THE CHANGING WORLD ENERGY MARKET: EMERGING ISSUES IN ENERGY SECURITY

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DECLARATION

I declare that the dissertation entitled "**THE CHANGING WORLD ENERGY MARKET: EMERGING ISSUES IN ENERGY SECURITY**" submitted by me in partial fulfillment of the requirements for the award of the degree of **MASTER OF PHILOSOPHY** of this university is my original work. This dissertation has not been previously submitted for any other degree of this or any other University

28/7/06

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CERTIFICATE

We recommend that the dissertation may be placed before the examiners for evaluation.

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Dedicated to

My Papa, Mummy, Prof. Girijesh Pant, and Goldie

Who has been a constant source of my inspiration....

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I owe all the responsibility for any error, or irregularities that may be found in this work. None other than me should be held accountable for that.

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INTRODUCTION

An overview of the energy security debate brings forth genuine differences of policy orientation, flowing from the several paradigms, and occurring in at least three key areas. First, to what extent does the old energy security model fulfils the domestic or global energy problem. Second, how much influence does it assign to the United States as a powerful actor in the world oil market? Third, what policy instruments are available and best suited to achieve domestic and foreign policy requirements? There is no definite agreement among scholars on these questions. The responses vary depending upon the different paradigms, which is applied to examine the issue.

Whether a paradigm, or more appropriately, a personal operational code informed by a paradigm interprets the oil problem as a foreign policy or domestic issue can have important consequences for the general orientation of energy policy. If defined as international in cause and cure, then one set of national goals emerges as primary: perhaps "breaking OPEC" or restraining its international economic and political influence, forging an anti OPEC consumer alliance or developing a rapid deployment force. If, on the other hand, the oil problem is primarily domestic, other imperatives come to the fore, such as national industrial adaptation to higher prices or a program of demand restraint. Each interpretation also implies the mobilization of a specific constituency and the alienation of another.[1]

There is an absence of developed policy paradigm for energy security analysis. The work on the energy security issue is largely descriptive, atheoritical, and

[1] Ole Holsti, (1976), "Foreign Policy Formation viewed Cognitively", in Robert Axlerod, (ed,) "*Structure of Decision*, Princeton University Press, Princeton, see also Edward Mitchell, "Energy and Ideology", for a study of this issue among legislators, Washington D.C, American Enterprise Institute, Reprint No. 77, 1977

noncumulative. It is more so because unlike other areas of public policy, energy security is cognitively complex and intuitive. Energy security encompasses flows, stocks, institutions, regional and global stakeholders etc. The analyst has to familiarize himself with the social behaviour and institutions across many analytic levels, from the structure of the international oil industry to refinery overcapacity in Western Europe to the gathering and consumption of wood fuels in Africa. The mastering of technical and institutional details of one stage of one fuel, i.e. oil production or gas distribution is daunting enough. It makes energy security study a daunting job.

The rather anarchistic nature of energy literature does not automatically suggest a conceptually useful framework. It typifies a number of early efforts to analyse and present information on national energy policies, for instance, the works of Leon Lindeberg and Kenneth Stunkel. Such studies gives the reader a sense of the national responses to the energy crisis, but does not provide any help in a comparative study of energy security politics associated with energy security issues. Collection unfortunately is not a substitute for genuine comparisons. As it sometimes occurs that, the analyst is left with a tale told by many without an integrating perspective. Only country case studies poses grave difficulties for the researchers in drawing a whole picture, especially in the context of international constraints in which the decision makers takes a particular decision. Even for the area specialists lack of a synthetic and integrated framework presents problems.

Volumes of country studies may miss important dynamics within which the energy market operates. An understanding of the international context along with domestic politics is equally important. Unfortunately the available limited literature in the energy security debate are more interested in purveying the latest runs of forecasting models than in synthesizing theoretical insights. However, this is not to dismiss the formal modeling as irrelevant. Synthetic social science essays may do little to help companies on returns of capital investments, but attempts should be made at conceptual clarity and a search for a better theory. What is

needed in the literature is a greater sense of the structure and dynamic of the changing context of world energy market and new putative or alternative order that seeks to replace the old world energy arrange. For instance in the context of OPEC nations during 1970s, pushed by sovereign political power in OPEC nations, important elements of the old markets were forcefully changed during the 1970s. a process of politicization occurred that challenged the basic market rules.[2]

Economic and political variables in the world energy market are intrinsically related to each other. Oil transactions often occur within a context of politicized market and economies. The transactions in energy is never conducted in totally "free markets", guided solely by forces of supply and demand operating unimpeded. Rather they operate in a politicized environment. During the two extraordinary periods of 1973-74 and 1978-80, demand was high and prices quickly rose following political upheavals. It was widely discussed that, political "intervention," had supplanted the traditional functioning of demand and supply. This message came through clearly in Henry Kissinger's remark in 1974. in his "Age of Interdependence", speech to the United Nations, he declared that, "the high cost of oil is not the result of economic factors... rather it is caused by deliberate decisions to restrict production and maintain an artificial price level... what has gone up by political decisions can be reduced by political decisions".[3]

This study seeks to identify the issue of energy security in the changing context of the world energy market. The issues in energy security emerge from a set of internal and external developments of strategic, geopolitical, and economic in nature. The internal context is the process of duel integration, involving the various technological developments, enlargement of energy demand, deepening market integration, and the convergence of producer and consumer energy interest. The external context involves a changing world in which new

[2] Robert Keohane and Joseph Nye,(1973), "World Politics and the International System", in C. Fred Bergston, ed, "*The Future of the International Economic Order*", Lexington Books, Lexington, p116

[3] Henry Kissinger, A Speech before the 6th special session of the UN General Assembly, Dept. of

relationships are emerging among consumers and producer states, the Caspian region, states in Asia, Europe, and USA. These new roles are influenced to some extent by the energy security needs in the supply, demand chain, the threat of terrorism, and the ambitions and policies of the various powers. In a period of growing dependence on oil and gas and possibly under the obligation to reduce CO2 emissions over the coming decades, the rise of Asia, the technological breakthrough in upstream and downstream activities, requires an evaluation of the existing energy security apparatus and a reconsideration of possible strategies to maintain security of energy supply.

The energy market is witnessing its most significant phase in expansion. In respect of energy consumption, the role of developing countries is bound to grow, because of the increasing volumes of oil and gas that will be consumed. On the production side, the role of Persian Gulf Producers, the Caspian Sea, and Russia is set to expand due to the increase in demand of energy. In the next decade 2010-2020, it is conceivable that a major chunk of the total oil and gas flow would be directed towards Asia. an enlargement on the demand side of the production chain would not only greatly improve "energy balance" and achieve further integration of the energy market, it would also change the geopolitical constitution of the world energy market as a whole.

The present energy security architecture is a legacy of the cold war period. It was framed in a context when there was hostility between the two Super Powers. Two main dimensions along which traditional energy policy will have to be reinvented stand out in this respect. The first dimension spring from the continuing relevance of the old energy security apparatus in the changing nature of world energy market. The second issue of concern involves the question as to whether the process of structural change underway poses additional risk to security of energy supply – either as a transitional or a structural phenomena and what measures can be taken to reduce the consequences thereof.

State, *Bulletin,* 6 May 1974, pp477-83

Many countries like the US, Japan, China and India will see their oil and gas imports grow over the next decades, as is predicted. At the same time, a concentration of the world oil and as production in a few areas is expected to take place, based on current estimates of world oil and gas reserves. If the consumption and imports of oil products continue to grow, while the production of crude becomes more concentrated, the buyers market that existed in the period of cold war will not be restored and consumer countries will face a sellers market for the near future. It is clear that the consuming countries will respond to the evolving situation, adopting policies that cannot be seen in isolation from each other. Either consumer countries may engage in aggressive competition for control over energy resources, or certain degree of cooperation among consumer or producer counties may develop. In theory, diversification by source and origin will be important components of energy security policy in many countries, while energy saving will technologies will still provide opportunities to reduce dependency.

Stability in the producer countries would be critical for the oil and gas market. Therefore, socio – economic reforms in these countries will feature high on the agenda. Success however will critically depend on both domestic political processes as well as on the international political and economic space that is available to realize these reforms. Seen within this perspective, there can be no disagreement to underscore consumers' security if supply, by fostering social stability in main producing countries and by securing the demand for their oil and gas. Cooperation among producers and consumer countries, taking care of their respective interests has also emerged as a major tool to minimize risk for supply crisis. Therefore, enhanced institutional cooperation between the IEA and OPEC and among individual producer and consumer counties in the International Energy Forum has emerged as a prime objective. The importance of multilateral cooperation is recognized, as illustrated by the amount and charter of the issues that are now on the political agendas in several fora.

Another issue of concern that has emerged to the consumer security of supply is the fact that many of the world's poor still lack access to modern energy sources. The availability of affordable modern energies is at the root of a process of economic and political development and, thus, key to local regional and international stability. Not only that, from the point of maintaining the security of energy supplies it is important to include the interests of the local stakeholders and the tribal people. The local tribal population should be made stakeholders in the energy supply matrix so that stability in energy supplies could be achieved.

For instance, the Central Asian region has a long tradition of ethnic conflict, rife with tribal and religious influences, leading to several of the most intractable conflicts in contemporary history. One need only look to the impact on potential pipeline projects of ethnic tensions in Nagorno - Karabakh, Chechnya and Georgia to see the significance of this all-important factor.[4]

The relation between energy supply and consumption is changing because of shifts in the boundaries between the state and the market through structural change and privatization. These developments have driven a process of internationalization in the production and consumption of energy, in the activities of the industry involved and in the investments in the energy system. This process has redefined the energy market. Today the scope of markets generally transcends the scope of national government. This asymmetry has convinced national governments in consumer and producer countries of the need for international/ or regional cooperation.

Energy security is closely related to macro and micro economic variables. Import and export of energy may have an enormous impact on the balance of payments. Subsidies, taxation, and the costs or revenues of state owned companies have a considerable influence on the state budget. Moreover, the costs of energy are an

[4] Tarry Lynn Karl, in "Robert Ebel & Rajan Menon (eds), (2000), " *Energy and Conflict in Central Asia and the Caucasus*", Oxford and Lanham, MD: Rowman & Littlefield Publishers,p479

important factor in the rate of inflation and in the international competitive position of a country's economy. The fact that the supply and consumption of, for instance oil products are part of the overall supply and consumption of energy in an economy and that, to some degree, various types of energy fuels can be substituted for each other, implies that security of supply policy has to be considered in the context of overall energy security policy.

OUTLINE OF THE STUDY

In Chapter I, "Global Energy Security Order: Deconstructing the Security Debate", an attempt has been made to assess the present global energy security apparatus, various stakeholders that are involved in the energy trade, their purposes, strategic interests, energy policy that various actors follow to ensure security of energy supply, the historical legacy behind such policies. It attempts to locate the debate of energy security in to the theoretical framework of Post Structuralism and Post modernism. "Foucault" assertion of Knowledge is power, Power is Productive, and it is a means to achieve and maintain the existing power relations finds mention here.

While de-constructionism and post modernity is highly contested concepts. The word Deconstructionism is used here in Derridian sense, i.e. the act of knowledge largely is a construction. The language that is used to convey that knowledge is governed by power motives. Words do not convey any meaning, even if they do, that meaning is contextual and varies from reader to reader. It holds that there are no words or languages, - only interpretations.

Energy security concept emerged in a specific spatio- temporal context. It was witnessed by competition, post war Power bloc rivalry, National Security and the fear of war. Under such condition, energy became increasingly associated with security. It became an important component of military and foreign policy. The

"energy" which was not a security concept in itself emerged as one, under the play of above-mentioned historical forces. Hence, an attempt has been made to "Deconstruct" the energy security debate, and examine the real motives and considerations that came into play behind its (Energy security concept) inception.

In Chapter II, "Energy: in the Changing Context", the study tries to probe various changes that are revisiting the present energy market. New producers and consumers, technological revolution in upstream and downstream activities, changes in the consumer preferences, like an increasing inclination towards the natural gas, the impact of Globalisation on the energy market, the changing nature of energy security, wherein energy security is identified with more and more producer and consumer convergence of interests, has been discussed. The pattern of energy supply shows an upward trend, along with it the pattern of energy consumption is also surging high.

In July 2003, world oil production was 78.3 million barrels a day, an increase of 8.6 million barrels since 1992. The IEA World Energy Outlook 2002 predicts oil supply to grow to 88.8 million barrels per day in 2010, 104 mb/d in 2020, and 120 mb/d in 2030. The share of OPEC in world oil production is auspicated to increase from 38.4% in 2000 to 54.1% in 2030. The share of the Middle East OPEC member states, which was 28.1% in 2000, is boded to increase to 29.8% in 2010, 36.4% in 2020, and 42.9% in 2030. The Persian Gulf countries are anticipated to produce 51.4 mb/d of oil, while the remainders of the OPEC countries are predicted to produce 13.5 mb/d in 2030. Hence, the world energy market is changing fast.

The evolving geopolitics in energy market is witnessed by the rise of Asia, especially China, India, Japan. Another development in the evolving geopolitics is the resurgence of Russia, followed by the subsequent challenge to US hegemony in the region. The India, China, and Russia axis has important implications not only for the USA, but also for the entire geopolitical space of the international

energy market. The terrorist threat, which became more pronounced Post 9 / 11, is also significantly influencing the international energy market. Security of vital energy installations has emerged as a major concern before the energy exporting and importing countries. The energy market today, is not what it was a decade ago, it has changed drastically. Hence, the Chapter tries to locate "Energy" in the changed circumstances revisiting the world energy market.

In Chapter III, "Securing Energy Infrastructure: Issues before Energy Security Infrastructure", it has been attempted, not only to present the importance of energy infrastructure, but to revisit the issues before the energy security infrastructure, which has emerged as a critical factor in the energy market today. Especially in the context of increased threat of supply disruption and terrorist activities, it has become quiet important for the consumer states to secure their energy infrastructure in such a way which shall easily withstand destability and meet the existing domestic energy demand. The changing nature of energy security has brought forth the issues of energy security infrastructure in debate. The rising demand, identified with sustainable and adequate supply of oil with minimal supply disruption, the threat of terrorism, market instability, rising oil prices etc has emerged as a major issue in the energy security debate. Hence, the energy security infrastructure is identified as an important element in the oil market today. Therefore, the chapter tires to revisit the debate regarding energy security infrastructure.

Chapter IV, "Redefining the Energy Security Framework," includes the changing definition of energy security and redefines the energy security in the light of current developments. The old energy security apparatus has been constructed during the cold war period, in an environment of hostility and rivalry between the two Super Powers. Consequently, energy security policy was militaristic and operated to check the growing power of the rival nations. It was woven around hostility and deterrence of the cold war period. However, after the end of cold war and the disintegration of Soviet Union there were concerns regarding the

continuing relevance of the old energy security apparatus in the changed circumstance? In other words, the changing time and space of the energy market entails a relook and calls for a redefinition of the old energy security doctrine. The chapter has tried to include these concerns and attempted to redefine the energy security framework in the changing context.

The onset of Globalisation, introduction of new technologies, emerging markets in Asia and other countries, soaring oil prices etc. foretells that, the energy market is not the same, as what it was, a decade ago. It is revisited with certain new developments, which has totally transformed its nature of functioning. In a context when, the fundamentals of oil market are changing fast, and the international energy market is confronted with new reality. The old energy security framework may not hold relevance. In addition, may not be applicable in the changing energy space today. Therefore, there is a need to redefine the energy security framework in the light of new market fundamentals.

In Chapter, V, "Conclusion" the study summarizes the main policy lesions. It includes the main security of supply policy tool for oil and gas in relation to the above-mentioned context of changing world energy market. It briefly summarizes the risks of oil and gas supply disruptions, and the policies needed to prevent such supply disruptions. It suggests some policy recommendations especially in the light of growing energy demand of Asia.

Chapter I

DECONSTRUCTING THE GLOBAL ENERGY SECURITY

Energy has always been important for nations, but it acquired strategic dimension when it became a source of power and domination. Historically the search for energy by the British in West Asia could be the beginning of energy relations among the nations. Energy became a security concept under two conditions. *First,* the imperialist powers needed oil in order to fulfill their domestic demands. For which there was intense completion among them. Oil was important for the production of a large number of goods and commodities. Hence, securing the oil fields became important, so that a constant flow of energy could be maintained. Security of the oil fields therefore became a major foreign policy issue, the aim of which was not only to secure the sources of oil but also to sell products in the colonial states. *Secondly,* the Western powers needed oil for military purposes, - to control the colonies. This brought the then existing imperialist powers into competition/conflict with each other. The state Powers were even prepared to go for war to secure the oil fields. Energy (oil) moved to the world domain in the context of security considerations. Hence, the debate about energy actuated into to security, and eventually to energy security.

The discussions regarding oil security entered into the energy domain. According to Robert Gilpin, "An economic system does not arise spontaneously owing to the operation of an invisible hand and in the absence of the exercise of political power. Rather, every economic system rests on a particular political order."[5] Energy debate under the influence of the then prevailing "order" defined in terms

[5] Robert Gilpin, (1975), *US Power and the Multinational Corporation,* New York, Basic Publishers, p 41

of meeting domestic demand of oil and by the need to maintain colonies went ahead to become a global energy security order.

In the West Asia, "the out side powers have found their oil interests and their oil ambitions spilling over into their more general relationships with each other, thus helping a process which has made the region a centre of international tension over long period of time."[6] Oil has led to shape the alignments of these powers with each other. Early British oil interests in the Middle East reflected late nineteenth century British interests of a more general nature. "These arose out of imperial connections with India and the Far East which demanded the establishment of coaling stations and of territorial enclaves to protect both them and route ways such as the Suez Canal. As a result of these imperial developments, Britain took an earlier interest than any other outside power in the possibilities of oil from the middle east."[7] Britain owned and controlled oil for its navy and its industry. "Frênch oil interests were limited to a share of Iraqi operations and at a later period, to participation in the crude oil pipelined that was built from Iraq to the Mediterranean."[8] The most powerful state in the international system acts as the "guarantor of last resort", for the system. Further, "the operation of this system is generally viewed as a public good, providing positive benefits, stability, order, etc, to the participants."[9]

Because of both political and commercial pressure, the US secured an entry to Middle East producing areas, and although the British government managed to keep American interests clear of its most important producing and refining facilities in Persia, it was forced to allow them into Iraq and the Persian Gulf States. In Iraq the consortium, in which British and French companies retained an interest, came to be dominated by a group of US oil companies. In Kuwait, the

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[6] Peter R. Odell, July (1968), "The significance of Oil", *Journal of Contemporary History*, Vol. 3, The Middle East, p93
[7] Ibid, p93
[8] Ibid,p94
[9] Robert Keohane and Joseph Nye (1977), *Power and Interdependence*, Boston, Little Brown, Chapter 3,op. cite..

concessionary company became 50/50 British and American. Thus by "the outbreak of war in 1939 the United States had won for itself a position of virtual parity with British interests, and one potentially stronger than that of the longer standing French oil influence in the region."[10] Oil wealth provided the basis for maintenance of dominance and colonialism. There was intense competition among major powers for the sources of oil. Oil emerged as a major element of foreign policy objectives. The purpose of which was to protect and secure the sources of oil throughout the world. This led to the securitization of the energy concept. "The specific areas of international production and exchange are governed by a set of norms, mutual expectations, and procedures that shape the behaviour of actors in that area." [11]

During First and Second World War, oil proved to be important for Military purposes. It was consumed not only by heavy vehicles for transportation, but also by certain very heavy military equipments like Tanks was dependent on it. Oil became quiet crucial for military victory, and was started to be identified with national security. In other words, the real significance of the war period from 1914 from 1945 has been that, it established the security framework around oil. The two world wars militarized the notion of energy. In addition, it was assumed a strategic weapon. In this period up to 1945, the structure of oil largely remained tied around security, within the framework of national power rivalry.

The real significance of pre 1945 developments in the oil industry is that it established the security framework around the post 1945 oil industry. With the cessation of hostilities, British, French and United States oil companies rushed in to take advantage of the concession areas which they had tied up for themselves before 1945. all companies concerned participated in the rush to expand Middle East oil production and exports. The post war world was short of energy, US oil

[10] Peter R. Odell, July (1968) , "The significance of Oil", *Journal of Contemporary History*, Vol. 3, The Middle East ,p94

[11] Robert Keohane and Joseph Nye (1977), *Power and Interdependence,* Boston, Little Brown, Chapter 3,op. cite..

was in demand at home, Mexican oil was required to service the increasing demands of Mexico itself under the process of industrialization, Venezuelan production had expanded rapidly towards the end of the war but it was physically unable to meet the demands of both the Americas and Western Europe, whilst "in the Far East, in the formerly important oil exporting areas of the Dutch East Indies and Burma, the industry had been destroyed in the war. War time oil developments in the Middle East have been limited."[12] Under such conditions there was intense competition among Powers for the security of oil supply. How to ensure sufficient and constant flow of oil to the national territories was the uppermost question preoccupying the policy makers in the post war period. It was also a time when the reconstruction was going on which needed quiet vast amount of energy. Hence, energy emerged as an area of national policy backed by national defence. In other words, the post war oil shortage further helped in the evolution of energy security doctrine.

Confrontation is quite fruitful if not entirely successful. Cowhey reminds us "governments often intervene through political instruments to steer markets in directions that will promote their own national interest."[13] Furthermore, he states that, there is a close relationship between states and markets in the oil industry. Thus, the oil regime is not so much "Stateless," as it is the outcome of a compromise between states and firms according to which firms were delegated or permitted to assume the responsibility for sustaining the regime on an operational level.

The post war progress of energy market was governed by energy security considerations. There was little hesitation in investing capital in Iran, Iraq, Kuwait, Saudi Arabia etc, because of the virtual certainty of discovering new oil resources and finding an outlet in world markets. In order to secure the sources of

[12] Ibid, p95

[13] Peter Cowhey, (1985), *The Problems of Plenty: Energy Policy and International Politics*, Berkeley, University of California Press,p10

oil, the rush to invest was not limited to the development of producing facilities but was accompanied by expansion of the areas refining facilities and , more significantly, by arrangements for more effective transport facilities for crude oil to the markets of Western Europe. Investment here included expenditure on the Suez Canal to ensure its usefulness for larger tankers which were now being built as a result of war time design developments, and also on the "construction of pipelines from the producing areas of Iraq and the Gulf to Mediterranean ports in the Lebanon and Palestine – pipelines which in the period before the advent of large tankers reduced the cost of getting the oil to western Europe and hence improved the profitability of the companies concerned."[14]

Anglo- American efforts to ensure a degree of direct or indirect political control over Middle East countries were partly motivated by their desire to ensure the "rights" of their companies to explore for and develop oil. In part, it was dictated by the constant fear that Middle East might become increasingly susceptible to external political intervention by other nations. It was thought that the USSR had not only a political but also an economic interest in securing control over the Middle East oil producing countries. Observers noted the rapidly increasing demand for energy within the Soviet Union and assumed that this would require more energy than the Soviet Union would produce within its sown boundaries. From this, assumption observers predicted that the USSR would seek access to Middle East oil not on commercial terms through purchases from the producing companies, but within the framework of a political attempt to capture the growing nationalist movement in these countries. Given "the international situation at that time, the coupling of Soviet interest in Middle East oil with a more general view of Moscow's intentions in the region."[15] Contemplating this 'threat" the US and UK governments started to pursue an energy policy aimed at countering Soviet influence. Anti soviet alliances like NATO developed. It was in such background CENTO emerged. Therefore, the security concept started impinging more and

[14] Ibid,p96
[15] Ibid,pp97-98

more on the energy policy.

The Marshal plan in the post war world also securitized the energy concept. By the end of Second World War U.S, oil companies had extensive interests all over the world, and they continued to expand in the postwar period. Significantly, the markets for the oil produced by U.S oil companies overseas were almost totally outside the United States. Thus the experience of the oil industry brings most sharply into focus the impact of the world dollar shortages on U.S business. In addition to being an important branch of US overseas trade, however, oil was also a basic domestic industry. "The dual nature of the US oil industry had a determining impact on efforts to balance its interests with US national interest in European recovery."[16] Europe thus faced a serious shortage of the energy necessary for its reconstruction and economic recovery. Under such circumstances, the possibility of obtaining oil supplies from overseas seemed to offer a sure and almost immediate solution to the impending energy crises. In addition, Marshal plan exactly did that. Oil was one of the key commodities in the European Recovery Program (ERP). More that 10 percent of the total aid extended under ERP was spent on oil, more than for any other single commodity. Between April 1948 and December 1951, 56 percent of the oil supplied to the Marshal Plan countries by US companies was financed by the Economic Cooperation Administration (ECA) and its successor, the Mutual Security Agency (MSA). This aid not only helped provide Europe with the Energy it needed for recovery, it also served to maintain markets for US oil companies at a time when their potential customers would otherwise have been unable to obtain the necessary dollars. As ECA head, "Paul Hoffman explained in early 1950, the Marshall Plan countries had remained "good customers of the US petroleum industry" because of dollars furnished by ECA."[17]

Much beyond Marshal Plan, in 1962, John F. Kennedy ensured secure passage of

[6] David S. Painter, Autumn, (1984) "Oil and the Marshal Plan", *The Business History Review*, Vol. 58, No.3 P361
[7] Ibid, pp362-363

the Trade Expansion Act. Which, while outlining the broad policy of the National security aim of retaining domestic oil reserves, also tried to secure oil interest abroad. "Kennedy backed the liberal trade in oil not only on principle and economic grounds, but also because America's security depended on safety transported, reliable supplies of petroleum imports, which would help conserve US deposits."[18] He did so by adhering to the "Fair Trade", doctrine. Similar to the "Managed trade," terminology of the 1970s. "The doctrine enabled Kennedy to reduce trade barriers while aiding domestic sectors hurt by imports."[19] It aimed, through trade liberalization, and boosting American exports by funding military and aid commitments, at bolstering national security. In short, fair trade in oil helped America and its partners enjoy the mutual benefits of expanded. It extended US hegemony over global energy regime.

Origins of Marshal Plan and Kennedy trade policy lies in the import problem stemmed from the immediate post war era. With its booming industry in need of oil, America in 1948 became a net importer of petroleum for the first time since the First World War. The cold war was another catalyst for oil imports. For defense purposes, the "United States hoped to keep this vital commodity available to its allies, conserve its own deposits by importing from foreign sources with secure access routes to America, and buoy the economies of oil dependent Middle Eastern and South American nations."[20] Therefore, national security largely guided energy policy of US and other Powers, in the post war era. As David, S Painter puts:

> "National security considerations under girded Kennedy's trade programme as well as his resistance to oil import restrictions. Both Moscow and Washington viewed petroleum as a critical commodity in their economic competition, and the Soviet Union had emerged as the second ranking producer behind the United States by the time Kennedy took office. Italy had already responded to Soviet overtures by selling or bartering construction material for Eastern bloc oil. The State Department now worried about Soviet penetration in the politically unstable LDCs, many of whom turned to Russian financing for exploration and drilling

[18] Thomas W. Zeiler, Summer, (1990) "Kennedy, Oil Imports, and the Fair Trade Doctrine", *The Business History Review*,, Vol 64, No. 2, American Business Abroad, p287
[19] Ibid,p287
[20] Ibid,p289

when international oil companies refused such help".[21]

Thus, as we see, energy security concept emerged in a specific spatio- temporal context. It was witnessed by competition, post war Power bloc rivalry, National Security and the fear of war. Under such condition, energy became increasingly associated with security. It became an important component of military and foreign policy. In other words, the energy that was not a security concept in itself emerged as one, under the play of above mentioned historical forces. The notion of "security" which came to be associated with energy was a product of international developments. Various power relations worked in the construction/ evolution of this concept. It was influenced, by Super Power Bloc rivalry, expansionism.

Hence there is a need to deconstruct the 'energy security debate" and examine the real motives and purposes that led to its inception. It is a matter of surprise, that how "energy", which is basically meant for national development, emerged as a "security" concept. There is a view held in certain quarters, that, the Global energy Security order is a deliberate construct, with having certain prior foreign policy objectives. It aims at fostering a particular global order. There are several important intersections between energy, national security and the maintenance of status quo. Energy is increasingly, as the rising Asia tends to signal, from the preexisting power relationships. Already oil is freely traded around the globe- oil producers have no interest in who receives their bounty and their supplies will go to the highest bidder. Therefore, it is possible in this context, that, by floating concepts such as Energy Security, interested Powers might be trying to check the changing global order. It is important to probe as to who benefited by the continued debate? Under what conditions the debate was generated and why? Its goals and objectives. The western governments and corporations "secured most of the oil rent for themselves." "The exporting countries... felt they were manipulated and exploited. There are certain scholars who identify the set of

[21] Ibid,p291

competiting counter norms that grew up inside the body of the old regime, norms held by the peripheral subordinate states who ultimately successfully challenged the old regime. These counter norms were that, "producer countries ought to have control over their own resources."[22]

The renewed focus on energy security is driven in part by an exceedingly tight oil market and the rising oil prices, which have doubled over the past three years. It is also "fueled by war, threat of terrorism, supply disruption, economic and political instability in some exporting as well as importing nations, environmental concern, assertion of tribal land rights, a nationalist backlash, fears of a scramble for supplies, geopolitical rivalries, and countries fundamental need for energy to power their economic growth."[23]

ENERGY SECURITY: THE CONCEPT

Energy security as a concept is intrinsically linked with energy crisis. The very security concern of nation states emanates from the degree of crisis perception of it. "The Energy Crisis as a concept, according to Study on Energy Supply Security and Geopolitics Final Report January 2004, Dgtren, Etap programme study may include the following."[24]

1. *Energy crisis emanates when* demand or supplies suddenly move away from the prevailing equilibrium level, resulting in dramatic price movements with a great impact on the economy of the producer or consumer countries.

