INSTITUT EUROPEEN DES HAUTES ETUDES INTERNATIONALES

2006-2007 ACADEMIC YEAR

SECURITY OF ENERGY SUPPLY IN THE EU: CHALLENGES AND SOLUTIONS

M.A. THESIS IN ADVANCED EUROPEAN AND INTERNATIONALE STUDIES

Diplôme Des Hautes Etude Européennes et Internationales

Istanbul

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JUNE 2007

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ABBREVIATIONS

bbl/d: Barrels per Day

bcm: Billion Cubic Meters

ECSC: European Coal and Steel Community

GDP: Gross Domestic Product

LNG: Liquified Natural Gas

mtoe: Million Tons of Oil Equivalent

Tcf: Trillion Cubic Feets

OSCE: Organisation for Security and Co-operation for Europe

OPEC: Organisation of the Petroleum Exporting Countries

TEN-E: Trans-European Energy Network

ECT: Energy Charter Treaty

ABSTRACT

This thesis is concentrated on the security of energy supply in the European Union. It mainly focused on its challenges and the solutions. In my study; I analyzed the importance of the energy for the European Union by concentrating on its historical background and its current energy situation. Furthermore, I mentioned the main challenges of the security of supply by questioning the EU's production capacity, its limited energy reserves, the reliability of the producer countries, the problems in the energy infrastructure and the lack of the common energy policy.

I also evaluated the relations between EU and its producer and transit countries to understand better the situation. Finally, I stressed the possible solutions to solve this problem. I highlighted the possible measures at the national, community and multilateral levels.

In this thesis, I evaluated the different perspectives of the different authors by using the appropriate data to ensure a better understanding about the security of supply in the EU.

INTRODUCTION

The energy is a vital element for the survival of individuals and actually of the states. Its roles for the individuals are quite important. They use the energy especially for the transportation, generating the power, heating and cooling. Energy is indispensable for the states, as well as for the individuals. It has became one of the most important and efficient driving forces in the economical and political matters of the states. Most of the political and economical events are related to the energy and to its vitality.

Since the decades, it has been used as a divisive but in the same time as a unifying power. In many times, this vital element was the main reason of the political and economical crisis between the international actors. However, on the other hand, it also paved the way for different international and multinational organizations and frameworks. For these reasons, energy policies are usually related with the security and defense policy of the states. In this respect, governments are also aware of the crucial position of energy and its role for ensuring the security and the stability of the states.

There are five main energy sources. These are mainly oil, natural gas, solid fuels, nuclear energy and recently the renewable energy. Among them; the most vital fuels are oil and natural gas. The countries which have large oil and gas reserves become the main actors of the international energy market, international economy and international politics as well. For this reason; the competition of different states from different regions for gaining the access to the energy resources is ,today, one the main priorities of the international political and economical agenda.

Unfortunately; the energy resources are not equally distributed in the world. Some regions and some countries are self-sufficient and some of them are quite dependent to the other producer countries. This

dependency has developed the ‘energy security’ concept and even more deeper, the concept of ‘security of supply’.

At the basic sense, the security of supply is to ensure the safe and secure transfer of the supplied energy from producer to the consumer countries. It is one of the main driving forces of the states’ politics. And especially, it has a quite important impact on security and the foreign polices of the consumer states.

Energy has a crucial role in the European Union because of its historical ties. It is one of the determinant factors in the establishment of the union. Coal and steel are its constituents. And since that time, the energy has been one of the main efficient factors determining the future of the union. However, the importance of the coal and steel didn’t stay the same and the preferences toward the energy sources had been changed. This kind of changement in the energy sources affected the energy situation and the security of supply of the EU.

Additionally; even though EU is one of the most populated and richest markets of the world, its energy resources especially those of oil and natural gas, are very limited and its energy dependency to the imports is very high. This is the biggest challenge for the EU’s supply security. The dependency to the external resources brings with them automatically many risks threatening its security. However, apart from the high dependency, the EU’s security of supply has been threatened also by different internal and external challenges. For this reason, the security of supply is one of the most important issues in the EU.

Concentrating on all of these points, it can be relevant to say that this issue is a high priority for the European Union. The main factors affecting the security of supply should be well analyzed and the necessary and efficient solution should be taken for solving this problem.

CHAPTER 1

ENERGY IN THE EUROPEAN UNION

1.1-The historical background of the energy in the EU

Energy had a crucial effect in Europe in the past as well as in today. Especially since the creation of the European Union, the effect of the energy in Europe can be more clearly seen. Especially, in the early years of the European Community, during the years of the European construction, it has a vital role.

The energy has a unifying feature for the European Union. Especially the coal, steel and nuclear power were the main elements of this unifying power. These elements are the subjects of two important founder treaties of EU; ECSC and the Euratom Treaties. The ECSC was founded by the Paris Treaty in 1951. France, West Germany, Italy, Netherlands, Belgium and the Luxembourg were members of this community. The main aim was to combine the coal and steel resources of the member states for establishing a coal and steel union.

After the Second World War, the energy was indispensable for the Western Europe. As the energy is one of the most important parts of the economy, it was essential for the reconstruction of the continent after the war. At that time; the coal was the most abundant energy in the continent. And also, the coal and steel were the main products of the gun industry. Germany possessed the coal industry and France possessed the steel. The coal and steel productions were problematic issues between France and Germany. In this respect, Jean Monnet recognized that by establishing a coal and steel union, the problems between the two countries can be avoided and the absolute peace in the Western Europe can be provided. This objective was renewed under the Schuman Plan which was launched by Robert Schuman- the foreign ministry of France-. According to this plan; a 'high authority' would be responsible of the coal and steel production.[1]

[1] Matlary,J.H.; *The Development of Energy Policy in the European Union;* Energy Policy in the European Union, Hampshire : Macmillan,1997,pg: 14-15

The establishment of ECSC is the basis of the European Union and it is a significant example for understanding the efficient role of energy in shaping the international politics.

The coal dominance in the European Union didn't continue too long. The coal consumption started to decrease by 1955. At that time, the Middle East started to sell its cheap oil and this cheap oil arrived to the European Market. And, gradually, it started to replace the coal in Europe. At that time, most of the people believed that the sectoral integration can bring a fully integrated political unit.[2] This idea was weakened with the failure of a two important initiatives; 'European Defense Community' and 'European Political Community'.

After these failures; the efforts for the European integration continued. Especially, the Euratom and the European Economic Community (1957) were quite successful initiatives for the European integration. Moreover, the creation of the Euratom Treaty was a new milestone for organizing the energy issue and increasing its efficiency in the union.

In that time, the use of oil was not broadly used, the consumption of coal was declining and in this case, the use of the nuclear power seemed advantageous. However, all the member states were not completely interested in the nuclear issue. They had different intentions for signing this treaty. To illustrate these different intentions, I believe that the cases of France and Germany are appropriate examples. France was quite interested in the nuclear energy contrary Germany was not. Germany was interested in the establishment of a common market. But for achieving this aim, Germany needed France. These different interests show how there was a lack of common approach in the energy field, even at that time.[3]

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[2] Matlary,J.H.; *The Development of Energy Policy in the European Union;* Energy Policy in the European Union, Hampshire : Macmillan,1997,pg: 16

[3] Matlary,J.H.; *The Development of Energy Policy in the European Union;* Energy Policy in the European Union, Hampshire : Macmillan,1997,pg:17

The European Union entered a new era with the first oil crisis. During this oil crisis, the embargo put by the OPEC members showed how the consumer countries are vulnerable against the producer countries. And, European countries realized that they should take some new measures for strengthening their situations.

The new efforts, in the energy issue, were launched in 1974 and in 1980 focusing on some new objectives. The 1974 objectives were about taking the essential measures to lessen the risks of being primarily and highly dependent to the oil. We can say that this target was mainly concentrated on the oil. Otherwise, 1980 targets had more economical aims comparing to those of 1974. In these objectives; the primary focus was taking necessary measures to prevent the energy consumption. They highlighted that the oil imports can be a threat for the security of supply. In this respect, the European Community started to make progress for reducing the level of the imports. Moreover, the commission set new targets in 1986 which should be achieved until 1995. According to these targets; the share of oil and gas in the electricity production will decrease to 15% until 1995, the energy saving relating with the energy efficiency measures should be enhanced, the rise in the domestic production will be developed, the diversification of the new suppliers and the use of the different sources of energy should be promoted, the energy networks ought to be developed.[4]

The development of the energy issue gained a new aspect with the new treaty 'The Single European Act'. This treaty was a crucial step for establishing the common market, removing the barriers for the trade. However, the new imitative about the common single market didn't cover the issues relating to the energy. It started to include them since 1988. One of the other reforms in the SEA was made in the decion-making procedure. The areas where qualified majority voting system is using were extended. This reform weakened the member states' veto power to inniate the common policy and to have a common approach in

[4] Belgrave,R.;*Western Europe's Energ Security to 2000;*Energy Security to 2000;Aldershot:Gower;1987; pg 185-187

the energy issue. This was an important step for establishing the common energy policy.[5]

The security of supply and the creation of the internal energy market remained as two main priorities in the energy field in the EU. The Energy Green Paper 'Towards a European Strategy for the Security of Energy Supply' published in 2000 and the Energy Green Paper 'A European Strategy for Sustainable, Competitive and Secure Energy' published in 2006 became important reference documents which explain quite clearly the priorities of the European Union in this field.

The efforts for strengthening the energy policy in the EU have being continued. The latest initiative was to put a separate chapter in the draft constitution however as it is not ratified, this initiative also failed.

As it is obvious, since ECSC, there have been gradual initiatives for developing the energy sector and improving the security of energy supply. And these efforts have been continued even today.

1.2- The Common Energy Policy

It is obvious that in a political union like the EU, having a common approach for the policies is the best way to be organized and to be efficient. The vitality of the energy and its indispensable effects on the politics and on the economics bring itself at the center of many policies.

The common energy policy in the European Union is a very problematic issue. Especially, after the fourth and the fifth enlargement; this process became more complicated. In the enlarged EU, the national interests and the approaches toward the new initiatives were diversified. And this diversity of the national interests prevents "*to speak with one voice*[6]." Especially; the idea of a supranational dominance on the national energy policies is the main opposition for a common energy

[5] Matlary,J.H.; *The Development of Energy Policy in the European Union;* Energy Policy in the European Union, Hampshire : Macmillan,1997, pg: 19-20

[6] European Commission, Green Paper ' A European Strayegy for Sustainable, Competitive and Secure Energy', Brussel, 2006, pg:14

policy. They do not want to lose their interest in their national policies. [7] For this reason, there is no consensus for the creation of a common energy policy.

All the member states have different views about the common energy policy. Some of them are strongly against and some of them have more moderate approaches toward this issue. Unfortunately, the majority of the Union is totally against to have a common energy policy. They do not accept a supranational authority in the energy sector.

The main actors of the oppositions and fragmentations toward the common energy policy are the member states and the interest groups. The member states are mainly concentrated on the protection of their sovereignty and their national policies however the interest groups mainly focus on their interests and their benefits. Their lobbying force is very effective. In the energy sector, the interest groups are usually the companies and the associations. Moreover, most of the energy companies are unified and established large scale frameworks in the form of federations. These are the Eurogas, the Europia, and the CEPCEO. These interest groups are very important for the decision-making process. Especially, about the common energy policy, they can easily influence their national governments, according to their benefits.[8] It is quite clear that not only the national interest but also the interests of the specific groups also affect the initiatives and decisions about the common energy policy.

Especially in the last two decades, the commission tried to install the common energy policy in the EU's mechanism. However, each initiative failed and the community authorities could not succeed. In this issue, the most significant initiative was that they tried to put a separate chapter for the common energy policy in the Maastricht Treaty.

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[7] Umbach, F.; Towards a European Energy Policy?, Foreign Policy in Dialogue ; Vol. 8-Issue 20; 2007; Trier; pg: 11 available at: http://www.deutsche-aussenpolitik.de/newsletter/issue18.pdf

[8] Matlary,J.H.; *The Role of Member Governments an Interest Group;* Energy Policy in the European Union; Hampshire : Macmillan;1997; pg: 95

However, this proposal cannot be succeeded. It failed because of the strong oppositions of member states.[9] This initiative is very significant because this is a clear attempt to transfer an important share of competence in this issue to the Union.

The common energy policy is indispensable for ensuring the security of supply. The different priorities and interests among the member states prevent to have an integrated approach for the supply security. To illustrate, the target of 20% for the renewable energy became a controversial issue because of the concerns of the some member countries. According to this target; the share of the renewable energy will be 20% in the total energy consumption in 2020.[10] However, there are some concerns about this target in the Union. The main reason of these concerns is the different interests of the member states. The rise in the share of renewable energy will increase its share in the electricity production. And this situation is considered as a threat by the member states which produce the electricity from the nuclear energy and the coal. These members are mainly France, Finland, Hungary, Poland, Czech Republic and Poland.[11] This opposition is a perfect example for showing why EU does not have a common energy policy. The national interests and the priorities are different between the member states and this situation prevents to have a common approach in some specific issues which are quite important and efficient for the union. However, these kinds of concerns are quite detrimental for the union and its security of supply. If the member states don't respect the targets put by the commission and they cannot have a common approach in this issue, the import dependency cannot be decreased and the security of supply cannot be ensured.

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[9] Matlary,J.H..;*Towards a Common Energy Policy*; Energy Policy in the European Union; Hampshire : Macmillan;1997; pg: 60

[10] European Commission; Renewable Energy Road Map 'Renewable Energies in the 21st century:building a more sustainable future'; Brussel; 2007; pg:3

[11] http://www.foeeurope.org/press/2007/coverage/Euractive_energy_spring_summit_070307.pdf accessed on 20.04.2007

As it is quite clear above, it is very difficult to have a common approach in a union with 27 members. All of these members have different national interests and most of them prefer preserving their own priorities. This situation can have a quite negative outcome for the security of supply. In such a strategic issue, if the countries continue to have their own strategy for ensuring their security of energy supply, the current challenges will continue and even the situation will be worsened in the future.

1.3 Energy situation in the European Union

The European Union, despite its political and economical powers, has a vulnerable energy situation. This vulnerability arises essentially from three main reasons. These are limited energy reserves and insufficient indigenous production, the rise in the energy demand and the high import dependency especially for the fossil fuels. These reasons are essential challenges for the security of supply. Therefore, ensuring the security of supply is quite necessary for strengthening the energy security of the European Union.

The limited reserves are mainly concentrated on the oil and the natural gas. These fossil fuels are not equally distributed in the EU. Some of the areas are in a more advantageous situation than the others. Especially, the member states which possess oil and natural gas reserves have more chance to strengthen their security of supply. However, almost all of them cannot meet its energy demand and are dependent to the imports.

In the European Union, each energy source has a different situation. Some of them are more dominantly used and some of them are more abundant than the others. Some of them are more conveyable for the environmental protection while the others are more harmful.

For a better analyze of the EU's energy situation, it can be relevant to analyze two important indicators; the share of the energy sources in the total consumption and the share of the energy sources in the indigenous production. According to the 2005 data; the share of the solid fuels is

18%, the share of the oil is 37%, the share of the natural gas is 24%, the share of the nuclear power is 15% and the renewable energy's share is 6% in the total energy consumption.[12]Otherwise in 2003, the share of the solid fuels is 22%, the share of oil is 16%, the share of the gas is 21%, the share of the nuclear energy is 29% and the share of the renewable energy is 12% in the domestic energy production.[13]

As it is clear, the energy consumption is higher than the energy production. Especially the oil and gas consumption levels increase the vulnerability of the energy situation in the EU. Furthermore, in the European Union, each energy source has is own advantage and disadvantages for the consumers.

1.3.1- Oil

Oil is not only an energy source but also an important political and economical tool. It has strong effects both for the producer and the consumer countries. In the European Union, the oil consumption is indispensable. It can be relevant to stress that the oil is one of the most important instrument influencing the international economy and politics. "The *dramatic price rises experienced in recent years, and heightened awareness of the role of hydrocarbon combustion to global environmental change, have returned energy, and petroleum, to the centre of political debate.*[14]" This statement clearly shows how the oil and the price changes affect the international politics.

Oil has a special position in the European energy market. It is the predominant energy source in the domestic production and consumption. The oil is mostly consumed in the transport sector. According to 2004 data, for the dispersion of the sectors in the energy consumption, the transport is in the first rank, the second one is the industry, the third is the

[12]Morelli,L.V.; *European Union's Energy Security Challenges*; CRS Report for Congress; Congressional Research Service; 2006; pg:6 available at: http://fas.org/sgp/crs/row/RL33636.pdf

[13] http://ec.europa.eu/energy/green-paper-energy/doc/2006_03_08_gp_factsheet_en.pdf accessed on 15.03. 2007

[14] http://ec.europa.eu/energy/oil/index_en.htm accessed on 16. 02. 2007

households and the fourth is the commerce.[15] Especially the large share of the transport sector in the total consumption shows the importance of the oil for the EU. However, this high oil consumption cannot be met by the domestic production. According to the 2004 data; the oil production in the European Union was 145.12 mtoe and the consumption was 645.85 mtoe.[16] This large gap between the production and the consumption shows how EU is dependent to the oil imports to meet its growing demand. The main oil exporter countries to the EU are Russia, Middle East, Norway, and North Africa. Some of the member states which are highly dependent to the oil exports are Germany, France and Poland. Germany's import dependency level is 97%, France's dependency level is 95% and Poland's dependency level is 98%. These three countries are not importing from the same producers countries. Germany and Poland are highly dependent to Russia. However, France's oil imports are more diversified. The large share of the oil is importing from the Middle East and also from the North Africa. Their share in total oil imports is 51%. The rest is importing from the North Sea and Russia. The share of North Sea is about 32% and the share of Russia is about 23%.[17]

European Union favors an effective and competitive access to the oil market and to buy the oil at a reasonable price by avoiding any volatility in the prices. Beside this objective, EU supports also the establishment of the security stocks for avoiding the possible outcomes of the supply disruptions.[18]

The main two oil producer countries in the EU are the United Kingdom and Denmark. However, Italy, Germany and Netherlands also produce oil and contribute to the domestic production. The crude oil

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[15] http://ec.europa.eu/energy/green-paper-energy/doc/2006_03_08_gp_factsheet_en.pdf
[16] http://ec.europa.eu/energy/green-paper-energy/doc/2006_03_08_gp_factsheet_en.pdf
[17] Geden ,O., Marcelis, C., Maurer, A.; *Perspectives for the European Union's External Energy Policy: Discourse, Ideas and Interests in Germany, the UK and France*; SWP Working Paper FG 1; Berlin, 2006, pg:6 available at: http://www.swp-berlin.org/common/get_document.php?asset_id=3521
[18] http://ec.europa.eu/energy/oil/index_en.htm

production is mostly concentrated on the United Kingdom and Denmark.[19]

The United Kingdom is one of the main domestic oil suppliers in the EU. In this country, the major oil fields were discovered in the 1970s. And for this reason, most of the large oil reserves are mature. The oil production in these fields, reached to its highest level in 1999. And after 1999, the production started to decline. In 2000, just after one year, the decline in the production was about 7%.[20] This decline in the production is a crucial risk for the European energy security. If this decline continues, the UK will be a net oil exporter in 2010. However, the data stress that it can become a net oil exporter earlier then 2010. According to the expectations, its oil production will not be sufficient to meet the oil demand and it will have to be an oil importer by the year 2008.[21]

Consequently; this decline in the UK's oil production increases the dependency to the external resources and the concerns about the supply security in the EU.

Another domestic oil producer country is Denmark. Denmark's energy situation has been changed since the last decade. It became an oil exporter country. The discovery of the new fields especially in the North Sea is the main reason of this changement. In 2003, its crude oil production was 375 thousands of barrels per day and its consumption was 188 thousand of barrels per day. It is quite obvious that the consumption is less than the production.[22].

Apart from these two important producer countries; Italy, Germany, Netherlands are other oil producer countries. But, none of them have the capacity to export. Besides, they should import to meet their demands. Its consumption exceeds its production. Its reserve capacity which is approximately 750 mb is not enough to meet the total consumption. For

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[19] http://www.researchandmarkets.com/reportinfo.asp?report_id=307879 accessed 15.05.2007

[20] Zittel,W. ;Analysis of the UK oil production; Ottobrunn; 2001; pg:1-8

[21] http://www.odac-info.org/news_releases/documents/UK_oil_2006.htm 02.05.2007

[22] http://www.cslforum.org/denmark.htm accessed on 02.05.2007

this reason Italy is very much dependent to the external sources.[23] Germany is another important oil producer in the EU. Its proven oil reserves are approximately 367 mb according to the 2006 data. The field of Mittelplate is the most productive oil field in Germany. However, despite its reserves and its domestic production, Germany still depends on oil imports.[24] This situation in Germany increases also the vulnerability of the EU's energy supply. Netherlands is another oil producer in the European Union. Comparing to the other domestic oil suppliers, Netherlands does not posses larges oil reserves. Besides these limited reserves, the consumption is quite high. It is the sixth biggest oil consumer in the EU. For this reason; the level of import dependency is high. In the country; approximately 90% of the consumed oil has been imported.[25]

Finally; it is quite obvious that most of the domestic producers in the EU are not sufficient to meet the EU's overall oil consumption. Their limited oil reserves and high level consumption increase the EU's dependency to the external oil suppliers. And this situation is a big challenge for the EU's security of supply.

