. (Ministry of Energy and Natural Resources, 2017)

4.3 Logistics Industry In Turkey

In 2023, when the 500 billion dollar export target is spoken, logistics is one of the most important sectors to reach this target. Logistics is one of the most important sectors in Turkey. With Turkey's own logistics potential; Considering the potential of the region where it is in the center, namely the Black Sea Region and Central Asia, and when the historical Silk Road, which is on the way of revival in line with the changing commercial dynamics between the West and the East, is added to the logistics market potential, the magnitude of this potential is clearly seen (Bayramoğlu, 2014).

The importance of the logistics sector, which has a very high growth potential, is increasing in Turkey. Logistics, one of the service sectors, is the second sector that has the highest potential after tourism in Turkey. Because, according to 2012 data, the transportation sector in Turkey ranks second in the list of commercial services exportswith a share of 31.4 percent and an export amount of 13.2 billion dollars, after thetourism sector (Bayramoğlu, 2013).

First of all, Turkey will have a monopoly in terms of countries that can provide logistics services in its immediate vicinity due to its geographical location. However, national producers and exporters who will benefit from logistics services due to its population and economic power will benefit, the access time and cost of Turkish products to foreign markets will decrease, and export demand will be positively affected (Çevik and Kaya, 2010). Considering that exports are the acceleration of economic growth, this situation will increase Turkey's economic growth rate.

4.4 Renewable Energy And Investents In Turkey

Among the renewable energy sources, wind can be a very attractive generation source. With the Renewable Energy Law enacted by the Ministry of Energy in December 2010, manufacturers can produce electricity with wind turbines up to 1MW capacity in the field of wind energy without obtaining a license, and even sell the excess energy they do not use to the grid. With this law, Turkey aims to save energy, reduce our dependence on foreign countries and make a positive contribution to the environment. (Powerenerji, 2021)

Turkey's leading private sector energy generation company, Enerjisa Üretim, whose portfolio consists of 56% domestic and renewable resources, continues its investments in renewable energy. In this context, it signed the turbine supply and maintenance contract with Nordex for the 65 MW Erciyes Wind Power Plant project investment, for which it gained capacity in 2017. 12 Nordex N163 turbines, which will have Turkey's largest rotor diameter, will be used in the Erciyes WPP project, whose construction process has started in Yahyalı District of Kayseri and will have a total installed power of 65 MWe. Turbines also have the feature of being a "Cold Climate Version" considering the cold climate conditions in line with the goal of high availability.(Rüzgarenerjisi, 2021)

4.5 Renewable Energy Policies And Turkey

Renewable energy is energy derived from natural processes that can be renewed at a higher rate than they are consumed. Wind, solar, geothermal, hydroelectric, bioenergy and ocean energy are renewable energy sources. The role of renewable energy sources continues to increase in the electricity, heating-cooling and transportation sectors. There are many policy instruments supporting the use of renewable energy. Support policies aim to encourage the achievement of a set of goals. Some of these goals include improving technology cost competitiveness; creating employment, promoting a sustainable level of domestic production and increasing market share, and ensuring a more sustainable and secure energy system.

Renewable energy can be expressed as energy sources that can be provided without the need for a certain production time in the world, are non-fossil origin, have less or even no negative effects on the environment compared to traditional energy sources, are continuous and ready for use (Urgun, 2015). According to the definition of the International Energy Agency, renewable energy; It is the energy obtained from natural sources such as the sun and wind, which can renew itself quickly after consumption and does not run out as it is used. Resources such as solar, wind, biomass, hydropower, geothermal, wave, biofuel and hydrogen energy can be given as examples of renewable energy sources.

4.6 Renewable Energy Policies In Turkey

Energy, as one of the basic elements in terms of economic, social and environmental development, is a very important factor that should be considered in the growth and development strategies of countries. Despite the increase in energy demand in the world, limited energy resources have led countries to focus more on their energy policies. Today, national energy policies that will support economic growth and sustainable development are implemented in many countries, and by determining long-term goals in this area, states try their best to achieve these goals (Zamfir , 2016). Due to the increase in population, the high rate of energy demand increase in countries, the concerns about energy supply security in the face of this increase, and the intense discussions on the issue of climate change have increased the interest in renewable energy sources in our country as well as in the world (MENR, 2014)

The existence of resources to meet the energy needs of a country for its development and their diversity are very important. Countries and governments, which are aware of the negativities of being highly dependent on foreign sources in every field such as energy, are turning to domestic and renewable energy sources, the source of which is also in nature, in order to find a radical solution to the energy problem that awaits the world. Securing an uninterrupted, low-cost and globally sustainable energy supply is at the focal point of national energy policies all over the world (GRF, 2013). In this sense, government energy policies based on the use and distribution of energy resources determine the future of humanity in a sense.

Turkey has a rich potential and diversity in terms of renewable resources that can be used for clean energy (Demir and Emeksiz, 2016). In addition, its geographical

location makes it possible to use these resources effectively. In order for the resources in this field to be used efficiently, national policies are determined in our country, targets related to renewable energy are determined, and the government implements legal regulations and incentives in the field of renewable energy in order to achieve these targets. While Turkey aims to meet at least 30 percent of its total electrical energy demand and 10 percent of the transportation sector needs from renewable energy until 2023, at the same time, the energy intensity, that is, the amount of energy consumed per unit of GDP, in 2023 is at least 20 percent compared to the 2011 reference year. aims to reduce it. (Powerenerji, 2014).

4.7 Renewable Energy Policies And Logistics Connection

Increasing global energy consumption brings with it important problems. The decrease in traditional energy resources such as oil, coal, natural gas reveals the necessity of using these resources more efficiently around the world. However, fossil fuel consumption also causes many environmental problems such as air pollution and greenhouse gas emissions. One of the most important ways to deal with these problems is to develop the supply of renewable and clean energy sources. Renewable energy sources are of great importance in terms of being sustainable as well as being available all over the world. Today, various renewable energy sources are used as an alternative to traditional sources in order to protect environmental resources and improve the quality of life.

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With the increase in the number of countries providing innovation, increasing competition and policy support, there has been a great technological development and sharp cost reduction in the field of renewable energy. As a result, the installation rate of renewable energy has surpassed all other energy sources, including fossil fuels, in recent years (Dünya Enerji Raporu, 2020)

The energy supply chain is one of the most important factors that will be effective in the development of the renewable energy industry (Saavedra et al., 2018, pp. 248-249). The energy supply chain is a chain that extends from the members who provide the input to be used for energy production, to the users, similar to the traditional supply chain. At the beginning of the energy supply chain, there are primary sources, and in the next stages, there are the generation companies that transform the source into energy, the distribution companies that deliver the energy to the consumer, and finally the consumers of energy (Afşar and Büyükkeklik, 2016).

The main tasks in the renewable energy supply chain cover the storage, distribution and efficiency of energy. The renewable energy supply process includes physical, informational and financial flows; It tries to raise awareness about green production processes, green logistics and green products so that industries can increase their supply chain performance (Saavedra , 2018).

4.7.1 Policies In The Heating And Cooling Industry

The heating sector has the highest electricity consumption in terms of end users. 50% of the total final energy consumption in 2015 is from heating and 70% of this amount is provided from fossil.

4.7.2 Policies In The Electricity Industry

fuels. It is important to make a determined policy and take measures to activate this sector, which has been ignored until now.

Policies vary according to the heating demand and infrastructures of the countries. Incentives in the heating sector are classified in four main categories: (Dünya Enerji Raporu, 2020)

1. District heating and cooling,

2. Industrial heating and hot water,

3. Clean cooking,

4. Competing with natural gas use

4.7.3 Policies In The Transport Industry

The transportation sector has the second highest energy consumption in terms of end users. 29% of the total final energy consumption in 2015 is from transportation, and 96% of this amount is provided from petrochemicals. In addition, 64.7% of the total oil consumption in 2015 is from transportation.

With the exception of biofuels, there is little practice in developing renewable resources in transport. Until now, the vast majority of policies have been biofuel-based and have recently turned to developing electric vehicles. Simultaneous and integrated changes are needed in 3 areas for the development of renewable energy in transport;

1. Ensuring renewable energy sources and transportation,

2. Dissemination of vehicles using renewable fuels,

3. Development of fuel distribution infrastructures

In addition, fossil fuel subsidies, especially in maritime and aviation, need to be removed to increase the use of renewable fuels.

Although only 1/5 of the total final energy consumption in 2015 was realized in the electricity sector, renewable energy support policies mostly focused on this area. The use of renewable energy in the electricity sector is increasing. Between 2009 and 2014, electricity consumption from renewable sources increased by an average of 6.4% annually. This figure is more than the increase in electricity demand. In 2015, 23.5% of the total electricity production is from renewable sources. These resources are mainly listed as hydroelectric, wind, bioenergy and solar PV. The decrease in technology costs and the increase in support mechanisms are the main reasons for this increase.

4.7.4 System Integration Policies

Policies are being developed for the integration of variable renewable energies into the system in many countries and regions. The unique characteristics of variable

renewable energies create difficulties for the electricity system with the increase in intensity. As the share of variable renewable energies increases, policies need to adapt. As the transport, heating and cooling, and electricity sectors become increasingly integrated, it is important for decision makers to design appropriate policies. In this era of low renewable energy costs, appropriate integration strategies are required to transform renewable energy into cheap electricity for consumers.

4.7.5 Policies For Energy Access

Distributed renewable energy solutions will play an important role in ensuring modern energy access by 2030 (Sustainable Development Goal 7). Appropriate policies need to be developed to increase the use of variable renewable energies resources. National energy access plans must include both onshore and offshore solutions to be successful in a timely manner. Mini-grid applications are widely used in developing countries to achieve the electrification goal. This method should be supported by mechanisms such as connection to the main grid, purchase guarantee, incentives and tax exemption so that the electricity produced can be sold. Ensuring quality, supporting access to finance and capacity building are equally important. The use of conventional fuels for heating and cooking should be reduced. Energy access plans, clean cooking and the transition to modern fuels should be prioritized.

