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MASTER'S DEGREE THESIS
TURKEY AS AN ENERGY HUB:
WOULD THE COUNTRY REACH ITS DESIRE?

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ABSTRACT

Recently Turkey has set ambitious targets for its energy future. The ultimate desire of the country is to become an energy hub through taking advantage of its geopolitical position. The aim of this thesis is to analyze whether Turkey would reach its desire of becoming an energy hub. For this purpose, energy outlook of the country will be scrutinized with its all dimensions. Besides Turkey's current international energy presence and regional dynamics will be evaluated in order to analyze the future of this desire.

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LIST OF ACRONYMS AND ABBREVIATIONS

AKP	Justice and Development Party
Bcm	Billion Cubic Meters
BOTAS	Petroleum Pipeline Company
CESS-NGS	Commission for Enduring and Supervising Security of Natural Gas Supply
CTF	Clean Technology Fund
DITAS	Marine Operations and Tanker Management Company
EEC	European Economic Community
EIA	Energy Information Administration
EMRA	Energy Market Regulatory Authority
EU	European Union
EUAS	Electricity Generation Company
FSRU	Floating Storage and Regasification Unit
G20	Group of Twenty
GDP	Gross Domestic Product
GEF	Loans and Global Environment Facility
GWh	GigaWatt hours
IEA	International Energy Agency
IMF	International Money Fund
INDC	Intended Nationally Determined Contribution
INOGATE	Interstate Oil and Gas Transport to Europe
ISIS	Islamic State of Iraq and Sham
KRG	Kurdish Regional Government
LNG	Liquefied Natural Gas
MENR	Ministry of Energy and Natural Resources
MoD	Ministry of Development
Mt	Million Tonnes
Mtoe	Million Tonnes of Equivalent
MWt	Megawatt

NATO	North Atlantic Treaty Organization
NPP	Nuclear Power Plants
OECD	Organization for Economic Cooperation and Development
PKK	Kurdish Worker Party
POAS	Petrol Ofisi Co.
SCP	South Caucasus Pipeline
SNPTC	People's Republic of China's State Nuclear Power Technology
TAP	Trans-Adriatic Pipeline
TEDAS	Turkish Electricity Distribution Company
TEIAS	Turkish Electricity Transmission Company
TEP	Tonnes Equivalent to Petrol
TETAS	Turkish Electricity Trade and Contracting Company
TFC	Total final consumption
Toe	Tonnes of Oil-Equivalent
TPAO	Turkish Petroleum Company
TPES	Total Primary Energy Supply
TTK	Turkish Hard Coal Enterprises
TUPRAS	Turkish Petroleum Refinery Corporation Company
TWh	Terawatt hours
TWh	Terawatt-hours
U.N	United Nations
U.S	United States
UNFCCC	United Nations Framework Convention on Climate Change
YEKDEM	Renewable Energy Technology-Specific and Longer-Term Support Mechanism
YPK	High Planning Council

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INTRODUCTION

Energy routes are the most important decisive of political and economic agendas of the contemporary world. Turkey stands at one of the key points of these routes; the country is at close proximity to more than 70% of world's proven oil and gas reserves of the Caspian and the Middle East. Besides, energy consumer Europe-world's second biggest energy consumer- stands at the other side of the country.

Today Turkey has ambitious targets on its energy agenda for the near future. The ultimate desire of the country is to become an energy hub through taking advantage of its geopolitical position. Apart from its geopolitical position, which is called "natural bridge", there are several internal and external dynamics for the future of this desire. The aim of this thesis is to analyze whether Turkey would reach its desire of becoming an energy hub.

The wide scope of this desire is not only important for Turkey's energy future but also important for energy producers and consumers. While Turkey can contribute Europe's energy security, it can also open new energy markets to supplier countries. This win-win approach can be assumed as the main support for Turkey's desire on energy. In this scope the working hypothesis of this thesis is **"Turkey will emerge as a powerful energy hub of its region in the near future in regard to its geopolitical position"**. The working hypothesis will be examined with the energy profile of Turkey. Also different internal and external dynamics will be dealt with various perspectives in order to analyze the energy future of the country.

Due to dynamic nature of the subject, several different sources will be exploited. In order to obtain up-to-date information, official sources will be contacted. Especially, Republic of Turkey Ministry of Energy and Natural Resources (MENR) and the International Energy Agency (IEA) will be benefited as the main resources. Reports and publications of different institutions, governmental and non-governmental organizations will be examined. In addition, books and articles from different disciplines will be used in order to reach different perspectives.

The subject will be examined under five chapters. The first chapter will analyze the term 'energy hub' in order to determine limits of this subject. The second chapter will present the energy outlook of

Turkey. In the third chapter the interaction between economy and energy in Turkey will be addressed. Later, the fourth chapter will mention milestones and changes in energy policy of Turkey. Finally, in the fifth chapter, the geopolitical location of the country and the EU-Turkey energy relation will be analyzed. Also, existing, planned and possible international pipelines in Turkey; the future role of the country and possible challenges for its target will be focused.

1. THE TERM ‘ENERGY HUB’

The term, which defines the energy vision Turkey, is quite important for the purpose of this thesis. In order to examine the energy future of the country, determined targets and current energy outlook are needed to scrutinize inside of specific limits.

According to Bilgin, being an energy corridor, energy hub or energy center have different characteristics and dynamics in the case of Turkey. In scope of this conceptual division, the position of energy corridor can be regarded as the first level in which transit fees are utilized but internal demands can not meet sufficiently. In the position of energy hub, Turkey is compatible between international agreements and domestic energy mix. Additionally it has a wide influence on energy trading networks and re-exportation ability. The energy center can be regarded as a top level where massive investments are made at very high level. Also energy centers have efficient energy intensity. Nuclear and renewable energy are included in energy mix of the country. Thanks to this conceptual division of Bilgin, along with the pipelines, also significant relationship between energy geopolitics and foreign policy gain importance. Thus, restrains, risks and opportunities can be identified for Turkey's energy future.¹

Despite the term 'energy hub' which is mostly used in Turkish official sources, it is understood that Turkey's energy targets were set in order to become a fully equipped energy center. For this reason, ongoing chapters will elaborate the subject within this framework.

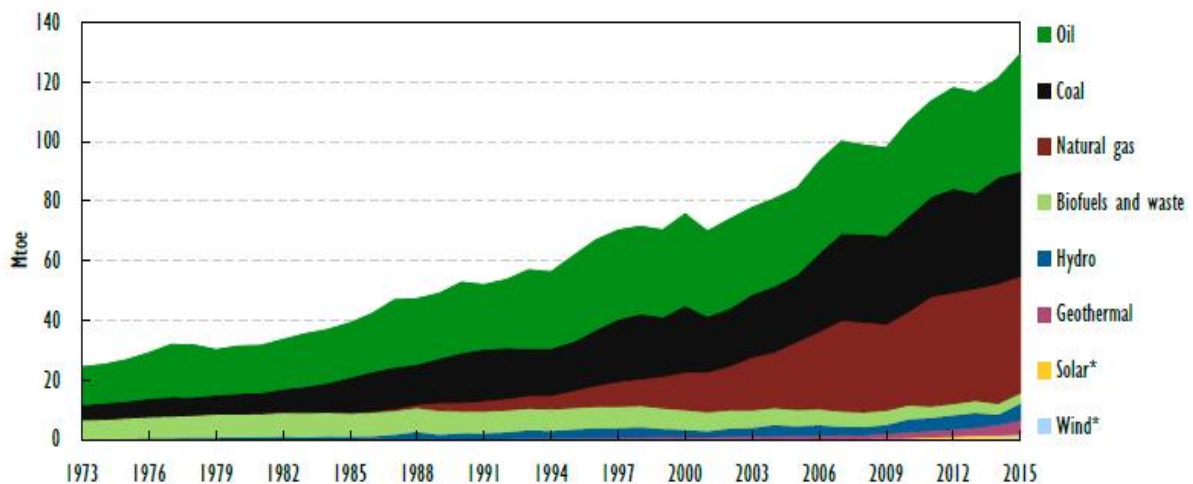
¹ Bilgin, M. (2010) “Turkey’s Energy Strategy: What Difference Does It Make To Become an Energy Transit Corridor, Hub or Center?”, *UNISCI Discussion Papers*, pp.113-128

2. TURKEY'S ENERGY OUTLOOK

2.1. MAIN ELEMENTS OF TURKEY'S ENERGY

Turkey's energy demand has been on upward trend for the last four decades. Concordantly, this rise has seen on the supply side. Country's TPES (Total Primary Energy Supply), which was 84.2 million tonnes of equivalent (Mtoe) in 2005, has reached to 129.7 Mtoe in 2015 (See Figure 1: TPES, 1973-2015). Oil and natural gas are the main components of the energy composition of Turkey and domestic sources only meet 24.8% of energy supply. In terms of TPES per capita, Turkey has the lowest level with 1.7 tonnes of oil-equivalent (toe) among IEA member countries that have 4.5 toe in average. The country, which produced 4.4 million tonnes (Mt) oil in 1991, has recorded decline by 2.5 Mt in 2015. While Turkey's domestic oil production has been on declining trajectory, crude oil imports have been on increasing. Also cost differences between low prices of international coal and high prices of imported natural gas, make coal more attractive and leads the way for more investments in coal-fired power plants using imported coal.²

Figure 1: TPES of Turkey, 1973-2015³



² International Energy Agency (2016) 'Energy Policies of IEA Countries-Turkey, General Energy Policy pp.21-32

³ Ibid.

In comparison to oil supply, which has increased by 35.8%, natural gas and coal supply have increased by 72.1% and 56.2% over the past decade. In 2015, while coal (41.8%), (mostly lignite), oil (8.3%) and natural gas (1%) constituted 51.1% of domestic energy production, renewable sources constituted 48.9% of all domestic energy production, these were hydro with 17.9%, geothermal with 14.8%, biomass with 10.1%, wind with 3.1% and solar with 3%. It is clear from these figures, that renewable energy has gained strong share with growth in its total installed capacity. Despite its growing strong share, energy production capacity of renewable energy shows volatility due to varying levels of hydro basins.⁴

Total final consumption (TFC) of Turkey was 85.8 Mtoe in 2014. Oil consumption was in the first place with 35.6% and it was followed by natural gas (22.6%), electricity (20.6%) and coal (12.3%). Natural gas has gradually taken the place of oil use through diversification of usage area and with expansion of domestic gas distribution network. With the economic expansion in the recent years, Turkey has headed to different energy resources. Thus diversification on exported and produced energy has been started. However Turkey is the fifth country among IEA member countries in terms of the share of natural gas usage in total, also the country is in the ninth place in terms of fossil fuels in electricity generation in 2015.⁵

2.2. CURRENT RENEWABLE ENERGY OUTLOOK OF TURKEY

2.2.1. Hydraulic Energy

Hydroelectricity has the biggest share in renewable energy composition of Turkey. In terms of electricity generation, capacity of hydraulic energy is 78 times bigger than geothermal and 18 times

⁴ Ibid.

