

The Contribution of the Nabucco Pipeline to the Security of Natural Gas Supply in the European Context

“The Opera Pipeline” – An Assessment Study of Nabucco Pipeline

Ahad Hadian

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تقدیم به پدر و مادر نازنینم،

ابوالقاسم و عذرا

I dedicate this dissertation to my beloved parents,
Abolghassem and Ozra

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Abstract

In January 2006 Europe entered into a state of shock by the unexpected shortage of natural gas that had been caused by the Russian-Ukrainian gas dispute. The gas pipeline crossing Ukraine provides the EU market with Russian natural gas, and this shutdown resulted in a significant disturbance for many of the EU members. In the new world order, interruption of energy supplies could threaten the national security of a country to the same magnitude as military actions. With EU depending on Russia, Norway and Algeria for more than half of its imported natural gas consumption, this threat could be more tangibly sensed.

However, in the wake of this crisis, EU members became sensitized to the matter of sustainability and security of monopolized gas supply and the consequent geopolitical vulnerability. The Russian-Ukrainian crisis brings energy security to the forefront of the EU agenda and made European policy makers contemplate about new pipeline routes and LNG technology in order to diversify their supply resources. Therefore, the attentions turned to Central Asia and Middle East as an abundant source of natural gas and Nabucco pipeline as a potential route to contribute to the diversification of natural gas supplies to the EU and enhancing the European energy security.

Keywords: Nabucco pipeline, Natural gas, Geopolitics, Security, Policy, Europe, Energy, Supply, diversification

Sammendrag

I januar 2006 gikk Europa inn i en tilstand av sjokk på grunn av den uventede mangelen på naturgass, en hendelse forårsaket av den russisk-ukrainske uoverensstemmelsen om gassforsyning. Gassrørledningene som går gjennom Ukraina tilfører EU-markedet russisk naturgass, og stengingen av gasstilførselen resulterte i en markant uro for mange av EU-medlemslandene. I et moderne, energiavhengig samfunn vil stans i energitilførselen true et lands nasjonale sikkerhet med samme styrke som militære aksjoner. Med et EU som er avhengig av Russland, Norge og Algerie for mer enn halvparten av sitt importerte naturgasskonsum, kunne denne trusselen få en mer konkret betydning

Imidlertid ble EU-medlemslandene i opptakten til denne krisen, oppmerksomme på spørsmålet om bærekraftig utvikling og sikkerhet i forhold til monopolisert gasstilførsel og den vedvarende geopolitiske sårbarheten. Den russisk-ukrainske krisen bringer spørsmål om energisikkerhet til fremste linje på EUs agenda, og medfører at europeiske politiske beslutningstakere må overveie nye gasslinjenett og LNG-teknologi for å spre sin tilgang til naturgassressurser. På bakgrunn av dette ble oppmerksomheten vendt mot Sentral Asia og Midtøsten som rike kilder til naturgass, og Nabucco rørledningen som en potensiell rute for å bidra til differensiering av naturgasstilførsel til EU, og for å styrke den europeiske energisikkerheten.

Nøkkelord: Nabucco-rørledningen, naturgass, geopolitikk, sikkerhet, politikk, Europa, energi, tilførsel, differensiering

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List of Abbreviations

Bcm	Billion Cubic Meters
Bcma	Billion Cubic Meters per Annum
CCGT	Combined-Cycle Gas Turbines
CIS	Commonwealth of Independent States
CMEA	Council of Mutual Economical Aid (Comecon)
EIA	Energy Information Administrative
EU	European Union
EU-27	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.
IEA	International Energy Agency
KWh	Kilowatt Hour
LNG	Liquefied Natural Gas
Mtoe	Million Tons of Oil Equivalents
NATO	the North Atlantic Treaty Organization
NIGC	National Iranian Gas Company
NPP	Nabucco Pipeline Project
NGV	Natural Gas Vehicles
OECD	Organization for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries

Tcm	Trillion Cubic Meters
UGS	Unified Gas System
US	United States
USA	United States of America
USSR	the Union of Soviet Socialist Republics
UK	United Kingdom

1.1. Introduction and Background

Natural gas is rapidly gaining in geopolitical importance. Worldwide consumption of natural gas has changed dramatically from a marginal fuel consumed in regionally disconnected markets to a reliable fuel for long distance consumers. Natural gas has several advantages making it increasingly the fuel of choice for many policy makers. Of all fossil fuels, natural gas has the lowest emissions of pollutants and carbon dioxide and its efficiency for many applications cannot be surpassed. Recently the European Union¹ (EU) has set ambitious objectives such as increasing energy efficiency by 20 per cent until 2020 and reducing greenhouse gas emissions by 8 percent below their 1990-level by 2012 (Directorate-General 2007: 7). Worldwide natural gas consumption is expected to double over the coming three decades and potentially overtaking the share of oil in the energy mix of many large industrialized economies. (EIA 2010, International Energy Outlook)

Many European countries have changed their energy mix with a prominent role for natural gas. However, reduction in the European indigenous gas production and prediction of increasing in the volume gas demand in the next decades outstandingly in the Eastern Europe will lead to escalating gas import dependency in the European gas market. (IEA, WEO, 2010)

There are several proposed pipeline projects to flow gas to the European gas market in the next decades that should feed European gas hungry region with large-scale gas volumes from non-European gas producing countries. Besides to the Nord Stream (is an offshore natural gas pipeline from Vyborg in Russia to Greifswald in Germany), whose construction has already started, the Nabucco and South Stream pipeline are the largest projects being planned to flow gas to the Europe from out of the continent. Though, both pipelines aimed to enhance the security of gas supply in the EU. The ambitious goal of the EU to increase the share of renewables in the energy mix until 2030 might lead to just a moderate growth of natural gas demand in the coming decades. Given this point of the view, not all major pipeline projects might be vital for security of gas supply in Europe. This matter particularly for Nabucco and South Stream that both intending to provide South-Eastern European gas market and seems to be competitors.

Quarter of Europe’s gas demand is supplied by imports from Russia. This great volume of natural gas transported to Europe through pipeline via Ukraine and Belarus. The Russia-Ukraine gas dispute on the pricing mechanism of January 2006 caused unpredicted disruption of gas supplies to the EU and revealed the European vulnerability toward gas security supplies. This cease of gas supplies was known as the worst gas crisis in IEA history and was a wake up alarm for the EU. (IEA, 2009) It is shown that scarcity of natural gas is physically possible for the European market in the foreseeable future. As a consequence, supply of additional quantities of natural gas is accompanied by significant investments in production and transport infrastructure. Good example for such investment is the proposed Nabucco pipeline project from the Caspian region and the Middle East to Europe or the extensive expansion of LNG facilities.

As a result of absence of natural gas security supply, European policy makers will have to deal with some challenges in the coming decades. Initially gas supply to Europe has to be secured, due to the fact that EU imports a big volume of demanded gas from non-European countries and it could increase the geopolitical and geo-strategic risk of the EU. Hence, supply sources should be diversified, however, not only the sources of gas suppliers should have to be secured but also the transport routes to different European gas market. Political conflicts such as in the case of Russia-Ukraine dispute could lead to supply disruption and has significant political and economic consequences in long-term. Therefore, the risk of shipment needs to be decreased through diversification means, i.e. LNG regasification terminals, storage and major import pipelines.

This paper will investigate the effects of the Nabucco pipeline project on European natural gas security of supply in general. Moreover, the EU27’s gas market in terms of resources, production and consumption at present and in the perspective of 2030, the major energy and security policies associated with the EU’s dependence on limited numbers of gas suppliers are reflected and the role of the Nabucco pipeline to mitigate this risk are analyzed.

1.2. Disposition

Chapter 1. Introduction

The introduction chapter intends to describe the background of the subject and provides general realizing to the research. Delimitations of the study are also presented.

Chapter 2. Problem Discussion

It contains a general description and introduction to the investigated research problem and the reason for both this study and the studies leading to it. The chapter as well intends to give a brief understanding to the objectives and importance of the study and the knowledge it will bring to the reader.

Chapter 3. Theoretical Framework

In this chapter, useful theories and literature concerning geopolitics and energy scarcity that comes to use in the study are presented. Former studies that have generated knowledge that comes in handy are introduced as the understanding for the problem at hand refines. Models and theories that is used to better present knowledge in the study are here formally presented and explained.

Chapter 4. Methodology

The philosophical basis that has been used in order to conduct the study is presented. What equipment has been selected in the measurements like qualitative, inductive and explanatory have been focusing on is explained. The chapter consists of collecting secondary data and for gathering of new data using interviews, analyzes of data material also described. Reliability and validity and ethical considerations are also discussed and evaluated.

Chapter 5. Nabucco Pipeline Description

This chapter intends to give a full picture of the Nabucco pipeline project like motivations, history, technical features.

Chapter 6. *European Gas Market Outlook*

This Chapter analyses the European gas market in terms of resources, production and consumption and sets the scene for projections in this field in EU27. At the end author looks at the import dependency in the future of European gas market.

Chapter 7. *Energy security and policy in EU*

This chapter will take a closer look at the energy security situation of the EU and attempt to sketch out the wider context in which EU energy policy has come about. The central focus will be on energy policy efforts and critical issues that are reason for concern.

Chapter 8. *Finding and Conclusion*

The finding part of this chapter is focusing on comparing the gathered data material in three previous chapters in the empirical parts. The comparison gives understanding on the subjects of the study and gives knowledge of the current and future situation of the European gas market.

In conclusion part what the study has generated is here presented. The purpose of the study is fulfilled with the help of answering the research questions. Findings that are generated can be used in evaluating in the case of Nabucco pipeline and its contribution to enhancing the security of supply in the gas market. Policy recommendations propose that might help to achieve a coherent energy policy for Europe. Final remarks include limitations of this research and suggestions for possible future research.

2.1. The impotence of Energy Scarcity and Security

Security of supply of natural gas has emerged as a new area of concern for the European Union agenda. Although Europe has the experience of dependency on importing hydrocarbon fuels like oil; however, the issue of natural gas seems to be a new and more problematical one due to the nature of gas that should transfer through pipelines. Nevertheless, the LNG technology to some extent overcomes to this problem via liquefying natural gas, though pipelines still remain the basic means of transporting gas.

The share of natural gas in EU27’s energy mix is 24% at present, while forecasted projections for gas consumption seemed to increase dramatically within the next two decades particularly after 2015. (IEA, World Energy Outlook 2010) With this growth in demand in the Europe’s gas market and correspondingly tight competition in global market in future, thus the supply part became more critical at the same time considering the tense geographical concentration of reserves. Moreover, the mother of nature restricted natural gas reserves in the European continent (excluding Norway) and dependency on import from outside suppliers in a great deal since indigenous gas production will decline in Europe and unable to meet the growing trend of demand.

Nevertheless, relying on imported oil or natural gas is not the essence difficulty in securing the EU’s energy supplies; however this dependency does not essentially lead to insecurity of supply. The best sample that illustrates a well-established energy policy is Japan. Although, Japan completely depend on imported fossil fuels from out sources but a comprehensive energy policy enhanced its security of energy. The greatest threat for security of supply is reliance on few numbers of suppliers when they provide the biggest portion of imported fuel. Due to eurogas statistical report 2010, EU27 imports more than half of its need to natural gas from three countries. Russia with 23 percent has around quarter of supplied gas to EU27, followed by Norway with 20 percent and Algeria with 10 percent. Therefore, EU has to seek for other opportunities to create a strategic energy partnership with other suppliers and new routes in order to decrease excessive dependency on its traditional suppliers and prevent natural gas being used as a ‘Political Weapon’. Since Nabucco pipeline project planned to transport natural gas from the

abundant gas reserves of Caspian region and Middle East to meet the EU’s hunger for more gas and contribute to the security of supply by diversification.

Taking into account the above, it is obvious that EU is vulnerable and sensitive in regard to its energy requirements and security. According to European Union’s energy vulnerability and potential role of Nabucco pipeline project as a major new route of gas supplier, the following research question will be tackled in this thesis:

- *How the Nabucco pipeline project could contribute to enhance the EU’s energy security of gas market?*

In order to achieve a full understanding of the subject under study and to be able to come to a comprehensive answer two sub-question will be addressed as well:

- *What is meant by security of supply in the EU’s point of view and how it can be attained?*
- *What are the potential European gas scarcities linked to the Nabucco pipeline project?*
- *What is the energy outlook in the European Union for the next two decades and what strategy or policy does the EU pursue in order to meet its increasing demand?*

Given the committed new energy policies on the road to more environmental considerations and sustainability like Kyoto protocol and 20-20-20 in EU, a shift away from oil and coal consumption to gas expected to emerge an integrated global gas market. With the intention of keeping its competitive position the EU member states should adopt a coherent and comprehensive energy policy. One of these strategies could be reducing the current vulnerability and dependency on few numbers of suppliers via diversification like constructing new routes of pipeline to Europe or employing LNG facilities. The Nabucco pipeline project as a potential alternative for transporting natural gas to Europe with lower cost in security came into account especially after 2006 dispute between Russia and Ukraine that revealed the weakness of Europe’s energy security. Despite the controversial discourse about the political character of Nabucco pipeline, however constructing the Nabucco pipeline will primarily depend on feasibility and economical study of it.