4.8 Renewable Energy Resources And Turkey's Vision And The EU

At a time when EU member countries started to focus on efforts to increase the share of renewable energy sources in their energy consumption, Turkey, as a country that aimed to become a national policy towards EU membership, gives increasing importance to renewable energy sources. (T.C.DışişleriBakanlığı, 2020)

In line with the National Energy Policy adopted in 2017, increasing the use of domestic and renewable energy resources is among the main priorities. Turkey has risen to 5th place in Europe and 12th in the world in terms of installed power in renewable energy. As of January 2022, 54% of the installed power in Turkey consists of renewable resources. (T.C.DışişleriBakanlığı, 2020)

In the National Program, it is also stated that increasing the use of renewable energy in the energy supply balance constitutes an important part of the energy policy and that the use of renewable energy should be supported in order to reduce the dependence on

energy imports and ensure supply security. (T.C.DışişleriBakanlığı, 2020)

Turkey's hydropower, geothermal, solar, wind, energy potential is 216 billion KWh, 31500 MWt, 500 Mtoe/year, 400 billion Kwh, respectively. In other words, it is located in one of the lucky regions of the world in terms of renewable energy sources. In Turkey, hydro-energy is still one of the most widely used renewable energy sources, with a share of 41% in total electricity generation. (T.C.DışişleriBakanlığı, 2020)

Energy is one of the most important strategic issues for our developing country, as it is all over the world. It is no longer possible to illuminate the whole of Turkey with certain energy sources. This rapidly increasing energy demand increases Turkey's dependence on energy imports, especially oil and natural gas. For energy independence, we have to switch to renewable energy. (Erkesin, 2014)

Our country, which has great advantages in terms of its geographical location, also has inexhaustible resource potentials such as hydroelectric energy, geothermal energy, solar energy, wind energy, which are various primary energy sources. Renewable energy sources have become one of the priority issues of both the country's energy policy and the energy sector. The results of the investments started to be made in hydroelectric power plants, wind power plants and geothermal power plants have started to be seen. Of the 245 billion kilowatt-hours electricity consumed in Turkey last year, 29 percent (73 billion kilowatt-hours) was produced by renewable energy sources. (Erkesin, 2014)

We see that especially energy projects supported by government policies increase the investments of this sector in the field of material production. While the production of water turbines, wind turbines and solar panels belonging to renewable energy sources gained importance, the "need to transport the produced materials" brought together the ways of the energy and logistics sectors. (Erkesin, 2014)

With the increase in renewable energy investments, companies in our sector started to open units in the field of "energy logistics", which requires a special area of expertise. Each major project in the energy sector created an important business potential in the field of logistics. Factors such as choosing an ideal mode of transportation, undamaged and timely delivery of equipment to the project site, and correct planning are of great importance in the energy sector, which has to provide the energy needed by the society and economy in a sufficient, quality, continuous, low-cost and safe manner. Aware of

this importance and aiming to create a sustainable working system with a sector whose capacity is increasing, our logistics companies have taken steps to specialize in project transportation for the transportation of non-standard heavy and bulky loads such as complete facility transportation, power plants and investment materials. (Erkesin, 2014)

The fact that projects such as HEPPs in Turkey are located in mountainous regions makes transportation to these regions very difficult. With the special project transportation teams formed within the companies, the field researches carried out before the materials are transported to the construction site, the transportation of the materials to the construction site from the most suitable port and route, by the most appropriate vehicle, are carried out successfully. (Erkesin, 2014)

Most of our companies in the logistics sector have come a long way in this regard and have started to have a say in the loading of energy projects not only in Turkey but also in other countries. The Caucasus, Middle East and North Africa are among the markets where Turkish companies are strong in energy logistics. (Erkesin, 2014)

Another important issue for Turkey in the energy sector is natural gas and crude oil pipeline projects. Turkey is at an important crossroads between eastern countries where primary energy sources exist and western countries where they are consumed. Pipeline projects to be realized in the field of natural gas and oil in Turkey will create significant opportunities for the logistics industry. (Erkesin, 2014)

Considering all these developments, the energy field creates an important investment potential for the logistics industry. While companies are making rapid progress in 'energy logistics' and 'project transportation', regulation of heavy and out-of-gauge transportation regulations, and the development of appropriate vehicle technologies for the safe transportation of heavy loads are among the issues that await solutions. (Erkesin, 2014)

While Turkey continues to grow rapidly thanks to its location and economic stability, investments made in the field of energy will gradually increase the project transportation capacity within the logistics sector. Turkey, which is on the way to become a logistics base with its geographical advantages in its region; It will continue to take part in logistics services around the world by using all modes of transportation, including sea, land, air and rail.

4.8.1 What can be done ?

These regulations made in Turkey, which is located in a region rich in renewable energy resources, will increase the production of environmentally friendly and inexpensive energy. More use of renewable energy resources should be encouraged in order to increase domestic production, diversify energy resources, reduce foreign dependency and cause less damage to the environment. investments should be supported. In order to meet the rapid increase in energy demand, it will also be beneficial to direct public and private sector investments to this field in order to benefit from renewable energy sources in the most efficient and rational way.(Ofluoğlu and Valadbigi, 2021)

However, it is seen that the high cost of investment, production and consumption in this regard is the biggest obstacle to the use of renewable energy sources more. For example, coal will continue to be an important source of energy, especially given its abundance in developing countries (India, China, Indonesia, etc.), unless there is a high penalty to be paid for carbon dioxide emissions when burned. On the other hand, natural gas will play an important role in the energy planning of many developing and densely populated countries in the coming years. Despite all these developments, although renewable energy resources have not been utilized at the desired level so far, it is pleasing that more steps are taken in this direction with international cooperation in order to overcome the severe environmental problems we are experiencing on a global scale. (T.C.DışişleriBakanlığı, 2020)

CHAPTER 5: TURKEY'S COMPLIANCE WITH EU ENERGY POLICY AND ITS EFFECTS ON TURKISH LOGISTICS INDUSTRY

Right after the 1999 Helsinki Summit, Turkey's process of harmonization with the energy acquis started. In Turkey, which started the reform processes as of 2001, the studies are still continuing. In particular, with the establishment of the Energy Market Regulatory Authority, an inspection and regulation system was established in the electricity, oil, natural gas and LPG sectors. (Alptekin, 2021)

Turkey-EU energy relations develop on the basis of international agreements involving both actors, energy policies with similar goals, EU's regional initiatives, aid programs and membership negotiations. The Middle East, the Caspian Region, the Black Sea and the Eastern Mediterranean are the regions where both actors try to develop common policies. Energy relations are supported by international energy transmission line projects reaching Europe from these regions, in which Turkey acts as a transit country, and constitute an important part of the positive agenda that will stimulate the negotiation process necessary for Turkey's accession to the EU. (Kodaman, 2019)

Turkey's compliance with EU energy policies is based on the principles of full opening of markets to competition, consumers' ability to choose suppliers, markets being under the control of an independent regulatory agency, ensuring international trade and improving supply security. Chapter 15 in EU sectoral policies covers energy policy, and the scope of the chapter covers the internal energy market, energy efficiency, renewable energy, nuclear safety and radiation protection and security of supply. The first introductory meeting of the chapter was held on May 15-17, 2006, and the detailed meeting was held on June 14-15, 2006. Information and consultations were held on many subjects such as natural gas, electricity, coal, oil, renewable energy, demand forecasting, and nuclear energy. (Alptekin, 2021)

Legal arrangements are continuing in order to establish a competitive market. In 2001, Electricity and Natural Gas Market Laws came into force and in the same year, an independent institution, EMRA (Energy Market Supervision Agency), was established to supervise the electricity, natural gas, oil and LPG sectors. In 2005, Petroleum and LPG Market Laws were adopted. (Yorkan, 2009)

Turkey enacted the Renewable Energy Resources Law in 2005 and at this point, it has come a long way to pave the way for investments. Especially in recent years, private sector investment in wind turbines has increased. Also, studies in geothermal and biofarming are continuing. Compared to the EU, we are well ahead with a 13% share in our total energy consumption. However, our country, which is much more dependent on foreign sources than the EU and is rich in renewable resources, needs to increase its investments in this regard. (Yorkan, 2009)

Almost half of Turkey's energy consumption is met from petroleum-based resources. This poses a significant burden to Turkey. In terms of operation and cost, coal-based thermal power plants lose their efficiency. Turkey's compliance with the EU's energy policy is extremely important in terms of increasing the diversity and quality of energy resources. Turkey is an important hydroelectric energy producer with a key role in energy. Turkey's strategic location makes it a gateway country for oil and natural gas transportation to Europe. (İktisadi Kalkınma Vakfı, 2019)

Turkey is also a part of the EU's partnership system covering 12 Mediterranean countries. In 1995, with the Barcelona Declaration, the Euro-Mediterranean Partnership was established and the important role of energy was recognized with special reference to the development of energy cooperation. Turkey and the EU have been in constant dialogue within this framework and have had the opportunity to develop regional projects. At the Trieste Conference in 1997, the Ministers of Energy decided to establish the Euro-Mediterranean Energy Forum, consisting of representatives of 27 partner countries. A year later, in May 1998, a Euro-Mediterranean Energy Action Plan for cooperation was established. At the sector level, cooperation between the energy producing enterprises of the Mediterranean partners and the EU and the adaptation of the energy producing industrial enterprises to the expected increase in demand were determined as two objectives. (İktisadi Kalkınma Vakfı, 2019)

The MEDA program, which covers a period of five years (1994-1999) and has a budget of 3.4 billion Euros, is the main cooperation tool for the Mediterranean region. Six MEDA projects are planned at the Mediterranean region level. There is also significant support from the European Investment Bank, which has allocated 2.31 million Euros for the Mediterranean Partnership. In addition to this financial aid, the Synergy Program has also been implemented in the Mediterranean region. Within the

framework of the program, 26 projects were put into use between 1994 and 1998, which Turkey also benefited from. (Atlı, 2002)

Turkey also participates in EU activities to develop energy cooperation in the Black Sea Region. Alongside its ongoing activities to encourage investment in energy connectivity infrastructures, Turkey has also engaged in energy connectivity such as the Balkan Energy Connectivity Task Force (which has contributed to ensuring the effectiveness and coordination of investments related to energy interconnection projects and has produced an inventory of planned gas, electricity and oil interconnection projects in the region). He also took part in activities that improve his connections. (İktisadi Kalkınma Vakfı, 2019)

Turkey's role is also important in EU cooperation with the Caucasus and Central Asian Republics (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan and Turkmenistan). The EU has developed a strategy for cooperation based on economic support, the need to reinforce energy supply security and the expected increase in gas use in the EU. In this context, technical assistance is provided through "INOGATE", an EU initiative funded under the "TACIS1 program" aimed at helping the former Soviet states (İktisadi Kalkınma Vakfı, 2019)

The latest situation regarding Turkey's obligations to comply with the EU energy legislation has been revealed with the 2003 Turkey Progress Report announced by the European Commission in November 203. The issues mentioned in the report regarding Turkey's harmonization with the EU energy policy are summarized below:

• No progress has been made towards harmonization with the EU acquis on security of supply and oil stocks in the energy sector. Turkey continued its efforts to diversify resources and routes in order to strengthen energy supply security. The Iran-Turkey natural gas line connecting Turkey to Russia via the Black Sea started operating in December 2002. As an East-West oil and gas transit country, Turkey plays an increasingly important role.

• Significant progress has been made on competition and the internal energy market. In September 2002, the Energy Market Regulatory Authority began issuing licenses for some electricity activities.

• Compliance with EU legislation continued with the adoption of the regulations regarding the grid code, distribution code, returns and tariffs, and the audit and pre-

investigation processes of the Energy Market Regulatory Authority.

•In December 2002, Turkey signed the Memorandum of Understanding aiming to establish a Regional Electricity Market in Southwest Europe. In April 2003, the Energy Market Regulatory Authority established a single price tariff applied by all distribution companies. Losses (technical loss and theft) during distribution have an extremely high rate of 22% of the electricity produced.

•In November 2002, the natural gas market was liberalized. However, BOTAŞ continues to carry out international trade, distribution and storage activities and is the only supplier in the domestic natural gas market.

• The oil market has been liberalized. Significant progress has been made in the adoption of implementing legislation. In September 2002, the license regulation was adopted. Legislation on tariffs, transport and distribution networks, consumer services, inspection and investigation and preliminary examination, and internal installations has been adopted.

•The Energy Market Regulatory Authority has been strengthened in the field of administrative capacity.

• Progress has been made in legislative alignment in the area of efficient energy use. The electricity license regulation adopted in 2002 demands priority given to generator systems based on renewable energy sources.

•No progress has been made in the fields of solid waste and nuclear energy.

•Restrictions on importing energy from producers outside Turkey and producers exporting energy to consumers outside Turkey have not been lifted yet.

