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M.A. Degree Dissertation

The Caspian Sea's Role in Energy Supply to China

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To My Kind Parents

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Tehran-Iran
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Abstract

Given this fact that China looks at the Caspian Sea's energy as a resource for diversify its energy supply, the present study will attempt to discus about the role of Caspian Sea in energy supply to China. While the China-Kazakh oil pipeline can be considered as a good example of energy supply to China by Caspian Sea, the dissertation will focus on mentioned oil pipeline and it's geopolitical affects in the Caspian Sea region.

The present study will try to answer to following questions:

What is the role of Caspian Sea in energy supply to China?

What is the Caspian Sea situation in world energy market?

What are the geopolitical impacts of energy supply to China by Caspian?

In order to answer to the abovementioned questions, different theories regarding energy security will be analyzed and then China motivations in use of the Caspian Sea's energy will be discussed and finally the role of Caspian Sea in energy supply to China will be considered.

Chapter One: Introduction

The growth of oil and gas demand in the world market plays its own part in the development of oil and gas in the Caspian Sea .As demand for oil in the energy market is increasing, the world oil supply and energy security become important issues, which need strategic consideration in the world market. Currently, accounts for some 65% of the world's proven oil reserves and its importance to the west will grow, given the growing demand in the global energy and the fact that the west consumes 61% of world output.

Energy studies indicate that demand is constantly growing in Asian markets. The *World Energy Outlook* reports that China and other developing countries will be the source of two-third of the increase in energy demand over the period 1995-2020. So the Caspian Sea energy can be considered as an important source to fulfil the Energy demands of the world's countries, especially some great Countries and regions such as China.

At the root of Asia's rising energy demand is China. Since the early 1990s China's trade balance in energy has sharply deteriorated, propelled by double-digit economic growth and the transition to a consumered economy. Since the early 1990s China's trade balance in energy has sharply deteriorated, propelled by its double-digit economic growth and the transition to a consumer economy. In November 1993 for the first time the country became a net importer of oil in more than a quarter of a century, and the deficit has soared ever since. This trend will no doubt affirm itself in the years to come, as China's per capita energy consumption is still only 40% of the

world average, and per capita oil consumption little more than one-sixth. Japan, by comparison, uses twenty times as much as oil per capita, and the United States thirty.

Recent estimates from the Asia-Pacific Economic Co-operation (APEC) organisation suggest that China's net external requirements would rise to over one million barrels per day by 2000 and nearly three million by 2010. By 2015, less than two decades hence, Shell China Petroleum Development estimates, and Chinese imports of more than seven million barrels per day will approach the current imports of the United States. These estimates may be disputed by some, but the pace at which China is turning into a major net importer of oil is noteworthy indeed.

The most explosive increases in demand are in the South-Eastern coastal provinces, notably Fujian and Guangdong, yet the southeast produces virtually no oil and relies heavily on imports. North-eastern oil fields like Daqing and Shengli are on the decline, but China appears to have huge reserves in the 220.000-square-mile Tarim Basin of western Xinjiang province, close to the Russian border; some experts suggest that Tarim could top Saudi Arabia's proven reserves of nearly 250 billion barrels. Yet prospecting in Tarim's desolate desert is torturous, and the oil, located in deep, small, hard-to-find pockets, is extremely difficult to extract.

Regarding to the shortage of energy resources in the world, every attempt to access to energy, has influences on the geopolitics issues in the region. Therefore, China attempts to gain the Caspian Sea's energy, can be led to emerge some regional geopolitical issues .This study will be try to examine the role of Caspian Sea in energy supply to China as an economic and political power.

1.1. Key Question

The main Question is: "*What is the Role of Caspian Sea in the energy supply to China*?" There are other questions the present study tries to answer. For example "What are the geopolitical impacts of energy supply to China by Caspian?" And also "What is China's preference to investment in the Caspian Sea region?"