2.2. Research Objectives

The main objectives of this research are to develop:

- *the understanding of the energy policies and securities in the EU,*
- *the significant role of natural gas to contribute to enhancing energy security in Europe,*
- *the potential role of Nabucco pipeline as a strategic route in providing security of supplies for the natural gas destined to the Europe’s market,*
- *to what extent Nabucco pipeline could play a role in order to meet the European Union’s security of energy particularly in gas market.*

By exploring energy policies and the development of the gas sector in the EU, the author hopes to shed lights on the contribution of the Nabucco pipeline to the security of gas market in Europe.

2.3. Significance of the Study

This study will be worthy of note for the European Union member states at the first place, to take into account the importance of energy vulnerability as a weakness of the EU that would have side effects on other spheres like insecurity or political dependency on gas suppliers to Europe. Additionally, European policy makers can use the results found in this research to determine if Nabucco pipeline as a potential and strategic route could be a choice for Europe to implement the diversification goal.

The author believes the most effective way to reach the European gas market for Nabucco Gas Pipeline International GmbH is through understanding the European energy policies toward diversification of supplies route in general and securing gas market in particular. This paper hopes to create a guideline and potential expectations that have to fulfill in order to allow investors and all the groups who are beneficiary and involved in Nabucco project to evaluate their success and possible impediments in transporting gas from the Caspian region and the Middle East to Europe.

Analysts who are interested to study and track the gas market and especially in Europe can benefit from this study to learn more about the future energy policies and trends in European market and the challenges the EU would tackle within the next two decades.

The last but not the least, is the impact of the construction of the Nabucco pipeline which would change the geopolitical and security sphere in the gas market for other suppliers to Europe. Countries like Algeria, Norway and Russia as the traditional suppliers to Europe who have long-term plans for further development should consider the strategic outcomes of the Nabucco on their investments

3.1 The Origin of Geopolitics

The term “*Geopolitics*” came in to political terminology during the late of the nineteenth century. From the term itself, “*geopolitics is concerned with politics regarding power and resources in combination with territorial dimension of states.*” (Peters & Balduk, 2006, p 4)

Back in 1897 in Germany, Friedrich Ratzel (1844-1904) a scholar in geography published a book under the title of “*Politische Geographie*” (political geography). Ratzel was attracted in space and territory dominated by the nations, and their position on the world map, as well, he was influenced by social-Darwinism. In his book, he conceived states as a living organism in a metamorphic way in his analysis of political science and geography. He believed states are similar to plants; they need space and resources to survive and continuously compete for them. He asserted states are organic entities and can thrive and growth through their expansion into other territories, and this competition leads to natural selection which species can accustom to their surroundings better will survive longer. (Peters & Balduk, 2006) In other words, this contention for living space (*Lebensraum*) meant that robust and big states would stay alive at the expense of small(er) and weak(er) nations. (Ratzel, 1925) For instance, until the population growth, the space will be insufficient and there is a need for resizing of the state to a new and a larger one and this expansion is possible by annexing smaller territories. Ratzel’s idea’s not only provided an ‘intellectual justification’ for German expansionism, but emphasized that it is utterly a natural and inevitable process. (Jones, 2004)

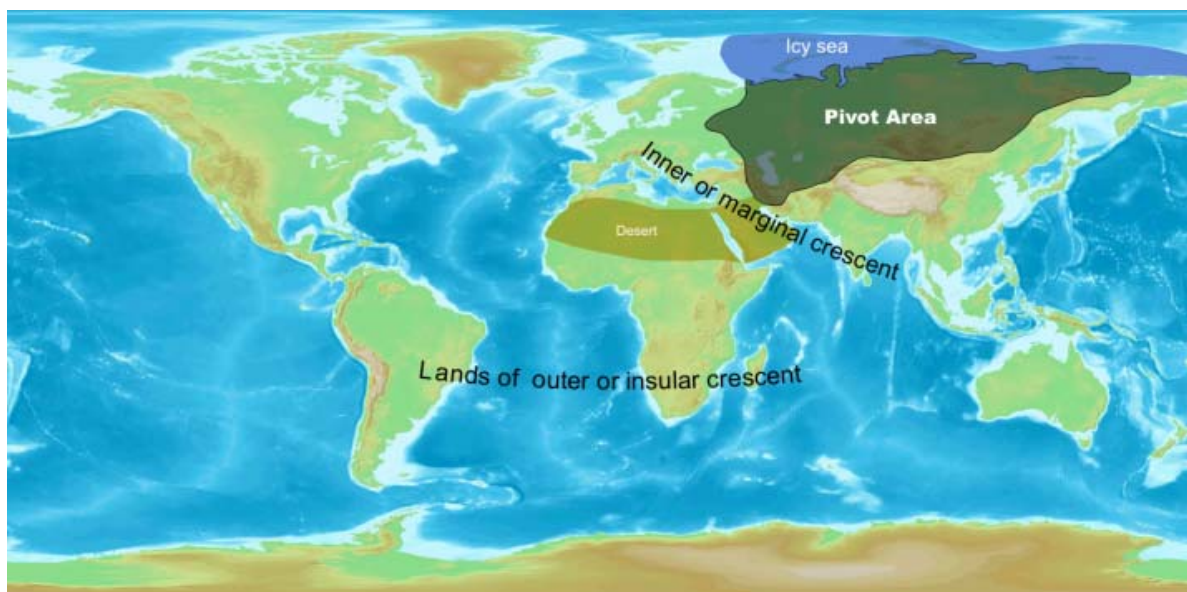
In 1989, a Swedish political scientist Rudolf Kjellén who was Ratzel’s student, elaborated his thought about organic state by coining the term “*Geopolitics*” and introduced the scientific geopolitics in the academic atmosphere. (Agnew, 2001, 2003) Kjellén focused on the territorial dimension of politics and developed that part of politics that is “*essentially concerned with the external relations, strategy and politics of the state, and which seeks to employ such knowledge to political ends.*” (Jones, 2004, p 5) In his idea, any given space on the world is granted certain and “absolute” characteristics, determined by the location of resources and natural specifications. From that point, a significant vision established to link systematic thinking of political aspect to

geographical scale and this new point of view came to consideration of practical scene of policy making. (Agnew, 2003) Correspondingly, geopolitical concepts make a theoretical backing for development of European territorial states including their overseas colonies like in Africa. (Peters & Balduk, 2006)

3.2 Mackinder and the Heartland Theory

While Ratzel and Kjellén were developing the idea of dynamics of state power and territory, the second breeze of political geography blown by a British scholar named Sir Halford John Mackinder (1861-1947). The concept of geopolitics popularized through his public lectures in the 1880s and 1890s and he was interested in issues like global strategy and the balance of power between states. (Jones, 2004) In an article published in the *Geographical Journal* under the title of "*The Geographical Pivot of History*", he formulated his famous “*Heartland Theory*” in 1904 and tried to describe patterns for state development and behavior. Mackinder categorized world into three political regions: an ‘outer crescent’ across the Americas, Africa and the oceans; an ‘inner crescent’ across Europe and southern Asia; and the ‘pivot area’ located at the heart of the Eurasian land mass. (Jones, 2004)

Figure 1.1- Map of Heartland



Source: GNU FDL

According to Mackinder, whoever controls the pivot area, or Heartland would be the dominant power of the globe, and the key to Heartland is East Europe; therefore, the first step for world domination is possible by controlling of the East Europe, he argued. (Jones, 2004) Mackinder sum up his idea in three famous statements:

Who rules East Europe commands the Heartland;

Who rules the Heartland commands the World-Island;

Who rules the World-Island commands the World.

(De Pater & Van der Wusten, 2002, p 82)

For Mackinder World-Island identified as Eurasia, and he expressed his fear of changing of the hegemony of the world in favor of the continental powers like Russia, China and Germany; after four centuries of British maritime superpower. It is noticeable in the above statements that he pursued the dominated political thought in the early twentieth century about Eurocentric world view. (Peters & Balduk, 2006) Mackinder also criticized by O’Tuathail for oversimplifying the history, disregard and underestimating the air power and marginalizing the significance of North America. (O’Tuathail 1992) From this critique a modified approach arose that changed the academic basic of such theories away from mainstream geography to international relation and strategic studies, like Spykman (1942, 1944). (Jones, 2004)

Mackinder’s ideology showed its significant influence on the Versailles peace conference in 1919, in which he represented as a British delegate, while creating ‘buffer states’ in Eastern Europe, separating Germany and Russia. Although, his influence was not only impressive in its home continent, but also was the theoretical basis for informing US strategy in the Cold War. (Jones, 2004)

3.3 Haushofer and the German Geopolitik

The geopolitical ideas of Ratzel and Mackinder backed German nationalists for revival after their territory reduced and military dismantled during the First World War. (Paterson 1987) As Nazi party began to rise in the 1920’s Karl Haushofer (1869-1946) a former military officer and

geographer expanded his theories through the means of a journal called “*Zeitschrift für Geopolitik*” (*Journal of Geopolitics*) (Flint, 2006) Haushofer used the organic conception of the states and their need for expansion from Ratzel and Kjellén, and combined it with Mackinder’s supremacy of Eastern Europe and Heartland theory to provide justification for both territorial growth and colonial acquisition for Nazi’s German. (Flint, 2006) However, as *life* magazine declared in 1939, Haushofer was not Hitler’s philosopher of Nazism (Ó Tuathail, 1996). Indeed, geographic and spatial relationships shaped Haushofer’s views, while racist perspective was supportive ideology for Hitler’s geopolitical strategy. (Flint, 2006)

3.4 Geopolitics in the Post Second World War Era

In a tendency rose to depoliticize and marginalize the political geography and direct it to academic zone, Richard Hartshorne proposed a “*functional approach*” to political geography. Hartshorne, as a leading American geographer, believed geopolitics should not interfere in forming political strategies, but it should be concerned about analyzing and describing the internal dynamics (consist of ethnic differences, concept of a ‘nation’ and organizational mechanisms through which a state governed its territory) and external functions (included the territorial, economic, diplomatic and strategic relations of a state with other states) of the state. (Jones, 2004)

Although, functional approach applied in geopolitical literature after the Second World War, but it stemmed in the works of Isaiah Bowman in the early 1920s. Unlike Mackinder, he believed the new world map is tremendously unstable and the real source of this political instability is not strategic models, but more concern with social and economic reasons such as access to natural resources and the distribution of population. In “*The New World*” (1921), Bowman set the new world order of concerns for major problems such as

national debts and reparations, control over the production and distribution of raw materials, population movement and the distribution of land, the status of mandates and colonies, trade barriers and control over communications and transit links, the limitation of armaments, the status of minority populations and disputed boundaries between states.

(Jones, 2004, p 7)

Undeniably, he contributed to establish a foundation to use more academic and objective methods in analysis of political geography.

3.5 Geopolitics and Natural Resources

During the post-Cold War era, the issue of North-South relations became one of the main concerns in the geopolitical thought. The key concern in North-South is the imbalanced distribution and access to natural resources, in addition to modern type of western dominance in regard to economic reformation which led to various theories about dependency and neo-colonialism. (Slater, 2004) It can be observed in the approaches of western countries in rich resource regions like Persian Gulf that are diametrically linked to this new geopolitical order, in which policies are aimed to secure resources for western hunger oil-oriented industry and economies. (Slater, 2004; Agnew, 2002)

Another new topic that emerged in geopolitical thought is concerned about disparity in sustainable development in the globe. Extensive environmental problems make happen by developed countries, while often having harsh consequences for developing countries of the South. This sustainability perspective led to the vision that a safe world is not only the result of balance of powers, redistribution of fortune and or accessibility to resources, but also about fair opportunity for future generation vis-à-vis resources, including an environment that is free of pollution. (Arts, 1994)

This North-South conflict is more comprehensible when it comes to fossil fuels that feed North industry and economies. A recognized example of resource conflict has been the Russian-Ukrainian-European controversial situation about the gas pipeline transfers the Russian blue fuel to Europe through Ukraine. Gazprom, the gigantic Russian monopolized gas company, ceased pumping gas to Ukraine as well to final destination, Europe, in 2006 in the middle of a negotiation with Ukraine concerning renewal of supply contract. Accidentally or not, it took place when Ukraine was trying to make tight relationships with the European Union.