1.3.2- Natural Gas

The natural gas has a special importance for the EU. The use of the natural gas gradually increases. In 2004, its share in the total consumption was about 23.9%. It has the second largest share in the total consumption after the oil.[26] According to the estimations; each year, there will be an increase of 2.4% in the natural gas consumption in the EU. Unfortunately, contrary to the high consumption in the natural gas; there is a decline in the production capacity in the EU. The main natural gas producer countries are the North Countries, which possess gas fields in the North Sea, and Netherlands. However, the gas production in the

[23] http://www.cslforum.org/italy.htm accessed on 29.04.2007
[24] http://commercecan.ic.gc.ca/scdt/bizmap/interface2.nsf/vDownload/CABS_0035/$file/Germany.pdf. accessed on 04.05.2007
[25] http://www.cslforum.org/netherlands.htm accessed on 04.05.2007
[26] http://ec.europa.eu/dgs/energy_transport/figures/pocketbook/doc/2006/2006_energy_en.pdf accessed on 16.05.2007

North Sea and in the Netherlands has the tendency to decrease. Especially in the North Sea; the oil production reached to its highest capacity in 2001 and it has being decreased since that time.[27] This decline in the production is a big threat for the security of energy supply in the EU. Unlike the consumption; between the years 2004-2005; the natural gas production in the North Sea decreased .The fall in the production was 5.8%. Despite this fall, the consumption of the natural gas increased. The rise was about 2.9% in one year. Among the member states, Spain, Estonia, Portugal, Italy, Greece, Lithuania, Austria and Hungary experienced the most dramatic rises in the natural gas consumption. On the other hand, the natural gas consumption decreased significantly in Finland, Luxembourg, Sweden, Denmark and Belgium.[28]As I already mentioned, the natural gas reserves are limited and the domestic production capacity is insufficient to meet the increasing demand for the natural gas. The main gas producers in the EU are United Kingdom, Netherlands, Denmark, Germany, Italy and with a small size; Hungary and Poland. All of these suppliers, except Denmark, suffer from the decline in the gas production. However, the situation is different in Denmark. In this country, the gas production increased by 10.8 % in 2005, comparing to 2004.[29]

Obviously, the decrease in the production capacities is a big concern for the Union in terms of the security of supply. The main reason of this concern is that this situation increases the import dependency of the EU to the external gas producers. Among the external suppliers, Russia has the biggest share in the EU's gas imports with 25%. After Russia the second big gas importer is Norway with 15% and the third importer is Middle East with a share of 14%.[30]

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[27] Hitzfeld J, *Gas Imports Increase*, The Unicredit Weekly Magazine, 2007, available at http://uninews.unicredit.it/en/articles/page.php?id=7054 accessed on 14.05.2007

[28] www.eustatistics.gov.uk/Download.asp?aspects%20of%20the%20natural%20gas%20economy%20in%202005_tcm90-38033.pdf accessed on 15.03.2007

[29] Ibid.

[30] European Commission, Annex to the Green Paper A European Strategy for Sustainable, Competitive and Secure Energy, 2006, pg: 24

United Kingdom is the biggest gas producer in the European Union. Its production is about 100 bcm per year. Its reserves are generally mature and they don't have large capacities. This is a big obstacle for the future production. The production of UK is in decline and has become gradually more dependent to the imported gas. According to the estimations, if this trend will continue as in today; UK will have to import 80% of its needs in 2020. Especially; in winter, because of the bad climate conditions and the need of heating, the demand for the imported natural gas increases. The main reason of this increase is that they prefer the natural gas as the source of the electricity production. It is a major source for the electricity production. This choice increases the consumption of the gas in the country.[31]

Another important EU producer is Netherlands. It is the second large natural gas producer in the European Union. Netherlands has 1.45 trillion m3 proved reserves according to the 2005 data. The natural gas production increased from 2003 to 2004 by 15%.[32] The main resource of its production is the Groningen Field. This field is mature, it has being used since 1959 and for this reason its production capacity is declining. For ensuring the sustainability and the continuity in the gas production, there are also the small fields which contribute to the overall domestic gas production. Their main problem is their limited production capacity. They already reached to their maximum production. This situation shows that the gas production in the Netherlands will decrease in the future relatively. This situation of the Groningen and the other smaller fields are an obstacle for the Netherlands' gas production. [33] Additionally, the maturity and the limited capacity of the Dutch gas fields can threaten, in the future, its supply security and increase the level the import

[31] Parliamentary Office of Science and Technology, *The Future of UK Gas Supplies*, Number 230, October 2004, pg:1

[32] http://ec.europa.eu/energy/energy_policy/doc/factsheets/mix/mix_nl_en.pdf accessed on 27.02.2007

[33] Clingendael International Energy Programme, *Natural Gas Supply for the EU in the short to medium term*, Clingendael Institute, The Hague; 2004, pg: 10-11 available at: http://www.clingendael.nl/publications/2004/20040300_ciep_paper.pdf

dependency for the natural gas. And if, really, the county will be highly dependent to the exported gas, this will show that the security of supply in the EU will be under a big threat.

Denmark is also another natural gas consumer and exporter country. It produces more than it consumes. And this situation makes Denmark directly a gas exporter for the Union. Germany and Sweden are the main importers of the Danish gas.[34]

The other producer countries cannot even meet their domestic demand. Germany possesses approximately 0.2 % of the world gas reserves. Its domestic production cannot meet its consumption. 75% of its consumption is imported mainly from Russia and Norway.[35] This situation is similar for the other small gas producer countries. One of these producers is Italy. Like Germany, Italy's domestic gas production cannot meet its consumption and for this reason, Italy has to import a big amount of gas from the external producers. Its suppliers are two Mediterranean Countries; Algeria and Libya, one Nordic country; Norway and also Netherlands and Russia.[36]

It is quite clear that the domestic suppliers cannot totally meet the growing gas demand in the EU. The rise in the gas consumption and the decrease in the production capacities of the gas fields complicate the energy security issue and threaten the security of the energy supply in the union.

1.3.3- Coal

Each energy source has a different situation in the EU. The coal has a historical importance for the Union. It is one of the main elements of the ECSC. And this historical factor increases the importance of the coal for the union

Germany, United Kingdom, Spain, Poland, Czech Republic, Slovakia and Hungary are the main coal producers in the EU-25. Especially, the fifth enlargement contributed to the coal production because some of the

[34] http://www.cslforum.org/denmark.htm
[35] http://www.cslforum.org/germany.htm accessed on 02.05.2007
[36] www.cslforum.org/italy.htm

new member states like Poland, Czech Republic, Slovenia and Hungary, possess large coal reserves. However, among all of these; Germany and Poland are the most significant coal producer countries in the EU.[37]

Germany, being the largest coal producer in the EU, has approximately 7.5 billion short tones according to the 2005 data. In the country, the coal has been mostly used for producing the electricity. This role increases the importance of the coal in the German economy. However, despite its large reserves, the 19% of the total coal demand cannot be met by the domestic production. For this reason, Germany is also dependent to the coal import from different producer countries. [38]

Poland is another important coal supplier in the EU. It has also a significant position in the international coal market. It is the seventh largest coal producer in the world. In Poland, there are three main productive areas for the coal production. These are Lower Silesia, Upper Silesia and Lublin.[39] The accession of such a big coal producer country to the union is a significant opportunity for increasing the domestic production.

The coal's contribution to the EU's security of supply is a dilemma. Its abundency in the union is quite an advantage for the European consumers. They can access to these abundant fuel by a cheaper and easier way than the oil or gas. This is a significant alternative because it can decrease the dependency to the oil and gas imports. And also, it can substitute the natural gas ın the electricity production. Such a substitution can also decreases the electricity prices because the coal is cheaper and more abundant than the natural gas.[40] On the other hand, even though it contributes to the security of supply, there are some other concerns about the environmental protection.

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[37] IEA Clean Coal Centre, Coal in an Enlarged European Union, June 2004, available at http://www.iea-coal.org.uk/publishor/system/component_view.asp?LogDocId=81113 accessed on 08.02.2007

[38] http://www.cslforum.org/germany.htm a

[39] http://www.iea-coal.org.uk/site/ieacoal/reportdetails?LogDocId=80786 accessed on 14.02.2007

[40] IEA Clean Coal Centre; Coal in an Enlarged European Union; June 2004 available at http://www.iea-coal.org.uk/publishor/system/component_view.asp?LogDocId=81113

As it is clear, the environmental protection has an increasing importance in the international politics. The climate change, the greenhouse gas emissions, the change in the ecological balance are the main reasons of the environmental problems. In this respect, there is an increasing concern about the use of coal because of its CO2 emissions. It is generally believed that it is harmful for the environment. These emissions are the biggest challenges for the climate change. These increasing concerns about the use of coal influence the decision-making process and the energy mix of the members.

However, there are new initiatives to make the coal more efficient and convenient for the security of supply in the European Union. In this respect, EU highlighted two important new technologies in the recent energy Green Paper. In this document, the European Commission stressed that the carbon capture and the geological storage can be a significant and efficient options for eliminating the harmful gas emissions.[41] These technologies can be a new opportunity for revitalize the share of the carbon in the total consumption.

1.3.4- Nuclear Energy

The use of nuclear energy is a very important and problematic issue in the European Union. As in the coal situation, it has a historical significance. The Euratom Treaty had strengthened the position of the nuclear energy in the union.

As in the coal situation, the use of the nuclear energy has both advantages and disadvantages. Its main advantage is that it does not contain the harmful gases and it has a significant contribution to the environmental protection.

On the other hand; the use of the nuclear energy has also some disadvantages. The concerns about the nuclear energy are not very recent. The Chernobyl Accident[42] and its effect are still actual. This

[41] European Commission; Green Paper ' A European Strategy for Sustainable, Competitive and Secure Energy' ; Brussel ; 2006 ; pg:12

[42] The Chernobyl Accident was an accident at the Chernobyl Nuclear Power Plant on April 26, 1986

accident showed that how the use of the nuclear energy and the nuclear centrals can be dangerous and harmful.

The European Commission highlighted the importance of the nuclear energy for ensuring the European energy security and the security of energy supply in its communication 'An Energy Policy for Europe'. The EC strongly mentioned that each member can choose its energy sources for its own energy mix. However, if the countries choose to use the nuclear power, they should strictly obey to the 'nuclear safety' priorities set by the Euratom Treaty. In addition to this condition, the document also focused on other two issues relating to the nuclear power which are the 'nuclear waste' and 'the decommissioning'. EC favored a new imitative at the community level for dealing with these two issues.[43] These steps prove how European Commission endeavors to avoid the concerns for the nuclear energy and to increase its share in the energy mix of the member states.

In parallel to these respects, the member states have different approaches about the use of the nuclear power. France is the strongest supporter of the use of the nuclear power. The main reason of this support is the high share of the nuclear power in its electricity production. In addition to France, United Kingdom and Poland also support the nuclear energy. They consider the use of the nuclear energy as a good option for dealing with the challenges against the supply security and the climate changes. However apart from these countries, Germany decided to cease the operation of the nuclear centrals.[44]

As it is clear, there is not a common approach about the use of nuclear issue. However, even though there is not a consensus, all the countries should respect the priorities concentrated on the security, nuclear waste and the decommissioning. And also I strongly believe that a legally binding rule should be launched about these priorities.

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[43] European Commission; An Energy Policy For Europe; Brussel; 2007; pg:17

[44] Geden, O., Marcelis, C., Maurer, A., *Perspectives for the European Union's External Energy Policy: Discourse, Ideas and Interests in Germany, the UK and France*, SWP Working Paper FG 1; Berlin; 2006,;pg:6

1.3.5-Renewable Energy

The renewable energy has an increasing importance for the European Union. Especially after the oil crisis in the 1970s which causes the price volatility and high dependency for the gas imports showed to the member states that they should take some measures to deal with these challenges. Renewable energy is a significant way to fight against these problems.

The renewable energy is consisted of the solar energy, wind power, hydro energy and the biomass. These sources have great contributions to the security of supply. Especially, the solar and hydro energies and the wind power can be domestically produced and decrease the import dependency. The biomass was launched as an option to replace the oil especially in the transport sector.[45] If the oil can be substituted by the biomass, this means that, the oil dependency can significantly decrease and this can be a big success for ensuring the security of supply. European Commission looks for the new measures to increase the share of the renewable energy in the total energy consumption.[46]

Each member state focuses on different sources of the renewable energy. To illustrate; Germany focuses more on the wind energy and the solar power while France and Poland concentrate on more the biomass energy and the hydropower. [47]

As I mentioned above, each energy source has different advantages and disadvantages for the union. However, unfortunately, because of the different reasons, all of them have different obstacles and this situation complicates the energy situation in Europe. Especially, the limited capacity of the oil and natural gas reserves and the high level import dependency for these fuels increases the risks and challenges for the security of supply.

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[45] European Commission, Annex to the Green Paper 'A European Strategy for Sustainable, Competitive and Secure Energy', Brussel, 2006, pg: 34

[46] For further information; please see: Chapter IV: Solutions for Ensuring the Security of Energy Supply in the EU

[47] Geden, O., Marcelis, C., Maurer, A.; *Perspectives for the European Union's External Energy Policy: Discourse, Ideas and Interests in Germany, the UK and France*; SWP Working Paper FG 1; Berlin;2006; pg: 8

CHAPTER 2

THE SECURITY OF ENERGY SUPPLY: RISKS AND CHALLENGES

The security is a crucial factor for each political being; states, international or intergovernmental organizations. It is essential for their survival. They should guarantee absolutely the security in terms of politics, economics and military. Energy is an important driving force for guaranteeing the security in these areas.

The energy situation differs from one country to another and from one region to the other. The most distinctive elements of the state's energy situation are their production capacity and their dependency level to the external producers. The security of supply is an outcome of these elements. It is a big priority for each consumer country in around the world.

Additionally, ensuring the security of energy supply is quite significant for the EU as well. The bad experiences in the international energy markets, the unexpected oil crisis and their negative outcomes has brought this issue at the top in the EU's political agenda.

The security of supply is an important element for consolidating the stability in the country. It has very close links with the politics, diplomacy and the economics. And it has been affected by all of these factors. Furthermore, the main idea of the security of supply is to provide secure transfer of energy supplies from producer to the consumer countries. However, it is not easy to ensure the security of supply. There are many different driving forces affecting this issue. It is mainly related to the internal energy market's situation, the political stability in the producer and the transit countries, the stability and the transparency of the energy prices and also the dialogue with the main energy actors.

In the European Union, this is a very problematic and complex issue. Its domestic production capacity, growing demand for energy, high

import dependency, has threatened its supply security. In addition to these main challenges, the lack of a common approach in this issue is another problem. All of these factors prove how it is important to prove the security of supply in the EU.

In this respect; there are two main questions for understanding better the EU's energy situation and the importance of the security of energy supply. These are:

-Is European Union really in a fragile and vulnerable situation?

-What are the main threats and risks for EU in this issue

The answer for the former question is quite clear. As I mentioned in the previous chapter, the energy security is not good enough. Each energy source has different problems and disadvantages threatening the general energy security. For this reason, the vulnerability of the EU's energy security is quite obvious. However, for understanding better the fragile energy situation, the security of supply concept and the possible risks and challenges should be better analyzed.

2.1- The Definition of the Security of Energy Supply

There are different explanations for the security of supply. A clear idea about the security of energy supply can be seen in this sentence: "…..security *of supply essentially as a strategy to reduce or hedge risks that derive from energy use, production and imports*.[48]"

The European Commission strongly accentuated the security of supply issue in both the Green Papers published in 2000 and in 2006. These two documents show how the security of supply is important for the European Union. Especially in the Green Paper 'Towards a European strategy for the security of energy supply' published in 2000, the European Commission stressed the fragile energy situation and its high dependency to the external energy suppliers. In the same document, the Commission also highlighted the basic factors for promoting the energy

[48] Egenhofer, C.; *Integrating Security of Supply, Market Liberalisation and Climate Change*; European Energy Security What It Mean? What To Do?;ESF Working Paper No.23; Centre for European Studies; Brussel; 2006; pg: 5 available at: http://shop.ceps.be/BookDetail.php?item_id=1392

supply security. According to the same document; "*security of energy in the energy field must be geared to ensuring, for the good of the general public and smooth functioning of the economy, the interrupted physical availability on the market of the energy products all prices for all consumers (both private and industrial), in the framework of the objective of sustainable development enshrined in the Amsterdam Treaty.*[49]"

From these definitions, it is obvious that the factors which prevent the access to the energy resources and the stability of the energy prices are the main threats for the security of supply. Ensuring the security of supply is essential to protect the domestic consumers from the possible risks and a possible energy crisis.

Energy crisis is an important threat for the security of energy supply. The factors causing an energy crisis are usually multidimensional. These are mainly, the gap between the demand and the supply position in the energy market, the sharp price changes, supply disruptions because of the physical, economical and technical risks and the unexpected growth in the supply.[50] Especially there are two important events which caused a crisis in the energy market. These are 1973-74 oil shocks and the Russian-Ukrainian gas disputes. The former had larger impacts than the latter. However, the gas disputes between Russia and Ukraine had quite efficient effects especially on the European Union. It was a milestone for the union. After this crisis, the European consumers started to focus more attentively to the security of supply issue.

It is quite obvious from these definitions that the security of supply aims to provide the uninterrupted energy supply at a stable and acceptable price.

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[49] European Commission, Green Paper ' Towards a European Strategy for the Security of Energy Supply', Brussel, 2000, pg:10

[50] Clingendael International Energy Programme, *Study on Energy Supply Security and Geopolitics;* Clingendael Institue;The Hague, 2004, pg: 36 available at: http://ec.europa.eu/comm/energy_transport/doc/2004_lv_ciep_report_en.pdf

2.2- The Risks of the Security of Energy Supply

The security and the risk are actually two parts of a medallion. These concepts are very interrelated. It is possible to say that the security can be ensured through eliminating the risks. Especially, in the energy field; the security of supply is very much affected by the different type of risks.

The author Christian Egenhofer clearly cites in his article; 'Integrating Security of Supply, Market Liberalization and Climate Change', the main types of the risks. According to the author; the risks can be classified as the short term and the long term risks. The short-term risks usually are unexpected events which cause the supply disruption like the whether disaster, sudden political crisis, technical problems. However, the long-term risks are more predictable and long-lasting problems like the gap between the demand and supply, the unavailability of the resources because of the lack of investment and the problems in the infrastructure.[51]

Besides to the Christian Egenhofer's arguments, Green Paper 'Towards a European strategy for the security of energy supplies' classified the risks as four main pillars; the physical risks, the economic risks, the social and the environmental risks. According to the same document; the physical risks should be analyzed as the permanent and temporary risks. The permanent physical risks occur usually when the production of an energy resource come to an end. This is exactly what European Union has experienced today. Its limited oil and gas reserves are sharply declining and European Union became more dependent to the external resources. And this is one of the biggest concerns today for the European Union concerning its security of supply. The temporary physical risks are related to the unexpected political and economical events, geopolitical problems and the environmental or the natural damages.[52] The energy crisis between Russia and Ukraine in January

[51] Egenhofer, C., Legge, T. ; *Security of Energy Supply A Question For Policy or The Markets?*; CEPS Task Force Reports, Brussel, 2001; pg: 4 available at: http://shop.ceps.be/BookDetail.php?item_id=37

[52] European Commission, Green paper 'Towards a European Strategy for the Security of Energy Supply', Brussel, 2000,pg:64

2006 is a clear example for the physical risks in the energy supply. During the crisis between Russia and Ukraine, Europe couldn't receive enough energy supplies.

Additionally; apart from the physical risks, there are also the economical risks which affect the security of supply. They usually include all the economical and financial dimensions of the energy supply. The price is the main determinant. The sharp price changes affect the consumers negatively. The high import dependency for the fossil fuels, especially the oil and the natural gas, makes the prices more dependent to the world market and worsens the supply and demand balance in the energy market.[53] This type of risk is quite current for the EU. Its high oil and gas dependency especially to a few suppliers increases the risk of disruption. The two main giant suppliers are Russia and OPEC. Their pricing mechanisms are highly affecting the supply security of the EU.

