

CENTRAL ASIAN HYDRO-CARBONS AND INDIA'S ENERGY SECURITY

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**CENTRE FOR RUSSIAN AND CENTRAL ASIAN STUDIES
SCHOOL OF INTERNATIONAL STUDIES
JAWAHARLAL NEHRU UNIVERSITY
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Date: 30th July 2007


DECLARATION

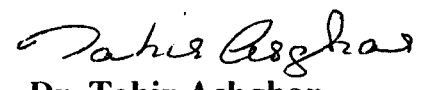
I declare that the dissertation entitled “Central Asian Hydro-Carbons and India’s Energy Security” submitted by me in partial fulfillment of the requirements for the award of the degree of MASTER OF PHILOSOPHY of Jawaharlal Nehru University is my own work. The dissertation has not been submitted for any other degree of this University or any other university.


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CERTIFICATE

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


Prof. Tulsi Ram
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*DEDICATED
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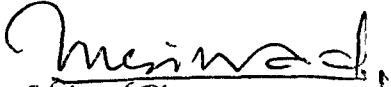
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ABBREVIATION

ADB	Asian Development Bank
AIOC	Azerbaijan International Operating Company
APM	Administered Price Mechanism
BAU	Business As Usual
BG	British Gas
BOC	Burma Oil Company
BPCL	Bharat Petroleum Corporation Limited
Bpd	Billions per day
BTC	Baku Tbilisi Ceyhan
BTC	Baku-Tbilisi-Ceyhan
CARs	Central Asian Republics
CICA	Conference on Interaction & Confidence Building Measure
CIS	Commonwealth of Indian States
CNPC	China National Petroleum Corporation
CNPC	China's National Petroleum Corporation
CPC	Caspian Pipeline Consortium
GDP	Gross Domestic Product
GSI	Geological Survey of India
HMT	Hindustan Machine Tools
HPCL	Hindustan Petroleum Corporation Limited
HPP	Hydro Power Project
HPP	Hydro Power Plants
HPP	Hydro Power Plants
HSD	High Speed Diesel
IEA	International Energy Agency
IEO	International Energy Outlook
IEO	International Energy Outlook
IEP	International Emergency Programme
IOCL	Indian Oil Company Limited
ITCIT	India Turkmenistan Centre for Information Technology
ITEC	India Technical Economic Corporation

JWG	Joint Working Group
JWG	Joint Working Group
KWH	Kilo Watt Hour
LDO	Light Diesel Oil
MFC	Most Favoured Nation
MMT	Million Metric Tonnes
MNC	Multi National company
MoU	Memorandum of Understanding
NATO	North Atlantic Treaty Organisation
NATO	North Atlantic Treaty Organisation
NGO	Non Government Organisation
OCC	Oil Co-ordination Committee
OCC	Oil Co-ordination Committee
OIL	Oil India Limited
ONGC	Oil and Natural Gas Commission
OPEC	Organisation of Petroleum Exporting Countries
OSCA	Organisation for Security & Co-operation in Asia
OVL	ONGC Videsh Limited
PIL	Petronet India Limited
PLF	Plant Load Factor
PSA	Production Sharing Agreements
PSA	Production Sharing Agreements
SCO	Sanghai Cooperation Organisation
SKO	Superior Kerosene Oil
SPR	Strategic Petroleum Reserves
SPR	Strategic Petroleum Reserve
SSR	Soviet Soviet Republic
TAPI	Turkmenistan Afghanistan Pakistan India
TCF	Trillion Cubic Feet
TERI	Tata Energy Research Institute
USEIA	US Energy Information Administration
USSR	Union of Soviet Socialist Republic

Chapter 1

Introduction

Chapter 1

INTRODUCTION

The European Commission defines energy security as, “the ability to ensure that future essential energy needs can be met, both by means of adequate domestic resources worked under economically acceptable conditions or maintained as strategic resources, and by calling upon accessible and stable external sources supplemented where appropriate by strategic stocks”¹ (Bahgat, 2006). Barton, Redgewell, Ronne and Zilman defines it “as a condition which a nation and all, or most of its citizen businesses have access to sufficient energy resources at reasonable prices for the foreseeable future free from serious risk of major disruption of service”² (Ibid, 2006).

Although in the developed world the usual definition of energy security is simply the availability of inefficient supplies at affordable prices, different countries interpret what the concept means for them differently. Energy exporting countries focus on maintaining the security of demand for their export, which after all generate the overwhelming share of their government revenues. Thus, the usual definition varies from country to country. 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 hydrocarbons to international markets. The concern for developing countries is about how changes in energy prices affect their balance of payments. For China and India, energy security 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 means offsetting its stark scarcity of domestic resources through diversification, trade, and investment. In Europe, the major debate centres on how to manage dependence on imported natural gas- and in most countries, aside from France and Finland, whether to build new power plants and perhaps to return to coal. And 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.