1.2. Hypotheses:

"*Caspian Sea oil and gas reserves have an important role in energy supply to China."*

Regarding to the main hypothesis the alternative hypothesis can be definend as: "*Caspian Sea oil and gas reserves have not an important role in energy supply to China",* or "*There is no difference for China to access to Caspian Energy."*

1.3. Review of Literature

Fortunately, because of importance of the Caspian Sea energy reserves and also China Energy demand, we can find a lot of related information. Some related texts are:

"Energy Security in the Black Sea-Caspian Region" by: Gareth M. Winrow

This study ties to demonstrate that issues related to energy security in the Black Sea-Caspian region are complex and multifaceted. They are related to various issues of military and political security (for example, unresolved ethnic conflicts and the activities of Islamic radicals in the region) as well as issues pertaining to societal security within certain states. Technical, legal and environmental concerns also need to be considered. The role and influence of Russia as a major energy producer and energy consumer, and the possible repercussions of its control over energy transportation routes must be taken into account. Questions relating to the security of pipeline routes are also of importance.

In the longer term, the development of technologies would enable larger quantities of liquefied natural gas (LNG) to be transported by tanker at a cheaper price. This would enable LNG from states such as Egypt and Qatar to be shipped to European markets. The significance of Turkey as an energy corridor for the transportation of energy to Europe from the Black Sea-Caspian region and other regions would thus gradually diminish. But that is for the more distant future, bearing in mind that particular natural gas pipeline projects are about to be realized. In the meantime, therefore, the Black Sea-Caspian region will remain of importance for EU member states both as a source of natural gas and crude oil, and as territory through which this energy is transported in order to reach European markets.

"Caspian Energy: A viable alternative to the Persian Gulf?" by Dr Mehdi Parvizi Amineh

The study is about this subject that with the world's energy demands projected to rise rapidly over the next decades, can Central Eurasia and the Caspian Sea region become a viable alternative to the Persian Gulf as a global energy supplier? What are

the potential obstacles for the production and security of supply of the region's energy resources? This paper surveys the oil and natural gas reserves of Central Eurasia and the Caspian Sea region in the matrix of competitive forces of the post-Cold War world.

"China's Energy Future "By Robert E. Ebel

China burst onto the world oil market scene in 2004, catching oil exporters and importers alike by surprise, as oil consumption rose by 900,000 barrels per day (b/d) to 6.43 million b/d, accounting for roughly one-third of the growth in world oil consumption that year. China's demand turned out to be far in excess of what most observers had anticipated. This surprise, by pressuring available supplies, was among the key factors in pushing world oil prices to $55 per barrel, and beyond. Should it have been a surprise? Probably not. Indeed, over the 10-year period from 1994 to 2004, China accounted for 28% of the growth in world oil consumption, with lower rates characterizing the early years of that time period and higher rates the closing years.

Yet there were other factors, of equal importance, that restricted supplies. Over the years, oil exporting countries, particularly those of the Gulf, had allowed their production capacity to be run down to a point where it basically matched demand. Remaining spare capacity was largely in the hands of Saudi Arabia, and the crude oil itself was heavy; a quality that was not especially desirable. Second, oil-refining capacity worldwide had not kept up with growth in world oil demand. No new refinery had been built in the United States, for example, in the past quarter-century. In the absence of adequate refining capacity, exporters then ask why they should expand output. Indeed, some have sought guarantees of demand before making investments in new production capacity.

China has overtaken Japan and now stands as the second leading oil consumer in the world, trailing only the United States. But with position comes responsibility to provide the market with transparency and with current and reliable information. China has difficulty in responding to this requirement to the dissatisfaction of the oil market. Equally important, China must be reminded that they do not live in isolation, that very energy-related decision taken, or not taken, carries implications for the rest of the world.