The sharp changes in the oil and gas prices are dangerous for the producer and the consumer countries. The decline in the energy prices are harmful as well as their rise. The decline in the prices is naturally disadvantageous for the producer countries. For most of the producer countries; the energy export is one of the main revenues and for this reason, a sharp decline in the energy prices can affect directly their economy. On the other hand, the consumers can suffer from the decline of the prices as well. In this case, especially the energy companies highly suffer from the decline in the energy prices. Especially low oil price is a real danger for the oil companies. It is not easy to provide the sustainable production for these companies because of the high cost of production. Therefore, they cannot meet their cost of production with the low prices. Also, decline in the oil prices has another negative effect. The oil and the gas prices are interrelated. For this reason, the decline in the oil prices can directly affect the decline in the gas prices and this situation

[53] European Commission, Green paper 'Towards a European Strategy for the Security of Energy Supply', Brussel, 2000,pg:64

increases the risks and the threats in the economy.[54] It is quite obvious that the changes in the prices have a negative effect on the energy sector. For this reason, I completely agree with Christian Eigenhower that, the prices should stand at a reasonable and a sustainable level.[55]

According to the Green Paper, other risk groups are the social and the environmental risks. According to this document, any possible energy crisis causes some social problems as well. It is obvious that the energy is vital for the countries and for this reason any disruption in the energy supplies can have a domino effect. It affects the politics, the economy and the social life as well. And also any kind of the environmental accident like in the Chernobyl disaster, the harmful gas emissions polluting the air and damaging the climate like the CO2 gases can be considered as environmental risks [56]

Apart from these types of risk, there are also domestic risks. The domestic risks cover all the problems relating to the indigenous energy production, and the infrastructural and technological capacity. Especially, EU suffers from this kind of risks. The limited gas storage capacity and even its absence in some member countries, the insufficient oil and gas production, the problems in the gas and electricity networks are some examples for the domestic risks in the EU.[57]

2.3- The Main Challenges for the Security of Energy Supply in the EU

All of the risks that I classified above have direct effects in the security of energy supply. However apart from these risks, there are four main challenges in the EU threatening its security of supply. These challenges are;

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[54] Clingendael International Energy Programme; *Study on Energy Supply Security and Geopolitics*; Clingendael Institute; The Hague; 2004; pg: 39

[55] Egenhofer, C.; *Integrating Security of Supply, Market Liberalisation and Climate Change* ; European Energy Security What It Mean? What To Do?; ESF Working Paper No.23; Center for European Political Studies; 2006; pg: 5

[56] European Commission; Green paper 'Towards a European Strategy for the Security of Energy Supply'; Brussel; 2000; pg:65

[57] Egenhofer, C.; *Integrating Security of Supply, Market Liberalisation and Climate Change*; ; European Energy Security What It Mean? What To Do?; ESF Working Paper No.23; Center for European Political Studies; 2006; pg:6

1-Limited indigenous energy production and high import dependency,

2- The reliability of the energy suppliers

3-Problems in the energy infrastructure,

4-Lack of a common approach in the energy field.

2.3.1- Challenge I: Limited Indigenous Energy Production and High Import Dependency

In the energy field, as I already mentioned, European Union does not have a strong position. Its energy reserves and indigenous production capacity are quite limited. Despite its limited production capacity, the demand for the energy has been increased. Since 1998; each year, there is a rise in the energy demand at around 1%-2%.[58] Unfortunately, the insufficient domestic production cannot meet EU's increasing demand for energy.

In spite of the limited production capacity, EU has also some geographical advantages relating to this issue. EU is located in a very special area. It is surrounded by two major energy producer countries Russia, Norway and also it can access easily through two important transit countries, Turkey and Ukraine, to the Caspian, Central Asia and the Middle East reserves. It has also the chance to access to the Mediterranean and North African reserves. Its geographical proximity to these regions increases the opportunity of supplying from different resources. This is an important advantage for enhancing the security of supply. However, this geographical advantage cannot solve EU's energy problems. Its limited indigenous production causes directly a new problem which is high import dependency. These two main EU's energy problems are very interrelated. It can be relevant to stress that the later is the outcome of the former. And they form the main challenge for the EU's energy supply security. Today, EU's energy dependency is around 50% but unfortunately, according to the expectations, this level will

[58] European Commission, Directorate General for Energy and Transport, Energy Infrustractures: Increasing the Security of Supply in the Union, Brussel, 2003,pg:1

increase to 70% in 2030.[59] The main reasons of this dependency are the high oil and the natural gas consumptions. Their shares in the total energy imports are 80.2% and 54.5%.[60] Furthermore, the worst point is that Russia and OPEC have the biggest share in the EU's energy supply. The share of OPEC is about 51% in the total energy imports.[61] This data proves how EU is dependent to these countries. In addition, Russia has also, especially for the gas, a strong position in Europe. It is the largest gas supplier to the EU. Its share in the total gas import is 36.7%.[62] These data clearly highlight that the import dependency is a growing challenge for the EU. Being dependent especially to a few suppliers worsens the situation.

Additionally, the high demand for the oil and natural gas makes EU more dependent to these two suppliers. However, it is not easy to reduce the oil and natural gas consumption in the short-term. The main reason of this obstacle is their strong positions and dominance in many sectors. . The highest energy consumption is in the transport sector. In 2004; its share in the total energy consumption was 30.7%.[63] The oil is the predominant energy source in this sector and the substitution of the oil with another fuel is almost impossible.[64] This situation is a big obstacle for the EU's security of supply. The efforts for reducing the oil consumption seem quite difficult. As I mentioned in the last chapter, the use of renewable energy can be an alternative to decrease the oil dominance in this sector. This option can contribute to the EU's security of supply by decreasing the import dependency.

This challenge directly affects the security of energy supply and its elements. It should be highlighted that "*security of supply has two*

[59]European Commission, Green Paper ' A European Strategy for Sustainable, Competitive and Secure Energy', Brussel, 2006, pg:3
[60]http://ec.europa.eu/dgs/energy_transport/figures/pocketbook/doc/2006/2006_energy_en.pdf
[61] http://www.globalchange.umd.edu/energytrends/eu/3/ accessed on 14.05.2007
[62]http://ec.europa.eu/dgs/energy_transport/figures/pocketbook/doc/2006/2006_energy_en.pdf
[63] Ibid.
[64]Egenhofer,C., Legge,T.;*Security of Energy Supply A Question For Policy or The Markets?*; CEPS Task Force Reports; Center For European Political Studies;Brussel; 2001, pg: 7

equally important constituent parts: physical availability and price[65]" And I believe that, these two factors are under a big threat in the case of a high import dependency. The main reason is that the access to the resources and the prices of the imported fuels can easily affected by the political and economic changes in the supplier countries. Or, the supplier countries can increase the prices of their fuels or cease the supply and cause a physical disruption. Especially, the change in the prices can have a very large and destructive effect. They can even cause an economic crisis in the consumer countries. Fortunately, even though EU has high dependency, it has the chance to diversify its energy suppliers thanks to its geographical proximity to the different producers. And this advantage decreases the threat of being disrupted.

In conclusion; the EU's limited production and high import capacities increase the threats for its security of supply. In this respect, the main measure should be the diversification of the suppliers for dealing with this issue. If EU can diversify its suppliers, EU can avoid the high import dependency to OPEC and Russia and it can also have the chance to choose the more secure and reliable suppliers.

2.3.2- Challenge II: The Reliability of the EU's Energy Suppliers.

As I highlighted in the previous section, European Union suffers from the high import dependency. However, unfortunately, in addition to this problem, there are also increasing concerns about the reliability of the supplier countries. There is not a consolidated and sustainable stability in most of its suppliers. Almost all of them suffer from also their own domestic problems.

EU's main energy suppliers are Russia, Norway, Middle East and Gulf Countries, the North Africa and Mediterranean Countries. EU also focuses the energy resources in the Caspian Basin and in the Central Asia.

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[65] Egenhofer,C., Legge,T.;*Security of Energy Supply A Question For Policy or The Markets?*; CEPS Task Force Reports; Center For European Political Studies;Brussel; 2001, pg: 3

Among them; Russia and the OPEC are the biggest oil and gas suppliers. They possess the biggest shares in the total energy import. These levels of dependency show how these suppliers have strong position in the European energy market. However; these two big giants represent the biggest threats for the security of energy supply in the EU as well. Their strong positions have two main negative outcomes for the security of supply. First of all, Russia and most of the OPEC countries which are Iran, Iraq, Nigeria, Libya, and Indonesia suffer from different political and economical problems. The domestic stability cannot be totally ensured in these countries. For this reason, it is very risky to import the oil and gas from these countries. Their supply can be easily interrupted because of the internal problems of these countries. Second negative outcome is that they have large political and economic effects. As I already mentioned, energy is a vital issue at the national and international context. The countries which possess large energy reserves, obtain automatically significant political powers. Especially, Russia and OPEC mainly benefit from their energy resources in the international arena. They are not strong enough in the political and social fields however their large oil and gas reserves bring them directly to the top of the international agenda. These two energy giants have the power to influence the decision-making process of their consumer countries. Especially Russia showed its power in the Russian-Ukraine gas dispute.

On the other hand, even though most of the producer countries are not reliable, EU has also one quite reliable and stable supplier; Norway. Norway, being a member of the IEA, has quite reliable, stable and transparent energy sector. Besides, the interconnection of the Norwegian gas and electricity market with the European gas and electricity market strengthened the dialogue between Norway and EU.[66]

Consequently, concerns about the stability and the reliability of the energy suppliers are one of the main challenges for the energy supply in the EU. Diversifying the suppliers and increasing the numbers of the

[66] http://www.iea.org/textbase/nppdf/free/2000/Norway_comp02.pdf accessed on 01.05.2007

reliable producer countries should be one of the EU's aims for ensuring its security of supply.

2.3.3- Challenge III: Problems in the Energy Infrastructure

The infrastructure is quite important for ensuring the security of supply. Any problem in the infrastructure can cause a short or long-term disruption in the energy supply. Especially, the European electricity and gas market increased the importance of the infrastructure for the EU. An enhanced and developed infrastructure is urgently required for strengthening the security of supply, reducing the risk of disruptions.

Unfortunately, European energy infrastructure has serious problems threatening the security of supply. In the EU, they cannot still completely ensure the third-party access to the market through non-discriminatory ways, the interconnection of the national markets are not still completed and there are still some areas which are not integrated to the European electricity and gas networks, the congestion and the bottlenecks problems are not solved yet and finally there is not necessary investment for improving the internal and the cross-border infrastructural development.[67] These are the general problems concerning the infrastructure. However, it can be relevant to analyze these problems separately.

In the electricity infrastructure, the main problems are concentrated on the low interconnection levels in some areas, the congestions and the bottlenecks. In the European Union, there are four main interconnection levels. The highest interconnection level are between Denmark, Sweden, Austria, Belgium and the Netherlands on the other hand the lowest interconnection level is between United Kingdom and Spain. This difference prevents to have an integrated and perfectly interconnected electricity market in the EU. Relating to these different interconnection levels, the threat of 'congestion' appears. The main risk of the congestion is the high prices. The price of the interconnections increases when there is congestion. This was mainly seen between France and

[67] European Commission; Priority Interconnection Plan; Brussel, 2007, pg: 4-5

United Kingdom, Denmark and Netherlands.[68] The risk of the bottlenecks is another challenge for this sector. In Europe, there are seven major areas where there are bottlenecks. These are between Denmark and Germany, in Ireland, in United Kingdom, between Belgium and Netherlands, between France and Spain, in Italy and in Greece.[69] These challenges are important obstacles for the internal gas and the electricity market.

. Additionally, the gas sector also suffers from the infrastructural problems. The main challenge in this sector is the increasing demand for the gas. This situation is an obstacle for the gas network capacity. Today it is quite sufficient to meet the demands for the gas however tomorrow it is not certain if it will meet the increased demand for the gas. And also even though there are a strong and well-interconnected a gas network in the EU, there are still two members which stay out of this network. They are Finland and Greece.[70]

These challenges are important obstacles for the European energy infrastructure. An enhanced and developed energy infrastructure is very important for the energy security of the EU. Strong electricity and gas networks decrease the risk of disruption in the energy infrastructure and improve the security of electricity and gas supply flowing in the Union.

2.3.4- Challenge IV: Lack of a Common Approach toward the Energy Suppliers

The lack of a common energy policy is a big challenge for the European Union and especially for its security of supply. The lack of a common approach about the energy, especially about the security of supply, prevents the coherence and efficiency in this issue.

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[68] European Commission; Directorate-General for Energy and Transport; European Energy Infrustracture: Fighting Congestion and building links ;Luxembourg ;2002; page 27.

[69] http://ec.europa.eu/energy/electricity/florence/doc/florence-8/pres-infrastructure.pdf accessed on 17.05.2007

[70] European Commission;Directorate-General for Energy and Transport; European Energy Infrustracture: Fighting Congestion and building links ;Luxembourg ;2002; page 33

The Green Paper 'A European Strategy for a Sustainable, Competitive and Secure Energy' focused on three main elements. These are the security of supply, the competition and the environmental protection. According to this document, all of these elements are interrelated and have a significant impact on the EU's energy policy.[71]

These three basic elements are quite important for ensuring the stability in the EU. And especially for having a common policy in the union, these elements should be highly respected. However, because of the different national interests and national priorities, there is not still a common energy policy. Recently, the most significant effort about the creation of a common energy policy is the unratified draft constitution. In this document, they tried to put a separate chapter for the energy policy. This was an important step to for the creation of a common policy. According to that document; the energy issue should be under the 'shared competence'. [72] If this treaty had ratified, the energy issue would not have been an exclusive national policy. Therefore; this step is a quite important initative for the EU.

The lack of a common energy policy has negative effects on different areas however the most significant one is the security of supply. The lack of an integrated approach increases the threats for the security of supply. It can be relevant to say that the lack of a common energy policy is one of the main challenges of the supply security. The main reason is that when there is not a common policy and when there are not necessary binding rules, they can pursue their own priorities and can prefer their own interests than the community interests. For avoiding such a situation, member states should have a common policy. Especially, for decreasing the import dependency, the appropriate measures should be taken at the community level and they have to be binding. I do not mean a very strict common policy however at least in some specific and basic issues;

[71] European Commission; Green Paper 'A European Strategy for Sustainable, Competitive and Secure Energy'; Brussel; 2006; pg: 4
[72] http://mail.foeeurope.org/activities/convention/convention-article.htm accessed on 19.04.2007

member states should be coordinated and assume their common responsibilities. Decreasing the import dependency, increasing the use of the carbon free fuels, developing the bilateral dialogue with the producer countries at the community level, decreasing the excessive energy consumption should be considered as basic and specific issues. I believe that member states should have a common and integrated approach and, if necessary, there should be also legally binding measures for ensuring the security of supply.

In conclusion, the lack of a common policy is big obstacle and makes EU's energy situation more vulnerable. Especially its negative effects on the security of supply are obvious. For strengthening the energy security especially the supply security, the common energy policy should be encouraged by convincing the member states on this issue.

As it is highlighted in this chapter, there are different risks and challenges affecting the security of energy supply in the EU. Especially, the limited indigenous production and the high import dependency are the main threats for the EU in the energy issue. In this respect, the situations of the main energy suppliers and transit countries and their dialogue with the EU should be analyzed for ensuring a better understanding,

CHAPTER 3

THE EUROPEAN UNION'S SUPPLIER AND THE TRANSIT COUNTRIES: CRUCIAL RELATIONS

3.1- Russia

The role of the energy resources is obvious for the development of the states. Russia is the most significant example for this situation. Russia has passed a fast and a significant economic recovery since the dissolution of the USSR. This weak and vulnerable country at that time become today one of the main energy powers in the world. This process especially accelerated after 1999, with Putin's presidency. Energy and energy-related issues have the largest share in this transformation. The large oil and natural gas reserves became the main factor determining the Russian economy.

Additionally, Russia is also located in very special area. Its proximity to the Caspian and the Central Asian reserves increases its importance for the consumer countries. The western and eastern consumers which are European Union, China and India are the main competitors for the Russian energy sources. Among them; European Union has the most significant competitor. EU's fragile energy situation and its high energy import dependence increase the role of Russia for the European Union. However, the Russian position in the European market started to be questioned because of the increasing concerns about the security of energy supply in the EU.

3.1.1- The Energy Situation of Russia

Russian energy situation is largely determined by the oil and the natural gas. These two strategic reserves are strategically important for Russia.

Russia is one of the main oil producer countries in the world. Its oil reserves are quite important for improving its economy and integrating to the world's oil market. According to the BP statistics; the proven oil

reserve capacity in Russia was *72.4* tmb at the end of the 2004 and *74.4* tmb at the end of the 2005. In parallel to the situation of the oil reserves, the oil production also increased by 2.7% between the years 2004 and 2005..[73]

A large share of the oil production has been exported to Europe and to the East Asia. The revenues of these exports are very important for the Russian economy. In 2006; 70% of the oil produced in Russia was exported and the remaining amount was used for the domestic consumption and the refinery sector. They use either the pipelines or the railways for exporting the oil to the consumer countries. Usually, they use the pipeline for the European consumers and the railways for the Asian consumers. Its main consumers in the EU are mostly the Central and Eastern European Countries which are Germany, Poland, Hungary, Czech Republic and Slovakia.[74].

However, despite its large reserves, Russia suffers from the problems in the oil sector. The main problem is the financial incapabilities. The main oil company; Rosneft has financial problems and is not able to support and develop the new oil projects. In addition to this problem; in the oil sector, the technology is not sufficiently developed as well. Russia suffers from the lack of a modern technology and sufficient equipments. The research and the exploration process necessitates technologically developed infrastructure and modern equipments.[75]

These problems threaten the oil production in the country. Even though the oil production is less than the gas production, its continuity and its sustainability of the oil production is quite important for the Russian economy and also for its political power.

In addition to the oil production, there is also quite large natural gas production. However, unlike the oil, the natural gas is essential and vital

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[73] http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statisical_energy_review_2006/STAGING/local_assets/downloads/pdf/oil_section_2006.pdf accessed on 01.04.2007

[74] http://www.eia.doe.gov/emeu/cabs/Russia/Oil_exports.html accessed on 28.03.2007

[75] Monaghan, A., Montanaro-Jankovski, L.; *EU-Russia Energy Relations: The Need for Active Engagement*; EPC Issue Paper No.45; European Policy Center ; 2006;pg:20

for Russia. It can be relevant to stress that it is the main economic and the political instrument of the country. The main reason of this vitality is its large gas reserves. Russia has the largest natural gas reserves in the world. And at the same time, Russia is also the main gas producer and exporter in the world. The large part of the natural gas production is concentrated on three main fields which are Urengoy, Yambourg and Medvezh. Approximately 70% of the total natural gas is produced by these fields. However, the productivity of these fields is not as efficient as before.[76] Therefore, Russia started to focus on the new gas fields and on the new projects. Other possible fields are located mainly in the West Arctic, Far East and in the Eastern Siberia. Especially in the West Arctic; the Kara and the Barent Seas have high potential for the future Russian gas supply. The Rusonovskoe and Leningradskoe fields in the Kara Sea and the Shtokmanovskoe field in the Barent Sea represent the largest natural gas production in these areas. Apart from these fields; the Sakhalin Area represents a huge potential for the natural gas production in Russia.[77]

Additionally, even though Russia has the major gas producer, there are some problems in this sector as well. These are the matura fields and their limited capacity, the centralized structure of the country and of the energy market, the dominant position of Gazprom and the lacks in the infrastructure.[78]

As I already mentioned, the most productive gas fields suffer today from the decline in their productivity. And for this reason, Russia looks for the new fields to ensure the stability of the gas production. However, strongly related with this issue, there is a big challenge in the infrastructural system in Russia. Especially the gas delivery system; pipelines, is not well developed. And this is big risk for the Russian

[76] http://www.eia.doe.gov/emeu/cabs/Russia/NaturalGas.html accessed on 04.04.2007
[77] www.offshore-environment.com/russianoil.html accessed on 12.04.2007
[78] http://www.eia.doe.gov/emeu/cabs/Russia/NaturalGas.html

economy. In this situation, Russia needs urgently to receive enough financial support to improve its infrastructure.[79]

Another problem in the gas sector is the low gas prices in the domestic sector. The low price in the domestic market is a disadvantage for the economic situation of Russia. Domestic consumers can be satisfied by these low prices however the Russian economy has suffered from this policy. The domestic revenues decrease automatically when the prices are low and when the revenues are low, the required amount for the investments especially in the energy sector cannot be provided. It is not an advantageous situation for the investors. It is obvious that all these points are interrelated and form a vicious circle. Besides, this-as mentioned above- Gazprom and the Russian government aim to increase the production and for this reason they are looking for the exploration of the new fields. However, they need financial support for the new explorations[80]. For this reason; a rise in the domestic prices can ameliorate the financial situation of Russia by the increased revenues.