The twelve days from 6th to 17th October 1973, not only marked the end of the Era of cheap energy, which the affluent consumers of Europe, America and Japan had come to take for granted in the years of unprecedented growth and prosperity which had followed the end of the Second World War, they changed the world. There were two problems of inflation and chaotic state of the payment system which was caused by the oil price rise. Both of these could lead to an appalling international depression. They have the capacity to wreck the monetary and banking system, or to bring about recognition of the world economy by stimulating faster economic growth in countries, which have so far remained underdeveloped. The two massive price increases in 1973, were the culmination of dramatic shift of bargaining power from the consumers to the producers of oil which had begun 3 years earlier in the summers of 1970. In the west the revolution was seen, naturally, as an outright disaster, and in the OPEC states it was viewed as the triumphant conclusion of a 20-year struggle for a fair return on diminishing natural resources³ (Field, 1975).

Ever since the foundation of the world's petroleum industry in 1859, with Col. Drake's famous discovery of oil in Pennsylvania in North America, the oil industry has made rapid progress. Significant technological achievements have been made especially in the last twenty-five years in the field of petroleum exploration and exploitation. The world has witnessed tremendous growth in the demand for hydrocarbons in the last century, the highest growth being in Asia-pacific region. This scenario is likely to continue and the demand is expected to exceed supply in the near future. Current oil consumption is around 75 million barrels per day and by 2015 this is expected to rise to around 99 million barrels per day. Natural gas demand is expected to grow by more than 76% i.e. about 82 TCF to 133 TCF in 2015. The fastest growth is expected in Asia, followed by Europe, and Central and South America.

The world's oil reserves are accessed at 838 billion barrels, with the Middle East having the major share of 55%. The total discovered unit amounts to 1598 billion barrels, of which about 417 billion barrels lie in the Middle East (Gulf), followed by Eurasia (17%), and North America (14%). The undiscovered potential is estimated to be 211 billion barrels. of which 31% lies in the Middle East (Gulf), followed by 18% in Eurasia, and 1% in Latin America. Oil reserves of the world at the end of 1999 were estimated to

be of the order of 140.4 billion tonnes and reserves of natural gas around 146.43 trillion cubic metres. The globally proven oil reserves are dominated by the Middle East, which hold almost 2/3 of the total, where as more than 70% of the world's gas reserves are in the former Soviet Union and West Asia⁴ (Chopra, 2004).

Recent rise in the prices of oil and natural gas reflects the concern for energy security as well as the change in the balance between global supply and demand. In this context efforts have been made by the major consuming countries to diversify this energy sources and focuses on the potential contribution to global energy security of oil and gas from the countries of the Caspian Sea Basin. It also examines the policies those countries have followed to develop these region's hydrocarbon resources since the collapse of the former Soviet Union to late 1991.

For civilisation energy has fundamental value. Energy Security and even energy independency are critical to all countries. Energy Security means sufficient supply of energy resources at reasonable price. Energy Security depends on sustainable development of the energy sphere. Together energy production and energy consumption form the "energy-sphere" – a set of means of energy extraction, production, distribution, transformation and exchange. The energy sphere covers the fuel-energy complex, power networks, power plants and energy consumers.

It is extremely difficult to ensure energy security and energy independence in the modern world. In the last 100 years world energy consumption has increased 12 times (doubling average is 27 years) and has grown twice as fast as the earth population. Today, one is focused with many serious problems: the energy sphere keeps growing at a pace that is incompatible with the health of the environment, lead to an exhaustion of fossil-fuel resources. The growing demand on energy cannot be satisfied by further development of conventional energy technologies in the existing model of the economy, based on fossil fuels, cannot provide less developed countries with the same per capita level of energy used as the developed countries, because the rates of growth of oil pumping in the world is expected to slow down sharply. According to estimates, energy consumption will increase from the present 14 billion TCF up to 37 billion TCF by the end of the 21st century. Civilisation faces a real threat to its existence coming not so much

from political factors, but from contradictions between the level of economic development and the standards of material well-being. Organised efforts for sustainable development of energy production and use are required from all national governments and the international organisations from all over the world, as a whole. In many countries developmental programmes for energy industries, to cover next few decades, are being worked out. However, they do not take enough account of the global energy balance structure and the role of innovative technologies of the future⁵ (Pavlov, 2006).

Providing energy security is no longer a question of material resources; it involves a complicated structure consisting of laboratories, national and international technological initiatives, space exploration programmes, international networks, and education system, culture of energy consumption as well as traditional resources, plants and grids. On the eve of World War I, First Lord of Admiralty Winston Churchill made a historic decision to shift the power source of the British navy ships from coal to oil. He intended to make the fleet faster than its German counterpart. But 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 the question of national security. Churchill on “Safety and certainty in oil,” said, “lie in variety and variety alone”⁶ (Yergin, 2006).

Since Churchill’s decision, energy security has repeatedly emerged as an issue of great importance, and it is so once again today. But the subject now needs to be rethought, for what has been the paradigm of energy security for the past three decades is too limited and must be expanded to include many new factors. Moreover, it must be recognised that energy security does not stand by itself but is lodged in the larger relations among nations and how they interact with one another.