''China's Energy Security: Geopolitical Implications for Asia and Beyond'' by: Mehmet Ögütçü

This study addresses energy security issues, particularly in the context of Asia's growing energy consumption and widening supply gap, with a particular reference to China, the newest player in world energy scene that will likely shape the future energy and geopolitical equations in the region. The paper elaborates on Beijing's emerging energy-security policies and the resultant energy-related links, which it has begun to establish - since its oil import dependency started in 1993 - with other key players in the Middle East, Russia, Central Asia and the Asean region, in search for some certainty of long-term supplies and reasonable protection against market volatility.

The study also looks into how this situation may impact the future geopolitics of Asia and the "Greater Middle East" – Middle East to Central Asia - with a concluding note that international co-operation and dialogue is essential in order to avoid misunderstandings, ensure multilateral supply security measures, and attract more foreign investment for large-scale energy supply and transmission projects in the region.

"Current Problems of Global Energy Security: in Light of the Caspian Sea Region's Recent Experience" by: Robert M. Cutler

This study tries to answer these questions: (1) if the energy crisis is real, then what should our future energy plans be; (2) what is the impact of energy on the world's geo-political scenario today; and (3) what policies should be considered to ensure energy security. The third of these questions is the least variable. The answer to it should not change much, whether the energy crisis is real or not, whether we recognize such a crisis or not, and regardless of energy's impact on global geo-politics. The first and second questions are far from unimportant. I have addressed them elsewhere, especially in relation to the development of energy resources of the Caspian Sea basin. However, in a short paper one has to choose, so here the third question will be at issue. Also, this approach allows previous work on the first and second questions to be brought into pragmatic and more generalized focus.

"Geopolitical Dimensions of the Main Export Pipeline in the Caspian Region" by: Tamineh Adeebfar

This book argues that the United States used a shock, which was external to the Caspian region, namely the events of September 11, in order to change the operational environment that prevented it from using its power to achieve its interest in securing energy security through the Main Export Pipeline (MEP). To demonstrate the argument, the study examines the development of Caspian pipelines in the context of the geopolitical dynamics of the region and carries out an empirical inquiry on the three pipline case studies of the Northern Route(NT),the Western Rote(WR)and the Baku-Tibilis-Ceyhan (BTC).

"Transatlantic Energy Security and the Caspian Basin: Moving Towards a Common Agenda " by:Adam N. Stulberg and Hendrik Cosijn

Once considered an impediment to stable development and a catalyst for a new "Great Game," Caspian energy may play a stabilizing role in world markets and geopolitics after all. With the West's growing dependence on hydrocarbon imports, growing tensions in the Middle East, and Moscow's emergence as a major player in 21st century energy politics, the Caspian region is poised to become a focal point for cooperation between the United States, Europe, and Russia. Policymakers in Washington, Brussels, and Moscow share a common interest in preventing the Caspian Basin from lapsing into another Persian Gulf, where windfalls in oil revenues have fueled instability and extremism. They also recognize that efforts to extract and export Caspian energy must advance regional development and stability. Thus far, however, shared interests have not yielded real transatlantic partnership on Caspian energy issues. Different strategic orientations and preferred approaches for unlocking Caspian energy threaten to mar prospects for broadening and deepening transatlantic cooperation in the region. To date, the U.S., Europe, and Russia have pursued parochial interests in the Caspian Basin without much regard for each other.

"The Energy Security Challenge faced by India and China: Recipe for Potential Conflict?" by: Satyakee Sen

India and China are two of the largest growing economies in the modern world both having maintained an almost 2 digit growth rate over the last decade. But both these countries are heavily dependent on oil and gas for their economies to grow without disruption. Unfortunately India and China are net importers of oil and gas at the present and it is only likely that their import needs would increase over the coming years. Since the rimatu suppliers of oil and gas are fixed, it is therefore likely

that India and China would run into each other, while trying to secure a stable supply of this resource. Added to the fact that the world reserves of oil and gas are first dwindling, does this mean that India and China are heading towards a potential conflict, or is it that the two Asian giants can find a mutually amicable “middle-path” that will allow them to have a fair share of the energy pie?