⁵ Ibid.

than wind. With 433,000 Gigawatt hours (GWh), gross annual hydroelectric potential, %25 of Turkey's electricity generation is obtained from hydraulic energy.⁶

The total installed capacity is 26.246,6 Megawatt (MWt) and there were 572 hydropower plants at the end of 2016 June. This figure with 34.3% does not constitute even the half of country's total potential.⁷ However until the year 2020, hydraulic energy potential of the country can meet up to 46% of the total energy demand.⁸

2.2.2. Geothermal Energy

Turkey has quite high geothermal potential thanks to its position on the Alp-Himalayas belt. This geothermal energy capacity of the country, which is mainly located in the west side, is 31.500 MWt in theory. In 2005 usable geothermal heat capacity of Turkey reached to 5000 MWt from 3100 MWt due to efficiency mobilizations through development of existing geothermal resources and search for new potential areas. Between the years 2002 and 2016, Turkey has shown promising progress in geothermal energy.⁹ Despite this promising progress, Turkey's total installed geothermal power generation capacity is 0.3% of the total installed power generation capacity. Still the geothermal outlook of the country is quite strong, the country is one of the 5 leading countries in direct use of applications of geothermal energy and also it has 1/8 of the world's geothermal energy.¹⁰

⁶ Melikoglu, M. (2016) "The role of renewable and nuclear energy in Turkey's Vision 2023 energy targets: Economic and technical scrutiny", *Renewable and Sustainable Energy Reviews* 62, pp.1–12

⁷ Republic of Turkey Ministry of Energy and Natural Resources, Info Bank-Hydraulics, <http://www.enerji.gov.tr/en-US/Pages/Hydraulics>

⁸ Yuksel, I. (2010) "Energy production and sustainable energy policies in Turkey", *Renewable Energy* 35, pp.1469–1476

⁹ Republic of Turkey Ministry of Energy and Natural Resources, *Info Bank-Geothermal* <http://www.enerji.gov.tr/en-US/Pages/Geothermal>

¹⁰ Melikoglu, M. (2016) "The role of renewable and nuclear energy in Turkey's Vision 2023 energy targets: Economic and technical scrutiny", *Renewable and Sustainable Energy Reviews* 62, pp.1–12

2.2.3. Biomass Energy

Biomass, the only renewable petroleum substitute, is quite widespread as the major energy source in rural areas of Turkey.¹¹ Agricultural diversity of Turkey provides several alternative sources such as residues of grain dust, wheat straw and hazelnut shell and municipal solid wastes. Today Turkey has about 8,6 Mtoe potential in biomass energy.¹² Also Turkey's biogas production potential has been estimated at 1.0-1.5 Mtoe however the country only has three small operating units. Also researches on the development of biogas production are very limited. Preliminary studies, which were initiated by the General Directorate of Electrical Power Resources Survey and Development Administration for biogas production from animal wastes, were terminated in 1987, while no studies were available for production from agricultural wastes. Country obtained about 10 GWh electrical productions by biomass in 2009, it is estimated that this number would reach around 50 GWh by 2030. Hence, 250,000 job opportunities would be created and personal benefits will be 6.4 billion USD with this capacity.¹³

2.2.4. Wind Energy

The wind atlas of Turkey, which was published by EMRA (Energy Market Regulatory Authority) on May 2002, indicates that the regions with the highest potential for wind speeds at height of 50m are the Aegean, Marmara, and Eastern Mediterranean regions of Turkey, as well as some mountainous regions of central Anatolia. Meteorological data by the USA space studies have shown that Turkey has high wind capacity.¹⁴ The installed capacity of wind energy plants in operation was measured as 5.751,3 MW at the end of 2016.¹⁵ Approximately 37% of Turkish lands are above medium level wind capacity. Turkey's target is to install up to 20 GW by 2023 in order to meet 30% of its electricity

¹¹ Toklu, E. (2017) "Biomass energy potential and utilization in Turkey", *Renewable Energy* 107, pp.235-244

¹² Republic of Turkey Ministry of Energy and Natural Resources, *InfoBank-Biofuel*, <http://www.enerji.gov.tr/en-US/Pages/Bio-Fuels>

¹³ Toklu, E. (2017) "Biomass energy potential and utilization in Turkey", *Renewable Energy* 107, pp.235-244

¹⁴ Ata, R. (2013) "The Current Situation of Wind Energy in Turkey", *Hindawi Publishing Corporation, Journal of Energy Volume 2013, Article ID 794095*

¹⁵ Republic of Turkey Ministry of Energy and Natural Resources, *Info Bank-Wind*, <http://www.enerji.gov.tr/en-US/Pages/Wind>

generation from renewable sources. According to the predicted wind power development capacity of Turkey, the power obtained from wind will increase and exceed 10,000 MW by 2030.¹⁶

2.2.5. Solar Energy

Turkey has high solar energy potential. However investments on solar energy are very low.¹⁷ The total annual insolation time was determined as 2.737 hours (a total of 7,5 hours per day), and the total solar energy derived per year is 1.527 kWh/m² (total 4,2 kWh/m² per day). As 528.000 tonnes equivalent to petrol (TEP) in houses and 283.000 TEP for industrial purposes, solar collectors produced close to 811.000 TEP in the year 2015. By 2016, a total of 1043 number solar energy facilities were established: 2 licensed; 34 pre-licensed and the rest are unlicensed.¹⁸ It is expected that the capacity will be increased gradually in the coming years, with the target of the MENR, being a minimum of 3000 MW installed capacity of license PV plants in 2023.

2.3. EMERGING NUCLEAR ENERGY OF TURKEY

Nuclear energy, which is assumed as an alternative energy resource along with renewable energy, has been inside of Turkey's energy agenda almost for 7 years. Even though Turkey's interest in nuclear power, which started in 1950s, all construction attempts resulted with failures until the agreement of Mersin Akkuyu NPP (Nuclear Power Plant) with Russia in 2010. The Russian company Rosatom runs the project in Turkey's southern city Mersin, which locates in the Mediterranean coast of the country. In the first 15-year commercial plan, Turkish Electricity Trade and Contracting Company (TETAS) has 70% of the output of Akkuyu units 1 and 2 and the 30% of units 3 and 4. The Akkuyu Company will be supplier of the rest of the plant output on the electricity market. Also the government will not take an equity share but 20% of the total profit plan will be given to the government after 15-year

¹⁶ Ata, R. (2013) "The Current Situation of Wind Energy in Turkey", *Hindawi Publishing Corporation, Journal of Energy Volume 2013, Article ID 794095*

¹⁷ Melikoglu, M. (2016) "The role of renewables and nuclear energy in Turkey's Vision 2023 energy targets: Economic and technical scrutiny", *Renewable and Sustainable Energy Reviews* 62, pp.1–12

¹⁸ Republic of Turkey Ministry of Energy and Natural Resources, *Info Bank-Solar*, <http://www.enerji.gov.tr/en-US/Pages/Solar>

commercial. Russian ownership with total share will be reduced to %51 within the plan; hence Turkish companies may obtain share.¹⁹

The Mersin-Akkuyu NPP project is followed by another project for the northern city of Turkey, Sinop, in the Black Sea Coast. For the second NPP project Turkey agreed with Japanese company, Mitsubishi Heavy Industries. This NPP will service for 60 years and will be under the management of French company, Areva. Electricity Generation Company (EUAS) will have 49% of equity share of Sinop NPP and the total output will be bought by TETAS. Hence unlike Akkuyu Nuclear Power plant, public companies will have lower limits on purchasing production output and equity shares on Sinop NPP.

In addition to these two NPPs, the country has started to initiative for the third NPP. EUAS is the authority for site selection of the third NPP project. The memorandum of Co-operation for the Development of a NPP was signed with Westinghouse Electric Company and the People's Republic of China's State Nuclear Power Technology (SNPTC) in 2014. The development report for the project has been under the assessment since 2015.²⁰

Despite its location, which stands on a seismically active Mediterranean Earthquake belt, and widespread public unrest against the NPPs, the country has strong ambitions on nuclear energy. Today nuclear power is inside of Vision 2023; general goal is to increase the share of nuclear power to 10% in total energy composition.²¹

2.4. LIQUEFIED NATURAL GAS IN TURKEY

Liquefied Natural Gas (LNG) is another way of the natural gas transportation which Turkey uses.

Today with 83%, country predominantly uses piped form for oil and gas supply and 16% is supplied

¹⁹ The World Bank (2015) "Turkey's Energy Transition: Milestones and Challenges", <http://documents.worldbank.org/curated/en/249831468189270397/pdf/ACS14951-REVISED-Box393232B-PUBLIC-EnergyVeryFinalEN.pdf>

²⁰ International Energy Agency (2016) "Policies of IEA Countries-Turkey", *Nuclear Energy*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.181-190

²¹ The World Bank (2015) "Turkey's Energy Transition: Milestones and Challenges", <http://documents.worldbank.org/curated/en/249831468189270397/pdf/ACS14951-REVISED-Box393232B-PUBLIC-EnergyVeryFinalEN.pdf>

via LNG form. As the figures of the U.S Energy Information Administration (EIA) shows, Algeria is the biggest natural gas supplier of Turkey in LNG format with 8%, Algeria is followed by Qatar with 4%, Nigeria with 3% and the rest 2% is consist by other suppliers.²² When it is considered that Russia, Iran and Azerbaijan are the main suppliers of natural gas, which is imported by pipes, it can be assumed that further increase in the share of LNG imports will considerably contribute to energy security of the country.²³

By the year 2016, the country has two LNG import terminals; the first one is in Aliaga-Izmir under the operation of private company with send-out capacity of 6 bcm/y, and the second is in Marmara Ereğlisi-Tekirdag under the operation of Petroleum Pipeline Company (BOTAS) with a send-out capacity of 8 bcm/y.²⁴

According to the announcement of BOTAS, the country will increase its LNG import capacity through installing two floating storage and regasification units (FSRUs). By 2019, two FSRUs that will have combined total capacity of 14.6 bcm per year will be in operation. One will be located in Iskenderun in the East Mediterranean part of the country and the other in the Gulf of Saros near the Gallipoli Peninsula. Also capacity of the existing FSRUs are planned to expand. The receiving capacity of Marmara Ereğlisi-Tekirdag was planned to increase to around 9.9 bcm by 2017.²⁵ Another plan was conducted in order to deployment of an additional FSRU to Aliaga. Increase in general capacity of country in LNG will provide flexibility for seasonal difference in demand also through the diversification of sources country will enhance its position in price negotiations.²⁶

²² U.S Energy Information Administration (2017) "Country Analysis Brief: Turkey", <https://www.connaissancedesenergies.org/sites/default/files/pdf-pt-vue/turkey.pdf>

²³ Biresselioglu, M. & Demir, M. H. & Kandemir, C. (2012) "Modeling Turkey's Future LNG Supply Security Strategy" in *Energy Policy* 46(2012), pp.144–152

²⁴ International Energy Agency (2016) "Energy Policies of IEA Countries-Turkey", *Natural Gas Supply and Demand*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.103-106

²⁵ Stevenson, R. (2016) "Turkey Plans Boost For LNG Delivery Capacity", *News Base, EurOil - Europe Oil & Gas* 24 November, Week 46, Issue 377, <https://newsbase.com/topstories/turkey-plans-boost-lng-delivery-capacity>

²⁶ Norlen, A. (2017) "Turkey's floating LNG imports deliver cheaper gas and energy security", *McKinsey Energy Insights*, <https://www.mckinseyenergyinsights.com/insights/turkey-s-floating-lng-imports-deliver-cheaper-gas-and-energy-security/>

3. ENERGY AND THE TURKISH ECONOMY

Turkey is a member of the G20 as the world's 18th largest advanced and emerging twenty economy.²⁷

Also, the country belongs to the MINT- Mexico, Indonesia, Nigeria and Turkey- an unofficial term which was created by Jim O'Neill of Goldman Sachs, the creator of the well-known term BRIC. The MINT countries have very favorable demographics for at least the next 20 years, and their economic prospects are encouraging. Other elements that put Turkey into this group are its big and growing populations with lots of young workers and its favorable geographic position that allow Turkey to take advantage of large markets nearby.²⁸