The renewed focus on energy security is driven in part by an exceedingly tight oil market and by high oil prices, which have doubled over the past three years. It has also fuelled by the threat of terrorism, instability in some exporting nations, a nationalist backlash, and fear of a scramble of supplies, geopolitical rivalries, and countries fundamental need for energy to power their economic growth.

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 region. And the vulnerabilities are not limited to threats of terrorism, political turmoil, armed conflict and piracy. Since Churchill's day, the key to energy security has been diversification. This remains true, but a wider approach is now required that takes into account the rapid evolution of the global energy trade, supply-chain vulnerabilities, terrorism and the integration of major new economies into the world market.

The last decade has witnessed a substantial increase in the world's demand for oil, primarily because of the dramatic economic growth in developing countries, particularly China and India. As late as 1993, China was self-sufficient in oil. Since then, its GDP has almost tripled and its demand for oil has more than doubled. Today, China imports 3 million barrels of oil per day, which accounts for almost half of its total consumption. China's share of the world oil market is about 8%, but its share of total growth in demand since 2000 has been 30 %. World oil demand has gone up by 7 billion barrels per day since 2000, of its growth, 2 million barrels each day have gone to china. India's oil consumption is currently less than 40% of China's, but because India has embarked on what the economist Vijay Kelkar call's the "growth turnpike," its demand for oil will accelerate. Ironically, India's current high growth rates were partly triggered by the spike in oil prices during the 1990-91 Persian Gulf crises. The resulting balance-of-payments shock left with almost no foreign currency reserves, opening the door to the reforms initiated by then Finance Minister Manmohan Singh, now India's Prime Minister⁷ (Ibid, 2006). Energy security will depend much on how countries manage their relations with one another, whether bilaterally or within multilateral frameworks. That is why energy security will be one of the main challenges for the developed and the developing countries' foreign policy in the years to come. Based on the bases of my observations my dissertation will focus on India's energy needs and policies to augment her energy requirements from Central Asian states.

The second chapter "Central Asian Energy Potential" deals with the various issues and throws light on the regions geographical importance and its location. It gives historical precedence of the region that it held during the Colonial era when there was

scramble for power between the British Empire and the Russians for the domination of Central Asia. The chapter throws light on the present context of its importance.

With the disintegration of Soviet Union in 1991, the world has become unipolar and Central Asia has become playground for different Global players, such as US, Russia, Iran, China and Turkey, for the dominance of the region economically, politically and militarily. The reflection of intentions of the nations (external players) are seen in the implementation of the foreign policies according to the respective countries view point. And off times, there is a greater contradiction in the policies among the regional as well as global players for the establishment of their hegemony.

The major disadvantage of the Caspian reserve is that there is no easy outlet to the sea. There has been much political jockeying back and forth to come up with pipeline route or routes to be able to get the oil to the market. This in turn has given to much talked geopolitics for pipeline diplomacy. Turkey vetoes a route through Armenia to mediate, Russia opposes the route favoured by the US and Turkey that would go through Georgia and Turkey to the Mediterranean, US opposes the cheapest and the most direct route that would go through Iran to the Persian Gulf.

The region is new to the international dynamics of the world and mere political independence has not culminated into military and economic independence. The region has low infrastructural development and due to lack of capital formulation and capital investment and is chronic to the pace of development. This situation has often attracted the industrialised nations of the west and the region for investment in the Central Asian economy and exploiting the rich natural resources on the pretext of building its economy.

The recent trend of globalisation has not left the Central Asia unaware but the process of integration into the world economy has begun. And the impact can be seen with the fluctuation of prices in one region of the world or any event of Socio-Political-Economic importance in the globe to affect region far off from the place of origin. The economic development of the states of Central Asia in the first decade of independence consists of two periods a precipitous decline in the first half of the 1990s and a tentative and modest recovery in the second half. The economic situation in Central Asia is totally dependent on the world prices for raw material commodities, as well as influx of foreign

investment. Direct foreign investment has placed Central Asia firmly in the raw material niche for the global division of labour.

In the 1990s, the absolute level of capital investment sharply contracted throughout the region the gross accumulation of fixed capital remains rather low. The investment in all these countries has become increasingly dependent upon exogenous factors. Given the minuscule volumes of domestic savings, the influx of direct investment and loans from abroad has become the decisive factor in the economic growth of these countries.

The regions internal problem often accentuates the path of development and discusses the internal political bickering. The most serious problem impeding the rapid penetration of foreign capital and correspondingly, an economic upturn in the Central Asian countries are the followings: (1) Political instability (2) the process of states construction remains incomplete and property relations are still undefined (3) the acute struggle (which is not always visible to outside observers for influence over economic and political spheres). Central Asia has neither sufficient institutional development nor (in the current economic situation) the domestic resources to sustain an acceptable level of stability either at the national level nor at the international level. Instead, a complex set of foreign factors acts to sustain military, political and (above all) economic stability.