"*The Energy Security in Central Eurasia: the Geopolitical Implications to China’s Energy Strategy " by: Guo Xuetang*

The competition among great powers over energy resources and pathways has gotten increasingly intense in recent years, not least in Central Eurasia (CEA). This article will explore the evolution of energy security that has taken place lately and the accompanying political, economic, and even military factors that improve or impede international energy cooperation in the Caspian and Central Eurasian region. It will also make an assessment of China’s geopolitical understandings of energy security in CEA, its implications for China’s energy strategy, and the future of Central Eurasian energy geopolitics.

The mentioned resources are just an example of too many resources which can be found in the field of Caspian Sea energy and also China Energy. This study tries to have a new approach to describe energy supply to China by Caspian Region.
Actually, this study focus on geopolitical diminutions of energy supply to China and importance of Caspian Region as an energy producer in the world. I hope this try led to create an useful and new study.

1.4. Data Gathering Methods

Data gathering methods include: Secondary data that are Books and journals, statistics annuals, and Internet materials (websites, electronic texts) that are consider as main sources for data gathering.

1.5. Description of Methodology/Approach and Theoretical Issues

The present study is a descriptive analytical research. In order to evaluate the above-mentioned hypothesis, the historical developments and facts will be studied and analyzed. Reaching this target, the information will be gathered, in each part, to examine the hypothesis.

1.6. Shortcomings and Obstacles of the Subject

Access to primary data and information is restricted**.**

1.7. Key Terms

Caspian Sea, energy Supply, China

Chapter Two: Theoretical foundations

2.1. Energy Security and the Regional Security Complex Theory

The theory evaluates theoretical aspects of energy security. This chapter is based on the theoretical concept of Regional Security Complex Theory (RSCT) and there is an attempt to apply the RSCT to the energy security issues and ascertaining whether energy security should be considered as a sixth security sector together with already established military, political, economic, social and environmental security sectors or should energy security be counted as a sub or super sector to these five other sectors instead. This part introduces both the RSCT and securitization as theoretical concepts and also proceeds to applying these concepts to energy issues.

2.2. The Concept of Energy Security

Energy security as a concept is widely used in the media and in academic studies, but its definitions are vague and often limited only to the economic aspects of the phenomena. For instance the energy security defined as an attempt by energy customers to protect themselves from interruptions that could endanger supply of energy as a result of an accident, terrorism, insufficient investment in energy

infrastructure or insufficient organization of the energy markets[1]. Energy security definitions often emphasize the need to secure sufficient supply and reasonable price for energy:

"[…] conventional definition of energy security – that of securing adequate energy supplies to sustain economic performance and growth - and extends this quantitatively oriented definition, again in a fairly conventional albeit less usually discussed direction, to include prices, that is - that of securing adequate energy supplies at reasonable and

stable prices in order to sustain economic performance and growth."[2]

"[…] energy insecurity as a susceptibility to prolonged supply disruptions and price spikes."[3]

However, these definitions do not take into account the political aspects of energy security, which has been on top of the European energy agenda after the 2005-2006 gas price disputes between Ukraine and Russia. The gas conflict interrupted Russian natural gas deliveries to several EU countries and highlighted effects of growing dependency of Europe on energy imports, and in particular on Russian energy resources. The subsequent energy discourse in Europe has pointed out the danger of over dependency on one main energy supplier (Russia) for European energy security and possibility that energy could be used as a political weapon. This suggests that the concept of energy security is broader than the definitions limited to the economic dimensions of energy supply and energy price and that energy issues can involve dependency relationships, which include political aspects that can be argued as (energy) security threats.

Since the energy producers have comparable over dependency threat perceptions on only few energy customers or energy markets (such as the Russian dependency on European energy market), regional energy security cannot be approached only from the point of view of energy importing countries.Therefore,

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[1] Milov, Vladimir (2005): "Global Energy Agenda". *Russia in Global Affairs*. Vol.3 No.4, October-December.