•More efforts are needed to ensure real market competition. In this context, the dominance of the state commercial enterprise in the wholesale market and energy purchase agreements should be taken into account. •Restrictions on cross-border trade should be lifted.

•Problems in the area of build-operate-transfer and business transfer right agreements should be resolved. Delays in resolution prevent potential investors from investing in the Turkish electricity sector.

•Problems regarding the collection of electricity bills should be resolved.

•The administrative capacity of the Energy Market Regulatory Authority should be further strengthened.

•As a result, Turkey has made new progress in harmonization with the Community energy acquis, in particular the competitiveness of the internal energy market, which includes the liberalization of the natural gas market, with the implementing legislation it has adopted. Some progress has also been made in the area of efficient energy use and renewable energy sources. Administrative capacity in the energy sector has been strengthened.

However, efforts should be continued to complete the alignment of the legislation with the acquis in all energy fields and to implement it effectively. Capacity building of implementing units is necessary to ensure effective implementation. (European Commission Turkey Progress Report - Energy, 2003)

In 2012, the Positive Agenda was established in order to accelerate the membership negotiation processes. The Positive Agenda covers eight chapters, including energy policies. On 14 June 2012, Turkey-EU Energy Sector Enhanced Cooperation document was accepted and it was aimed to establish policies for energy cooperation. Working groups were formed by the Ministry of Energy and Natural Resources and five meetings were held in 2013 and 2014 on electricity, natural gas, nuclear energy, renewable energy and efficiency. In order to increase energy cooperation between Turkey and the EU, a High Level Energy Dialogue was initiated on 16 March 2015 and the Joint Declaration was published on 17 March 2015. Two meetings have been held so far. The EU Foreign Relations Council announced on 15 July 2019 that it suspended relations due to Turkey's hydrocarbon activities in the Eastern Mediterranean. (Alptekin, 2021)

As of 2001, when the energy policy harmonization process between Turkey and the EU gained momentum, Turkey made progress in many areas. Although Chapter 15 has not been opened to negotiations yet, many projects have been realized and public reforms have been made within the scope of chapter. Twelve projects have been completed and seven projects are in the implementation phase. Twelve completed projects are on strengthening the institutional structure, improving technical infrastructure, increasing efficiency, and improving cross-border energy trade. (Alptekin, 2021)

The most important part of the cooperation between Turkey and the EU is cross-border trade, that is, energy transmission lines. Trans Anatolian Natural Gas Pipeline Project (TANAP) and Nabucco Project are the most important of these lines. With the Nabucco Project, it is aimed to transport 31 billion cubic meters of natural gas to be supplied from Azerbaijan, Turkmenistan, Iran and Iraq annually to South East and Central European countries via Turkey. However, as a result of the various commercial and financial problems related to the financing of the pipeline, the expectation of a decrease in the EU's natural gas consumption, the emergence of uncertainties in the amount of natural gas to be supplied to the pipeline by the supplier countries, and the introduction of alternative projects such as South Stream, where Russia will deliver natural gas to EU countries, Nabucco The project could not be realized. (Kodaman and Kalkışım, 2019)

The TANAP Project, on the other hand, came to the fore mainly with the work of Turkey and Azerbaijan. The fact that the Nabucco project could not be realized has made the TANAP Project more attractive. While trying to ensure its own supply security in natural gas, Turkey both contributed to the EU natural gas supply security within the framework of EU cooperation and took a positive step in the membership process. Transport of Caspian natural gas to Italy by connecting the TANAP project with the Trans Adriatic Oil Line (TAP) targeted. It is planned to increase its capacity up to 31 billion cubic meters. Apart from TANAP, there is a Turkish Stream project under construction. (Alptekin, 2021)

With this project, it is aimed to deliver Russian natural gas to EU countries and Turkey. It was designed with two pipelines, one line to Turkey and the other to the EU. The annual capacity is projected to be approximately 31.5 billion cubic meters. Since it is on the shortest transit route to the EU in terms of geographical location, Turkey has demonstrated its geopolitical effectiveness in all energy transportation projects. (Alptekin, 2021)

5.1 Turkey's Energy Supply Security And EU Compliance

Turkey has great geopolitical and strategic importance with its location close to regions where 70% of the world's current oil and natural gas resources are located and where these resources are needed. In particular, it is in the position defined as a transit country or "Energy Corridor" in te rms of natural gas. Energy transmission lines are one of

the most important logistics infrastructures. Pipelines passing through Turkey are very important for producer and consumer countries. The country takes part in and supports many important projects, including being a natural "Energy Center" between energy- rich Central Asian, Caspian and Middle Eastern countries and consumer markets in Europe. (T.R. Ministry of Energy and Natural Resources, 2019)

In terms of energy supply security, ensuring safe energy flow and the existence of secure energy transmission lines are as important as country diversity. Turkey is in both an advantageous and a disadvantageous position in this respect. Turkey is considered as the most suitable route and the most important transit country that can provide energy flow between EU countries and the Eastern Mediterranean, due to its land connection with the European continent and its proximity to Cyprus and the natural gas reserves in the region. (Kalkışım, 2017)

The Effects of Turkey's Membership Report, published by the European Commission on October 6, 2004, emphasized what Turkey's membership would bring in terms of energy supply security to the European Union (EC, 2004). Report; He stated that Turkey's EU Membership is important because it facilitates the EU's access to energy resources with Turkey's neighbors and the energy flow from these resources can be safely transported to the European market (EC, 2004)

Especially in terms of the energy security of the European Union, Turkey's importance is undeniably large in the natural gas axis{Roberts, 2004). Supply security of natural gas, as an energy type, is more difficult than oil. One of the reasons for this is that natural gas is more difficult and costly to transport than oil, and therefore it needs a regional network industry. Ensuring the security of oil supply is a global problem in this regard. But ensuring natural gas supply security is a regional issue (Roberts, 2004). Turkey is located at the intersection of regions that have 71.8% of the world's reserves (BP, 2004} The importance of Turkey is as a natural corridor where gas comes from the Caspian region, passes through the Middle East and from the Gulf to Egypt and then to the European market. (Robert, 2004) As a transit country, Turkey brings together the European market with natural gas supplied from sources other than Russia. At this point, the importance of the Turkish logistics industry can be seen once again.

The EU seeks to establish an open, transparent, competitive and fully integrated internal energy market at Community level in the electricity and natural gas sectors.

At this point, Turkey has made some efforts within the framework of the law. The steps that Turkey will take towards liberalization in its own energy market will contribute to the energy supply security of both itself and the EU. (Yorkan, 2008)

In order to fulfill this goal of the EU, the second goal is to expand the common energy market to include all European countries. To this end, the Union strives to integrate the South East European countries into the EU common energy market. In this context, Turkey provides an important support to this process thanks to the ongoing projects in natural gas, and in electricity, studies are being carried out to ensure the connection of our electricity system with the European electricity system, UCTE (European Electricity Transmission Coordination Union). (Yorkan, 2008) Logistics will play an important role in the design, establishment and operation of the common transmission network to be used here in Turkey.

5.2 Turkish Competition Policy And Harmonization With The EU

The main purpose of the competition policy of the European Union is to create a common domestic market where commercial companies belonging to member countries can compete under equal conditions in order for the economic integration process to take place in a healthier way. (Çelik, 2005)

The Customs Union was introduced in order to ensure the free movement of goods within the framework of competition rules. To explain a little more, if the competition in another member country is restricted due to the commercial activities of a company affiliated with a member country, the European Commission has the authority to warn the member country to impose sanctions against the activities of this company. Likewise, a member state may ask the EU to impose sanctions on an issue that affects it commercially.(Methibay, 1996)

Due to its relations with the European Union, which it wants to be a member of, Turkey has been making an effort for the coordination of common competition policies for a long time. After Turkey made its first application for membership to the European Union in 1959, the Ankara Agreement of 1963, the Additional Protocol of 1970 and the Customs Union Agreements of 1995, adopted the provision that it would comply with the common competition rules, which is the basis of the European Union integration. These agreements signed with the European Union brought important

obligations to Turkey in terms of common competition policy practices. According to the Customs Union Agreement, it has been clearly and explicitly committed to enact a Competition Law that is fully compatible with the European Union rules and to establish an Institution with administrative and financial autonomy, independent of political powers, to implement the Law. Then, within the framework of the Free Trade Agreement signed with the ECSC (European Coal and Steel Community) in 1996, it was obliged to comply with the European Union legislation on the control of incentives in iron and steel products and to provide continuous information to the European Union Commission about the incentives given to these products .(Özgöker, 1996)

Turkey works diligently to fulfill the demands expected by the Community. In this context, it adopted the Competition Legislation No. 4054 in 1994. In 1997, the Competition Authority established the Competition Authority in order to implement this law effectively and efficiently. However, many undertakings were disturbed by these regulations of the Competition Authority and refused to comply. (Ege, 1994)

The Law No. 4054 on the Protection of Competition, which the Competition Authority is responsible for implementing, is a part of Turkey's international obligation. This law is not only a commitment to the EU, but a necessity of the liberal capitalist economic order that Turkey targeted and implemented in the post-1980 period. At the same time, this law is a request from Turkey by the Economic Cooperation and Development Foundation (OECD), of which Turkey is a member, and the World Trade Organization (WTO), formerly GATT. (Uyanusta, 2005)

According to the 2005 report of Turkey progress reports submitted by the European Commission to the European Parliament and the Council, Turkey's energy trade is limited and does not yet have a coordinated connection with the Western European electricity network. It also signed the Athens Memorandum, which aims to establish a regional natural gas and electricity market in Southeastern Europe, and participated in the Energy Community Treaty negotiation process. The 2006 and 2007 progress reports do not mention any significant development in competition.

The limited competition in the natural gas and electricity markets is mentioned in the 2008 progress report. The full use of the regulatory authority's powers is necessary to establish competition and improve the functioning of markets. According to the 2009 progress report, Turkey has successfully reformed the electricity market and is gradually opening it up to competition. In the 2010 and 2011 progress reports, there is

advanced progress regarding the electricity market, but there has been no significant development regarding competition.

As explained in the 2012 progress report, EMRA has issued implementing regulations to improve competition and market surveillance. In 2013, a new Electricity Market Law was enacted in order to improve the harmonization with the EU Electricity Directive and to create more competition in the market regarding the internal energy market. Routine progress continues in the energy market in 2014 and 2015 and no significant changes are mentioned.

Two new regulations were published in 2016. These are the acquisition and merger of electricity distribution companies in order to increase competition, efficiency, transparency and accountability.

CHAPTER 6: CONNECTION OF LOGISTICS AND ENERGY SECTOR IN TURKEY

6.1 Turkey And EU Logistics Connection

In the globalizing world, the logistics sector is one of the most important factors affecting the success of countries in foreign trade. The geographical location of a country directly affects its success in logistics. Since Turkey is a country between Europe, Russia, North Africa and the Middle East, Asia and the Caucasus, it successfully carries out the task of being a crossroads in transportation. There are 67 countries within a 4-hour flight distance from Turkey. 1.5 billion people live in these 67 countries with a total GDP of 35 trillion dollars and a trade volume of 7 trillion dollars. (Utikad, 2019)

The logistics sector, which makes up 12-13 percent of Turkey's GDP, has a volume of 200 billion dollars. The industry, with a turnover of over $100 billion, ranks 34th in the Logistics Performance Index published by the World Bank. One of the important issues for the Turkish logistics industry is to ensure the integration between transport modes. Today, 74 percent of exports and 95.4 percent of imports are preferred by sea transportation. Again in exports, maritime transport is followed by land with 24.5 percent, air with 1 percent and rail with 0.5 percent. In imports, the situation does not look much different. While 4 percent of the cargo is transported by road, 0.5 percent of the freight is preferred. The share of the airline remains at 0.1 percent. (Utikad, 2019)

6.1.1 Turkey's International Transportation Activities

While maritime transport had a share of approximately 62-70% in imports between 2010 and 2019, its share in the first three quarters of 2020 fell below the 60% level and became 58.10%. It increased its share of seaway in export shipments from 2010 to 2018; The share of maritime transport, which was 51.41% in 2010, reached the highest share in a 10-year period in 2018, and the share of maritime transport increased to 63.31% in the said year. While this rate decreased to 60.82% in 2019, it became 59.86% in the first three quarters of 2020. (Utikad, 2019).