The chapter further deals with the complex nature of Caspian Sea's legal status. After the collapse of the Soviet Union, Iran and the Soviet Union governed the Caspian Sea under the treaties they signed in 1921 and 1940 .Since then, the dispute has been centred on whether the Caspian is a sea or a lake, and what rules might apply to its division and use either by each bordering state or in an agreement for the common management.

The third chapter, "India" deals with India's energy scenario and the policies and reforms she is undertaking to meet her energy needs and thus vying for energy security. How energy plays a critical role in the socio- economic development of a country? The Indian economy has been on along-term growth trend since the decade of 80s when it breached the average GDP growth rate of 3.5% a year to move to an average of 6% in the 90s.Over the last 5 years, the GDP has grown at an average of 5.6percent.global

experience proves that the energy market needs to keep pace with growth of economy. In fact the sustained handholding by energy availability is one of the important requirements for growth. The requirement of energy in the form of power, natural gas and refined fuel products has increased steadily.

Further, the chapter throws light on the history of Petroleum Industry in India, its formation and working. How reforms in the energy sector were initiated to supplement the government's efforts in the development of the sector and to make it more efficient. The government has been endeavouring to provide a policy that encourages free and fair competition in each element of the energy value chain and attracts capitals from all sources public and private, domestic and foreign, encouraging such capital formation is crucial for India to meet its energy needs.

It throws light on the Hydrocarbon Vision which would guide the policies relating to the hydrocarbon sectors for next 25 years. Issues such as energy security, use of alternative fuels, and inter-changeability of technology are vital to ensure that the mix of energy sources used in the economy is optimal and sustainable and that adequate quantities of economically priced clean and green fuels are made available to the Indian consumers.

It shows India in the world perspective, as a percentage of the total energy consumed by the world, its share of energy consumption rose from 19% in 1980 to 23% in 2002, and is expected to go on rising. It is estimated that demand will grow at the rate of 6 to 7 percent per annum with corresponding rate of 0% growth in the production of oil and gas. The bulk of the growing demand therefore will have to be met with imports. And when India accelerated its market based development, it was importing 53% of its oil gas needs in 1990-91. But in the past 10 years the imports have gone upto 70 percent.

India being deficient in hydrocarbon resources as most of her energy needs are met through import of oil from far of regions. It discusses the possible pipeline routes that would fulfil the growing demand of oil and the geopolitical problems faced by her in bringing the oil from abroad. Today, ONGC Videsh Ltd. (OVL) is playing a very vibrant role in acquiring Equity Oil Abroad. What should be the future vision of OVL in securing

India's energy needs? What strategy should India take to meet her energy requirement both in the domestic as well as in international arena?

The fourth chapter, "India and Central Asia" establishes relationship between the two regions as well as throws light on bilateral exchanges with five countries namely Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan and Tajikistan. How, India's geographical proximity with Central Asia and cross-regional and social interaction between both the regions led to forging of highly significant linkages. Central Asia had both the advantage and disadvantage of a central location between four historical seats of power. From its central location, it has access to trade routes, or lines of attack, to all the regional powers. It gives vivid account of countries surrounding the region. The central theme revolves around possibilities of India acquiring hydrocarbon resources from this region and meeting her energy needs. It is not only energy that has attracted India in Central Asia but its geopolitical location on the global map and other International dynamics that govern the policies of international relations. It not only discusses the possibilities of transport routes for energy and enlightens the impediments that have delayed the connectivity from this region.

The collapse of the Soviet Union in 1991 came as a great shock to India. The Central Asian Republics attained independent sovereign status and looked to India for help and support. During the period 1991-1995, India was passing through a difficult phase of political instability and was not able to respond befittingly to the events like the gulf war, fought by the US led coalition against Iraq, collapse of Soviet union, emergence of the Central Asian Trans-Caucasian region etc. The leadership and the policy makers would not grasp the high stakes that India has in the central Asia's stability, security, integrity and secular ethos. There are a lot of common grounds for building this relation. Secularism and democracy are two cardinal features that are shared by the Central Asian countries and India. How, India's relationships with the Central Asian countries are growing day by day? It gives insight into high level visits exchanged on a regular basis with these countries.

There are three factors which make Kazakhstan important for India. First, its geostrategic location, second, its economic potential, especially its energy resources, and

third, its multi-ethnic and secular structure. It also gives details of political relationships between the two countries and the exchange of bilateral visits. How, Kazakhstan could help India develop her space launch programme and vice-versa. Kyrgyzstan although cannot fulfil India's energy demands due to its negligible hydrocarbon resources but there are other areas of forging ties between these two countries seeing the geopolitical dimensions of the region. India's relationship with Turkmenistan is also growing and there is bright prospect for energy cooperation with high natural gas resources and discusses the development of TAPI pipeline project and the risks .It also gives profiles of relationship in the other areas of cooperation namely, trade and commerce, important bilateral treaties and cooperation in Science and Technology. Tajikistan is the nearest neighbour among the Central Asian countries. Although it is deficient in oil potential but there are other areas of developing ties. What policy should India adopt with these five central Asian countries in building ties? Is it only oil or other geopolitical dynamics that has led India to look north?