The centralized structure of the Russian government and the situation of the Gazprom is a big obstacle in the country. Gazprom is the main energy company of Russia. The Russian government has a big influence on the Gazprom because of its 51% share in the company and for this reason the interests of the state and the interests of the Gazprom are usually crossing.[81] Gazprom is primarily responsible from 90% of the total gas production and the total transportation networks. Its super power position makes the company the main decision-maker in the gas sector.[82] Gazprom is especially dominant in the Central and Eastern Europe. In Bosnia-Herzegovina, Estonia, Finland, Macedonia, Latvia, Lithuania, Moldova and Slovakia, the Gazprom is the only supplier and

[79] Monaghan, A., Montanaro-Jankovski, L.; *EU-Russia Energy Realtions: The Need for Active Engagement*; EPC Issue Paper No.45; 2006;pg:20
[80] Thumann, M.; Diversification des sources- la meilleure strategie pour les relations energetiques UE-Russie; ifri, Paris, 2006, pg:7-8
[81] Ibid, pg: 7
[82] Johnson, D.; EU-Russian Energy Links: A Marriage of Convenience; Government& Opposition;Spring 2005; Volume 40, Issue 2; pg:271

they are dependent 100% to Gazprom. Bulgaria imports *97%* of its gas from Gazprom, Hungary imports *89% and* Poland 86% of their gas from Gazprom. In the EU-15; Austria's dependency is about 40%, Germany's dependency is 36%, Italy's dependency is 27% and France's dependency is 25% to Gazprom[83].

Obviously, these percentages show how Gazprom is powerful in the domestic production and in the gas delivery to the especially European countries. However, this situation prevents to enter new companies to the market and this is a big obstacle for a competitive market. Besides, this is also a problematic issue for European Union. The main solution to solve the negative outcomes of the monopolistic structure of the Gazprom is to limit its production and allow other smaller gas companies to be integrated to the market and to work independently.[84]

The vulnerable and fragile energy situation of most of the European Countries, because of their high gas import dependency to Russia, has been proved by the Ukrainian-Russian gas dispute. The crisis occurred in the 1 January 2006 when Russia cut the energy supplies for Ukraine. The main reason of this cut was the Ukrainian refusal to pay the increased Russian gas prices. And for punishing this country, Russia used its stick policy and cut the gas. This is an important shock for Europe because Ukraine is an important transit route for the gas supply to Europe. And naturally, the gas export to Europe was affected from this crisis. The worst situation was in Hungary. Because of this crisis, it couldn't receive 40 % of the gas supply. This amount was 33% in Austria, Italy, Slovakia and Slovenia.[85] As I already stressed, European Union has a quite fragile energy situation and can be easily affected from this kind of crisis and disruptions.

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[83] Thumann, M.; Diversification des sources- la meilleure strategie pour les relations energetiques UE-Russie; ifri, Paris, 2006, pg:8

[84] http://miranda.sourceoecd.org/vl=275427/cl=12/nw=1/rpsv/cgi-bin/wppdf?file=5lgsjhvj75zv.pdf accessed on 05.03.2007

[85] http://en.wikipedia.org/wiki/Russia-Ukraine_gas_dispute#Alleged_political_motivation

This event is a perfect example to prove the importance of the energy resources-especially, the gas- in the Russian foreign policy. Russia can easily interfere to the consumer countries' politics and the decision-making policy thanks to its large gas production capacity and the Gasprom's dominance on the transportation routes. This Russian energy dominance is clearly perceived by the European countries after this crisis.

3.1.2-EU-Russia Energy Dialogue

. As I already highlighted; European Union is in a fragile situation. The high level of dependence to the external sources makes European Union vulnerable in terms of energy. Europe has an increasing demand and it has no sufficient capacity to meet its own demand. In this case, the external suppliers gain more importance for the EU. Among the producer countries, Russia is the most important energy supplier of EU. According to the 2006 data; the 44% of gas and *30%* of the oil are imported for EU-25 from Russia.[86] This amount shows how Russia has a crucial position in the EU's energy situation.

The relation between the EU and Russia cannot be explained only by the 'dependency'. Both parts need to each other. Russia has a crucial role to meet the European energy demand. However, European Union also is essential for Russia. EU has a large market with an increasingly growing demand for energy. Besides to this, there is another important factor for demonstrating the EU's importance for Russia which is EU's economic and its financial abilities these abilities can be beneficial for improving the Russian energy infrastructure. Russia cannot finance itself in this issue, because of its financial deficiencies.[87] As it is clear in these statements, the mutual interests of both parties signify the importance of a bilateral dialogue between the parties.

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[86] Piebalgs ,A.; EU and Russian Energy Strategies; EU-Russia Energy Dialogue Conference; Moscow; 2006; pg:2; available at http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/06/653&format=HTML&aged=0&language=EN&guiLanguage=en accessed 28.01.2007

[87] Schuett, R.; *EU-Russia Relations: Interests and Values-A European Perspective*; Carnegie Papers; Number 54; 2004; Washington; pg:6 available at: http://www.carnegieendowment.org/files/cp54.shuette.final.pdf accessed on 20.02.2007

The necessity of a bilateral dialogue was also recognized by the two parties and it was initiated in 2000. This dialogue focuses on four main goals. These are destroying the monopolistic market structure and liberalizing Russian energy market, promoting the economic and financial situation in Russia, increasing the investments and finally, improving the common interests about the environmental protection concentrating on the concerns of the climate change and the nuclear power.[88] It is obvious that this energy dialogue has a crucial role for decreasing the difference and the gaps between two partners and increasing the security of energy supply in EU.

The progress report is the main instrument for highlighting the priorities and improving the dialogue. The latest report was published in 2006. In this report; there are five highlighted issues; the most important objective mentioned in the report is improving the energy security. This is the basis of this dialogue. Both of the partners try to ensure their own energy security. Other objectives are supporting the investment, encouraging the new initiatives serving to their common goals, increasing the trade of the energy products, improving the energy efficiency and strengthening the roles of the technology center. [89] These objectives are essential for promoting this dialogue and complementary with the basic goals. These progress reports are essential to monitor the efficiency the dialogue and to support the partners for taking further steps under this bilateral framework.

Even though they have common objectives; there are still unresolved problems between two partners. The main problem between two energy partners is the structural difference between the energy markets. This is a big obstacle for a deeper cooperation. European Union favors the liberalization, the competition and the deregulation in its energy market.

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[88] Piper, J.; *Towards an EU-Russia Energy Partnership ;* The EU-Russia Energy Dialogue, Powerpoint presentation available at http://www.iea.org/textbase/work/2003/soyuzgaz/proceedings/Piper_slides.pdf accessed on 14.05.2007

[89] http://ec.europa.eu/energy/russia/joint_progress/doc/progress7_en.pdf accessed on 04.03.2007

However, Russian energy market is dominated by a few monopoles energy companies. Therefore, this difference prevents the integration of the energy markets between both partners. This difference causes two other problems. One of them is that Gazprom has bilateral energy contacts with the EU's members and for this reason its pricing mechanism differs from one member state to another. This situation is unacceptable for the EU's energy market. Another problem is about the monopolistic structure of Gazprom. Its situation can cause a reduction of the delivered gas to Europe in the future. The main reason of this probability is that Gazprom has no sufficient financial capabilities to explore new fields and the companies which have the potential to do, are not allowed to be integrated to the Russian market. And this is a risk for the EU's future energy supply.[90] However, Russian government is reluctant to change its market structure and to adopt the European style-deregulated energy market. This pro-monopolistic approach showed again itself in the beginning of this year. Putin agreed to shift all the new initiatives and projects concerning the exploration of the offshore fields to the Russian main monopoles, Gazprom and Rosneft. This decision was taken by the Russian government for strengthening the monopolistic structure of Gazprom and Rosneft and preventing other companies to be integrated to the market.[91]

I strongly believe that if Russia continues to fallow only its own interests and to refuse the transformation of its market, it will probably suffer from a huge economic crisis. And the main actor in this crisis will be probably, European Union. As I already mentioned, EU is one of the most important trade partners of Russia. And if EU cuts demanding and finds another supplier, in this case Russia will be in a real economical trouble. And all the balance in this region will probably change. For this

[90] Grant,C., Barysch, K., The EU-Russia Energy Dialogue, Center For European Reform, 2003, pg:2 available at: http://www.cer.org.uk/pdf/briefing_eu_russia.pdf accessed on 03.02.2007

[91] http://www.ft.com/cms/s/7267f1f0-aa3e-11db-83b0-0000779e2340,dwp_uuid=81f97690-812f-11da-8b55-0000779e2340.html accessed on 10.04.2007

reason, Russia should urgently have, at least, more moderate approach toward the issue.

Another problem with Russia is the low domestic energy prices. European Union believes that this situation brings the union to a very disadvantaged situation. And EU decided to solve this problem during the negotiations for the Russian's accession to the WTO. Firstly, EU considered this problem as a pre-condition for its membership. It should increase the domestic energy prices for becoming a member of WTO.[92] Later, the issue was brought to a more diplomatic framework and EU-Russia signed a bilateral agreement in 2004 concerning also the Russian membership. This is an important step for the Russian WTO talks and for the pricing sector. According to this agreement; Russia agreed on the increase gradually the domestic prices until 2010.[93]

The third problem between two partners is about the ratification of the Energy Charter Treaty and its Transit Protocol. Energy Charter Treaty has special position in the international context. This is the only legal framework which organizes all the energy-related investment, trade and transit issues at a multilateral level.[94]However, Russian's reluctance for ratifying this treaty is a problem between these energy partners. EU believes that if this treaty is ratified also by Russia, its sense and its efficiency will be promoted. However, Russia doesn't accept to ratify neither the ECT nor its transit protocol. The main reason of this strong Russian opposition toward this treaty is that Russian government believes that this treaty will damage to their market structure and many foreign customers will be allowed to enter to the Russian market.[95] It is clear that Russia is against all of the initiatives which can damage the

[92] Grant,C., Barysch, K., The EU-Russia Energy Dialogue, Center For European Reform, 2003, pg:2

[93] Kernohan,D.,Vinokurov,E., The EU-Russia WTO Deal:Balancing Mid-term and Longer-term Growth Prospects?, CEPS Commentary,2004, pg:2 available at: http://www.ceps.be/Article.php?article_id=382& accessed on 04.04.2007

[94] http://www.encharter.org/index.php?id=28 accessed on 12.03.2007

[95] http://www.rferl.org/featuresarticle/2007/02/3b55571f-960b-41b2-b2b7-596c3ed811a3.html accessed on 27.03.2007

monopolistic structure of the Russian oil and gas market. For this reason, they are quite reluctant to ratify this treaty.

The biggest obstacle of this treaty is the Transit Protocole. Russian government believes that when Russia ratifies this protocol, it will automatically allow the foreign companies to use their transportation routes. And therefore, the dominance of the monopole companies will gradually decrease.[96]

All these oppositions toward the ECT and its transit protocol clearly demonstrate the Russian approach toward its energy sector. Russia is aware of the importance of its energy sources for its survival and tries to maximize its benefits. Thus, it is clear that this is the main reason why Russia is always opposed to share its benefits with the foreigners. Therefore, I strongly believe that the ratification of this treaty should be a milestone for the EU-Russia energy dialogue. EU should retract and stops supporting Russia economically unless Russia ratifies this treaty. In this respect, EU can also use its diversification policy as a soft 'weapon' for punishing Russia.

I would also stress that the Russian crisis between Russia and Ukraine show how Russia acts as a superpower in the energy sector. If Russia exhibits its energy as a 'treasury', European Union also should consider itself as a treasury and shouldn't forget that without European consumers, Russia's economy definitively will shrink

Finally, both parties should focus on taking the necessary measures to ensure their security of supply. However if Russia will not necessarily contribute to the energy dialogue and increase its challenges toward the EU's security of supply, European Union should urgently change its supplier and focus on the other producer countries for substituting Russian oil and gas supplies.

3.2- Norway

Norway has an important position in Europe. Especially with the EU, they have a very long historical background. Since its creation, EU tried

[96] http://www.iht.com/articles/2006/12/12/news/energy.php accessed on 01.04.2007

to integrate Norway to the union twice but each time its membership was refused by the Norwegian citizens in the referenda. However, despite these refusals, the relationship between EU and Norway is quite improved. The main factor of this strengthened relationship is the Norwegian oil and gas reserves. Its energy sources are quite important for EU and its security of supply.

Norway is one of the major oil and gas suppliers of the EU. It can also be considered as the most stable and reliable supplier country. Its political and economic stability comparing other suppliers increase its reliability and importance for the security of supply in the EU.

3.2.1- Energy Situation in Norway

Norway possesses large oil and gas production capacity. Its large oil and gas reserves offer a specific and advantageous situation comparing to the other western European countries.

Norway's proven oil reserves are 8.5 billion barrels and its proven gas reserves are about 73.6 tcf . Most of these reserves are located in the North Sea. The remaining are in the Norwegian and in the Baren Seas.[97]

As it is obvious, the North Sea has an important significance for the European energy supply and especially for Norway. 57% of the Norwegian oil has been produced by the fields in the North Sea.[98] Especially, the Ekofisk field, in the North Sea, is the oldest however the most important oil and gas field in Norway.[99]

However, as in the other producer countries, the change in the oil and gas production is also an important challenge for Norway. Recently, because of the insufficient oil production in the Norwegian shelf of the North Sea, there has been a decline in the oil production since 2000. In 2000, the oil production was 3.2 million barrels per day however in 2005 this amount decreased to 2.5 million barrels per day.[100] This decline is a

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[97] Morelli,L.V.; *European Union's Energy Security Challenges*; CRS Report for Congress; Congressional Research Service; 2006; pg: 19
[98] http://www.eia.doe.gov/emeu/cabs/North_Sea/Oil.html accessed on 03.04.2007
[99] http://www.norway.org.uk/business/news/oilproduction.htm accessed on 03.04.2007
[100] http://www.norwaypost.no/cgi-bin/norwaypost/imaker?id=20748 accessed on 03.05.2007

problem both for Norway and the EU. For Norway, it is risky because the energy production is important for the Norwegian economy and it can be easily affected from such a decline. Apart from Norway, it can be also a problem for the EU as well. This decline in the Norwegian oil production signifies a decline in the oil export to the EU as well. And this is a real risk for the EU's security of supply. If EU receives less oil and gas supply from such reliable and stable suppliers, this will be a real threat for its supply security.

Despite the maturity of the North Sea fields and the decline in the oil production; there are still many unexplored oil fields especially in the Barent Sea. Theotrically, these unexplored fields are quite advantageous options for contributing to the total oil production. Unfortunately, there are some problems about this area. The first problem is that the Norwegian environmentalists are totally disagree with the energy companies and also with the Norwegian government for the exploration of the oil fields in the Barent Sea. They argue that the exploration operations will damage the ecology of this area. The second problem is about the whether conditions; its climate is quite severe. This situation complicates the exploration process, in the economical and technical terms, in the area.[101]

Comparing to the oil, the natural gas production is in better position. The gas fields are not as mature as the oil fields and represent a high potential for the future gas supply. The main gas fields are Troll and Ormen Lange fields. The Troll was the oldest but at the same time the largest gas field in Norway. It is vital for the current and future Norwegian gas production. Its production capacity was 70 bcm and according to the expectations this amount will be around 100 bcm in 2010. Apart from the Troll Field, the Ormen Lange field is another large and productive field in Norway. These are the largest and the most competitive fields. However, apart from these fields in the North Sea, in

[101] http://news.bbc.co.uk/2/hi/business/3622129.stm accessed on 06.04.2007

the Barent and in the Norwegian Seas, there are also smaller gas fields.[102] Unfortunately, because of the negative environmental and the climate conditions, it is not easy to explore these fields.

It is quite clear that Norway possess high oil and gas production capacity thanks to its geography. These large energy reserves are quite important for EU as well.

3.2.2-EU-Norway Energy Dialogue

Norway is an indispensable supplier and an energy partner for the European Union. Norwegian large oil and gas reserves, its reliable and stable economical and political structure, its geographical proximity to the EU are important factors to prove the importance of Norway for EU, especially in terms of energy. Norwegian oil and gas are also significant alternatives against the Russian oil and gas supplies. And it is fruitful to improve the relationship with Norway for the diversification of the energy supplies and improving the energy supply security.

In this respect, their energy dialogue is quite important for strengthening their energy relations. " *Bilaterally, the EU-Norway Energy Dialogue principally aims at the coordination of energy policies in a wider sense, including research and technological development in the energy sector and relations with other energy producing countries*[103]" Especially since 2005, they have focused on also the alternatives like the renewable energy ,energy efficiency for promoting the security of energy supply[104].

Finally, the Norway-EU energy dialogue is an important driving force for promoting the security of energy supply of the European Union. If the union can be able to increase its energy supply from Norway, this can be a great contribution to the energy supply security.

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[102]Clingendael International Energy Programme;*Natural Gas Supply for the EU in the short to medium term;*The Hague; Clingendael Institute, The Hague, 2004, pg:13-14

[103] http://ec.europa.eu/dgs/energy_transport/international/bilateral/norway/index_en.htm accessed on 03.04.2007

[104] Ibid

3.3-Algeria

Algeria is one of the most important and developed countries of the North Africa. Its energy resources and also its key position in the Euro-Mediterranean Partnership have increased its importance in the region and in the European Union as well.

3.3.1- Economic Situation in Algeria

The two main indispensable energy sources are oil and natural gas in Algeria. According to 2007 data; its proven oil reserves are 12.3 billion barrels and it is the third biggest oil producer of the continent. There are essentially two main basins for the oil production. These are Hassi Messaoud and Berkine Basins. Approximately most of the oil, approximately 70%, has been produced in the former field. Even though Algeria is an energy country and possesses large oil reserves, the level of domestic consumption is not very high. Its crude oil production in 2006 was 1.37 million bbl/d however the overall oil consumption was only 283.000 bbl/d. It is quite clear that the production exceeds the consumption. In this case; the oil surplus has been exported. The main Algerian oil importer countries, in the European Union, are France, Italy, Germany and Spain[105].

Another important energy source in Algeria is the natural gas. The proven gas reserve in Algeria is 161.7 tcf in 2005. The main gas fields are; Hassi R'Mel, Rhourde Nuss, Tin Fouye Tabankort, Alrar, Ouan Dimeta and Oued Noumer fields. The Hassi R'Mel, possessing 85 tcf proven reserves, is the largest and the most productive gas field in Algeria.[106]

The gas production in the country has been increased since 1991 and reached to 80 bcm in 2000. According to the estimations, the level of production will continue to increase as far as new reserves are discovered for the new productions.[107]

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[105] http://www.eia.doe.gov/emeu/cabs/Algeria/NaturalGas.html accessed on 15.04.2007
[106] http://www.mbendi.co.za/indy/oilg/gas_/af/al/p0005.htm accesed on 12.05.2007
[107] Clingendael International Energy Programme ; *Natural Gas Supply for the EU in the short to medium term;* The Clingendael Institute; The Hague; 2004 ; pg:14

Algeria has also a leading role in LNG production. Its LNG production is about 30 bcm. The main LNG importers from Algeria, in the EU, are France, Belgium and Spain.[108]

3.3.2- EU-Algeria Energy Relationship

It is quite obvious that Algerian oil and gas supplies are quite important for the regional and European consumers. Algeria was the third gas importer country for EU in 2005. Its share was 19.1% in the total gas import.[109] This demonstrates that Algeria's energy supplies have a crucial importance for the EU's security of supply.

According to a speech of Andris Piebalgs; energy commissioner of EU, EU considers Algeria as one of the major oil and gas supplier to them. However, this relationship is not one-sided. EU is dependent to the Algeria's resources however at the same time; Algeria is also dependent to the EU in terms of financial assistance for developing its technology and its infrastructure.[110]

In the same speech; Andris Piebalgs highlighted three important points for enhancing the relation between EU and Algeria; *"(1) the convergence of the Algerian and EU energy policy through convergence of our regulatory frameworks; (2) the development of energy infrastructure of common interest and (3) technology cooperation and exchange of expertis[111]"*.

Additionally, the Algerian gas is important for the European Union but the transportation of the supplies is not easy because of the long distance between two continents. For this reason, the natural gas has been transported through the pipelines to Europe. There are two main arteries for the transportation. These are Transmed Pipeline and Maghreb-Europe

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[108] Clingendael International Energy Programme ; *Natural Gas Supply for the EU in the short to medium term;* The Clingendael Institute; The Hague; 2004; pg:15

[109] http://ec.europa.eu/dgs/energy_transport/figures/pocketbook/doc/2006/2006_energy_en.pdf

[110] Piebalgs,A.; EU-Algeria Energy Challenges; Speech at the Conference on Investment Opportunities in the Algerian Energy Sector , 2006, pg:3
Available at: http://www.google.com/search?source=ig&hl=en&q=the+EU-Algerian+Energy+Challenges accessed on 03.04.2007

[111] Ibid,pg:4

Gas. The gas has been transported by the former line to Italy and to Spain and Portugal by the latter[112].