Road transport takes the second place in terms of value in Turkey's foreign trade

transports. While the share of road transport in imports tended to decrease in the last10 years until 2018, it had a share of approximately 20% in 2019 and in the first three quarters of 2020. The year it had the highest share in the analyzed period was 2010 with 26.75%. The year in which the share of road transport in exports was the highest in the analyzed period was 2010 with 40.88%; In the period from 2010 to 2018, the share of highways in exports decreased to 28% in 2018. While it increased to 30.36% in 2019, the share of highways in exports was 31.79% in the first three quarters of 2020. (Utikad, 2019)

Air transport ranks third among the types of transport in terms of value in Turkey's foreign trade activities. In the last 10 years, it is not possible to determine a trend in air transport as in sea and road transport types. While the share of air transport in imports was between 10-16% betw een 2010 and 2019, it reached a record level in the first three quarters of 2020 and took a share of 21.22%. In the last 10 years, the share of air transport in exports has been around 6-14%. In 2016, the share of air transport in exports on a value basis was 12.54%, and its share has been on a downward trend since this year, reaching 7.55% at the end of the third quarter of 2020. (Utikad,2019)

6.1.2 Logistical Ties Strengthen

This strong bond in foreign trade between Turkey and EU countries is also reflected , in the transportation and logistics sector. Transport and logistics services are one of the most concrete areas where EU-Turkey cooperation has improved significantly and relations are very solid and lively. In parallel with the increase in the foreign trade volume between Turkey and the EU, there is a rapid increase in the demand for transportation. (Utikad,2019) .The most preferred transport for export to the EU is land and sea. On the other hand, it is observed that the shares of rail and air transport increased in imports from the EU. Another popular mode of transportation on the EU-Turkey line in the last period is intermodal transportation. Intermodal, which is an important alternative to overcome the obstacles encountered in road transportation especially on the Europe-Turkey line, has become a preferred mode of transportation due to its efficient and environment-friendly approach as well as timely delivery, low cost advantage. (Utikad,2019)

	Road		Airway		Seaway		Railroad	
Year	Import	Export	Import	Export	Import	Export	Import	Export
2009	27,75	42,30	9,57	9,74	61,25	47,05	1,43	0,91
2010	26,75	40,88	9,54	6,84	62,16	51,41	1,55	0,88
2011	21,97	37,60	10,62	6,42	65,85	55,05	1,57	0,93
2012	20,26	33,35	12,23	14,40	66,31	51,57	1,21	0,67
2013	18,69	35,66	15,21	8,61	65,28	55,10	0,83	0,64
2014	18,23	35,29	12,07	9,01	69,11	55,11	0,59	0,59
2015	19,09	32,70	11,11	12,10	69,14	54,64	0,65	0,56
2016	19,16	31,62	12,83	12,54	67,22	55,39	0,80	0,45
2017	18,01	29,59	16,33	10,98	65,10	58,99	0,56	0,44
2018	17,88	28,00	14,40	8,25	67,09	63,31	0,62	0,44
2019	19,01	28,59	15,33	8,41	64,87	62,42	0,80	0,58

Figure 2. Percent Shares of Transport Modes in Imports and Exports by Years (by Value) (Source: TUIK ,2019)

6.2.2 Effects of Energy Policies on Turkish Logistics Sector

The concept of "green", which managed to enter the transportation sector in the late 1980s, created awareness about the environmental problems created by transportation systems. In the early 1990s, researches started to be carried out on minimizing the damage to the environment by using environmentally friendly technologies in logistics applications. The transportation sector is an important contributor to environmental degradation. Around 24% of total greenhouse gas emissions worldwide are due to logistics activities. The word green became a slogan in the transportation industry in the late 1980s and early 1990s.

The concept of green is a new concept that deals with goods produced and distributed in a sustainable way, which is integrated with logistics and takes into account the environmental and social factors called "green logistics", and aims to measure the environmental effects of different distribution strategies, reduce energy use in logistics activities, reduce waste and manage its operation. an application area.

Many companies in Turkey produce some environmentally friendly policies in line with sustainable principles by adding 'green' solutions to all or some of their logistics activities.

It is defined as supply chain management practices that reduce the environmental and energy footprint of green logistics, packaging, waste management and transportation-oriented load distribution activities (Seroka, 2014).

The more 'green' the supply chain is, the more environmentally and sustainable logistics activities appear before us. Logistics is the integrated management of all the activities necessary to move products along the supply chain. “Green logistics”, on the other hand, is associated with goods that are produced and distributed in a sustainable way, taking into account social and environmental factors.

The foundation of future logistics is based on green logistics. Logistics objectives are not associated with the economic effects of logistics policies; however, environmental pollution and its effects on society are taken into account. Green logistics activities; It includes measuring the environmental impact of different distribution strategies, reducing energy use in logistics activities, reducing and

treating waste. In recent years, concepts related to the environmental effects of human activities and logistics activities on the world have increased and it has been suggested that these are not sustainable in the long term. Many organizations and businesses have begun to measure their carbon footprints and have been able to see the environmental impact of their activities. Reducing emissions and other environmental measures has also been included in the policies of governments. The interest of companies and governments in green logistics has increased (Tao,2001).
The setup model of green logistics consists of seven components (Tao,2001):

- Green Supply Chain
- Green Production Logistics
- Green Transportation Logistics
- Green Packaging
- Green Distribution Process
- Green Distribution Logistics
- Waste Material Logistics

The most important purpose of green logistics indicators is to minimize the environmental damage caused by each activity in the supply chain. These indicators are not only put forward by businesses; The measures taken by the states also enrich the indicators and create an imperative environment for the implementation of green logistics. All kinds of steps implemented within the scope of green logistics in the world are also included in the table of indicators. In this context, spatial measures taken for green and sustainable logistics in countries such as Germany, Austria, Denmark, France, Netherlands, England, Sweden, Italy, Spain, Russia, USA, Canada and Japan were examined and added to the indicators table. The use of renewable energy, measures to reduce energy consumption, measures to reduce carbon footprint, consideration of environmental sensitivities in raw material selection, green design practices, the existence of ISO 14001 certificate and reverse logistics practices are common indicators in the countries examined. In addition, the measures taken specifically in each country are added to the table of indicators.

When we look at the policies implemented regarding green logistics practices in the world, it is seen that each country creates logistics systems with a green perspective in accordance with its physical location. In addition, these policies put pressure on

both society and businesses on the necessity of being enforced by the state; thus, environmental and economic policies are required within the scope of sustainability.

The activities commonly implemented in companies in Turkey appear as measures to reduce energy consumption, emission rate and carbon footprint in accordance with legal regulations, the use of environmentally friendly vehicles, the use of intermodal transportation systems, reverse logistics practices and efforts to minimize the waste rate. . In addition to companies that attach importance to environmental management certification, there are also companies that make it their business policy to prepare sustainability reports. According to the research, there are companies in Turkey that take measures to dispose of wastes within the enterprise.

6.2.3 Infrastructure Projects in the Field of Transport and Logistics

Logistics Center and Facilities: Logistics centers are special places on which various enterprises operating nationally and internationally related to transportation, logistics and physical distribution operate on a commercial basis. Logistics centers offer the most suitable solutions to the producers in the region they serve in terms of transportation and storage activities. Thanks to these solutions, it is ensured that transportation and storage costs are optimized and the efficiency of industrial processes is increased. In our country, there are still 21 logistics center projects carried out by the Republic of Turkey State Railways (TCDD) and the Ministry of Transport, Maritime Affairs and Communications. Eight of them have been put into operation, six of them are under construction, and seven of them are at the stage of study/project or tender. (T.R. Ministry of Development, 2019)

İzmir Çandarlı Port: A total of 1,500 m breakwater construction has been completed at the North Aegean Port in Çandarlı, which is planned as Turkey's largest container port. Çandarlı Port will be an important transfer center in the combined transportation chain arising from the potential traffic between Europe and the Middle East. (T.R. Ministry of Development, 2019)

Mersin Main Container Port: The Environmental Impact Assessment report regarding the “Mersin Main Container Port” planning area, which is planned to be

built in the sea area south of the existing Mersin Port, has been approved. The planning area consists of a port area of 4 million 128 thousand square meters and a fortification area of 221 thousand 570 square meters. Within the port, there will be container storage areas, machinery-equipment required for loading-unloading operations, administrative and social facilities, waste reception facility, maintenance-repair areas. (T.R. Ministry of Development, 2019)

Filyos Port Project: The Filyos Port, which was built in the region that was declared an Industrial Zone in 2015 and supported by railway, airport and road connection, is planned to be Turkey's gateway to the Black Sea. It is envisaged that the port will provide employment for 12,000 people and will be the third largest port in the country. (T.R. Ministry of Development, 2019)

Marmaray: Marmaray, which has been in service since October 2013, is a submarine railway tunnel connecting the Asian and European sides of Istanbul. Marmaray makes a significant contribution to Istanbul's railway network with its connections to the Istanbul metro and the high-speed train line between Istanbul and Ankara. (T.R. Ministry of Development, 2019)

Yavuz Sultan Selim Bridge and Northern Marmara Motorway: The bridge connecting the Asian and European sides of Istanbul was designed in a hybrid structure to be the widest and longest combined road and railway bridge in the world. (T.R. Ministry of Development, 2019)

Istanbul New Airport (IYH): With an estimated investment cost of 10.25 billion Euros, INA, which is the largest infrastructure investment project in the history of the Republic of Turkey, is being built on an area of 76.5 million square meters, 35 km from the city center. (T.R. Ministry of Development,2019). In the report prepared for the economic impact analysis of INA, it is evaluated that if the dynamic development of the aviation industry in Turkey and its harmony with global competition are sustainable, the airline traffic in Turkey can grow by an average of 5.2 percent each year until 2025. Accordingly, it is estimated that cargo transportation via INA will reach 1 million 280 thousand tons in 2030. (EDAM, 2016)

Gebze-Orhangazi-İzmir Highway and İzmit Bay Crossing Bridge: The project shortens the road distance between İstanbul and İzmir, Turkey's third largest city.