Endnotes:

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Chapter 2

Central Asian Energy Potential

Chapter 2

CENTRAL ASIAN ENERGY POTENTIAL

The term “Central Asia” in its current geo-political meaning applies to the southern part of the USSR and includes five former Soviet Republics that are now five independent states – Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan and Tajikistan. The region shares borders with Russia, China, Afghanistan, and Iran (only a thin stretch of land separate it from Pakistan); it has a diversified landscape and enormous actual resources. The geo-economic and geo-strategic significance of the Central Asian region, its location between Europe and South Asia, between the Middle East and western Siberia-all this has, over many centuries, made it a tempting rise for various invaders, who have brought not only death and destruction but also different culture and more often, a fusion of ethnic groups, languages and confession. Economically, the region possesses extensive and still largely unexplored natural resources (including natural gas, petroleum, gold, uranium, and ferrous and non ferrous metals) as well as a whole complex of nuclear facilities. The Soviet legacy in Central Asia also includes a significant scientific-technical intelligentsia and a level of education higher than that found elsewhere in the Muslim world¹ (Reznikova, 2003).

The disintegration of the Soviet Union opened up a geographical vacuum in Central Asia, which in effect had constituted a critical buffer between Russia, China and countries of the Islamic world. The world press has advanced a number of hypotheses about the future of the newly independent states of the region, about the role in the post-cold war era, about the establishment of the regional union, about possible membership in various political and economics blocks, and about ties to countries in the Muslim East. The prospects of Central Asian states drawing closure to the Islamic world arouses much concern in Russia, the NATO countries, India and China. This strongest interest in Central Asia is reminiscent of the Anglo-Russian rivalry in this region in the 19th centuries that Rudyard Kipling deftly called the “Great Game”. But this time the number of players has increased considerably.

Hydrocarbon Reserves of Central Asia

The Caspian-Caucasus region of Central Asia has the potential to become the largest supplier of oil and gas to Asia and Europe with its estimated reserves approximating 200 billion barrels surpassing any region outside the Persian Gulf. These reserves put it on a par with Saudi Arabia and it is expected that the Caspian Sea will become the second most important source for oil for the West and the world in the 21st century. This quest for exploration of hydrocarbon resources in the region is termed the “New Great Game” recalling the previous one in which the British and the Russian contested for influence in the region. More significantly, the prospects of Caspian Sea’s natural resources have put some of the Central Asian republics in spotlight on the global Geostrategy map whereas they were almost anonymous during their seven decades of existence within the former Soviet Union.

Table: 2.1

Energy Production by the Country, 2004

Commodity	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Oil (b/d)	1,200,000	2000	Negligible	162,500	143,300
Gas (bcm)	11.6	.016	.05	58.57	63.1
Coal (mtoe)	43.2	0.508	.0127	0	2.0959
Electricity (billion kWh)	66.82	11.72	15.08	11.41	47.7
Primary Energy (mtoe)	49.6	4.2	3.5	16.9	51.7

Sources: (1) *The World Fact book, 2005*;

(2) *British Petroleum. BP Statistical Review of World Energy, 2004, London*;

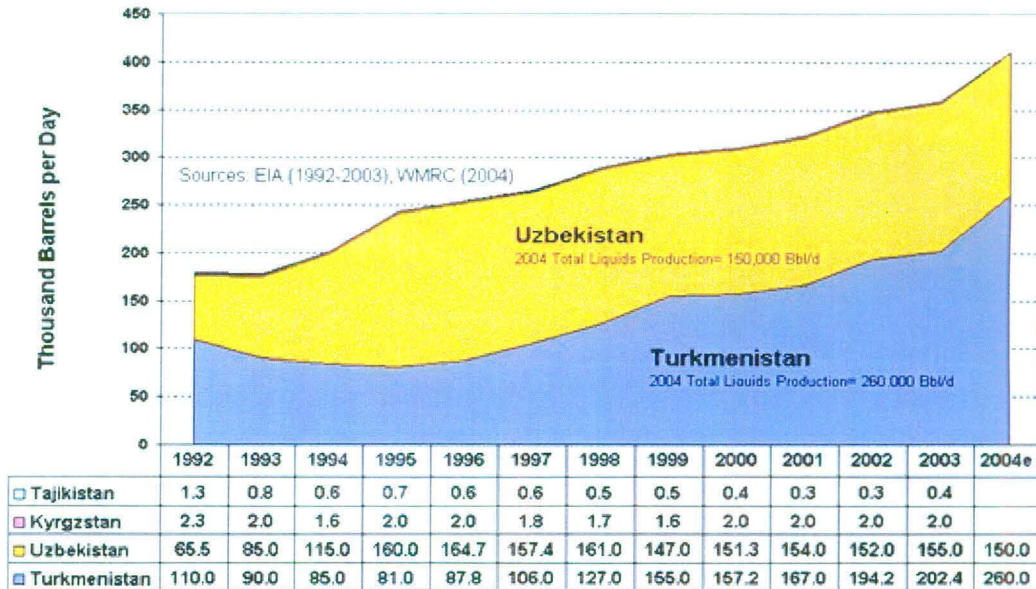
(3) *US Department of Energy, Energy Information Administration, May 2002, “Central Asia”, Country Analysis Brief Washington, D.C.*