It can be as a wakeup call for Western world, where prominent picture had been that politics, power and energy were not interconnected that solid anymore. Although, the world market seemed to become a global free one; however, this example shows that the robust relations between politics and resources should take into account. (Peters & Balduk, 2006)

3.6 Critical Geopolitics

The critical geopolitics emerged in 1990's when scholars such as John Agnew, Genaróid Ó Tuathail and Simon Dalby blame the narrow view and extra concern of traditional geopolitics about the geographical well-being of the states. Besides, due to changes in world politics after Cold War under the expansion of globalization, the political order cannot any longer just described by the actions of nation-states. (Amineh, 2003)

Although space is still important in critical geopolitics, however unlike classical geopolitics, it questions any simple causal relationship between geographical space and politics. Instead, it looks into other aspects in which space is translated by a wide range of geopolitical actors and their objectives. In other words, with growing importance and power of international agencies, multilateral organizations and transnational companies, the ability of states to formulate and implement legislation has been limited and challenged. Hence, the national economies is no further just control by state but influences by international demand in market, international obligations and rules, incorporation of economies and globalized flows of capital. Moreover, other agendas come up to consider; like environmental issues, inflation, unemployment and terrorist actions that are transboundary and seem no single state can solve and manage them by itself. Thus, the position and function of states as powerful entities has changed over the world's conflicts and in doing so the hegemony of nation-state is being challenged too. (Dodds, 2000)

Amineh believes in critical geopolitics states do not territorialize into “us “versus “them” and the idea of biological organism with expansion approach in not discussing any more. Here space identifies by social and economic factors and states use means like market regulation, trade relation, production technologies and controlling of financial flows instead of military forces in order to fulfill their national interest. (Amineh, 2002)

Accordingly, the nature of unilaterally oriented of the state and national government for controlling has changed over the time. In the new world order factors such as economical and cultural interaction moderate the power and effectiveness of administrative. Though, governments continue to keep their crucial importance, particularly when it comes to natural resources and being guarantors of long-term energy contracts; however it is undeniable that the role of state is weakening and the role of companies is escalating. (BIS, 2005)

Keeping the mentioned modification in mind, interpreting the world geopolitics in general and energy geopolitics in particular with classical approach is problematic. Instead, critical geopolitics proposes a broader world perspective on the issues in which states are not the sole player in the international system any longer, but considering the role of companies, armed forces, terrorist groups, peace movements, human rights activists, and environmental organizations. In the light of energy politics, it is not irresistible when conflicts take place around natural resources specially oil and natural gas considering rising consumption, diminishing availability of resources, increasing the price for such commodities and deteriorating environmental issues. (Amineh, 2003)

3.7 Energy scarcity

Scarcity is a vital dilemma that stands up when there is no equity in human needs and wants, in the world of limited resources. In other words, it means nature or productions do not have sufficient resources or capacity to supply and fulfill human needs and demand. Fossil fuels are the most significant source of energy in our planet and there is a big effort to secure the accessibility and constant flow of these fuels since these resources are nonrenewable and not everlasting. Besides, scarcity has a key anchoring role in energy dispute and conflict. To elaborate the model of energy scarcity by Homer-Dixon and Blitt (1998); three various categories of scarcity will discuss below: demand-induced scarcity, supply-induced scarcity and structural scarcity.

Demand-induced scarcity: There are three main factors which control the changes in demand; the first and important one is the remarkable growth in the global population which ultimately

causes increasing in consumption in resources. The second driving factor is elevating in income per capita in developed economies and countries with transit economy specifically south and East Asia where huge amount of world population lives in India and china with over one billion for each. As the final factor, technological development has made world more reliant on fossil energy for production required power.

Supply-induced scarcity: In one hand it tightly dependent on demand portion for energy, and in another hand fear of depleting in the amount of fossil fuel resources. The fact is that fossil fuel resources are not endless and during the past decades the number of discovery of “big elephants” has reduced gradually. This kind of scarcity is the raw material in conflicts and tensions to stimulate the beneficiary competitors to use military action like territorial conquest or interfere in the domestic issues like regime change, in order to control or influence on the rich resource territories.

Structural scarcity: This type of scarcity is the result of unequal distribution of natural resources. It is more sensible when major actors in energy sector could intentionally influence the fossil fuel market, like main International Oil Companies (IOC’s) or by Organization of Petroleum Export Countries (OPEC) as an oil producer cartel. The aim of these actors is to gain more control over the energy market and expand own supremacy to change it in favor of their benefits. (Amineh & Houweling, 2005)

The three discussed sources of scarcity can interact, interfere and reinforce one another, and moreover each of them can be exacerbated by the inability of market to adjust to new changes and unpredicted challenges. (Sean, 2006)

Throughout this paper, the term geopolitics used to show the geographic, cultural, demographic, economic and technological factors that make affect on political discourse in the international sphere. While states have the key role when considering geopolitics of energy, undoubtedly they are not the individual actor that should take into account but others like IOC’s, human rights organizations, indigenous groups and environmental activist will influence. Therefore, herein geopolitics is not a concrete term that used in a zero-sum game by nation-states to quest their national interests where one takes over at the expense of another. And further, critical geopolitics

employed instead of classical geopolitics to explain better the significance of international actors and uncover the role they have in energy politics.

3.8 Studies of Energy Security

There are many studies addressing the issue of security of energy supply but without a specific focus on natural gas (CIEP (2004) and Correlje and van der Linde (2006)). Victor (2007) discusses global geopolitical security of supply aspects for natural gas. However, there are only few studies focusing on specific pipeline projects. Holz et al. (2009) analyze European gas supplies until 2025 with the strategic model GASMODO and find that specifically pipeline availability remains a critical issue. Stern (2002) analyzes the impact of dependence on natural gas imports and the influence of liberalization on security of gas supply and recommends a policy framework to prevent disruptions to consumers. He analyzes relationships with non-European gas exporting countries and the influence of a liberalized European market on security of gas supply. He differentiates between short-term and long-term adequacy of supply and infrastructure to transport gas to the demand regions and between operational, i.e. stresses of weather and other operational influences, and strategic security, i.e. catastrophic default of infrastructure or supply sources. Further, associated with import dependence he distinguishes source dependence, transit dependence and facility dependence.

4.1. Philosophical positioning

The philosophical positioning is vital to understand and determine in order to make clear on which basis the researcher observes the world and phenomenon while conducting the research process. Choosing an appropriate philosophical basis will assist to argue how this paper identifies, gathers and makes conclusions based on the findings. Another major purpose of philosophy is confining the researcher to the problem that might be a big challenge faced during the research process.

Paradigm defined by Merriam-Webster dictionary as *"a philosophical and theoretical framework of a scientific school or discipline within which theories, laws, and generalizations and the experiments performed in support of them are formulated; broadly: a philosophical or theoretical framework of any kind."* While social ontology involved with nature of social entities. The central concept here is the matter of whether entities should take into account as objectives that have external reality to actors, or should be considered as social construction develop from the perceptions and actions of actors. These positions respectively known as objectivism and constructionism (constructivism). (Bryman& Bell, 2007)

Objectivism as an ontological position emphasizes that social phenomena and their meaning have an independent and separate being from their actors. In contrast, the other ontological position-constructivism- implies that social phenomena and categories are constantly being accomplished by social actors. Recently, constructivism consists of the idea that researchers' own conceptions of the world are constructions. It means, the researcher always give a particular understanding of the social world instead of the one that could be considered as definitive. Knowledge regarded as indeterminate and the discussion of postmodernism reflects this point of view that will mention later in this chapter. (Bryman& Bell, 2007) Ontological perceptions will contribute in a way which research questions are originated and research is carried out. If research questions formulated in a way that have objective relation with social entities, the researcher underline the formal beliefs and values. In contrast, researcher can put emphasize on active involvement of people in reality construction to formulate the research questions. (Bryman& Bell, 2007)

4.1.1 Philosophical Basis

The 'postmodernism' primarily was a style in fine art, literature, architecture, film, and dance etc. and described by randomness, anarchy and fragmentation factors. In the recent decades postmodernism increasingly expand into academic disciplines as well. (Johnson& Duberley, 2000) Regardless of the framework postmodernism has usually considered as a move away from ordered structures connected with modernism, toward an explicitly eclectic and unspecified structure. The idea of optimistic of modernism has left behind in the past and as a result of alteration in social and economic situation the understanding of reality has changed to a new area. For example some scholars (like Clegg, 1990 and Gergen, 1992) labeled the quick rate of changes in social economic, politics and globalization as a sign for the postmodern condition and era. Regardless of the labels used for the postmodern concept, the underlying matter is the magnificent changes that sense we are entering a new historical configuration.

The new view of disorder and uncertainty was a sign of closing stage for certain and stable modernist in favor of new social and institutional forms, which, required postmodern political leadership, for instance. (Bauman, 1988) Hence, it is the world that has changed not the philosophy of how we gain the knowledge of the world, and postmodern epistemology weakens the prevailing epistemology of modernity-positivism. (Parker, 1992) Positivist placed the strength and ability of science to obtain a body of privileged and untainted knowledge which disclose the essence of the world and secure explanation, prediction and control. While postmodernism due to its approach of instability and unpredictability in analysis, shed a doubt on the capability of positivism to contribute to its promises in the social science and challenge its certainty in the possibility of epistemic privilege and progress. In other words postmodernist sets aside the rational certainty of positivism and substitutes with a relativism view of science and knowledge. (Johnson& Duberley, 2000) Besides, postmodernist epistemology cast question upon, and utterly deny, the goals of those scholars who try to classify social and historical development '*that support the hypothesis that society is moving towards a new postmodern era*' (Hassard, 1993, p 2)

Regarding the nature of constructivism that believes individuals have an active role in perceptions and understanding of the meaning of reality and the methods through them

knowledge can be achieved, constructivism would be suitable approach for this paper when there are various players with different perspective toward Nabucco project.(Morgan& Smircich, 1980) In addition, postmodernism as an epistemology that roots in disorder and uncertainty seems to fit for this study when there is no exact answer about the contributions of the Nabucco pipeline to the EU's security of supplies. Besides, the circumstances and issues revolve around the construction of Nabucco pipeline has been changing due to the contradiction perspectives and ongoing discourses between actors and beneficiaries. Hence, the future of the opera pipeline is wrapping with ambiguity and postmodernism is the very approach that could deal with this paper.

4.2. Research Approach

4.2.1 Inductive vs. Deductive

Deductive and inductive approaches are two helpful techniques which form the way of reasoning in research. (Hyde, 2000) Deductive approach moves from general theories toward empiricism and specific cases. This method helps the researcher to examine the hypotheses with particular data. As indicated by Hyde (2000) deductive reasoning is a theory testing process, begging with identifying the theory and then looking for implication of the theory in the conducted research.

In contrast, the inductive approach starts the other way around from empiricism to theory, which findings and conclusions are draw from details and cases toward general. Thus, inductive approach is proper for qualitative method, while deductive reasoning is more suitable with quantitative process.

Based on the research question, this paper will utilize qualitative method. As asserted above, inductive approach tries to establish a connection between observations or research objectives and the conclusions draw from collected data. (Easterby-smith et al, 2002) Besides, this research attempts to outline and understand how the Nabucco pipeline project will contribute to enhance the security of supply in Europe's gas market. To discover the answer the researcher had to realize the important features which influence the security of supply based on energy policies in EU and the way Nabucco project will approach this goal in the Europe's gas market and

ultimately attach them to provided theories. Therefore, this research will be found on the inductive basis, where it will move from observations toward a deeper understanding of the Nabucco role in developing security of supply in Europe. This also backed the choice of the qualitative approach as the best method to answer the research question in this paper that will discuss later in this chapter.

4.3. Research Design

Research design is a tool to establish a link and bring together the collected data and findings derived from the initial question of the study. (Yin, 1984) Regarding to Aaker and Day (1990, p 59) research design is "*detailed blue print used to guide the implementation of a research study towards the realization of its objective*".

4.3.1 Exploratory Research

This type of research used when researcher tries to develop a series of principles in order to provide a basic for understanding and predicting the behaviors and decisions. Exploratory is a proper method when there are not explicit set of hypotheses with large amount of available data regard to different views and values and looking to find a pattern in the data (Easterby-Smith et al. 2002)

This paper will focus on the main issues concern about the Nabucco pipeline project that related to European energy policy, EU's gas market security and interaction between these factors, which is why exploratory research is suitable for this thesis. (Marshall& Rossman, 2006) Exploratory research as well empowers the author to capture the aspects or patterns related to units of analysis and ultimately contribute to illuminate the role of the Nabucco pipeline in EU's energy policy through this study. (Marshall& Rossman, 2006)

4.4. Qualitative vs. Quantitative Method

Qualitative and quantitative techniques are two different approaches of conducting research. Therefore it is central to understand the nature of the problem in order to pick out proper

technique to reach the research goal and utter finding response to the problem statement and question.

Quantitative method is understood by applying sampling techniques whose findings might express in a numeral way, and are amenable to mathematical manipulation enabling the researcher to estimate and interpret future results or quantities. (Thagaard, 2003)

On the other hand, the qualitative defined as: *"research that seek to provide understanding of human experience, perceptions, motivations and behaviors based on description and observation and utilizing a naturalistic interpretive approach to subject and its contextual setting"* (Silverman 2004, p 17) In order to uncover the research questions in this thesis, the answer reliant on the factors used to define qualitative research mentioned above, and besides the rich explanation they provided, the qualitative methods are preferred.

The key idea of this study is to identify the major contribution of Nabucco pipeline project to EU gas market concerning security of supply; so qualitative method is the best approach in order to answer problem statement. As a result, the author need to discover the interaction of the actors involved in the Nabucco Pipeline, and create a basic understanding of their possible actions in the future in regard to reach their objectives. One of the main features of qualitative research is the capacity to detect intangible factors, (Mack, Woodsong, Kathleen, Guest, Namey, 2005) for instance actors' perception, values and involvement in Nabucco project. Although, this paper will employ some numbers and figures in empirical part and conclusion, but qualitative data do not presented within numbers and has to be interpreted in words.