Since 2000 the economic performance of the country has been evaluated as impressive in the overview of the World Bank.²⁹ Over the last decade, Turkey's gross domestic products (GDP) per capita has nearly doubled to USD 19 917.³⁰ In the period 2002-2012 country's average economic growth has successfully reached to more than 5%.³¹ Rapidly growing private sector, basic industry, construction, banking, transport, and communication are the main reasons of this recent growth in the Turkish economy.³² Along with the economic growth, population of the country has also increased considerably.³³

In parallel to this economic outlook of the country, energy demand has been on upward trend. The country has expanding energy needs due to its young and urbanising population. Turkey's electricity consumption has doubled in 12 years with industrial boom.³⁴ Besides, on global scale, the country has

²⁷ Republic of Turkey Ministry of Foreign Affairs, Economic Outlook of Turkey, <http://www.mfa.gov.tr/prospects-and-recent-developments-in-the-turkish-economy.en.mfa>

²⁸ Durotoye, A. (2014) "The MINT Countries as Emerging Economic Power Bloc: Prospects and Challenges",

²⁹ The World Bank, Turkey Overview, <http://www.worldbank.org/en/country/turkey/overview>

³⁰ The Organisation for Economic Cooperation and Development, Turkey Data- Gross Domestic Product, <https://data.oecd.org/gdp/gross-domestic-product-gdp.html>

³¹ PricewaterhouseCoopers (2014) "Trade& Finance, Autumn Edition", <https://www.pwc.de/de/newsletter/laender/assets/pwc-nl-trade-finance-herbst-2014.pdf>

³² International Energy Agency (2016) "Policies of IEA Countries-Turkey", *General Energy Policy* pp. 21-32

³³ PricewaterhouseCoopers (2014) "Trade& Finance, Autumn Edition", <https://www.pwc.de/de/newsletter/laender/assets/pwc-nl-trade-finance-herbst-2014.pdf>

³⁴ International Energy Agency (2016) "Energy Policies of IEA Countries-Turkey", *General Energy Policy*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp. 21-32

a striking energy outlook. The world's energy consumption has been estimated to increase by %60 in the next 25 years and Turkey is inside of the region where the energy consumption will be intense.³⁵

Even it seems as a unilateral, the relationship between energy consumption and economic growth shows bidirectional interaction. Economic growth was a trigger for the increase in energy consumption. Thus it has opened the door for technological development, and technological development has accelerated economic growth through new energy sources.³⁶

Despite this remarkable scenery in the economy, Turkey is facing serious challenges in satisfying its growing energy demand. To fuel a rapidly growing economy, the country's electricity consumption has increased by an average of %8-9 every year.³⁷ In parallel, the external dependency of the country has also increased due to high level energy import. Between the years 2009 and 2014 Turkey spent \$239 billion for energy import.³⁸ High level energy import is one of the main causes of current account deficit of the country.³⁹ This dependency on external energy sources makes Turkey vulnerable in face of possible crises.⁴⁰ Turkey imports 72% of its energy and the country's energy import heavily depends on few suppliers. Especially Iran and Russia are the main suppliers for Turkey. This situation put Turkey into a very unfavourable position at the price negotiations.⁴¹

In the face of growing economy, becoming an energy hub will benefit the country in many respects. Firstly the diversification of resources will be in favour of Turkey. Thus the country would gain other options to choose and reach a better position in the price negotiations with its suppliers.⁴² Also the country would gain transit revenues as an energy hub and enhance its political influence on the

³⁵ Erdal, G. & Erdal, H & Esengün K. (2008), "The causality between energy consumption and economic growth in Turkey", *Energy Policy* 36 (2008), pp.3838–3842)

³⁶ Ibid.

³⁷ Ata, R. (2013) 'The Current Situation of Wind Energy in Turkey', *Journal of Energy Volume* 2013

³⁸ Daily Sabah (2014) "Turkey's energy import costs \$50 billion per year, on average", *October 2*, <https://www.dailysabah.com/energy/2014/10/02/turkeys-energy-import-costs-50-billion-per-year-on-average>

³⁹ Yurdakul, F. & Cevher, E. (2015) "Determinants of Current Account Deficit in Turkey: The Conditional and Partial Granger Causality Approach", *Procedia Economics and Finance* 26 (2015) 92 – 100

⁴⁰ Erdal, G. & Erdal, H & Esengün K. (2008), "The causality between energy consumption and economic growth in Turkey", *Energy Policy* 36 (2008) pp.3838–3842

⁴¹ Altundeger, N. (2015) "A Dream Coming True? Turkey Becoming an Energy Hub" in *The 2015 WEI International Academic Conference Proceedings* pp.71-82

⁴² Ibid.

supplier region.⁴³ However Turkey needs to meet a lot of requirements on the way of becoming an energy hub. Especially in the financial area, many regulations are needed.⁴⁴

4. MILESTONES AND CHANGES IN ENERGY POLICY OF TURKEY

Energy is one of the most important determinants of Turkey's foreign and domestic policy. Especially on the foreign policy, energy geopolitics appears as the most prominent element. Turkey stands at the crossroads of uneasy relations: on the one hand its tough regional neighbours such as Iran and Russia on the other hand the West as an important energy partner; in addition regional conflicts in the Middle East create various dimensions for energy politics of Turkey. Even though the fragile structure of the region, Turkey is quite determined on its desire to become an energy hub. Therefore the country works hard to make itself as an attractive energy hub for the EU and also tries to collaborate with Russia. While countries with different regimes on energy lines create complex conflicts, regional oppositions put Turkey into indispensable position. So the country found itself inside of a multiple integration process which includes the Middle East, Russia, and Europe, all at once.⁴⁵

Turkish government has initiated its multidirectional policies on energy agenda both in national and international level. Thus broad energy targets have been identified on the way of becoming an energy hub. Also energy is given weight in the vision 2023 which was formed for the centenary of the country. In scope of the vision, diversification of energy supplies, increasing capacity of the energy production and renewable energy are conducted as the main pillars. Also energy ambition of the country is intensely reflected on the international arena. Turkey chaired the G20 in 2015 and made considerable contribution to the energy agenda of the group.⁴⁶

In parallel of its desire to become an energy hub, the country has also reshaped its domestic energy policy in recent years. However, dynamism in Turkish energy sector has been visible for many years.

⁴³ Winrow. G.,M. (2007) "Turkey and the East-West Gas Transportation Corridor"

⁴⁴ Altundeger, N. "A Dream Coming True? Turkey Becoming an Energy Hub" *The 2015 WEI International Academic Conference Proceedings* pp 71-82

⁴⁵ Einar W. 2012, "Pipe Dreams or Dream Pipe? Turkey's Hopes of Becoming an Energy Hub", *Middle East Journal*, Vol. 66, No. 4 (Autumn 2012), pp. 598-612

⁴⁶ International Energy Agency (2016) "Policies of IEA Countries-Turkey", *General Energy Policy*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp. 21-32

Restructuring in energy sector has started in the 70s with establishment of state owned institutions. In 1973, Turkish Petroleum Company (TPAO) (exploration, and production), Turkish Petroleum Refinery Corporation Company (TUPRAS) (refining), BOTAS (oil and gas pipeline activities), the Petrol Ofisi Co.(POAS) (distribution activities) and Marine Operations and Tanker Management Co. (DITAS) (crude oil and fuel transportation) have been established in the scope of The Petroleum Reform Law. Since 2003 the Petroleum Law (No.6326, 1954-2013) has led to the separation of natural gas and oil market activities.⁴⁷

Turkey opened its energy sector to the private sector in 1984 within the shift of its economic structure to toward a market economy after the end of Cold War. In the following of the several economic downturns, through the supports of International Monetary Fund (IMF) and the World Bank comprehensive reforms were launched; an Electricity Market Law and a Natural Gas Market Law were both enacted in 2001. Sectoral restructuring accelerated with these and the establishment of electricity and gas markets open the way for the establishment of EMRA.

Since the beginning of the 2000s, Turkey has been inside of a liberalizing process on its energy sector through privatizing public companies, opening up the electricity sector to private investment, and letting electricity prices be determined under day-ahead and intra-day bidding markets.⁴⁸ In 2003 liberalization started in Turkish electricity sector and the changes have made in the structure of the Turkish Electricity Transmission Company (TEIAS). In the following year Turkish Electricity Distribution Company (TEDAS) was restructured after the failed privatization attempts. One holding company and twenty regional subsidiaries have shaped inside of the TEDAS, in the scope of 1st Electricity Reform and Privatization Strategy Paper of 2004. Significant targets were determined for

⁴⁷ International Energy Agency (2016) “Policies of IEA Countries-Turkey”, *Oil*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.71-88

⁴⁸ Institute for Energy Economics and Financial Analysis (2016) “Turkey at a Crossroads: Invest in the Old Energy Economy or the New?”, http://ieefa.org/wp-content/uploads/2016/09/Turkey-Crossroads-Invest-in-the-Old-Energy-Economy-or-the-New_June-2016-v2.pdf

the use of indigenous energy resources in electricity generation by the year 2023. These cover renewable energy, use of lignite and nuclear power.⁴⁹

Also incentives have been taken in order to attract local and foreign investors. Privatization has been mostly taken place through the transfer of the operational rights.⁵⁰ Turkish investors were the main financiers, foreign financiers stayed relatively behind of domestic investments. This prominence of the Turkish investors can be attributed to restructure of the banking sector which started after the economic downturn in 2000–01 and provide large volumes financing for Turkish investors.⁵¹

Also implementations have been pursued on energy import, Turkish government aimed to decrease the import dependency on energy and started Electricity Market and Security of Supply Strategy in 2009. Thus the use of domestic lignite has been supported with other indigenous resources. In line with this strategy installation of the clean coal technologies for power plants have been accelerated.⁵² Also the policy directions of Strategic Plans of 2010-14 and 2015-19 include increase of domestic coal usage in electricity generation. Privatization in the coal sector was made on the production side but state-owned institution Turkish Hard Coal Enterprises (TTK) has all the reserves. Through the transfer of power plant ownership and operating rights, 30% of coal production has been privatised since 2002. Also subsidies and investment incentives are provided by government for the production.⁵³

As a result of the economic growth, power generation has increased in the face of raising electricity demand. Generation in 2008 with 198.4 terawatt-hours (TWh) reached to 259.7 TWh in 2015.

Privatization process which attracts private investments and successful restructuring has brought satisfactory capacity and profit margins. Also the Turkish electricity system has been synchronized with the Continental European system since 2014. With the all of these progresses, the Turkish

⁴⁹ International Energy Agency (2016) “Policies of IEA Countries-Turkey”, *Electricity*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.131-163

⁵⁰ Yuksel, I. (2010) “Energy production and sustainable energy policies in Turkey”, *Renewable Energy* 35 (2010), pp.1469–1476

⁵¹ Institute for Energy Economics and Financial Analysis (2016) “Turkey at a Crossroads: Invest in the Old Energy Economy or the New?”, http://ieefa.org/wp-content/uploads/2016/09/Turkey-Crossroads-Invest-in-the-Old-Energy-Economy-or-the-New_June-2016-v2.pdf

⁵² Ibid.