The hydrocarbon reserve of Central Asian region, as accessed on 1 Jan 2002, is 6.552 billion barrels of crude oil and 2326 trillion cubic feet of natural gas. Kazakhstan has 5.4 billion barrels of oil, and 65.0 trillion cubic feet of natural gas (7-9 billion barrels of Kashagan field not included). Turkmenistan has 0.5 billion barrels and 101.0 trillion cubic feet of gas. Uzbekistan has 0.5 billion barrels of oil and 66.2 trillion cubic feet of gas. Kyrgyzstan has 0.04 billion barrels of oil and 0.2 trillion cubic feet of gas. Tajikistan has 0.012 billion barrels of oil and 0.2 trillion cubic feet of gas. In addition to

Kazakhstan's proven reserves, both offshore and onshore, are estimated thirty or fifty billion barrels of oil mostly in the Kazakh section of the Caspian Sea (Jatar, 2004).²

Figure: 2.1

Oil Production in Central Asia (1992-2004)

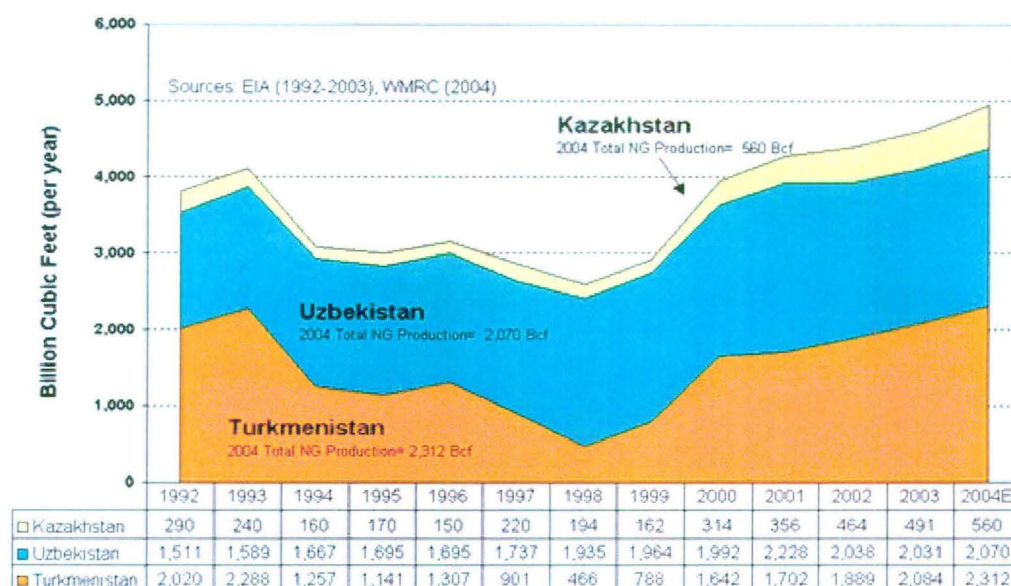


Source: http://www.exorthodoxforchrist.com/images/Oil_Production_Central_Asia_Caspian.jpg retrieved on 12 of July, 2007

The world community depends on an intricate complex of economic, political and military strategic factors. With respect to the states of Central Asia that constitute the focus of the present work, economics is of decisive significance in determining the form and pace of their incorporation into global economic and political space. The presence of immensely rich, untapped reserves of hydrocarbon raw materials and metals predetermines the fate of these states in the foreseeable future. Unless the raw resource potential can be realized, not a single country in Central Asia can expect to enter into a trajectory of sustained economic growth that is based on the market model. These same raw-material resources provide the foundation for the formation of a specific configuration of global forces and interests, the interaction and confrontation of the latter, within the framework of the Central Asia have steadily become more clearly defined and intense³ (Reznikova, 2003).

Figure: 2.2

Natural Gas Production in Central Asia (1992-2004)



Source: www.exorthodoxforchrist.com/resources4.htm&h retrieved on 12 of July 2007

The rich reserve of hydrocarbon raw-materials and precious metal will enable the Central Asian countries, in the near future, to occupy an important niche in the global economic and the political system. The reserve of oil and gas are concentrated primarily in Turkmenistan and Kazakhstan. These two countries share borders with Uzbekistan, which possesses more modest reserves of hydrocarbon raw materials, especially oil. However, Uzbekistan is one of the largest world producers of gold and silver. Rich deposits of precious metals are also found in Kyrgyzstan, Kazakhstan and Tajikistan. Even in one aspect, the lowest estimates for the hydrocarbon reserves in the region, Turkmenistan and Kazakhstan nevertheless have excellent prospects of becoming the world's top producers of petroleum and gas.