4.5. Data Collection

This paper will benefit from both primary and secondary data collection.

4.5.1 Primary Data

Primary data is the kind of data that collected directly from the first hand sources, and assist author to control the quality of data like the amount of information generated, managing the time and design of measurement. Although, primary data could be expensive in terms of time-

assurance was given to the respondents that the information will just use for the purpose of this thesis.

Whether or not the interviewees replied trustfully is an issue that always revolves around the research, but being a researcher this risk should take into account during the process. Subjects related to trustworthiness will discuss later in this chapter.

4.5.2 Secondary Data

Secondary data is the kind of information that has been collected and existed already for another purpose and result. (Yin, 1984) During the ground study secondary data has been a major source of information in order to get the fundamental concepts to pick up the thesis topic, developing research question and seeking for theoretical framework. To provide this paper with requirements of secondary data many academic literatures, official web pages, authority's words, news, reports from think tank centers like Eurogas, Eurostat, Clingendael International Energy Program, International Energy Agency (IEA) and Energy Information Administrative (EIA) and other online articles were taken into account.

Using secondary data associate with some advantages and disadvantages, but the researcher tried to employ valid and reliable data. One of the major benefits of using secondary data is offering plenty of information with less time and expense compare to primary data during the process of data collection. Besides, secondary data collected without considering the subject of this paper, so it seems more likely to be reliable and accurate, since it was provided in a natural way. At the end, secondary data could have supportive and comparative role for primary data. (Saunders et.al. 2007)

On the other hand, disadvantage of employing secondary data is that it collected for another purpose and does not match and meet research's requirements. Moreover, secondary data might be presented in a way that excludes the necessary aspects matter to the objects of study.

4.6. Trustworthiness of research

While carrying out the research process, it is crucial to build the thesis on validity and reliability in all facets such as understanding and interpreting the findings from secondary data or determining the impact of the results. (Last, J. 2001) Yin has highlighted four area of concern in order to augment to the quality of research:

- *Construct Validity: Establishing correct operational measures for the concept being studied,*
- *Internal Validity: Establishing a causal relationship, whereby certain conditions are shown to lead to other conditions,*
- *External Validity: Establishing the domain to which a study's findings can be generalized,*
- *Reliability: Demonstrating that the operations of the study such as data collection procedures can be repeated, with the same results.*

(Yin, 2002, p. 53)

4.6.1. Internal Validity

Looking at internal validity shows its assists for setting up operational measures, and Yin believes it is a criterion for quality. Yin suggest to use '*pattern matching, explanation building, addressing rival explanations and using logic models*', (Yin, 2002, p. 55) while Fitzgerald and Dopson believed that in case studies '*the probability of relationships may be established and replace the standards of proof of causal relationships applied to quantitative data*' (Fitzgerald and Dopson, in Buchanan and Bryman, 2009, p 92) Hence, they state that alternative approach can be apply to reach internal validity.

Having assumption about research problem, can consider as weakness regarding internal validity. In terms of a research that cannot directly observed like a project, there always exists the probability of interfering bias or earlier findings in describing and interpreting the situation. This is the art and skill of researcher to keep ones objective position and view throughout the process. It would be exaggerating to state that the author does not have ones side and view about the Nabucco pipeline project, but what the researcher can truly state is, to keep the objective

position during the process and personal point of view will not affect the study and analyzing findings.

4.6.2. External Validity

Some argue that generalizing in case studies remains a main difficulty and inadequacy. In other word, the methods used for research in one project might not be proper for another one. (Yin, 2002) It can be problematic to expand the findings from one case study to other; that is why every project is irreplaceable and unique and consist of different actors in different times. As a result, this research about NPP is essentially specific for this project and just can use as an example or a 'lesson learned' but not as a general idea. (Yin, 2009) However, the author believes that some findings and components can compare and expand to similar situations with this level of player involvement.

4.6.3. Reliability

The aim of reliability is to increase the consistency. In other words, the techniques used in research should end in consistent findings. Easterby-Smith state three following questions that can use as a means to assess the reliability of the research:

- 1. Will the measures yield the same results on other occasions?*
- 2. Will similar observations be reached by other observes?*
- 3. Is there transparency in how sense was made from raw material?*

(Easterby-Smith, 2002, p 53)

The first question try to find the answer in case of repeating the research it will lead to similar results and findings. The process of research should assure that the collected information and data are valid and true, and every researcher must meet this requirement at some point. For instance, the answers the author gets from informants must be their actual beliefs and perspective, instead of supporting ones country or organization to keep loyalty. Thus, it is essential to identify and highlight the issues related to data reliability in order to increase the trustworthiness of the paper.

When it comes to the second questions, if another researcher follows the steps and perform the same study as done in this paper, the results should be similar. This illustrates the importance of setting up a precise process during the research, and author had the feeling like someone always looking over ones shoulder. (Yin 2009) It means, if someone decide to follow the "recipe" performed in this research at some other time, and terminate with the same findings. This a very crucial task if considering case studies, because political, economical and many other factors are continuously changing in this research and the outcomes of a similar study might be so far from this one. However, applying an exploratory approach will help to establish and improve reliability; because using this method will contribute to analyze the findings based on the information provided by informants from interviews, and data that collected from various sources based on the hegemony of the players in NPP till now. Thus, another study done by a different researcher will end up in dissimilar result due to the changes in the situation that are affecting this Nabucco project.

The last question revolves around the reliability while collecting data and it should contribute to answer the problem statement. In order to meet this requirement, the questions need to be well-prepared for interviews (as primary data) and collect secondary data from consistent sources.

5.1. Nabucco Pipeline Project

The Nabucco pipeline is a proposed gas pipeline project from Erzurum in Turkey and pass through Bulgaria, Romania, Hungary and ultimately end up in Baumgarten an der March in Austria. Nabucco aims for contributing to diversify gas suppliers and deliveries routes in Europe; at the same time some analysts believe the main goal is to demolish the Russian status in Europe’s gas market. However, apparently Nabucco pipeline will assist to increase and strengthen European energy security. The project supports by several European Union states and Unites States and seems to be a competitor to Gazprom-led South Stream pipeline project.

Figure 5.1- Nabucco Pipeline Route



Source: www.nabucco-pipeline.com

5.2. Motivation

In Trans-European Networks - Energy (TEN - E) program, Nabucco pipeline got a strategic importance for Europe’s gas market. (Decision No 1364/2006/EC of the European Parliament) Nabucco planned to supply Europe with natural gas resources from Caspian Sea and Middle East regions. The project designed by the intention to diversify European gas supply option and lessen

its reliance on Russian energy as the biggest gas provider to Europe. One of the main drivers for Nabucco project has been Russia–Ukraine gas disputes that caused an immense shortage for European consumers in 2006 and 2009, and as a result the idea of the new suppliers, sources and routes arose. In addition, as per European Commission, the Europe’s gas consumption is expected to increase for the next two decades till 2030 which means Russia alone would not meet the demand. The issues related to the amount of growing in consumption and demand is under discussion between experts and will discuss in depth later in the next chapter. (AFP 2009-01-27) As asserted by Nobuo Tanaka, the executive director of International Energy Agency, as long as Nabucco transfer gas from more suppliers to Europe’s market, it would be more effective in the terms of increasing energy security than South Stream. (Novinit, 24.02.2010)

5.3. History

Nabucco initially put up for discussion in February 2002 during a meeting between Austrian company OMV and Turkish counterpart BOTAS. Four months later in June five companies (OMV of Austria, MOL Group of Hungary, Bulgargaz of Bulgaria, Transgaz of Romania and BOTAS of Turkey) inked an agreement of intention to construct the Nabucco pipeline. The Nabucco pipeline takes its name from the same famous opera by Giuseppe Verdi that shareholders attended in Vienna State Opera following their meeting. (Rowley, Pipeline & Gas Journal, Sep 2009)

The European Commission put on view its support by granting up to 50% of the cost of the feasibility study including market analysis, technical, economic and financial survey in December 2003. In June 2005, five Nabucco partner established a joint venture company under the name of ‘*Nabucco Gas Pipeline International GmbH*’, and finally German RWE became a shareholder of the consortium in February 2008. (EurActiv, 18.09.2007) Ultimately, an intergovernmental agreement (IGA) signed by five prime ministers in July 2009 between Turkey, Romania, Bulgaria, Hungary and Austria. They confirmed their support for Nabucco project and agreed upon a single, stable legal framework to control the gas shipment and appoint the transit tariffs through the all five countries. (www.nabucco-pipeline.com)

5.4. Technical features

5.4.1 Route

Nabucco is 4,042 kilometers in length. In the start point in Ahioz, Turkey pipeline will be linked with the feeder lines from Georgia (South Caucasus Pipeline) and Iraq (pipeline to be built); additionally it is possible to connect to Tabriz–Ankara pipeline that feed from Iran in future. Most of the Nabucco path will be laid down in Turkey with 2,730 kilometers, while 412 kilometers in Bulgaria, 469 kilometers in Romania, 384 kilometers in Hungary and 47 kilometers in Austria. (www.nabucco-pipeline.com)

5.4.2 Capacity

Nabucco is a 56 inches (1,400 mm) diameter pipeline gas. After completion the first phase in 2015 the delivery gas expected to be 8 Bcma (billion cubic meters per annum), growing in second phase up to 15 Bcma in 2018 and finally reach between 25 to 31 Bcma in phase 3 in 2020. (Rowley, Pipeline & Gas Journal, Sep 2009) Over 250,000 pipes and near two million tons of steel required to transfer gas from suppliers in Asia to consumers in Europe.

5.4.3 Construction

According to Nabucco Gas Pipeline International GmbH (NIC), Nabucco shareholders will make the final investment decision about the construction of the pipeline in 2011 and planned to start constructing in 2012. The first gas will pump through the Nabucco in 2015 as it scheduled and the lifespan is estimated to be 40 years. (www.nabucco-pipeline.com)

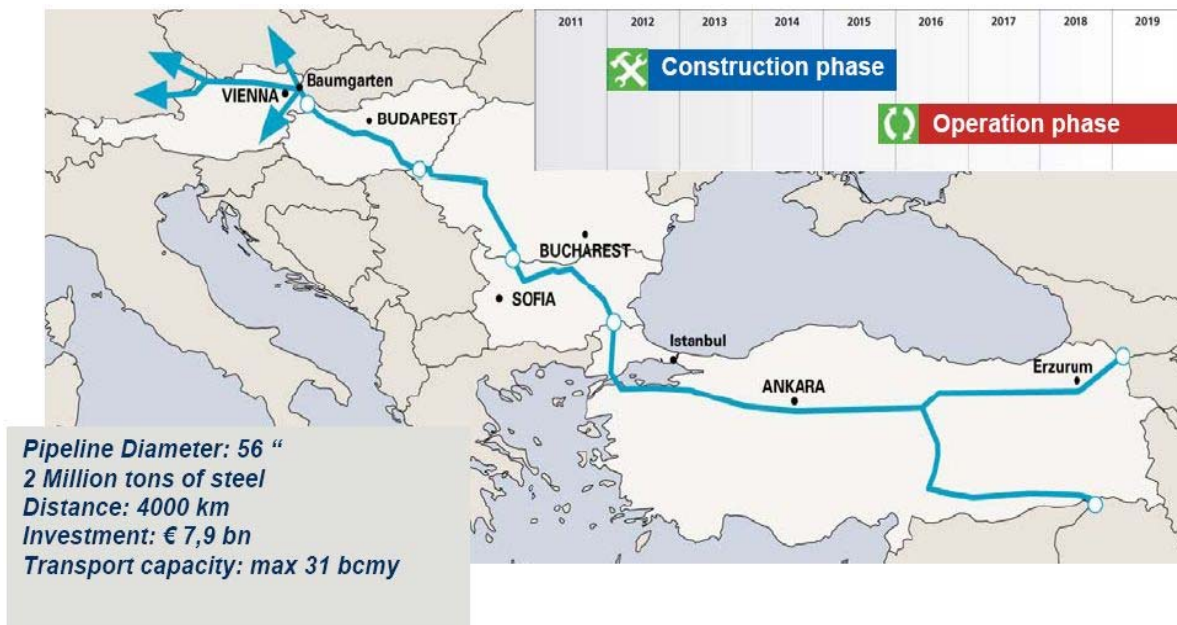
As mentioned earlier the EU awarded a grant in order to perform the feasibility study. The study was included review of the technical feasibility, route confirmation, preparation of the design basis, hydraulic studies and preparation of tender package. (Upstream Online, 07.01.2008)

5.4.4 Financing

In 2008, the Nabucco project is estimated to cost € 7.9 billion approximately, however some experts believe with current prices of iron and steel the expenditures will jump to € 14 billion. (Bloomberg, 22.02.2011) In addition, the sources of financing are still ambiguous and remain a topic for Nabucco critics as a big challenge for the project.