⁵³ International Energy Agency (2016) “Policies of IEA Countries-Turkey”, *Coal*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.89-101

electricity market has entered into consolidation period. Cooperation of the MENR and the Ministry of Development (MoD) and its High Planning Council (YPK) are responsible formulating and implementing policies related to the electricity sector.⁵⁴

In 2013 with the Turkish Petroleum Law (No 6491) liberalization was also started in the Turkish oil market in order to increase the efficiency of state-owned TPAO -country's main domestic crude oil producer which was covering about 70% of total domestic production in 2014 and holding 76% of exploration areas on its hand - and to attract foreign investors. Special tax exemptions, tariffs, and fees have been implemented for the exploration and production companies in Turkey. Also Article 10 of the Petroleum Market Law regulates the price levels in the market.⁵⁵

The energy regulations of recent years were mainly made in the natural gas field. Generally, Turkish government has set objectives to stabilise the share of natural gas below 30% in the electricity mix by 2023. TPAO has 50% of natural gas production of Turkey other 50% is produced by private companies. Although the existence of many private wholesale companies state-owned BOTAS has the biggest market share.⁵⁶

Country aims to increase its natural gas storage capacity to cover 10% of annual consumption by 2019. The EMRA granted storage licences to three private companies. Turkey's legislation does not contain gas and oil transit via the national transmission system and the construction of new pipelines for transit purposes as an internal market activity. These are assumed as Intergovernmental Agreements in the scope of the Law concerning Transit Passage of Petroleum. In addition to these natural gas storage strategies, the standards were set for gas supply security in the scope of the 2001 Natural Gas Market Law No. 4646. Within this framework 10% of their imported annual gas is obliged to storage.⁵⁷

⁵⁴ International Energy Agency (2016) "Policies of IEA Countries-Turkey", *Electricity*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.131-163

⁵⁵ Ibid., pp.71-88

⁵⁶ Ibid., pp.103-131

⁵⁷ Ibid., pp.103-131

The Commission for Enduring and Supervising Security of Natural Gas Supply (CESS-NGS) was established in order to amend the National Gas Market Law which will oblige all power plants with fuel-switching capacity to hold sufficient amounts of secondary fuel such as diesel.⁵⁸

On renewable energy, Turkish government has initiated series policies. The basic legal framework was adopted for the support renewable energy in 2005 and renewable energy underlined as key component of country's energy structure in 2009. With specific targets for solar and wind energy, Turkey adopted Intended Nationally Determined Contribution (INDC) before the Paris COP21 Conference. In 2011 government enacted the Amendment Law to Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy No. 6094. Through the support of the Renewable Energy Technology-Specific and Longer-Term Support Mechanism (YEKDEM) country has reached growing rates in renewable energy investments. Also the Clean Technology Fund (CTF) loans and Global Environment Facility (GEF) have been provided for investors of renewable energy in order to encouragement in the energy sector.⁵⁹

In nuclear energy area, Turkey has an agenda for a long time but the country has visible steps since 2009 through the intergovernmental agreements. The Law on Construction and Operation of Nuclear Power Plants and Energy Sale (No. 5710) entered into force in 2007. With the regulation in 2009, the procedures of the construction and operation of NPPs for electricity production, and the energy sales were settled. In the Nuclear Safety and Security area Turkey committed to a full range of International Instruments.⁶⁰

In energy and environment area, global trend of the CO₂ emissions is visible in Turkey too; in 2014 country's CO₂ emissions level were 141.6% higher than its level in 1990. Power generation is the main reason of CO₂ emissions with its 43% of share in total, and it is followed by transport and industry households and the commercial and public services sector with their 19.8%, 14.6%, 9.1%,

⁵⁸ International Energy Agency (2014) "Energy Supply Security 2014-Turkey", *Emergency Policy*, https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Turkey.pdf pp. 460-461

⁵⁹ International Energy Agency (2016) "Policies of IEA Countries-Turkey", *Renewable Energy*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.165-180

⁶⁰ Ibid., pp.181-190

and 9.7% of shares. Other energy industries (including refining) account for the remaining 3.7%. Country signed the United Nations Framework Convention on Climate Change (UNFCCC) in 2004 and the Kyoto Protocol in 2009. Turkey is an Annex I Party of the UNFCCC with other OECD countries, because of its special circumstances as a developing country. Therefore country is not included quantitative emission mitigation targets.⁶¹

In addition, the MENR has set four-year strategic plans in order to provide maximum level developments in the field of energy and natural resources. The latest Strategic Plan of the MENR which covers the period between 2015 and 2019 has 8 themes, 16 goals and 62 objectives. The Strategic Plan was prepared in parallel with Turkey's goal of becoming an energy hub. Sustainability is seen as the main concept for the process of introducing energy and natural resources. Also energy generation and imports, transmission, storage and distribution infrastructure and management of demand are considered as the components of the energy security. Implementation plan is under the consideration of environmental, economic and sustainability principles. In the scope this development strategy, regulations assisting the private sector to make investments and supports for completion of existing projects have been provided.⁶²

5. TURKEY AS AN ENERGY HUB

5.1. TURKEY'S LOCATION BETWEEN ENERGY SUPPLIERS AND DEMANDERS

Turkey is at the crossroads of Asia and Europe. The country is surrounded by the Mediterranean, Aegean and Black Sea and also has an internal sea, Marmara, which separates Asian and European continents. In the south Syria and Iraq; in the east Iran, Armenia and Azerbaijan; in the north-east Georgia; in the north-west Bulgaria; and in the east Greece are the neighbors of Turkey. Turkey is the fourth-largest IEA members in terms of her territorial size with 783 562 square kilometers.

⁶¹ International Energy Agency (2016) "Policies of IEA Countries-Turkey", *Climate Change*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.33-43

⁶² Republic of Turkey Ministry of Energy and Natural Resources (2015) "Strategic Plan 2015-2019", *Mission, Vision, Basic Values and Principles*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf>

The country is in close proximity to more than 70% of the world's proven oil and gas reserves of the Caspian and the Middle East.⁶³ For that reason the country is perceived as a key country for ensuring energy security and providing diversified supply sources and routes.⁶⁴

Apart from the energy sources, the region attracts attention because of its current complex structure. The Caspian region is the subject of power competition of regional players. However Russia, the main reason of energy security strategies of the EU, is the dominant power in the region. Russia has the control of the north-western shore of the region through its close relations with Kazakhstan, Turkmenistan and Uzbekistan. These three former Soviet countries are the energy partners of Russia in the region. They gain considerable advantage through co-operations with Russian private energy companies, which have high technologies. Besides, Russia's strong energy routes which lie to wide energy markets strengthen commitments of these countries to Russia. On the other side, Iran is the other big energy power in the region and it has religious ties with Azerbaijan, Kazakhstan and Turkmenistan. The country is assumed as an attractive export route for oil and gas between Central Asia and Europe but it faces challenges because of the sanctions of the U.S. Apart from the competition of big powers of the region, there are still disputes on demarcation of the Caspian basin.⁶⁵

In comparison to the Caspian, the Middle East has more fluctuated look. Lately many changes have occurred; while the U.S is reducing its role, regional powers have become more active. Also global powers Russia and China have shown their presence in the region. So-called Arab Spring; formation of a terrorist organization Islamic State of Iraq and Sham (ISIS) that threatens the world and civil war in Syria have made the region even weaker. This regional instability reflected in the energy subject as well. The region has been subjected to the disruptions of oil and gas production and transport.

Individual acts of crime, sabotage, and terrorism have targeted to the energy infrastructures. Therefore

⁶³ Barysch, K. (2007) "Turkey's role in European energy security", *Centre for European Reform*

⁶⁴ Guney, N. R. (2016) "Turkey as an Energy Hub for Europe", *Springer International Publishing Switzerland 2016 R. Bardazzi et al. (eds.), European Energy and Climate Security, Lecture Notes in Energy 31, DOI 10.1007/978-3-319-21302-6_4*

⁶⁵ Ibrayeva, A. & Tashtemkhanova R. & Ospanova, A. & Aigerim, Somzhurek, B. & Azmukhanova, A. (2017) "Energy Export Potential in the Caspian Region and Its Impact on EU Energy Security"

low investment rates have resulted with undeveloped energy grid.⁶⁶ Also possible routes for natural gas of Qatar and Iran which would pass through Syria have been started to restatement.⁶⁷

Hitherto Turkey has always had a geopolitical approach on energy politics in spite of regional instability. Turkey's ninth president Suleyman Demirel evaluated the region and energy with geopolitical approach and said *"We see this rich region of oil and gas reserves not just as a source of energy, but as an element of stability; just as the founders of the European community saw coal as a source of peace and stability for Europe. So we see oil and gas in our region serving the same role."*⁶⁸

As it can be understood from Demirel's expression, in spite of the energy based geopolitical approach of the country, Turkey had not positioned itself as an energy hub. In time country's geopolitical approach on energy has evolved with ambitious targets. Its developing economy, regional changes, technology, new interests and needs have shaped of this evolution. Today the country desires to become an energy hub and strengthen its position in the energy corridors.⁶⁹ This focal of country has been actively inside of today's agenda and it has been mostly mention by high officials. Turkish Presedent Recep Tayyip Erdogan clearly reflected the desire of the country and stated *"One of the main factors of Turkey's energy strategy is making use of its geography and geostrategic location by creating a corridor between countries with rich energy resources and energy consuming countries"*.⁷⁰

When the recent evolution in energy policy is evaluated, the impact of the "Strategic Depth" doctrine of Ahmet Davutoglu-the former foreign minister of Republic of Turkey-, needs to be addressed as the main pillar. According to Davutoglu's doctrine "Strategic Depth", Turkey is inside of small group of countries that he defines as "central powers". In general, the doctrine emphases Turkey as global strategic power due to its influence on all Middle Eastern, Balkan, Caucasian, Central Asian, Caspian, Mediterranean, Gulf and Black Sea regions. Despite it is not an active doctrine anymore, the vision

⁶⁶ Mills, R. (2016) "Risky Routes: Energy Transit in the Middle East", *Brookings Doha Center Analysis Paper*

⁶⁷ Herron, D. (2015) "Qatar/Iran natural gas field, Syria's civil war and the refugee crisis", *The Long Tail Pipe*, <https://longtailpipe.com/2015/09/11/qatariran-natural-gas-field-syrias-civil-war-and-the-refugee-crisis/>

⁶⁸ Aras, B.&Foster, G., Turkey: Looking for a Light at the End of the Caspian Pipeline in *Oil and Geopolitics in the Caspian Sea Region*, (edi.) Croissant, M. P. &Aras B. pp. 229

⁶⁹ Republic of Turkey Ministry of Foreign Affairs, *Turkeys Energy Profile and Strategy*, <http://www.mfa.gov.tr/turkeys-energy-strategy.en.mfa>

⁷⁰ Shaffer, B. (2006) "Turkey's Energy Policies in a Tight Global Energy Market" in *Insight Turkey* (edi.), April-June 2006 / Vol. 8 / Number 2, pp.97-104, http://www.belfercenter.org/sites/default/files/legacy/files/insight_turkey_shaffer_energy.pdf

and the impact of the "Strategic Depth" doctrine can be seen in several attempts on domestic and foreign policy of the country.⁷¹ The energy policy of Turkey is one of them, and the structure of today's energy target covering a very large area, reflects the strong influence of the doctrine.⁷²

5.2. THE EU-TURKEY ENERGY RELATION

The deep rooted relation between the EU and Turkey date backs to the Turkey's application for the membership of the European Economic Community (EEC) in 1959. Since then, economic and political interdependency between two have led many interactions in various areas. The Custom Union, the backbone of the current relation, was agreed on with the Ankara Association Agreement in 1963.⁷³ Also many reforms have been made in Turkey in the line with the accession negotiations which started in 2005.⁷⁴ The relation between Turkey and the EU has gained another dimension with the changing energy balances after the Ukrainian crisis.⁷⁵