2. *Energy crisis includes-* when a disruption of supplies (because of domestic economic or political unrest in producer countries; export

[22] Hans Jacob Bull Berg and Magne Holter, (1983), *The International Oil regime- The Conceptualization of a Non Contractual Regime,* Polhodga, Norway, Fridtjof, Nansen Institite,p5

[23] Daniel Yergin, "Ensuring Energy Security", *Foreign Affairs,* March /April 2006,p69

[24] *Study On energy Supply Security and Geopolitics* final report January 2004, Dgtren, Etap,p3

restrictions or boycott and import restrictions or embargo on energy imports) and/or a sudden price increase occur, with significant (short and/or long-term) economic effects.

3. *Energy crisis occurs-* when supplies are suddenly greatly expanded and result in such a dramatic price decline that the continuity of the national energy systems (in consumer countries that rely on companies supplying the market but also in producer countries that cannot produce at such a low price or see their export and government income drop below sustainable levels) is at stake.

2. A risk to the continuity of energy supplies in consumer countries is the probability of an event affecting supply. *Exposure* is the vulnerability of a society to such a risk. Increased risk can occur as a result of: a. deliberate policy changes in producing countries or producer country organizations; b. prolonged inadequate investments levels in production, transportation and processing and distribution capacity and/or maintenance; c. macro-economic instability in producer countries; d. socio-political instability in producer countries and/or regions; e. regulatory instability in consumer countries; f. market failures and g. government failures.

5. A *geopolitical risk to the security of supply happens-* when a change or breakdown in the international economic and political order or system or a part of that system takes place (exclusivity/ discrimination, autarky, political boycott, failed states, terrorism) that results or could result in absolute or relative scarcity in energy (oil and gas) flows.

6. *Energy Security or security of supply* can be defined as the availability of energy at all times in various forms, in sufficient quantities, and at reasonable and/or affordable prices. According to the study, energy crisis is multi causal in nature, it emanates from multiple sources. However, the very threat perception of nations emanating from a particular event or development is highly subjective. It

does not apply equally to all nations, for instance, a nation might perceive a particular development as threatening, but others may not. Still, irrespective of the highly loaded terms in the above definition, like sufficient quantity, affordable prices, failed states, or failed governments, on which there may not be agreement among the nations, it amply provides an insight as to how nations perceive energy crises and the notion of energy security today.

Another school of thought defines energy security as "enjoying sufficient supplies at an acceptable cost".[25] This conception of energy security emphasizes on supply and cost side matrix. Thus, proponents of this understanding recommend "energy self-sufficiency or, at least, the diversification of supplies sources and of the energy mix, and the establishment of reserves to help face a sudden tightening of supply".[26] This approach is visible in the Japanese quest for oil in the early World War II period, the 1973 Arab producers' embargo. The 1991 invasion of Kuwait largely was also an instance of oil driven conflict.[27]Another approach which appeared during 1980s and which can be called as "liberal school of thought" on energy security puts that, "given the regular discovery of new oil deposits, the growing role of non- OPEC producers, and the development of hedging instruments such as the futures market, oil is becoming less strategic and should be considered as a normal commodity. Thus, government intervention would be desirable only in a situation of market disruption - i.e. when a given externality is not taken care of by the market structures. As such, state intervention would be legitimate only in basic regulation of the market, information gathering and diffusion, R&D and international cooperation. "Oil being a fungible product, diversification is counterproductive and energy security is better protected by the markets, so the best strategy a country can follow is to decrease barriers to trade and investments in production and limit

[25] Christian Constantine, China's Conception of Energy Security: sources and International Impacts", working Paper No. 43, March 2005, p3-4
[26] Ibid, p3-4
[27] Ibid,p3-4

its intervention."[28] This approach to energy security, heavily rely on market. It assumes that the market shall handle the energy security concern of nations quiet efficiently; any governmental intervention is uncalled for. It approves intervention only in the conditions of market failure i.e. when the market is no longer able to take care of energy needs of a nation state. While accepting the need of opening national borders for cross border energy supply, it also endorses state intervention in times of exigencies. However, the problem with this approach is that, *first*, shows an excessive faith in the market. *Second*, in the name of state intervention in times of crisis, it ends up giving more power to the external stakeholders. A fact of energy market that remains until today is that, it is determined more by external factors than internal. However, the concept of energy security is a highly complex term. It is difficult to reach at any conclusive definition. Yet simply stated, it is about investments, technical arrangements, and infrastructure. It relates with the overarching imperatives of economics, politics, and the environment. It has both domestic and foreign policy implications. It "translates into producer- consumer interdependence, where mutual vulnerability and win-win opportunity is the name of the game, short term and long term."[29] Beyond, this, it even goes to the extent of producer- producer, and consumer- consumer cooperation. The crux however, remains the same, and that is, how to safeguard and pursue energy interest efficiency, and in a cost effective manner. The notion of energy security, as has been perceived by different nations until recently, has been a product of particular time and space. It was determined by temporal and spatial nuances of the period. The role of "history" as a determining factor in the conceptualization and definition of energy security debate cannot be underestimated altogether. The perception, definition, and practice of energy foreign and domestic policy are rooted deep in the past. The energy security policy, as different stakeholders pursue it today is a continuity of that

[28] Ibid,p3-4

[29] Interview, Ambassador Walther Arne, Secretary General, Riyadh based International Energy Forum, 'Global –Producer- Consumer Energy Dialogue: the contribution of the International energy Forum", *OPEC Bulletin*, Feb 2005, p18

tradition which goes back to First World War or before. Nevertheless, owing to the recent developments that includes besides technological revolution and globalization, the emergence of new stakeholders both as consumers and as producers in the market, the old paradigm of energy security of past four decades needs a reexamination.

THEORETICAL FRAMEWORK

The study is undertaken in a framework of Postmodernism, and De-constructionism. Postmodernism usually refers to various trends expressive of a new historical phase in which the structures and assumptions of "modernity" are no longer valid. Modernity here is identified with industrialization; it is associated with the sweeping changes that took place in the society and particularly in the fields of arts and literature. Its roots going up to the enlightenment and renaissance period. "Postmodernism as a tool of social and political analysis highlights the shift away from societies structured by industrialization and class solidarity, to increasingly fragmented and pluralistic information societies (that is, to postmodernity) in which individuals are transformed from producers to consumers, and individualism replaces class, religious and ethnic loyalties".[30] According to this school of thought, "there is no such thing as certainty; the idea of absolute and universal truth must be discarded as an arrogant pretence. Emphasis is thus placed on the importance of discourse, debate, and democracy."[31] "Post structuralism deals with methodological ways in which structures and assumptions are exposed as arbitrary and as serving a particular form of domination."[32] The intellectual heritage includes, Neitchze, Michel Foucault, Jean-Francois Lyotard, Judieth Butler, Jacques Derrida, and Edward Said.

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[30] Andrew Heywood, (1997)"*Politics*", Macmillan Publishers, p61

[31] Ibid,p61

[32] Edited by Eric Stephen,Bronner, (1997), "*Twentieth Century Political theory : a reader*. Routledge New York London.,p236

According to François Lyotard the "postmodern" is an "incredulity towards meta-narratives". In his enormously influential *The Postmodern Condition,* Lyotard means by this (incredulity towards metanarratives) "skepticism toward all general claims, universal theories of history."[33] Foucault's investigation were those of "productivity of power (power relations are integral to the modern social productive apparatus, and linked to active programs for the fabricated part of the collective substance of society itself) and the constitution of subjectivity through power relations (the individual impact of power relations does not limit itself to pure repression but also comprises the intention to teach, to mould conduct, to instill forms of self awareness and identities)."[34] Foucault in his *Truth and Power* clearly delineates the construction of knowledge by particular interest group intending to either maintain or incline existing power relations in its favor. He mentions somewhere, that the "exercise of power creates and causes to emerge new objects of knowledge and accumulates new bodies of information the exercise of power perpetually creates knowledge and conversely knowledge constantly induces effects of power."[35] There is a two-way relationship between knowledge and power, power creates knowledge, and knowledge helps in the perpetuation of power. "Truth is always a social construct, however, and it thus has no anchoring or Foundation. No "epistemological" "Starting points or discursive presuppositions exist for dealing with others."[36] Judieth Butler in her well-known essay *"Contingent Foundations"* puts that the "Foundation" is always contingent and the point is to recognize it as such. "Genuine political criticism instead of treating categories as absolute of immutable, must subsequently insist on keeping them "open". Even the notion of "Women" for example hides the differences between various women."[37]

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[33] Ibid,p236

[34] Faubion D. James,ed, Michel Foucault, (1994) ,"*Power*", translated by Robert Hurley and others, Vol. Three, Penguin Press, pXIX

[35] Ibid,pVX

[36]Edited by Bronner Eric Stephen, (1997) ,"*Twentieth Century Political theory : a reader*". Routledge New York London.,p238

[37] Ibid, op cite....

Jacques Derrida as a postmodern thinker, in his *Of Grammatology,* has created a since of writing, which he calls Grammatology. He has "developed his own particular poststructuralist blend of philosophy, linguistics and literary analysis. It goes by the name of Deconstruction."[38] Derrida's central theoretical concern is with deconstruction. In deconstruction, Derrida tries to dig out the meaning of meaning. He tries to read in between the lines. The post modern thought tends to reject the idea of things having a single, basic meaning. There is no single reason, there are reasons. "Post modernity embraces fragmentation, conflict, and discontinuity in matters of history, identity, and culture. ... And it rejects the view that any *socio cultural* phenomena can be explained as the effect of one objectively existing, fundamental cause."[39] Furthermore, the sutucturalists look for the conditions, which allow texts to be meaningful, and it shares their interest in the relationships between language and thought. Derrida, in his "deconstruction theory is interested to find out how the meanings of texts can be plural and unstable than in finding them to a rigid structure."[40]

While de-constructionism and post modernity is highly contested concepts. The word Deconstructionism has been used here in Derridian sense, i.e. the act of knowledge to a greater extent is a construction. The language which is used to convey that knowledge is governed by power motives. Words do not convey any meaning, even if they do, that meaning is highly contextual and varies from reader to reader. It holds that there are no words or language only interpretations.

Edward W. Said, in *Introduction to Oreintalism,* puts that "cultures and histories, cannot be seriously understood or studied without their force, or more precisely their configurations of power, also being studied. The relationship between occident and Orient is a relationship of power, of domination, of varying degrees of complex hegemony".[41] He too emphasizes on the

[38] S.L Joshi,(2003) ,"*Modernity, Post Modernity and Neo sociological Theories*", Rawat Publications, ,p238
[39] Ibid,p328
[40] Ibid,p328
[41] Edited by Bronner Eric Stephen, (1997) ,"*Twentieth Century Political theory : a reader*",

construction of a particular knowledge to maintain or foster a particular order.

ASSUMPTIONS

Therefore, it is in the above-mentioned theoretical framework we proceed to assume that:

- *First,* the very concept of energy security as it is defined and pursued by nations today is a construct embedded in power relations in international politics. It includes what definition, why and who defines.

- *Second,* any "action" of nations in pursuance of energy policy, contains multiple objectives behind it. We assume that if a particular nation behaves in a particular way, it does so, not primarily due to one reason, rather that act is multicausal in nature, intending to achieve multiple foreign policy goals.

- *Third,* we assume that energy is not a security issue, but it has been securitized by stake with definite aims. Hence, a deconstruction of the energy security debate is called for. There can be multiple explanations to the energy security debate. The deriving meaning depends, largely on the interpretation and the interpreter. Interpretation as "finding" is also influenced by the fact that: Who is the interprets?

- *Fourth,* we assume that there is a link between the construction of a particular knowledge as foreign energy policy and power. Power configurations in international energy market play an important role in the definition of energy security. It creates energy security knowledge, and uses it for the change or to perpetuate the existing

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Routledge New YorkLondon.,p262

power structure. Power in international energy market, influences knowledge and is being influenced by it.

- *Fifth,* the energy market functions today as per certain rules and regulations, therefore the notion of who defines the game and for what purposes is equally important.

- *Sixth,* we assume that knowledge always suffers from temporal and spatial limitations. The energy knowledge which was true during 1960s may not be applicable in 2006. Therefore, there is a need to contextualize the debate in the present, highlight the limitations from which the old knowledge suffered, and explore the possibilities.

With this theoretical framework, we venture on to analyse in particular as to how some countries that are a dominant players in international energy market define and pursue energy security. How they see the politics and economics of energy security debate, and why.

THE CONSTRUCTION OF A CONCEPT

"On the eve of World War I, First Lord of the Admiralty Winston Churchill made a historic decision: to shift the power source of the British navy's ships from coal to oil. He intended to make the fleet faster than its German counterpart did. However, the switch also meant that the Royal Navy would rely not on coal from Wales but on insecure oil supplies from what was then Persia. Energy security thus became a question of national strategy. Churchill's answer? "Safety and certainty in oil," he said, "lie in variety and variety alone."[42]

Therefore, when Churchill was thinking of seeking variety, he was essentially preoccupied with security. Security of energy supply was uppermost in his mind even while shifting the energy base.. The very intention of making British ship faster than the German counterpart was nothing but a security

[42] Daniel Yergin, March /April 2006, "Ensuring Energy Security", *Foreign Affairs,* ,p69

concern. The switchover from coal to oil also meant that the Royal Navy is going to *secure* the insecure oilfields of Persia (currently Iran). The notion of Insecure Oilfields becomes important in this context. If examined with a little criticality, one can very easily find that, Churchill was thinking to secure the oil fields from other nations. As a result, two things happened. *First,* oil became an issue of *national security. Second,* since the oilfields were insecure, there was a need to secure it from other nations, so the oil fields became an issue of foreign policy concern.

Therefore in the name of what Lawrence Freedman calls *Commercial Pragmatism,* Britain went on to capture the international market, however beyond market, what Britain was looking for, was to secure the oil wells from other nations. Britain was trying to do so by increasing arms sales to the friendly nations. It helped it (Britain) in three ways; *First,* Britain was able to strike friendship with oil-bearing nations. *Second,* through arms sale Britain wanted to strengthen the internal defence of these nations, so that they can be able to meet domestic resistance and any external aggression. Lastly, the arms sale agreements made these nations dependent on Britain for repair and replacement of the existing weapons.

An estimate of British arms trade to less developed countries fully substantiate our point. Ministry of Defence indicates that British sales have grown considerably during 1970s. This trend is confirmed by the ACDA (Arms Control and Disarmament Agency) figures that show the value of British arms deliveries between the late 1960s and the mid 1970s.[43]

[43] Freedman Lawrence *International Affairs (Royal Institute of International Affairs 1944), Vo.1.54, No3(July 1978)p377-392*

Table No.1.1

MAJOR IDENTIFIED ARMS AGREEMENTS 1977- 1978

Recipient country	Approx. date of agreement	System	quantity	App rox. cost	Expec ted date
Iran	1977	Naval supply vessels	4	150	1981
do	1977	Base workshop for tanks			
do	1977	Tank transport	1000	170	-
Arab organization for industrialization	Nov 1977	Mig 21s			
Do	Dec 1977	Swing fire ATGW	-	75	-
Do	March 1978	Lynx helicopters	280	600	
do	Jan 1978	Patrolling boat	-	280	-
Saudi Arabia	Sept 1977	Support Traingair ports		900	1978-83
do	April 1978	telecommunications	-	600	1978-83
Kuwait	Mid 1977	Fast patrolling boats	10	180	-

Source: Arms Control and Disarmament Agency

"It must be recognized that energy security does not stand by itself but is lodged in the larger relations among nations and how they interact with one another."[44] The institutions and policies that were set up during that period, and

[44] Daniel Yergin, "Ensuring Energy Security", *Foreign Affairs,* March /April 2006,p op cite....

the foundation of which was laid down by Churchill was not only meant for procuring energy for self sustenance but also to essentially meet the foreign policy challenges emanating form other nations like Germany. Since oil was quiet crucial for the maintenance of Pax Britannica, it was but natural that oil would be used to sustain that order.

During the First World War period, oil moved to international relations. However, it moved to the International Security domain during the Second World War period. Here Pax Americana policies played a dominant role in doing so. The IInd world war oil experiences (oil shortage) of USA and Britain created serious concern, especially among US military professionals on the engagement with Soviet Union. The apprehension was that, if war with Soviet Union could last for three to four years, and United States did not have enough oil reserve to sustain it. The engagement with Soviet Union therefore, ipso facto included the need to secure West Asian oil fields.

This was eloquently put forward by a study prepared by the USA joint logistics committee of Defence was forwarded and approved by the Joint Chiefs of Staff it stated that,

> "In future major war of five years duration, during the period 1947 - 51 inclusive, the total United States military and civilian consumption requirements cannot be met after M+3 years by all the then current production in the United States and United states controlled foreign sources including that in the near and Middle East."

American military planners ipso facto accepted the necessity of controlling oil-producing areas of the West Asia for any engagement with USSR.

This was further magnified in the making of the Truman Doctrine and Marshal Plan, wherein the primary objective of American foreign policy was the "containment of Soviet power". Economic considerations were attached with military preparedness.

During 1950s two developments in West Asia regenerated the oil fear of West (especially British and US). First, the nationalization of Anglo-Iranian Oil Company, which was till then jointly owned by British and Iran. Moreover, which resulted in a subsequent loss of reserves to British. The second development was the nationalization of Suez Canal. In 1956, Abdul Gamal Nasser nationalized the Suez Canal, which was taken by those countries as a mortal threat to Western oil supplies especially. The evolving close ties between Nasser and Soviet Union also added to the Western fear.

By the end of 1970s USA and USSR have constructed extensive military bases in the West Asia. United States have its base in Turkey Incirlink, Izmir and command and control and intelligence at Sinop, Belbasi, Karamursel and Piriclink, Tackman I and Tackman II intelligence facilities at Iran, at Cyprus, Syria etc. Soviet Union had its bases in Egypt, Syria, South Yemen, Algeria, Libya Yugoslavia, Iraq etc.

In October 1973, USA's support to Israel triggered Arab oil embargo. The Arab exporters imposed restraint on oil production and a total ban was imposed on oil export. The oil embargo led sharp rise in oil prices, resulting shortages in the market and evoking fear among consumers. Major industrial economies suffered huge losses. US gross national production decreased by 6% between 1973 and 1975 and unemployment doubled to 9%. Therefore, some strategy was needed to diffuse the energy crisis. In Feb 1974, USA convened an energy conference in Washington that led to the formation of IEA. The basic purpose of IEA included- ensuring cooperation among industrialized nations in order to meet domestic energy demand. This was a landmark event in the creation of energy security doctrine. Daniel Yergin puts it elegantly when he says that:

> "The current energy security system was created in response to the 1973 Arab oil embargo to ensure coordination among the industrialized countries in the event of a disruption in supply, encourage collaboration on energy policies, avoid bruising scrambles for supplies, and deter any future use of an "Oil Weapon" by exporters. Its key elements are the Paris - based International Energy

> Agency(IEA), whose members are the industrialized countries, strategic stockpiles of oil, including the U.S. Strategic Petroleum Reserve, continued monitoring and analysis of energy markets and policies, and energy conservation and coordinated emergency sharing of supplies in the event of disruption. The emergency system was set up to offset major disruptions that threatened the global economy and stability, not to manage prices and the commodity cycle."[45]

The old energy security doctrine remains unequipped to handle emergencies emanating form soaring prices and commodity cycle. "Oil has become a political instrument in the hands of the major oil producing nations."[46] It is no longer a solely economic commodity; rather it has been increasingly used by producing nations to achieve non-political objectives.

> "Oil has been used to induce the United States, France, Germany, Italy, Japan, and Brazil to trade advanced weapon systems and certain technologies which have military applications to the Middle East. Oil has been used to obtain economic concessions, including assistance in building refineries, petrochemical plants, or other industries which otherwise probably would not have been granted. Oil has been used to influence the foreign policies of the industrialized and Third World nations, on the Arab/Israeli dispute and the Egyptian/Israeli peace process."[47]

Following the Iranian revolution (December 1979) and Soviet invasion of Afghanistan in 1980, President Jimmy Carter enunciated Carter Doctrine which was termed as "arc of crisis" by Brezezinski. In a state of the Union message in 1980, Carter proclaimed, "an attempt by an outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interest of United States and it will be repelled by use of any means necessary, including military force." It explicitly declared that United States would regard any Soviet threat to oil supplies of the Gulf as a legitimate cause requiring American military response, but after Soviet Union is no longer a contender the policy continues.

The end of the cold war appears to have done little, however, to diminish US interest- so forcefully expressed in the Carter doctrine - in the stability of

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[45] Ibid, op cite....

[46] "The Geopolitics of Oil," (Dec.19,1980), *"Science"*, New series, Vol. 210,No.4476p1324

[47] Ibid,p1325

Middle Eastern regimes. As the world order, changes form Bipolar to Unipolar, "US interest in the Middle East appears to focus on any unfriendly country that might try to dominate the region."[48] Therefore, US direct military involvement in the region is steadily growing.

> "Even in the post cold war era, US military and political influence continues to support the established, friendly governments of the Persian Gulf, specifically Saudi Arabia, Kuwait, the Emirates and Oman. The pace and extent of democratic reform in Kuwait and Saudi Arabia are likely to become important and delicate issues, but given a choice between maintaining the existing regimes and dealing with Iran style republics the United States would undoubtedly support the status quo. As a result, US policy may be said to have evolved from the Eisenhower doctrine (Defence against "international communism") through the Carter doctrine (defence against the Soviet Union) to what we might call the "Bush doctrine"- pledging defence assistance to oil rich conservative regimes against any force that threatens them."[49]

Going beyond the constructivist approach the Deconstructivist research in the field of International Relations has reintroduced the legitimacy of studying multiple ideas as factors of definite foreign policy choice. According to the constructivist approach the material elements or rational utility that inform political decisions cannot be interpreted without an understanding of the ideational environment which allows political actors to ascribe meanings to these elements.[50] The deconstructive approach holds that, ideational environment no doubt is important, i.e. The environment in which a particular idea takes birth as a foreign policy option, but along with what is equally important is to see, whose, how, what and why of ideas? Why a particular knowledge is born and with what purposes? Thus, from this perspective the way the whole debate of energy security was constructed somewhere informs us that there were definite power motives behind it. Beyond self-sufficiency in energy and stable supplies of oil, there was an inclination to foster a particular power equation.

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[48] Edward N. Krapels, (Jan,1993), "commanding Heights: International oil in a changed world", "*International Affairs*", *(Royal Institute of International Affairs 1944), vol.69,No1, p79*

[49] Ibid,p79

[50] Christian Constantine, (2005), "*China's conception of energy security: Sources and International Impacts*", working Paper, No.43, March

The major developments during the First World War as mentioned elsewhere brought oil to international domain. However, the cold war period that followed Second World War securitized the concept. It brought the issue of security into the energy debate. This act was not unconscious but was a deliberate attempt. By bringing Security into energy domain interested powers wanted to maintain and foster a particular power balance. It was an attempt at perpetuation and control of power. Hence, concept of Security came at handy to serve the purpose. Energy security did not become an issue in international energy order; it was made as an issue. It was an invented concept with defined motives.

It was an act of deliberate construction, which guided the debate for more than nine decades. In addition, the motive for doing so lies in Realist explanation, wherein quest for power is the guiding principle of national actors. Nevertheless, under the changed time and space, the million-dollar question remains, whether the old security doctrine can continue to serve the purpose for what it was devised. Can it hold in the changed circumstances, especially, when there has been a fast change, which goes on to globaslisation and information technology revolution?

The disintegration of the Soviet Union and its subsequent breakup in 15 independent units gave rise to very new political and strategic circumstances. Along with it the emergence of Caspian energy unfolded new dimensions in the global political economy of energy. The stage was set up for intense competition for resources among major international oil companies' consumer countries. Significantly, the old doctrine was once again enacted by what is popularly called New Great Game. Its prime objective was to take control over central Asia energy resources. It aimed to diversify supply sources and hence secure energy supply for meeting American energy needs. However, it also targeted at undermining Russian influence and controlling the Chinese inroad to this region.

Energy security was the number one topic on the agenda on the group of eight

highly industrialized countries (G-8), when they met at st. Petersburg in July. Concerns over energy security are not limited to oil. Power blackouts on both the East and West coasts of the United States, in Europe, and in Russia, as well as chronic shortages of electric power in china, India, and other developing countries, have raised worries about the reliability of electricity supply systems. When it comes to natural gas, "rising demand and constrained supplies mean that North America can no longer be self reliant, and so the United States is joining the new glob\al market in natural gas that will link countries, continents, and prices together in an unprecedented way."[51] At the same time new vulnerabilities have emerged, the threat of terrorism, political differences like the recent Russian – Ukrainian gas dispute temporarily cut supplies to Europe, the rising tension over Tehran's nuclear program brought threats from Iran, which is the second larg4est OPEC producer, to unleash oil crisis. Besides, attacks on certain vital energy installations throughout the world in Iraq, Nigeria, Sudan, Saudi Arabia etc, has raised serious concern about energy security.

In the changing geo- political environment, the understanding about energy security has also changed. Until now, the West has defined the concept of energy security. It includes the availability of sufficient supplies at affordable cost prices. However, under the new circumstances certain new actors have emerged in the energy industry, who defines energy security differently from the west. For instance, the energy exporting countries focus on maintaining the "Security of Demand" for their exports, which after all generate the overwhelming share of their government revenues. For Russia, the aim is to reassert state control over "Strategic resources", and gain primacy over the main pipelines and market channels through which it ships its hydrocarbons to international markets. The concern for developing countries is how changes in energy prices affect their balance of payments. For china and India, energy security now lies in their ability to rapidly adjust to their new dependence on global markets, which represents a major shift away from their former commitments to self-sufficiency. For Japan, it

[51] Daniel Yergin, (March /April 2006), "Ensuring Energy Security", *Foreign Affairs*, ,p70

means offsetting its stark scarcity of domestic resources through diversification, trade and investment. In Europe, the major debate centers on how to manage dependence on imported natural gas and in most countries, aside from France and Finland, whether to build new nuclear power plants and perhaps to return to (clean) coal. And the "United States must face the uncomfortable fact that its goal of "Energy independence" – a phrase that has become a mantra since it was first articulated by Richard Nixon four weeks after the 1973 embargo was put in place is increasingly at odds with reality."[52] Therefore, the prominent question is, in a context, when the goals of different actors in the energy industry is changing, when different actors define energy security differently, can the old energy security structure, which was created in an altogether different spatio and temporal environment will sustain. Whether it is possible that the definition of energy security as given by the West shall continue? The Asia, and other developing countries define the ends and means of their energy security differently, therefore, it is important that the energy security doctrine which was framed by the West shall be revisited.

The international energy industry has changed fast. There has been addition of new actors both as producers as well as consumers. China is the newest major player in the global energy system. The 1998 edition of World Outlook shows that oil, which made up 20 percent of china's final commercial energy consumption in 1996, is set to rise to almost 26 per cent by 2020, with imports at 8 million barrels a day. This makes about 400 million tones a year, more than the projected net imports of the OECD Pacific countries Japan, Korea, Australia, and New Zealand) combined. The Caspian littoral sates together hold one of the World's largest oil and gas reserves, making them very significant global players. According to Wood Mackenzie, the five Caspian littoral states including only the Caspian off shore sector of Russia and Iran have the potential to produce about 4 million barrels per day (mbbl/d) by 2014. For US, access to energy resources has always been a major strategic interest. The US is determined to secure a dominant

[52] Ibid, p70

role not only in the Persian Gulf but also within (Central Eurasia) CEA. The main challenge for US is to balance commercial and security interests, and foreign policy goals of CEA. Its major concern is to break Russia's dominant control over oil and gas resource and transport routes, and prevent Iran from gaining influence in the region.

Russia however, remains the most prominent regional player in CEA and tries to reincorporate the region into its security system. For Russia, the CIS provides the possibility of reviving the former security, political and economic Soviet order within a new political constellation. The EU imports about 90 percent of its total oil consumption, and 40 percent of gas consumption. Up to 40 percent of the EU's gas imports currently come and will continue to come from Russia. The EU candidate states have an oil dependence of 90-94 percent and a gas dependence of 60- 90 percent. OPEC represents 45 percent of current EU oil imports. During the years, West Africa's role as an oil producing and exporting region has been increasing. The vital Japanese interests conflict with Japan's Asian neighbours, China, Korea, and India, the three countries that have a vital stake in ensuring rapidly increasing energy imports. All major actors in Asia have different relationships with their Asian neighbors.

The changes in international relations during the last decades and the attacks of September 11 as a serious event in these developments had a major impact on the international energy market. It has led to the redefinition of the hitherto followed energy security policy. Globalisation which is accompanied with the relative undermining of the autonomy of the state, a shift towards supranational authorities and sideways toward non-state, transnational actors had influenced the changing context of energy security policy, Calls for a reexamination of the changing context of energy.