[2] Eng, Gary & Bin Haji Mohamad, Ahmad & Konishi, Shiro & Singam Rajoo, Jaya & Sinyugin, Oleg & Lin, Chung-Yang (2003): *Energy Security Initiative: Some Aspects of Oil Security*. Asia Pacific Energy Research Centre. Tokyo.

[3] Bartis, James T. & Bernstein, Mark A. & LaTourrette, Tom & Debra Knopman (2005): "In Search of Energy Security – Will New Sources and Technologies Reduce Our Vulnerability to Major Disruptions?". *RAND Review*, Fall 2005.
http://www.rand.org/publications/randreview/issues/fall2005/energy.html

energy security analysis should be able to capture and combine both economic and political aspects of energy security as well as the perspectives of both energy producers and customers.

This chapter approach to the energy security is the Regional Security Complex Theory (RSCT) introduced by Barry Buzan in "People, States & Fear"[4]. The key concept of the theory, securitization, was advanced by Buzan, Ole Wæver and Jaap de Wilde in "Security: A New Framework for Analysis". The chapter will first put forward some basic definitions of the Regional Security Complex Theory and then attempts to show how RSCT and securitization could be applied to energy security issues.

2.3. The Regional Security Complex Theory (RSCT)

Buzan and Waver have defined regional security complexes as follows:

"The central idea in RSCT is that, since most threats travel more easily over short distances than long ones, security interdependence is normally into regionally based clusters: security complexes. […] Process of securitization and thus the degree of security interdependence are more intense between actors inside such complexes than they are between actors inside the complex and outside of it."[5]

In other words, the regional security complexes can be seen as a group of security dilemmas concentrated into certain geographical area, where essential threat perceptions by states (or other actors) are so interlinked and create such strong security interdependence, that security of a one state cannot be easily separated from security of another. Two components with different dynamics define security complexes. Distribution of power between the states in specific geographical area and historical *amity* and *enmity* patterns of these states.

2.4. The Energy Security Complex

[4] Buzan, Barry (1991): People, States and Fear: An Agenda for International Security Studies in the Post-Cold War Era.Second Edition. Harvester Wheatsheaf. Hertfordshire.

[5] Buzan, Barry & Wæver, Ole (2003): *Regions and Powers: The Structure of International Security.* Cambridge University Press. Cambridge.

Energy security complexes on the other hand could be defined as follows. The regional energy security complexes are formed by energy related interaction between two or more states in a limited geographical area, which includes an energy dependency relationship between the states involved and perception of this dependency as a threat (*securitization*). The energy interaction includes transactions such as production (export), purchasing (import) and transit of energy. Analogous to RSCT definitions by Buzan & Waver, also the threats arising from energy dependencies are usually more intense between states (or regions) in close geographical proximity. On the other hand, thousands of kilometers long oil and gas export pipelines can link states, located geographically far apart, into a same chain of energy (inter)dependency. In other instances, this direct geographical link either does not exist and or is less obvious. A good example is the US and Western European energy dependency on Persian Gulf hydrocarbon resources, in particular crude oil, which can be - at least logistically – more easily substituted by energy imports from alternative sources. In energy security complexes regional distribution of energy resources and regional energy dependencies could be regarded as parallel to the distribution of military power in political military based security complexes. This highlights an important question: are the regions and actors the same in the energy security complexes and in the more traditional political-military security complexes? In order to outline an energy security complex one needs to evaluate the relative strength of energy dependencies by measuring such factors as energy trade balance, level of (domestic) energy resources and possibilities for energy diversification. In the Eurasian context this idea can be roughly conceptualized by thinking the relative (%) energy dependency of different CIS-states on Russian gas, oil and electricity imports measured against their ability to diversify energy imports from alternative sources or increase their own domestic energy production.