Concerns on energy have raised and energy security has become one of the most important issues. According to article of the European Commission the EU-28's gross inland consumption was 1 627 Mtoe in 2015. It is assumed that the level of energy consumption of the union in that year was almost at the same the level of energy consumption in 1990. But the population of the EU-28 has increased by 33.3 million persons in that period of time. The energy consumption in 2015 was 11.6 % lower than previous peak which was recorded in 2006 with 1 840 Mtoe. The availability of natural resources for primary energy production and the development level of each economy are the main decisive of the intensity of energy consumption. The rates of the energy consumption of member countries verify this generalization. In 2015 Germany was in the first place of the gross inland energy consumption with its

⁷¹ Grigoriadis, I. N.(2010) "The Davutoğlu Doctrine and Turkish Foreign Policy", *Hellenic Foundation for European and Foreign Policy, Middle Eastern Studies Programme Working Paper Nr 8/2010*

⁷² Ersoy E. (2009) "Old Principles, New Practices: Explaining the Akp Foreign Policy", *Turkish Policy Quarterly Volume 8 Number 4*

⁷³ European Commission "Turkey : Customs Unions and preferential arrangements", https://ec.europa.eu/taxation_customs/business/calculation-customs-duties/rules-origin/customs-unions/turkey-customs-unions-preferential-arrangements_en

⁷⁴ European Commission (2016) "Enlargement-Turkey", https://ec.europa.eu/neighbourhood-enlargement/countries/detailed-country-information/turkey_en

⁷⁵ Centre for the Study of Democracy, "EU-Turkey Energy Dialogue", <http://www.csd.bg/index.php?id=2258>

19.3% of share. The country was followed by France with 15.5 %, the United Kingdom with 11.7 % and Italy's with 9.6 %. Petroleum products consisted 34.4% of the EU's total energy composition in 2015. The share of solid fuels was 16.1% and the share of nuclear energy was 13.6%. Although it adopts the leader role in green energy, the share of the renewable energy consisted 13.0% of total. But it must be noted that this share is three times higher than the share of 1990. The EU aims to cut 20% its energy consumption by 2020.⁷⁶

Until recently the EU did not enjoy government-backed energy diplomacy. And, on the global level, resource nationalism, unreliable suppliers and safety hazards on transportation have become more visible threats for the EU's energy security. Also strained global oil production due to regional turmoil and wars has created threats for supply too. Even it is not seemed as a threat in the first place; different regime of the energy transporting and trading countries is also threat. From more global perspective, changing power balance of the world; recent impressive boost in economic expansion of both China and India and their raising energy demand has squeezed the energy supply of the EU. In addition to all these it is questionable that how the EU can continue to use fossil fuels in the face of its leading role in clean energy awakening.⁷⁷

Currently the policy makers of the EU are working on the establishment of the Energy Union in the face of this energy outlook. This strategy was launched in February 2015 and several packages of measures have been published in order to ensure the Energy Union by the European Commission. It was planned to making energy more secure, affordable and sustainable. The free flow of energy across borders will be facilitated and a secure supply will be provided for every EU members.⁷⁸

Therefore there is a need for a partner for supply side. The EU assumes Turkey as a key partner for its energy security and diversification. Thus efforts for collaboration were started in various

⁷⁶ Eurostat (2017) "Statistics Explained 2017 Consumption of energy", http://ec.europa.eu/eurostat/statistics-explained/index.php/Consumption_of_energy

⁷⁷ Proedrou F. (2012) EU Energy Security in the Gas Sector, *EU Energy Security: Tracing the Main Threats, the Policy Framework and the Actors* pp.41-48

⁷⁸ European Commission (2017) "Building the Energy Union", <http://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/building-energy-union>

levels.⁷⁹ Turkey joined the Energy Community which was established for an integrated and competitive energy market among EU members, non-EU South Eastern European countries and other neighbouring countries. Turkey joined this international organization as an observer. On the other hand, in the process of EU accession negotiations, the screening process of the Energy Chapter was completed for Turkey in 2007.⁸⁰ Turkey-EU High-Level Energy Dialogue was launched in order to improve cooperation and their policy dialogue on energy, and its first meeting was held on 16 March 2015 in Ankara.⁸¹

5.3. INTERNATIONAL ENERGY ROUTES OF TURKEY

Today, pipelines reflect difference between power and wealth in the world. Over the past decade pipelines have become one of the most important subjects of political discussions.⁸² According to Proedrou, the pipeline politics in the Eurasia is still at a peak due to several proposed pipeline projects and active energy lobbies with the presence of various energy actors.⁸³ Turkey is at one of the important point of this region. For this reason Turkey's pipeline grid has a crucial important on its energy future.

Currently Turkey has two operating international crude oil import pipelines: Kirkuk-Yumurtalık Route and Baku-Tblisi-Ceyhan Route. Along with these pipelines, the country has four operating and one interconnector natural gas pipelines: Baku-Tblisi-Erzurum Route; Russia-Turkey (Western Route); BlueStream; Iran-Turkey and Turkey-Greece Interconnector (See Figure 2). In addition to these existing pipeline routes there are two planned pipeline which are under construction: Trans-Anatolian Natural Gas Pipeline Project (TANAP) -transit pipeline- and Russia-Turkey TurkStream. Also

⁷⁹ European Commission (2016) "EU and Turkey strengthen energy ties", <http://ec.europa.eu/energy/en/news/eu-and-turkey-strengthen-energy-ties>

⁸⁰ Republic of Turkey Ministry of EU Affairs, *Chapter 15 – Energy*, http://www.ab.gov.tr/80_en.html

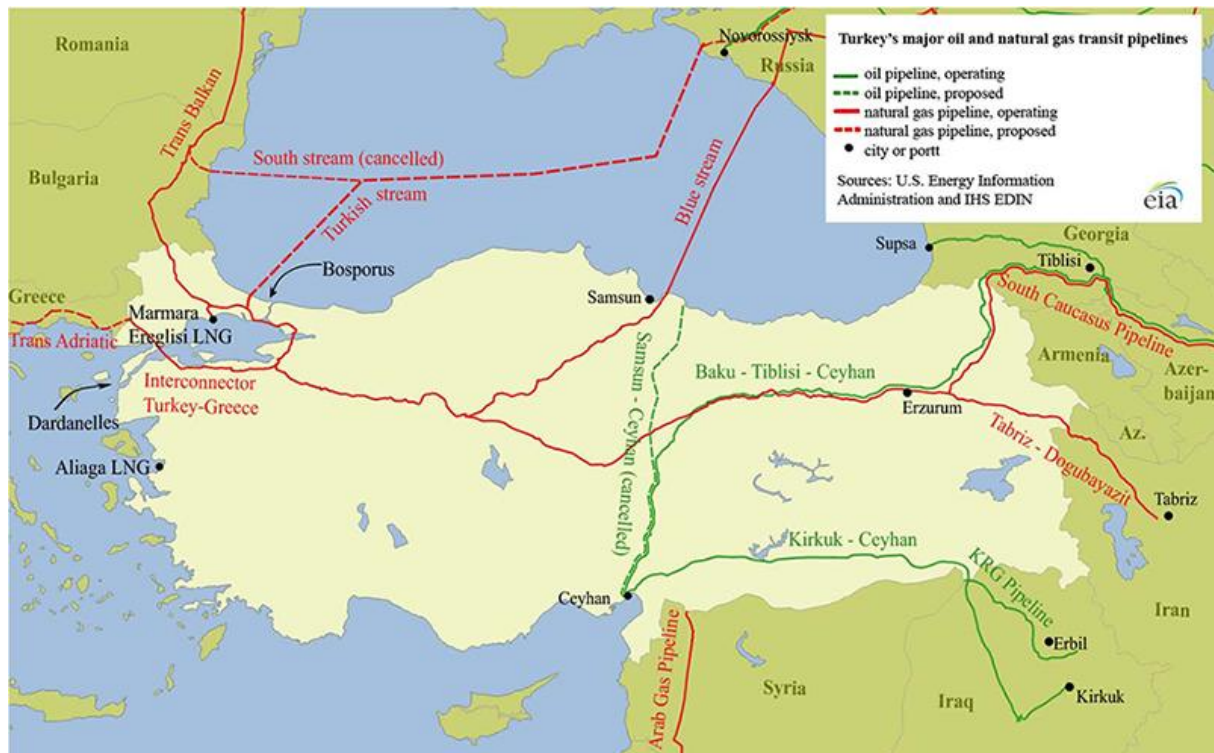
⁸¹ European Commission (2015) "EU-Turkey High Level Energy Dialogue and Strategic Energy Cooperation", https://ec.europa.eu/commission/commissioners/2014-2019/arias-canete/announcements/eu-turkey-high-level-energy-dialogue-and-strategic-energy-cooperation_en

⁸² Szeman, I. (2017) "Pipeline Politics", *The South Atlantic Quarterly* 116:2, April 2017 doi 10.1215/00382876-3829478

⁸³ Proedrou, F. (2017) "Revisiting Pipeline Politics and Diplomacy, *Problems of Post-Communism*", <http://dx.doi.org/10.1080/10758216.2017.1303616>

according to recent agenda, Israel-Turkey and Iraq Kurdish Regional Government- Turkey pipelines have possibility to be built.

Figure 2: Turkey's Major Oil and Natural Gas Transit Pipelines⁸⁴



5.3.1. Existing Pipelines

5.3.1.1. Kirkuk-Yumurtalik Crude Oil Pipeline

The Kirkuk-Yumurtalik (Ceyhan) Crude Oil Pipeline Agreement was signed between Turkey and the Republic of Iraq in 1973. The route was determined in order to transport crude oil, which is produced in Kirkuk field and other fields of Iraq, to Yumurtalik.⁸⁵ The pipeline is 970 km long and has 600,000

⁸⁴ U.S Energy Information Administration, *Country Analysis Brief: Turkey*, https://www.eia.gov/beta/international/analysis_includes/countries_long/Turkey/turkey.pdf

⁸⁵ Republic of Turkey Ministry of Energy and Natural Resources, *Oil Pipelines*, <http://www.enerji.gov.tr/en-US/Pages/Oil-Pipeline>

barrels transport capacity per a day.⁸⁶ The first pipe (40" diameter) started to the operation in 1976 and the second pipe (46" diameter) started to the operation in 1985 with higher capacity. Thus the annual transportation capacity between two countries reached to 70.9 million ton. The renewal agreement for extra 15 years of the pipeline was signed in 2010.⁸⁷

However regional instability has reflected into operation of the pipeline. Oil flow in has been interrupted many times due to terrorist attacks for many years. In 2015 and the following year 2016 the pipeline was closed down because of the attacks to theft and sabotage. The Turkish government strengthened security measures on the pipeline.⁸⁸

5.3.1.2. Baku-Tblisi- Ceyhan Crude Oil Pipeline

The Intergovernmental Agreement of Baku-Tblisi- Ceyhan Crude Oil Pipeline has been signed between Azerbaijan, Georgia and Turkey in 1999. In this context, Turkey and Main Export Pipeline Participants signed The Host Government Agreement in 2000. The part in the Turkish territory has 1076 km length and is operated under BOTAS. The pipeline has been on operation since 2006. The pipeline carries crude oil from the Caspian region to Ceyhan via Georgia. The capacity of the pipeline was 1 mb/d, but it can be increased to 1.2 mb/d with alternative methods.⁸⁹ Turkmen and Kazakh oil are also transported via this pipeline depending on the production capacity.⁹⁰

The Baku-Tbilisi-Ceyhan oil pipeline is the essential element of the East-West Energy Corridor. After the Ankara Declaration on 29 October 1998, the pipeline gained more importance due to supports of Turkey, Georgia, Azerbaijan, Kazakhstan, and Uzbekistan. The pipeline decreases the stronghold of both Russia and Iran in the Caspian region.