Chapter II

ENERGY: THE CHANGING CONTEXT OF GEOPOLITICS

The global energy space has undergone basic transformation. It has become spatially and technologically more accessible. The energy market is globalizing, consequently the parameters of security are changing. The rapid evolution of the global energy trade, supply- chain vulnerabilities, terrorism, and the integration of major new economies are some of the major advance. New developments requires newer mode of transactions. Hence, the energy market operates today in a quiet different plane than earlier. The increasing use of new Technologies in exploration and transportation activities, the growing use of Information Technology in the conduct of business etc are transforming fundamentals of energy space. The transnationalisation of venture capital, new technologies, up-to-the-minute mode of market operations, surging demands in Asia, the threat of terrorist disruption, energy diversification, emergence of new players in the international energy market, etc has added to the changing profile of energy. In this chapter, an attempt has been made to locate the "energy" in the changing context of geopolitics.

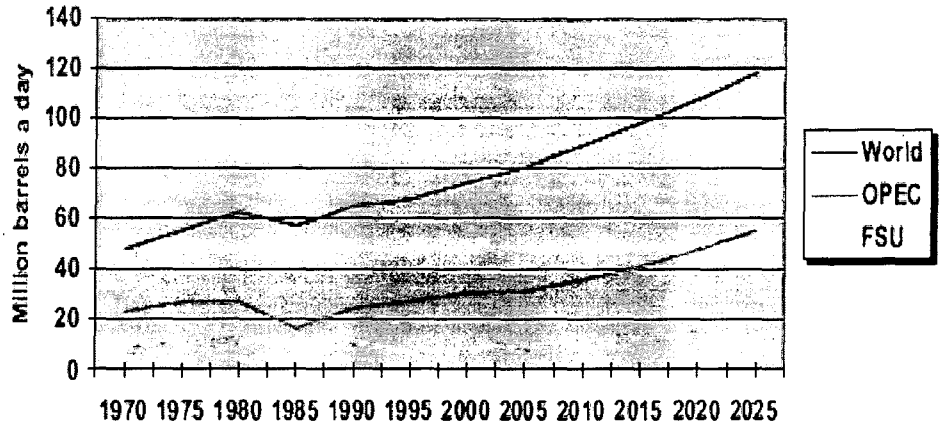
THE CHANGING GEOPOLITICS OF OIL

There has been capacity growth in oil production. "Global output has actually increased by 60 percent since 1970s, the last time the world was supposedly

running out of oil."[53] According to a study conducted by Cambridge Energy Research Associates (CERA), the "net productive capacity could increase by as much as 20 to 25 percent over the next decade."[54] The BP statistical review of world energy outlook of world oil reserve and future projections, presents the following picture.

Figure 2.1

World oil Production: Recent History and Future Projection



Source: Data from 1970 until 2000: BP, *StatisticalReview of World Energy*, June 2003. Projections from EIA's *International Energy Outlook 2003*, p. 238.

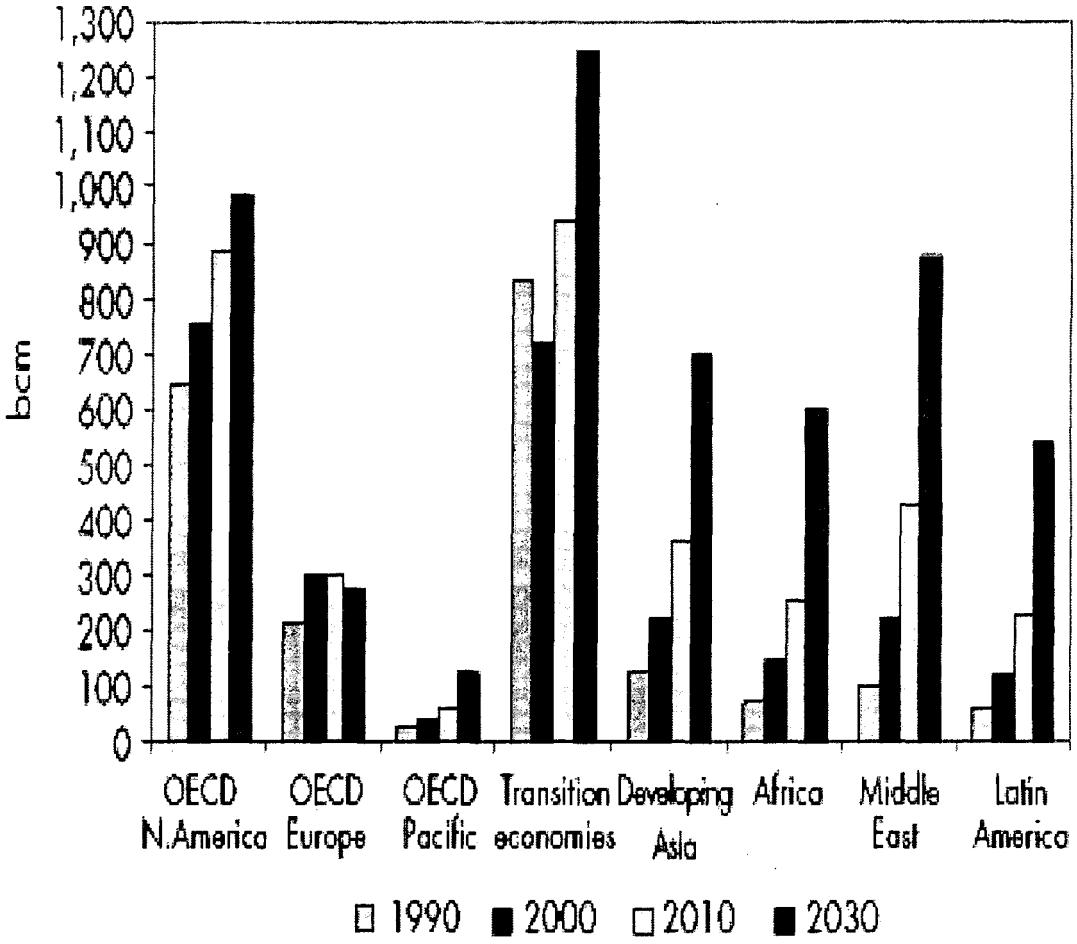
In July 2003, world oil production was 78.3 million barrels a day, an increase of 8.6 million barrels since 1992. The IEA World Energy Outlook 2002 predicts oil supply to grow to 88.8 million barrels per day in 2010, 104 mb/d in 2020, and 120 mb/d in 2030. The share of OPEC in world oil production is predicted to increase from 38.4% in 2000 to 54.1% in 2030. The share of the West Asia OPEC member states, which was 28.1% in 2000, is auspicated to increase to 29.8% in 2010, 36.4% in 2020, and 42.9% in 2030. "The Persian Gulf countries are augured to

[53] Daniel Yergin, "Ensuring Energy Security", *Foreign Affairs*, March - April 2006, vol.85 No. 2,p74

produce 51.4 mb/d of oil, while the remainder of the OPEC countries are boded to produce 13.5 mb/d in 2030. The Persian Gulf region will become an even more important supplier of the world oil market than it is today. The story of the gas market is also not very different from oil."[55]

Figure 2.2

NATURAL GAS PRODUCTION BY REGION



Source: IEA, *World Energy Outlook*, 2002, p. 115.

The share of production of North America was 30.3% in 2002, of Europe about

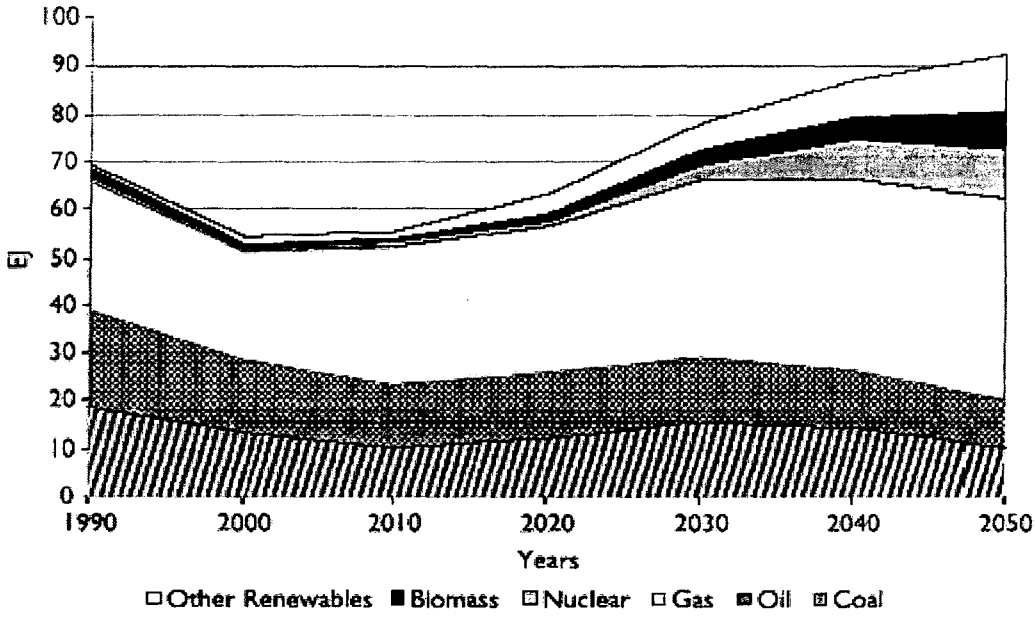
[54] Ibid,p74

[55] Study on, *Energy supply Security and Geopolitics*, Final Report, January 2004, Prepared by DGTREN,Contract Number TREN/C1-06-2002,ETAP programme 54

11.3% and Russia 22%, while the share of consumption of North America was 31.2%, of Europe 17.5% and Russia 15.3%.50 The share of production of the West Asia was about 9.3% in 2002, while the share of consumption was 8.1%. The main exporters by pipeline are: Russia (128.2 bcm), Canada (108.8 bcm), Norway (61.2 bcm), the Netherlands (42.7 bcm) and (Algeria (30.9 bcm) and the main LNG exporters are: Indonesia (34.3 bcm), Algeria (26.8 bcm), Malaysia (20.5 bcm), and Qatar (18.6 bcm). The substantial increases in gas production in Asia, Africa, the Middle East and Latin America illustrates the fact that much gas was stranded and that developments in gas demand in the region and LNG are expected to unlock these reserves. Europe is the only region where gas production is close to peaking and production will level off in the coming decades. "The dependence on imported gas has increased, and supplies from Russia, the Middle East, and North Africa have expanded substantially."[56]

Figure 2.3

World Total Primary Energy[57]



Source: Elaboration on data from SRES and IIASA

[56] Ibid,p58-59

[57] "*Energy To 2050:Scenarios for a sustainable future*", IEA, 2003, France,p133

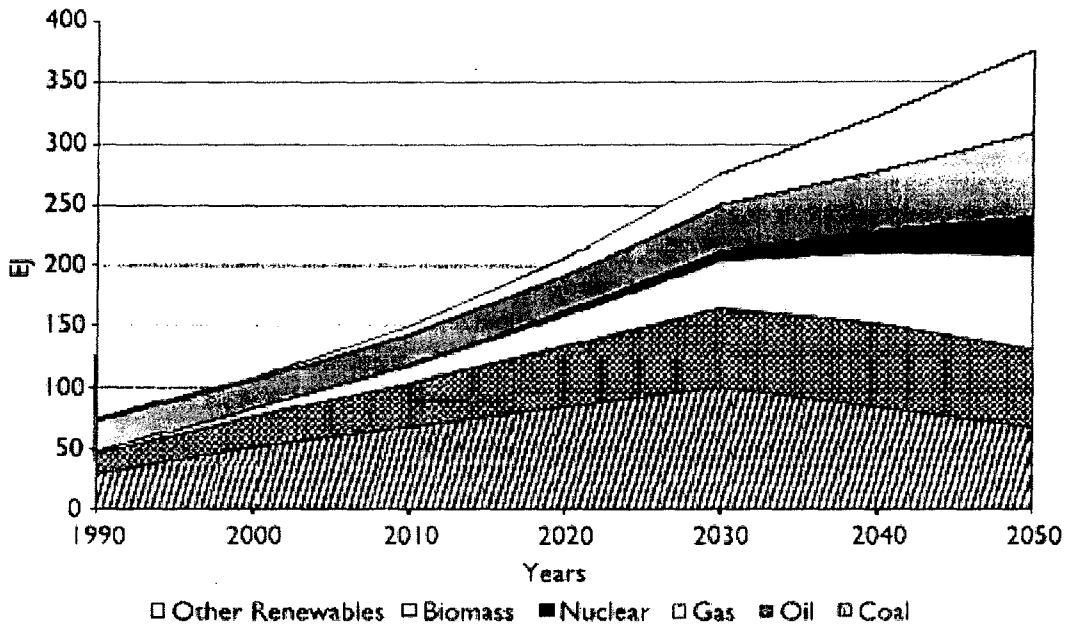
According to the above-mentioned projection, nuclear generation, which is a bit slower, would increase thirteen-fold by 2050, expanding its share more than sevenfold. Biomass energy production also shows an upward increase- nearly seven-fold, quadrupling its share, while other renewable have also increased their output. By 2050 only 16% of total energy for transport would come from oil, the rest being provided by gas (either directly or stripped of its carbon and transformed into hydrogen) and coal based fuels, by bio fuels and electricity. Reliance on abundant natural gas resources, which has grown substantially, would grow despite increasing gas exports, while oil resources are to a significant extent exported and slowly depleted. Gas is the main basis for the transition to a less carbon intensive world. However, while its use keeps increasing, its share peaks in 2010 at 53% of total primary energy and declines to 45% by 2050. Over time, increasing amounts of gas is being reformed to produce hydrogen, especially for use in the transport sector.[58]

In the rest of Asia, energy demand has grown at a steep rate following population increase and successful economic expansion. By 2050 energy, demand will have increased 247.5% with respect to 2000. Gas will also keep increasing until 2050 overtaking both oil and coal in terms of share of primary energy.

[58] Ibid,p132-135

Figure 2.4

ASIA: Total Primary Energy[59]



Source: Elaboration on data from SRES and IIASA.

The above mentioned current and future projections foretells that, there has been a tremendous change in the energy market in the past decades and the trend is set to continue in future also. However, it is difficult at this stage to project the exact trajectory of the future energy market, but basing upon the above mentioned data, one thing could be said with certainty, that is, the energy market is not the same what it was a decade earlier. The current trends and the patterns suggest that, energy market is changing fast. The said fact is substantiated further by the IEA's data as given below:

[59] Ibid,p134

Table 2.1

Yearly Growth Rates of Total Primary Energy[60]

	Historical Data*			SD Vision Scenario			
Total Primary Demand	1971-2000	1990-2000	2000-2010	2010-2020	2020-2030	2030-2040	2040-2050
Biomass	1.74	1.5	1.40	2.70	2.90	2.50	3.00
Other Renewables	3.23	3.4	5.75	6.00	4.50	5.60	4.65
Nuclear	11.5	2.5	3.55	4.50	8.00	7.00	4.00
Coal	1.70	0.7	1.10	1.37	1.41	-1.60	-2.45
Oil	1.30	1.3	0.67	0.75	0.77	0.01	-0.55
Gas	3.00	2.2	3.55	2.57	2.76	1.77	1.00

* Sources: IEA *WEO 2002*; IEA *Renewables Information 2003*.

[60] Ibid,p139

Table 2.2

Selected Indicators[61]

	2000	2010	2020	2030	2040	2050	2000-50
							Yearly % change
WORLD							
Energy intensity 10^6J/$ - PPP	12.455	11.553	9.318	7.974	6.696	5.850	-1.50
Per capita energy 10^3J/cap	68.007	72.096	79.338	92.440	102.983	116.382	1.08
Carbon intensity kg/$	206.475	185.722	141.677	112.601	80.527	57.687	-2.52
Per capita carbon t/cap	1.127	1.159	1.206	1.305	1.238	1.148	0.04
OECD90							
Energy intensity 10^6J/$ - PPP	10.466	9.970	7.805	6.824	5.852	5.288	-1.36
Per capita energy 10^3J/cap	202.176	206.388	208.101	213.649	214.374	226.094	0.22
Carbon intensity kg/$	176.699	159.904	114.446	88.286	60.398	43.832	-2.75
Per capita carbon t/cap	3.413	3.310	3.051	2.764	2.212	1.874	-1.19
REF							
Energy intensity 10^6J/$ - PPP	24.226	21.990	17.714	13.824	9.919	7.993	-2.19
Per capita energy 10^3J/cap	129.833	130.134	146.031	180.424	201.294	217.909	1.04
Carbon intensity kg/$	433.825	377.717	290.912	214.922	137.479	94.778	-3.00
Per capita carbon t/cap	2.325	2.235	2.398	2.805	2.790	2.584	0.21
ASIA							
Energy intensity 10^6J/$ - PPP	13.078	12.413	10.044	8.443	6.835	5.964	-1.56
Per capita energy 10^3J/cap	33.180	41.654	52.416	66.329	75.735	89.090	2.00
Carbon intensity kg/$	227.204	215.538	169.198	134.408	92.152	64.825	-2.48
Per capita carbon t/cap	0.576	0.723	0.883	1.056	1.021	0.968	1.04
ALM							
Energy intensity of 10^6J/$ - PPP	13.178	12.340	9.830	8.493	7.256	6.111	-1.53
Per capita energy 10^3J/cap	44.503	48.575	55.851	70.376	86.440	100.822	1.65
Carbon intensity kg/$	176.561	164.751	125.698	103.751	80.140	56.602	-2.25
Per capita carbon t/cap	0.596	0.649	0.714	0.860	0.955	0.934	0.90

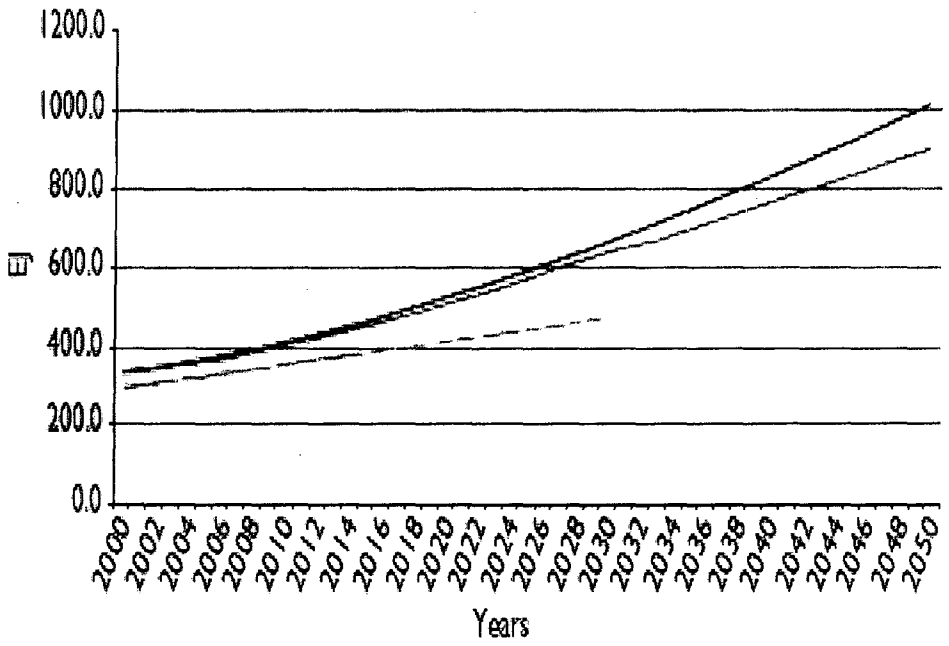
Source: author's computations based on SD Vision scenario output.

[61] Ibid,p138

The changing face of energy market becomes more evident, when seen in the altering pattern in consumption side of the energy matrix. The figure given below clearly shows a much higher trajectory with a more rapid growth. Total primary energy demand increases in aggregate terms at a rate between 2 and 2.7% over the 1990-2050 period The high growth in per capita incomes, especially in the developing world is the main driver behind this robust growth in demand.

Figure 2.5

Total Primary Energy Supply consumption[62]



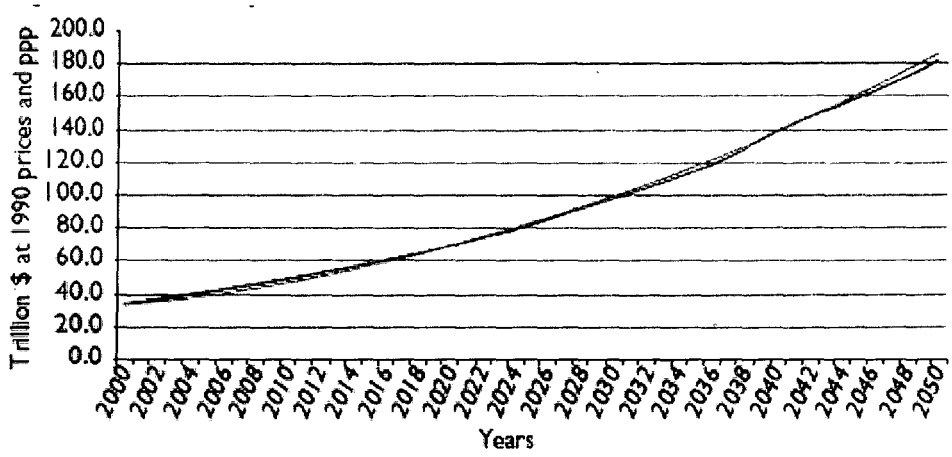
Source: Elaboration on data from SRES and IEA's WEO – 2002.

EJ: exa-Joule or 1018 Joules

[62] Ibid,p203

Figure 2.6

GDP Projections[63]



Source: Elaboration on data from SRES.

The above projections trends to suggest that, the energy market is evolving fast. The pattern of energy supply shows an upward trend, along with it the pattern of energy consumption is also surging high. Hence, we can safely assume that, the present energy market that has traveled quiet a long distance is set to grow even faster in future.

The evolving geopolitics in energy market is witnessed by the rise of Asia, especially China, India, Japan. Another development in the evolving geopolitics is the resurgence of Russia, followed by the subsequent challenge to US hegemony in the region. The India, China, and Russia axis has important implications not only for the USA, but also for the entire geopolitical space of the international energy market. The terrorist threat, which became more pronounced Post 9 / 11, is also significantly influencing the international energy market. Security of vital energy installations is a major concern before the energy exporting and importing countries. As a result the definition of energy Security has become more expanded and complex. Energy has been on the agenda of recently concluded G-8

[63] Ibid,p201

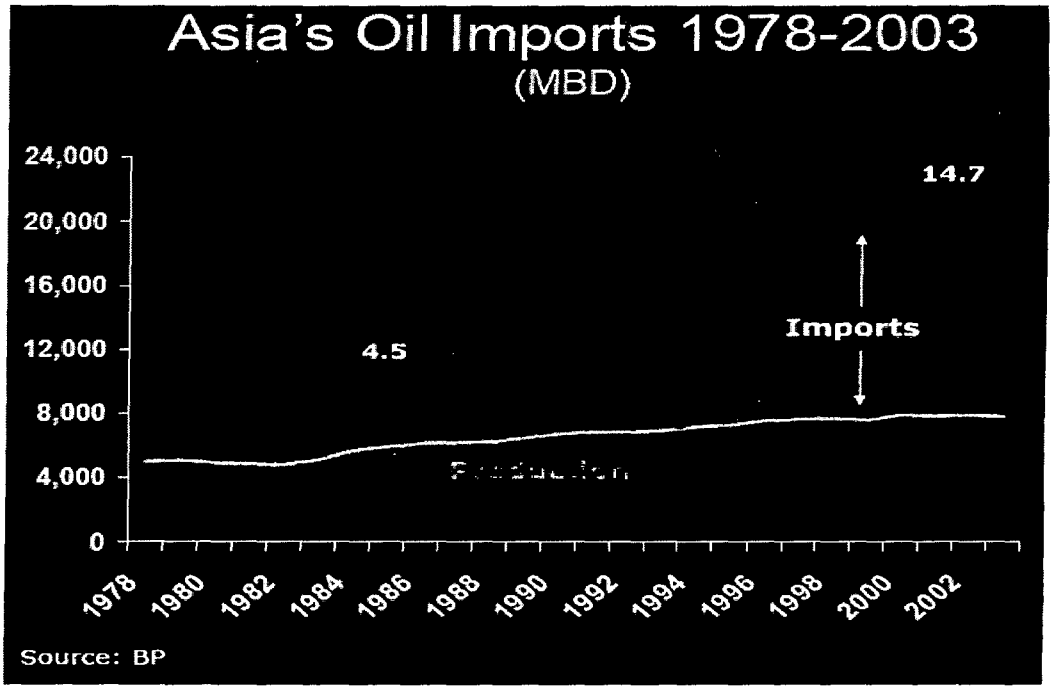
summit. It was never that, the industrialized nations have been so concerned about rising oil prices, and energy supply issue. The very mentioning of energy to of the agenda of G- 8 summit, foretells that, the energy space is not the same what it was a decade earlier. The geopolitics of the energy space has changed drastically. Economic growth, especially in the developing countries has led to a drastic increase in energy demand. There has been tremendous increase in per capita energy consumption in Asia compared with other countries.

In broad terms, oil makes up about 40 percent of Asia's energy consumption, about the same share as the rest of the world. Asia's oil demand doubled between 1985 and 2003, while oil imports tripled from 4.5 to 14.7 million barrels per day (MMBD), driven by dynamic transportation and industrial growth. By 2002, imported oil accounted for two-thirds of Asia's total oil consumption.

Much of energy is consumed within the region. By 2002 the physical volume of imports of Asia, substantially exceeded the import volume of either the United States or the European Union.[64]

[64] Ibid,p343

Figure 2.7



Source: Asia's Energy Insecurity, Mikkal E. Herberg, National Bureau of Asian Research, Tokyo Japan, Feb,23,2005

According to the above-mentioned projections, Asia's oil import dependence is likely to become even more acute. Its oil imports will rise from 13 to 31 MMBD by 2025. Asia's 18 MMBD increase exceeds today's total oil exports from the

Near 2025, it is likely that 80 percent of Asia's total oil needs will be imported, with 80 percent of imports likely coming from the Persian Gulf.[65] Natural gas in Asia accounts for only about 11 percent of energy consumption, compared to 23 percent of consumption globally. Nevertheless, gas consumption in Asia has been growing at a torrid pace over the past two decades at nearly five times the global growth rate, reflecting booming electricity demand, the rapid development of new gas supplies in the region, and marked government policy shifts in favor of gas for environmental and energy diversification reasons.[66] The gas market in Asia

[65] Ibid,p343
[66] Ibid,p344

is set to grow.

Much of the demand in Asia is coming from India and China. China is the second-largest energy consumer in the world after the United States. Its oil demand doubled between 1984 and 1995 from 1.7 to 3.4 MMBD, and has continued to grow strongly since, rising to nearly six MMBD by early 2004. China became a net importer in 1993, and by 2003, it surpassed Japan to become the world's second-largest oil consumer behind the United States and the fifth-largest importer of oil.

Over the period of time China have become heavily dependent on oil. In next fifteen years, China's demand is expected to roughly double, by 2020 China will likely import 70% of its total oil needs, compared to 40% today. China's global energy expansion has provoked a wide range of concerns among U .S. policymakers. China's growing energy expansion has created concerns in US

China has indeed accounted for a significant share of world oil demand growth recently (approximately 30–40% annually over the past several years), making China one important factor among many in today's tight oil markets. High oil prices are, in fact, a product of a long list of supply and demand developments, including very strong global oil demand, slow growth in production capacity, and low investment in new capacity in recent years, particularly in the Organization of Petroleum Exporting Countries (OPEC). Global refining is also running at virtually full capacity and is especially tight in the United States. "Due to this tight capacity, global price formula linkages strongly influence benchmark U .S. crude prices and, therefore, world prices."[67] Hence the US apprehension. A major concern for the United states is the growing involvement of China's energy sector in a number of problem states, including Iran, the Sudan, Myanmar, Uzbekistan,

[67] Victor D. Kalashnikov *"National Energy Futures Analysis and Energy Security Perspectives in the Russian Far East"* The East Asia Energy Futures Project, Khabarovsk Economic Research Institute Far Eastern Branch of Russian Academy of Sciences 10

Venezuela, Cuba, and, lately, Syria . Iran and the Sudan are clearly of the most significant concern.

As the world's sixth largest energy consumer India's is not only affected by the emerging energy dynamics, but also is a major part of evolving trends. India's Natural gas import more than doubled in 2000 is anticipated to cross 4 trillion cubic feet by the end of 2006. Its oil consumption is also expected to increase at an equal pace. ONGC currently operated in Iran, Egypt, Tanzania, Vietnam, Nigeria, and Sudan etc. Demand for commercial fuels in India has been growing at an average of approximately 5 percent per annum, and is awaited to continue at this rate into the next century.

The increase in global energy demand foreseen in the years ahead is substantial. Most of this increase is coming from the developing countries as they industrialize and their economies grow. The production and consumption patterns, the energy mix and investment requirements along with changing geopolitical environment has evolved as a major issue in the changing hydrocarbon market.

> "The impact of growth in China, India, and elsewhere on the global demand for energy has been far reaching. In the 1970s, North America consumed twice as much oil as Asia. Last year, for the first time ever, Asia's oil consumption exceeded North America's. The trend will continue: half of the total growth in oil consumption in the next 15 years will come from Asia, according to projections by Cambridge Energy Research Associates (CERA). However, Asia's growing impact became widely apparent only in 2004, when the best global economic performance in a generation translated into a "demand Shock"- that is, unexpected worldwide growth that was more than double the annual average growth rates of the preceding decade"[68], says Daniel Yergin.