However, these percentages or relative dependency figures are aggregate measures of overall energy (supply) dependency from specific exporting country; therefore these shares have to be balanced against energy mix of the individual states. For example, at first sight Finland's 100% dependency on natural gas imports from Russia would indicate strong dependency pattern resembling circumstances in Georgia and in Armenia. However, the decisive difference is that natural gas constitutes only around 11% of Finland's primary energy consumption. Therefore, there is room for analytical choice, whether one chooses to construct regional energy

security complexes based upon aggregate energy dependencies or whether it makes more sense to construct these along major energy sources (i.e. natural gas, oil, coal, electricity, renewables, hydro power or nuclear power). Analyst has to make the assessment, whether or not this is well-grounded or justified. What speaks heavily against dividing energy security complexes according to the energy sources is the fact that in the policy making process the energy security of any given state is treated as an aggregate whole. However, a powerful counter argument for analyzing the security implications of the different energy sources separately is the difference in their transportation capabilities and the structure of their markets. For example, the crude oil can be easily transported by large tankers from the other side of the world and thereby the oil market is truly global, where as the natural gas trade rests upon far less mobile gas pipelines and that is one of the reasons why there is no such thing as the global gas markets or a global gas price. Although it is technically possible to transport liquefied natural gas (LNG) over long distances by ships, for the most part the gas producers and customers alike are still lacking the expensive LNG-infrastructure to create a truly global market for natural gas.

Since the 1960's and 70's the dependency and interdependency concepts have been widely used in the Marxist oriented research on global inequality structures, north-south and centre-periphery conflicts. More over, in the mainstream IR theory interdependency has been associated with liberalist emphasis on markets (dependency) versus realist or neo-realist emphasis on political (dependency). According to Sullivan for example, the mainstream liberal arguments have advocated separation between economic and political issues, i.e. that economic activities occur in non-politicized space, where as realist regard economics subordinate to politics, because for them nations are the main actors and the power is the main objective.[6] The difference is illuminated by Benjamin Cohen, who by building upon Richard Rosecrance's distinctions has argued that in the two extremes liberalism sees states mainly as trading states seeking absolute gains and not interested what are the gains of other states, where as realism sees states mainly as territorial states, seeking gains relative to other states, i.e. gaining (better) position among the states.[7]

[6]Sullivan, Michael P. (2002): *Theories of International Relations – Transition vs. Persistence*. Palgrave Macmillian. New York / Hampshire.

[7] Cohen, Benjamin J. (1990): "Review: The Political Economy of International Trade", *International Organization*, (spring 1990), pp. 261-281.

2.5. The Energy Security Communities

The concept of security community was introduced by Karl Deutsch in the late 1950's. At that time, security communities were defined as products of profound integration that created sense of community among the states which led to the expectations that conflicts within that community would be resolved in a non-violent manner. States within the security communities share core values and security cooperation between them reinforces the mutual understanding of these shared values. According to Deutsch security communities are either amalgamated or pluralistic. In the former case two sovereign units are formally integrated into united whole and in latter case sovereignty of states involved stays intact.

The energy sector, one of the most ambitious initiatives in this direction has been the Polish proposal in March 2006 for establishing the *European Energy Security Treaty* (EEST) that would have been open to the current member states of both NATO and the EU. Similar to the NATO's article 5, the EEST would have obligated the signatories to assist other treaty members if their energy security had been threatened, thereby creating an energy security pact or a sort of an energy NATO. Key practical feature of the proposed treaty was to set ceiling limits on particular (geographical) sources of energy. Proposal didn't meet much success, because it excluded Russia and because majority of the EU countries valued the Russia's energy exports over the Polish proposal.28 After all, proposal appeared as an unsuccessful attempt to utilize Norway's hydrocarbon resources for advancing the energy security of the NATO-EU Europe as a whole.

2.6. Structure of the Security Complex

Structure of the security complex can change as a result of changes in the regional balance of power or as a result of change in historical amity and enmity patterns. Four structural options available for security complex are:

1) *Status quo*, where changes in distribution of power or amity/enmity patterns have not transformed the essential structure of the security complex;

2) *Internal transformation*, where structure of the security complex changes within the existing boundaries of the complex as a result of changes in those two factors;