There are also three new projects which will facilitate the natural gas transportation to Europe. These are Medgas Pipeline, Galsi Pipeline and Trans-Saharan Pipeline. According to the expectations, by these new projects, more natural gas will be supplied to Europe.[113]

In conclusion; Algeria is one of the main important energy actors for the EU. It is crucially important for European Union to reduce its dependency to a single exporter, especially for the natural gas. However, as I already mentioned, this relation has been based on mutual interests. It cannot be considered as a dependency. Each partner is dependent to the other. The financial assistance of the EU is important and necessary for developing the Algerian economy. However, this relation has a more significance for the European Union. The oil and especially gas supplies from Algeria can decrease the import dependency to Russia, diversify the suppliers and enhance the security of energy supply.

3.4-OPEC

OPEC is one of the most important energy actors in the world. It has a vital effect on the international energy market. It has eleven member states which are Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela.

"*OPEC's objective is to co-ordinate and unify petroleum policies among Member Countries, in order to secure fair and stable prices for petroleum producers; an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the industry*.[114]"

Among the OPEC members; the Saudi Arabia is the biggest producer country possessing the quarter of the global proven oil reserves.[115]

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[112] Clingendael International Energy Programme, *Natural Gas Supply for the EU in the short to medium term*, The Clingendael Institute, The Hague, 2004, pg:15

[113] Piebalgs,A.; EU-Algeria Challenges;Speech at the Conference on Investment Opportunities in the Algerian Energy Sector, 2006, pg: 4

[114] http://www.opec.org/aboutus/history/history.htm accessed on 16.02.2007

[115] http://en.wikipedia.org/wiki/Oil_reserves accessed on 16.02.2007

OPEC meets 40% of the EU's total oil import requirement. This ratio shows how EU is dependent to this organization for the oil supply. In addition to this high dependency; the sharp changes in the oil prices and the concerns about the oil market required an energy dialogue between EU and OPEC. The necessary dialogue was launched in 2004.[116]

Even though their interests are different, there are some common and mutual aims which are essential to stabilize the relations between oil consumer and producer countries. These basic aims are to maintain a well-functioning, stable oil market and to ensure fair and acceptable oil prices. Especially the price is one of the main determinant factors in this bilateral energy dialogue. The consumers suffer from the dramatic rise or decline in the prices. And for this reason, ensuring the price security, the price stability is essential for maintaining the security of supply. This bilateral energy dialogue is also important for increasing the coordination and interaction between oil consumer and producer countries. Additionally, it enhances the reliability of both partners by supporting the transparency and promotes the oil market's mechanism.[117]

In this dialogue; the interests of the parties are different but in the same time complementary. "*The EU aims at a more stable international oil markets and prices, an attractive investment climate, a more transparent market, a better market analysis and forecasts as well as, technological and international cooperation.*[118]*"* On the other hand, "OPEC's *role is the coordination of petroleum policies, fair prices for petroleum producers and efficient, economic, regular supply to consuming nations and a fair return in capital to those investing industry.*[119] *"*

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[116] http://ec.europa.eu/dgs/energy_transport/international/int/opec/index_en.htm accessed on 30.03.2007

[117] EU-OPEC Energy Dialogue-2nd Meeting; Joint Press Release; 2005; Vienna,pg:1; available at http://europa.eu/rapid/pressReleasesAction.do?reference=IP/05/1527&format=PDF&aged=1&language=EN&guiLanguage=en accessed on 08.03.2007

[118] http://ec.europa.eu/dgs/energy_transport/international/int/opec/index_en.htm accessed 10.03.2007

[119] http://ec.europa.eu/dgs/energy_transport/international/int/opec/index_en.htm

Both parties especially concentrate on the necessity of promoting the investment in the oil market and developing the oil stock capacity.[120]. In terms of investment; OPEC has insisted in investing especially in the refinery sector. This is also a priority for the future actions in this dialogue. They argue that any increase in the investment for this sector will, in the same time, contribute to the stability and prosperity of the world oil market.[121]

The spare capacity is also important as much as the investment for the EU and OPEC members. The spare capacity which promotes the oil stocking mechanism is a very efficient way to deal with the unexpected disruptions. This mechanism is efficient and necessary for the consumer and producer parties because they are affected, both of them, from the unexpected crisis.[122] For this reason, the spare-capacity can also be called as a life-jacket for the producer and the consumer countries. If the producer countries have large oil stocks, even if there is a crisis, the producer countries can continue to supply. Thus; the physical supply disruption will be avoided and the security of the energy supply will be promoted in the consumer countries.

Consequently, EU consumer and OPEC producer countries try to develop a coherent, reliable and stable dialogue. It is clear that these efforts will promote the European security of supply in the future. European Union is aware of the necessity of the good relations with the producer countries for preventing the possible risks and the disruptions in its energy supplies.

3.5- Turkey

Turkey has been located in one of the most strategic regions of the world. Its strategic geography and location has brought Turkey to the

[120] EU-OPEC Energy Dialogue-2nd Meeting, Joint Press Release, 2005, Vienna,pg:2
[121] Further Steps Forward in the EU-OPEC Energy Dialogue;Joint Press Release;2006; Vienna;pg:1 available at: http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/misc/89925.pdf accessed on: 10.03.2007
[122] Ibid,pg:2

center of the political agenda of many states. This country is dramatically important for both the eastern and the western countries.

The energy issue is one of the main fields which can demonstrate why Turkey has such an importance. Turkey has been located between the lands which are quite rich in terms of energy resources and which are suffering from theenergy import dependency. And this location makes Turkey a transit country between these two areas. Otherwise; energy is one of the main factors determining and influencing the foreign policy of Turkey. Its insufficient hydrocarbon production capacity and the transportation routes passing through this country increased the importance and the efficiency of the energy.

Turkey, similar to the EU, has a vulnerable economic position. It is highly dependent to the oil and gas imports. Its overall import dependency for the energy sources is approximately 70% and this amount has a tendency to rise until 2030. According to the expectations, Turkey's dependency to the imports can exceed 80% in 2030. Among the hydrocarbone resources, the oil is the predominant energy source in the energy mix. Its share in the total consumption is approximately 40%. The oil supplies from the Middle East and Russia represent 90% of the total oil import.[123] The situation is quite same for the gas also. There is an increasing demand for the natural gas. And this situation increases the import dependency level. In 2001; the share of the natural gas in the total consumption was 19% and according to the expectations, this share will increase up to 32% in 2010. Turkey has different gas suppliers however the largest share belongs to Russia.[124]

However; Turkey's geographical proximity to most of the world's oil and gas reserves is essential for its energy security. Especially after the end of the Cold War, the energy resources in the Caspian Region and in

[123] Arslanalp, M.;*Demand and Supply for Energy Resources*,Global Trends and Turkey's Energy Policy Series, 2006, pg:4 available at: http://www.dispolitikaforumu.com/demand%20and%20supply%20for%20energy%20resources.pdf accessed on 28.01.2007
[124] Ibid,pg:5

the Central Asia had been liberalized and opened to the world's energy market. This event increases the geopolitical importance of Turkey.

This geographical proximity to these large reserves has two main outcomes for Turkey. First of all; this proximity to the different hydrocarbone producer regions allows Turkey to diversify its supplies. Second outcome is that its geographical advantages increased the importance and the significance of Turkey in the EU. Additionally, this situation can have also a contribution to the Turkey's EU accession process as well.

As I already stressed; European Union is highly dependent to the external producer countries. Among the suppliers, the largest share belongs to Russia. This is an increasing challenge for its security of supply. Therefore, EU became aware of the necessity to find some new suppliers for ensuring its supply security. In this case, European Union needs a transit country to reach Central Asia, Caspian Basin reserves or Middle Eastern hydrocarbone reserves. Besides, this transit country should be secure and reliable. In this respect, EU has two main options; Turkey or Ukraine.

Comparing to Ukraine, Turkey can bring more advantages to EU in this issue. Its geographical proximity to the diverse oil and gas resources, its close relations with the EU and the political stability in the country increases the reliability of Turkey for the EU's energy security. Additionally, EU can diversify its suppliers and access to the reserves in the Caspian Basin, Central Asia and Middle East, passing through Turkey. This is quite important advantage for the EU's security of energy supply.

Turkey's significance for EU can be highlighted as below;

. "*Turkey's strategic location makes it a natural "Energy Bridge" between major oil producing areas in the Middle East and Caspian Sea regions in the East and big consumer markets in Europe and in further West. This is why a paralel and integrated system of oil and gas pipelines known as the "East West Corridor" is underway to transit those*

resources first to Turkey and then further to the western markets.[125]" As it is clear in this statement, Turkey has been considered as an important actor for ensuring the security of supply in EU.

Considering Turkey as a transit country, especially for the gas export, will bring mutual interests to the both parties. This can be considered as a kind of interdependency. It can provide for the EU the chance to diversify its import routes and at the same time it provides for Turkey the chance to have a large gas market to sell the gas passing through the country.[126].

Additionally, there are also new special projects which ensure Turkey's position toward EU. These are the South Caucasus Pipeline, Turkey-Greece Gas Pipeline and the Nabucco Projects.[127]

Turkey is not only part of these three pipeline projects, but also part of the Baku-Tbilisi-Ceyhan Pipeline Oil Pipeline, Baku,-Tbilisi-Erzurum Gas Pipeline, Kirkuk-Yumurtalık Oil Pipeline, Russia-Turkey Western Pipeline, the Blue Strem Gas Pipeline, and Iran-Turkey Gas Pipeline.[128] All these pipelines increase the importance of Turkey's geopolitics in the region and also in the world.

In conclusion; Turkey's and EU's interest are overlapped. Their main concern is to ensure the security of the energy supply. The main challenge for both of the parties is the Russian dominance in the import's share in the EU and in Turkey. For preventing such a dependency, an enhanced, coordinated and strategic dialogue should be launched between Turkey-EU .This dialogues is especially important for EU to ensure its security of supply. And also, in a wider context, an enhanced dialogue in the energy issue is essential for avoiding the possible supply

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[125] Pamir,N.; *Energy (In) Security and The Most Lesson: " The Russia-Ukrainia Gas Crisis"*; Center for Eurasion Strategic Studies; Ankara, 2006, pg.19-20 available at: http://www.asam.org.tr/temp/temp111.doc

[126] Roberts, J.:*The Turkish Gate:Energy Transit and Security Issues*; Turkish Policy Quarterly; Volume 3, Number 4; Ankara; 2004; pg:19 available at: http://www.esiweb.org/pdf/esi_turkey_tpq_id_13.pdf

[127] The further details for the three pipelines; See: Chapter III; Solutions for Ensuring the Security of Energy Supply in the EU

[128] Pamir,N.; *Energy (In) Security and The Most Lesson: " The Russia-Ukrainia Gas Crisis"*; Center for Eurasion Strategic Studies; Ankara, 2006, pg.25

disruptions and promoting the energy security for both parties in the long-term.

3.6-Ukraine

Ukraine is one of the most significant actors in the region. It is one of the countries which benefits from its geography. Its proximity to Russia and to the European energy market increases its importance for these actors.

The oil and the gas are the predominant energy sources in the country. Unfortunately; the country is not able to meet the total demand for the oil and gas. Ukraine does not have sufficient oil production to meet its consumption. The oil imports are indispensable to meet the demand. In 2004, the domestic production met only 20% of the total consumption. The rest was imported. Its main oil suppliers are Russia and Kazakhstan. Eventually, the import from Russia is higher than the imports from Kazakhstan. Ukraine, because of its location, is an important transition area of the Russian and Caspian oil to the Europe.[129]

The situation is similar for the natural gas as well. Ukraine is highly dependent to the natural gas import. Its main gas suppliers are Russia and Turkmenistan. Especially, between Turkmenistan and Ukraine; the main energy tool is the long-term energy contracts. The current contract covers the years between 2007 and 2032. However in the gas sector, the most important point is its strategic location between EU and Russia. Most of the Russian gas passes through Ukraine and arrives to Europe. It is the main artery for the Russian gas toward Europe. Ukraine transited approximately 78% of the Russian gas for delivering to Europe.[130] Therefore, Ukraine is an indispensable actor for Russia and it is also strategically important for the European Union.

Apart from the Russian gas, as I already mentioned, Ukraine and Turkey are two main transit countries for delivering the Caspian gases to Europe. However, comparing to Turkey, Ukraine is not a stable and secure option. It is obvious that, the security of transportation is

[129] http://www.eia.doe.gov/emeu/cabs/Ukraine/Oil.html accessed on 16.04.2007
[130] http://www.eia.doe.gov/emeu/cabs/Ukraine/NaturalGas.html accessed on 16.04.2007

important for ensuring the security of supply. If any problem occurs during the transportation process because of the political or technical problems, these can easily cause a supply disruption. This kind of concerns about the transportation and transit countries were proved by the Russia-Ukrainian gas crisis occurred in 2006. The dispute between Russia and Ukraine dropped the supply to the European Countries. This was quite bad experience for most of the EU consumers. Especially the Central and the Eastern members are highly dependent to Russia and also to Ukraine as a transit country. After, this event, the reliability and the safety of Ukraine became to be questioned. And EU experienced that not only suppliers but also the transit countries should be stable, safe and secure.

On the other hand, despite the concerns about this country, it is still one of the main transit lines. For this reason, EU tries to improve its relations with this county. In this respect; in 2005, they agreed on four specific and essential points on energy fields for consolidating their relations. These points are about to ensure the safety of the nuclear energy, to increase the coal sector's contribution to the environmental protection, to provide the interconnection of the Ukrainian gas and electricity market with the European market and finally to promote the security of energy supply.[131] Among them; I believe that the most important aim is to ensure the EU's security of supply. Ukraine's high import dependency to Russia has become a real threat for the security of the EU's energy supplies, especially after the 2006 crisis.

In conclusion, it is clear that the European Union has different producer countries and two important options for the transit countries. I strongly believe that, among the producer countries; Norway and among the transit countries; Turkey are the safest, the most reliable options for the European Union. Finally, for ensuring the security of energy supply, EU has perfectly promoted its dialogue with the producer and transit countries. Enhanced and well-coordinated dialogue with these producer

[131] http://ec.europa.eu/external_relations/ukraine/intro/index.htm#energy accessed on 16.04.2007

countries will have a big contribution to the energy supply security of European Union.

Finally; the European Union perceives quite well the obstacles threatening its security of supply. In this respect; for avoiding the obstacles arising from its energy situation and the problems in the supplier and the transit countries; it should develop new measures. The main objective of these measures should be ensuring the security of energy supply in the EU.

CHAPTER 4
SOLUTIONS FOR ENSURING THE SECURITY OF ENERGY SUPPLY IN THE EU

The security of energy supply is related to the many factors; some of them are domestic and some of them are external factors. Reducing the factors threatening the security of supply should be essential. In this case; the EU institutions, private energy companies, and even the householders should have maximum attention and maximum efforts for reducing the risks and promoting the security of energy supply.

The possible measures can be taken at the three levels; at the national, at the community and at the multinational levels. At the national level, member states take their measures unilaterally to deal with the obstacles about the security of energy supply. At the community level; the measures are taken in a wider context in the EU. I believe that the measures taken at the community level are the most efficient way for ensuring the security of supply. At the multinational level, European Union cooperates and intereacts with the international or intergovernmental organizations multilaterally. The measures for ensuring the security of supply have been taken in the international context.

4.1-Measures at the National Level

The measures taken at the national level are unilateral. The main aim is to ensure the security of supply individually. At this level; member states can take two efficient measures which are the diversification of the energy mix and the long-term agreement with some producer countries.

4.1.1- Diversification of the Energy Mix

The diversification of the energy mix is a measure taken at the individual level. "*Each national government or energy company within a nation decides what mix of energy will actually be utilized*.[132]" Each

[132] Morelli,L.,V.; *The European Union's Energy Security Challenges*;CRS Report for Cogress;Congressional Research Service;2006, pg:22

member state is free to form its own energy mix. There is no strict community rule for this issue. However, there are some special targets set by the EU to protect the EU's security of energy supply from the threats. The most problematic issues in the energy mix are the use of nuclear power, the environmental concerns about the use of fossil fuels, especially the coal, and the high import dependency.

The use of the nuclear power is a quite problematic issue. It can have great contributions to the environmental protection thanks to its CO2 free structure. It is convenient for fighting against the climate change. However, because of the security concerns, there is no common decision in the Union about the nuclear issue. Each country has the right to decide about the use of the nuclear power however with the condition of paying attention to certain points. This condition is very well summarized in the European Commission's communication about the Nuclear Illustrative Programme: *"At the same time, nuclear safety, decommissioning nuclear reactors at the end of their active life, management, transport and final disposal of radioactive waste together with non-proliferation are important issues that must continue to be actively addressed.*[133]*"*

Relating with the environmental issue; the carbondioxide emissions are very harmful to the environment. In this respect; within coal, oil and gas; the most harmful fuel to the environment is the coal. The most convenient for the environmental protection is the gas. According to this new respect, the use of gas has gaining support because of its environmental-friendly structure. Especially in the power generation, the share of natural gas is increasing while the share of coal is decreasing.[134] In terms of natural gas; the use of LNG has an increasing importance in the energy mix, as well. LNG is a recent alternative for diversification of the energy sources. EU's LNG consumption is 8% of the total LNG

[133] European Commission; Nuclear Illustrative Programme; Brussel; 2006; pg:5
[134] European Environment Agency, Energy and environment in the European Union-Tracking progress towards Integration, Copenhagen, 2006, pg: 33

consumption in the world. The biggest LNG supplier is Algeria however Oman, Qatar and Egypt also produce LNG and export to Europe. As a diversification option, LNG can highly contribute to the European energy supply security. Its main reason is that the liquefied gas is transported through the sea ways or by the tankers for the long distance. This is very important because the pipelines cannot be constructed along the very long distances and secondly the pipelines have always the risk of being disrupted because of political or technical reasons. For these reasons; LNG can be an effective option. Around the Europe, there are different projects about the constructions of the LNG terminals. Especially Spain and Italia, being the largest LNG exporters, take into considerations these projects and support the new LNG terminals constructions[135].

The import dependency for the hydrocarbones is another element affecting the energy mix. As I already mentioned in the previous chapters; the EU has a very high import dependency. Because of this vulnerable position of the member states, they started to focus more on the renewable energy. As it is domestically producible, the renewable energy can be an efficient energy source for the energy mix,

Finally, the member states have the right to decide how to form their energy mix. There is no strict limitation about the use of the fuels. However, the member states have to respect the targets put by the EU for supporting the environmental protection and enhancing the energy supply security. For this reason, even though the diversification of the energy mix is considered under the national competence, there are also some community interventions to this area for the stability and prosperity of the system.

4.1.2- Bilateral Dialogues and the Long-term Agreements with the Producer Countries.

The most efficient measures at the national level for promoting the supply security are the bilateral long-term agreement with the producer countries. It requires usually a close relation between the consumer

[135] Morelli,L.V.; *European Union's Energy Security Challenges*; CRS Report for Congress; Congressional Research Service; 2006; pg:18

countries and their primary energy suppliers. There are this type of bilateral relations between Germany and Russia, United-Kingdom and Norway, Spain and Algeria, Italy and Algeria.

These bilateral relations are usually strengthened by the long-term contracts. They ensure the security of demand and also the security of supply. The supplier countries can ensure by these agreements that the consumer country will buy the oil or the gas from them for a long period. This is a medium-term goal. However, in the long-term, the consumer countries also can benefit from these contracts. They can ensure their long-term supply and contribute to their security of supply. However this can be also a disadvantage for them because, if the producer country enters to the consumer country's energy market, obtains the largest part of the total supply and uses these contracts as a political leverage, this can be a great threat for their energy security.