The resurgence of Russia is another significant development in the energy market, having important geopolitical and geo-economic implications. The definition and pursuance of energy interest of Russia has implications for the region as well as the world in general. According to Energy Strategy, Energy Security implies in

[68] Yergin Daniel, "Ensuring Energy Security", *Foreign Affairs,* March – April 2006, vol.85 No. 2,p74

Russia protection of a person, society, state, and its economy from the threats of inadequacies in meeting their energy demands by technically, economically and ecologically accessible fuel –and power resources of an reasonable quality. "The accepted levels of such protection correspond to the full meeting of the reasonable demands under normal conditions and to the guaranteed meeting of the minimum required demands under extreme conditions."[69] The following estimate of discovered primary reserves in Russia's Far East gives an impression of its strong resurgence in the energy market.

Table 2.6

Discovered Reserves of Primary Energy of the RFE, (MTOE)[70]

	Coal	Oil	Natural Gas	Hydro	Total
Republic of Sakha	6,700	375	1,200	115.5	8,390.5
Magadan territory	710	14	13.3	33	770.3
Kamchatka territory	160	0	20.3	11.6	191.9
Amur territory	1,150	0	0	17.5	1,167.5
Khabarovsk territory	1,280	0	1.75	45.5	1,327.3
Primorskii territory	1,400	0	0	5.8	1,405.8
Sakhalin territory	1,080	620	850	1.1	2,551.1
The RFE as whole	12,480	1,010	2,085.4	230	15,802.4

* The estimates are made for coal as of 01.01.97, oil and natural gas as of 01.01.95 by categories A+B+C1+C2. For hydro theoretical potential is shown.
** MTOE – million tonnes of oil equivalent.
Source: Data from ERI.

The US is a major oil producer and the world's biggest consumer. In 2001 production stood at 7.7 mbbl/d, consumption at 19.6 mbbl/d, with oil providing nearly 40 percent of total primary energy demand. Oil imports derive mostly from Canada, Mexico, Venezuela, Saudi Arabia and other Middle East countries.

[69] It was announced by the Secretary of the Russian Security Council S. Ivanov at the All-Russian meeting on the problems of development of the fuel-and-energy complex of Russia in the city of Surgut in March, 2000.

[70] Victor D. Kalashnikov *"National Energy Futures Analysis and Energy Security Perspectives in the Russian Far East"* The East Asia Energy Futures Project, Khabarovsk Economic Research Institute Far Eastern Branch of Russian Academy of Sciences,,p8

Domestic production is quite expensive compared with production in other countries, and even though proven reserves amount to 30.4 billion barrels, production is not expected to rise significantly in the near future. Consumption is likely to grow at a rate of 1.5 percent per year. As far as Natural gas is concerned, the US accounts for 3.2 percent of world reserves (177.4 tcf), and 22.5 percent of world production (53 bcf/d). Consumption stands at 59.6 bcf/d (25.6 percent of the world total, all figures for 2001). Total North American consumption is expected to grow 2.1 percent per year until 2020, meaning that without new discoveries, natural gas will run out within the next ten years. However, the US has a unilateral approach to international affairs, energy issues are perceived as of vital national interest, and private sector resource development is strongly supported, in conjunction with a market system approach to the economy. "In the aftermath of the September 2001 terrorist attacks, the American government has adopted a pre-emptive stance in dealing with perceived threats to its interests, examples of which can be found in Afghanistan and Iraq."[71]

Thus it is quiet evident, that the energy market is evolving fast, the rise of Asia, especially India and China, the growing strength of Russia in terms energy reserves is a great leap. Not only that, energy market which is visited by certain geostrategic developments, for instance the old energy architecture carved around US hegemony, is now increasingly being challenged by New Asian giants. The new energy architecture seems to be evolving around and influenced by china, India and Russia.

GLOBALISATION AND THE EMERGING GEO - ECONOMICS

Globalisation has emerged as a major stimulator of change in the evolving energy market. It has opened up a series of possibilities. The technological advancement,

[71] Study on, *Energy supply Security and Geopolitics*, Final Report, January 2004, Prepared by DGTREN,Contract Number TREN/C1-06-2002,ETAP programme,p207

development in seismic technology, which had led to a reduction of risk and cost of exploration. Advances in deep water technology opened up new areas for exploration and development. Advances in reservoir management technology pushed up recovery factors. In addition, the political change largely flowing from Globalisation has opened up new doors. International companies are able to invest in areas previously closed to them, for instance in Russia, China, Central Asia and the Caspian region. There has been a series of developments; due to Globalisation that has is impacted change in the energy market.

The next fundamental change came on the demand side. The growth in demand for oil in 2003 and 2004 has been so strong that for the first time in 30 years, the rate of oil demand growth worldwide almost matches the growth of GDP. "The rise in demand is driven by demand, particularly the dramatic growth in demand in China, which has increased its imports of oil by 400% in just 4 years, and is reinforced by concern about supply security. For most of the last two decades, the market has operated with around 3mn b/d of spare capacity."[72]

"Information" has emerged as a major policy option in the international energy market. Participants in the energy market have started to rely increasingly on information network.

> "Information is no less crucial in a crisis, when consumer panics can be instigated by a mixture of actual disruptions, rumors, and a fevered hunt for conspiracies, transforming a difficult situation into something much worse. In such situations, governments and the private sector should collaborate to counter panics with high quality, timely information[73].

Therefore, information exchange is being all the time more used to counter market instability and profit maximization.

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[72] John Browne "The Outlook For The World Oil Market", *Middle East Economic Survey*, 47:51/52, 20/27 December 20004,p D1

[73] Ibid,p 74

Political instability is still a factor in the evolution of the international oil market, but along with it, the industrial relationship between oil exporters and importers is equally important. The business of oil has always been strongly affected by the degree of "vertical integration" in its production, refining and marketing components. In the 1970s, this was the domain of the "multinational' corporations and debate raged about the degree to which the international companies exploited the Third World, including OPEC countries. Today however, most oil exporters no longer want to exclude the oil companies- they want to buy them, especially the companies' whose refining and marketing assets give the exporters access to oil markets.[74] However, the international energy market has become more diversified, with number of multinational companies increasing. The energy market is no more under the earlier Oligopolistic control of few suppliers group.

The driving force behind the general evolution in energy markets from monopoly to competition is the need to incentives investments. Before 1970s, oil and gas projects were mostly financed from the cash flows of major international oil companies. Now project finance is one of the most useful financial tools for raising capital, particularly for the development of long term, capital-intensive energy projects.[75] Asian Development Bank, World Bank, etc are increasingly involved in financing the Greenfield projects in underdeveloped areas of Asia and Africa.

The energy market at the supply chain is susceptible to short term and long-term disruptions ranging from, investment insecurity, inadequate infrastructure, from transportation and distribution networks, local disruptions etc. Therefore, long-term contracts and the diversification of energy supplies have become the main

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[74] Krapels N. Edward, "Commanding Heights: International Oil in a Changed World", *International Affairs (Royal Institute of International Affairs 1944-)*, vol. 69,No 1,(Jan.,1993),p79

[75] Konoplyanik Andrei, "Energy Charter: the Key to international energy security", *Petroleum Economist*,
Feb 2006, p19

tools for diminishing volume risk. "Multiple supply sources enable consumers to switch between suppliers and, similarly, a highly developed network enables suppliers to switch between consumers."[76] The international energy market, therefore, is "witnessing long-term international energy investment, minimizing risk to such investment and an investment friendly economic regime that balances the interests of the state and investors throughout the value chain."[77]

Due to the changing geopolitics and increasing disruption threats to oil installations, the energy market is under constant pressure to ensure security of supplies. There are four basic components of Supply security model that the energy market currently seems to be pursuing:[78]

- *Prevention-*, which includes various measure to check the disruptive tendencies at the very outset, its place of origin. It includes, Foreign Policy measures, Multilateral Arrangements, Economic cooperation etc.
- *Deterrence-* it includes measures like Military capability, High Security and Surveillance, Strategic alliances, Economic Sanctions etc.
- *Containment-* includes, Diversification, Storage, energy Saving etc.
- *Crisis Management-* Price Management, Energy Sharing, Demand Management etc.

However, to sum up, according to Walther Arne, the main concern in the field of energy security is giving security of demand to those countries that produce and export for their economic and social development, while ensuring security of supply to those countries that need to import energy for their economic and social development.[79] This is the view that seems to be quiet predominant in the

[76] ibid, p19

[77] Ibid, p19

[78] *Study on Energy Supply Security and Geopolitics (TREN/C1-06-2002)*. January 2004. This report was prepared for DGTREN

[79] Walther Arne, "The International Energy Forum: Promoting Cooperation in a Multipolar

transitional phase of energy market today.

There has been an evolution of international legal instruments like the Energy Charter to protect both consumers as well as the producers. According to Andrei Konoplyanik:

> "International legal instruments at the current stage of global energy market development are one of the most cost- efficient ways of providing the basics of energy security by protecting investments and their stimuli."[80]

Not only have that, a variety of bilateral and multilateral intergovernmental undertakings now promoted investment friendly atmosphere to the energy market.

Another significant development revisiting the energy market is the "increasing number of transactions involving direct sales between the producing and consuming governments without oil company intermediaries. It has expanded the producers control over their oil."[81] Over the period, it is witnessed that, there is a direct involvement of governments in oil dealings. There has been a decline in the role of private oil companies. "In 1973, 90 percent of the oil traded in the world was sold by private oil companies. By 1979, the figure had dropped to below 50 percent. Now the middle east countries are dealing directly with an increasing number of foreign governments."[82] According to Brian Levy, the most recent shift in control:

> "Is the rise of direct marketing of crude oil by oil exporting countries. Until the early 1970s, multinational oil companies, especially the seven oil

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World", *OPEC Bulletin*, Feb 2005,p27

[80] Ibid, p19

[81] Ibid,p1325

[82] Ibid, p1325

> majors, dominated crude oil trade in international markets. However, since 1973, state owned enterprises from producer countries have increased the share of oil that they market directly to downstream users, bypassing entirely the international oil companies. Directly marketed oil rose from 8 percent of trade in 1973 to 25 percent by 1976. And reached almost 45 percent in 1980."[83]

The number of stakeholders in the energy market has significantly increased. There is an addition of new players both on the consumption and supply side of energy chain. The production of oil has rapidly increased due to technological revolution, but demand for oil has grown much faster. A major chunk of demand is coming from the emerging economies of Asia. Hence, competition among governments for foreign sources of oil has increased. According to a study by Senate committee on Energy and Natural resources in *Science, New Series;*

> The world is likely to witness increasing competition by the governments of consuming nations for privileged access to foreign sources of oil. Such competition will lead to higher prices and greater political and military concessions in return for oil. The number of government-to-government transactions is likely to increase as individual consuming nations futilely attempt to lock up an assured source of supply in a world of uncertainty.[84]

The advent of direct marketing is a new development in the energy market. It includes two things,- energy source diversification and high competition. The major oil now comes from diverse sources than in the past. Moreover, the majors now sell very little crude to third parties. As a result former third party buyers have lost the shelter that had been provided by the majors "supply Umbrella". These buyers now deal directly with exporting nations, and they usually try to purchase oil from as many countries as possible.[85] High competition among consumers is another feature revisiting the energy market.

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[83] Levy Brian, "World Oil Marketing in Transition", *International Organisation,* Vol. 36,No.1.(Winter, 1982),p113

[84] Ibid,p1325

[85] Levy Brian, "World Oil Marketing in Transition", *International Organisation,* Vol. 36,No.1.(Winter, 1982),p130

Globalisation has significantly influenced the energy space. New economic and political blocs have been established, the global balance of power has shifted to some degree, and wealth has become more diversified. The technological revolution continues to run unabated."[86] There are now many more producers and consumers, many more technologies, ranging from oil exploration, production to transportation are at hand. The modern day hi-tech world of 21st century is a very different place than it was earlier two or three decades back. Globalisation has proved to be a powerful force of transformation, opening up of borders to trade and leading to the creation of new economic blocs that are continuing to undergo rapid social, political, and economic change. This ongoing development has inevitably led to the liberalization of the energy sector, a process that continues to evolve as oil industry players adopt their market strategies to the new order and increasingly move towards forging partnerships to help meet the new challenges posed."[87] A number of countries in and around the region are forced to open up their domestic markets.

The manner in which energy is retrieved transported and consumed has changed significantly under the influence of technological developments. The face of the oil and gas industry has altered immensely over the decades as technology has opened up new possibilities along all parts of the energy chain. On the upstream side, oil companies are exploring and exploiting deep-sea reservoirs that were once technologically out of reach or simply unknown. Downstream, the use of state of the art information technology (IT) systems has pushed the boundaries of efficiency and productivity. As well as bumping up sales and production levels, technology has helped in other critical areas. The use of modern horizontal drilling techniques has played a key part in reducing the environmental footprint during exploration.[88] The energy market is increasingly intervened by

[86] " OPEC The Imprint of 1960: Aims and objectives still same today", *OPEC Bulletin*,9/05, p13

[87] "OPEC from a historical Perspective", *OPEC Bulletin,* 9/05, p 19

[88] Clark Martin, "The Digital Oilfield", *Petroleum Economist* , May 2005, p13

Information technology. The concept of the intelligent oilfield- remotely capturing and using real time data from wells and other facilities and using complex IT systems to interpret and make timely and meaningful decisions is already here.[89] The introduction of advanced visualization technologies, giving three dimensional picture, models, and graphic information, is transforming the energy market. There is a demand for exploration intelligence and oilfield connectivity to increase production, reduce finding and lifting costs as well as help to better define reserves and their replacements, says Marise Mikaulis, world wide oil and gas industry manager for Microsoft. Mikulis says collaboration will become increasingly important throughout the industry, as oil companies team up with specialist IT providers such as Microsoft. IT vendors have already transformed themselves from simple providers of isolated products and services to providers of enterprise- wide solutions and enabling infrastructure.[90] The global petroleum industry has become more information dependent than ever.

The 1990s witnessed the emergence of the internet, which supported applications to deliver business solutions in areas such as customer relations management (CRM), and procurement. Web enabled technologies have allowed companies to improve their operations dramatically, focus on their customers and reduce costs. Downstream internet portals reduce interaction costs and automate certain key functions, such as meter reading and bills printing.[91] The IT sector in energy market is in a consolidating phase. Veronique Durand- Charlot of the International Gas Union (IGU) says, "We are in a phase of consolidation of the technologies that appeared in the late 1990s." The information technology has immersed into the energy market. It has become quiet difficult as of now to visualize the energy market without the Wireless technology, DSL technology and Voice over IP technologies.

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[89] ibid,p13

[90] ibid,p,13

[91] ibid, p13

Outsourcing is another important shift that is taking place, Durand Charlot adds: "this trend is pretty new to the energy industry. Historically, energy players have been more reluctant them the banking industry to outsource more than their IT maintenance. Now cost reduction reasons are pushing them to outsource large parts of their non- essential business process." "This is resulting in the multiplication of actors servicing the energy market, such as marketers, traders, retailers, as well as IT vendors."[92]

Information technology revolutionized the energy market. In such technology-swamped industry, it is no accident that exploration success rates have shot up. New seismic technologies, such as 3-D and 4-D, new processing techniques and imaging skills have helped the exploration managers understanding of hydrocarbon reserves around the world.[93] Therefore, along with the rise in demand of energy, there have been quiet substantial additions to the supply side of the chain also. Among the major upstream advances of recent times, is the faster computing of ever- increasing volumes of data. Reservoir simulations, utilizing seismic imaging to produce digitized scale versions of an oilfield imaging to produce digitized scale versions of an oilfield, have also improved immensely. "You can do things with scale that just couldn't be done 10 years ago, says Brewing, computer power is also enabling us to turn things around in a time we wouldn't have dreamed about before."[94]

The LNG market is expected to expand quiet fast over the next few years. According to International Energy Agency (IEA) LNG, demand in the Atlantic basin will grow by 70% in the next five years and 25% in Asia. The effect of large number of importers as well as exporters in a short space of time has boosted the prospects of its expansion. USA is likely to become world's second

[92] ibid,p13

[93] ibid,p13

[94] ibid,p13

largest LNG importer after Japan by 2010 and is likely to overtake the later by 2015.[95] Besides South Korea, China and India have emerged as important consumers. There has been an addition to the suppliers side also like Nigeria, Oman, in Africa, the Mediterranean region, Latin American region etc. the expansion in the gas market is also taking place due to technological up gradation, especially the LNG and GTL technologies.

Mutualism and cooperation is emerging as a dominant mode of conducting business in the energy market. The past has shown how energy, especially the strategic commodity oil, and market volatility, can create conflicts or exacerbate political tensions between countries or groups of countries. "For many years, it was politically unacceptable for energy ministers of consuming and producing countries to meet in a multinational context."[96] Now the perceptions have started to change. International developments and the Gulf war in 1990-91 highlighted the importance of oil and proved a turning point for the idea of dialogue at a political level. A "more cooperative atmosphere between producers and consumers ensued in its wake. At the initiative of President Mitterrand of France and Perez of Venezuela, the first ministerial meeting was held in Paris in 1991."[97] Henceforth, greater stability in energy developments is increasingly seen as a shared goal. The mutual sense of interdependency, vulnerability and win-win opportunity has improved the atmosphere for long-term cooperation. "In addition difficult short term issues are being addressed in a more cooperative way than before when the atmosphere was confrontational."[98] Arne Walther points out seven 'Cs' for the direction in which energy developments seems to be heading. He calls it seven 'Cs' of energy. The first 'C is Energy Concern. It is important

[95] Gavin James, "The days of cheap gas are over" *Petroleum Economist*, May 2005, p 24

[96] ibid,p18

[97] Interview, Ambassador Walther Arne, (secretary General, Riyadh based International Energy Forum, "Global- producer –consumer Energy dialogue: the contribution of the International Energy Forum", *OPEC Bulletin*, Feb 2005,p18

[98] ibid,p19

for survival. It fuels economic and social development. Political leaders and individuals are concerned about energy security and the energy challenges ahead. As energy demands grows so will Competition, the second 'C as reflected in the competition for energy resources and between resources. The intense competition between producers and consumers marks as an important feature of the energy space. Associated with competition is the chance of Conflict, the third 'C. Competition among players is often witnessed by intense conflicts between them. However, owing to the huge cost and economic and political consequences, associated with negative conflict, the players enter into Cooperation. The aim is to reduce conflict and foster healthy competition. The fifth 'C' includes a global consensus on energy based on awareness of long-term common interests. An element of this consensus is the sixth 'C Conservation. Conservation of energy has become more important due to the huge environmental and developmental costs attached with it. This brings the seventh 'C confluence. There is a need to ensure confluence of the streams of energy, environment, and economic development into a sustainable and equitable common future.

Concerns of energy security are not limited to cooperation and oil. The mismatch between where sources of energy are located and where they are consumed, besides linking regions and sub regions together, has posed security challenges. "Susceptibility to disruptions of energy supply, due to terrorists attack has increased. Vulnerabilities emanating from terrorism have become more evident. Al Qaeda has threatened to attack what Osama Bin Laden calls the "hinges" of the world's economy, that is, its critical infrastructure – of which energy is among the most crucial elements."[99] Terrorism constitutes a risk to security of supply because of possible attacks on the key energy installations.

Maintaining security of international sea-lanes and pipelines, both onshore and offshore, have assumed increasing importance. In the Pacific and Atlantic oceans,

[99] Yergin Daniel, "Ensuring Energy Security", *Foreign Affairs,* March – April 2006, vol.85 No. 2 p70

more than 75 percent of Seaborne trade is consigned more than 60 percent of the World's oil reserve are located in the Gulf region. The USA imports more than 20 percent of its requirements and China will soon be importing 200 million tones annually, overtaking Japan as the second largest importer. Countries of the European Union also get oil and gas from this part of the world, as does Korea. "Of the $ 200 Billion worth of oil that is sent out through the Strait of Hormuz annually, nearly half is destined for destinations eastwards moving through the sea routes mentioned above. This makes the Gulf region an area of considerable strategic significance."[100] The port and related infrastructure are capital intensive and any attack on them by terrorists have the capacity of directly affecting trade and commerce, movement of precious cargo as well as the operation of the port itself. That is why maritime trade in oil and gas is more prone to terrorist attacks. There are references to the attack on USS Cole, off the coast of Aden, and on MV Limburg, an oil tanker. According to P.S. Das, there are certain "Choke Points" like Suez Canal, the Bab –el-Mandeb south of Yemen, controlling the Gulf of Aden and the Red sea, the strait of Hormuz dominating the Persian Gulf, the waters South of Sri Lnaka and the Great Nicobar Island, the Malacca, Sunda and Lombok Straits. Which open out into the South China Sea, and further to the South, the Sea routes close to Mauritius, Seychelles, and Mozambique. Inevitably, the ships have to "Stack Up" as they pass through these confirmed waters and are exposed to great risks as they do so."[101] Therefore, Maritime security in energy trade has emerged an important area of concern.

> "Long- distance, cross border pipelines are becoming an ever –larger fixture in the global energy trade. There are also many choke points along the transportation routes of seaborne oil and, in many cases, liquefied natural gas (LNG) that create particular vulnerabilities: the strait of Hormuz, which lies at the entrance to the Persian Gulf, the Suez Canal, which connects the Red Sea and the Mediterranean, the Bab el Mandeb

[100] Das P.S., "Security of Sea lanes of communication- Japan-Indian ocean-Arabian Gulf(JIA) with special reference to Maritime Terrorism", *Journal of Indian Ocean studies*, vol.13 No2 August 2005, P203

[101] ibid,p203

> strait, which provides entrance to the Red Sea, the Bosporus Strait, which is a major export channel for Russian and Caspian oil, and the strait of Malacca, through which passes 80 percent of Japan's and south Korea's oil and about half to China's. Ships commandeered and scuttled in these strategic waterways could disrupt supply lines for extended periods. Securing pipelines and chokepoints will require augmented monitoring as well as the development of multilateral rapid response capabilities."[102]

There has been a resurgence of new Asian energy identity. Common energy concerns have brought in increasing Asian energy interdependence. An example of this growing interdependence could be seen in the Roundtable of Asian Ministers on Regional Cooperation in the oil and gas economy, hosted by India in New Delhi Jan 2005. Today, east and South Asia rely on west Asia for four out of every barrels of their imported oil, and West Asian nations send two out of every three barrels of their oil exports Eastwards in Asia. "The ministers recognized that while the Asian oil economy is integral to, and inseparable from the global oil economy, the share of Asia in global production and consumption will progressively increase."[103] They accepted the need for Asian producers to promote investments in oil and gas for Asian consumer destinations. They underlined the importance of strategic storage and criss- cross investments linking Asian producers and consumers closer together.[104]

The transition towards new energy era, favored by ample presence of oil and natural gas calls for greater market stability, and prices at a reasonable level for both producers and consumers. It includes ever intersecting substantial investments to satisfy growing global energy demand. The environmental dimension of energy production and use along with emphasis on the development of alternative sources of energy use, characterizes the energy space transition.

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[102] Yergin Daniel, "Ensuring Energy Security", *Foreign Affairs,* March – April 2006, vol.85 No. 2,p79

[103] ibid,p20

[104] ibid,p21

The energy market, as it is today, is not only dominated by the major oil companies, and producer countries as it used to be few years back, rather the number of players and stakeholders has clearly increased. Now the market is significantly influenced by the consumer's interest, environmental lobby, local interest groups etc. the emerging energy space, witnesses due attention to the interest of all major parties. Unlike the past, the most important party in the energy market today is the consumer countries. The emerging energy set up has started to acknowledge as well as adjust to the place and rights of these countries. Maintaining a stable hydrocarbon market with fair and reasonable prices, both for producers and consumers, as well as a fair return for investors is not possible, without acknowledging to stakeholders their due place.

The oil market has become quiet diverse, complex, intensified and highly diversified. "Prices can crash or soar overnight. And as the oil market of the new millennium has shown, nowadays it is a series of non fundamental factors issues not related to the supply of crude oil- that are playing a critical role in the direction of oil prices take."[105] A single incidence anywhere can immensely influence the world energy market. "Hype and speculation caused by geopolitical tensions and uncertainty over future supply security have proved to be extremely problematic for the oil industry- a situation that is not only difficult to counteract, but one that snowballs with each successive event that raises its head."[106] The energy market has become more unpredictable. It has become vulnerable that even weather in the shape of hurricanes, seen in the Americas, adds up a hefty premium to current oil price levels.

There has been renewed emphasis on environmental degradation and sustainable development. The non-conventional sources of energy like, the wind power industry, solar energy, hydrogen power has started to acquire critical mass.

[105] "OPEC steps up to face challenges of the future", *OPEC Bulletin,* 9/05, p 27

[106] Ibid, opp.cite...

Similarly, biofuels, carbon capture and storage technology has started to sound like a compelling concept both environmentally and in terms of energy security. By this year, "the EU had hoped that blended biofuels (conventional diesel and gasoline diluted with fuels sourced from organic materials) would account for 2 percent of the automotive fuels consumed in EU."[107]

"Biodiesel is a clean burning diesel as fuel produced from energy crops- typically which produce vegetable oil fallow or cooking oils. The perceived benefits of biofuels are reduced carbon emissions and more significantly reduced particulates pollution."[108] Similarly, bioethanol is a petroleum additive and a substitute that can be blended with gasoline. It is an alcohol made from renewable sources such as corn, wheat, sugarcane. In addition, there is a growing recognition that the capture and safe storage of carbon dioxide in Geological formations can significantly reduce emissions from fossil fuels combustion. "Geological formations that can be used as storage facilities include depleted oil and gas reservoirs, deeply buried saline aquifers, and non mineable coal seams."[109] Certain companies like Norway's Statoil have even started working towards this direction.

Fear of global warming has spurred governments worldwide to ratify the Kyoto Protocol. The Kyoto Protocol is a protocol of the UN Framework Convention on Climate Change, itself adopted in 1992. The Kyoto Protocol was agreed upon in 1997. In its subsequent agreements, targets for greenhouse gas emission reduction were set for different countries. Many of the countries are yet to ratify the protocol, but it has received an added significance recently.

The rapid onset of global warming and climatic change is a consequence of

[107] Dan Lewis, "Biofuels No Magic Bullet for EU", *Petroleum Economist,* August 2005, p24

[108] Ibid,p24

[109] Sundset Trude, Steeneveldt Roselta, Torp Andreas Tore and Berger Bjorn, "Statoil Leads the way on carbon dioxide storage", *Petroleum Economist,* August, 2005, p21

anthropogenically derived CO2 emissions into the atmosphere. The inability to check carbon emissions has been demonstrated by the world's richest and most technologically orientated countries since 1990, the base year from which the Kyoto Protocol requires their use of carbon fuels and hence, the volumes of their CO2 emissions to be reduced. Instead, their collective use of 3,425 mn tons of oil equivalent in 1990 (from a mélange of oil, gas and coal) increased to 4,075 mn tons by 2002.

Transitional periods in the international energy market is characterized by the onset of new technologies, discovery of major oilfields in different parts of the world, search for alternative sources of energy, the threat of terrorism etc. however a major development in the post cold war energy market is the introduction of new producers like Nigeria in Africa, Venezuela in Latin America etc. a new set of consumers in Asia have also entered into the energy market. Since European economies are no more growing economies and have almost reached a saturation point. There has been a demand shift of energy from Europe towards Asia. This need not be an abrupt transition; the pace has been slower, nevertheless consistent. Notions of mutualism and cooperation have increasingly started to acquire weight. It has been increasingly realized that the interest of both consumers and the producers are tied together. Globalisation has further integrated the distant producers and consumers. Market stability and sustainable price of energy plays a unifying role in that direction.

From the preceding discussion, it is evident that, energy market has changed drastically. The change is visible not only in terms of increased instability and new kinds of threat to the energy infrastructure, but also it is evident in the emerging geopolitics of energy market and also in the increased role of energy security infrastructure. New players and consumers have emerged, a major part of oil that was earlier going to West, is headed now towards Asia. The volatility of crude oil and product prices, increased instability, and terror threat to energy

industry has made the role of "energy security infrastructure" quiet crucial. The following chapter discusses the kinds of security threats to the energy infrastructure, level of risk, types and the role of energy security infrastructure in neutralizing those impacts.

Chapter III

SECURING GLOBAL ENERGY INFRASTRUCTURE: ISSUES BEFORE ENERGY SECURITY INFRASTRUCTURE

Energy security infrastructure is receiving a great deal of public attention due to its increasingly important role in the nation's development and its potential vulnerability to the terrorist attacks. It has long been important to the global energy markets, although energy economics and the public perceptions about the associated risks involved have never been discussed so widely as it is done today. Concerns about rising oil and gas prices, possibility of domestic supply shortages due to market instabilities, increasing nature of hazards involved in energy exploration, transportation refining and storage in large quantities have brought the security debate into energy infrastructure to the fore. In the light of terror attacks of September 11, 2001, the global energy markets have become more concerned about the security of existing energy infrastructure. Hence, there is a need to reexamine the global energy market and the associated activities undertaken regarding the security of energy infrastructure. The chapter describes global energy infrastructure, the market safety record and security risks, and the various initiatives undertaken since September 11, 2001.

The risks associated with energy security infrastructure have been debated for decades. A prominent accident at one of the commercial LNG facilities in 1994 initiated wide public fear and security threats, which persists today. The "Cleveland Disaster" wherein an LNG spill from an importantly designed storage tank caused a fire that killed 128 people. This accident continues to serve as a reminder of the hazards posed to the energy security infrastructure.

Energy security infrastructure consists primarily of Physical infrastructure including offshore and onshore facilities, energy transit facilities, storage, sea-lanes, etc. the concept of energy security infrastructure has come into the lexicon due to the risks associated with the energy trade.