The project also includes the 3 km long İzmit Bay Crossing Bridge (Osmangazi Bridge), the world's fourth largest suspension bridge. (T.R. Ministry of Development, 2019)

Baku-Tiflis-Kars Railway: The 829-kilometer Baku-Tbilisi-Kars (BTK) railway line, the construction of which started in 2008, was opened to passenger and freight transport in October 2017. The line, which had an annual capacity of 1 million passengers and 6.5 million tons of cargo at the beginning, is planned to carry 3 million passengers and 17 million tons of cargo by the end of 2034. The main importance of the line stems from the fact that 240 million tons of freight transport annually from China to Europe, via sea, air and the railway channel known as the northern line passing through Russia, is shifted to the middle corridor, which became uninterrupted with BTK. (T.R. Ministry of Development, 2019)

Ovit Tunnel: The Ovit Tunnel, which was opened to traffic in November 2017, consists of 14,200 meters long double tubes built on the Rize-Erzurum highway, one of the most important corridors connecting the Black Sea and Eastern Anatolia, Ovit 9 EDAM, 2016 19 Mountain Passage, and is located in Turkey. It is the longest tunnel ever completed. The project, which connects the Black Sea to Eastern Anatolia, facilitates the Black Sea traffic to Iran and Georgia. (T.R. Ministry of Development, 2019)

6.3. Logistics Investments, Contribution To GDP And Economy

In addition to infrastructural investments such as Istanbul Airport, Marmaray, Baku-TbilisiKars, significant progress has been made in the Combined Transport Regulation and the Turkey Logistics Master Plan, the liberalization of railway transport and the end of the monopoly structure, and the studies carried out within the scope of the Trade Facilitation Agreement, both national and international. factors that will play a facilitating role on international transport activities. It is stated that the main objective of the transportation infrastructure investments and expenditures of 145 billion USD in the last 17 years is to make Turkey a logistics base and to provide a fast and uninterrupted connection between Asia and Europe. The fact that the transportation activities to be carried out and the logistics services

offered over Turkey, which is among the eastern and western countries, which are accepted as production and consumption centers, and the European and Asian countries, are uninterrupted, competitive and at international standards, and the legislation system that makes it possible to benefit from the infrastructure opportunities and infrastructure at the highest level. passes. With the exception of 2019, public expenditures have increased in the Public Investment Programs of the last 5 years, and it is seen that the Transport and Communications sector has the highest share from public investments. The Transport and Communications sector has the highest share in Public Investment Programs. (UTIKAD , 2019)

6.3.1. International Logistics Investments

Foreign investor interest in Turkey, which stands out in the logistics sector with its strategic advantage provided by its geographical location, continues to increase.
Turkey, which is not very rich in energy, makes up for this gap with its qualified workforce in the industry and its strategically important geography. Turkey, which uses some of its people as oil and its location as natural gas, continues to attract the attention of foreign investors in this sense. Although there has been a decrease in the investments made from scratch called “greenfield” recently, some sectors do not lose their value. Logistics stands out as the most striking sector in this field. (UTIKAD, 2019)

For the last 5 years, regional and global giants from many parts of the world have flocked to Turkey, where foreigners have almost carried international competition. Many foreigners from Australia to Austria, from Japan to Dubai are expanding their networks in Turkey or entering the country with purchases. German DHL, which has made a new investment of 135 million euros in Istanbul's new airport, and Aramex, one of the largest logistics companies in the Gulf, based in Dubai, which has grown by establishing a company from scratch in Turkey, are the most striking. (UTIKAD ,2019)

There are also companies that prefer the way of purchasing, the number of which is increasing rapidly. Japanese giants Yusen and Hitachi, German giants Kühne-Nagel, South Korean CJ Group, Dubai-based Abraaj Capital and Australian Toll Global are

the most notable among them. Another world giant was added to this list last week and Hong Kong-based Kerry Logistics acquired the majority shares of the Turkish company ASAV. In logistics, in which dozens of companies, large and small, changed hands, the most striking ones were the 10 major operations marked by regional and global giants. (UTIKAD, 2019)

Kerry Logistics is a name that knows Turkey closely. world for the first time last week. Far East Kerry Logistics, aiming to increase its share in Europe from com. ASAV, which has a network in the Netherlands as well as in Istanbul, Bursa and Izmir, has a total of 7 offices. The bonded warehouse of the Turkish company in Amsterdam, which has a warehouse of 452 thousand square meters in Istanbul, serves on an area of 21 thousand 500 square meters. ASAV, which is one of the most important airline transportation companies in Turkey in terms of tonnage, also carries out sea and land transportation. (UTIKAD , 2019)

6.3.2 Japanese Partner to Mars and Inci

The Japanese are at the forefront of Asian companies that made one of the first purchases in Turkey in the field of logistics. The 109-year-old Japanese giant Hitachi became the main shareholder of Mars Logistics, one of the important players in the sector, in 2013. The Japanese giant, which has 307 thousand employees, bought 51 percent of Mars Logistics, one of the largest logistics companies in Turkey. Mars Logistics, which has around 2,200 vehicles in its fleet, has branches in countries such as Luxembourg, Italy and China. Mars Logistics, which closed 2017 with a turnover of 1 billion 85 million TL, closed last year with approximately 1.5 billion TL. Last year, the company bought 275 tow trucks and 330 trailers, and opened a 30 million lira Hadımköy warehouse. Another Japanese giant, Yusen, took its first step in 2012 by purchasing assets from the Turkish company Catoni Air and Sea Transportation. Later, Yusen, who sat at the table with İnci, one of the important players of the Turkish logistics sector, acquired 32 percent of İnci Logistics. Yusen Logistics, a subsidiary of the Japanese NYK Group, has offices in more than 40 countries around the world and has 34 thousand employees. Yusen also decided to merge with İnci Logistics in 2017. (UTIKAD , 2019)

6.3.3 Danish DFDS Paid 950 Million Euros

When it comes to purchasing in the logistics sector, the first operation that comes to mind is U.N Ro-Ro, the largest of the Turkish maritime transport. The Turkish company, which has changed hands twice in the past 10 years, sold to the Danish DFDS, the Fund of Esas Holding-Actera, last year. Transferred with 950 million euro sales, U.N. Ro-Ro has 12 ships. Thanks to its Pendik and Trieste ports, the Turkish company operates 5 ro-ro lines between Turkey and Italy and Turkey and France. With 500 employees, U.N. Ro-Ro has 500 employees and a 35 percent share in the ro-ro field. DFDS, one of the largest shipping and logistics companies in Europe, has 8,000 employees in 24 countries. The Copenhagen-based company has an annual revenue of 2 billion euros. (UTIKAD, 2019)

6.3.4 Australia's Largest Toll Came with Acquisition

The Australian Toll Group, which entered Turkey by opening an office in September 2011, is one of the most important players in its sector in the region. Australia's largest company in logistics, Toll Global Forwarding, immediately started negotiations with Istanbul-based Megatrans International Transport and its subsidiary Makro Logistics and concluded the acquisition by incorporating some of its operations. Founded in 1888, the Australian company with a turnover of 8.7 billion dollars has 44,000 employees worldwide. (UTIKAD, 2019)

6.3.5 MNG Cargo Changed Hands in 2017

One of the most notable investments of 2017 was the sale of MNG Kargo. With this purchase made by Mirage Cargo company owned by Turkven, which invests in Turkey by obtaining funds from abroad, in Dubai, MNG Cargo belonging to businessman Mehmet Nazif Günal changed hands. MNG Cargo, which was taken over by Turkven, which brought about 5 billion dollars of investment to Turkey since 2000, has nearly 900 branches, 25 transfer centers and 9,000 employees. MNG reaches 600 thousand addresses per day. (UTIKAD, 2019)

6.3.6 Abraaj Acquires Netog

Another important acquisition of 2017 came from The Abraaj Group, a private equity firm operating in the growing markets of Africa, Latin America, the Middle East, Turkey and Asia. Drawing attention due to the problems he is currently experiencing, Abraaj became a partner of Netlog, one of Turkey's largest logistics companies. Founded in 2003, Netlog has 6,750 employees. Netlog, which has more than 3,100 vehicles in its fleet, has 74 warehouses. Netlog, which operates in many fields, has 21 companies. According to the announced 2016 data, Netlog has reached the annual number of transporting 5 million tons and 1 billion 200 thousand parcels. (UTIKAD, 2019)

6.3.7 South Korean CJ Group Stepped into Logistics with Effort

South Korean giant CJ Group, which is quick to invest in Turkey for the logistics sector. The logistics pillar of CJ Group, which is the 417th largest company in the world in terms of turnover with approximately 20 billion dollars, is CJ Logistic Corporation. CJ Logistic Turkish company, which was established in 1930 and has more than 5 thousand employees, decided to partner with Çaba&Misnak Proje Lojistik and Ibrakom FZCO. Established in 1996 to meet the heavy load and lifting service needs in Turkey and the surrounding countries, Çaba was acquired by Misnak in 2010. Towards the end of 2015, Çaba and Misnak brands were merged under one roof and Çaba & Misnak was established. The Korean company, which bought the Turkish company, is known in Turkey for its collaborations and transactions, especially with the Sabancı Family. (UTIKAD, 2019)

6.3.8 German Billionaire Entered with Drugs

Kühne-Nagel, one of the largest logistics companies in the world, took an important decision in the shadow of political discussions with Germany. The Swiss-based German company made an important acquisition in Turkey. Kühne-Nagel acquired the Turkish logistics company Zet Farma.(UTIKAD Logistics Industry Report, 2019)

In 1992 founded by Ahmet Saim Başay and Satiye Başay, Zet Farma has

approximately 400 employees. Kühne-Nagel, one of the oldest logistics companies in Germany, was founded in 1890. Klaus-Micheal Kühne, the honorary president of the company, which has 70,000 employees in more than 100 countries, has a fortune of 12.4 billion dollars. (UTIKAD , 2019)

6.3.9 Austrian Became a Partner of Aras

Aras Kargo was also affected by foreign interest. Austrian Post bought 25 percent of Aras Kargo in 2013. Aras Distribution and Marketing, which was founded in 1979 by the late Celal Aras, also laid the foundations of Aras Cargo, which started its operations in 1989. Aras, which has 13 regional directorates, 29 transfer centers, nearly 900 branches, a fleet of more than 4 thousand vehicles and nearly 14 thousand employees, serves 12 million people, institutions and organizations every month. The Austrian Post has more than 20,000 employees. The Austrian giant has a turnover of 2 billion euros. (UTIKAD, 2019)

6.4 Railway Transport Corrods and Turkey

With the operability of projects such as Baku-Tbilisi-Kars railway line, Marmaray Tube Crossing, Yavuz Sultan Selim Bridge railway crossing, Turkey's load share in international railway corridors may increase and besides east-west axis railway transportation, Intermodal transportation will be developed with the development of port and highway connections. will be able to strengthen Turkey's position for international rail freight movements.(Ulker, 2019)

6.4.1 Logistics Centers

Except for the logistics centers such as Ankara Logistics Base, Samsun Logistics Center, Mersin Logistics Specialized Organized Industrial Zone, which are operated by the private sector, 9 logistics centers were put into operation by TCDD. These are Samsun (Gelemen), Izmit (Köseköy), Uşak, Istanbul (Halkalı), Eskişehir (Hasanbey), Balıkesir (Gökköy), Denizli (Kaklık), Kahramanmaraş (Türkoğlu) and Erzurum (Palandöken) Logistics Centers. The construction of Mersin (Yenice) and Konya (Kayacık) Logistics Centers has been completed and is ready for opening. The

construction, tender or project studies of the Logistics Centers in Kars, İzmir (Kemalpaşa), Sivas, Bilecik (Bozüyük), Karaman, Kayseri (Boğazköprü), Bitlis (Tatvan), Mardin, Şırnak (Habur) and Istanbul (European Side) are still in progress. is doing. According to the latest data announced by TCDD, a total of 1,302,173 tons of cargo was handled in 2018 at 9 logistics centers that were put into operation8. The total capacity of the operating logistics centers is 10,639,000 tons. The Ministry of Transport and Infrastructure is held responsible for the regulation of the procedures and principles regarding the establishment and operation of logistics centers and the policy and strategy regarding the logistics centers in the Medium Term Program that will cover the period of 2020-2022 of the New Economy Program, and the planned completion date of the legislation is March 2020. is indicated as. In the executive summary of the Turkey Logistics Master Plan (TLMP), it is seen that logistics centers are given great importance within the scope of TLMP. (Ulker, 2019)

Among the aims and objectives of the TLMP project regarding logistics centers,

• Determining the location, capacity and similar qualities of logistics centers,

• Determining the construction procedures and principles regarding the establishment of logistics centers,

• Establishing the necessary technical and safety standards for the establishment of infrastructures for logistics centers,

• Determining the procedures related to the land allocation and acquisition forms that will be needed for the logistics centers,

• There is a legislative basis for the logistics center planning studies to be established in Turkey.