Like other commercial projects, 30% will be financed by project’s shareholders and the rest by commercial financial instruments. In January 2009 at Nabucco summit in Budapest delegates of the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD) agreed to provide financial banking for the project. (Deutsche Welle, 27.11.2009) Finally the NIC consortium inked a contract with EIB, EBRD and the International Finance Corporation (IFC) for a financial support package up to €4 billion. (Upstream Online, 06.09.2010)

Figure 5.2- Nabucco Pipeline Project Schedule



Source: www.nabucco-pipeline.com

5.5. Supply Sources

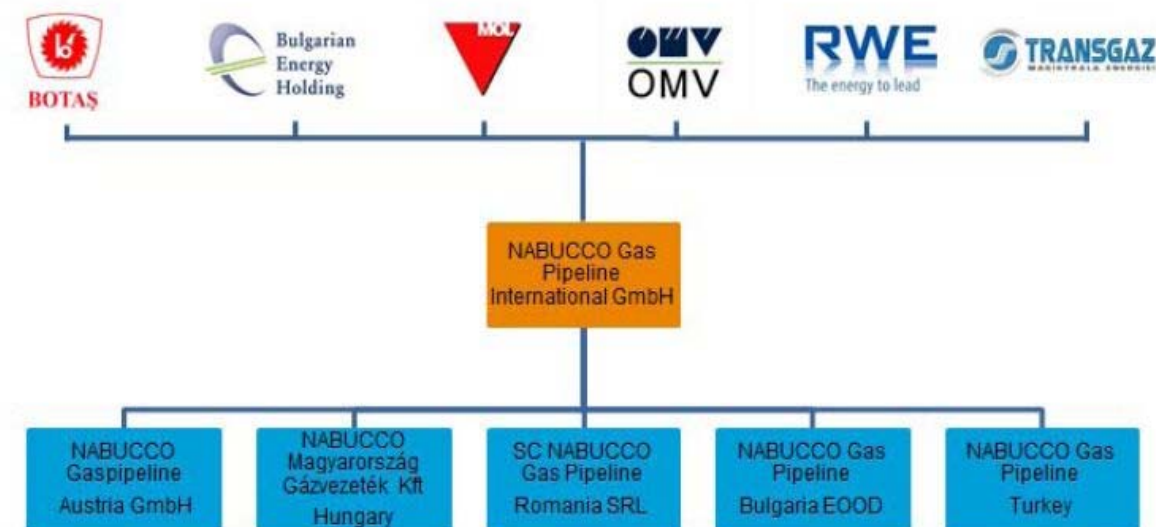
Supply issue is a source of controversy and problematic for Nabucco project that will discuss in detail in the next chapter. Although there are some countries in the list of suppliers, however the amount of gas and their ability to pump it due to the plan and agreed contracts remain doubtful. According to Nabucco official webpage, potential gas providers are included Azerbaijan, Egypt, Iraq and Turkmenistan; though Azerbaijan and Iraq seems to have less challenges and are more reliable as supplier. (www.nabucco-pipeline.com)

Azerbaijan has stated to contribute to Nabucco as a gas provider from the second phase of Shah Deniz gas field in the Caspian Sea. The estimated amount that Nabucco shareholders have counted on Azerbaijan is between 8 Bcma to 12 Bcma with further expansion. Iraq's significant gas reserves will be connected to Nabucco through a new feeder pipeline. Two of the Nabucco shareholders OMV and MOL have gained a 10% share in khor Mor and Chemchemical gas fields in Northern Iraq. (www.nabucco-pipeline.com) The expected natural gas from Iraq is 10 Bcm per year. (Upstream Online, 30.09.2010)

5.5. Project Company

The project will develop by the Nabucco Gas Pipeline International GmbH (NIC). NIC with a headquarter in Vienna, consists of a consortium of five National Nabucco Companies (NNC's), included OMV of Austria, MOL Group of Hungary, Bulgargaz of Bulgaria, Transgaz of Romania, BOTAS of Turkey along with RWE of Germany, which are fully owned by NIC. Each of the shareholders holds 16.67% of the shares.

Figure 5.3- Organigram of Nabucco Gas Pipeline International GmbH (NIC)



Source: www.nabucco-pipeline.com

As asserted by official webpage *‘The company is responsible for the development, construction, financing, operation and the marketing of Nabucco’s transport capacities, while National Nabucco Companies are responsible for the operation and maintenance of the pipeline in their respective countries’*.(www.nabucco-pipeline.com)

6.1 Introduction

Considering the economic crisis and more anxiety of energy policy on energy efficiency and renewable had great impact in terms of gas demand in medium to long term to a lower level than before. Besides, policy highlights on environmental issues gave natural gas a key role in the EU climate policy that cannot be reached via increasing use of renewable only. Taking into account the Base Case Scenario or the Environmental one, the demand for gas predicted to grow by 14% to 23% till 2030, with most expected increase from power generation plants. (Eurogas.org)

Current decrease in demand with surplus supply pressure on European procurement market; however, analysts believe that this situation will not continue in the long term. Considering the increase in gas demand and diminishing of indigenous gas production in Europe, make it critical for Europe to import gas from 2015 onward while existing supply cannot meet the demand. From the geographical point of view gas reserves are profuse worldwide and relatively Europe is in a good spot to diversify its supplies. In order to achieve sustainable energy policy goals like 20-20-20 in future, Europe should take a significant role for gas into account.

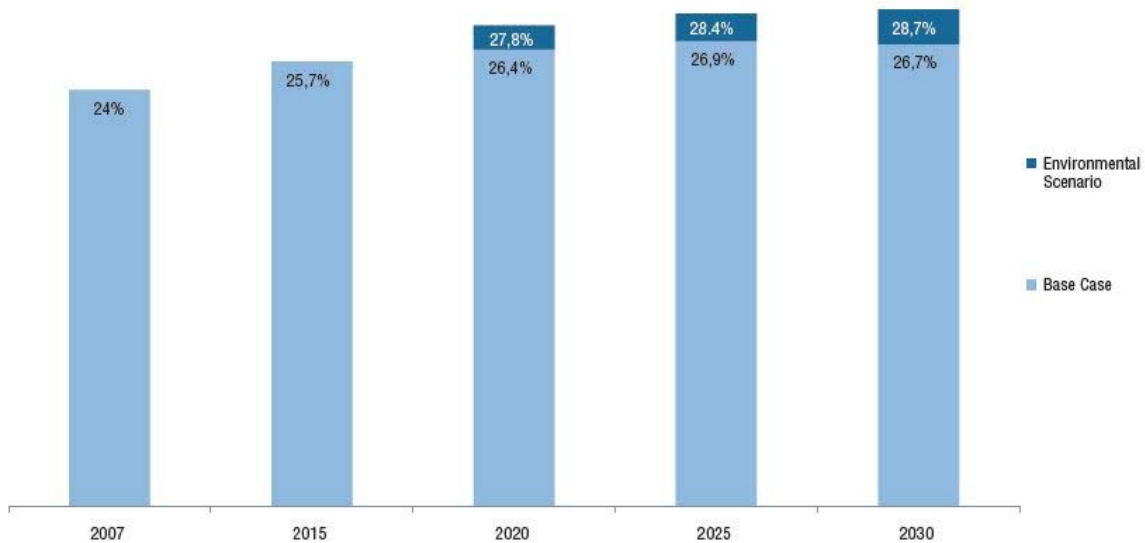
6.2. Expected Consumption for Natural Gas in EU27

As indicated by Eurogas demand for gas dropped by 6.4% in EU in 2009 compare to 2008. Slowdown in industrial sales which include more than one third of EU gas consumption was one of the main sources for this decrease. Industrial users employ natural gas generally for power plants and decline in demand for products has a direct impact on demand for electricity and finally lower demand for gas. In consequence of economic crisis and energy policies taken by EU in meantime to reach environmental targets like Kyoto protocol and 20-20-20, expected development of gas demand in long term is some 15 to 20% lower than three years ago.

However, demand for natural gas still predicted to increase in EU region. Based on International Energy Agency, consumption of natural gas in EU states is expected to grow from 536 Bcm in

2008 to a range of 591 Bcm in 2030, which indicates an increase of 0.4% and the share of natural gas in European energy mix could rise from 24% in 2008 to 27%-29% in 2030. (World Energy Outlook 2010) Most of the growth is expected to come from power generation. Natural gas will be the fuel of choice due to utilizing of “green properties” and high efficient application technologies and utterly contribute to energy policy and energy security in EU27. In addition natural gas will play a key role as the fuel of future over the coming decades in order to develop a sustainable energy policy.

Figure 6.1- Rising Share of Natural Gas in EU27 Energy Mix



Source: Eurogas.org

6.3. Natural Gas Demand by Sector

6.3.1 Residential and Commercial Sector

In this sector gas consumption has gradually growth at the level of infrastructure expansion and the associated increase in the population of consumers. Over the last 12 years, consumption of this sector has raised 1.5% per annum to around 185 Bcm and natural gas with holding 35% of market share in this sector is the market leader. (epp.eurostat.ec.europa.eu)

According to eurostat the population of EU27 forecasted to increase moderately and in some states likely to fall, thus the consumption in this part of the market will also slow down considerably. The main reason for this reduction is the high market penetration that has already been achieved in main gas consumer's states; and in other member states the residential and commercial market sector will reach saturation gradually in the course of time. The second factor needed to consider is the low density distribution of population, settlement structure and topographical conditions in some of the countries that make it tougher to penetrate in market due to the economy of scale. Other aspects that control the demand in this section are increasing of the energy efficiency of buildings, by means of employing modern thermal insulation standards or implementing new heating system with higher energy efficiencies. Nevertheless, the growth of competition from renewable sources also should take into account. Therefore, all the mentioned factors contribute to diminish demand dramatically in this part of the market.

Due to the Base case scenario of eurogas, EU's gas consumption expected to reach the peak in 2015 and then return slightly back to the current level. While involvement of gas to contribute to the space heating market will be approximately constant up to the level of 170 Mtoe in the long perspective till 2030 based on the Environment scenario. (eurogas, Long Term Outlook for Gas Demand and Supply 2007-2030)

6.3.2 Industrial Sector

Natural gas utilizes to generate 31% of energy consumption in industrial segment and thus is a main source of energy in this market as well. This portion of the market traditionally has a good background in energy efficiency consumption due to the given fact of the robust competition in international climate that force European industry in order to adapt and reduce the cost of production. This situation demands a continuous trend for investment in renewing production plants in the future. Therefore, considering the efficiency-improving investment in plant modernization and replacement in EU27 members slow down the energy consumption in this sector of the gas market too.

This market is so sensitive to the price of the energy and natural gas can only keep its market share and sales volume at the expense of oil and coal if it can offer more competitive prices.

Despite of the economic developments and the price competitiveness gas demand will grow slightly to 123-129 Mtoe in industrial sector in 2030. (eurogas)

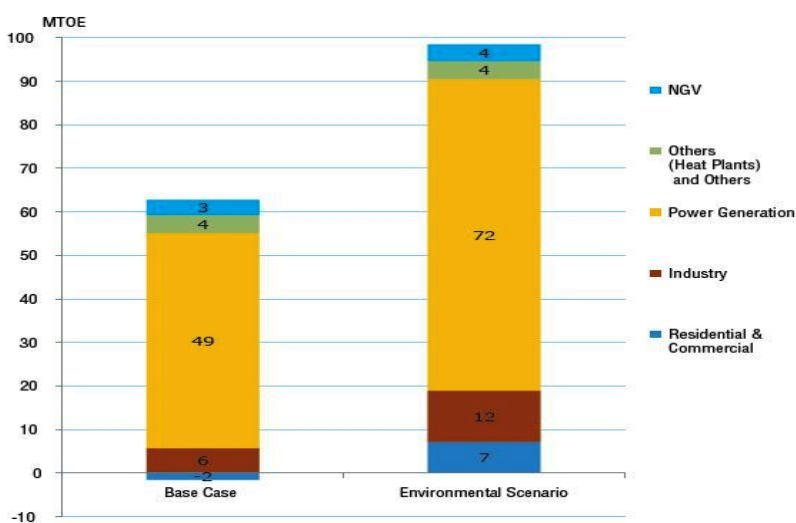
6.3.3 Power Generation

In contrast to the two last sectors, the role of natural gas in power generation plants has ascended dramatically since 1990s and it is more obvious in UK, Italy and Spain. Currently, in EU27 one fifth of electricity generate by gas-fired power stations compare to 7.5 % in 1990.

A mixture of factors must take into account when drawing a perspective for the future consumption of gas in power generators. In this field the policies toward natural gas is tremendously heterogeneous as a result of various natural conditions, economic situations and political decisions in each of the member states. However, any development in this section not only required increase in electricity consumption, but also the energy policy of individual members specially policies toward nuclear plants regarding to nuclear disaster in Japan’s earthquake, involving of renewables in generating power and expansion of the European CO2 Emission Trading Scheme. Further, the price of gas to coal and oil as well as the cost of CO2 emission will touch the future development of the gas-fired power generations.