Offshore Oil and Gas Security Infrastructure

Offshore oil and gas infrastructure have been frequent terror targets. Since September 11, 2001, international concern about terrorist attacks on these platforms has grown. April 2004 – al-Qa'ida associates conducted a multiple Boat Borne Improvised Explosive Device (BBIED) attack against two offshore oil-loading platforms, *al Basra* and *Khor-al Amaya*, south of Basra, Iraq. Coalition naval forces and Basra security interdicted the attack, limiting damage to only one platform, which returned to operation within days. Three sailors died in the attack.12 March 2005 - A gang of 35 pirates armed with machine guns and rocket launchers seized a fully laden gas tanker in the Malacca Strait. The 1,289-tonne Indonesian owned *MT Tri Samudra* was carrying a cargo of methane gas from Samarinda in Kalimantan province on Borneo Island to Belawan on Sumatra Island when it was boarded in the early evening. The ship was subsequently released but the captain, chief engineer were kidnapped, and a ransom was demanded. The ship's owners believe the pirates were rebels from the Free Aceh Movement (GAM). "Terrorist attacks against offshore platforms have been on the rise recently in countries with a history of terror activity like Nigeria, Colombia and Indonesia. Many of these attacks however, are economically and politically motivated."[110] Offshore oil and gas infrastructure includes:

[110] Adams, Neal. "Terrorism in the Offshore Oil Field." *Underwater*. March/April 2003.

Fixed Production Platforms

"Fixed oil and gas platforms are permanently fixed or connected to the seabed and used in petroleum production operations for the recovery of petroleum from sub-seabed deposits. Fixed platform structures vary and include conventional steel fixed platforms, concrete gravity platforms; mini platforms; monotowers; monopods; and minipods. Some platforms are co-located and form a production network with interconnecting pipelines."[111] Platforms can be manned or unmanned depending on the nature of the operations they perform. Oil and gas facilities have a 500m safety exclusion zone from the base of the structure to prevent accidental collision.

Floating Production and Storage Facilities

Floating facilities include Floating Production, Storage and Offtake (FPSO) vessels and Floating, Storage and Offtake (FSO) vessels. FPSO vessels are either purpose built or converted tankers with oil processing plants on the deck. FSO vessels store oil, but do not have processing capabilities. Floating facilities can be permanently moored in place or can be disconnected from the flow lines that run down to the subsea wellheads. Oil from the wells is stored in FPSO and FSO vessels and later off loaded to other tankers. Disconnectable FPSOs/FSOs can disengage from the subsea pipes and move under their own propulsion.

Mobile Drilling Facilities

Mobile drilling facilities are used in the exploration phase. The most common types are Drillships, Jackups and Semi-submersibles. These vessels frequently move internationally and usually conduct operations independently from any existing production facilities. They have no capacity to produce oil and gas, other than for production tests for short periods. They generally have no storage

[111] *Offshore oil and gas risk context statement*, Office of Transport Security Department of Transport and Regional Services, Commonwealth of Australia, April 2005, p7

capacity for oil or gas. Drillships are usually equipped with propulsions systems and can sail as a vessel. Jackups and Semi-submersibles usually have limited or no propulsion systems and are generally not capable of navigating the seas unless undertow.

Oil Tankers

There are several types of oil tankers, including petroleum product carriers and very large crude carriers (VLCC). Petroleum product carriers transport up to 50,000 dead weight tonnes (dwt) of mainly refined petroleum although they also can transport vegetable oils. Crude carriers can transport up to 300,000 dwt of a variety of liquid cargoes, the main cargo being crude oil. The majority of new oil tankers are double hulled to prevent spillage; however, there are many single hulled ships in service. Oil tankers typically make between 12 to 15 knots at sea. Oil and tankers deliver crude oil to refineries.

LNG Tankers

LNG tankers are visually distinctive from other tankers and average around 14 knots at sea. There are two predominant types of LNG tankers, Moss Rosenberg tankers which have four large spherical cryogenic tanks, 40 meters each in diameter that are visible above the deck of the tanker; and Membrane tankers which have long geometric tanks visible above the deck. Moss Rosenberg tankers are slowly being phased out for newer Membrane tankers. LNG tankers carry approximately 130,000 cubic meters of LNG kept at atmospheric pressure with the gas temperature maintained at -160oC.[112]

LPG Tankers

LPG tankers carry both propane and butane in a liquefied state, which significantly reduces the volume of the original vapour composition. LPG is either

[112] Ibid,p9

shipped and stored as a liquid at ambient pressures (refrigerated) or as a liquid at ambient temperatures (pressurised). Some LPG/chemical combined tankers are capable of carrying the cargo partly refrigerate and partly under pressure. The odorless LPG is carried at temperatures as low as -48 C and stored in two or three tanks of about 2500m3 in volume.

Pipelines

Oil and gas network is connected by a series of oil and gas pipelines. There are also a number of key trunklines that transport the oil and gas from the main hub platforms to the other Plant via subsea pipelines, shorecrossing sites and buried onshore pipelines. Condensate and gas are transferred from the offshore facilities to Plant via a Trunklines (DT) system that runs along the seabed at an average depth of 100m. Each trunklines uses two-phase hydrocarbon flow system, allowing both liquids and gas to flow concurrently with no free water.

The main terrorist threat to oil and gas infrastructure comes from Islamist extremists associated with al-Qa'ida. Since 11 September 2001, a number of statements have come formal Qa'ida head Osama bin Laden and his deputy Ayman al Zawahiri which shows that the oil and gas infrastructure may be a future targets.

The general threat enunciated in these public statements has been reflected in planning for specific attacks. Intelligence and investigations have revealed planning for attacks by Islamist extremists. The threat from al-Qa'ida and associated groups remain for the near future.

Oil and gas sector is integral to the economic well-being and protecting it from the threat of terrorism is a national priority of all countries in the immediate and foreseeable future. The predominance of offshore oil and gas installations in supplying domestic and overseas energy markets make these facilities critical elements of national infrastructure and attractive targets for terrorists in the

current security environment. "Intensifying terrorist activity by al-Qa'ida and associated groups against oil and gas infrastructure in the Middle East has created uncertainty, and combined with other oil market dynamics is capable of pushing oil prices up into price bands that cause damage to global economic growth. Past terrorist attacks on the oil and gas industry have successfully affected the energy sector's operating costs with increased protective security and insurance costs for affected multinational oil and gas companies." [113] To date, al-Qa'ida and associated groups have almost exclusively focused their attention in the energy sector on oil. However, like oil, the gas industry is integral to the global economy and has similar production and transportation networks involving volatile materials. Terrorist groups have focused their attention on gas infrastructure in the future, as it offers comparable consequences and requires similar capabilities.

National governments seeks to enhance the protection of offshore oil and gas facilities from terrorist and other security threats through an integrated approach across jurisdictions, between government agencies and with the oil and gas industry to ensure adequate prevention and preparedness.

The direct protection of each offshore platform through the provision of appropriate on-site security measures is an industry responsibility and represents a key element in the Government's integrated approach to enhanced offshore maritime security.

"The first attempt by al-Qa'ida to attack shipping took place in January 2000 in Yemen against the US warship *USS Sullivans*. The attack failed when the explosives-laden boat to be used for the attack sank soon after launching. Since then al-Qa'ida has successfully carried out suicide attacks against the *USS Cole* and the French oil tanker *MV Limburg*. Al-Qa'ida and its affiliates are innovative and will continue to seek out a variety of targets. In choosing a target for attack they are likely to consider the potential for mass casualties, economic impact,

[113] Ibid, p12

symbolism of the attack, media imagery likely to be generated, the accessibility, and vulnerability of a given target and the opportunity for attack."[114]

IDENTIFYING SECURITY RISKS

Offshore oil and gas facilities have several unique features that act as deterrents to terrorist attacks. The degree in difficulty in damaging a robust structure with safety shut-down procedures, the logistics in reconnoitering and attacking an isolated facility, and a generally small crew size with limited potential for inflicting mass casualties. However, the isolated, open water location of offshore facilities also makes them equally vulnerable to attacks. Fixed and floating offshore oil and gas facilities could suffer major damage through a number of attack methods:

- **Direct attack**- There are number of methods through which direct attacks are undertaken against oil and gas infrastructure. Boat Borne Improvised Explosive Device (BBIED), stand off weapons etc. In April 2004, al-Qa'ida associates conducted a multiple BBIED attack against the *al-Basrah* and the *Khor-al Amaya* terminals off southern Iraq that successfully damaged one terminal. It is feasible for terrorists to put an explosive-laden motorized boat alongside a stationary vessel and detonate it using a suicide bomber, either a timing delay device or two-way radio to detonate the explosives. Pirates already disguise their vessels as fishing vessels to avoid inspection in the Malacca Straits. The BBIED attacks against the stationary *USS Cole* and *MV Limburg* demonstrated that small vessels with little hold capacity could be effectively used in this type of attack. The *USS Cole* was attacked using a modified dinghy carrying 227 kilograms of explosives. The French-owned VLCC, *MV Limburg* had an eight-meter wide hole blown in the side using a BBIED in this type of

[114] Ibid, p14

attack and although the blast did not sink the carrier it was sufficient to rupture the outer and reinforced inner hull, spilling 90,000 barrels of crude oil into the Gulf of Aden. An explosion of this type could cause LPG to explode and oil and LNG to burn, however LNG is less likely to explode. An additional danger to a ruptured LNG tank is the extreme cold of the liquid that can cause metal of the ship's hull to become brittle and fracture.

- **Armed Intrusion-** A fishing vessel provides a platform for a skilled operator using a standoff weapon to accurately target a platform using a man portable military weapon, such as short-range rockets or mortars. Such an attack would generate high impact imagery if fuel ignited. The only effective mitigation strategy for the threat posed by standoff weapons is adequate surveillance and broader counter-proliferation efforts. If sufficient explosives were detonated at a structurally vulnerable point on the platform, they could cause significant damage to the foundations and result in lengthy and costly repairs. If pre-production gas on a platform was ignited, a large explosion and casualties could result. It would be difficult for the terrorist to attack where surveillance is strongly conducted. Armed intrusion also includes Piracy. Piracy is common in many areas around Southeast Asia, particularly in the Malacca Straits and off the Indian subcontinent and the Horn of Africa. Approximately 20 per cent of all piracy incidents involve oil or gas tankers in the Malacca Straits. The most recent attack on a gas tanker occurred on 11 April 2005 on the *Kyose Maru* product tanker in the Malacca Straits where pirates boarded the vessel and stole $5,000. On 12 February 2005, 35 pirates armed with machine guns and rocket launchers seized a fully laden gas tanker in the Malacca Strait. The 1,289-tonne Indonesian-owned *MT Tri Samudra* was carrying a cargo of methane gas. The motivation appears to have been criminal extortion.

- **Hijacked vessels/aircraft-** A hijacked tanker is used to ram a platform, any tanker loaded with explosive cargo, with significant blast, fire, and casualty consequences. Boarding and hijacking a platform and then destroying it with explosives could be attempted. All substantial offshore oil and gas facilities are vulnerable to attack by hijacked aircraft. There are no preventive measures that offshore facilities can reasonably take to prevent such an attack. Platforms are easily identifiable from the air although they do not present a large target area. Surveillance of the airspace from the platforms and coast watch air patrols could provide early warning of an airborne attack although response time would be limited. A hijacked tender vessel could be used by terrorists as a cover to moor alongside an offshore facility without causing undue alarm and launch an attack. While port authorities require passenger lists of all arriving vessels, there is no physical screening of workers on tender vessels that regularly visit the offshore facilities.

- **Sabotage-** Like most onshore facilities, offshore facilities could be vulnerable to acts of sabotage or theft against its physical and network infrastructure by trusted insiders – working either individually or with hostile third parties such as terrorist groups. Motivations for such actions could include personal commitment to cause, financial desperation, psychological instability, or dissatisfaction with an employer.

- **Underwater attacks**.-To limit opportunities for sabotage or direct attack by individuals who work on offshore facilities, or on the construction of the platforms/pipelines individuals should be subjected to adequate passenger and bag screening arrangements at their last port of call prior to arriving on the platforms.

Offshore Oil and Gas Security Assessment

The Offshore Oil and Gas Security Assessment Process are essentially comprised of four key elements[115].

1. **Intelligence inputs** – classified information from national intelligence agencies or other sources such as police, including national sectoral and specific threat assessments.

2. **Oil and Gas Risk Context Statement** – it includes the nature of the security environment – it provides the context for transport operators' risk assessments.

3. **Security Assessments** –The assessment process identifies analyses and evaluates risks as well as possible risk treatments. It supports the development of locally specific security plans.

4. **Security plans** – describes security arrangements to meet desired security outcomes. The plans should set out the preventive and mitigating strategies –the measures, policies, and practices - that treat the risks identified during the risk assessment process. A range of guidance materials, including the Offshore Oil and Gas Assessment Guidance Paper and Guide to Preparing a Security Plan, supports this approach.

Table 3.1

Threat/Risk Relationship

RISKS CATEGORY	THREAT (Source of Harm)	POSSIBLE RISK EVENT/S
Direct Attack	Fishing vessels within 500m exclusion zone	Eg. A BBIED detonates in close proximity to an offshore facility.
Hijacking	Pirates or Terrorists with water-borne capacity	Eg. Oil or LNG tanker hijacked and used as a weapon.
Sabotage	Disgruntled Insiders or 'sleepers' (employees, contractors, etc).	Eg. Interference to services, or sabotage of platform, critical equipment and infrastructure.

Sourece: *Offshore oil and gas risk context statement*, Office of Transport Security

[115] Ibid, op cite..

Department of Transport and Regional Services, Commonwealth of Australia, April 2005

Recently there has been an attempt in the LNG industry to build new marine terminal offshore. A number of measures have been initiated in this regard to protect offshore critical infrastructure. It includes maintaining high level of security around LNG tankers, more refined terror threat information are focused, coordination among several groups like local agencies, trade associations, LNG infrastructure operators etc LNG tankers, terminals and peak shaving plants are all being highly protected. "Security inspections, on-site pipeline security, LNG storage at LNG, marine terminals, security escort, strengthening emergency plans; increased liaison with law enforcement; increased monitoring of visitors and vehicles on utility property; increased employee, security awareness",[116] and deployment of more security guards. It may reduce terrorism risks to ports and coastal communities. Nevertheless, may increase the "risks to the terminals themselves. Because offshore oil and gas facilities are remote, isolated, and often lightly staffed." [117] They are more vulnerable to terror attacks than land-based facilities. Disruption of any offshore terminal has a great impact on oil and gas supplies.

As a region, the core Middle East, with the addition of Algeria, Egypt, Libya, and Tunisia hosts some 66.4 per cent of the world has proven oil reserves (BP Statistical Review 2005). Worryingly, the security situation in this region continues to pose threats to those operational there – including the energy industry. Illustrating, to a small extent, what problems can be expected to emerge from the continuing conflict in Iraq in the wider region was the 19 August attack against US military vessels in the Red Sea Ports of Aqaba, Jordan and Eilat, Israel. A group calling itself the Abdullah al-Azzam Brigades of the al Qaeda

[116] American Gas Association (AGA) *Natural Gas Distribution Industry Critical Infrastructure Security.* 2002. and AGA. *Natural Gas Infrastructure Security–Frequently Asked Questions.* April 30, 2003.

[117] Paul W. Parfomak, *Liquefied Natural Gas (LNG) Infrastructure Security: Background and Issues for Congress*, CRS Report for Congress, Received through the CRS Web, Order Code RL32073, September 9, 2003,p20

Organization in the Levant and Egypt claimed it carried out the attack via an internet posting. Reports from Jordan indicate that three of those responsible for the attack against US military vessels have fled to Iraq under the auspices of false Iraqi passports. A Syrian by the name of Mohammed Hassan al-Sahli has been arrested in connection with the attack that is believed to have been executed by three militants who traveled from Iraq with the specific intention of carrying out such terrorist acts. The incidents have been linked to the al-Qaeda organization in Iraq led by Abu Musab al-Zarqawi. In this respect, the geographical shift in activity into neighbouring Jordan is of concern. In addition, evidence from Saudi Arabia demonstrates the risks of the spread of fighters when on 25 August an Afghan national was arrested in the Kingdom suspected of Terrorist activity.

MARITIME SECURITY INFRASTRUCTURE

There has been a rapid growth in global oil demand; in addition, the fleet capacity has also multiplied. The tanker rates have remained at high, pointing to a strong maritime market. According to Martin Clark, "this year, however, the coming together of a number of factors created such a strong market that very large crude carrier (from here onwards VLCC) rates jumped from world scale (WS) 90 - 95 in mid January to a high of WS 195 for some Middle Eastern cargoes to Asia- Pacific by the end of the month - equivalent to earnings of $120,000 a day. This compares with highs of WS 340 - around $ 225,000/d - during certain periods in late 2004".[118] The rise in rates of VLCC indicates of a healthy market, which is growing quiet fast.

Amidst higher and accelerated non-OPEC production, "it is estimated that an extra 1 m barrels a day on the market ties up 20 - 25 VLCCs, helping to mop

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[118] Martin Clark, "Too Much of a good thing", *Petroleum Economist,* March 2006, p31

up new tonnage capacity."[119] In addition, the maritime energy traffic has increased quiet fast. For instance, the worlds largest traded tanker group, Frontline, is expanding into the conversions segment, targeting the expanding market for floating production, storage, and offloading (FPSO) vessels.[120] Frontline is not alone, Shipyards are seeing increasing volumes of conversion work as the demand for FPSOs rises, breathing new life into the market for single - hull vessels. "Singapore's Shipyard recently completed the conversion of the 87, 000-dwt MST Odin shuttle tanker into the FPSO Alvheim for delivery to Marathon's Alvheim field in the North Sea."[121] However, with many tanker companies awash with cash, further industry consolidation cannot be ruled out.

Of all oil traded internationally each day, more than three-fifths moves by sea. World's major maritime trade takes place through the following routes: "Bosporus (Turkey), Oil flows (2001) 2.0 mbd, from the Black Sea towards the Mediterranean, Strait of Hormuz (Oman/Iran). Connects the Persian Gulf with the Gulf of Oman. Oil flows, (2002) 13 mbd, towards Japan, the US, Europe, Strait of Malacca (Malaysia/Singapore/Indonesia), Oil flows (2002) 10.3 mbd, to Japan, South Korea, and China, Bab el Mandab (Djibouti, Eritrea, and Yemen), Oil flows (2000): 3.2-3.3 mbd. Suez Canal (Egypt), From Red Sea to Mediterranean Sea, Oil flows (2001) 1.3 mbd, the adjacent, Sumed Pipeline transports an additional 2.5 mbd, all mainly towards Europe, Panama Canal (Panama), Oil flows 0.6 mbd. 50 mile-long canals, 64 percent of which goes south towards the Pacific."[122] Owing to the fact that these regions are highly volatile, there is an increased danger of disruption of maritime trade in energy by terrorist attack or sabotage.

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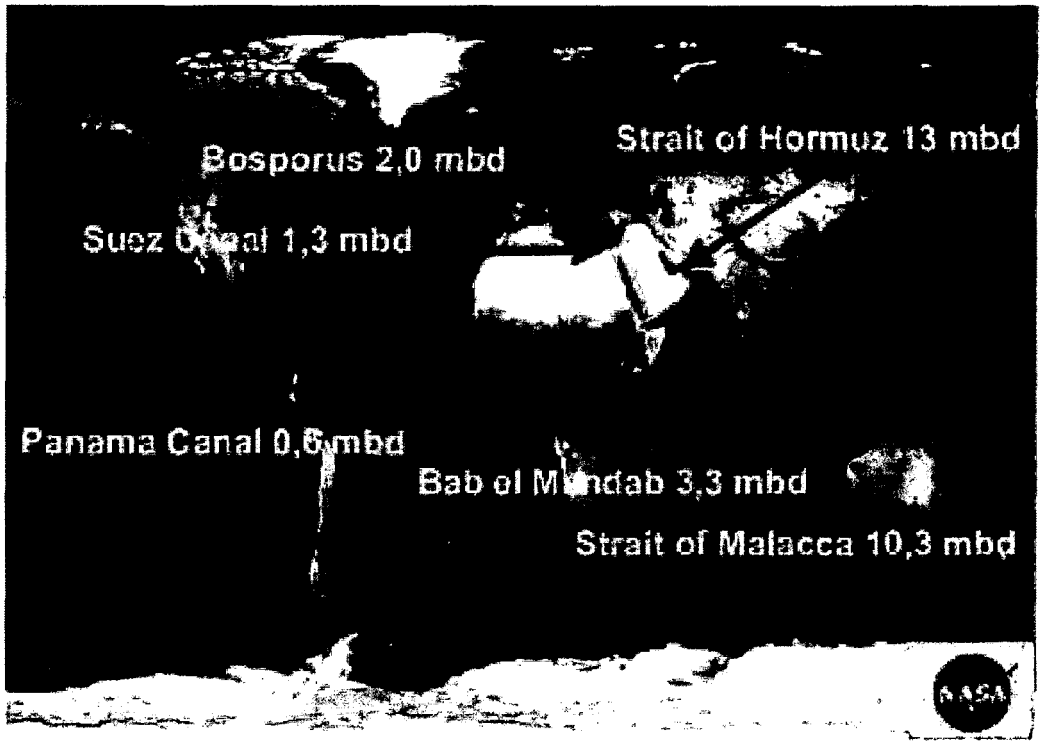
[119] Ibid. op.cite...
[120] Ibid,p32
[121] Ibid, p32
[122] Report, *Study on Energy Supply Security and Geopolitics,* January 2004, By the Clingendael International Energy Programme (CIEP), Institute for International Relations 'Clingendael', The Hague, the Netherlands,p237-238

Figure 3.1



Source: Report, *Study on Energy Supply Security and Geopolitics,* January 2004, By the Clingendael International Energy Programme (CIEP), Institute for International Relations 'Clingendael', The Hague.

Certain scholars also refer to these routes as "choke points." A choke point is a strategic strait or canal, which could be closed or blocked to stop sea traffic. There are some of the critical points on the energy supply chain, it is increasingly a possibility that they might be attacked any terrorist on these points could easily disrupt oil and gas trade. Hence, maritime security has emerged as an important component of security debate in energy infrastructure.

While September the 11, 2001 attacks on the US demonstrated the willingness of terrorists to inflict mass casualty. The sea certainly offers scale, and it is not surprising that sea vessels are attacked. "Two main reasons are put

forward for this, why terrorists might mount attacks on water: the high seas are an unregulated space that, in the case of weak states that are unstable to police their territorial waters effectively, extends right up to coast, and that few terrorist incidents have occurred at sea and therefore it is the turn of ships and seafarers to provide the next vehicle and set of victims."[123] It is quiet likely that the large ships might be used as weapons, and since ships are essential means for energy transport, any attack on them can jeopardize the whole economy. Consequently, attention has focused on the oil tankers and gas carriers.

ASIAN ENERGY SECURITY INFRASTRUCTURE

There has been tremendous change in the recent years and especially post 9/11 in the prevailing security outlook of the Asian energy market. The main security risks continue to be centered on Algeria, Iraq, and Saudi Arabia etc, however new threats have also emerged in Asian region. The implications of this are that while operators accustomed to oppressive conditions in the most commonly hostile areas will be prepared, those in newly hostile zones may find their contingency plans redefining as per the regional prevailing threat level.

The energy security environment within Asia and Asia-Pacific region has deteriorated in the past month; the co-coordinated suicide attacks in Bali hold implications for the energy industry. It is also in Indonesia where the impact of rising energy costs necessitating cuts in subsidies has led to civil unrest.

In Bangladesh on 5 October, development work at the Bibiana gas field was suspended for a few hours because of protests by local landowners. Unocal, which is developing the field, resumed work later that day following negotiations with the landowners. The protestors are angry that promised compensation from the

[123] Martin Murphy, "Maritime terrorism: the threat in context", *Jane's Intelligence Review*,

local administration had not been paid to them. The compensation was originally set at Tk 82,000 per acre (approximately $1200) but this was later reset at Tk 5 lakh per acre ($7000) following local protests. This proved unsatisfactory to local opinion once again and they insisted an additional Tk 10 lakh per acre ($14000) be added. Resolution was thought to have been found on 27 September when an agreement was reached that an initial Tk 5 lakh be paid upfront and an additional Tk 10 lakh later on. However, the Energy Ministry has implied that it will not honour that deal, hence the latest protests and interruption to work. To date this has impinged on the work of the energy industry. Concerning political risks, the implications of China's requirement to ensure energy supply and diversification were evident. In the past month, the China National Petroleum Corporation has secured ownership of PetroKazakhstan. In response to this, the two other main Asian powers, India and Japan, have sought to boost their co-operation to ensure they are not 'muscled out' of potential future bids by Chinese oil majors. The PetroKazakhstan bid is of note for another reason. "The takeover was almost thwarted by the Kazak parliament's passing of a law enabling the government to intervene in foreign-held oil stakes. It is yet a further indication of the energy nationalism that was so evident in the failed bid by China National Offshore Oil Corporation for Unocal in August this year."[124] The competition in Asia led in part by Japan boosting its co-operation with India, the third Asian power to begin to look with concern at China's expansion. Japan and India have agreed to enhance co-operation in energy supply development with third parties. The agreement was announced by Japanese economy, trade and industry minister, Shoichi Nakagawa, and India's petroleum minister Mani Shankar Aiyar on 30 September. Areas mooted for co-operation include the upstream sector in West Africa, Middle East, South-East Asia, and Russia. The pact, it is hoped, will ensure India and Japan gain better access to supplies thereby boosting their energy security. The pact will almost certainly hold implications for regional competitors, namely China, in foreign bids. This is particularly of concern for India whose

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February 2006,p20

[124] A&A Energy Security Briefing Vol. I, issue #01 - November 2005 Page 13/30

state-owned Oil and Natural Gas Corporation has recently lost out to China in its bid for PetroKazakhstan. Nonetheless, it is evident that competition in Asia is intensifying and along with it is the rising concern for security.

The security situation in the South China Sea region in particular and in the Asian region in general is characterized by multinational dispute over the territorial delimitation of the South China Sea, and terror threat to the maritime energy transport. There are overlapping claims between no less than six states to the area (South China Sea). "The lack of a firm security structure in the region makes the territorial dispute an explosive issue. On the other hand, the dispute provides the regional states in Southeast and East Asia with an incentive and opportunity to develop regional co-operative institutions."[125] The southern part of the South China Sea contains rich reserves of oil and gas, and this may be the case for the area. Exploration for oil is already going on in areas claimed by more than one country. The fishing zone around the South China Sea ranks fourth among the world's nineteen fishing zones in terms of total annual marine production. As the traditional fishing grounds in the region are suffering from over-fishing, the renewal of resources in the South China Sea is expected to be of major importance for the coastal states in the future. The security of the region is of vital importance also to external powers, primarily to the oil-hungry economies of Japan, South Korea, and Taiwan, and increasingly the southern provinces of China, which all depend on safe and open sea-lanes through the South China Sea. Energy security is once again a top policy priority in energy consuming economies. "This development has been driven by changes in the underlying structure of energy markets that have been taking place in the last half a decade or so. Energy security policies in the 1980s and 1990s were benign, if not sanguine. That has all changed dramatically with growing concern about instability in the Middle East and terrorism generally and its impact on reliability of energy supplies. These developments on the supply side have been exacerbated by the

[125] Stein Tonneson, "Maritime Conflict in Asia", International Peace Research Institute Oslo, www.prio.project/research

unanticipated pressure on international markets because of the remarkable growth of China and, in more recent times, India."[126]

The growing maritime trade activity in the region has incepted the debate regarding maritime security in the region. Questions like who will undertake the security of sea-lanes in the region are being frequently asserted. Until now, the security of sea lanes of the region are being protected by the external powers, but of late there has been growing demand from the Asian states that the security of this region should be handed over to them. The surge of energy demand in East and South East Asia is at the heart of the energy security issue in this region. Rapidly increasing demand has raised the stakes in securing long-term and stable energy supplies for Asian economies and made keener the diplomatic play on energy and other issues between principal energy consumers in the region, importantly India, China, and Japan.