The most significant example for these long-term agreements is the case of Gazprom. Gazprom uses usually the long-term agreements. Germany's gas company Ruhr Gas is one of the main customers of Gazprom. Russia has the largest share in the total gas supply in Germany. And Gazprom uses these contracts for ensuring the continuity of its position in the German market. They have already expanded their agreements until 2020. This expansion shows how Gazprom position has been strengthened in the German energy market.[136] Russia has also close energy dialogue with France based on the long-term agreements. The French gas company; Gaz de France and Gazprom agreed on the extension of their long-term contracts about the gas delivery until 2030.[137]

Another close bilateral relation is between United Kingdom and Norway. The geographical proximity and the Norwegian oil and gas importance for the UK are the main reasons of a close relationship

[136] www.eon-ruhrgas.com/cps/rde/xchg/SID-3F57EEF5-80C77878/er-corporate/hs.xsl/804.htm?rdeLocaleAttr=en accessed on 01.05.2007

[137] http://www.globalresearch.ca/index.php?context=va&aid=4399 accessed on 01.05.2007

between two countries. In 2005, they signed an Oil and Gas Co-operation Treaty between two countries. This treaty shows how the countries prefer the bilateral dialogue at the national level.[138]

Third example is between Algeria and Spain and also Algeria and Italy. Spain and Italy imports large amounts of natural gas and LNG from Algeria. To illustrate, Sonatrach and Endessa, the Algerian and Spanish energy companies, agreed on a long-term supply contract about the LNG delivery. This agreement is for a period of twenty years. Thus, most of the Spanish demand for LNG will be met by Algeria during twenty years.[139]

All the bilateral relations highlighted above, show perfectly member states' approaches toward developing bilateral relations between producer and consumer countries. However, even though the bilateral relations and long-term contracts are considered as the efficient measures taken at the national level for ensuring security of supply, appear at the same time as a big obstacle for having a common approach about the supply security throughout the EU. Even though the main actors are the energy companies in these bilateral dialogues, they have large and big lobbies for affecting the government. For this reason, the consumer countries should also take into account the community interests while pursuing their bilateral dialogues with the producer countries.

4.2-Measures at the Community Level

4.2.1- Diversification of the Sources and the Transit Routes

The energy supply security is mainly related with the oil and gas supply which are very scarce in the European Union. As discussed in the previous chapters; the domestic production of oil and gas in the EU is not sufficient. They cannot meet the overall EU consumption. For this reason; importing oil and gas are indispensable for the Union. Especially the growing demand in a larger EU with 27 members increases the level

[138] Geden, O., Marcelis, C., Maurer, A.; *Perspectivces for the European Union's External Energy Policy: Discourse, Ideas and Interests in Germany, the UK and France*; SWP Working Paper FG 1; Berlin; December 2006; pg: 8

[139] Morelli,L.V.; *European Union's Energy Security Challenges*; CRS Report for Congress; Congressional Research Service; 2006; pg:18

of dependency to the external resources. Some of the member states are in the worst situation. They are dependent to a unique supplier like Estonia and Finland which are totally dependent to Russia for importing the natural gas.[140] In this respect ,EU supports a diversification policy, as highlighted in the Green Paper ' A European Strategy toward Sustanable, Competitive and Secure Energy' is essential. This can ensure the oil and gas supplies from different resources and contribute to the energy supply security in the EU.[141]

I strongly believe that member states should become aware of the necessity of the diversification policy and also they should be coordinated for the new projects in this issue.

4.2.1.1- Caspian Basin and Central Asia

During the Cold War era, all the resources and the pipelines were belonging to the USSR in these areas. However, after the collapse of the USSR, Russia wanted to continue its dominance in the region. These sources have economical and political revenues for Russia. And for this reason, Russia still tries to dominate completely these areas.

Especially after the dissolution of the former USSR countries, the areas with large oil and gas reserves belonging to the former countries were liberalized. And also these areas became quite attractive for the western consumer countries which suffer from the limited hydrocarbone resources and the high import dependency. Among the western consumers; especially three main actors have focused on this region. These main competitors are United States, European Union and Russia. Apart from them, each actor in this area either producer or consumer country, has different interests toward the region. However; despite the different interests; all of them have one common priority which is ensuring their security. As it is very well known in the international

[140] Morelli,L.V.; *European Union's Energy Security Challenges*; CRS Report for Congress; Congressional Research Service; 2006; pg:18

[141] European Commission; Green Paper 'A European Strategy toward Sustanable, Competitive and Secure Energy'; Brussels; 2006,pg:15

relations; the security is the basis of the politics and the economics for the states.[142]

The security issue has a crucial importance for the EU. It tries to ensure its security in every field. And energy is naturally one of them. As I already highlighted, EU, for ensuring its security of energy supplies, tries to diversify its energy resources and the transportation routes. The reserves in the Caspian Region and in Central Asia represent significant alternatives for this objective. However, because of the geographical difficulties; European consumers cannot access directly to these reserves. The hydrocarbon supply from this region has been usually transported by the pipelines. For this reason, there should be quite developed pipeline systems and reliable transit countries.

European Union, by taking into considerations all these factors, is part of many pipeline projects for accessing these areas.

4.2.1.1.1-Baku-Tbilisi-Ceyhan Pipeline(BTC)

For the oil, the most significant pipeline for EU is the Baku-Tbilisi-Ceyhan pipeline. The BTC is one of the most important and longest pipelines in the world. Its length is 1.760 km and its maximum capacity for the oil delivery is 1 million barrels per day. The Baku-Tbilisi-Ceyhan Pipeline starts from Baku, passes through Tbilisi and arrives to Ceyhan which is in the south of Turkey. The transported Azeri gas, after passing through Turkey, was delivered to Italy for the first time in 2006.[143] This project is beneficial for both Turkey and European Union. Its essential contribution to Turkey is that BTC increases its geopolitical importance toward the Western oil markets. Moreover, it has also a high priority for EU in terms of lessening the dependency to Russia. "The *B.T.C. pipeline will account for only a small percentage of global oil, but the West considers a stable- -and not Moscow-controlled- -supply to be worth the financial and political cost.*[144] "

[142] Moradi,M.; *Caspian Pipeline Politics and Iran-EU Relations*;UNISCI Discussion Papers; Institute for Political and International Studies(IPIS); Tehran; 2006; pg:174
[143] http://www.pinr.com/report.php?ac=view_report&report_id=537&language_id=1 accessed on 08.04.2007
[144] http://www.pinr.com/report.php?ac=view_report&report_id=537&language_id=1

The BTC significantly contributes to the regional countries in the region as it is already mentioned, ensuring the pipelines' security is difficult. It can be easily affected by the social and political conditions in the transit countries. In this respect;the BTC has positive effects on Azerbaijan and Georgia. These countries mainly suffer from ethnic disputes, political and financial problems. The economic effect of this pipeline to the Georgia and Azerbaijan is indispensable. The BTC has multidimensional economic effects in Georgia. It has contributed to its GDP, the level of the employment, the national budget and the amount of investment.[145] The economical development in the country increases the opportunities for establishing the social stabilization as well. In Azerbaijan also, this pipeline project has similar effect. The stability and the prosperity of these countries are quite important for the EU. If the stability in these countries can be promoted, the security of supply will be promoted as well. The BTC is a perfect case to show how a pipeline can be an efficient as a political and economic instrument to develop the producer and the transit countries.

Apart from the BTC oil pipeline; there are also three new gas pipeline projects; Nabucco Gas Pipeline, Turkey-Greece-Italy Interconnector and the West Balkan Pipeline

4.2.1.1.2-The Nabucco Pipeline

The Nabucco Pipeline has a crucial role for ensuring the security of energy supply in the European Union. It has a strategic importance for the gas delivery to Europe from the Caspian resources. According to this project; The Middle Eastern and the Caspian gas will be delivered to Austria passing through Turkey, Bulgaria, Romania and Hungary.[146] The main suppliers will be Iran, Azerbaijan and Turkmenistan. Their gas will be transported to the Western markets.[147]

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[145] Papava,V.,*The Baku-Tbilisi-Ceyhan Pipeline:Implications for Georgia*, n/a, pg:87-88 available at http://www.silkroadstudies.org/BTC_5.pdf accessed on 01.04.2007
[146] Özkan, T., *Petrol Türkiye'ye Akıyor; BusinessWeek* Türkiye, 2007;;pg:51
[147] http://www.turkishweekly.net/comments.php?id=2588 accessed on 05.04.2007

The Nabucco Project is one of the most important pipeline projects. It is a quite significant occasion to enlarge the European energy market. Thanks to this pipeline project; the Caspian producer countries and Turkey will be integrated to this market. Additionally, apart from this advantage; another important point about this project is the coordination between all the participant countries. They have represented a perfect coherence and coordination by balancing the interests and priorities of all the parties.[148]

I believe that the main advantage of this pipeline to the European Union is that the transit countries are reliable for EU. Especially Romania, Bulgaria and Hungary; being EU's members, can have additionally contribution to the European supply security. In addition to these countries; Turkey is also a quite reliable energy partner and transit country for the EU. And as well as Baku-Tbilisi-Ceyhan Pipeline, this project is also a big advantage for Turkey. It consolidates Turkey's position as a transit country. John Roberts summarized very well this situation in his article by these sentences: "*This is particularly true of the Nabucco Project, which, if it is developed in the way its promoters envisage, would do most to establish Turkey as Europe's fourth artery.*[149] "

Consequently, this project is a real chance for EU's supply security. Thanks to this pipeline project, EU will have the chance to receive large amount of natural gas supplied from different resources and to diversify its suppliers. If a sufficient amount of gas can be supplies from these areas to the Europe, the import dependency for the natural gas to Russia will decrease and the security of supply will be enhanced.

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[148] Piebalgs, A.,;Nabucco Pipeline-Searching for Alternative Routes for our Gas Supply; 2006; pg:1-2 available at http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/06/413&format=PDF&aged=1&language=EN&guiLanguage=en accessed on 10.04.2007

[149] Roberts, J.; *The Turkish Gate: Energy Transit and Security Issues*, Turkish Policy Quarterly,Volume 3,Number 4, Ankara,2004;pg: 19

4.2.1.1.3-Turkey-Greece-Italy Interconnector

Turkey-Greece-Italy interconnector is an also important initiatives for diversifying the energy resources and ensuring the security of energy supply in the EU.

Turkey and Greece agreed on the first part of the interconnector in 2003 which links Karacabey and Komotimi; Turkey and Greece. The general aim of this pipeline is to transport the gas from Middle East and Caspian Region through Turkey to Greece. And later ,from Greece, it will be delivered to Italy[150]. This first part between Karacabey and Komotimi is called Turkey-Greece Natural Gas Pipeline

This project is quite fruitful for both Turkey and Greece. It serves to the interests and aims of both parties. For Greece; the essential aims are to diversify the supplier and transit countries, to ensure the security of the energy supply on the other hand, Turkey's main aim is to strengthen its position as a transit country between East and West.[151]

This natural gas pipeline between Turkey and EU is only the first part of this project. The second part is to link this pipeline to Italy especially for ensuring the sufficient gas supplies to Italy. The extension of this pipeline to Otranto will be held between 2010 and 2015.[152]

It is obvious that these two projects will have significant effects on European energy security. As the supplied gas will pass through Turkey and later Greece, there will be minimum risk for the disruption. And this will be quite efficient for improving the security of supply in the EU.

4.2.1.1.4-The South-Caucasian-Pipeline (Baku-Tbilisi Erzurum Pipeline)

The South-Caucasian Pipeline is one of the most important pipeline projects. The main objective of this pipeline is to transport gas mainly from Azerbaijan and Turkmenistan to Europe through Turkey. However, until today, only Azeri gas has been supplied through this pipeline.

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[150] Özkan,T.; *Petrol Türkiye'ye akıyor;* BusinessWeek Türkiye; 2007;pg:51
[151] Tsombanopoulos, V., The Turkey-Greece Interconnection and the Arising Prospects, n/a, pg:2-3 available at accessed 18.05.2007
[152] Ibid. Pg:5

However, if this project will be successful, there will be more Turkmen gas in Europe and this can weaken the dominant position of Russian gas in the market. [153]

The different interests between Turkmenistan and Azerbaijan are the main obstacle in this project. However, if its natural gas will start to be transported by this pipeline, the efficiency and the importance of this project will be enhanced and the supply security in the EU will be improved.

4.2.1.2 Gulf Region

Gulf Countries are strategically and geographically important for the Middle East and also for the other regions. These important countries are Bahreyn, Iran, Iraq, Kuwait, Qatar, Oman, Saudi Arabia and United Arab Emirates. According to 2003 data, these countries possess 57% of the world's oil and 45% of the world's natural gas reserves.[154]

Among these countries; Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates are the members of the GGC. This organization is very important for the European energy supply security. These countries' large reserves are very attractive for the EU. And, in this respect, EU aims to develop the relations with the GCC members, especially for ensuring the reasonable oil prices, strengthening the infrastructure between two regions, and increasing this energy dialogue based on transparency and reliability.[155]

Apart from the GCC members, another Gulf Country, Iran is quite important especially for the future of the European energy supply security. Even though some part of Iran is located in the South Caucasus, its position as an energy supplier should be examined individually.

This country is one of the main energy actors in the world. Iran is the fourth biggest oil producer and exporter. In addition to its large oil

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[153] Özkan,T.; *Petrol Türkiye'ye akıyor;* BusinessWeek Türkiye; 2007; pg:51

[154] http://www.eia.doe.gov/emeu/cabs/pgulf.html accessed on 19.03.2007

[155] "Commissioner Piebalgs launches reinforced energy dialogue with oil & gas producing countries of the Gulf Cooperation Council region", Europa Rapid Press Release; Brussel, 2005;
availableat:http://europa.eu/rapid/pressReleasesAction.do?reference=IP/05/379&format=HTML&aged=0&language=EN&guiLanguage=en accessed on 22.03.2007

reserves, the second largest gas reserves in the world are located in Iran as well.[156]

However despite its large reserves, there is not an active energy dialogue between EU and Iran. The main reason of this obstacle is the political position of Iran in the international arena. Its political regime, the dispute with the United States, its pro-Russian attitudes and its nuclear efforts prevent a closer dialogue between Iran and EU.

United States' opposition is another important obstacle for the supply of Iranian gas and oil to the Western market. Its opposition prevents a long and efficient pipeline project between South Caspian Region and Europe. However, despite the high political tension, and its dispute with the US, EU continues to pave the way for a possible energy dialogue in the future. Iran's observer status in the ECT is the proof of these efforts.[157]

It is obvious that if the necessary political stability can be provided in this country and in its relations with the Western consumers, Iran can be an efficient actor for EU's energy security in the future..

4.2.1.3-Mediterranean and North Africa Countries

The Mediterranean Basin and the North Africa are important areas for EU to enhance its energy supply security. Among these countries; the most significant energy actors are Algeria, Tunisia and Libya.

The relationship between EU and the Mediterranean Countries entered to a new era with the Euro-Mediterranean Partnership. This process was launched by the Barcelona Declaration on 27-28 November 1995. It aims to develop these areas in the political, economical and social terms. Besides; in this partnership, the energy has a significant importance. Especially the large gas reserves of the partner countries make this area more attractive for European Union and its supply security.

The energy dialogue between two partners requires some crucial priorities. These are increasing the investment in the energy-related areas,

[156] Moradi,M.; *Caspian Pipeline Politics and Iran-EU Relations*; UNISCI Discussion Papers; Institute for Political and International Studies(IPIS); Tehran;2006; pg:181
[157] Ibid, pg:183

enhancing the dialogue between two partners, consolidating the energy infrastructure in these areas, encouraging the energy efficiency and the use of renewable energy.[158]

For diversifying the energy resources; these areas are significantly important for the European Union. The natural gas has been transported usually by the pipelines from these areas to Europe. However; European consumers import also LNG from some of these countries.

EU members are part of three essential natural gas pipelines and also two important projects in these areas. Trans-Mediterranean Pipeline, Maghreb-Europe Gas Pipeline, Greenstream Pipeline currently functions and they are the essential for transporting the natural gas from this region to Europe. On the other hand Medgas, GALSI projects are also quite significant. They will have probably large contribution to the EU's security of supply in the future.

The Trans-Mediterranean Pipeline brings the Algerian natural gas to Italy, passing through Tunisia. It is one of the major pipelines of the region.[159] In addition, there is also **Maghreb-Europe Gas Pipeline** which transports the Algerian gas to Spain and Portugal. Its main transit country is Morocco. Its total production capacity per year is 8.5 bcm.[160] This is an important artery for Europe.

Another important transportation route is between Algeria and Spain. Between these two countries; there is a preparation of a new pipeline, called **Medgas,** which will transport the Algerian gas to Spain. Most part of the pipeline will be under the sea. This initiative may have an alternative for the EU and can contribute to the security of the energy supply in the EU.[161]

Another pipeline project which will interconnect the Mediterranean Basin to Europe is the **GALSI project**. According to this project, The

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[158] http://ec.europa.eu/external_relations/euromed/conf/sect/energy.htm
[159] http://www.eni.it/eni/internal.do?RID=@2xUaE%7C0?xoidcmWopk&catId=-1073759905&cntTypeId=1005&portalId=0&lang=en accessed on 16.05.2007
[160] http://en.wikipedia.org/wiki/Maghreb-Europe_Gas_Pipeline accessed on 18.05.2007
[161] http://www.medgaz.com/medgaz/pages/claves_mejora_seguridad-eng.htm accessed on 16.05.2007

Algerian natural gas will be delivered to Italy. It will have a capacity around 9 bcm natural gas per year. According to the plans, the construction of the pipeline will start in 2010.[162]

Apart from the gas supplied from Algeria, Europe has also received the gas supplied from Libya. **Greenstream Pipeline** is the main mechanism which brings the gas from Libya to Europe. A significant part of this project is under sea. It has the capacity to produce 8 bcm natural gas per year. This pipeline is a part of another project which is called **the Western Libyan Gas Project**.[163] The main aim of this project is to buy the natural gas from Libya and to transport to the western countries especially to Europe. The Greenstream Pipeline is the key artery in this project[164]

These initiatives enhance the importance of these areas for the European Union. Thanks to these pipeline networks; European Union gains the chance to access to the reserves in these areas and have the chance to diversify its suppliers. Therefore; an enhanced energy dialogue is quite fruitful for the European Union. In this respect The Euro-Mediterranean Partnership is the main tool for promoting the energy dialogue between the EU and the partner countries in these regions.

4.2.2-Energy Efficiency

The limited indigenous production and the growing demand for the fossil fuels have constrained the EU to import high level of fossil fuels to meet its demand. However, as I already mentioned, its high import dependency is one of the main threats for its security of energy supply.

EU started to launch new initiatives for ensuring its energy security for lessening the import dependency and promoting the indigenous production. Among them, the most significant initiative is promoting the energy efficiency.

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[162] www.sonatrach-dz.com/presentations/session3-2/poti.pdf accessed on 16.05.2007
[163] http://www.eni.it/eni/internal.do?RID=@2BUBz%7C0?xoidcmWopk&catId=-1073756928&cntTypeId=1005&portalId=0&lang=en
[164] http://www.oilvoice.com/m/viewEd.asp?ed_ID=16 accessed on 16.05.2007

The key idea of the energy efficiency is the energy saving. This is one of the most important initiatives of the EU. And for consolidating this objective, there is a specific target set by the European Commission. According to this target; member states will diminish their consumption by 20% until 2020.[165] The energy efficiency is very effective for ensuring the security of supply and the environmental protection. As it aims to decrease the overall consumption of the primary energy in the EU and to increase the energy savings, it will directly decrease the high import dependency. Therefore, it can have a clear contribution to the security of supply. Additionally, the energy efficiency has a significant role for the environmental protection as well. Due to the decline in the fossil fuels; the CO2 emissions will decrease and the Kyoto protocol's commitments will be respected.[166]

The fourth and fifth enlargements and the growing European economy increased the living conditions of the people. In 2003, in the total energy consumption, the transportation had the highest share. In the transport sector, the rise in the use of the private cars increases the oil consumption in the sector.[167] Unfortunately, it is very hard to prevent people to use their private cars and decrease the oil consumption in this sector. Apart from the transport sector; the households also consume significant amount of energy. They use large share of electrics especially for heating. During the summer; the southern part of the Europe and during the winter, the northern part of the Europe become biggest energy consumers in the Europe.[168] For these reasons, it is not easy to decrease the energy consumption. However, some efficient measure can be fruitful and decrease the consumption.