Figure 6.2- Increase in Gas Demand by Sector between 2007 and 2030

The Dominant Role for Gas to Power is Evident.



Source: Eurogas.org

Looking at figure 5-2, demonstrate the total demand growth in absolute terms, while eurogas forecasts the magnificent increase of gas consumption will be in power generation sector 181-203 Mtoe in 2030 from 131 Mtoe in 2007. The market share of power generation in 2007 was 30% of total gas demand in EU27 and predicted to grow up to 36-38% in 2030, this means 1.4-2% increase per annum during the mentioned period.

The major motive for employing gas for power generation is the considerable contribution to lessen CO₂ emissions at low cost. For instance, gas-fired plants release 40-50% carbon per KWh compare to conventional coal-fired generation. Combined-cycle gas turbines (CCGT) could be an environmentally attractive alternative while renewables are under development to a commercial scale, as well CCGTs are quick and moderately economical to build. As a result, natural gas is an ideal fuel for future to reduce CO₂ emissions and fulfill energy policies toward sustainability through power generation plants.

At the end, it worth to mention Natural Gas Vehicles (NGV) in EU27 count to be around 780000 vehicles (NGVA Europe statistics - June 2009) and consume 1 Mtoe of natural gas. However, if right environmental policies and sufficient supports implemented from EU member states there is a possibility of progressive demand to five times more in this portion of market.

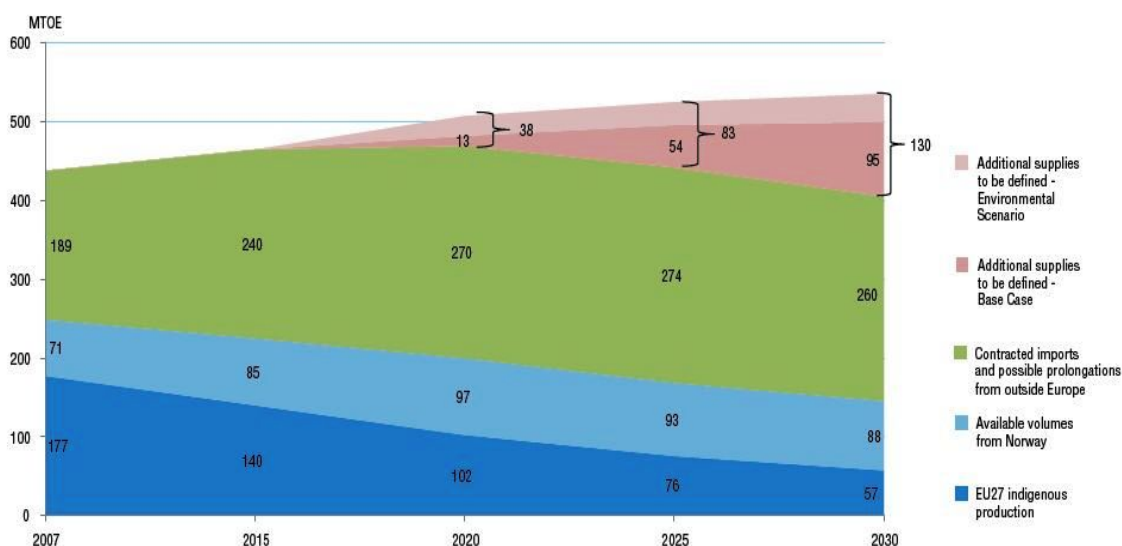
6.4. EU Supply Outlook

Decrease in gas demand after 2008 crisis in EU has made happened the current saturate in the European market. Further, the economics of scale and employing new technologies in shale gas production in USA has changed the world gas market balance as well. Before shale gas boom predictions indicated a deficit in the US gas market for the coming years in supply part and the only solution to overcome to this shortage seemed to be new investment in LNG liquefaction plants. However, growth in shale gas production contributed to fill the shortage in the USA and some part of this surplus in LNG supply entered the Europe and overloaded the EU's gas market. Excessive volumes of spot gas in European hubs created extraordinary peaks of liquidity and low prices, and a few years required before gas demand and supply balance comes to equilibrium in

the gas market. Nevertheless, market analysts do not believe current overload supply in gas market will continue very long so a reactive policy should take for securing gas supplies.

Having another look at indigenous gas production in Europe uncovers the vivid decline in this continent. International Energy Agency in the last world energy outlook in 2010 assumed that the indigenous production in Europe together with Norway will touch its peak from 307 Bcm in 2008 to 259 Bcm in 2020 and will drop to 222 Bcm in 2030. Therefore, considering the climbing gas demand and the continuous decrease in Europe’s production; the present contracted gas supplies cannot fulfill the shortage in the long future and new providers will be compulsory from 2015 onwards.

Figure 6.3- European Natural Gas Supply Outlook until 2030



Source: Eurogas.org

Currently, European gas production considering Norway accounts for 55% of supplies to the gas market, while EU gas market required approximately 70% of its demand imported from outside of the continent in 2030.

6.5. Import Dependency

There are plenty of natural gas reserves spread worldwide and Europe fortunately is in a geo-strategic situation to drive a benefit from this abundant deposit of gas fuel. Due to BP estimates, world proven reserves consider to be 185 Tcm with a reserve to production (R/P) ratio of more than 60 years. The geographical position as well facilitates Europe's access to different suppliers and totally enables EU to diversify its gas market. Although, Russia will remain the major supplier to Europe but Africa, Caspian region and Middle East will play an important role in the future of natural gas market in the European continent with more quantities of gas. In addition, with an optimistic view on potential shale gas production in Europe that escalates Europe's strength in supply part to some extent, however, analysts believe with the best scenario in medium and long term outlook unconventional production in EU would not reach more than 20 or 25 Mtoe per annum.

Nevertheless, the difficulty of supplies in gas market should be considered with a bigger picture of natural gas market in the world. Based on World Energy Outlook in 2010, IEA evaluate a global jump in gas demand from 3149 Bcm in 2008 up to around 4297 Bcm in 2030. This illustrates a tight international market that will intensify the competition for global natural gas reserves in the near future. In addition, financial crisis has slowdown the rate of investments in all sectors of gas chain like delay in projects, reconsideration of transportation facilities and storage.

7.1 Introduction

The European Union will remain dependent on imported hydrocarbon fuels endlessly, and for natural gas as well. (EU Energy Policy Data, SEC (2007) 12) New gas flows have to increase to substitute declined indigenous production in Europe at one hand, and to meet the expected growth of gas demand on the other hand. Regarding the strengthening of import dependency, the need for more diversified gas seems to be more critical in order to keep away from economic and political dependency. New gas pipeline routes and LNG sound to be the best options to fulfill the EU gas need plus to the traditional pipeline flows. At present three main pipelines provide Europe with more than half of its required gas: Norwegian gas supplies the UK and northwest continental Europe, Algerian gas pumps to the Iberian Peninsula and Italy, and totally Russia as the main gas supplier covers continental northern, central and southern Europe. Given the significant role of governments in the gas sector, the answer of diversification of gas market not only has geo-economic aspects, but also geopolitical essence. Development of the natural gas trade market in the different sections of the gas value chain looks for a considerable cooperation between governments. Absorbing more diversified gas flows to Europe seems to remain problematic without considering robust political and economic support from big actors in EU and member states governments as well. (Van der Linde, 2004)

7.2. New Market Structure

The new world order in altered the geopolitical and geo-economic balance of power as well and require to reconsider the situation under which fossil fuels will be exploited and traded in the coming years in general and in Europe and Asia in particular. It is expected gas can flows freely between producers and consumers in a totally liberalized market; however common strategic interests and the geopolitical balance of power will still remain important in order to control the gas investment projects and trade flows. In this case International Oil Companies (IOC) as the major agent for reaching security of supply in the international market should redefine their

strategies with host producing countries in order to access to upstream assets and with end users in consumer countries as well.

Despite the popular perception in 1990's that international oil and gas market would be liberalized from government controls like regulating market or tax collecting; however, for instance producing countries still have a tendency to keep their control over their natural resources and economic rents. On the other hand, consumer governments developed their dominance over the energy sector as well, regardless of liberalization and privatization processes. They followed some policies that bounded competitive market in order to achieve their goals like, regulating markets regarding to public interests (environment and security of supply), subsidizing new energy sources (renewables), taxing the energy sector to capture the economic rents, increasing cost of carbon emission. The short term goal of this involvement is distribution of risks and benefits via the energy resource value chain and known as security supply and security of demand policies in long term. (The Gas Supply Outlook for Europe, The Roles of Pipeline Gas and LNG, CIEP, 2008)

The description for more tight energy policies in countries can justified through the big change in international oil and gas market. For a long period production capacities were more than the growth in demand, while currently oil and gas market become much rigid with entering new players in market such as China and India. Therefore, shortage in production resulted instability in the market and diminish the flexibility of oil and gas industry. Maintenance operations, political and social instability, acts of nature and any accident in oil and gas industry would end in severe volatility in supply and market as well. (Gas for Tomorrow, Dutch Energy Council, 2005)

7.3 Member States and the Gas Market

Import dependency in a perfect gas market can interpret different compare to imperfect economy and market. Based on the level of imperfection in market, the level of interfering in market determine by government's policies. Public interests, like sustainability, environmental issues and security of supply are required to be secured through these policies in order to prevent abuse

of market powers and stabilizing market to some extent. Although, governments implement certain market policies to overcome the imperfections, however these interventions will result in new imperfection of market in another way. Besides, government’s involvement in market has an anxiety of using it for political or social reasons when the market outcomes run counter to or frustrate government’s objectives and responsibilities in other spheres.

Regardless of the types of markets, in energy sector the role of governments is crucial and goes beyond market regulating or prime owner of energy assets. Governments as the owner of the subsurface natural resources are not only responsible for delivering licenses for exploring, producing, transporting, transiting and distributing, but also could outline climate investment in a country or region which is vital in capital-intensive energy industry.

The possible incomes from various segments of energy industry like economic rents, the impact on the balance of trade (and payments) and the social and political stakes are too high for any state, whether they are producing, transiting or consuming, to leave it to the industry. Additionally, the value chains in energy are usually further than a solitary jurisdiction, which cause difficulties in selecting regulatory regime that might affect government’s revenues and fulfilling public interests harder to achieve as well. In this case, security, transit and demand may conflict and strategic political interests will come to the high agenda of decision makers. (The Gas Supply Outlook for Europe, The Roles of Pipeline Gas and LNG, CIEP, 2008)

As it assumed by the demand and supply relation in a free market, fossil fuels should be accessible to those who are willing to pay the market price. This assumption is based on the idea that there are no severe bottlenecks in the value chain that would interrupt the supply and demand equilibrium. However, in the energy sector due to some difficulties like the interval period between discovery and exploitation, the capital intensity of some parts of the value chain and the inflexibility of transportation especially for natural gas tilt the balance in the value chain in favor of imperfection market. Regarding this imperfections energy companies tended to deal with it by backward and forward integration in order to manage the risks and benefits. Besides, lack of information in various parts of the value chain and government intervention were two further inducement for this business model. These integrations made some troubles for states when company’s activates go beyond one jurisdiction into the other and companies as well have

to cope with the gas value chain find themselves in the middle of heterogeneous interests of two governments.

7.4 The EU External Energy Policy

The European began to understand the changes in the international energy market when they challenged by the active interferences of producer governments in the energy value chain. This intervention somehow was the result of insecurity of demand due to EU market design and climate policies that impacted on the producer's income. The changes in the international energy market and the importance of energy policies revealed the significant role of national states in the EU. Therefore, from one hand the EU Commission cannot make the 'handshake' contracts as far as the EU is not a state, and as well made it more difficult to come to an agreement about the EU external energy policy from the other hand.

In the new world order, energy uses as an economic, strategic and a geopolitical tool coincidentally, and producing companies employ this power in order to make the most of political and economic benefits to serve their national interests. Recognizing the important role of oil and gas as a strategic goods, implies the fact that investment and production levels will go into a direction to satisfy the producer's states (companies) interests in the first place instead of the good of the world economy.

Given the limited political and strategic role of the EU in securing the flows of fossil fuels, the EU member states followed the International Energy Agency (IEA) mechanisms on oil security and crisis. Although, collaboration in IEA was beneficial for the EU countries to leave behind the oil crisis, however the new market structure required more attempts to shore up their national and regional interests that could be 'one voice' in the EU's external energy policies. (The Gas Supply Outlook for Europe, The Roles of Pipeline Gas and LNG, CIEP, 2008)

7.5 Energy Security in the EU

While energy security in the US and China concern about security of oil supplies, but in the EU mainly focused on the flow of natural gas, undiversified EU’s gas market and the monopolized over supply and transportation by state gas companies like in Russia and Algeria. Neither the IEA have comprehensive mechanism in the field of gas, nor does the EU have a gas security policy in the case of crisis which means gas sector is more vulnerable to interruptions. Besides, many long-term supply contracts have a bilateral nature between government and company and diminish the EU’s gas security of supply position to each member state situation.