6.5 The Effects Of Pipelines On Turkey's Transitional Corridor

Energy use in the world necessitates the connection of supply and demand centers with various types of transportation. Pipeline transportation, which has a higher initial investment cost compared to land and sea transportation; It has advantages such as being fast, safe, environmentally friendly and not affected by atmospheric conditions compared to other transportation types, as well as paying back the investment in a shorter time.

Therefore; In particular, the transportation of oil and natural gas from production centers to consumption areas in the most economical way by pipelines comes to the fore. Oil is generally transported to suitable ports by pipelines, and from there to refineries by tankers or directly to refineries by pipelines. Natural gas, on the other hand, is transported from production areas to consumption areas by pipelines or by liquefied and transported by tankers.

In our energy-oriented world, pipelines, which are an indispensable transportation model among transportation modes, have come to the fore. Considering the necessity of energy for the economic development of countries; Pipeline transportation is considered within the long-term strategic vision plans of our country in the transportation of oil and natural gas and other unitized materials.

Today, 32% of world oil trade is done through pipelines. This figure is around 75% for natural gas. In 2011, 1.03 trillion m3 of natural gas and 2.69 billion tons of oil were traded in the world. The length of the pipelines used in oil and natural gas cargo transportation in the world is approximately 2 million km according to 2010 data. The length of the pipelines of the USA, which has the largest pipeline network, is 794 thousand km, respectively; Russia has 247 thousand, China 58 thousand, Mexico 40 thousand, Iran 37, Germany 33 thousand, England 20 thousand, France 23 thousand, Brazil 22 thousand, Italy It is 21 thousand km, 12 thousand km in Spain and 19 thousand km in Turkey. Pipelines are considered as strategic and critical infrastructures of countries. (Ulaştırma Bakanlığı, 2013)

When we look at the European Union; Pipelines accounted for 12.5% (250 million tons) of the EU's total trade in 2009. The share of the pipeline in trade is in the second place after seaways. (Ulaştırma Bakanlığı, 2013)

Pipelines; oil, gas and even water transportation are the main arteries that work nonstop around the clock, and the need for these lines will increase in the future. The first oil pipeline in our country was put into service on January 4, 1967 between Batman/Dörtyol with a length of 511 km and a capacity of 4.5 million tons/year. With the natural gas purchase agreements made since 1987, the transmission of gas to our residential areas and industrial facilities through pipelines throughout the country, especially in Istanbul and Ankara, has started. (Ulaştırma Bakanlığı,2013)

Located in a very important region in terms of geopolitics, Turkey; It is adjacent to regions with about ¾ of the world's proven oil and gas reserves. Our country is an energy corridor between the oil and natural gas-rich Middle East and Central Asian

countries and the oil and natural gas importing countries of Europe. Turkey's energy policy is aimed at ensuring the energy supply security of both itself and Europe. In this respect, many oil and natural gas pipeline projects are being implemented in Turkey within the scope of the east-west and north-south energy corridor. Developing strategies to be at the center of the East-West and North-South energy corridors, Turkey plays an important role in the transportation of oil and natural gas in uninterrupted international standards, environmentally friendly and safe ways, and in the creation of independent commercial export routes. (Ulaştırma Bakanlığı, 2013) Turkey is a bridge between the Middle East and Central Asian countries, where the world's largest oil and natural gas reserves are located, and the European crude oil and natural gas importing countries. Turkey's good relations with the countries of the region and its historical and cultural ties with Central Asian countries have increased its importance in the region. Turkey borders regions with 73% of the world's oil reserves. Being aware of this advantageous position, Turkey also carries out a policy aimed at becoming a regional energy center. The main axis of the policy is to ensure that Turkey becomes an energy terminal in oil by developing pipelines. The length of the existing oil and natural gas pipelines in Turkey is approximately 15.5 thousand km (excluding military pipelines), of which 3.332 km is oil pipelines. Using existing pipelines, approximately 13% of oil and 84% of natural gas consumed in 2011 were transported via pipelines. (Ulaştırma Bakanlığı, 2013)

Ceyhan Port, located in the southeast of Turkey, is very important for Iraqi and Caspian oil exports. Turkey presents a potential model for many countries to shape their national or regional and global policies according to current or future energy flows. Aiming to be recognized as a natural “energy bridge”, Turkey has made a strategic decision to become a regional energy hub that controls the flow of oil and natural gas from the Caucasus and Middle East regions to Europe. With Turkey's proximity to resource-rich regions and its geographical position as an energy hub, it makes a positive contribution to European energy security. Turkey shares common interests with Russia, Iran and the United States for the successful operation of pipelines on its territory. Turkey, which aims to become an energy hub with its strategic plan and policies supporting it, will increase its political influence in the region due to its control over key infrastructure and pipeline routes. (Vidakis and Baltos, 2015)

Turkey has proven to be a reliable partner with successful projects such as Baku-Tbilisi-Ceyhan Crude Oil Pipeline, Baku-Tbilisi-Erzurum Natural Gas Pipeline and Interconnection Turkey-Greece Pipeline (Yıldız, 2012). An energy transit corridor through Turkey would also provide greater diversity in the United States. Therefore, from an energy perspective, Turkey is an important geopolitical power for the USA, although it is not as important as it is for the EU. Pipeline agreements divert influence in energy-producing regions, intensify the struggle over energy routes, and also fuel competition between Russia and Turkey. There have been tangible gains in realizing the East-West energy corridor through Turkey, with strong encouragement by the USA and to some extent the EU. At the same time, "Great Game" rivalries in the Middle East and the Caspian are limiting Turkey's potential as a major gateway. Despite these restrictions, the country has the potential to make a significant contribution to regional and global energy supply security. (Tekin and Walterova, 2007)

Turkey is located in an extremely important energy network between oil and natural gas reserve areas and supply regions. This feature provides Turkey with the advantage of being an energy distribution center/junction (hub) beyond the advantage of a transit zone. Turkey holds the advantage of being the safest and most stable country in the transmission of energy in the source geography such as the Caspian basin, the Eastern Mediterranean and the Middle East to Europe, with the projects it will participate in. Turkey is in a strategic geography among rich oil and natural gas production regions, which has the potential to become a terminal and center in both north-south and east-west axis. (Oral and Özdemir, 2017)

Between Turkey's east-west pipelines; There are Baku-Tbilisi-Ceyhan Project (BTC), Kirkuk-Ceyhan Oil Pipeline, South Caucasus Pipeline, Turkey-Greece-Italy Gas Pipeline, Trans-Caspian Pipeline, Kazakh-oil expansion to BTC and Iraqi Gas. Between the north-south pipelines; Blue Stream Natural Gas Pipeline, Eastern Thrace Kiyikoy-Ibrice Petroleum Pipeline, Samsun-Ceyhan Pipeline and Turkey-Israel Oil and Gas Pipeline. It hosts the BTC crude oil pipeline, transporting Azerbaijan's oil to world markets (Figure 8). BTC has proven to be one of the largest and most successful engineering projects in the world (Fackrell, 2013). BTC mainly carries Azeri oil, and Kazakh oil also reaches world markets through this route.

6.5.1 Crude Oil Pipelines

6.5.1.1 Iraq-Turkey Crude Oil Pipeline

The Iraq-Turkey Crude Oil Pipeline transports the crude oil obtained from Iraq's Kirkuk and other production fields to the Ceyhan Marine Terminal. The pipeline, which has an annual transport capacity of 35 million tons, was put into operation in 1976 and the first tanker loading was carried out on May 25, 1977. With the 1st Extension Project, which started in 1983 and completed in 1984, the capacity of the line was increased to 46.5 million tons/year. Parallel to the I. Pipeline and put into operation in 1987, II. With the Pipeline, the annual transport capacity has reached 70.9 million tons. The total length of the first line is 986 km, of which 345 km is in Iraq and 641 km in Turkey, and the second line is 890 km, with 234 km in Iraq and 656 km in Turkey. (Botaş, 2006)

Since the second Gulf War, this line has been the main target of Iraqi insurgents and has been interrupted from time to time by attacks. With a nominal capacity between 1.1 million barrels/day and 500,000 barrels/day, the maximum flow has been 750,000 barrels/day since the war started. In line with the permissions given to Iraq by the United Nations, the amount of crude oil transported by the Iraq-Turkey Crude Oil Pipeline in 2005 is 13,166. thousand barrels. In 2006, this figure was 10,900 thousand barrels. (Fink, 2006)

It has been calculated that there are approximately 45 billion barrels of oil reserves in the Northern Iraq Region. The estimated amount of natural gas in Northern Iraq is 3.2 trillion m3. On the other hand, it is planned that these energy lines will merge with the Baku-Caspian energy lines and go into central Europe. Iraq needs Turkey in order to capture an energy wealth approaching Saudi Arabia in the coming years, in other words, to be the second Dubai and to utilize its energy resources (both Mosul-Kirkuk and Basra) and to present it to the international market. The Kirkuk-Basra pipeline planned to be built will connect the production in the south of Iraq with the export lines in the north.(Botaş, 2006)

6.5.1.2 Baku-Tiflis-Ceyhan Crude Oil Pipeline (BTC)

The natural gas produced in Azerbaijan's Caspian Sea Shah Deniz fields is transported to Turkey with the line starting from Azerbaijan and reaching our country through Georgia. (Ulaştırma Bakanlığı, 2013)

The Baku-Tiflis-Ceyhan Crude Oil Pipeline, which was opened with an official ceremony on 13 July 2006, aims to transport the crude oil produced in Azerbaijan via the pipeline to a marine terminal in Ceyhan in Georgia, and from there to the world markets by tankers.