⁸⁶ Hydrocarbons Technology (2016) "Turkey Starts Repair Works on Kirkuk-Ceyhan Pipeline Hit by Bomb Attacks", February 29, <http://www.hydrocarbons-technology.com/news/newsturkey-starts-repair-works-on-kirkuk-ceyhan-pipeline-hit-by-bomb-attacks-4823656>

⁸⁷ Republic of Turkey Ministry of Energy and Natural Resources, *Oil Pipelines*, <http://www.enerji.gov.tr/en-US/Pages/Oil-Pipelines>

⁸⁸ Roker, S. (2016) "Recapping Turkey's 2016 pipeline projects", <https://www.worldpipelines.com/special-reports/28122016/recapping-turkeys-2016-pipeline-projects/>

⁸⁹ International Energy Agency (2014) "Energy Supply Security 2014-Turkey", *Oil-Ports and pipelines*, https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Turkey.pdf pp.455

⁹⁰ Republic of Turkey Ministry of Energy and Natural Resources, *Oil Pipelines*, <http://www.enerji.gov.tr/en-US/Pages/Oil-Pipelines>

5.3.1.3. Baku-Tbilisi-Erzurum (Shah Deniz) Natural Gas Pipeline

The Baku-Tbilisi-Erzurum pipeline, approximately 980 km long, was constructed under the Turkey-Azerbaijan Intergovernmental Agreement, which was signed between SOCAR and BOTAS on 12 March 2001. Agreement contains the transportation of 6.6 billion m³ natural gas to Turkey from Azerbaijan.⁹¹ Thanks to its long construction plan in Turkish territory, the pipeline also provided development opportunity to underdeveloped eastern provinces of Turkey. Later the Baku-Tbilisi-Ceyhan oil pipeline was constructed over the same route and was extended to Ceyhan.⁹² The Shah Deniz natural gas pipeline changed the role of Turkey in the world energy politics through involvement of local connection projects into global routes. Thus Turkey has gained dynamic position as both consumer and transit country.⁹³

5.3.1.4. Turkey-Greece Interconnector (ITG)

The Intergovernmental Agreement of ITG was signed between Turkey and Greece on 23 February, 2003, after ten months the Natural Gas Sale Purchase Agreement for natural gas export for 15 years was signed between the energy companies of two countries. The project, which started to gas supply to Greece in 2007, has been planned to extend to Italy. Thus an Intergovernmental Agreement has been signed between Turkey, Greece and Italy in 2007.⁹⁴ The Interconnector carries natural gas to Greece with a maximum capacity of 2.4 mcm/d.⁹⁵

This route is seen as one of the energy diversification way of Europe and encouragement for new pipeline constructions.⁹⁶ The project was developed under the EU INOGATE (Interstate Oil and Gas Transport to Europe) Programme. With this pipeline, which is one of the most important projects to

⁹¹ Republic of Turkey Ministry of Energy and Natural Resources, *Natural Gas Pipelines and Projects*, <http://www.enerji.gov.tr/en-US/Pages/Natural-Gas-Pipelines-and-Projects>

⁹² Shaffer, B. (2006) "Turkey's Energy Policies in a Tight Global Energy Market" in *Insight Turkey* (edi.), April-June 2006 / Vol. 8 / Number 2, pp97-104, http://www.belfercenter.org/sites/default/files/legacy/files/insight_turkey_shaffer_energy.pdf

⁹³ BOTAS Petroleum Pipeline Corporation "2015 Annual Report", http://www.botas.gov.tr/docs/raporlar/faalrap_2015.pdf

⁹⁴ Republic of Turkey Ministry of Energy and Natural Sources, *Natural Gas Pipelines and Projects* <http://www.enerji.gov.tr/en-US/Pages/Natural-Gas-Pipelines-and-Projects>

⁹⁵ International Energy Agency (2014) "Energy Supply Security 2014-Turkey", *Gas-Ports and pipelines*, https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Turkey.pdf pp.459

⁹⁶ IGI Poseidon Interconnector Greece - Italy Pipeline http://www.depa.gr/uploads/files/poseidon/Poseidon%20pipeline%20for%20PCIs_ENG_final.pdf

establish an energy corridor through Turkey, a big leap was achieved for becoming the fourth main artery.⁹⁷

Also in parallel to this project, a bypass line has been determined between Greece and Bulgaria. In scope of the joint venture of Turkey and Greece, €118m for the Greek section and €165m for the Turkish section were spent. The project which was built by DEPA (Greek public gas corporation) in partnership with BOTAS and was supported by the EU through financing 50% of the cost of technical studies and 29% of the construction costs through the European Union INOGATE.⁹⁸

5.3.1.5. Russia-Turkey (Western Route) Natural Gas Pipeline

Russia-Turkey (Western Route) Natural Gas Pipeline Agreement was signed between the former Soviet Union and Turkey in 1984. After the research for consumption and feasible route, 25-year Natural Gas Purchase-Sale Agreement was agreed on by BOTAS and Soyuz Gaz Export in 1986. The pipeline which starts from Russia follows Ukraine, Romania, and Bulgaria and finally reaches to Turkey. Natural gas flow was started in 1987.⁹⁹ The pipeline has the capacity of 16 bcm.¹⁰⁰ After the Ukraine crisis, Russia has started to find new routes in order to transmission natural gas to Turkey and Europe.¹⁰¹ In this scope, the TurkStream pipeline which will lie under the Black sea will bypass Western Route.¹⁰²

5.3.1.6. Blue Stream Natural Gas Pipeline

The agreement on the Blue Stream pipeline project was signed for 25 year natural gas purchase-sale between BOTAS and Gazexport. Through the 1,213 km long gas pipeline, which covers an overland and offshore sections, Russian gas directly flows to Turkey.¹⁰³ The pipeline, which passes under the

⁹⁷ BOTAS Petroleum Pipeline Corporation, “2015 Annual Report”, http://www.botas.gov.tr/docs/raporlar/faalrap_2015.pdf

⁹⁸ Hydrocarbons-Technology, *Interconnection Turkey Greece Italy (ITGI) Pipeline*, <http://www.hydrocarbons-technology.com/projects/turkeygreeceitalypip/>

⁹⁹ Republic of Turkey Ministry of Energy and Natural Resources, *Natural Gas Pipeline Projects*, <http://www.enerji.gov.tr/en-US/Pages/Natural-Gas-Pipelines-and-Projects>

¹⁰⁰ International Energy Agency (2014) “Energy Supply Security 2014-Turkey”, *Gas-Ports and Pipelines* pp.459

¹⁰¹ MacFarquhar, N. (2016) “Warming Relations in Person, Putin and Erdogan Revive Pipeline Deal”, *the New York Times*, <https://www.nytimes.com/2016/10/11/world/europe/turkey-russia-vladimir-putin-recep-tayyip-erdogan.html?mcubz=0>

¹⁰² Konarzewska, N. (2017) “Turkish Stream Moves Ahead” in *Turkey Analyst*, <https://www.turkeyanalyst.org/publications/turkey-analyst-articles/item/580-turkish-stream-moves-ahead.html>

¹⁰³ Gazprom, *Transportation*, <http://www.gazpromexport.ru/en/projects/transportation/>

Black sea, comprises three main parts: Russian territory part, the Black Sea pass and the Turkish territory part. GAZPROM financed and constructed the part in the Russian territory and the part which lies under the Black sea, BOTAS financed and constructed the Turkish part of the project which starts from Samsun and reaches to Ankara. The pipeline has been on an operation since 2003.¹⁰⁴ Currently the Blue Stream pipeline transports 16 bcm gas to Turkey.¹⁰⁵

Gazprom reflected the Blue Stream's aim as precaution to avoid third countries for the transportation of Russian gas to Turkey as the existing gas route went through Ukraine, Moldova, Romania, and Bulgaria. However the Blue Stream pipeline was seen as a partial competitor of the East-West Energy Corridor that will link Caspian basin to Europe.¹⁰⁶

5.3.1.7. Iran – Turkey Natural Gas Pipeline

Natural Gas Purchase-Sale Agreement of Iran-Turkey pipeline was signed in 1996. Gas purchase was started in December 2001.¹⁰⁷ The pipeline has 10 bcm capacity and has approximately 1491 km length.¹⁰⁸

Before the construction the Iran-Turkey pipeline was criticized by U.S as a provocative act because of the U.S sanctions on Iran. Later on the pipeline was approved after including Turkmen gas to flow too.¹⁰⁹ After the settlement of the Iran-Turkey pipeline problem, the East-West Energy Corridor, which is called as the energy version of the Silk Road in the 21st Century, was introduced to linking the hydrocarbon riches of the Caucasus and Central Asia to Europe. Recently with the break out of the Ukrainian crisis, Iran has developed strategies in the face of new balances. With the revival of the

¹⁰⁴ Republic of Turkey Ministry of Energy and Natural Sources, *Natural Gas Pipelines and Projects*, <http://www.enerji.gov.tr/en-US/Pages/Natural-Gas-Pipelines-and-Projects>

¹⁰⁵ Karagol, E. & Kızılkaya, M. (2015) "The Turkish Stream Project in the EU-Russia-Turkey Triangle" in *Insight Turkey Spring 2015* pp.57-65

¹⁰⁶ Kim, Y. & Blank, S. (2015) "The New Great Game of Caspian energy in 2013–14: 'Turk Stream'", *Russia and Turkey' Journal of Balkan and Near Eastern Studies*, DOI: 10.1080/19448953.2015.1094250

¹⁰⁷ Republic of Turkey Ministry of Energy and Natural Sources, *Natural Gas Pipelines and Projects*, <http://www.enerji.gov.tr/en-US/Pages/Natural-Gas-Pipelines-and-Projects>

¹⁰⁸ International Energy Agency (2014) "Energy Supply Security 2014-Turkey", *Gas-Ports and pipelines*, https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Turkey.pdf pp.459

¹⁰⁹ Ediger, V. & Durmaz, D. (2016) "The new geopolitical Game in the Caspian Region: Azerbaijan-Turkey Energy Relations", *Turkish Policy Quarterly*, Volume 15 Number 2

European energy demand, Iran has sought a way to promote itself as a reliable supplier. In scope of the possible Iran-Europe energy trade, existing Iran-Turkey route has become more important.¹¹⁰

5.3.2. Planned Pipeline Projects

5.3.2.1. Trans-Anatolian Natural Gas Pipeline Project (TANAP)

TANAP, 1.850 km. long pipeline project, has been planned in order to meet energy needs of Turkey and Europe. The project is seen as a great opportunity for the European energy security. Also Turkey took a huge step on the way of becoming an energy hub.¹¹¹ The capacity of the pipeline is expected to be 16 bcm of gas per year and will be gradually increased to 31 bcm.¹¹²

The project has already started in Ardahan, Turkish city in border with Georgia and will pass by 20 provinces and finally will reach to Edirne, the Greek border of Turkey. TANAP project will be linked with the South Caucasus Pipeline (SCP) and the Trans-Adriatic Pipeline (TAP).¹¹³ Therefore the pipeline will be the backbone of the Southern Gas Corridor. Co-operation in energy field between Turkey and the EU has strengthened through this project. In scope of this co-operation, the EU – Turkey Strategic High Level Energy Dialogues provide exchange of information at the global and regional level for the both sides.¹¹⁴ The construction of Turkey's first transit pipeline started in 2015.¹¹⁵

¹¹⁰ Bahgat, G. (2014) "Iran-Turkey Energy Cooperation: Strategic Implications in Middle East Policy", *Vol. XXI, No. 4, Winter 2014*, pp.121-132