At the same time, the ruling elites in Kazakhstan, Turkmenistan, Uzbekistan and Kyrgyzstan are fully cognizant of the following facts: the economic and political prospects of these countries (as independent states) are totally dependent on their ability to realize this raw-material potential. Accordingly, two-states Kazakhstan and Turkmenistan have announced ambitious programs to increase the extraction and export of oil and gas. Uzbekistan is endeavouring to keep up with them; it has undertaken not only to make a large-scale exploration of oil and gas deposits but also to increase the

production of natural gas. In the case of latter, Uzbekistan has already passed Turkmenistan and now ranks as the second largest producer in the post soviet world (surpassed only by Russia).

Table: 2.2

Predicted gas production and export in Central Asia till 2015 (bcm)

Production and Export	2005	2010	2015
Kazakhstan Production	15	22.7	NA
Kazakhstan Export	13	24	35
Turkmenistan Production	100	120	180
Turkmenistan Export	70	100	115
Uzbekistan Production	67	70	NA
Uzbekistan Export	15	20	20

Source: J.P. Dorian, Energy Policy 34(2006),pp553.

Kazakhstan's Hydrocarbon Reserves

Kazakhstan got independence on 16 December, 1991. It is the biggest country among the Central Asian countries with an area of 2717.3 km². The GDP real growth rate is 9.1% and the GDP per capita \$7800. The principal natural resources of Kazakhstan are oil and gas, chrome, iron-ore, coal, gold, copper, lead-zinc ore and tungsten. The primary farm products are wheat, barley, meat, wool and the country has metallurgy, textile, machine building and petrochemicals. The major exports from the country are oil and gas, non-ferrous metallurgy, chemicals, grains, garments, meat and coal. It is a major importer of machinery, industrial materials, oil and gas, consumer goods etc. The trading partners include the countries of former Soviet Union i.e. Russia, Ukraine, Uzbekistan, Kyrgyzstan and other are US, Turkey UK, Germany, China and Western European countries.

Kazakhstan is the second largest oil producer among former Soviet Republics (after Russia), by 2002 producing almost 1 million barrels per day (b/d). It has significant petroleum reserves, with proven oil reserves estimate ranging from 9 billion to 17.6 billion barrels. In addition, it is believed by many that Kazakhstan possible hydrocarbon reserves – with optimistic estimates falling between 30 million and 50 million barrels. Most of this is projected to come from the Kazakh sector of the Caspian Sea. Earlier a large portion of Kazakh production came from two of the oil fields Tengiz and

Karachaganak. Several new oil deposits were discovered in the last two years, and the most important of all is the Kashagan field with its recoverable reserves of 1.6 billion tonnes. Located in the northern part of the Caspian Sea, the Kashagan field places Kazakhstan among the leading countries possessing hydrocarbon resources. Other discoveries of oil reserves include Kalamkas field with 100 million tonnes of recoverable reserves, South-Western Kashagan (20million tonnes), Aktola (210million tonnes), and Kairan (150 million tonnes).Resultantly, Kazakhstan’s proved recoverable reserves of oil have almost doubled within a very short period of time. Recoverable reserves of the Kazakh sector of the Caspian Sea are preliminary estimated to exceed 60 billion barrels (8 billion tonnes). Also, more than half of Kazakhstan’s probable reserves (13 to 18 billion tonnes) are associated with the Kazakh sector of the Caspian Sea shelf. All these developments have attracted the interest of the whole world to the Caspian region and have enhanced the attraction of the Kazakhstan sector of the Caspian Sea as an investment object⁴ (The Embassy of Kazakhstan, 2006).

Table: 2.3

Hydrocarbon Production in Kazakhstan <i>(million tonnes)</i>		
Years	Oil	Gas Condensate
2000	30.65	4.65
2001	36.1	4.03
2002	42.1	5.2
2003	45.4	6.1
2004	50.7	8.8
2005	51.3	10.7

Source: Kazakhstan’s statistics Agency (Various Years)

In the first decade of independence, Kazakhstan received approximately US\$ 13 billion in foreign investment in its oil and gas industries – more than any other former Soviet country. Throughout 2000-2005, oil and condensate production increased by 60 percent. In 2005, Kazakhstan produced more than 51 million tonnes of oil. According to available data; the state owned oil and gas company KazMunaiGaz produced 9,364,000 tonnes of oil and gas condensate in 2005, which is 445,000 tonnes more than its previous year’s figures. The company’s share in total oil and gas condensate production amounted to 15 percent. Oil production grew due to the application of new techniques to increase

reservoir recovery. For 2006, oil and condensate production is forecasted to be 9,450,000 tonnes⁵ (Ibid, 2006). The level of investment enabled a production rise from 530,000 b/d in 1992 to 939,000 b/d in 2002. Output has been increasing by almost 15% a year since 1998. If all the fields, which are planned, are brought online, it is anticipated that oil production could reach 1.2 million b/d by 2015 (i.e. the same level as UK in 2001).