Russia is the main energy supplier to the EU member states, particularly after Soviet Union collapsed in 1991. Countries in the East of Europe had been traditionally supplied by Russian energy, but the share of Russian energy is also increasing in the EU member states energy mix as well. Near all of the gas flows from Russia have had to transport through the corridors known as Comecon countries, and result in worries about security of transit. In the EU perspective, diversification of suppliers is one way of lessen the risk of supply and transit. In addition, a supplier will be more committed to a market when significant investments have been made to reach the market. This sort of interdependency has not been concerned in the European Union discourse level to share common interests between the EU and Russia instead of concentrating on conflicts.

European member states mostly developed the problem of security in terms of their internal energy market issues instead of progressing security discourse at the EU level from geopolitical and strategic point of view. European politicians have failed to cope properly with the geopolitical and geo-economic changes and find a right position for Europe, and further the EU foreign and security policy involved in the European ambitions context rather than international context it must operate in. In the current world geopolitical circumstances, EU has to revise its policies about moving further from an economic zone toward a political and strategic organization. In this case, these questions should be addressed whether the EU could develop its external energy policies without the required changes in the EU’s organization or whether energy diplomacy could used as a means to develop the new changes for EU. (The Gas Supply Outlook for Europe, The Roles of Pipeline Gas and LNG, CIEP, 2008)

Apparently, achieving a common foreign policy in the EU seems to be difficult in the short time, remarkably in the controversial areas where national interests meet the EU’s interests. Therefore, it is unlikely to expect a consistent strategic energy policy in EU to cope with in the case of energy crisis. Even market integration could weaken policy tools when they utilized at various levels, i.e. the EU and the member states level, and totally can end up in contradictions and/or inaction. Nevertheless applying an external energy policy required some preconditions, while in the absence of them speaking for ‘one voice’ seems to be useful for public consumption, and not meant to done seriously. (Van der Linde, 2008)

Cooperating under a unique policy will lead into some problems for the EU member states in order to achieve a common energy policy, like devaluation part of the sovereignty in foreign energy policy sphere, nonexistence of comprehensive crisis procedure in the case of market failure to distribute costs and benefits over the member states.

Although reducing carbon emission is a long term policy in the sense that decrease dependency on imported gas and oil and totally help to disruption risk, however the short and medium term risks are not covered. A crisis management procedure for all member states could be a minimal short term policy to contribute to strategic external energy relations and investment strategies for companies as well. This is more critical in the gas sector while value chain goes beyond the sovereignty of the EU. Such policies would be valuable to employ within an EU framework for the reason of cost and benefit distribution and create a political buffer for the external energy policy objects. Besides, a fuel-by-fuel strategy should be avoided; and an integrated approach should be taken in that empower energy diversity among and within the member states. (Study on Energy Supply and Geopolitics, CIEP, 2004)

Eventually, this question will rise that what the EU can do to establish a basement for an integrated European energy policy. At the first step, the EU should available market with transparency on flows, in the second move European Commission provide a basis benchmark for security of supply, and finally create an evaluation mechanism for member states to review each other preparations. From the above, the EU could be delight to create an external energy policy, however the Commission has not yet made any success to persuade member states to abandon their national oriented gas policies. The lack of a crisis management policy is more vital for

smaller or follower member states, whereas large member states had secured their energy interests more effectively.

The EU should accept the present unperfected in the energy policy sphere will take quite long time to establish a coherent 'one voice' policy. The first step could be move toward transparent policies and create a basis for a crisis procedure. It is worth to mention that a low carbon economy, as the EU's long term containment policy, is achievable under an integral security of supply approaches. In other worlds, a sharp crisis mechanism is fundamental to develop an external energy policy, not the other way around. (The Gas Supply Outlook for Europe, The Roles of Pipeline Gas and LNG, CIEP, 2008)

7.6 Balancing the Internal and External policies

Despite the fact that internal gas market has developed in the EU and attempts to bring member states' gas industries under the EU jurisdiction, however with the imperfect EU gas market and remaining significant aspects of energy policy sphere in the hands of member states, it sounds difficult to reach a particular policy. As mentioned above unlike the US, gas industry and its value chain in the EU are not bounded to one jurisdiction. Thus, the EU has to consider connections with other active regulatory systems in line to balance the EU demand and international supply. This could amplify the power of companies to cope with their risks and benefits in the value chain via extending vertical integration into more than one jurisdiction. (Van der Linde, 2008)

European companies could easily integrate along the gas value chain with upstream companies and vice versa due to the economic integration policy. The default of this strategy is that when producers and consumers have common economic and energy interests it will help to maintain the good economic relations and securing additional supply and demand between them. In the case of Russia and the EU, such interdependency could see as a regulatory frame in their relationship. When substitute gas flows are not feasible to reduce gas dependency on one major supplier, integrating economic interests within the infrastructure and in markets with other upstream and downstream actors would be a good way to challenge the exposure to disruption

risk or abuse of market power. Although establishing a crisis mechanism is important to enhance member states’ levels of comfort; however, this integration policy would help to discipline the behavior of the major powers in market. (The Gas Supply Outlook for Europe, The Roles of Pipeline Gas and LNG, CIEP, 2008)

Looking at world gas market trends indicate that in the medium and long term perspective the market will be tighter. In such market situation the EU have to compete with other regions for gas supplies and it means more paying more attention to external market from internal market. Currently, the internal EU market is of value in a buyers’ market along with an abundance of supplies, while a well design energy policy and low prices lie down on finding competitive supplies from outside the EU. The European market objectives will achieve, to a great extent, by price competition in the international market and not only concentrate extensively on organizing company structure. Competition policy in general and using punishment mechanisms for abuse of market powers particularly would be useful instruments to manage and maintain competitive actors in the EU market.

7.7. The Geopolitics of Security of Gas Supply

During the 1990’s dependency on imported gas had economic consequences, while currently this dependency has got a geopolitical and strategic dimensions, particularly when energy became the main concern of foreign policy among the major geopolitical actors in the globe. The active policy which China employed to secure oil and gas flows by the means of bilateral political relations with countries such as Iran, Venezuela and Sudan has worried foreign and energy policy makers in the OECD countries. The gas dispute between Russian state company, Gazprom, and Ukraine has sent a remarkable signal for the EU policy makers. While the clash apparently had commercial aspects and seemed as part of a transportation problem of energy trade relations between the states and the former Soviet Union, however some observers saw as an act of Russian regional energy power politics. The dispute wholly touched the EU-Russian relations. Concerns about the security of supplies from Russia are more focused on gas security instead of security anxiety for other commodities like imported oil.

7.7.1 Old Gas Flows, New Relations

At present Europe supply by three major gas pipelines, considering the inflexible nature of pipeline and bilateral delivery contracts, from Russia, Norway and Algeria. The external supplied balanced with indigenous production capacities, and gas diversification was achieved by mixing domestic suppliers in the EU and importing from one or two regional suppliers out of Europe. Algeria generally provide southern Europe's market with gas, Norway supplied the northwest European market and the UK, while Russia supplied both the continental northern, central and southern European market as well. During the Cold War era in 1980's, West Germany, France and Italy came to a decision to purchase more Soviet gas and take part in developing the Unified Gas System (UGS) into Europe, but American's was intensely against being import dependent on a geopolitical opponent. The US was frightened Western Europe's dependency on Russian gas would be a potential mean for accessibility of Russian oil to the world market and gasifies the economics of Comecon by supporting that alliance. Additionally, European-Soviet gas contract could empower Soviet economy and increase their capability to use gas as a political and strategic weapon to challenge the US around the world in general and in Europe in particular. The gas imports from the Soviet Union not only made a tension in the transatlantic relationship, but also demonstrated the deeply different policy of the leading countries of the Western Europe.

The dependency of the Soviet Union on gas exported income and the lack of demand for their gas in other markets decrease the possible threat to interrupt supplies and even the collapse of the Soviet Union and the following harsh economic breakdown never stopped the flows of gas to the Europe's market. However, the collapse of the Berlin Wall in the late 1980's and dissolution of the Soviet Union in the early 1990's made fundamental changes in the economic and political relations on the Eurasian continent and as well influenced energy trade and diplomacy in the region. The EU and NATO were developed into East Europe states that were part of the Council of Mutual Economical Aid (CMEA, Comecon) and Baltic Countries, which were under the Soviet Union sovereignty and CIS began to be more independent from the old power structure of the USSR. Thus after 1991, the EU, NATO, Russia and post-Soviet states had been involved in comprehending the new regional order and shaped a modern security and energy policy discourse in the EU. (Schmidt, 2006; Algieri, 2006)

Following the intense political, institutional, and economic changes these countries and organizations should redefined their new interests and policies both within and among them when political and economic interest clash. The West European member states fought back against entering new member states from Eastern part into the EU in the term of changing the EU itself and practically in the political climate. However, the Treaty of Maastricht proved they could not resist against the remarkable changes in the balance of power on the continent.

After around two decades, in the current geopolitical and regional sphere and apparent weaker transatlantic relationships, discourse about the EU constitution and new strategic partnership shape today's inter-European relations. Taking into account special relations with Russia, has seen in contrary foreign policy approaches and various future energy relations with the EU. (Tymoshenko, 2007) Although, both Belarus and Ukraine with poor fuel transition records lessened the EU's support for their future membership in the EU however, the US would not like to see these countries, nor the Caucasus' countries to be in the Russian campaign weaken the potential of the new energy corridor outside the realm of Russia and Iran as the world's two biggest gas reserves holders. The development of an energy community as a part of the EU's energy policy must increase the official control over export pipelines. Apparently, this action will provoke Russia to promote approaches to keep its traditional superior in supplies and export routes in European gas market and securing their market demand. (Halper& Clarke, 2004)

7.7.2 Competing Jurisdiction

The gas value chain not only developed within the jurisdiction of the member states, but as well indicates by some factors beyond the EU borders. The fact is that to a degree the EU control over the gas value chain risks and benefits shaped and defined by factors decided in other jurisdictions. The EU made an effort to bring at least some of the neighboring transit countries under the Energy Community Initiatives jurisdiction to facilitate controlling the Russian gas flows earlier on the value chain. Additionally, Turkey as well, as a possible transit route for the Central Asia and Middle East gas flows, was not willing to accept this model and excluding some small states, the suggestion has not reach a common acceptance beyond the border of the EU. At the same time, Russia conducted its own approach of controlling the risks and benefits of

the gas value chain by fortifying a shipment and export monopoly for gas. Besides, Russia gradually diversifying its shipment routes to the Europe’s market through the Nord and South Stream pipelines in order to reduce the insecurity of dependency on Ukraine, where 80 percent of the Russian gas destined to Europe ship throughout. Reducing the power of both Ukraine and Belarus by the means of new routes and adding extra shipment capacity in transportation system, helped Gazprom to handle its risk and benefits and improve the security of demand for Russia.

The Gazprom and the Russian government have been much more successful compare to other projects such as Nabucco in managing the interval time between plan and investment in order to take the advantage as the first mover in the market. For instance, Russian initiatives to bring the Central Asian gas to the European market through pipelines was successful to some extent, while other projects have failed to find enough gas to pump into the pipeline. Contracts with both Russia and China have made it difficult for further gas flow from Turkmenistan through Nabucco to the Europe’s market. However, Azerbaijan from the Caspian Region and Iraq from the Middle East seem more likely to flow gas to Europe through Nabucco pipeline, whereas Iran as a potential alternative source politically blocked by the US and the EU.

Both the EU and the US backed the construction of the Nabucco pipeline that could transport gas from alternative source and route to Europe and totally contribute to diversifying supplies in European gas market. Sometimes, pipeline projects initiate for the sake of strategic and political reasons, i.e. without considering employing their full capacity. In other words, it might be possible that economic considerations for the pipeline come into mind after the pipeline is in the place, and not before. However, for a project like Nabucco to be conceivable in the EU context, remarkable public and financial support required to overwhelm the business risks linked to the project. Nonetheless to this point, the EU has supported the Nabucco pipeline consortium with good will.

In order to establish a secure gas market in the EU, developments in producing, transit and competing consumer counties should be considered. Whereas other countries also involved in the every step of the gas value chain, the EU cannot change the domestic political and economic situation of potential partners, and their national companies interests could be matter as well. The EU should understand the importance of the national interests and regulatory regime other

competing and partner states make, whereas following its own strategic gas policy. At the end, the EU should continuously keep an eye on, the vibrant gas value chain, the regional market for gas and emerging of the international gas market.

8.1 Findings

The objective of this dissertation was to shed light on the European energy security of supply circumstances and explore the potential role of the Nabucco pipeline as a new route with respect to become a possible strategic supplier of natural gas to the European market.

The hydrocarbon fuels will continue to be the major source of energy for the next decades in the entire globe. Although oil will remain the most important fossil fuels, however it is expected natural gas play an important role in the world energy mix due to the new energy policies and geo-strategic benefits. Traditionally, in the hydrocarbon fuel market production highly concentrated in the Persian Gulf and the Caspian region, whereas consumer countries was situated in the Western hemisphere. However, in the last decades consumption has spread eastwards to include China and India and as well many underdeveloped countries and countries with transition economy join the club. Increasing in the globe consumption as the result of population growth and an increase in GDP levels is a signal for speeding up the process of consumption and a tight market in the coming years. Thus, the traditional energy mix has to diversify in many countries (consumers and producers) in order to preserve the world energy security.