¹¹¹ Altundeger, N. (2015) "A Dream Coming True? Turkey Becoming an Energy Hub", *The 2015 WEI International Academic Conference Proceedings*, pp.71-82

¹¹² Tekfen Construction, Turkey – TANAP Trans Anatolian Natural Gas Pipeline Project, http://www.tekfeninsaat.com.tr/pipeline_project_detail.asp?id=25

¹¹³ Trans-Anatolian Natural Gas Pipeline Project (TANAP), *Why TANAP?*, <http://www.tanap.com/tanap-project/why-tanap/>

¹¹⁴ Republic of Turkey Ministry of Energy and Natural Resources, *Turkey-EU High Level Energy Dialogue EU-Turkey Strategic Energy Cooperation Joint Declaration*Share, <http://www.enerji.gov.tr/en-US/News/Turkey-EU-High-Level-Energy-Dialogue-EU-Turkey-Strategic-Energy-Cooperation-Joint-Declaration>

¹¹⁵ International Energy Agency (2016) "Energy Policies of IEA Countries-Turkey", *Natural Gas Supply and Demand*, <https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf> pp.103-106

5.3.2.2. TurkStream Pipeline Project

The changing relation between Russia and the West after the Ukraine crisis caused the cancellation of the South Stream Project.¹¹⁶ In addition to cancellation of South Stream pipeline, the agreement on TANAP pushed to Russia to route a new pipeline to Turkey.¹¹⁷ Thus another natural gas transmission project, TurkStream was agreed on to provide Russian gas to Turkey and Southern Europe through two pipelines.¹¹⁸ The Memorandum of the TurkStream was signed between BOTAS and Gazprom in 2014, afterwards Greece signed the Memorandum for the cooperation on the construction of the TurkStream on Greek territory. Turkstream starts from Russian city Anapa and it lies under the Black sea until Turkish city Kırklareli.¹¹⁹ The TurkStream is expected to transfer 63 bcm gases. Turkey will store 15 bcm and Greece will store 48 bcm.¹²⁰

This new project not only started a new energy era between Turkey and the EU, it also strengthened the relationship between Turkey and Russia. In addition Turkey will gain financial returns as one of the main leg of the direction. 133

5.3.3. Possible Pipeline Projects

5.3.3.1. Israel-Turkey Possible Natural Gas Pipeline

As a possible plan, Israel-Turkey natural gas route has brought new dynamics into the energy agenda of Turkey. It is envisaged that with the energy flow which will be created from under the Mediterranean Sea, the energy demand of Turkey and Europe will be met. There is already another route which was agreed on another line in the direction of Israel-Europe. Within scope of this Mediterranean pipeline project, the energy route will reach to Europe after passing through Cyprus,

¹¹⁶ Karagol, E. & Kizilkaya, M. (2015) "The Turkish Stream Project in the EU-Russia-Turkey Triangle" in *Insight Turkey Spring 2015* pp.57-65

¹¹⁷ Kim, Y. & Blank, S. (2015) "The New Great Game of Caspian energy in 2013–14: 'Turk Stream', *Russia and Turkey*' *Journal of Balkan and Near Eastern Studies*, DOI: 10.1080/19448953.2015.1094250

¹¹⁸ Republic of Turkey Ministry of Energy and Natural Resources, Natural Gas Pipelines and Projects, <http://www.enerji.gov.tr/en-US/Pages/Natural-Gas-Pipelines-and-Projects>

¹¹⁹ Gazprom, TurkStream, <http://www.gazpromexport.ru/en/projects/>

¹²⁰ Karagol, E. T. & Kizilkaya, M. (2015) "The Turkish Stream Project in the EU-Russia-Turkey Triangle" in *Insight Turkey Spring 2015* pp.57-65

Greece and Italy.¹²¹ Along with this Mediterranean pipeline project, possible Israel-Turkey pipeline will be the second route for Israeli gas. Through this pipeline, natural gas which is situated in Leviathan, Israel's Mediterranean coast, would be delivered to Europe and to the Balkans via Turkey.

After the 22nd World Petroleum Congress which was held in Istanbul, energy relations between Israel and Turkey have gained momentum.¹²² And currently Israel-Turkey route is widely accepted as viable for energy commerce despite the potential of the possible conflicts in the region. This new emerging energy tie could create positive leverage effect on relations in the region and co-operation between Turkey and its neighbors. Also the EU can contribute its energy security with the development of energy ties in this region. However Cyprus problem is a serious obstacle for this pipeline. Cyprus is at crucial position for the Israel-Turkey route.¹²³ The long standing dispute and the recent collapse of unity talks of the island impede diplomatic relations and create obstacles in front of energy talks.¹²⁴ However common strong interests of the EU and U.S on Mediterranean natural gas which is seen as alternative to Russian gas would intensify efforts to resolve the Cyprus problem.¹²⁵ The needs of the governments and initiatives of private energy companies could open ways for the consensus. Also strategically, current energy network of Turkey will speed up the access to Europe for Israeli gas.

5.3.3.2. Iraq Kurdish Regional Government-Turkey Possible Natural Gas Pipeline

Proposed gas pipeline is expected to carry natural gas to energy markets of Turkey and Southeast-Europe. Along with KRG, Turkey has also negotiated with the Iraqi Government for the pipeline which will carry natural gas from KRG.¹²⁶ By 2019-2020, KRG plans to start exporting 10 bcm a

¹²¹ Reed, J. (2017) "Israel signs pipeline deal in push to export gas to Europe", *Financial Times*, April 3, <https://www.ft.com/content/78ff60ca-184c-11e7-a53d-df09f373be87>

¹²² Daily Mail (2017) "Turkey energy minister 'to visit Israel for pipeline deal'", July 12, <http://www.dailymail.co.uk/wires/afp/article-4689714/Turkey-energy-minister-visit-Israel-pipeline-deal.html>

¹²³ Winrow, G. M. (2016) "The Anatomy of a Possible Pipeline: The Case of Turkey and Leviathan and Gas Politics in the Eastern Mediterranean" *Journal of Balkan and Near Eastern Studies*

¹²⁴ The National Herald (2017) "Turkey Pushes Israel to Make Cyprus Allow Gas Pipeline to Europe", July 22, <https://www.thenationalherald.com/169981/turkey-pushes-israel-make-cyprus-allow-gas-pipeline-europe/>

¹²⁵ Stergiou, A. (2016) "Turkey-Cyprus-Israel relations and the Cyprus conflict", *Journal of Balkan and Near Eastern Studies*, DOI: 10.1080/19448953.2016.1195994

¹²⁶ U.S Energy Information Administration (2017) "Turkey Energy Profile: Important Transit Hub For Oil And Natural Gas – Analysis", *Eurasia review*, February 4, <http://www.eurasiareview.com/04022017-turkey-energy-profile-important-transit-hub-for-oil-and-natural-gas-analysis/>

year.¹²⁷ However no agreement has been reached yet, also independence referendum of KRG, which is subjected to high opposition by Turkey, would hinder the possible pipeline project and also existing crude oil flow.¹²⁸

5.4. THE FUTURE ENERGY ROLE OF TURKEY AND POSSIBLE CHALLENGES

Turkey is a member of NATO since 1952 and the OECD since 1961.¹²⁹ Also as its member, the country chaired G20 summit in 2015, and took the leading role in energy agenda of G20. Significant contributions were made by Turkey in the subjects of energy access, renewable energy and energy efficiency.¹³⁰ Also lately Turkey hosted the 22nd World Petroleum Congress and welcomed all industry stakeholders in Istanbul on 9-13 July, 2017.¹³¹

The country has ambitious energy targets for the near future. The ultimate desire of the country is to become an energy hub of its region.¹³² Along with Turkey's desire, also energy suppliers and demanders put Turkey in a crucial position for the energy future of the region.¹³³

However Turkey's energy security risk score was 1,064 in 2014. With this score, Turkey fell behind the OECD average which was 869.¹³⁴ Despite its quite ambitious desire and geopolitical advantage, Turkey was not inside of top ten of Energy Access and Security Performers Rank in 2016. The performance of the country did not happen because of its energy importer profile. Except the energy

¹²⁷ Razzouk, N. (2016) "Iraq's Kurds to Start Natural Gas Exports to Turkey in 2019-2020", *Bloomberg*, January 15, <https://www.bloomberg.com/news/articles/2016-01-15/iraq-s-kurds-to-start-natural-gas-exports-to-turkey-in-2019-2020>

¹²⁸ Srivastava, M. & Solomon, E. & Sheppard, D. (2017) "Iraqi Kurdistan referendum poses challenge for Turkey", *Financial Times*, September 21, <https://www.ft.com/content/3a99026e-9dda-11e7-9a86-4d5a475ba4c5>

¹²⁹ Republic of Turkey Ministry of Foreign Affairs, International Organizations, <http://www.mfa.gov.tr/sub.en.mfa?7cafe2ef-78bd-4d88-b326-3916451364f3>

¹³⁰ G20 Turkey 2015, *G20 Energy Ministers agreed on Inclusive Energy Collaboration and G20 Energy Access Action Plan in their first ever meeting in Istanbul*, <http://g20.org.tr/g20-energy-ministers-agreed-on-inclusive-energy-collaboration-and-g20-energy-access-%E2%80%8Baction-plan-in-their-first-ever-meeting-in-istanbul/>

¹³¹ 22nd World Petroleum Congress, *About*, <http://www.22wpc.com/22wpc.php>

¹³² Republic of Turkey Ministry of Foreign Affairs, Turkey's Energy Profile and Strategy, <http://www.mfa.gov.tr/turkeys-energy-strategy.en.mfa>

¹³³ Güney, N. R. (2016) "Turkey as an Energy Hub for Europe", *Springer International Publishing Switzerland 2016 R. Bardazzi et al. (eds.), European Energy and Climate Security, Lecture Notes in Energy 31, DOI 10.1007/978-3-319-21302-6_4*

¹³⁴ U.S Chamber of Commerce (2016) "International Index of Energy Security Risks", https://www.globalenergyinstitute.org/sites/default/files/energyrisk_intl_2016.pdf

exporters, Canada and Norway, the countries that belong in this group depend on external energy sources.¹³⁵

At this point, it is important to evaluate Turkey's energy security structure. Energy security is defined as "the uninterrupted availability of energy sources at an affordable price" by IEA.¹³⁶ Despite this definition of IEA, energy security has a quite complex structure with several dimensions. The composition of energy security consists of seven different elements: relationship among nations; environmental acceptability; accessible/available supply; sufficiency relative to demand; affordable/competitive supply and reliable/uninterruptible supply.¹³⁷

In scope of these elements of energy security, various challenges exist for contemporary Turkey on the way of becoming an energy hub. Despite new policies on energy area, domestically more reforms are needed to establish a properly functioning legal and regulatory framework in energy market.¹³⁸

Transparency is another challenge, which prevents the Turkey's development as an energy hub. Lack of transparency hinders rule of law and new international investors.¹³⁹ It must be noted that Turkey fall to 75th place from 66th place in Corruption Perceptions Index 2016 of Transparency International.¹⁴⁰

Looking at Turkey's recent past, domestic instability is another challenge for the country. The failed coup attempt on 15 July, 2016 caused serious upheaval in the country. Besides, post-coup attempt period is also evaluated as instable.¹⁴¹ Also the situation in South-East part of Turkey causes serious concerns for many years. The internal unrest which started after the 7th of June, 2015 general elections

¹³⁵ World Economic Forum (2016) "Global Energy Architecture Performance Index Report"