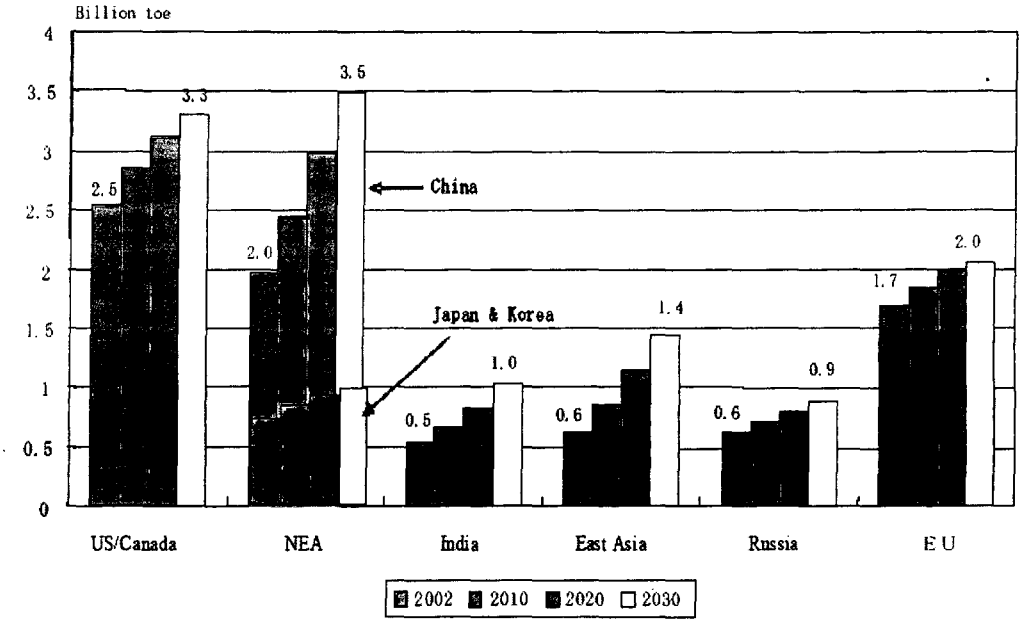
The big energy consumers in Asia – China, Japan, Korea, and India – have powerful common interests in securing energy supplies in a market visited by relatively high prices and increased terrorist threats. Sustained higher prices and security of energy supplies is inducing changes in the structure of energy markets to satisfy increased demand, substitute new fuels and sources of energy supply, and evolve joint mechanism of supervision and control of the sea-lanes. Hence, attempts are being directed to find out ways to build common military relationship to ensure against probable energy disruption to energy procurement. This includes an increasing assertion that, security of energy trade through sea lanes should be handed over to the Asian stakeholders. Several initiatives in this direction have already been initiated. For instance, Two initiatives that address the potential for short-term market disruption are the "Joint Oil Data Initiative (JODI) covering 94 countries, being promoted by collaboration of six international institutions, namely, APEC, EUROSTAT, OECD/IEA, OLADE, OPEC and UNSD and the

[126] Peter Drysdale, *Asia Energy Forum, 2005: International Energy Security and Regional Cooperation in Asia* , Asia Pacific School of Economics and Government, Australian National University, IEEJ December 2005,p1

Real-Time Emergency Information Sharing System (RTEISS) among APEC countries. This is a real time communication system among government officials sharing information and exchanging intentions. There is scope for further cooperation in dealing with short-term supply disruptions through arrangements to share national stockpiles in times of natural emergency."[127]

Figure 3.2

East Asia and the World Energy Outlook, 2002 to 2030



Source: IEA, World Energy Outlook, 2004[128]

The increase in producers and consumers have made the energy market more flexible and beyond the control of any one actor or group of actors. For instance, irrespective of United States attempt to drive down the all time high oil prices, the price of oil remained unchanged. This amply states the limitations of any one actor to set rules, and in the near future, it will become more difficult to do so.

[127] Ibid, op.cite..

[128] Located in Peter Drysdale, *Asia Energy Forum, 2005: International Energy Security and Regional Cooperation in Asia* , Asia Pacific School of Economics and Government, Australian National University, IEEJ□December 2005,p 4

The United States faces a global competitor China, which has an active place in Sudan's oil sector and has been pursuing a toehold elsewhere in the continent's oil wealth. "Chinese participation in Africa has been accompanied in some cases by Chinese military delegations selling arms, a situation of some concern given the proclivity towards ethnic and political strife in some key oil producing countries in the region. East Asia frequently pulls one million bpd from West Africa to feed its growing appetite for high quality West African crude."[129]Therefore, China is emerging a tough competitor to the United States in its African venture.

China's involvement in the Caspian region energy resources, and Russia's and India's interest in the region has again adding up to the heightened competition among them. It is happening due to the fact that, Caspian oil offers a welcome possibility of supply diversification from West Asia dependency. Kazakhstan and Turkmenistan are territories neighboring China, India, and Russia, with whom all these countries have close relations. Although the exploitation costs are high, they are still preferable to these countries because of greater political stability compared with the West Asia.

China is encouraging the new Central Asian states to balance their relations with the US and Russia, and increase cooperation between China and Russia. Moreover, China is actively allying with Russian oil companies to jointly enter competition for Caspian oil and gas to counter Western influence in Central Asia. Infact, china is trying to open up a new Central Asian corridor that would offer a continental corridor to the Persian Gulf, thus increasing China's geo-economic space.

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[129] Joe, Barnes, Amy Jaffe & Edward L. Morse, "The new Geopolitics of Oil", *The National Interest,* Winter 2003/2004, energy supplement 12

India is a net energy importer, and with a growing population and continued economic growth, its energy consumption is growing accordingly. "India has a state approach to the energy sector, but its New Exploration Licensing Policy allows FDI by TNOCs in Greenfield projects. Self-sufficiency in oil and gas will not be reached. Consequently, energy imports have become a vital interest for the Indian state."[130] Certain initiatives like Turkmenistan; India via Pakistan pipeline is an attempt to fulfill its energy interest. India's growing interest in the Pacific region and elsewhere is making other competitors like China suspicious. Therefore, what we can conclude with all these episodes is that, competition associated with geopolitical interests is emerging as an important component energy security infrastructure. Nations often try to secure their energy interests by geopolitical moves.

The recently concluded G-8 Summit, in which India and China at St. Petersburg (Russia) participated, outlined the emerging energy challenge and called for the need of a coordinated regional approach to ensure energy security. The trilateral meeting between Russia, China, and India was crucial in this direction. These powers explicitly declared their intent to evolve a joint energy security infrastructure in the Asian region.

> "Since energy supply sector is global, most challenges to its effective functioning have global dimension as well. We have to deal with current tensions on the energy markets as well as with fundamental trends of demand out stepping energy supply, primarily due to rapid growth of most dynamically developing countries, lack of adequate investments, and resulting insufficiency in production and refining reserve capacities to effectively cover emerging imbalances. We are faced with depletion of the developed large hydrocarbon deposits and declining "quality" of new ones in terms of cost and technology required for their development, as well as their geographical and transport accessibility. Present and potential political instability in some major oil and gas producing regions, increasing vulnerability of the global energy infrastructure to natural calamities and terrorist and pirate attacks and transit interruptions are also

[130] Report, *Study on Energy Supply Security and Geopolitics,* January 2004, By the Clingendael International Energy Programme (CIEP), Institute for International Relations 'Clingendael', The Hague, the Netherlands,p219

of concern to us since they contribute to global energy uncertainties, which lead, among other factors, to higher and volatile prices on hydrocarbons."[131]

Based on the above objectives, principles and approaches, it draws the following common global energy security strategy:

- Promoting adequate and reliable long-term oil and gas supply to global markets;
- Increasing energy efficiency both on supply and demand side, improving Environment and mitigating effects of climate change;
- Eradicating energy poverty in the world;
- Diversifying energy supply and demand mix, including based on alternative energy and innovative technologies.

Markets only per se, may not always protect the energy interest of nation states. According to Moran models of economic maximasitation are inappropriate, inaccurate and misleading when applied to certain case studies like OPEC decision making and that the most complete and powerful explanations are those which acknowledge that "Political and Security concerns wag the economic tail, and not vice versa, where they conflict, and the former prevail". [132]

Energy markets in the twentieth century were not, for the most part, fully free markets. There were all kinds of interventions: to protect producers or consumers; to stabilize prices; to limit or promote demand for a particular commodity; to protect long-term security. "These interventions reflected both considered philosophies and sheer politics. The politics of energy played out quite differently depending on the size of the local coal, oil or gas producing interests, as well as the history of consumer protections or subsidies."[133] Energy security

[131] Draft, G-8 Summit, *Global Energy Security*, St. Petersburg, July 16, 2006
[132] Quandt, *Saudi Arabia in the 1980s,* Theodore Moran, 1978, *Oil Prices and the Future of OPEC,* Washington D.C. Resources for the Future, and especially his "Modeling OPEC Behaviour: Economic and Political Alternatives, *International Organisation,*32, Spring 1981, op, cite..
[133] George Anderson Deputy Minister, Natural Resources Canada *Markets, Geopolitics, Energy Security and Sustainability* 19th World Energy Congress, Sydney, Australia 5 – 9 September

infrastructure has become interdependent, and multilateral in nature. Now it is not realistic to expect pure market forces to shape energy economies around the world. That said, there is clearly more respect for market mechanisms than there was fifteen or twenty years ago—this is outstandingly true of the transitional and developing economies. In addition, "the OECD countries, in particular, have become much more rigorous in designing their energy policies to be market compatible. This is true even when they consider interventions in the energy market—increasingly the instruments used, such as emissions trading, energy security infrastructure are designed to take advantage of the market forces."[134]

Concern about energy security is now rising again. This year it was a focus of discussions amongst western hemisphere and APEC energy ministers and at the International Energy Forum in Amsterdam. "High prices have brought political and public focus to vulnerabilities in oil markets, including how exogenous developments—such as those in Iraq, Venezuela, and Nigeria—can have major impacts."[135] Therefore, energy security infrastructure has emerged as an important tool to protect the energy interest of the countries concerned.

Supply disruptions have become a fact, in 2002-2003, there was two major and one minor supply disruption, with the strike in Venezuela, the attack on Iraq, and the internal strife in Nigeria, Iraqi output has been slow with no exports out of the north. "It will continue to follow a bumpy, unpredictable path, with intermittent severe supply shortages and intermittent excess supply, there are likely symptoms of supply disruptions from Venezuela, Nigeria, Saudi Arabia, the Caspian, and there is no surety of how long it may continue, key new suppliers are sensitive to political instabilities, Azerbaijan, Angola, Sudan, Iran and Syria

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2004,p3

[134]ibid,p3

[135] George Anderson Deputy Minister, Natural Resources Canada *Markets, Geopolitics, Energy Security and Sustainability* 19th World Energy Congress, Sydney, Australia 5 – 9 September 2004,p4

loom on the near term horizon as well".[136] Therefore, the role of energy security infrastructure becomes ever more important.

The rapid growth expected in the energy market with the beginning of 21st century may not fully materialize without adequate energy security infrastructure. Impediments to free movements of capital and people, lack of institutional guarantees, tanker facilities etc. do not provide the readily accessible markets for the energy trade. Energy market is entering in a new millennium with mixed fortunes, which shall be greatly determined by the degree of security infrastructure component. The full advantages of energy trade largely depend upon security infrastructure preparedness. Energy use per unit of GDP in general does decline, but production and GDP growth induce a continued growth in absolute energy requirements.

Even after the price increases of 2005, IMF, World Bank continue to see 2006/07 global GDP slowing to around 3.5% from just above 4.0%. So long as global economic growth remains robust (3.5%+), underlying demand for energy should grow. Emerging markets will contribute oil demand at around 3.5% in 2006, Chinese growth projected to settle at 8.5% in 2005 and 8% in 2006, translating into +500-Kb/d per annum, US oil demand growth, after revisions, should see rises of over 200-Kb/d, in gasoline and diesel.[137] Very rapid economic growth will occur in parts of the Asia-Pacific region, Latin America and in Central Europe and Russia, contributing to aggregate oil demand growth. Economic development elsewhere in the world and the free movements of goods, capital and people provide the easily accessible markets for the products of these regions. Within this environment, it becomes quit likely that energy security infrastructure will play a pivotal role in sustaining the growth momentum.

The actual performance of the market largely depends upon the level of

[136] Hess Energy Trading Company, LLC December 7,2005,p48
[137] Hess Energy Trading Company, LLC December 7,2005,p20

integrated security infrastructure development. By integrated security infrastructure, we mean the joint efforts of different nations in managing security of energy flow. Infact, given the considerable resources at its (energy markets) disposal, the optimum exploitation and marketing of these resources depends on security infrastructure. Without adequate institutional guarantees, protection in high seas from terrorist attacks, port security etc. it would be difficult to transport energy to the consumer nations smoothly. The extent and level of security infrastructure development makes significant contribution to the growth momentum of economies.

There is a clear link between security infrastructure and economic growth. While Energy is a fundamental driver of growth and development around the world, security infrastructure ensures in keeping the momentum. For less developed countries in particular, energy is a key enabler of growth, but also a hindrance to growth if not available, or only available, at high prices[138]. The energy security infrastructural component of the energy market, besides reducing the cost of production and transportation also ensures security of supplies to these nations.

TYPES OF DISRUPTIONS

Given the predicted development of energy demand and the geopolitical context, several types of disruptions may occur. Different types of disruptions have different impacts. These are:

1) ***A sudden disruption,*** because of a political decision not to offer oil on the market, a war-situation, or due to technical and operational problems.

[138] E. Anthony Wayne, "Energy Security — A Global Challenge, May 22, 2006, Released by The United States Mission to the European Union

2) ***A slowly emerging supply gap,*** as a result of an dismal investment climate in production and/or transport capacity; and

3) ***A slowly emerging supply gap,*** because of the "ideological choice of producer governments."[139] Depending upon the scale, specific facilities and regions, the resulting impact of such disruptions would be catastrophic.

According to George Anderson:

"We are clearly entering a very different period for global energy relations. We shall continue to face geopolitical risks and uncertainties and concerns around energy security are likely to continue to rise. Oil will remain the most strategic and political energy commodity. But there shall be more and more focus on sustainability and potential constraints on our current energy paths—especially because of climate change, but possibly because of investment and even resource constraints. It will be interesting to see how these old and new issues might relate to one another."[140]

The energy security infrastructure links the old and the new issues together. It has emerged as a major tool to secure the geopolitical risks and uncertainties and concerns involved in the energy market.

One of the main aims of consumer countries is to create security of supply, while producer countries desire security of demand. These two energy policy priorities have brought producers and consumers increasingly together. Efforts of Venezuela and France in the 1970s and early 1980s to bring producer and consumer countries to the table initially failed. When relations had normalized in the second part of the 1980s, a dialogue became possible. In the past decade, the consumer-producer dialogue has gained importance and has been institutionalized in the International Energy Forum (IEF) with a Secretariat in Riyadh, Saudi Arabia. About 80 countries participate in the bi-annually meetings of the energy ministers. The agenda of the IEF was initially predominantly focused on oil issues

[139] Report, *Study on Energy Supply Security and Geopolitics,* January 2004, By the Clingendael International Energy Programme (CIEP), Institute for International Relations 'Clingendael', The Hague, the Netherlands,p101

[140] George Anderson Deputy Minister, Natural Resources Canada *Markets, Geopolitics, Energy Security and Sustainability* 19th World Energy Congress, Sydney, Australia 5 – 9 September

but recently gas and other subjects, such as investments, public-private partnerships, etc, have been included in the agenda. One of the major focuses of IEF has been on the energy infrastructure development. However, over the period it is expanded and has now come to include energy security infrastructure. The IEF has become an important channel for co-operation and creating a far better understanding of the vital interests and problems of the participating countries.

In July 2003, world oil production was 78.3 million barrels a day, an increase of 8.6 million barrels since 1992. The IEA World Energy Outlook 2002 predicts oil supply to grow to 88.8 million barrels per day in 2010, 104 mb/d in 2020, and 120 mb/d in 2030. The share of OPEC in world oil production is predicted to increase from 38.4% in 2000 to 54.1% in 2030. The share of the Middle East OPEC member states, which was 28.1% in 2000, is anticipated to increase to 29.8% in 2010, 36.4% in 2020, and 42.9% in 2030. The Persian Gulf countries are predicted to produce 51.4 mb/d of oil, while the remainder of the OPEC countries is predicted to produce 13.5 mb/d in 2030.[141] The bulk of oil supplies shall largely come from the Persian and the Gulf region. The security concern for the oil and gas infrastructure emanates form the fact, that both these regions are highly volatile and instable. These regions are more prone to disruptions in oil supplies, which may jeopardize the whole world energy market. There exists a real danger that certain problems in these regions like Islamic Militancy, legitimacy problem of the government, ethnic clashes might seriously affect the stable supply of energy. For consumer countries it would be a nightmare scenario if both these regions prove to be unstable because of their heavy dependence on oil form these regions.

In the last few years proven oil reserves have by remaining stable, has infact increased by 1000 billion barrels. The international market for oil and gas has undergone rapid changes in the past three decades. Technological progress in

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2004,p8
[141] Ibid,p243

exploration and production of oil and gas, for instance, has besides bringing the unconventional oil within reach, and increasing the recovery rates in existing oil fields, has raise concerns on the oil and gas infrastructure security. The bulk of increase in the global oil market was due to the new discovery of oil fields in West Asia, North African, and Latin American countries. However, fear of security of oil and gas infrastructure is confounded because, all these regions are highly unpredictable and disturbed, infested with ethnic wars, group clashes, and terrorism.

Over the period, trade in LNG has increased rapidly. According to one estimate, by 2015 the United States may be the world's largest LNG importer, accounting for 22% of global volumes, South Korea, Spain, and the UK will also be importing large quantities of LNG, and may be joined by developing nations including India and China, seeking greater imports for rapidly growing economies.

Securing LNG infrastructure against accidents and terrorist attacks is a big challenge. Since import terminals process large volumes of LNG, a breakdown at any facility has the potential to bottleneck supply.[142] Terrorist strike at any import/export terminal has the capacity of significantly affecting LNG price and availability. The LNG infrastructure requires large capital investments. In addition to gas field development costs, new liquefaction plant costs, it includes import terminal costs. Due to high capital costs of LNG infrastructure, LNG trade has traditionally relied upon long-term fuel purchase agreements in order to secure project financing for the entire supply chain. Of over 160 major LNG supply contracts in force around the world as of March 2004, well over 90% had a contract term of 15 years or longer.[143] These contracts require multilateral or bi lateral institutional guarantees also. Unless until there are adequate institutional guarantees LNG, trade shall remain fragile. The physical

[142] CSR Report For Congress, " Liquefied Natural Gas (LNG) in U.S. Energy Policy: Infrastructure and Market Issues", updated February 18, 2005p
[143] Ibid, p3

infrastructure of LNG market includes several interrelated things. However, it mainly includes, besides other things like roads etc, two things: one Pipeline, and the other Shipping oil tankers. Pipelines and oil shipping tankers have become an important infrastructural part of the oil market. A typical tanker, for example, can carry 138,000 cubic meters of LNG — enough to supply the daily energy needs of over 10 million homes. In producing countries, natural gas is extracted from gas fields and transported by pipeline to central liquefaction plants where it is converted to LNG and stored, liquefaction plants are built at marine terminals so the LNG can be loaded onto special tanker ships for transport overseas. "Tankers deliver their LNG cargo to import terminals in other countries where the LNG can again be stored or regasified and injected into pipeline systems for delivery to end users."[144] Gas, from foreign gas field reaches to Liquefaction plant and carried by LNG tanker that takes it up to the LNG terminal import facility, from where it is transferred through interstate pipeline system. Regasification takes place in a receiving terminal in the country of destination. Essentially a simple process, the unit costs of unloading LNG carriers, storing and regasification of LNG, calls for a considerable level of developed infrastructure. Disruption at any point of the chain shall affect the whole LNG trade. Therefore, LNG security infrastructure requires that, adequate measures must be taken to ensure security of gas installations, and transportation route. LNG gas is combustible, so an uncontrolled release of LNG posses hazard of fire or, explosion. Because LNG tankers and terminals are highly visible and easily identified, they are quiet vulnerable to terrorist attack. "The Sandia report, released in December 2004, determined that a worst-case, "credible" LNG tanker fire could emit harmful thermal radiation up 2,118 meters (1.3 miles) away. The report also concluded that, the consequences from an international [tanker] breach could be more severe than those from accidental breaches."[145] The terrorist attack poses a real danger to the LNG infrastructure. Securing tanker shipments and pipelines against terrorist attacks may be the

[144] Ibid, p3
[145] Ibid,p7

most significant public expense associated with LNG. The high costs of an LNG project are a characteristic that LNG has in common with long-haul gas pipeline projects. It is difficult to calculate the exact cost, because cost can vary depending to location and supporting facilities and distance from the market etc. For oil developments, the costs of taking the production to the market are only a fraction of the costs for gas, including LNG. Combined with the rigidity of the gas chain (i.e. little elasticity and the limited number of buyers, terminals and ships), these high up-front costs create a very different risk profile for LNG projects than for oil projects. For many LNG prospects, costs and risks are too high to make a project economically viable in its own right. In those cases, more supportive conditions are needed to make the project feasible, such as the associated production of oil and tax incentives from the host government.[146] The growing LNG market has a profound impact on the coming up Pipeline networks. New pipelines are coming into Europe, Africa, and Asia. Azerbaijan-Georgia-Turkey (AGT) pipeline system, two pipelines Baku-Tbilisi-Ceyhan or BTC pipeline [oil], Baku-Tbilisi-Erzurum or South Caucasus Pipeline, SCP [gas], the Eni's planned pipeline between Libya and Sicily, where it will connect with the Eni-controlled Trans Mediterranean system, which carries Algerian gas to the Italian mainland, the Medgaz planned direct link between Algeria and Spain. "Algeria's state owned oil and gas company Sonatrach, and Spain's Cespa will be joined in the venture by BP, Endesa, Eni, Gaz de France and Total Fina Elf- between them, covering the entire gas chain from production to distribution and electricity generation in Europe"[147], the Iranian pipeline entry into India and Pakistan, the Dolphin gas project from Qatar to Abu Dhabi. With the growing LNG import, capacity the linking of new terminals with pipeline network has become a consideration. LNG affects pipeline infrastructure in two ways. First, new terminals and terminal expansions must be connected to the interstate pipeline network through sufficient "take away" pipeline capacity to handle the

[146] "*Main Trends in International and European Oil and Gas Markets*", EU Study,p259
[147] Martin Quinal, "Natural gas trade set for sharp expansion", *Petroleum Economist*, March 2001, p,13

large volumes of imported natural gas. Depending upon the "size, location and proximity of a new terminal to existing pipelines"[148], the threat of terrorist attack always remains. In case of attack, not only availability of LNG is affected, but also the transportation cost adding up the total cost of gas. Second, consumers are always suffer from instable supplies, if gas imported as LNG cannot move freely through interstate pipeline systems, consumers may not realize the lower prices that result stable gas availability. Therefore, the most costly facet in the gas pipeline network is at the ends of the pipelines, not the beginnings. Recent indications point to an increased risk of systematic attacks against the world's petroleum supply chain, particularly in South Asia and the Middle East. According to Jane's intelligence review - June 01, 2003;

> "The most common form of attack, due to the immediate disruption caused, is pipeline bombings. Attacks against pipelines, however, also damage national economies and can cause human fatalities. As a result, guerrilla groups engaged in civil wars, particularly in Latin America and the Middle East, commonly target pipelines. One of the most serious attacks of this type was the October 1998 National Liberation Army (Ejército de Liberación Nacional) bombing of the Ocensa oil pipeline in Colombia. The oil spills created by the bombing caught fire, setting nearby homes and part of the conduit in Manchuca on fire, resulting in the death of more than 70 people."[149]

The threat of terrorist attack on oil and gas transport pipelines throughout the world is real and dangerous. Along with paralyzing the oil and gas dependent economies, it has a capacity to create instability in the international oil market.

Because of the geopolitical developments and certain new changes in the energy market today, there is a need to redefine and recast the hitherto followed energy followed energy security policy. New players in Asia, new discoveries of oil and gas in Asian, African, Caspian region, Africa and Latin America has changed the energy market as never before. In this context, until now followed energy security policy may not be applicable. The actors in the energy market have

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[148] CSR Report For Congress, *" Liquefied Natural Gas (LNG) in U.S. Energy Policy: Infrastructure and Market Issues"*, updated February 18, 2005p12

[149] *Jane's intelligence review* - June 01, 2003, Date Posted: 21 -May-2003

changed, the oil fields have changed, and oil and gas is flowing towards east and not towards West as it used to be earlier. Therefore, it is important to ask whether the old energy security doctrine, which was carved during the cold war period, can continue to fulfill the aspirations of the changed energy market. There is a need to revisit and redefine the energy security framework and interpret according to the evolving needs of new players in Asia. The following chapter proposes to do so.

Chapter IV

REDEFINING THE ENERGY SECURITY FRAMEWORK

With the onset of Globalisation, introduction of new technologies, emerging markets in Asia, new sources of supplies, the energy market is not the same, as what it was, when the energy supply was controlled and energy security defined by the super powers. Now it is revisited with certain new developments, which has totally transformed its nature of functioning. In a context when, the fundamentals of oil market are changing fast, and the international energy market is confronted with new reality. The old energy security framework may not hold relevance. Apparently, the energy security needs to be redefined in the light of new market fundamentals.

What has driven the change in energy policy climate is the relatively sudden shift from a buyer's to a seller's market. Real energy prices have still not reached the peak attained in during the energy crisis of the 1970s. However, the threefold rise in energy prices since March 2002 and their doubling since March 2004 has galvanized market players and governments to focus on securing reliable long-term supplies of energy. Major reports and white papers in Europe, North America, and Asia have highlighted the need to reconsider energy procurement and substitution strategies."[150] Anxieties about access to energy supplies have been aggravated by terrorist threat to the energy infrastructure.

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[150] Peter Drysdale, Asia Pacific School of Economics and Government Australian National University, *Asia Energy Forum, 2005: International Energy Security and Regional Cooperation in Asia,* a, Panel Discussion: The Establishment of an Energy Security System in East Asia IEEJ: December 2005,p2

Uncertainty about access to supplies is not primarily a product of re-assessment of physical reserves. Rather it has resulted from the interaction between the developments in the energy market, especially technological revolution, political developments in the Middle East and the war on terror and the spurt of growth in energy demand in Asia. The surge of energy demand in Asia has emerged as the core of the energy security issue in this region. Rapidly increasing demand has raised the stakes in securing long-term energy supplies for Asian economies and made keener the diplomatic play on energy and other issues between principal energy consumers in the region, importantly China and Japan and India. Besides, it has also led to the emergence of an alternative definition of energy security framework free from the way West perceives it. According to Peter Drysdale:

> "The sharp adjustment in the energy terms of trade in favour of sellers, if it persists, will require structural, not just marginal, shifts in energy markets with new suppliers and new energy sources playing a larger role. An implication is that there is a role for governments acting independently and in concert to address the political issues and undertake whatever the public investment needed to resolve energy problems."[151]

So long the flow of energy was westward, it was understood that the west defined energy security in the context of its own needs. Today when the market is expanding and moving to the East, the East does not feel comfortable with the energy still controlled by the West. the expansion of energy means that, Asia would be redefining the energy security. Voices in the form of the maintenance of security of sea-lanes, joint mechanism for security and supervision of the energy transport routes etc are coming. The Chapter addresses these issues.

For both energy exporting and importing countries, energy is crucial for national economic and social development. Energy is important for commercial and political relations between countries. It fuels the world economy. Production and consumption of energy influence the environment. "Energy influences, and is influenced by, international politics. It is difficult, indeed, to imagine an area,

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[151] Ibid, p3

where nations are more interdependent than in the confluence of energy, environment, and economic development."[152] In other words, nations have become interdependent. Energy security has been increasingly been visualized with an integrated approach. Energy sufficiency and demand sustenance can be met by incorporated approach and cooperation. Energy security in general is now being associated with cooperation between different stakeholders in the market.

New technological developments, economic growth, government policies and a maze of product introductions and consumer responses, over the long run has fundamentally changed, the way in how and why we define energy security. The "increasing import dependence of few important geographic areas constitutes an inherent security risk, both for oil and for gas,"[153] especially in the absence of political stability in those areas. Strong nationalistic feelings have remerged in various regions, creating tensions. Asia in this direction has surfaced as a prominent centre of tension and oil or LNG price volatility.

For the developing countries of Asia the concepts of energy and development is inextricably intertwined. Part of this reflects simply economic reality. Asia as an important and growing consumer must import energy to meet its domestic needs. The Asian policy makers and the public alike are painfully aware of the vulnerability of this dependence. The notion of energy security until now has played an important role in defining their national interest, and domestic policy. But the issue is that, this definition may not still continue to serve their interest, especially in the changed circumstances, and more specifically when the fastly growing economies need a lot of energy in order to meet their domestic demands and especially when energy is quiet crucial for their future growth momentum.

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[152] Arne Walther, "A New Asian Energy Identity", *Middle East Economic Survey,* VOL. XLVIII, No 4, 24-January-2005

[153] "Energy to 2050: Scenarios for a sustainable future", *International Energy Agency,* Head of Publications Service, OECD/IEA, 2003, p84

In a changing context, there has been a shift in the world energy market. Total energy consumption has substantially increased, not only that, the pattern of energy utilization also seems to be changing. Oil despite still being a strategic commodity is giving way to the preferences towards natural gas. On the supply side of the matrix, new players have made forays into the energy market. The pressure of market seems to be increasingly defining the parameters of energy security regime. Earlier in the past, geopolitics had a prominent say, now it is geo-economics that seems to be prevailing. The national governments played an important role in the past, now new actors both formal as well as informal are playing an important role in the energy regime.

The world energy demand (as primary fuel) has grown by nearly 95% during the last 30 years and is likely to grow by over 52% during the next two decades. The demand for natural gas is expected to grow by as much as 97% with demand for oil increasing by over 42%. The following mentioned IEAs energy demand estimate from 2003 to 2006 also reflects an increasing trend. Not only that, on the consumption side also, the total energy consumption has increased rapidly. Taking into account the demand supply matrix there has been a resurgence of new players in the energy market today, for instance in Asia, Africa, Latin America, Caspian region etc.