Though, at present there is no shortage or crisis in the European natural gas supplies, but there are some issues that would be reasons for concern in the near future. One of the main concerns is dramatic reduction of indigenous gas production in Europe that means more dependency in imported gas. Estimates show by the year 2030, 81 percent of demanded gas will have to come from non-EU suppliers. Although, being dependent in essence does not imply insecurity of supply like in the case of Japan; whereas insecurity increases when there are limited numbers of suppliers and it leads to dependency and vulnerability of the European energy security.

The European Commission knows about this vulnerability and has taken policy measures like in the Green Paper on sustainable, competitive and secure energy, but the major threat is the absence of a coherent policy within the member states. Consensus between the member states is

required for formulating and implementing a long term and comprehensive energy policy. Securing Europe's energy supplies is an integrated goal of the foreign and security policy of the European Union. Consensus on energy policies cannot be achieved in the absence of a coherent approach toward foreign, security and energy policies. Nevertheless, one thing is obvious that substitute opportunities for diversifying energy supplies from other regions and routes should gravely to be considered.

A reorientation of diversifying energy imports cannot ignore the abundant reserves of natural gas in the Middle East and the Caspian region. Taking into account the changes in the international energy market, diversification in the energy policies of the European Commission, gradual increase in gas demand and reduction in indigenous gas production in the EU make the Nabucco pipeline as a considerable route for the continent. Increasing dependency and reliance on Russian, Norwegian and Algerian natural gas create a vulnerable position for the EU and make it necessary to contemplate alternative suppliers. Nabucco pipeline with connecting Europe to the world's largest reserves of oil and gas, the Caspian region and the Middle East, is a priceless opportunity for Europe to consider.

8.2. Geopolitical Conclusions

As mentioned in chapter 3 Mackinder believed Eurasian landmass is the 'heartland' and who dominate this area can control the world. He specifically noticed to a region on the Eurasian landmass that he thought has vital geo-strategic situation, i.e., the 'Pivot Area' which engages much of the post-Soviet space and part of the Middle East that is the location of many world's largest and richest natural gas deposits today.

After World War Two and Cold War, Spykman redefined and revise Mackinder's Heartland theory to adjust it to the new world order. Spykman believed, geopolitical balance of power in Eurasia directly touches the Western national security, and he wrapped up that the West was bound to confront with a strong Soviet Union on the Eurasian landmass. Spykman argued if it is critical for the Western and US policy to keep its domination in the world, they have to expand a strong navy and keep a continuous and notable presence in where he named the 'Rimland' (or

Mackinder's inner crescent and Heartland) either by means of military basements or allied governments. (Spykman, 1944)

The West tried to weaken the Soviet Union position as one of the super power and prevented their sphere of influence and expansion to neighbor areas particularly in Europe. Therefore, the non-state organizations such as the EU and NATO in the western portion of landmass employed; as well states such as Iran (before 1979 revolution as a pro-US ally under the Shah and after under Islamic regime who were against expansion of communist ideology) in the south and to the east by Japan to reduce the USSR ability to exert influence in the post-Soviet space.

Instead the USSR utilized its soft power as an energy broker particularly with respect to its rich natural gas deposits not only to keep its strategic position and influence, but as well try to control the process that they saw as US expansionism. The USSR considered Caspian region and Central Asian countries (which consist of CIS countries) as part of Mackinder's Pivot Area and Spykman's Rimland, that have anchoring role in USSR's energy policy and strategy. In order to reconstruct its former empire, Russia tries to control lost Soviet energy complex (Kazakhstan, Uzbekistan, Turkmenistan and Azerbaijan) in the new world order, since without them it can never be an energy superpower.

Bearing in mind the mentioned issues and trend in which Russia-West relationships has built up till present, the West aims to confront Russia in the energy market as follow:

- Challenge Russian dominance in the post-Soviet space (the CIS countries) and restrain its power to exert influence on Europe, in order to re-emerge for a second time as a superpower.
- To undermine Russia's energy influence by suggesting other routes of transferring natural gas from Central Asia and the Middle East via Caucasus and Turkey and also Afghanistan.

The geopolitical consequential are not necessarily to end up to a win-lose game between Russia, the US and the EU in a geopolitical race. In this geopolitical game, pipeline routes and gas flows perform a remarkable role in formulating and settling down the strength and weakness position and also bargaining power of all players who involved in the current and future of the natural gas market in international environment in general and in this region in particular.

In the continuing contest of controlling Russia, rival actors (US and some of the EU states) pursue a strategy to fragment the Rimland area to inhibit and hamper Russian influence in both regions of Central Asia and Europe. Particularly herein when natural gas flows are concerned, the idea of constructing a new pipeline from Central Asia and Caspian region for transporting the gas to Europe through Turkey can be seen as part of this strategy to decrease gas reliance on Russia and enhance European energy security. The Nabucco pipeline designed to take this twofold responsibility to deliver gas to Europe and hinder Russian exert influence from one hand, and diversify European gas supply security from the other hand.

However, there are numerous problems frustrating this strategic energy cooperation. Demand induced scarcity will mean the competition for natural gas resources in the nearby future will be fiercer. Hence, more countries will be competing for fewer resources in the EU due to the diminishing indigenous gas production in Europe. Additionally, these resources are highly concentrated resulting in power projections and coalition forming to safeguard energy supplies. Not only the rise in global demand has posed a threat on the future market, but also growing domestic energy needs in exporting countries is among the most serious impediments.

Energy geopolitics and power projections between competing powers over producing and transiting countries in the Nabucco pipeline therefore put them in a renowned position. Fed up with the unilateral international system, Western dominated institutions and continuous interferences in domestic politics, the producing governments will embark on a political course oriented towards cooperation with transiting countries. This scenario will have serious geopolitical implications for consumer countries in Europe. It shifts the geopolitical chessboard and implies that consumer countries will be vulnerable to structural scarcity induced to it by this consortium. However, Mackinder's perception of controlling the Eurasian landmass will help the West to realize its regional if not global aspirations.

8.3 Other Conclusion

The European gas market is characterized by growing uncertainty. The central substantial uncertainties is surrounding about the amount of demand for gas and the role it will play in the

future of the European energy structure. This uncertainty rose from the EU declared environmental policies and the effectiveness of their implementation on the future demand of energy in general and natural gas in particular. As a result, demand forecasts are vary from one analysis to another and this makes the situation difficult for decision makers and suppliers to plan for the coming years.

European gas market can feed by two means of supply: shipping gas through new routes of pipelines, and developing LNG regasification terminals. More than other consuming regions in the world, due to the geo-strategic location, Europe have better chance to provided by more gas supply through pipelines, where surrounded by most of the world's biggest gas reserves. Nevertheless, new pipeline supplies to the European market necessitate time-consuming process of bringing together demand from various markets to a total amount that makes such a project economically viable. In the case of Nabucco pipeline while diversification of supplies is considered as significant complement to security of supply, the sufficient demand for the high volumes of gas can bring together from the Eastern Europe states with transition economies.

If the Nabucco pipeline could be constructed and brought gas to the European market, Europe will continue to benefit lower prices than may be paid by the Asian and Pacific market. However, in such a scenario, Europe will have problems obtaining LNG, specifically in competition with Asian and Pacific market from the Middle East. Should this end in shortage in the LNG market, the demand for LNG will grow in Europe and EU price level will gradually move toward Asian prices.

It would appear conservatism to get ready for a tight world gas market in which the global clash for gas supplies is escalating, and similarly Europe is not excluding and has to be attractive for gas suppliers either pipeline or LNG. In the context of security of supply, EU can obtain its gas security objectives under long-term contract with Nabucco pipeline. In general, given the possibility of a sellers' market in the coming years, make it necessary for EU to refocus from internal market to the external market. Competition for gas is not any longer a domestic EU affair but an international matter, which should be considered in EU energy policies in terms of the gas market. The EU internal market is based on value in a buyers' market with plenty of supplies, while in future's sellers' market a sharp energy policy should cope with a competitive

gas market from outside the EU as well. Taking into account the EU's market characteristics, the EU policies should move toward:

- Following energy saving goal through various means i.e. environmental policies, taxing carbon dioxide emissions in order to avoid considerable growth in gas demand, which become tough to control and manage;
- Transparent the economic and political uncertainties around the importance of power plants sector in generating electricity and its role in the future gas mix, in order to increasing 'security of demand' for suppliers;
- Supporting fiscal terms in order to increase indigenous productions and studying about the unconventional gas resources and its production feasibility in Europe.

The EU27 should have a special attention on external policies. The EU can open a close dialogue with producing and transiting countries who will be involved in Nabucco project. This discourse will help to develop a mutual understanding and cooperation between the EU and these countries in the long-term and provide the EU with diversified supplies of gas to European market. Additionally, it could be used as an advantage in negotiations with traditional gas suppliers to Europe on the future supply contracts particularly with Russia. Understanding the objectives, concerns and policies of producing and transiting countries, and decrease where possible the barriers to entry, by means of sustainable, long-term policies rather than temporary ad hoc measures could be part of such a repositioning. Establishing a stable policy and regulatory climate for long-term contract with states involved in the Nabucco pipeline could be one of the measures that would help to surmount some of the market uncertainties currently experienced by suppliers.

Although, natural gas reserves are abundant, unlike oil; however gas market would become more and more tight and costly and totally could lead to a scenario where increasing demand exceeds the growth of available supplies. Known as the cleanest fossil fuels, natural gas would keep its important role in future energy mix, particularly in power generation. Concerns about radiation leaks after earthquake in Fukushima nuclear crisis and a drastic policy reversal, lead to plan to take all of German nuclear power plants offline by 2022. Whereas, phasing out nuclear power plants could allocate big share of new power generation to gas-firing, but this could seriously

overload the demand for gas and lead to shortage and rising prices, which would affect all gas consumers in the globe. Observing the supply-demand balance is not only the task for the market, but also governments should have a close eye on it when it could threaten their national security and interests.

8.4 Policy Recommendations

As part of this paper, some policy recommendations will be proposed that could help to enhance the possibility of achieving a coherent energy policy in the European Union.

I. The essence of a supranational institution such as the European Union is the parallel interests of the member states policy with the whole policies of the union and it could act as a barrier and lead to constrain cooperation among members. In the case of the EU, the clash in formulating a comprehensive foreign and security policy from one hand and developing a common security of supply policy from another hand could be a good example. However, an EU-wide security and foreign policy does not stand by itself and implement parallel with concerns over energy security. Thus, it would be wiser to formulate a broad and common external policy instead of dealing with these issues as separate entities.

II. Similarly to other independent countries, member states look at energy sector as strategically important and although the energy policy consequences are more widened, and issues such as security of supply remains the domain interest of national governments. As a result, it is essential to establish a common external policy with an incorporation role for energy security, which provides a regulatory framework that pledges individual member states to cooperate more collectively on major issues such as energy security. The central barrier for the EU's effectiveness is its multi-level policies and competing national interests at the same time, thus an EU energy minister position seems necessary to coordinate a coherent policy on energy supply security. A consensus approach, rather than it is now, would lead to much more coordination between the member states.

III. The liberalization process of the European gas market is still incomplete and requires more attention and investment. The European Commission should establish a more comprehensive and

clear transparent regulatory framework and persuade member states in order to speed up the liberalization development of the gas market.

IV. With the intention of the development of diplomatic relations and further understanding, advances should be considered with the supplier and transporter countries in the Nabucco pipeline in the form of a comprehensive dialogue for energy matters and common interests. While Europe is in search for substitute suppliers and given the fact that gas market is moving toward a 'seller market', a practical approach is required and the European Commission should take the first step in materializing such a discourse. It should act as a platform for developing political relations and emphasize on the mutual benefits of a bilateral strategic energy partnership. Additionally, it would wash off the mistrust and skeptical feeling among both sides.

8.5 Delimitation of this Research

It is important to notice that this paper is first and foremost concentrate on political considerations and much less on an economic analysis of the Nabucco project. Nonetheless, the author has tried to consider these two multidisciplinary areas as much as possible in order to achieve the best answer for the research question as schemed in the second chapter.

Another crucial limitation throughout this thesis has been too much reliance on secondary data that at times, as in the case of with projection scenarios, does not always ascertain to be consistent. Estimates or predictions often vary due to the institution of organization to which this data belong, and therefore any conclusion made out of such data is greatly depend on the accuracy of that data.

Focusing on the European Union as a whole body and less attention on individual member states is another limitation of this paper that should take into account. Obviously, this was intentional choice in order to illustrate a wider picture of the European energy policy and security in general, and the reader must be conscious that differences exist among individual member states. As a propose for further study, it would be interesting to take a closer look at variations among member states in the equation of the energy security and how they deal with their own policies. Apparently, realizing the differences could help to shed light on the possibility of developing a

common security and foreign policy with an integrated role for energy that would create a basic understanding of the opportunities and impediments for further energy partnership between the European Union and countries involved in the Nabucco pipeline project.

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