¹³⁶ International Energy Agency, *What is Energy Security*,

<https://www.iea.org/topics/energysecurity/subtopics/whatisenergysecurity/>

¹³⁷ Kocaslan, G. (2014) "International Energy Security Indicators and Turkey's Energy Security Risk Score", *International Journal of Energy Economics and Policy* Vol. 4, No. 4, 2014, ISSN: 2146-4553, pp.735-743

¹³⁸ Tuncalp, E. (2015) "Turkey's Natural Gas Strategy: Balancing Geopolitical Goals & Market Realities", *Turkish Policy Quarterly*, Volume 14 Number 3, http://turkishpolicy.com/files/articlepdf/turkeys-natural-gas-strategy-balancing-geopolitical-goals-market-realities_en_9097.pdf

¹³⁹ Eralp, A. (2015) "International Energy Politics: Turkey can become a key player", (Schmermund, K. interviewer), *Blickwechsel Tuerkei*, http://www.blickwechsel-tuerkei.de/en/News/former/2015/20150914_International_Energy_Politics_Turkey_can_become_a_.php

¹⁴⁰ Transparency International (2016) "Corruption Perceptions Index 2016", <https://www.transparency.org/country/TUR#chapterInfo>

¹⁴¹ Varol, T. (2016) "What Will Happen To Turkey's Energy Security Following The Failed Coup?", *Oil Price*, July 26, <http://oilprice.com/Energy/Energy-General/What-Will-Happen-To-Turkeys-Energy-Security-Following-The-Failed-Coup.html>

have worsened together with unsafe borders with Iraq and Syria. Since then, Turkish Armed Forces fight against terrorist organization PKK (Kurdish Worker Party). Also Kirkuk-Ceyhan, Iran-Turkey and Baku-Tbilisi-Erzurum Pipelines have been subjected to attacks, and interruption of oil and gas flow many times.¹⁴² High cost and long term contracted structure of energy projects seek stability and security and current atmosphere in the country does not seem convenient enough and deteriorates the attractiveness of the country.¹⁴³

Along with the domestic stability, the presence of the country in international level requires strong look. For this reason, pursuing positive and stable foreign relations is one of the biggest challenges for Turkey due to complex and instable structure of its region.

As first, relations with Russia which are getting more complex look after the downing of Russian jet, need to focus on. Turkey-Russia relations, which derived from deep-rooted historic rivalry, have deteriorated many times due to clashing interests of both countries in Caucasus, Central Asia and the Middle East.¹⁴⁴ In addition to rivalry and clashing interests, today's energy and economy based mutual dependency creates more complex atmosphere for relations. After the series of tensions, pragmatist approach on relations has been reached.¹⁴⁵ However Turkey's multidirectional energy policies and regional dynamics have potential to create possible conflicts.

On the other hand, relations with Iran as Turkey's biggest competitor in the Middle East need to given weight. Along with its competitor position, Iran is also the second biggest energy supplier of Turkey. Also the country has the world's largest proven natural gas reserves and the fourth largest proven oil deposits, and Turkey is in a unique transit position for Iranian energy. Especially after the Ukrainian crisis, energy cooperation in the Middle East has become more crucial for the EU hence for Turkey

¹⁴² Varol, T. (2016) "Turkish Energy Security Under Threat", *Oil Price*, March 11, <http://oilprice.com/Energy/Energy-General/Turkish-Energy-Security-Under-Threat.html>

¹⁴³ Gur, N. (2017) "What Is Next for Turkish Economy after the Referendum?", http://setav.org/en/assets/uploads/2017/05/28_Perspective.pdf

¹⁴⁴ Bechev, D. (2015) "Russia and Turkey What does their partnership mean for the EU?", *European Policy Centre-Policy Brief*

¹⁴⁵ Hardy, C. (2017) "Russia-Turkey relations have "fully recovered" – Putin", *Euronews*, May 3, <http://www.euronews.com/2017/05/03/russia-turkey-relations-have-fully-recovered-putin>

and Iran.¹⁴⁶ However historical rivalry between both has continued with the changing balance in the Middle East and recent developments in Syria and Iraq increased the antagonistic relation between Turkey and Iran.¹⁴⁷ Besides the possibility of deteriorating relations with Iran, would make the Asian expanding economies alternative energy markets.¹⁴⁸

Along with Russia and Iran, relations with other Caspian countries are also important challenges for Turkey. Through these countries the country can enhance its energy diversity and respond to EU's interest on the region. Despite the long standing relations of Turkey and Azerbaijan, relations with other Turkic states Kazakhstan, Turkmenistan and Uzbekistan, which have 13.3% of the world's total natural reserves, are not strong enough for Turkey's energy desire. Also the region is the subject of conflicting energy interests. Presence of Russia and Iran, also Asian energy hungry emerging countries increase the competition in the region.¹⁴⁹

The Middle East creates serious risks for Turkey's energy security. Inter-state and intra-state conflicts, terrorist organizations and interests of global powers cause rapid geopolitical change in the region. While region itself creates challenges, current energy based challenges mostly intensifies on KRG and central government.¹⁵⁰ Turkey's challenge on search for balance in relation triangle has become more compeller with the referendum tension with KRG.

After the discovery of natural gas reserves, Leviathan basin has started to take part on Turkey's energy agenda. Therefore, relations with East Mediterranean countries have appeared as serious challenges for Turkey. Proposed pipeline from Israel to Turkey can highly contribute to the country's energy security but Turkey has long standing problematic relations in the region. Recently, relations with

¹⁴⁶ Bahgat, G. (2014) "Iran-Turkey Energy Cooperation: Strategic Implications", *Middle East Policy*, Vol. XXI, No. 4, Winter 2014

¹⁴⁷ Bora, B. (2017) "What is behind the hostility between Iran and Turkey?", *Aljazeera February 26*, <http://www.aljazeera.com/indepth/features/2017/02/hostility-iran-turkey-170225184418231.html>

¹⁴⁸ Carter, S. "Iran, Natural Gas and Asia's Energy Needs: A Spoiler for Sanctions?", *Middle East Policy Council*, <http://www.mepec.org/iran-natural-gas-and-asias-energy-needs-spoiler-sanctions>

¹⁴⁹ Ibrayeva, A. & Tashtemkhanova R. & Ospanova, A. & Aigerim, Somzhurek, B. & Azmukhanova, A. (2017) "Energy Export Potential in the Caspian Region and Its Impact on EU Energy Security"

¹⁵⁰ Ipek, P. (2017) "Oil and intra-state conflict in Iraq and Syria: sub-state actors and challenges for Turkey's energy security", *Middle Eastern Studies*, 53:3, 406-419, DOI: 10.1080/00263206.2016.1265511

Israel normalized through energy negotiations.¹⁵¹ However Cyprus problem and the complete absence of diplomatic relations hinder further energy talks. Also recent disputes on natural gas drill by Greek Cypriots, increased tension after the collapse of reunification talks of the island.¹⁵²

Apart from relations with energy suppliers under the energy security scope, relations with energy demanders are also crucial for Turkey due to its ambitions. Europe is the main demander side of Turkey's desire to become an energy hub. And as expressed in joint press statement of Turkey - EU High Level Energy Dialogue, cooperation on energy is important for both sides.¹⁵³ However relations with the EU destabilized. Recent dispute on refugee crisis and the European Parliament vote to suspend negotiations with Turkey for EU membership, Turkey's stance become aggressive. Tension rose especially in the pre-referendum period with the restrictions on the referendum campaigns of the ruling Justice and Development Party (AKP) in the EU member countries.¹⁵⁴ While the EU-Turkey relations are fragile like that, the nature of the EU, which consists of 28 different countries, is another challenge for Turkey. The member countries which have different level economies and energy outlooks have variations in their energy demands.¹⁵⁵ When it is considered that the EU is the main energy demander side of the Turkey's target and the EU's search for new reliable energy routes after the Ukrainian crisis, stability of the relations appear as one of the significant pillar. Therefore pursuing stable relations with the EU is needed high efforts from Turkey.¹⁵⁶

¹⁵¹ The National Herald (2017) "Turkey Pushes Israel to Make Cyprus Allow Gas Pipeline to Europe", *July 22*, <https://www.thenationalherald.com/169981/turkey-pushes-israel-make-cyprus-allow-gas-pipeline-europe/>

¹⁵² Toksabay E. & Dolan, D. (2017) "Turkey Warns Greek Cypriots, Oil Companies Against Offshore Energy Grab", *Reuters*, *July 6*, <https://www.reuters.com/article/us-cyprus-conflict-turkey/turkey-warns-greek-cypriots-oil-companies-against-offshore-energy-grab-idUSKBN19V0WL>

¹⁵³ Ibid.

¹⁵⁴ Quamar, M. (2017) "The Turkish Referendum and Its Impact on Turkey's Foreign Policy", *E-International Relations* *May 22*, <http://www.e-ir.info/2017/05/22/theturkish-referendum-and-its-impact-on-turkeys-foreign-policy/>

¹⁵⁵ Demiryol T. (2014) "The Eastern Partnership and the EU-Turkey Energy Relations"

¹⁵⁶ Chyong, C. & Slavkova, L. & Tcherneva, V. (2015) "Europe's alternatives to Russian gas", *European Council on Foreign Relations*, *April 9*, http://www.ecfr.eu/article/commentary_europes_alternatives_to_russian_gas311666

CONCLUSION

Over the past decade Turkey has shown impressive change on its energy agenda. The country has set wide energy targets, which are quite ambitious and comprehensive, hence the country wants to become an energy hub and play an important role on global energy trade. Therefore Turkey has given its efforts in order to increase its energy production and establish strong international energy grid. Also the country has already shown strong process on renewable energy, energy efficiency and nuclear energy.

In the face of these energy vision and targets, Turkey's current energy profile does not have a remarkable look. The country is highly dependent on external energy resources and imports 72 percent of its energy. Considering its growing economy and population, becoming an energy hub is seen as quite favorable in many respects. For this reason Turkey started to wide policy restructuring in energy area. Policy initiatives have gained momentum both at internal and external level. At the internal level, strategies have been conducted to increase production and investments thus privatization and liberalization have started in energy sector also high level incentives and subsidies have been provided. At the external level, multidirectional energy relations and foreign policy have been pursued together as complementary.

The unique position of the country, which is called 'natural bridge', lies behind of this energy desire and provides strong motivation. Currently Turkey wants to exploit its favorable position at high level. Thus the country targets quite wide trade area. This geopolitical energy approach of Turkey has been always inside of its energy agenda but growing economy and regional dynamics have evolved it to higher level. Also international level energy co-operations have strong contribution on this approach. Both producers and consumers have placed Turkey into an important role. Especially the EU, as the main consumer side, strengthens geopolitical energy approach through underline Turkey's position.

Despite Turkey's efforts and mentioned unique position, there are various internal and external challenges in front of the country. Current internal challenges in sectoral level can eliminate through regulating energy market for international transactions and providing full liberalization and

transparency. However dynamic challenges create high level risks for Turkey's energy security. Recent political upheaval disclosed structural weakness in the face of several threats. Also in the external level current regional instability, compelling energy partners and high competition hinder Turkey to pursue stable energy agenda.

In the light of all aspects mentioned above, it can be seen that there are several determinants, which directly linked to Turkey's energy vision. Therefore, despite the uniqueness of its location, other factors have also crucial role on the Turkey's energy future. Turkey can reach its energy desire if it pursues strong energy agenda. At the internal level, the structural change in the sector should be continued with the reforms. At the external level, Turkey needs to keep up with the regional dynamics. And most importantly, international energy co-operations are needed to maintain with successful multidirectional foreign policy.

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