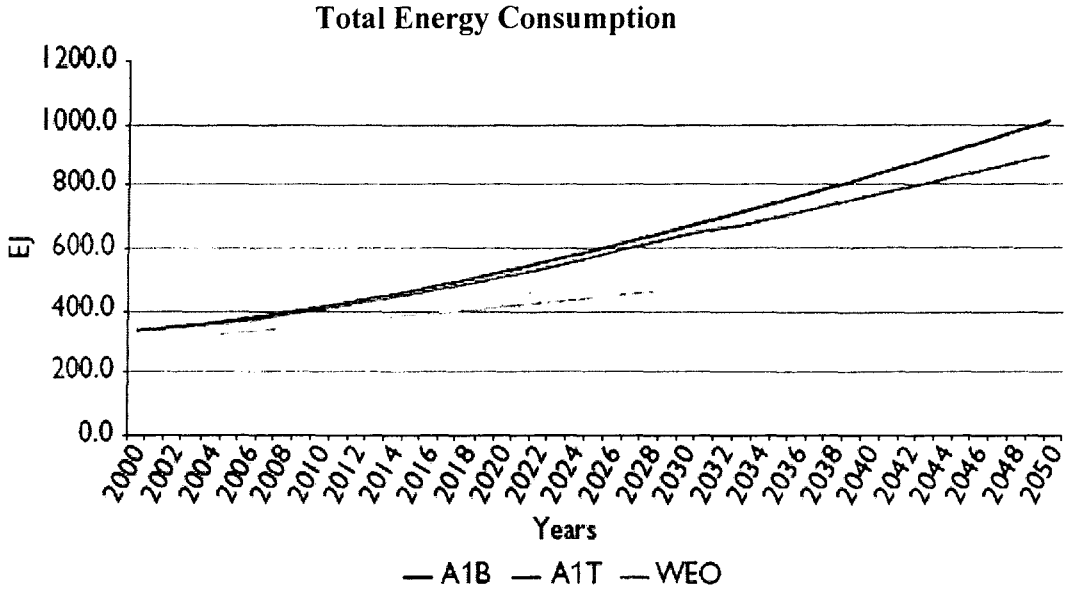
Figure 4.1

THE IEA'S VIEW OF OIL DEMAND (Actual and Projected, in mmb/d)

	2003	2004	1Q05	2Q05	3Q05	4Q05	2005	2006
OECD								
N. America	24.5	25.3	25.5	25.3	25.5	25.8	25.5	25.9
Europe	15.4	15.6	15.6	15.3	15.6	15.9	15.6	15.6
Pacific	8.7	8.5	9.5	8.1	8.1	8.9	8.6	8.7
Total OECD	48.6	49.5	50.6	48.7	49.2	50.6	49.8	50.2
Non-OECD								
FSU	3.6	3.7	3.7	3.6	3.6	4.1	3.8	3.8
Europe	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7
China	5.6	6.4	6.5	6.4	6.6	7.0	6.6	7.1
Other Asia	8.0	8.5	8.7	8.9	8.5	8.8	8.7	8.9
Latin America	4.7	4.9	4.8	5.0	5.0	5.0	5.0	5.1
Middle East	5.3	5.6	5.8	5.7	6.1	5.9	5.9	6.2
Africa	2.7	2.7	2.9	2.9	2.8	2.9	2.9	3.0
Total Non-OECD	30.6	32.7	33.3	33.2	33.4	34.5	33.6	34.8
Total Demand	79.2	82.2	83.9	81.9	82.5	85.1	83.3	85.0

Source: Hess Energy Trading Company, LLC, Dec 7, 2005, p21

Figure 4.2



Source: Elaboration on data from SRES and IEA's WEO - 2002.

The changing spatio – temporal dimensions in energy market since cold war has brought forth energy security issue in debate. Securing supply stability to the demands of newly emerging economies of Asia and elsewhere is a matter of serious concern. How to make compatible the globalizing energy market to the advantage, defined in terms of "developmental aspirations" of these nation states. The other issue, which the alternating market has put, is at the doctrinal level. The energy policy of the Asian states was till now, governed by the Cold War security Architecture."[154] Nevertheless, such doctrine may not be applicable in the changed circumstances after post cold war period. In other words, the old energy security paradigm that was framed in the context of cold war rivalry between two super powers may not be applicable after the disintegration of Russia and especially due to certain new developments, as mentioned elsewhere. Hence, the old energy security framework needs to be revisited and redefined in the light of prevailing circumstances.

There is a Disjuncture of interest between the cold war led energy doctrine, which was influenced by security considerations and the developmental aspirations of Asian states in the post cold war period. Asia today, unlike the power blocs during cold war period, needs energy not to fight wars or for military purposes, but for development. Therefore, the relevant question is,- when the goals of state have changed, i.e. from "security" it has become "developmental", then, can the means to achieve it could remain unchanged? The old Energy security doctrine is not only self-defeating to Asian states, it defeats the very essence of their foreign policy objectives. It goes against their developmental aspirations.

Even in the post cold war period also, there has been an attempt by certain major power like USA to dominate the energy market and continue the old energy doctrine of cold war period. The politics of the world's energy sector has been

[154] By *Cold War Security Architecture*, what it is meant that, due to the power bloc rivalry during the cold war period and constant tension between power blocs, perception regarding National Security in Military terms was quiet strong, as a result of which the foreign policies of these states was often influenced by Security considerations.

witnessing the United States' attempt to dominate it for the past few years. "The Gulf wars have sent a strong message to developing countries such as China and India and Asia in general of the danger of their heavy dependency on Middle East oil and the growing influence of Western powers in that region."[155] This development has tremendous influence in the search for alternatives for these countries. According to Nandkumar J:

> "China and India, as two big powers in Asia, will be the main energy consumers of the region. Burgeoning industrial growth and other energy-consuming activities are part of their economic development. As both these countries have similar patterns of energy use, their energy strategies may also have similarities. Any traditional approach to attain energy security may not be a solution to any kind of forthcoming energy shock or shortage of supply. That requires a comprehensive plan to act in a multi-dimensional way - investing in energy resources abroad, developing existing domestic energy resources, inviting foreign direct investment to develop renewable resources, and above all creating a well-structured network of regional energy cooperation."[156]

However, what is true for India and china is equally true for all Asian states, at least in this respect. There is a need for supply diversification, and more importantly an integrated regional network of energy cooperation.

The rising energy demand and consumption of Asia, foretells that on developmental stage, the next century is going to be Asia's century. Out of the total energy, demand in Asia a major share goes to India and China. Though the economic growth rates of China and India are different, their energy-consumption growth is almost same. Moreover, both are imported-energy dependent nations. The energy strategy of these two nations, which evolved during the cold war period, may need a redefinition. It may not be relevant in the changed energy space today. The new energy strategy of these two countries shall largely determine their energy security. It is true, for not only India and China; rather it is equally applicable for Korea, Japan and all other Asian states as well.

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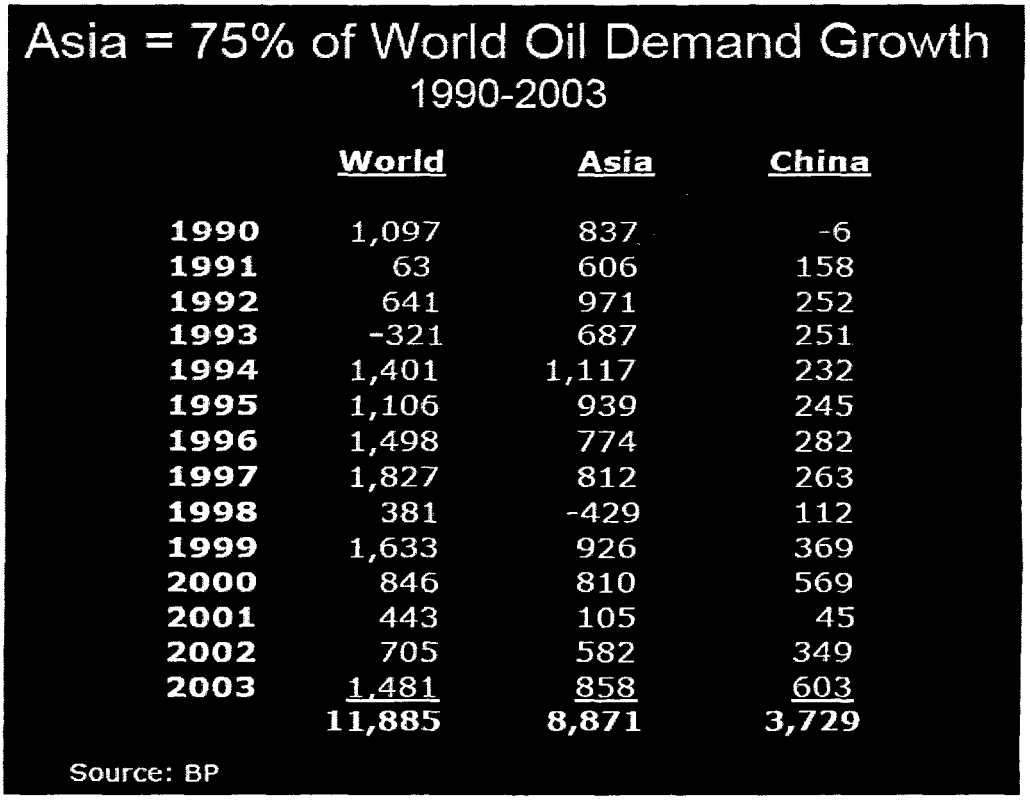
[155] Nandakumar J, "India, China, and energy security" *Speaking Freely,* Feb 7, 2004, www. Asia Times Online - News from greater China_ Hong Kong and T.htm

[156] ibid

Figure 4.3



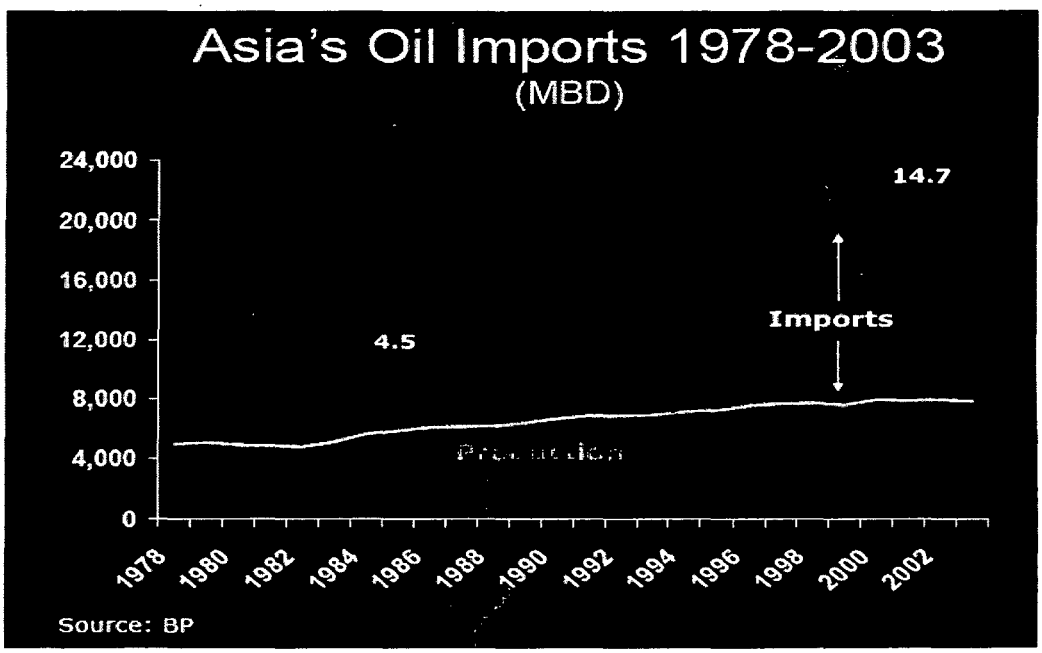
Asia = 75% of World Oil Demand Growth
1990-2003

	World	Asia	China
1990	1,097	837	-6
1991	63	606	158
1992	641	971	252
1993	-321	687	251
1994	1,401	1,117	232
1995	1,106	939	245
1996	1,498	774	282
1997	1,827	812	263
1998	381	-429	112
1999	1,633	926	369
2000	846	810	569
2001	443	105	45
2002	705	582	349
2003	1,481	858	603
	11,885	**8,871**	**3,729**

Source: BP

Cited in IEEJ, March 2004, Mikkal E. Herberg

Figure 4.4



Cited in IEEJ, March 2004, Mikkal E. Herberg[157]

As per the above-mentioned estimate, Asia accounted for around 75% of the total world oil demand growth during 1990- 2003. In 1990, world demand growth was 1,097 and Asia's 837, which total in 2003 rose up to 11,885 and 8,871. Along with that, Asia's oil imports from 12000 MBD in 1978, i.e. around 4.5%, rose up to around 24000 MBD and touched 14.7% mark. This by no means is a small leap. However, when compared total Asia's demand growth with China, and India during the same period, one can very easily conclude that, a major demand chunk is coming from these countries.

[157]ibid, p4

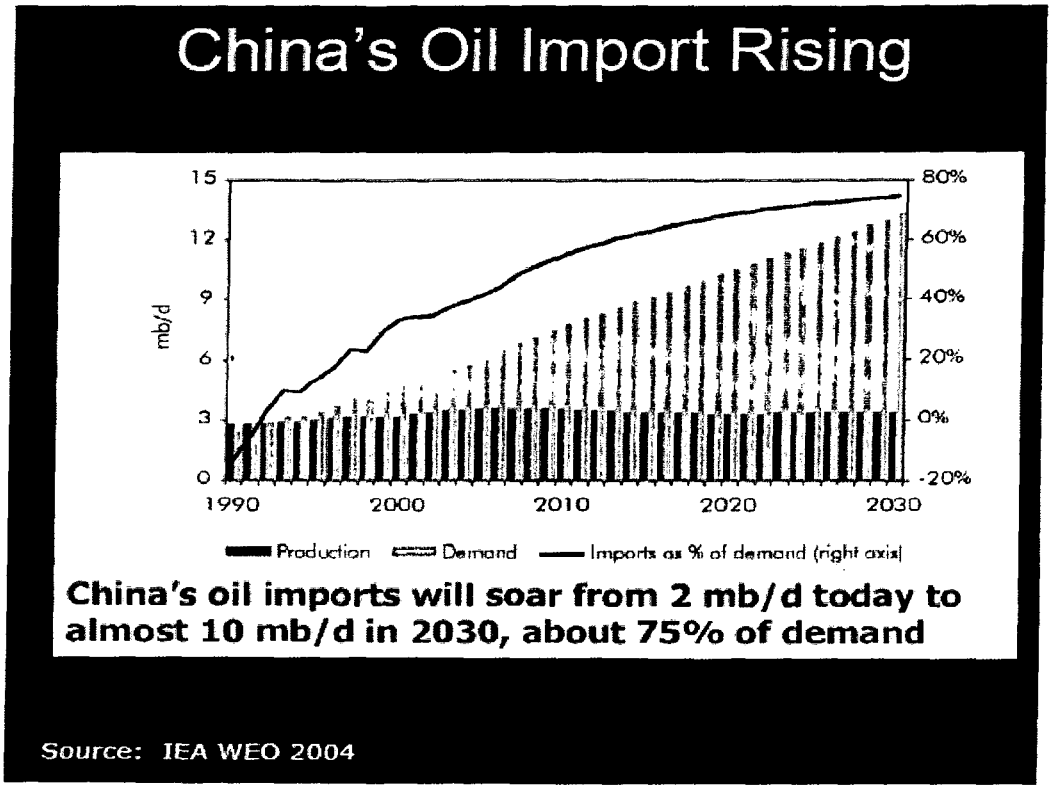
Table 4.1

Changing share of oil demand among the four Asian countries (000 b/d)

	1985	1995	2005	2010	1985	2010
India	845	1,481	2,922	3,807	8.39%	14.11%
China	1,752	3,152	5,221	6,320	17.22%	23.42%
Korea	535	1,970	2,485	2,778	5.26%	10.20%
Japan	4,308	5,612	5,714	5,795	42.34%	21.47%
Others	2,735	5,232	7,059	8,287	26.88%	30.71%
Total	10,173	17,447	23,401	26,987		

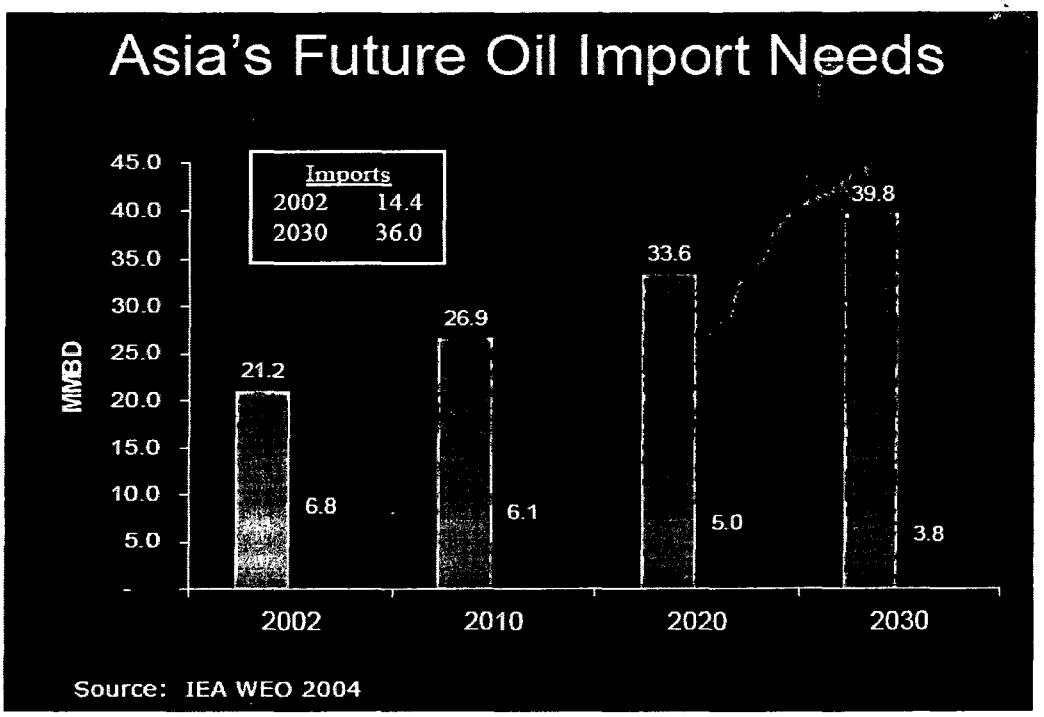
Source: Middle East Economic Survey, 5 June 2000, pA9[158]

Figure 4.5



[158] Javed Ahmed Khan, "*India's Energy Security and the Arabian Gulf*", Arise Publishers &Distrubutors 2005, New Delhi, p6

Figure 4.6



Cited in IEEJ, March 2004, Mikkal E. Herberg[159]

As per IEA's estimates Asia's future oil import needs has risen from 14.4% to 36.0% by 2030. In other words, it means that, there is going to be rapid demand surge from Asia in the coming decades. World's major chunk of oil will be consumed in this region. And more specifically according to certain estimates, a major part of oil will go to India and China – the two fast developing economies with large population and potential for growth. They will represent the bulk of Asia's current and future needs. They will also emerge as major actors in regions future geopolitical evolution. India and China's rapid growth since market reforms has sparked a surging demand for energy to serve an expanding industrial and commercial structure as well as households with rapidly rising living standards. The nation's vast energy resources lie far from the most populous, fastest growing regions, an inconvenient circumstance that stretched the inadequate domestic energy-delivery infrastructure from the start. So imported

[159] Mikkal E. Herberg, "*Asian Energy Insecurity*", in, Energy Research Conference, National Bureau of Asian Research, APERC, Tokyo Japan, Feb 23, 2005,p5

energy, notably oil and gas, has become an attractive alternative for these countries.

Aware of their growing dependency on imported energy, these countries try to seek a more prominent position in the existing global system of energy production and trade and try to open new connections in the global markets. Therefore, like in all heavily import dependent Countries, external energy policies have come to form a subset of foreign economic and security policies in general. India and China stresses the need for an independent energy supply in the short run, and an interdependent energy approach in the long run accompanied by an ambitious and costly energy development plan.

The current oil and gas sector reforms, meant for ensuring energy security in these countries includes multiple measures, ranging from privatization to energy diversification. The growth of Indian economy in recent years, and the demand for petroleum products, which is predicted to increase nearly four times from the present 96 to 369 million tones per annum in 2020. The deregulation policy initiated in India chiefly aims to meet these requirements. Besides trying to attract both national and international oil and gas majors. It also tries to make available business opportunities in oil exploration, refining, retail marketing of petroleum products and natural gas supply through pipelines. In order to reduce the energy insecurity, India is trying to promote joint ventures in oil and gas sectors. The countries like Saudi Arabia, Kuwait, Qatar, Oman UAE, Iran etc, are among the keen participants. "With its entry into the global oil bazaar as a major importer, China quickly learned the hazards of relying solely on purchase policies in the open markets."[160] China's overseas investment has gone, so far, to several Middle Eastern countries, plus Argentina, Bangladesh, Canada, Colombia, Ecuador, Indonesia etc. CNOOC has investments in Indonesia and the Gulf of Mexico, and plans new ventures in the Middle East (especially Iran), Central Asia, Myanmar

[160] Robert Priddle, Executive director, *China's World Wide Quest for Energy security,* a study done under International Energy Agency,p10

and other parts of Asia. CNPC has been even more active, with exploration and production contracts signed or under negotiation in at least 20 countries. By the end of 1997, CNPC had pledged more than $8 billion for oil concessions in Sudan, Venezuela, Iraq and Kazakhstan, plus—at least notionally—another $12.5 billion to lay four immense (but still far from real) oil and gas pipelines from Russia and Central Asia to China. The oil projects in Iraq, Kazakhstan and Venezuela are large scale.[161] According to Mikkal E. Hergerg:

> "The key Asian powers are responding to their growing sense of insecurity with a broad range of strategies to guarantee greater supply and price stability. These efforts are growing in scale and scope, and they range from largely cooperative and market-oriented strategies to those that are deeply neo-mercantilist and competitive. These countries are all accelerating their efforts to gain more secure national control of overseas oil and gas supplies by taking equity stakes in overseas oil and gas fields, promoting development of new oil and gas pipelines to Asia, developing broader trade and energy ties, and following up with diplomatic ties to cement relations with the major oil and gas exporting countries."[162]

For the first time, at the initiatives taken by India in convening Round Table with Kuwait as co- host, in association with the Secretariat of the IEF, "energy ministers of the principal oil and gas importing and exporting countries in Asia have gathered for informal discussions on a regional basis of an issue of utmost national and international concern – energy security, stability and sustainability." [163] Asian economies, as Arne Walther argues, have taken off. The gross domestic products of China, Japan, and India are surpassed only by the US. Few would dispute the vision that the 21st century is Asia's century. Asian energy cooperation will be crucial for that vision. It will have wider economic and political consequence in the region. Moreover, the impact will be global.

Cooperation is emerging as an important alternative to ensure energy security in Asia. Energy security boils down to producer consumer dialogue. "The cluster of

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[161] Ibid,p10
[162] Mikkal E. Hergerg, *"Asia's Energy Insecurity: Cooperation or conflict?"*,p340
[163] Arne Walther, "A New Asian Energy Identity", *Middle East Economic Survey*, Vol.XLVIII, No 4, 24 January, 2005

energy security issues is being addressed in on going dialogue not only between nations at political level, regionally, and globally, but also in dialogue and partnerships between governments and industry." [164] The transition period in international energy market, especially in the context of energy security is characterized by cooperative relations among the producers and consumers. However, of late the countries of Asia have relaised that the old security framework constructed during the cold war period may not continue to fulfill their demand aspirations. Hence, there is an increasing focus towards multilateralism.

For Asia, compounding the problem of rising oil demand is threatened oil supplies, which creates incentives to develop sizeable new international supplies of oil and gas in different parts of the world. The process requires large investments and explicit contracts between investors and suppliers that establish delivery volumes and prices. Achieving these contracts requires not only concerted diplomatic efforts but also solidifying long-term relationship with new international parties. Such contracts and the new relationships that sustain them could help these countries to achieve their energy needs. Therefore, there has been a renewed emphasis on cooperative relationship.

The mechanism that kept oil and natural gas prices low has broken down. In the case of oil, the marginal pricing system of the New York Mercantile Exchange (NYMEX), in which the price of small amounts of a commodity determines the prices at low levels and gave world economies the benefit of cheap energy for a period of economic expansion during the 1980s and 1990s, a period of surplus oil production capacity. "Such a price system was efficient for keeping prices low during periods of surplus, but it does not offer a return on sunk costs. It does not, therefore attract investments."[165] Especially in a tumultuous period like this, where Iraq is yet to stabilize, there is instability in Afghanistan, ethnic wars in Sudan, Nigeria, uncertainty over Iran, etc, NYMEX marginal price mechanism

[164] Ibid,
[165] Charles Kohlhaas, "Energetic Markets: Oil and Gas will Swing Again", *The National Interest*, Winter 2003/2004, p22

proved to be inadequate. Marginal pricing was also efficient at increasing prices during periods of shortage, as we are now beginning to experience in the oil markets. Buyers bid prices up to the limit they can pay for the oil or gas and still stay in business. "Worldwide demand is growing slowly and will increase as economic growth resumes. Supply shortages are thus expected to become more frequent and severe over the next few years, creating a general trend of higher prices."[166] Prices will move upward and without adequate investment shall further heighten. Not only that natural gas prices are also rising. Because of the difficulty and high cost of transporting natural gas, it was traditionally used only in areas where it was produced or could be transported cheaply by pipeline. "The environmental considerations severely restrict gas well drilling; declining production and increased demand have thus combined to cause increased prices."[167] Only by opening new sources of oil and gas supply can shortages be alleviated. This requires assistance among the stakeholders. Therefore, convergence of interest in energy security entails the need for harmonious relationship among the countries. The Asia especially India and China, at this front is learning fast.

Cooperation has emerged as an important concept in the energy security debate today, its chief aim being to improve efficiency and effecitivity. Hence, the market witnesses not only producer- consumer cooperation, but also, consumer-consumer and producer- producer cooperation. Accessibility of oil, versatility, transportability, cost, environmental factors, sovereign rights, sustainable development etc has necessitated the need. In any marketing environment, there is a constant quest to improve efficiency and effectiveness and to remain one-step ahead of the competition; every tool at one's disposal is used in this process, subject to moral and ethical considerations. "A healthy relationship between buyers and sellers have become crucial and this rides hand in hand with cooperation."[168] The stakeholders have therefore, started to pursue an integrated

[166] Ibid,p22
[167] Ibid,p23
[168] "Stability through cooperation: the way forward form a long time back", *OPEC Bulletin*,

approach towards energy security.

The first Round Table of Asian oil and gas ministers was held in New Delhi, under the umbrella of IEF Secretariat. OPEC is also engaged in high-level energy annual dialogue with elevated energy officials and research institutes from Russia, Japan, China, and South Korea, etc indicates towards the increasing weightage of dialogue. The conference of sovereign and Heads of State of OPEC member countries, which took place in Algiers, stated that, the sovereigns and Heads of state, "conclude that the interdependence of nations, manifested in the world economic situation, requires a new emphasis on international cooperation and declare themselves prepared to contribute with their efforts to the objectives of world economic development and stability. The trend towards close intra and inter regional cooperation mainly emanates from the convergence of interest, defined in terms of producer's supply interest and consumers procurement security. The main concern in the field of energy security is giving security of demand to those countries that produce and export for their economic and social development, while "ensuring security of supply to those countries that need to import energy for their economic and social development."[169] Energy security translates into producer – consumer interdependence.

The fact that till now cold war security doctrine impelled Asia's energy policy and kept it almost dependent, so far as independent and stable energy foreign policy is concerned, and hindered its economic growth, implies that Asia could benefit only after it breaks the old energy security doctrine. Hence, Asia should not commit itself to such a predisposed energy policy route, that an effective future response to a different geopolitical environment is not possible. That it never allows a self-sustainable growth and economic development. Asia should follow in the short run, policies that take into account its changing needs and help a faster economic development. It should look for intensified international

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9/05,p33

[169] Walther Arne, "The International Energy Forum: Promoting Cooperation in a Multipolar World", *OPEC Bulletin*, Feb 2005, p27

cooperation and for the strategic energy relationship. It appears sensible to strive for a multiple supply sources. This may well result in certain policy choices that takes into account the pursuance of national or regional vital energy interests of other prominent economic powers. To this end Asia should proceed to develop a clearer understanding of its own vital energy interests, in the medium and long term and

all those options that is required to serve these interests. It is sensible and prudent to assume that market alone will not suffice and that many of the benefits associated with the exchange process could be provided by properly cost regulation. Therefore, it is reasonable to anticipate a greater use of external trade and foreign and security policy making as an important energy security supply policy tool.

Due to the growing energy import dependence of other main consumer states in the region, such as China, Japan, Korea etc the energy relations will become increasingly politicized and competitive. Chinese companies shall invest in other countries to bring the oil and gas to China without fully participating in the international system. Viewed in this way, competition with Japan for oil and gas from the Persian Gulf and Russia will be fierce. Increasingly, Japan and China will want to secure the maritime supply routes and will use their naval forces in the region, for instance in the Strait of Malacca, to do so. India will also compete for resources and will pursue naval influence in the region." [170] The challenge in this situation lies in developing a unified coherent region, because the inter-regional competition and political incompatibilities remain too large. Not only that, for other consumer countries outside the region energy security will also become a more integral part of foreign and security policy making. Hence, competition among consumer countries for energy supplies is likely to be more

[170] *Study on Energy Supply Security and Geopolitics*, Final Report, January 2004, This report was prepared for DGTREN Contract number TREN/C1-06-2002, By the Clingendael International Energy Programme (CIEP), Institute for International Relations 'Clingendael', The Hague, the Netherlands

intensive in the coming years. The changed circumstances shall necessary impact on the regional and international economic and political relations. The expertise in this situation lies in adjusting the energy policy in such a way that national interest shall be fulfilled without antagonizing the other competitors.