I strongly believe that the energy efficiency can be better enhanced at the community level than at the national level. For this reason, EU

[165] European Commission;Energy Policy for Europe;Brussel;2007; pg:11
[166] http://ec.europa.eu/energy/demand/index_en.htm accessed on 18.01.207
[167] European Environment Agency ,Energy and Environment in the European Union-Tracking progress towards Integration, Copenhagen ,2006,pg: 25
[168] European Environment Agency, Energy and Environment in the European Union-Tracking progress towards Integration, Copenhagen ,2006, pg:28

authorities should launch some new measures for promoting the energy efficiency and ensuring the security of energy supply. In this issue, the Green Paper on the Energy efficiency is quite efficient document. It focuses on some possible measures for enhancing the energy efficiency. In this respect; first of all; EU should focus on the role of the research and developments for developing energy efficiency-related technologies. Especially for the transport and households sectors, the research and developments are highly important. Furthermore, there are also national action plans for each member state. They prepare their action plan periodically. For increasing the energy saving in the community, they should focus also on this issue in their action plan. Especially, they should put some benchmarks about the progress that they want to make. And these efforts should absolutely comply with the Lisbon principles.[169]

Otherwise, another possible measure is the tax policy. Tax can be used as a promoter or a deterrent instrument in the EU for enhancing the energy efficiency at the community level. The additional taxes can be implemented to the energy sectors or to the energy products which are harmful for the energy efficiency goals. On the other hand; the energy products which contribute to the energy efficiency and the energy savings can be tax free. And eventually, the demand for the tax-free energy products will increase and the energy efficiency will be indirectly promoted.[170] Besides these possible measures, the financial aids from the member states, EU' s institutions and EU-related funds have also crucial importance for improving the energy efficiency in the Union.[171]

Apart from these measures; the Action Plan on Energy Efficiency focused also on the importance of the Eco-Design Directive. According the Eco-Design Directive; the products should be produced by respecting to the necessary measures for enhancing the energy efficiency and the

[169] European Commission, Green Paper on energy efficiency 'Doing More With Less', Brussel, 2005, pg:16
[170] Ibid, pg:17
[171] European Commission, Green Paper on energy efficiency 'Doing More With Less', Brussel, 2005, pg: 18

environmental protection.[172] Under the action plan, European Commission concentrated on the transport sector and the buildings. In the transport sector, as the oil is the predominant fuel in this sector, European Commission looks for some different ways to avoid the disadvantageous effects of the high oil consumption. For this reason, the EU supports the production of the new-types cars and vehicles. In this respect "*The Commission will continue its efforts to develop markets for cleaner, smarter, safer and energy-efficient vehicles through public-procurement and awareness-raising.*[173]" Additionally, in the building sector; there are also some serious measures. The Commission puts a target of 40 megatones of oil equivalent energy for the energy saving until 2020.[174] Apart from this target; EU also focuses on the new buildings. In these buildings; the main aim is to provide the lowest possible energy consumption. And if they will be successful in this new initiative, the construction of this type of houses will increase in Europe especially until 2015.[175]

However, apart from all these measures; another quite efficient measure for promoting the energy efficiency is to educate the consumers about the necessity of the energy efficiency. In this respect, the European Commission should organize some courses and trainings or publish some brochures and books, for distributing to the people, about the energy efficiency and savings. If the people are better informed about the unfortunate energy situation of Europe and the crucial role of the energy efficiency, there can be more progress in the energy field in Europe.[176]

And finally, European Commission has also another plan at the multilateral level. According to this new initiative, the commission plans to launch an international agreement focusing on the energy efficiency

[172] http://ec.europa.eu/enterprise/eco_design/index_en.htm accessed on 20.05.2007
[173] European Commission, Action Plan for Energy Efficiency: Realising the Potential, Brussel, 2006,pg:15
[174] European Commission, Green Paper on energy efficiency 'Doing More With Less', Brussel, 2005, pg:19
[175] European Commission, Action Plan for Energy Efficiency: Realising the Potential, Brussel, 2006, pg: 12
[176] European Commission, Action Plan for Energy Efficiency: Realising the Potential, Brussel, 2006, pg: 18

and on its advantages. Thanks to this agreement, the positive outcomes of this issue can be expanded beyond the borders of Europe.[177]

In conclusion, the energy efficiency is one of the most significant ways to prevent the growing energy consumption and the European energy supply challenges. For this reason, European Union and its member states should urgently implement all the necessary measures on this issue for contributing to the environmental protection and ensuring the security of energy supply.

4.2.3- The Use of Renewable Energy

The renewable energy has an increasing impetus in the EU. The fragile European energy situation, its high level gas and oil dependency, the price volatility of the fossil fuels in the European and international energy markets, the concerns about the use of nuclear powers, the commitments of the Kyoto Protocole increased the importance of the use of the renewable energy in the European Union.

The share of the renewable energy was 6, 3% in 2004. However, the European Union tries to increase its share in the total energy consumption.[178]

The renewable energy can be considered as an indigenous energy production. And if its share increases in the total consumption, the import dependency for the fossil fuels can relatively decrease. For this reason, the renewable energy can have a great contribution for the security of energy supply in the EU.

In this respect; in the European Commission's document 'Renewable Energy Roadmap', a specific target was indicated for increasing the use of the renewable energy. According to this document, the commission strongly recommends to increase the use of the renewable energy to 20% in the total energy consumption in 2020.[179] This is a significant initiative

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[177] European Commission, Action Plan for Energy Efficiency: Realising the Potential, Brussel, 2006, pg: 19

[178] http://ec.europa.eu/dgs/energy_transport/figures/pocketbook/doc/2006/2006_energy_en.pdf

[179] European Commission; Renewable Energy Road Map Renewable Energies in the 21st Century: building a more sustainable future; Brussel; 2007;pg:3

to encourage the use of the renewable energy and to enhance the security of energy supply in the EU.

The renewable energy's contribution to the security of supply is obvious especially in the electricity production. The two main sources for the electricity production are the coal and the natural gas. However; the renewable energy appeared as an important alternative source for the electricity production because of the coal's carbon emissions and the high import dependency for the gas. Each member state has a target for the renewable energy's share in the electricity production and consumption.[180] And if these countries will be able to meet their targets, the position of the renewable energy in the total electricity consumption will be strengthened and its share will reach to 21% in 2020.[181] Another important point for the renewable energy is that by replacing coal and natural gas in the electricity production, there will be a great contribution for the environment also. The harmful greenhouse gas emissions will be relatively decreased.

Second important role of the renewable energy is the substitution of the oil and diesel by the biofuels. The dominance of the oil in the transportation sector is a big challenge for the supply security. For preventing this threat, the use of biofuels has started to be supported by the European Union. In this respect; according to the directive 2003/30/EC[182], the share of biofuels in the total consumption will be 5.75% in the energy mix in 2010. However, there are some doubts for achieving this target because of the different policies in the member states. Some states are willing to use the biofuels while some of them are

[180] For further information, please see: Directive 2001/77/EC available at: http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_283/l_28320011027en00330040.pdf accessed on 27.05.2007

[181] European Commission; Renewable Energy Road Map Renewable Energies in the 21st centruy: building a more sustainable future; Brussel; 2006, pg:6

[182] For a further information, please see: 2003/30/EC available at: http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_123/l_12320030517en00420046.pdf accessed on 27.05.2007

reluctant to do it. This fragmented approach, is an obstacle for increasing its share in the total energy consumption.[183]

Thirdly, the role of renewable energy is indispensable for heating and cooling. People consume large amount of energy for heating and cooling. This is essential and it is hard to prevent consumers to use the energy in these sectors. Especially, since the last decade, the air conditions have been quite popular both in winter and in spring. This situation causes a high level of electricity consumption as well. For this reason, the fossil fuels consumption is predominant for heating and the cooling. However, the share of the fossil fuels can be decreased by increasing the share of the renewable energy in these sectors. And if the rise in the use of the renewable energy can be ensured, the import dependency for the coal and the natural gas may decrease and this will contribute automatically to the security of the energy supply. According to the target set in 1997, it is expected that the use of renewable energy in these areas will be around 12% in 2010.[184]

It is obvious that the use of the renewable energy is quite important for ensuring the security of energy supply. It has a crucial role for decreasing the import dependency especially for the oil and gas. For this reason, all the efforts and the initiatives supporting the use of renewable energy should be completely enhanced and strengthened.

4.2.4- Internal Electricity and Gas Market

The internal gas and electricity market is actually a complementary element of the European Internal Market. The full integration of the EU can be reached only if all the sectors will be integrated.

The efforts for creating a gas and electricity market were accelerated by the first gas and electricity directives adopted in 1996 and 1998. The main aim of these directives was to liberalize the internal electricity and gas markets by promoting the energy efficiency and competition. Even though these two directives were adopted, there should be still further

[183] European Commission, Renewable Energy Road Map Renewable Energies in the 21st centruy: building a more sustainable future, Brussel, 2007 pg:7
[184] Ibid; pg:8

efforts to develop this initiative. These two directives were promoted by another two electricity and gas directives adopted in 2003. The main goal was to ensure completely the openness and the liberalization of this market. Especially there are two important benchmarks in these directives. According to these benchmarks, the industrial customers will be able to choose their suppliers by July 2004 and later, by 2007, all the customers will be capable to choose the suppliers in the market.[185]

These two benchmarks are milestones for the internal gas and electricity market. Having the rights to choose the supplier in the market means that this energy market is competitive and open to all the suppliers and customers. It can be easily mentioned that such competitive market is the end of the monopolies. And consequently, it contributes to the security of the energy supply. Apart from these two benchmarks, these second gas and electricity directives concentrated also on some other specific issues. These are*:" i) the separation of the transmission from the distribution network operators ('unbundling'); ii) regulatory tasks and third party access to gas storage; iii) rules on the setting of tariffs and the allocation of interconnection capacities for cross-border trade in electricity; iv) high standards for public services taking into account the objectives of protection of consumer interests, security of supply, protection of the environment and equivalent levels of competition in all the Member States; v) the establishment in each Member State of a regulatory authority with a minimum set of competencies*[186]*"*

Even though there are still some obstacles in the market, its contribution to the energy security is indispensable. The internal electricity and gas strongly encourages the security of supply by favoring the investments, diversification of the suppliers and the coordination in the market. Such a competitive and liberalized market is quite effective for increasing the investments. It is obvious that the adequate investment

[185] http://www.euractiv.com/en/energy/liberalisation-eu-electricity-gas-markets/article-145320 accessed on 10.02.2007

[186] http://www.europarl.europa.eu/oeil/OpenDetailFiche.do?ficheId=601&language=en accessed on 30.03.2007

is necessary for maintaining the stability in the market. If there are sufficient investments, especially for the infrastructure, the risk of disruption can be minimized. It also provides the diversification of the suppliers by destroying the monopolies. In this condition, the industrial and the private costumers have the chance to choose the most secure and reliable suppliers. This is an important step to ensure the security of energy supply. Moreover, the competitive and liberalized gas and electricity market favors also the integration and the coordination of the energy policies of the member states. This kind of integration increases the transparency and the reliability in the market.[187]

As I already mentioned above, the investment is quite important both for the gas and electricity market and the security of the energy supply. And the investment is important especially for developing and strengthening the infrastructure. Improving the infrastructure is essential because of the security concerns. A strengthened infrastructure can largely prevent the risk of disruption and maximize the benefits for the consumer countries.

In this respect, for a better infrastructural framework in this sector 'The Priority Interconnection Plan' was published by the Commission. Its main priorities for improving the infrastructure of the gas and the electricity market are set in the Commission's communication 'An Energy Policy for Europe' in 2007. These are;

- *"Identifying the most significant missing infrastructure up to 2013 and ensuring pan-European political support to fill the gaps.*
- *Appointing four European co-ordinators to pursue the four of the most important priority projects: the Power-Link between Germany, Poland and Lithuania; connections to offshore wind power in Northern Europe; electricity interconnections between France and Spain; and the Nabucco pipeline, bringing gas from the Caspian to central Europe.*

[187] European Commission, Prospects for the internal gas and electricity market, Brussel, 2007,pg: 4-5

- *Agreeing a maximum of 5 years within which planning and approval procedures must be completed for projects that are defined as being "of European interest" under Trans-European Energy Guidelines.*
- *Examining the need to increase funding for the Energy Trans-European networks,particularly to facilitate the integration of renewable electricity into the grid."*
- *Establishing a new Community mechanism and structure for Transmission System Operators (TSOs), responsible for co-ordinated network planning*[188] "

Another effective instrument for improving the infrastructure is the TEN-E. This instrument is essential for consolidating the internal electricity and gas market and also improving the security of supply. It has a crucial importance for the security of supply because it aims to interconnect all the electricity and gas networks in the Union and also to strengthen the connection of the European network with the other electricity and gas markets in the third parties.[189]

In this respect, TEN-E precised different objectives for the gas and the electricity sectors. In the gas sector, TEN-E primarily aims to integrate the insulated regions to the European gas sector, to improve the pipelines' infrastructure and to extend the delivery of the natural gas to the larger areas in the EU. On the other hand in the electricity sector; TEN-E focuses on interconnecting the electricity networks between the member states and also extending these networks to outside of Europe, to the third countries.[190]

As it is quite clear; the internal gas and electricity market has significant contributions to the security of supply. I strongly believe that this market is an efficient way to avoid two important challenges for the security of supply; the dependency to a few suppliers and the risk of

[188]European Commission, Energy Policy for Europe, Brussel, 2007, pg:9
[189]European Commission, DG Energy and Transport, TEN-E Guidelines Specify a European wide energy transmission network, Brussel, 2006. Available at: http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/06/304&format=PDF&aged=0&language=EN&guiLanguage=en accessed on 25.05.2007
[190] http://europa.eu/scadplus/leg/en/lvb/l06019.htm 23.05.2007

supply disruption because of the technical factors. The competitive and the liberalised electricity and gas market allow the customers to choice their suppliers and diversify their energy resources and their import routes. This is essential for ensuring the security of supply. And also by developing the gas and electricity infrastructure, the possible disruptions which can be arised from the technical problems, can be avoided.

In conclusion, the internal gas and electricity market has a crucial role for the promoting the security of supply. For this reason, all possible measures should be taken for completing the liberalisation process of the market and increasing its efficiency.

4.2.5-Storage Capacities and Emergency Stocks

As I already precised, European Union should immediately ensure the security of the energy supply. EU has implemented different tools to secure its oil and gas supplies and to improve its energy situation; like the diversification of energy sources, energy routes and energy mixes, the improvement of the energy efficiency and the use of renewable energy and the implementation of a liberalised and secure internal gas and electricity market. Actually; all these measures can only ensure the security of supply in the long-term. However, EU also needs some other short-term measures for providing the stability in the market and ensuring the security of supply. Creating a gas and oil stock mechanism can be an efficient way to protect the security of supply from the possible effects of an energy crisis in the short-term.

European Union has a more coordinated oil stock mechanism than the gas stocks. At least, all the member states have a legal obligation in this issue. According to this obligation; member states are obliged to have oil stocks at least for ninety days[191]. The aims of these oil stocks are to ensure the security of oil supplies by increasing the coordination between the member states, avoiding all the possible damages arising from the

[191] This is legal obligation acording to the directive:98/93/EC available at: http://eur-lex.europa.eu/LexUriServ/site/en/oj/1998/l_358/l_35819981231en01000104.pdf

energy crisis and protecting and strengthening the stability and the reliability of the oil market.[192]

As it is clear, these oil stocks are very important to protect EU and its energy supply from the negative outcomes of an energy crisis. Especially, when there is a physical or a technical disruption, the consumer countries can easily face with the interruption in the supply. And in this case, member states can provide their oil supply from their oil stocks. Thus, thanks to these stocks, the stability of the energy market and the security of the oil supply can be enhanced.

According to Andris Piebalgis; EU's energy commissioner, the capacity of oil stocks in the EU is increased. Today, they are able to meet 120 days' oil needs in EU. [193] This is quietly important development for the European energy supply.

For the gas storage capacity, there is not a legally binding requirement. Each member state has quite different gas stock capacities. According to 2005 data; Austria possesses the largest gas stock in the European Union. Germany, France and Italy are the other member states which have also large gas stocks. On the other hand; there is no storage capacity in Finland, Ireland and Sweden.[194] This difference between the member states is a challenge for the security of energy supply at the national but also at the community level. For preventing such a risk, a co-ordination between the members is very important. The countries which possess large stocks should help the countries which have limited stocks when it is necessary. However, this coordination is not easy because member states consider these stocks as a national and a very secret energy tool and are really reluctant to share them with the other member states.[195]

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[192] http://ec.europa.eu/energy/oil/stocks/index_en.htm accessed on 10.04.2007
[193] http://www.eurunion.org/News/press/2007/2007002.htm accessed on 16.04.2007
[194] www.eu2006.at/en/News/Press_Releases/January/0901bartenstein.html accessed on 20.04.2007
[195] Morelli,L.V., *European Union's Energy Security Challenges*, CRS Report for Congress; Congressional Research Service; 2006,pg: 26

In conclusion, both the oil and gas stocks are very effective in improving the security of energy supplies especially in the unexpected situations. I strongly believe that if there is a binding condition also for the gas storage capacity, the efficiency of this mechanism will be enhanced and the security of supply will be mostly prevented from the negative outcomes of the energy crisis.

4.2.6.-External Energy Policy

As I discussed in the previous chapters, the challenges about the security of the energy supply are neither ordinary nor simple. These challenges which are mainly the limited indigenous production and the high import dependency, the concerns about the reliability of the supplier and transit countries, the lack of a common energy policy and the infrastructural problems prove how European energy situation is fragile. Especially, its dependency to the external producer countries requires an enhanced and coordinated policy.

In the international relations, the diplomacy is essential for solving the problems and promoting the relations between the actors. In the energy field also, for enhancing the continuity of the energy supply from the external suppliers, promoting the security of supply and consolidating the stability in the energy market, in the long-term, the diplomacy should be implemented as an efficient tool.

Concentrating on the diplomacy; all of these challenges require urgently a policy for enhancing the EU's external energy relations. Having a common approach toward the suppliers and establishing consolidated, reliable and transparent dialogues with them are essential for creating an external energy policy. Relatively, this policy will absolutely contribute to the security of energy supply by increasing their reliability and transparency. [196] For this reason; an external energy policy is one of the main priorities of the EU's political agenda. Especially, the European Commission set some principles for ensuring an external energy policy. These are;

[196] European Commission; Green Paper ' A European Strategy for Sustainable, Competitive and Secure Energy';Brussel, 2006; pg:14

- *"The EC and its Member States should be a key driver in the design of international agreements, including the future of the Energy Charter Treaty and the post-2012 climate regime.*
- *EU energy relations with its neighbours are fundamental to European security and stability. The EU should aim to build up a wide network of countries around the EU, acting on the basis of shared rules or principles derived from the EU energy policy.*
- *To enhance relations with our external energy suppliers, further developing comprehensive partnerships based on mutual interest, transparency, predictability and reciprocity.*
- *To continue to develop closer energy relations with other major consumers, in particular through IEA and G8 or through intensified bilateral cooperation.*
- *Develop the use of financial instruments, via enhanced co-operation with the EIB and EBRD and the establishment of a Neighbourhood Investment Fund, to enhance the EU's energy security.*
- *To improve the conditions for investments in international projects, working for example to secure a clearly defined and transparent legal framework and appointing European coordinators to represent EU interests in key international projects.*
- *Promote non proliferation, nuclear safety and security, in particular through a reinforced cooperation with the International Atomic Energy Agency*.[197]"

If these objectives can be implemented and there will be an external energy policy at the community level, it will have three main contributions to the security of energy supply. First of all; an external energy policy will provide the stability in the energy market and prevent the consumers from the sharp price changes. This policy will encourage, at the same time , new common iniatives which will serve to the interests of both parties. Especially the construction of the new pipelines or the LNG terminals will be beneficial outcomes of this policy. And finally, it

[197] European Commission, Energy policy for Europe, Brussel, 2007, pg: 18

will support the member states to have a common approach to deal with the outcomes of the serious energy crises.[198]

Among the member states, there are fragmented approaches about the common energy policy however almost all of them support an external energy policy for ensuring their energy security. Especially the big member states which are Germany, UK and Poland, strongly encourage and support an external energy policy.[199]

Finally, I believe that an external energy policy should be perfectly implemented for enhancing the dialogue with the producer countries, transit countries, protecting the energy supply from the possible damages of the energy crisis and promoting energy supply security. If the dialogue can be well established with the partners, the energy supply security challenges will be significantly diminished.

4.3-MEASURES AT THE MULTILATERAL LEVEL

The energy issue is a big priority in the global agenda as well as in the EU. Especially in the energy issue, the security of supply concept has a growing importance for both the countries and the international institutions. Most of the organisations have some initiatives for ensuring the security of supply.

The European Union is also in cooperation with some of the international organisations for improving the security of supply issue. Some of them are International Energy Agency, G8 Summits, OSCE, United Nations, and Energy Charter Secreteriat.