Technical Specifications of the Project:

• Maximum Capacity 50 million tons/year (1 million barrels/day)

• Total length 1,730 km • Turkey section 1,070 km

• Exit point Sangachal (Baku-Azerbaijan)

• Destination Ceyhan Terminal, Turkey • Operation period 40 years

Oil, which entered Turkey from the Georgia-Turkey border on November 17, 2005, reached the Ceyhan Export Terminal on May 28, 2006. On June 4, 2006, the first oil tanker was loaded from Ceyhan and started to be transported to the international market. With the opening ceremony held on July 13, 2006, BTC officially became operational. (BTC, 2006)

In the feasibility study, the investment cost of the project for the total system was calculated as 2.4 billion dollars, but with the changes made during the project, this cost increased to over 3 billion dollars. 1-16, depending on the capacity to be transported from this line in Turkey in return for "Pass Tax and Management Services". Between the years 17-40, starting with 140 million dollars and reaching 200 million dollars. It is expected to generate an annual income starting with 200 million dollars and increasing to around 300 million dollars between the years. In addition, Turkey has a 6.53% share in BTC partnership with Türk Petrolleri Anonim Ortaklığı. (BTC, 2006)

Within the scope of the agreement between BOTAŞ and SOCAR, gas purchase started on July 4, 2007, and approximately 37.63 billion m3 of gas was transported from Azerbaijan's Shah Deniz-I field via the BTE Pipeline as of the end of 2012, 22 billion 865 million m3 of this gas was supplied by BOTAŞ. taken. The Intergovernmental Agreement signed with Azerbaijan in 2001 enabled the

development of the first phase of the Shah Deniz Field and thus the expansion of the Azerbaijan natural gas market. The supply of natural gas produced from here to Turkey has significantly improved the natural gas supply security of our country and ensured that the two countries have a strategic investment such as BTE. (Ulaştırma Bakanlığı, 2013)

6.5.1.3 Batman-Dörtyol Crude Oil Pipeline

The first oil pipeline in our country was put into service on January 4, 1967 between Batman/Dörtyol with a length of 511 km and a capacity of 4.5 million tons/year. With the natural gas purchase agreements made since 1987, the transmission of gas to our residential areas and industrial facilities through pipelines throughout the country, especially in Istanbul and Ankara, has started. Batman-Dörtyol Petroleum Pipeline was transferred from TPAO to BOTAŞ with a protocol signed on 13 January 1984. (Ulaştırma Bakanlığı, 2013)

Operational activities in Batman-Dörtyol Petroleum Pipeline; storing the oil delivered by the production companies to be transported in the pipeline at the stations, after delivering the oil needed by the Batman TÜPRAŞ refinery within the determined program, to bring the oil received at Diyarbakır and Sarıl stations to the Dörtyol terminal, without mixing (via pig and plug 10) according to the companies, with the increasing oil in Batman terminal and storing it here and sending it to refineries within the determined withdrawal schedules. (UlaştırmaBakanlığı, 2013)

6.5.1.4 Ceyhan-Kırıkkale Crude Oil Pipeline

11 was established in order to convey the oil supplied by TÜPRAŞ from the Ceyhan terminal to Kırıkkale in order to meet the needs of TÜPRAŞ's Central Anatolia Refinery, which was established in Kırıkkale. After the pipeline was transferred to BOTAŞ by TPAO in 1983, the construction works were accelerated and the construction was completed in 1985 and the first oil started to fill the Orta Anadolu Refinery tanks on October 12, 1985.(Ulaştırma Bakanlığı, 2013)

The pipeline, also known as Yumurtalık-Kırıkkale, has a diameter of 24“ and a length of approximately 447 km. The system consists of a tank farm, two pumping

stations and two terminals in Ceyhan. The capacity of the line is 5 million tons per year. (Ulaştırma Bakanlığı, 2013)

6.5.2 Natural Gas Pipelines

6.5.2.1 Russian Federation-Turkey natural gas pipeline (West line)

Within the scope of the Blue Stream project, Turkey has been supplying natural gas from the line since 2003. Petroleum Transport Inc. with Pipelines (BOTAŞ) signed a 25-year natural gas purchase-sale agreement with the Russian Federation on December 15, 1997, in order to transport the annual 16 billion m3 additional natural gas to be purchased from the Russian Federation from the bottom of the Black Sea to Turkey. The Black Sea section of the pipeline is the first pipeline in the world to be laid at a depth of 2150 m. After the completion of the construction, the pipeline was put into operation with the ceremony and delivery protocol held in December 2002. The first gas from the line reached Turkey in February 2003. (Botaş, 2006)

The pipeline, which enters Turkey from Malkoçlar on the Bulgarian border and reaches Ankara by following the route of Hamitabat, Ambarlı, Istanbul, Izmit, Bursa, Eskişehir, is 842 km long. In the pipeline, there are compressor stations in Kırklareli, Ambarlı, Pendik, Bursa and Eskişehir, and a main metering station in Malkoçlar. The line reached its first stop, Hamitabat, on June 23, 1987, and has started to be used in electricity generation at the Trakya Combined Cycle Power Plant since that date. The line reached Ankara in August 1988. (Ulaştırma Bakanlığı, 2013)

6.5.2.2 Iran-Turkey Natural Gas pipeline

With this project, it is aimed to transport the natural gas obtained from the sources in the east of Turkey into the country by pipeline. (Ulaştırma Bakanlığı, 2013)

On August 8, 1996, a natural gas purchase agreement for 25 years, 10 billion m3 per year, was signed with Iran. Its length is about 1491 km. Natural gas has been started to be taken from the pipeline since December 2001. (Botaş, 2004)

The Eastern Anatolian Natural Gas Main Transmission Line, which is 1491 km in length and varying between 48" and 16" in diameter, starts from Doğubeyazıt and extends to Ankara via Erzurum, Sivas and Kayseri, and one branch reaches Seydişehir via Kayseri, Konya. (Ulaştırma Bakanlığı, 2013)

6.5.2.3 Turkey-Greece natural gas pipeline

With the sponsorship of the European Union, the Interstate Oil and Gas Transport Program to Europe (INOGATE) was established in 1996. The aim of the program is to support investments in new strategic pipelines and contribute to the development of existing pipelines. The Turkey-Greece Natural Gas Pipeline was also launched in Brussels in July 2000 as part of INOGATE (Interstate Oil and Gas Transport to Europe). (Gareth, 2000)

Between the Republic of Turkey and the Republic of Greece; The Intergovernmental Agreement on the realization of the Turkey-Greece natural gas connection and natural gas supply was signed on February 23, 2003, and gas supply started on November 18, 2007, with the opening ceremony attended by the prime ministers of the two countries. Approximately 650 million m3 of gas was transported from the Turkey-Greece Natural Gas Pipeline in 2012, and a total of approximately 3.75 billion m3 of gas was exported. (UlaştırmaBakanlığı, 2013)

The length of the pipeline, which will start from Karacabey within the borders of Turkey, is 211 km. In Turkey, approximately 300 km. it will be. After passing under the Marmara Sea for 17 km, it will enter Greece from the İpsala border point and end in Komotini, Komotini. (T.R. Ministry of Energy and Natural Resources Press Center, 2006)

Studies on the extension of the pipeline to Italy after Greece have also been initiated. On the subject, an Intergovernmental Agreement was signed on 26 July 2007 between Turkey, Greece, and Italy. However, no progress has been made regarding the undertaking of gas transportation to the project, and it is considered that there may be opportunities for connection to Italy in the future. (ETKB, 2017)

6.5.2.4 Russian Federation-Black Sea-Turkey (Blue Stream) Natural Gas Pipeline

Within the scope of the 25-year Natural Gas Purchase-Sale Agreement signed between BOTAŞ and Gazexport on 15 December 1997; natural gas reaches Turkey from the Russian Federation via a line through the Black Sea. According to the agreement, natural gas shipments will reach 16 billion m3/year in the plateau period. (Ulaştırma Bakanlığı, 2013)

In the Russian territory, between Izobilnoye and Djubga, a total of 370 km of pipeline system, with a diameter of 56" of 308 km and a diameter of 48" of 62 km, a total of 370 km, 2 parallel lines of approximately 390 km each with a diameter of 24" between Djubga and Samsun, and in the territory of Turkey. On the other hand, the pipeline system between Samsun and Ankara with a diameter of 48" and a length of 501 km consists of three main parts. The line was put into operation on February 20, 2003, and the official opening ceremony was held on November 17, 2005. It is the deepest subsea pipeline in the world (approximately 2100 m).(Ulaştırma Bakanlığı, 2013)

The Turkish part of the Blue Stream Project, which was put into operation in 2003, starts from Samsun and reaches Ankara via Amasya, Çorum, Kırıkkale, and joins with the Malkoçlar-Ankara transmission line near Polatlı.(Ulaştırma Bakanlığı, 2013)

6.5.2.5 Baku-Tiflis-Erzurum Natural Gas Pipeline (BTE)

The natural gas produced in Azerbaijan's Caspian Sea Shah Deniz fields is transported to Turkey with the line starting from Azerbaijan and reaching our country through Georgia. The part of the pipeline from Baku to the Georgia-Turkey border is referred to as the South Caucasus Pipeline (SCP), and the part up to Erzurum within Turkey belongs to BOTAŞ. On March 12, 2001, a 15-year Natural Gas Purchase-Sale Agreement was signed for the shipment of 6.6 billion m3 of Azerbaijan natural gas per year to Turkey. (UlaştırmaBakanlığı, 2013)

6.5.2.6 Trans-Anatolian Natural Gas Pipeline Project (TANAP)

The agreement signed between Turkey and Azerbaijan in 2011 is planned to serve Turkey in 2018 and Europe in 2020. It is aimed to use 6 billion cubic meters of the 16 billion cubic meters of gas to be extracted from the Shah Sea in Turkey, and to transmit the remaining 10 billion cubic meters to Europe.The purpose of the said agreements is to provide the necessary political support and establish the legal infrastructure for the TANAP project to be implemented in Turkey. Based on the agreements, it is planned to construct an exclusive pipeline of approximately 2000 kilometers with a maximum capacity of 32 billion m3, starting from the Georgian border of our country and extending to the Greek and/or Bulgarian border. It is envisaged that the TANAP System will be put into operation in 2017-2018 in parallel with the phase II production of the Shah Deniz Field. (UlaştırmaBakanlığı, 2013)

The first of the 4 phases envisaged for the TANAP Project will take place in 2018, with the first gas flow. It is aimed to reach an annual level of 16 billion m3 in 2020, 23 billion m3 in 2023 and 31 billion m3 in 2026. The project has the feature of being an alternative line for the future transmission of Turkmen gas to Turkey and Europe. (Ulaştırma Bakanlığı, 2013)

This project was signed between Russia and Turkey in 2016. It consists of two lines, each with a capacity of 15.75 billion cubic meters. Starting from Russia, it extends over the Black Sea, with the reception terminal on the Black Sea coast of Turkey, to the borders of Turkey and neighboring countries. In the first phase of the project, it is planned to construct the first line that will provide natural gas supply to Turkey, and then, depending on the natural gas purchase commitment of the EU member states, the construction of the other pipeline is planned. In addition, this project is a system that includes the sea and land section to be built in order to provide Russia's natural gas supply to our country, as well as the supply of Russian gas to Europe through our country's territory.