In the past decades, the Asian - Super power relationship has been a determining factor of Asia's energy relations with other countries. It has left little room for an independent Asian approach towards energy foreign policy. The energy interests of the US have been a primary factor why the independent approach of Asia never materialized. The promotion of long-term energy interests is important and can coincide with stronger relations with neighboring countries or regions. North Africa, the Persian Gulf, the Caspian Sea region, and Russia are neighboring regions Asia and all economies are important trading partners. There is clearly room for neighboring countries or regions to integrate their markets with Asia. Consequently, Asia could as a part of its energy policy pursuance strategy, facilitate a deeper integration of markets.

Asia's trade policy and foreign energy security policy will be instrumental in securing an uninterrupted supply of oil and gas by underpinning the political and economic stability in the producer countries and maintaining good relations with these countries. Security of demand is of vital interest to the producer countries, which has to be acknowledged. A coherent and well-coordinated Asian approach in producer – consumer relations is an important precondition to achieve an acceptable level of energy supply security. In addition to traditional energy, policies, such as strategic reserves, foreign and security policy should also be seen as crucial element of the energy security toolset. The effectiveness of the policy tools depends not only on the ability to employ domestic energy assets, technical and operational factors, transportation and import facilities, investment climate and the availability of foreign oil and gas supplies, but also on the geopolitical setting in which these policies must perform. "Given the dynamic developments

in the international political and economic relations, a static approach to energy security does not suffice." [171]

Energy supply security therefore, requires a dynamic external trade and foreign and security policy towards North Africa, the Persian Gulf, the Caspian Sea region and Russia. Moreover, Asia's policy should be focused on political and economic sustainability in the producer regions to guarantee the long-term security of supply of oil and gas. For this reason, stability in North Africa and the Persian Gulf must be seen in the wider context of stability in the Middle East and in Central Eurasia. Asia should make efforts to assist these countries in overcoming their current political and economic difficulties. Existing policy efforts towards the Maghreb, Mashrak, and Eurasian countries could be intensified to create mutually beneficial and good economic and political relations.

According to a study,[172] the future development of the international political and economic system shall develop along two main trends or storylines: *Market and Institutions,* and *Regions and Empires.* Under the *Markets and Institutions* storyline, it is assumed that there is a continuation and intensification of the current internationalization of markets (globalization), and "enduring co-operation in the international political and economic institutions, leading to the continued evolution of the multilateral system that governs international relations."[173] Energy security in such situation shall largely depend on the market and various institutions operating therein. "In the *Regions and Empires* storyline, the world is broken up into more or less integrated political and economic blocks with satellite regions that compete for markets and resources with other blocks." [174] However, both situations offer governments the policy space for the completion of the internal energy market and enlargement. Supply of oil and gas is easier to obtain

[171] ibid
[172] ibid
[173] ibid
[174] ibid

because deeper economic integration is foreseen.

In the light of the recent geopolitical developments, especially the Iraq episode, the unilateral approach in foreign relations of US towards other countries, the level of external intervention in the region will grow, unless the Asian countries manage to deter it, through a regional cooperative approach. From an energy supply security point of view, the geopolitical developments have reinforced the predisposition of the current American Administration towards a unilateral foreign and energy policy. The outcome of the current geopolitical conflict is still unclear but will have a great impact on the way the international political and economic system will develop. It is better that Asia remain prepared for it.

The energy security policy tools must conform to the Prevention, deterrence, containment and crisis management. In addition to traditional energy policies, such as strategic reserves, external trade and foreign and security policy are a crucial part of the energy security toolset. Energy policy is further greatly impacted by environmental policies and vice versa. "The growing interrelationship between internal energy markets, energy security of supply, foreign relations, and the environment and the long-term consistency of policy-making, a more and integral approach of energy matters is required."[175] In order to determine the vital energy interests of Asia, internal policy co-ordination at the regional level is warranted.

Asia should determine its vital energy interests and correlate these interests to the relevant policy areas to allow for the development of a coherent and consistent integral approach. To this end, Asia should make an inventory of policy measures and the rigorous of implementation based on coherence and consistency or the lack thereof concerning the internal energy market policies, environmental policies, energy security policies and foreign and security policies. In this inventory, infrastructure and other technical and operational aspects and the

[175] Ibid,p26

management of the systems should also be taken into account in order to clarify the weaknesses in the energy system of Asia. Another important inventory should be made of essential demand and demand switching possibilities. Such an integral inventory can encourage the development of a coherent energy security policy.

Asian security of supply would greatly benefit from the further development of the multilateral producer- consumer cooperation in the international Energy Forum and, at the same time, Asia should intensify the bilateral integration initiatives with Russia and other neighboring producing, such as in North Africa, and transit countries. In addition to the multilateral cooperation in the IEF and IEA, bilateral cooperation and dialogue with other important consumer countries, particularly China, Japan and India in order to ensure as much as possible a common approach concerning stability at the global oil and gas markets.

The extent of the energy security standards depend on the completion of the internal energy market and the level of integration with the energy markets outside the region. The adoption of a flexible approach could, in turn, help in substantially integrating, and properly functioning and reducing the political risks. An instruction to Asian players to hold certain level of commercial flexibility contracts that can facilitate or compensate for losses elsewhere could achieve energy security of supply. They should follow an energy security policy which should be functional to present and future demands and allow the markets to develop in such a way that the integral priorities of energy policies are met.

Under the present geopolitical circumstances, Asia should keep its foreign and security and energy policy options open in order to facilitate a proper response in the event of a political calamity. Also, the transition to a more sustainable energy system should be part of the long term security of supply policy-making, particularly when the call on imported energies can be reduced as a result. Similarly, the continuation of research and technological development activities in the field of nuclear electricity generation and waste disposal is necessary. In

general, the field of international relations and energy, including security of energy supply, should be actively developed for policy-making purposes.

ASIA'S ENERGY STRATEGY

Energy security is once again a top policy priority in energy consuming economies. This development has been driven by changes in the underlying structure of energy markets that have been taking place in the last half a decade or so. "Energy security policies in the 1980s and 1990s were benign, if not sanguine. That has all changed dramatically with growing concern about instability in the Middle East and terrorism generally and its impact on reliability of energy supplies. These developments on the supply side have been exacerbated by the unanticipated pressure on international markets because of the remarkable growth of China and, in more recent times, India."[176]

Asia has a rich endowment of renewable and coal resources but its oil resource is limited. Therefore, Asia is facing an "energy dilemma." If it chooses to rely on its renewable natural resources and coal reserves for energy consumption, inefficient use of coal will exacerbate the tendency toward environmental degradation and the level of technology is not so matured that Asia can meet all its domestic requirements through natural resources. If Asia shifts its main energy consumption to oil and gas, then its imports of oil and gas will be huge. Now Asia's energy import dependency is higher when compared with other regions of the world. According to estimation by the International Energy Agency (IEA), by the year 2010, Asia's oil import dependency will rise tremendously. It is unavoidable for Asia to increase its oil imports, given the fast economic growth

[176] Peter Drysdale, Asia Pacific School of Economics and Government
Australian National University, *Asia Energy Forum, 2005: International Energy Security and Regional*
Cooperation in Asia, a, Panel Discussion: The Establishment of an Energy Security System in East Asia
IEEJ: December 2005,p2

and the change in energy consumption patterns. Its major Energy security concerns include following:

Unavailability

Political instabilities in the Middle East, Africa, Latin American and Russia can cause sudden falls in oil supply. Some hostile countries can use embargos and sanctions to cut off Asia's oil supply from the international market.

Fluctuation of Oil Price

Thanks to the changing political and economic environments, oil is almost like an ordinary "market commodity" for which supply and demand are governed by market mechanism. However, with the continuous increase in world oil demand and the monopoly power enjoyed by producers in the oil market, high oil prices or the fluctuation of oil prices impact on import countries' macroeconomic instability.

Safety of International Shipping Lanes and Pipe Lines

International shipping lanes from the Persian Gulf through the Indian Ocean and some critical straits, such as the Strait of Hormuz, the Strait of Malacca, and the Taiwan Strait, have shown new importance for Asia because Asia still relies on oil supply from Middle East. At present, however, Asia lacks the naval power and foreign maritime bases to guarantee the safety of oil import routes. The current investment by Asia in Africa, Latin American, and Central Asia has not only occurred for economic reasons, but also for reasons of energy security. China's oil imports from United Arab Emirates, Iraq and Kuwait and other countries with rich oil resources are relatively low, but that its imports from Sudan, Angora, and Oman have increased substantially. This indicates that China is seeking access to

energy resources in countries where developed countries, in particular US companies, have less investment. However, some of these states are classified by the USA as "rogue states" and Asia's support to these countries might place an additional strain upon bilateral relations between the West and the East. Based on the above discussion, Asia is pursuing the following issues in to account in pursuing energy security:

Rethinking the "Establishing Oil Supply Base Abroad" Policy

The Governments of Asia and Asian companies have started to invest abroad to establish oil supply bases in Africa, Latin American, Central Asia and other regions. The potential political and economic risks for these overseas investments are no doubt high but Asia is venturing into these regions in pursuit of an alternative energy security framework free form the West. Owing to the fact that socioeconomic, ethnic and political instability in these regions is high and the purchase of oil fields and other investments in these regions might prove to be very risky. As alternative Asian governments are buying shares in developed-country oil companies and other energy-related companies as a hedging tool.

Rethinking Asia -West Relationship

The West's energy strategy is quite different from that of Asia. Take for instance, Its military forces and overseas military bases play a vital role in protecting energy supplies for the USA. In contrast, India and China as major powers of the Asian region has invested a large amount of money in infrastructure in Africa and Russia to protect their energy supply. US companies dig oil worldwide and then sell to the world market and, therefore, to a great extend control the world market, whereas Asian companies purchase drilling rights and ship the oil back to Asia, rather than the world market. The increasing influence of Asia in the Middle East,

Africa, and South America might be viewed as a potential threat by the USA. The current energy strategies of Asia and the USA might cause tension in world energy market. Both sides need to cooperate to some degree. For example, the security of international shipping lanes is crucial for both side's energy supply.

Rivalry and Cooperation among Asian Economies

It is not only Asia's energy requirement that has increased, but also energy demand in the India, China Japan etc also claims increasingly on the global energy market. At present, Asia, led by Japan, China, Korea and India, imports more than 60 percent of its oil. This will lead to a corresponding increase in Asia's vulnerability to oil supply disruptions. Oil importing countries in this region have started to establish a collective negotiation mechanism to avoid competition among them. Other measures, such as cooperation in the development of environmental technologies, are also being encouraged.

Asia is playing a more and more important role in the international political and economic arena and more specifically in the global energy market. The energy issue is one of the most important challenges that both Asia and the world face today. Since Asia has been integrated into the global economy, the demand from and supply of oil and other energies to it has begun to show some impacts on the global market. At the same time, external shocks will be easily transferred to Asia. The solution to Asia's energy policy depends on the domestic reforms in energy sector in respective countries, such as the reform of the energy pricing system, investment in and financing of the energy sector, and the change of the growth pattern from heavily industrialization to a more balanced approach. It also depends on international cooperation. Extreme fluctuation of the oil price can drag the world economy to a prolonged recession and make nobody better off. It is important that Asia is willing to cooperate within and with other countries outside the region to build a more stable energy security framework.

CONCLUSION

The very nature of the oil market presents genuine problems. First, studying the market is like shooting at a quickly moving target. The extreme market volatility of oil and the speed with which its basic assumptions can change make firm conclusions a very risky business. There is often a problem of simultaneously too much and too little information. There are insufficient data, partly, because much of what the people wanted to know was proprietary held by the companies, and partly due to the reluctance of the governments to make certain data public. The excellent private industry studies currently produced by companies or consultants are usually prohibitively expensive and unavailable to most scholars. On the other hand often there is over flooding of data on certain issues, for instance a flood of figures on production levels, drilling costs, transaction costs, country reports, investment surveys, etc. and all the data differ from each other at one or the other level. The difference emanates from the nature and objective of the data collecting agencies which is seldom alike. Too much of data also overwhelms the analyst.

According to Robert Gilpin, "An economic system does not arise spontaneously owing to the operation of an invisible hand and in the absence of the exercise of political power. Rather, every economic system rests on a particular political order.[177] It is a product of the then existing power relations. It is this power relations which guide the debate and new knowledge in the economic system. Still, the specific areas of international production and exchange are governed by a set of norms, mutual expectations, and procedures that shape the behaviour of actors in that area. [178]

The emergence of changed world energy market, especially after the disintegration of Soviet Union, and with certain technological and geopolitical

[177] Robert Gilpin, 1975, *US Power and the Multinational Corporation,* New York Basic Publishers, p41

[178] Robert Keohane and Joseph Nye 1977, *Power and Interdependence,* Boston, Little Brown,

developments has generated a new debate in the literature of energy security and how the developing countries defines it. Every contemporary event in the world energy market up until now has been influenced, at least to a certain degree, by a complex system of power politics. It is quiet natural therefore, that, the debate in the literature of energy market has been influenced by the same set of forces. Whose purpose, some how was served by directing the energy debate form the developmental perspective to the security consideration. In other words, the debate about "energy security" was a make; it was an action of deliberate choice. It so happened that, the interest of the Powers was served in the maintenance of status quo, by securitizing the energy concept. Therefore, the foreign policy orientation of Washington, London, and the other governments of the West, Western leaders and various institutions supported and promoted the energy security concept while discouraging any alternative debate that tend to undermine the status quo.

In this context, the use of oil companies is not new. USA has from time to time used the oil companies to secure its foreign policy objectives. In the period 1947 to 1954 the US government made key decisions which gave five major American multinational oil companies – Exxon, Mobil, Texaco, Gulf Oil Corporation, and Socal – effective control of Middle east oil supplies, to a certain extent, this control was shared with the British Petroleum company (BP) and the Royal Dutch Shell Company. In this context Geroge V. Holton, vice President and general Counsel of Mobil warned the Mobil executive committee.

> "the arrangement would place practical control of crude reserves in the Eastern Hemisphere in the hands of seven companies Five of them would be American owned and all of the latter have substantial reserves in the Western Hemisphere also. Obviously, this concentrated control would lend itself to arrangements which could affect the import and export trade of the United States..... I cannot believe that a comparatively few companies for any great length of time are going to be permitted to control world oil resources without some sort of regulation.[179]

Chapter 3,op. cite..

[179] US Congress, Senate, Committee on Foreign Relations, Sub-committee on Multinational

In this way energy was associated with the foreign policy strategic objectives, and attempts has been made sometimes through multinational companies and sometimes by the sheer use of force to protect the oil interest. According to Cowhey, governments often intervene through political instruments to steer markets in directions that will promote their own national interest based on their own efficiencies and comparative advantages.[180]

Once John J. McCloy, Attorney for the major oil companies in a letter to the Secretary of State, Dean Rusk, wrote,

> I believe that the Department of State has a particular responsibility to make known to the treasury Department the implications of its proposed attack on crude oil prices because the present system of providing substantial revenues to the oil producing countries of the Middle East by means of a combination of royalties and of local income taxes on the producing companies (creditable under US tax law) was recommended to the oil companies and to the foreign governments involved in the Department of State and the Treasury Department. These Departments must recognize that it was in the national interest of the United States to keep such nations stable and friendly to the United States and thereby ensure American access to the vast oil reserves there located.[181]

For instance Terry Lynn Karl, in the context of Central Asia, points out quiet explicitly as to how, even if the motive was not to militarize the energy concept, super Powers in pursuit of their strategic interest, ultimately ended in giving birth to a militaristic definition of energy security.

> "Even if the stakes did not include oil, the geographical position of the region holds its own strategic significance. With Russia to the North, china to the East, and Afghanistan, Iran and Turkey to the South, this region where Europe meets Asia and Christianity and Islam come together is today, as throughout its history, a virtual chessboard for aspiring regional hegemony and world powers. Adding the fact that the area holds one of the world's largest unexploited sources of oil to this mix explains why nearly every nation with the resources to do so is active in the region. This volatile fusion, in further combination with the Central Asian

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Corporations, Multinational Oil Corporation and US Foreign Policy, Report together with individual views, 93rd Congress 2nd Session, 2nd January 1975, p49

[180] Peter Cowhey, (1985), *The Problems of Plenty: Energy Policy and International Politics*, Berkeley, University of California Press, p 10

[181] Frank Church, "The Importance of Oil Companies", *Foreign Policy*, No 27, Summer 1977,p30

and Caspian states, unique as the only completely land locked oil exporters in the world, only adds to the intrigue."[182]

Energy security will continue to be high on the agenda of developing and developed states. The recent G – 8 summits at St. Petersburg is a testimony of this fact. The renewed focus on energy is driven in part by an exceedingly tight oil markets, high oil prices, the threat of terrorism and the rising domestic demand. It is also fuelled by instability in some exporting nations, a nationalist backlash, as it is happening in Iraq, fears of a scramble for supplies, geopolitical rivalries, and the nation's fundamental need for energy to power their economic growth. At the same time, a new vulnerability has become more evident. Al Qaeda has threatened to attack, what Osama Bin Laden calls the "hinges" of the world economy that is its critical infrastructure of which energy is among the most crucial elements. The world will increasingly depend on new sources of supply from places where security systems are still being developed, such as the oil and natural gas fields offshore of West Africa and in the Caspian Sea.

The usual definition of energy security, for the developed world has been simply the availability of sufficient supplies of oil and gas at affordable prices. It has been framed during the cold war period amidst tensions and rivalry between the two super Powers. Therefore, a military architecture around the energy security framework necessarily followed "Availability", "Sufficient quantities of oil" and "at affordable cost", are the three elements of developed worlds understanding of energy security. All the three components inheres in them willingness to the use of force. Hence, in order to secure the "availability" of oil at any cost, the Western Powers militarized the energy doctrine. The developed powers in order to maintain the sufficient supplies associated energy with security. Right from the First World War, the western concern has been how to protect or secure the oil wells in West Asia or around the region. The recent Iraqi crisis, Iranian Nuclear conundrum etc has further reinforced the doctrine. United States goal of "Energy

[182] Tarry Lynn Karl, in "Robert Ebel & Rajan Menon (eds), 2000, " *Energy and Conflict in Central Asia and the Caucasus*", Oxford and Lanham, MD: Rowman & Littlefield Publishers,p479

independence" first articulated by Richard Nixon continued to guide the energy debate.

The new market structure and the energy security paradigm are based on the organizing principles of neoclassical economics, the assumption that buyers and sellers meet in markets that clear and operate in equilibrium. Any increase in price will drive down demand even as it calls forth new supplies.[183] Politics as such has little place in this well ordered universe. Yet, it continues to guide the market. In the evolving energy market the state intrudes to overcome limited market imperfections, still its presence is widely felt. As Nazli Chouri points out, "There is no explicit statement in the conventional economic theory of international trade and payments regarding the influence of political variables". [184] in brief, it can be said that, the international energy trade is evolving towards the neoclassical economic model in which the old energy security architecture framed during the cold war period continues to operate. Hence, the issue is when the market is changing towards a different economic paradigm; the old energy security doctrine may not hold relevance. The emergence of Asia and other developing countries no longer perceive and define their energy security in terms of what West continues to interpret until now. They perceive their energy security differently as per their own domestic needs. In addition, follow a different set of policies to pursue it. Asia needs energy for development, and not to maintain a particular set of power relations or to fight wars. Energy market for them is far more important than world politics.

India and China have been witnessing a steady increase in their energy consumption for many years. Increasing economic growth characterized by high industrial activity has been the main reason behind it. Though consumption of coal accounts for a major share of the total energy use, imported petroleum takes

[183] Paul Samuelson, (1980), Economics, 8th ed. MCGraw Hill, New York, chapter 4. op cite..
[184] Nazli Chouri, "International Political Economy: A Theoretical Perspective", in Ole Holsti, Tandolph Siverson, and Alexander George, 1980, ed, *Change in the International System*, Boulder, Westview,p10

an irreplaceable position in the energy mix of both India and China. Until 1993, China was the world's fifth-largest oil producer and was a net exporter. Driven by a surge in economic growth, however, China's growth in oil consumption is now running close to 8 percent a year and, as a result, that country is now a major importer. Meanwhile, India, the world's second-most-populous country, is also experiencing year-over-year consumption growth in excess of 8 percent, and has recently replaced France as the sixth-largest oil-consuming nation in the world.

The key energy-related issues for these two countries are, increasing energy dependency on imported oil, growing environmental concerns, transportation and supply problems, the threat of terrorism, and regional geopolitics.

The total Asia-Pacific energy demand is expected to be 31.4 percent of total world demand by 2005, and India and China will have the lion's share in it. Both India and China has managed to spread their tentacles in the energy-rich regions of the world quiet fast. However, on the energy front still, there are certain differences between them. The main reason for this difference is the long-term political and economic policies of these countries toward their neighbors. Though China had border problems and political differences with Russia, now it is trying its level best to rope the Russians into building an oil pipeline to Chinese markets. China's interest in the Russian weapons trade is also a part of its long-term strategy to improve the strained relationship with the aim of accessing the energy market.

Since the energy, import to Asia mainly comes from West Asia, volatility in that region's political situations have a great influence on supply vulnerability. This vulnerability in the supply of energy resources affects energy security and thereby weakens national security at large. However, of late the Asian players have started to realize this vulnerability of remaining dependent on a single set of suppliers. Therefore, they have started supply diversification. Attempts are being made to ensure energy security by relying on different suppliers outside West Asia.

For instance, China has been able to develop its access to Central Asian energy resources, especially focusing on deepening relations with Kazakhstan. Since Kazakhstan is China's major entry point to access Central Asian energy, this region is of special importance to China. India has realised that, there is a vast potential for regional energy cooperation in South Asia. Sub regional cooperation among the contiguous countries - Bangladesh, Bhutan, India, and Nepal is more promising to it. While India has a huge market for energy, these neighboring states could be potential energy suppliers. Nepal and Bhutan have good hydroelectric potential and Bangladesh has natural-gas resources. These energy resources along with Myanmar's resources can be extremely important, and the northeastern states of India shall chiefly benefit from them. Therefore, attempts are being made to harness the regional potential.

Certain developments in the world energy sector, like Iraq war, indicates to the fact that, United States is more interested in dominating the energy market for its own strategic and commercial interests. This may jeopardize the energy interest of other nations and especially of the developing countries of Asia. the Gulf wars has sent a strong message to developing countries such as China and India of the danger of their heavy dependency on Middle East oil and the growing influence of Western powers in that region. These developments and many more, have tremendously influenced the foreign policy choices of these countries. Asia, it seems is redefining energy security as per its own needs and aspirations. It is widely felt that, any traditional approach to attain energy security may not be a solution to any kind of forthcoming energy shock or shortage of supply. It requires a comprehensive plan to act in a multi-dimensional way - investing in energy resources abroad, developing existing domestic energy resources, inviting foreign direct investment to develop renewable resources, and above all creating a well-structured network of regional energy cooperation. The Asia is looking forward to creating an Asian union, i.e. a Greater Asia that is economically, technologically and politically competent in the world, where the "energy security of the Asian region will be free from the clutches old energy security architecture.

Therefore, for the first time, energy ministers of the principal oil and gas importing and exporting countries in Asia are gathered for informal discussions on a regional basis of an issue of utmost national and international concern – energy security, stability and sustainability at Ministerial Round Table of the principal oil and gas exporting countries of Asia in New Delhi on 6 January 2005, hosted by the Government of India, in association with the IEF, and co-hosted by Kuwait.

According to Arne Walther, Secretary General of the International Energy Forum (IEF) Energy security is a complex and broad-based issue. It is about oil, diversification of supplies and energy mix. It is about investments, technical arrangements, and infrastructure. It also has to do with overarching imperatives of economy, politics, and the environment. Energy security has domestic and foreign policy implications. It translates into producer-consumer interdependence, where mutual vulnerability and win-win opportunity is the name of the game. For both energy exporting and importing countries, energy is crucial for national economic and social development. It is important for commercial and political relations between countries. It fuels the world economy. Production and consumption of energy affect the environment. Energy influences and is influenced by, international politics it is difficult, indeed, to imagine an area, where nations are more interdependent than in the confluence of energy, environment and economic development. It is around the convergence of producer and consumer interest, and on the increasing realisation of interdependence of energy, environment, and economic development, that the new definition of energy security is conceived.

The global energy trade that is set to expand in the coming decades linking regions and sub regions closer together. However, the mismatch between where the energy resource is produced and where they are used will increase, linking regions and sub regions even closer together, but also posing new challenges simultaneously. Vulnerability to disruptions of energy supply, due to politically motivated sabotage or technical mishap, can increase. Maintaining the security of

international sea-lanes and pipelines on and offshore will assume increasing importance for energy security.

Energy security debate in general has largely remained confined to the reliance on foreign sources of energy, geopolitics such as supporting dictatorships, rising terrorism, stability of energy supplying nations, energy needs of poorer countries and demands from advancing developing countries such as china and India, economic efficiency versus population growth, environmental issues, in particular climate change, renewable and other alternative energy sources.

The drive or need for competitiveness in the energy market shall contribute to more intense rivalry as well as cooperation between nations. As more and more developing countries industrialise, they will naturally want more energy to quench the growth thirst. This will see more involvement in international affairs, and indeed China and India are increasingly active in many regions around the world. Geopolitical issues, new and old, will therefore arise. Stability and supply issues are also of concern. Places like Nigeria, Iraq, and Iran etc all produce oil but present problems of varying degree for oil consuming nations. The concern ranges from stable supply to stable governments.

The increased risk of terrorist attacks against world's petroleum supply chain, particularly in South Asia and the Middle East poses grave dangers to the security of supplies. Al Qaeda's stated objectives of focusing operations on hard economic targets allied to a rise in incidents of energy terrorism in regions where there has been a growth in Islamist groups indicates that the risk of attacks on energy sector infrastructure has increased significantly in recent months. In February 2003, the internet site arabforum.net published a call to the *Mujahideen* of all Arab and Muslim countries in which the West has military bases or is involved in the energy industry, to rise against these interests in the name of the Muslim *Ummah*. Given rising global energy dependence and particularly Asian dependence on oil and natural gas resources, such trend could bring massive economic disruption.

With the increasing dependence of world economy on energy, and especially of Asia, security of West Asian and African reserves, those in the Caspian region, will become increasingly important. Nevertheless, the vary fact of "dependence" of these countries on energy supplies makes attacks more likely. The attacks on oil and gas infrastructure are not a new target for terrorists. The terrorist groups have always been aware of the economic and political benefits of attacking on vital energy installations. In addition to contributing to economic instability, and terror, the energy industry has been targeted as a symbol of resistance to national governments, and as a means of placing pressure on governments. The terrorist groups have commonly targeting oil and gas pipelines, which they consider as an important source of financing.

Although the energy terrorism does not draw the same level of attention as other issues like nuclear weapons, chemical and biological weapons have been. The economic implications of energy terrorism are potentially enormous. With a number of targets, including depots, gas stations, personnel, pipelines, production plants, tankers, terminals and refineries, the energy infrastructure in extremely vulnerable today.

The growing influence of energy demand and the deteriorating state of global environmental system requires that the world pay close attention to it. Attempts should be made to promote rational energy policies in a global context through cooperative relations with other countries, industry, and international organisations. It is important that, the world's energy supply and demand structure should be improved by developing alternative sources of energy and increasing the efficiency of energy use. There is a need to assist the integration of environmental and energy policies. A major challenge in the energy market today is to achieve sustainable economic growth and employment, raise the standard of living of world population while maintaining financial stability, and development. The intersection between energy, environment, and sustainable development has posed serious question before the policy makers today. The mitigation of these

issues requires an adoption of very long-term perspective and sustained efforts. The role of energy security infrastructure, new technologies, and market intervention may hold the key in this direction. Efforts should be made to search the alternatives. The outcome largely depends on what new policies are undertaken by the governments today. Time horizon shall be increasingly important and the way the new policies are adopted by the governments. Assuming the present continuation of present trends, it is palpably evident that those trends may not lead to desirable outcomes. A logical reasoning of these trends point to some clear dangers down the road. However, attempts must be made to avoid those dangers by modifying present trajectory. It is high time that attempts should be made towards modifying the pattern of behaviour, in how energy is produced transported and consumed.

By examining the internally consistent and rational chain of events and trends, a better assessment of alternative policies should be made. It may include intellectual exercise at different scales and with different time horizons in contexts that range from trivial day-to-day planning of an enterprise, to longer-term plans for global energy security infrastructure development. Some of the underlying factors that drive an energy, development and environment system including, for instance technological development, degree of openness of markets, social structures, environmental values held by the people and so on are much less predictable. The difficulties are certainly there. However, it is precisely these factors that are most important. Therefore, any alternative policy has to include all these factors. It may be difficult to do so, but not impossible. It is important to identify the main drivers that shape the future course of energy market and understand the dynamic links.

Largely societies have the capacity to shape their own future and often have the means to implement their vision. The task then becomes one of identifying the necessary steps and the roadmap to get there. A sustainable and secure energy future is unlikely to unfold unless policy intervention is initiated covering a

variety of strategic issues and new policy actions to bring about the desirable outcomes. The relationship between short term and long-term objectives should be clearly understood, and how they change over time under various pulls and pressure.

In conclusion, it could be said that, the continuing trend needs to be critically reviewed. "A trend is a trend is a trend goes the statement, until it bends." In addition, the bends are generally of most interest, because it is the bends that carry the most risk or offer the greatest opportunities.

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