4.3.1-International Energy Agency (IEA)

The world had very suffered from the oil crisis during 1973-1974. This oil crisis showed how the world is vulnerable against the main oil monopole; OPEC. The bad experiences of the countries showed that the countries should take some measures to deal with this kind of crisis. The International Energy Agency was established with this idea. It can be

[198] Geden, O., Marcelis, C., Maurer, A.; *Perspectives for the European Union's External Energy Policy: Discourse, Ideas and Interets in Germany, the UK and France*; SWP Working Paper FG 1; Berlin; December 2006; pg: 25
[199] Ibid.

relevant to stress that the IEA is an outcome of the 1973-74 oil crisis. The main aims of the IEA are to promote security of supply, decrease the risks relating to oil, to enhance the energy market. [200] Today, 18 members of the EU are the members of the IEA as well. These members are Austria, France, United Kingdom, Italy, Spain, Portugal, Hungary, Sweden, Ireland, Netherlands, CzechRepublic, Greece, Finland, Denmark, Belgium, Luxembourg, and Germany.[201]

Today, the IEA mainly focuses on the measures preventing the oil supply crisis and on the oil stock mechanism. The close dialogue between the IEA and the Union affects also the measures taken at the community level for the security of supply. This impact can be clearly seen in the oil stock mechanism of the IEA and of the EU. Under the IEA, all the member states are obliged to have the oil stocks which are equal to the ninety days oil import level.[202] Under the EU, the member states are obliged to have the oil stocks which are equal to the ninety days oil consumption. These similar measures about the oil stock mechanisms show that EU and IEA are interacting in the energy field. Especially for the EU, this interaction is usual and necessary for promoting its energy supply security. The IEA's international position and its measures for this issue are significant opportunities for the EU.

4.3.2- G8 SUMMİTS

The G8 summits have serious and important global responsibilities in the international politics. The most important problems have been discussed in these summits. Their conclusions affect the global agenda. Their priorities change according to the world's priorities. They do not have the same agenda in each summit. The energy issue was one of the hot topics in 2005 and 2006 G8 summits.[203]

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[200] Belgrave, R.; *Western Europe's Energy Secuirty to 2000;* Energy Security to 2000 ; Aldershot:Gower; 1987 pg:188

[201] http://en.wikipedia.org/wiki/International_Energy_Agency accessed on 04.05.2007

[202] http://www.iea.org/Textbase/Papers/2004/factsheetcover.pdf accessed on 04.05.2007

[203] European Commission, Annex to the Green Paper A European Strategy for Sustainable, Competitive and Secure Energy, Brussel, 2006, pg: 42

In the 2005 summit, which was held in the United Kingdom, one of the priorities was the environmental protection and the climate change. In this respect, at the end of the summit, they prepared and declared a communication about the climate change and energy problems. According to this communication, the climate change and the CO2 emissions are harmful for the world's future, and also for the energy security. For preventing these threats, there are also some conditions in this communication. These are; enhancing the cooperation between the participant countries, maintaining financial assistances from world's primary financial institutions, developing a common approach about the climate change, decreasing the emissions of the carbondioxide gases and promoting the energy security and the sustainable development.[204]

In the 2006, the energy security was still one of the main issues discussed in the Saint Petersburg Summit. They especially focused on increasing the energy security concentrated on both security of demand and supply, the stability of the oil and gas market and promoting the alternative energies.[205] These summits are important for the EU because France, United Kingdom, Italy, Germany which has the strongest positions in the Union, and also the European Commission, participate to G8 Summits. For this reason, the conclusions and the outcomes of these summits automatically influence the EU. Besides, Russia also is one of the G8 states. This situation increases the importance of this summit for EU. Participating to the same summit and having the opportunity to discuss the common problems especially relating to the energy supply security is an important opportunity for solving the obstacles between Russia and EU in this field.

4.3.3-OSCE

OSCE is one of the most important international security organizations which have been supported by 56 states. Ensuring the

[204] http://www.g8.gov.uk/servlet/Front?pagename=OpenMarket/Xcelerate/ShowPage&c=Page&cid=1094235520309 accessed on 04.05.2007

[205] European Commission, Annex to the Green Paper A European Strategy for Sustainable, Competitive and Secure Energy, Brussel, 2006, pg: 42

security and eliminating the possible risks are the main priorities of this organisation. All of the EU member states are at the same time the members of the OSCE. This is a very important condition for enhancing the dialogue between OSCE and EU.

The energy security is one of the high priorities in the OSCE. In this respect, they support the measures taken at the international level because it is very hard to solve this issue at the national level. The most highlighted points are the security of energy supply and demand, the enhanced dialogue between the consumer and the producer countries, the importance of the energy efficiency and the use of the renewable energy, the stability and reliability of the international energy market and the diversification of the energy resources and the transit routes.[206]

These aims for ensuring the energy security comply with the EU's priorities in the same issue. Especially; the most significant point is that both OSCE and EU favour a diversification policy. These common objectives for enhancing the security of supply increase the importance and the significance of this close relation

4.3.4- United Nations

United Nations is the largest international organisation which supports the peace, equality and prosperity in the world. All the EU members are the members of the United Nations as well. And also, three members of the EU are the permanent member of the UN Security Council. This situation brings a close relationship with the EU.

'The sustainable development' project is one of the most important issues in the UN's agenda. And they are aware that for ensuring the sustainable development, the energy has a crucial role. Under the sustainable development, in the energy field, they aim to ensure the access to the reliable and secure energy supplies, to promote the energy supply security, to increase the use of renewable energy and to improve

[206] http://iea.org/Textbase/work/2006/energy_security/du_gucht.pdf accessed on 04.05.2007

the energy efficiency for decreasing the total consumption.[207] Thanks to pursuing the same goals in the energy field, European Union can have a significant support from UN for ensuring its supply security. And also under UN, there is a specific commission for the economic affairs in Europe which is called UN Economic Commission for Europe. This commission provides a forum in which European countries have the chance to meet, to discuss and to evaluate the problems and to look for the solutions to the problems.[208]

Finally, it is obvious that United Nations is a very fruitful partner for EU in the energy field to gain support for implementing its objectives about this issue.

4.3.5-Energy Charter Treaty

Energy Charter Treaty is an energy related agreement which mainly focuses on the trade, investment and transit issues. It is signed by the 51 countries. This treaty is an efficient way to ensure the energy security. It strongly favours the energy security, tries to minimize the risks concerning the investment and the trade, and also to consolidate the appropriate rules about the energy.[209] This treaty is strongly important for the EU because it focuses on two basic factors of the security of supply in EU; the investment and the transit issues. It specifically highlights the important role of the investment for the energy infrastructure and the energy security. The treaty mentions that each state can accept the foreign direct investment at the different levels however all the investments should be equally accessible, transparent and efficient.[210] Additionally, the treaty also stress that the security of the energy delivery is quite important. Especially, ECT highlights that the transit countries should take appropriate measures to prevent any supply disruption and to ensure the continuity of the energy supply. [211]

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[207] http://www.un.org/esa/sustdev/sdissues/energy/enr.htm accesed on 14.05.2007
[208] European Commission; Annex to the Green Paper ' A European Strategy for Sustainable, Competitive and Secure Energy'; Brussel, 2006; pg:42
[209] http://www.encharter.org/index.php?id=7 accessed on12.03.2007
[210] http://www.encharter.org/index.php?id=6 accessed on 12.03.2007
[211] http://www.encharter.org/index.php?id=5 accessed on 12.03.2007

EU’s priorities for the energy security are quite similar with those of the ECT. This situation makes closer the energy dialogue between ECT participant states and the EU members. I believe that this dialogue is quite fruitful for the EU because it can ensure and strengthen its supply security in a multilateral framework thanks to this treaty.

Finally; the energy dialogue of the European Union with the different organisations is an efficient way for promoting its security of supply. As this issue is in the agenda of most of the international and intergovernmental organisations, the cooperation can be beneficial for the European Union in this issue.

CONCLUSION

Since its establishment, European Union has been one of the major political and economical actors in the world. Especially in the world politics, it is the second leader after the USA.

As a soft power, European Union is an important promoter of the stability, transparency and the security. The risks and the threats which cause the crisis or, in a wider extent, the turbulence in the Union are considered as the major challenges for the security. In this respect, ensuring the security is indispensable.

Additionally, the security of energy supply is also vital in the European Union. Energy is essential for the survival of the people and with the 'technology age' the need for energy increases. The oil, the natural gas, the solid fuels, the nuclear power and the renewable energy are the primary energy sources of the EU. Among them, in the total consumption, the largest shares belong to the oil and the natural gas. Their large shares have the tendency to increase. The main reason of this tendency is the rise in the energy demand. Unfortunately, the rise in the energy demand is enormous in the EU. This situation is a big challenge for the Union because EU does not possess sufficient large reserves to meet its growing demand. In this case, the EU has to import from the external suppliers. It is possible to say that the high level of import dependency is quite evident in such a case. Moreover, this dependency is considered as a big challenge for the security of energy supply in the EU.

The main external suppliers are Russia, Middle East and Gulf Countries, Norway, Mediterranean and North African Countries and the Caspian and Central Asian producers. Regarding these producers; Russia and OPEC countries have the largest shares in the total energy import in the EU. This is an important risk for the security of energy supply in the EU. Being highly dependent to a few and specific producers increase the

risk of the supply disruptions. Russia in the gas supply and OPEC in the oil supply are dominant. They can easily change the energy situation of the EU. The unexpected price changes or the political disputes with the EU can cause an unexpected and unpredictable supply disruption in the union. Besides this, the political and the economical situations of the suppliers are also important challenges for the EU's security of supply. Any unexpected crisis can interrupt the flow of the energy to the EU.

Apart from these challenges, there are also some infrastructural problems threatening the security of supply. Especially, the lack of investment for developing the infrastructure and the obstacles in the interconnection network in the European gas and electricity market are the other problems concerning this issue. Especially in the European electricity and gas market, the interconnection is a crucial important. Some of the areas and the countries are not still integrated to the market and this situation prevents the completion of the natural gas and the electricity market.

Additionally, another important challenge for the security of supply is the lack of a common energy policy. The national interests and the national priorities prevent to have a common approach in this issue. Furthermore; the lack of the common energy policy is a real threat for the security of energy supply in the union. Today, all the possible solutions to solve the problems concerning the security of supply at the national level are the short-term efforts. For the long-term solutions, member states should be coordinated and have the same approach in this issue.

European Union has an increasing awareness about these challenges. And it is focused on the possible solutions to solve this problem. The solutions can be analyzed at the national, community and the multilateral level.

I strongly believe that the most efficient measures can be taken at the community level. I feel that the measures at the national level which are

the diversification of the energy mix and the bilateral relations with the producer countries are not as efficient as the measures at the community level. They are not long-term solutions and they cannot totally ensure the security of supply. Also, the measures at the multilateral level are more general. They can support the EU's initiatives in this issue but they cannot solve the problems completely. However, the measures taken at the community level are much more efficient than the others. The main objective of these measures is to ensure the security of energy supply and to promote the energy situation throughout the EU. It is possible to say that all the measures taken at the community level should have primary importance and also they should be respected by all the member states. These essential measures are the diversification of the suppliers and the transit routes, promoting the energy efficiency and the use of renewable energy, the competitive and liberalized electricity and gas market and the creation of an external energy policy.

According to my personal view; the most efficient measures for solving these problems are the diversification of the suppliers and the transit countries and also promoting the energy efficiency.

The diversification policy is quite important for securing the energy supply in the EU. European Union has different alternatives for the imports. For decreasing its import dependency to Russia and OPEC for the oil and gas, EU should diversify its suppliers. The main alternatives for the diversification are the Caspian, Central Asia, the Mediterranean and the North African suppliers. Especially, in these areas, Azerbaijan, Turkmenistan, Kazakhstan, Algeria, Tunisia and Libya have quite significance for the security of energy supply. Additionally, the EU should also diversify its transit routes as well. In this respect, Turkey has a growing importance. Comparing other major transit country; Ukraine, Turkey is more reliable and secure for transporting the oil and gas especially imported from the Caspian Basin and the Central Asia.

EU should also focus on promoting the energy efficiency. Its main objective is to decrease the consumption and increase the energy savings. If the energy efficiency can be sufficiently promoted, the overall consumption and the import dependency level can increase and the security of supply can be enhanced. This is a quite efficient way to promote the security of supply. However, these measures can be efficient and successful if only they are implemented by all the member states. The coordination is quite important for promoting the security of supply. In this respect; it can be relevant to highlight the importance of the common energy policy in this issue. I strongly support a common energy policy in the union. It should not be a strict policy but at least in some issues there should be binding decisions. Especially, member states should have legally binding targets about the use of renewable energy, the energy efficiency and the gas and storage capacities. Especially in the stock mechanism, all the member states should have minimum storage capacities for the gas as well. If all the member states have equal storage capacity, the gap between them can be decreased and during a crisis time, the possible supply disruption can be minimized. If the member states have some legal obligations in these issues, they can serve to the community interests. The national priorities can be replaced by the community priorities. I am perfectly aware of the member states' oppositions about the creation of a common energy policy. However, a loose common energy policy can be a solution and may perfectly ensure the security of energy supply.

In conclusion; EU's vulnerable energy situation increases the concerns about the security of supply which is one of the major challenges for the EU. Especially the high import dependency and the lack of a common energy policy quite threaten the security of energy supply in the EU. For this reason, it is relevant to stress that the coordination among the member states and the implementation of the community measures are efficient for ensuring the security of supply. Finally, I strongly recommend that member states should diversify its

energy suppliers and transit routes, promote the energy efficiency and especially agree on a loose common energy policy. If these measures are sufficiently implemented, the main challenges will be minimized and the security of supply will be perfectly ensured.

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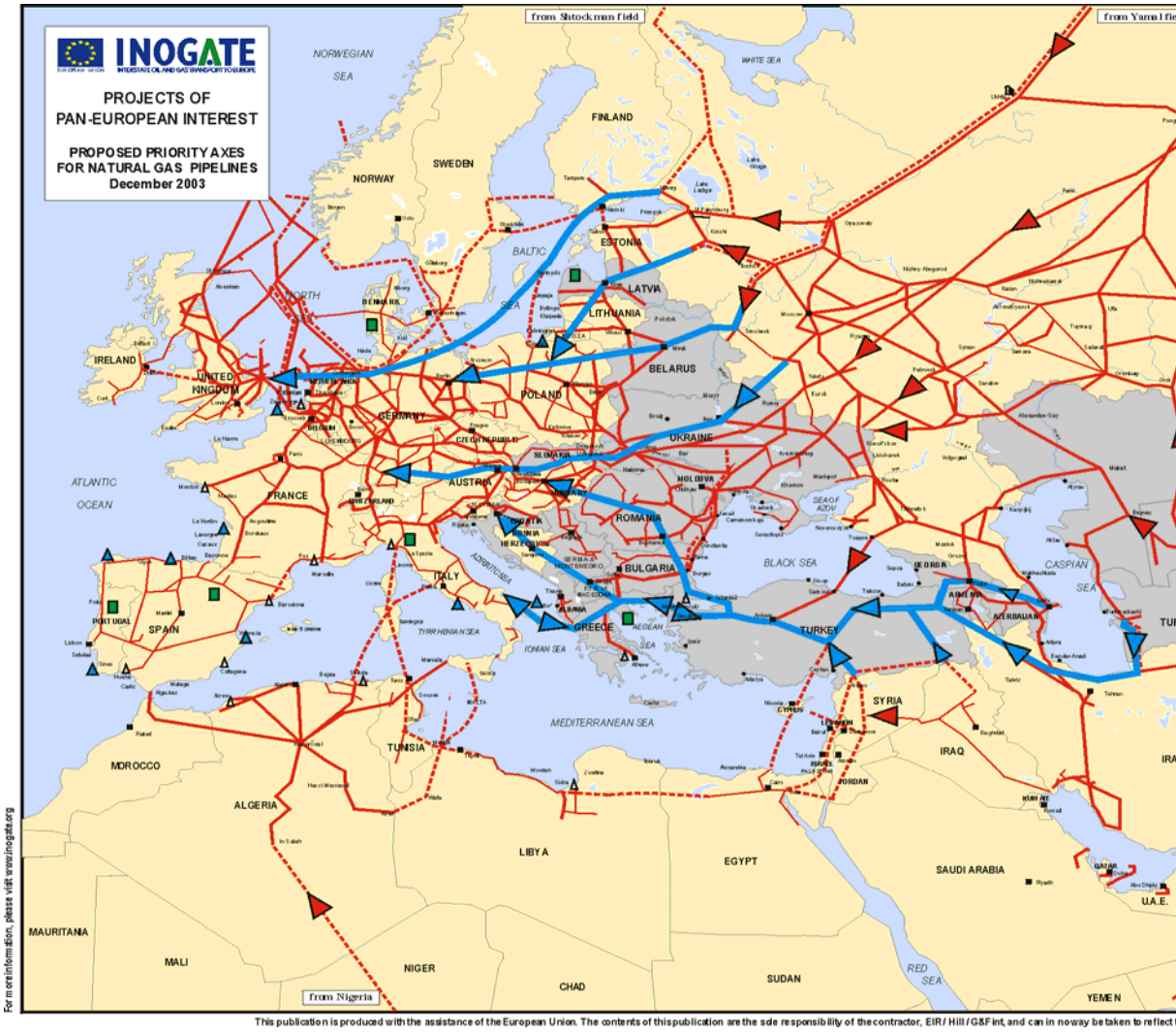
ANNEX I



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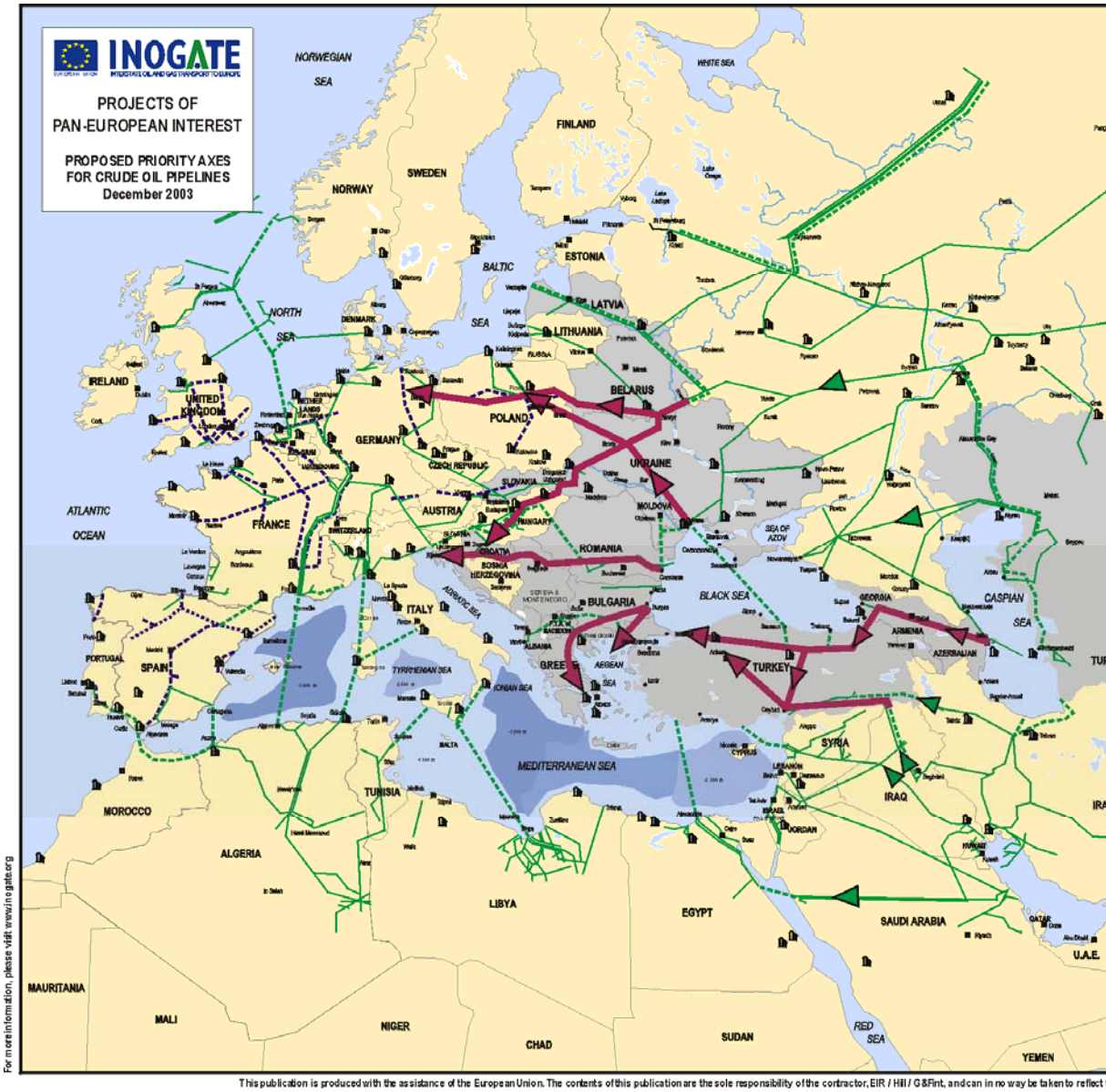
ANNEX II



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