With this project, Russian natural gas reaches Europe by passing through Turkey for the first time. While the TurkStream project carries natural gas directly to Turkey from Turkey's Western Line, it also means a new route for European countries. Thus,

Turkey strengthens its position as a country that contributes to Europe's energy security. (Haberturk, 2020)

The passage of two natural gas pipeline projects through the Black Sea for Turkey's energy supply has brought the region to a more important position for Turkey. So much so that the Blue Stream and Turkish Stream pipelines in the region are very important for Turkey's energy security. However, with the Turkish Stream project, a new energy line has emerged as a result of the Russian natural gas reaching Europe via Turkey through the Black Sea. Thus, after the TANAP project, Turkey contributed to the energy security of Europe with the Turkish Stream project, and made a long way towards becoming a center in energy.(Furuncu, 2021)

CHAPTER 7: DISCUSSION AND CONCLUSION

In the world energy outlook, the EU stands out as the most important energy consumer after the USA. In the EU's energy consumption table, fossil fuels have a predominant role in parallel with the world energy system. The EU is the world leader in nuclear energy and renewable technologies. Physically, the EU does not have the fossil fuel potential to meet its energy needs. In particular, oil and natural gas reserves are not sufficient to meet the EU's consumption. Coal is a resource that does not have a problem in terms of physical supply throughout the world, and it is also available in the EU at a sufficient level. The EU has become the world's number one economic area. In connection with this situation, the EU's total energy consumption is high, but there is also a slowdown in the rate of increase in energy consumption due to the slowdown in the economic growth rate. Energy intensity is in the process of decline, just like greenhouse gas intensity. . The EU is dependent on imports for traditional energy sources. The EU is heavily dependent on Russia for energy imports. The inadequacy of oil and natural gas reserves in the European continent shows that the dependence on the Middle East region, especially Russia, will increase in terms of these resources.

The EU and Turkey have both strengths and weaknesses in terms of energy. Strengths; Coal, which is one of the energy sources, is the most abundant energy raw material in both EU member countries and Turkey. The need for energy sources is increasing day by day. Both the EU and Turkey have developed industrial infrastructure and diversity of industrial production.

Considering the weak points of the EU and Turkey in terms of energy; It is noteworthy that the energy resources owned by both EU countries and Turkey cannot meet their own needs. EU countries and Turkey obtain their energy resources through imports at a high rate and they need energy resources.

The EU is trying to eliminate its foreign dependency in increasing energy by turning to energy diversity. In its energy policies, the EU attaches importance to the implementation of multiple pipelines in terms of energy supply security and

diversity. Due to its proximity to energy importing and exporting countries, pipelines passing through Turkey will always be safe and economical. Turkey has deep-rooted and good relations with energy exporting countries in the region. It is also a strong and stable country among the countries in the region. This highlights its importance in terms of energy supply security.

In this context, the concept of logistics, which is the advanced expression of the concept of transportation, has become one of the most important tools that play a role in the improvement of economic indicators today. In the new business world, transportation regulations, globalization of markets, globalization of production and supply processes, increasing material flow and storage needs, competitive conditions, difficulty in providing cost advantage, increasing use of outsourcing, increasing importance of changing customer expectations, logistics to ensure and secure customer satisfaction. concept has come to the fore, therefore the importance of logistics has increased.

All types of sea, rail, road and air transportation and combined transportation can be used in transportation activities carried out to all parts of the world, including European, Middle Eastern and Asian countries that are geographically close to Turkey. In the realization of Turkey's foreign trade targets, it should be taken into consideration that the physical logistics and transportation infrastructure, as well as the legal logistics and transportation infrastructure, are necessary conditions that enable the geographical advantage to be used at the highest level, as well as the geographical advantage. It is important to provide good service with competitive costs in the international logistics sector where competition is valid in the global sense.

Turkey has a high potential and logistics infrastructure with its manpower potential, suitable geographical location and relatively affordable cost structure. There are 3 thousand companies operating in the Turkish logistics sector. There are many Turkish logistics companies that are influential in the global markets with the investments made in the near geographical regions of the USA, Europe and Turkey recently.

The most important goal of Turkey regarding the logistics sector is to increase the share of the logistics sector in GNP, as in developed countries, in parallel with the economic growth rate, and to be among the first 15 countries in the Logistics Performance Index. In this context, in the Tenth Five-Year Development Plan, “by ensuring that Turkey becomes a regional power in logistics; Reducing logistics costs, developing trade and increasing competitiveness” were stated as the main objective

The EU and Turkey have both strengths and weaknesses in terms of logistics. Strengths; With its geo-strategic importance, Turkey is a center on the way from the developing Middle East and Turkic republics to Europe. Turkey has one of the largest truck fleets in Europe and a developed road transport sector. Labor costs are low. International trade is increasing. Turkey's possible EU membership will increase the trade volume even more. There is a suitable topography for the construction of new ports. The size of the sector is considerably smaller compared to EU countries and the market is not saturated yet. The European Caucasus-Asia corridor (TRECECA), which is one of the most important of the 10 main transportation corridors determined by the EU, passes directly through Turkey. Logistics technologies are developing rapidly.

EU energy policies and Turkey's energy policies are common. This requires them to act jointly in international organizations. Due to its natural location, Turkey acts as a bridge between energy exporting and energy needing countries. This makes Turkey important for all countries, especially the EU.

The targets set by the European Union for its own energy policy have had both positive and negative effects on Turkey's energy sector. As for the positive effects; With the reform initiated by Turkey within the framework of harmonization with the EU internal energy market, the energy sector has become more transparent. The efforts have been increased to determine the prices in more competitive environment. Energy institutions were restructured and EMRA, an independent supervisory institution, was established. Energy efficiency and savings have been increased. Investments for the development of energy-related infrastructures have been increased and developments have been made in the field of renewable energy resources. In addition, the Union's high dependence on foreign energy, like Turkey,

should be seen as a separate advantage for Turkey. This situation, which brings the energy supply security policies of both sides closer, will contribute to the achievement of this goal of Turkey, which wants to be the center of energy in its region.

The Union has published two books on energy. These are green books and white books. According to the Green Book; Competition in energy policy, environmental protection and energy supply have been the main objectives of the Union. The Union's biggest problem, its dependence on energy, and that this dependence will increase over time is also stated in the Green Paper. It is therefore important for the EU Commission to create a competitive and efficient integrated market. The White Paper is; It tells about difficulties such as promotion of petroleum.

In its individual-based energy policies, the EU has set some targets in order to provide consumers with cheaper energy and high quality uninterrupted service. According to the European Commission, the EU's objectives in energy are: ensuring Europe's energy supply security, establishing energy prices in a way that does not hinder the EU's competitiveness, protecting the environment and combating global warming, and improving energy networks. It is very important to establish a common energy policy for energy supply security in EU countries. If the EU countries, which are dependent on foreign energy, act jointly in the implementation of their energy policies, they can implement their energy policies in a strong and effective way and ensure their energy security. The EU's creation of a common energy policy is also important in terms of establishing a common security and foreign policy in the future.

When the effects of EU energy policies on Turkey are evaluated, it is seen that Turkey creates reliable policies that take into account environmental factors and support economic and social development. Turkey has aimed to become a full member of the EU in energy as well as in social and economic fields. For this, legal regulations have been made and implemented in many areas.

The EU has brought some criteria for the countries in the process of membership and membership in terms of harmonization with energy policies. Integration, compliance

with the domestic market, energy efficiency and savings, reduction of foreign dependency, development of policies compatible with the targets set by the Kyoto Protocol, increasing the share of renewable energy resources, preparation for emergencies are the criteria it brings for Turkey. The most significant impact between the EU and Turkey was felt in the field of environment. Environment is one of the most important policies of the EU. It is thought that the importance of Turkey's geographical location will contribute positively to the cooperation between the EU and Turkey on energy relations.

Regarding the importance of the logistics sector in Turkey's geopolitical power analysis and its EU connection, Turkey, which gives the message "Turkey will be a logistics base", is in the position of a transit country between Europe, Central Asia and the Middle East; strengthens its infrastructure with new sea, land, rail, air and pipeline transportation projects. Within the framework of the Tenth Development Plan, taking into account the corridor approach on the north-south line, continuing the construction of corridors that will improve trade with neighboring countries, providing ease of access to new markets, giving importance to projects that will connect the EU's transportation networks, and Turkey's international logistics in logistics with the "Transformation from Transport to Logistics Programme". Strengthening its position, reducing the logistics cost burden in the total cost of industrial products, shortening the transportation time of final products to consumption markets were determined as the objectives of the program. Within the framework of the 2023 vision, the construction of highways is to continue 8000 km2 by making the model of public-private cooperation. In addition, it is aimed to establish smart transportation systems for smart vehicles.

Turkey is in the 12th position in the world in terms of the export data ranking of the transportation sector (WTO, 2013). This situation reveals the strategic importance of the logistics sector in terms of the development of the Turkish economy. However, for the Turkish economy, it is important for logistics activities to reach a developed level and approach world standards in two respects. First of all, Turkey will have a monopoly in terms of countries that can provide logistics services in its immediate vicinity due to its geographical location. In addition, national producers and exporters who will benefit from logistics services due to its population and economic

power will benefit, the access time and cost of Turkish products to foreign markets will decrease, and export demand will be positively affected.

Increasing global energy consumption brings with it important problems. The decrease in traditional energy resources such as oil, coal, natural gas reveals the necessity of using these resources more efficiently around the world. However, fossil fuel consumption also causes many environmental problems such as air pollution and greenhouse gas emissions. One of the most important ways to deal with these problems is to develop the supply of renewable and clean energy sources. Renewable energy sources are of great importance in terms of being sustainable as well as being available all over the world. Today, various renewable energy sources are used as an alternative to traditional sources in order to protect environmental resources and improve the quality of life.

Turkey's harmonization with the EU regarding renewable energy has shown positive developments. Turkey has important steps in this regard. One of these steps is to ensure that 30 percent of electricity is produced from renewable energy sources by 2023 and to reduce energy intensity by 20 percent.

Arrangements made in Turkey, which is located in a region rich in renewable energy resources, will increase the production of environmentally friendly and inexpensive energy. More use of renewable energy resources should be encouraged in order to increase domestic production, diversify energy resources, reduce foreign dependency, and cause less damage to the environment.

The EU is trying to eliminate its foreign dependency in increasing energy by turning to energy diversity. In its energy policies, the EU attaches importance to the implementation of multiple pipelines in terms of energy supply security and diversity. Due to its proximity to energy importing and exporting countries, pipelines passing through Turkey will always be safe and economical. Turkey has deep-rooted and good relations with energy exporting countries in the region. It is also a strong and stable country among the countries in the region. This highlights its importance in terms of energy supply security.

Due to its geographical location, Turkey is an important transit country. It has

progressed to become an energy corridor and warehouse between investments made in neighboring countries with rich energy resources and other countries that do not have enough of these resources and need them. Turkey's lack of sufficient resources for oil and natural gas, being a neighbor to a region rich in these resources, and conflicts in this region cause many problems. For this reason, the characteristics of the energy region, including Turkey, require the country to turn to various energy projects and opportunities where it can take an active role, and to put forward strategies regarding energy.

As an energy corridor, Turkey will both ensure its own security of supply and increase its international importance. However, Turkey should not be seen only as a transit country, it should be turned into an energy terminal. It is very important to establish a common energy policy for energy supply security in EU countries. If the EU countries, which are dependent on foreign energy, act jointly in the implementation of their energy policies, they can implement their energy policies in a strong and effective way and ensure their energy security. However, on the contrary, each country sees the energy field as its own internal matter and prefers to act individually.

Turkey is in an important place for the future of the EU in energy. Turkey has important duties in the transportation of oil and natural gas resources of the Caspian region, which has started to become a strategic actor, to the EU. The choice of Turkey's route is in the interests of both the EU and Turkey. For this reason, the issue of Turkey's prioritizing the pipelines with EU projects and accelerating their work, if not, abandoning some of them should be evaluated scientifically.

The energy policies that Turkey has recently developed are aimed at reinforcing its transit country feature. In this wa way, although the country is not an energy producer, it aimed to gain an important place in the world energy market. In addition, increasing energy efficiency and protecting environmental factors were among the priorities of the country's energy policy. In addition, Turkey has recently started to implement important projects on energy efficiency.

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