A large portion of Kazakh current production comes from two fields – Tengiz and Karachaganak. The Tengiz development is led by Chevron-Texaco, which signed a US\$ 20 billion agreement in 1993 and has since increased production ten-fold. The US\$ 8 billion Karachaganak Petroleum Operating Partnership, led by the British Gas (BG) Group and Agip/Eni of Italy; it is focused on condensate production. In addition, the offshore Kashagan block is being operated by Eni, as part of another consortium. This project, with estimated possible oil reserves of upto 40 billion barrels is seen as an indicator of the whole Caspian region’s oil supply potential⁶ (Jafar, 2004). Kazakhstan refined 11.17 million tonnes of oil in 2005, which is 18.7 percent more than the previous year. Oil refining volumes for 2006 are estimated to be 3.4 million tonnes. In 2005, motor petrol production in Kazakhstan increased by 23 percent to 2.354 million tonnes, of which over 213000 tonnes were produced in December. In the same year, Kazakhstan’s refineries produced a total of 3.29 million tonnes of gas oil, which was 18 percent higher than the figures of 2004; 256,000 tonnes were produce in December. Production of fuel oil also increased by 43 percent, to 3.55 million tonnes, reaching 230,000tonnes in December. However, production of jet kerosene fell by 20 percent, down to 234,000 tonnes, with only 19,000 tonnes being produced⁷ (The Embassy of Kazakhstan, 2006).

Table: 2.4

Kazakhstan’s Export of oil and Gas Condensate to the World Markets						
	2000	2001	2002	2003	2004	2005
Oil and Gas condensate export, Million tonnes.	27.7	32.4	39.3	44.3	52.4	52.4.
World crude oil prices, Spot-\$/ barrel average annual	28.2	24.5	24.9	28.9	37.7	53.4

Source: Kazakhstan’s statistics Agency (Various Years)

Kazakhstan also has proven reserves of 65 trillion cubic feet of natural gas with over 40% of this situated in the giant Karachaganak field, an extension of Russia’s

Orenburg field. Other significant gas producing areas include the Tengiz, Zhanazol and Uritau fields. In addition, rising associated gas production at the Tengiz field will result in Tengiz becoming the second largest producing field for natural gas in Kazakhstan. The gas development has definitely come second to oil, however, partly caused by a poor pipeline infrastructure, and partly because the reserves are generally far from markets and population centres. As a result, a lot of gas, (35% of consumption) is actually imported from Uzbekistan, though in 1999 the government passed a law requiring companies to include gas utilization projects in their development plans.

Buoyed by increasing oil exports, the country has experienced impressive economic growth – from 2.7% in 2000 and by 13% in 2001 – easily the best result in independence. According to Minister of Economy and Trade Zhaksibek Kulekeyev, the oil industry accounted for approximately 30% of the government's budget revenue, and half the country's export. However, in March 2002 the government approved a three-year plan that aimed at a more modest annual GDP growth of 5-7%. Under present conditions this goal seems well within reach.

Production today is barely 1% of global production (with exports even less than this). And, despite being granted observer status by OPEC in 2001, this figure puts it on a par with relatively minor players in the oil-exporting club such as Syria and Brazil. Thus, the entire Caspian basin's proven reserves today make it comparable to the North Sea and several orders of magnitude smaller than the Middle East.

Despite attempt to compare Caspian oil and gas reserves with those of the Middle East, they differ in one crucial aspect, aside from debate over quantity and quality and that is the cost of production. As such, the oil business in Caspian becomes considerably less lucrative in the low oil price scenario. In addition, a lot of the production is expected to be 'sour' – with high sulphur content. This further reduces its value in international oil markets.

Turkmenistan's Hydrocarbon Reserves

Turkmenistan got independence on 27 October, 1991. It has an area of 488.1 million km². The GDP real growth rate is 21.4% and the GDP per capita of \$5700. The principal natural resources of Turkmenistan are natural gas, cotton and electricity. The primary

farm products and industry is cotton. The major exports from the country are natural gas, cotton, petroleum products, electricity, textiles and carpets. It is a major importer of machinery, foods, plastic and rubber, consumer products and textiles. The trading partners include the countries of former Soviet Union i.e. Russia, Ukraine, Azerbaijan and others are Turkey and Germany⁸ (Dorian, 2006).

The country is endowed with both oil and natural gas and the percentage break up being 20% and 80% of its commercial energy reserves respectively. Turkmenistan has two hydrocarbon basins, the Caspian shelf and the centre/eastern region, where the latter extends into Uzbekistan. The inland region is mainly gas prone, and contains little oil. The state oil company Turkmenneft, has signed only Five PSAs with foreign companies, despite its announcement of ambitious plans for energy development.

The oil production occurs mostly in the west of the country, both onshore and offshore. Of the five PSAs with foreign companies, only three are in production. The Burren Energy and the Dragon Oil areas are in western Turkmenistan. Burren is a U.K. company producing about 12,000b/d from the onshore Nebit Dag area. Dragon Oil, headquartered in Dubai, produces 15,000b/d from the offshore Cheleken field, and is the only foreign company producing offshore. Petronas and Maersk signed offshore development deals, but neither company has begun production. Panama's Mitro International is a minor partner with Turkmenneft, and their Khazar project is producing in the neighbourhood of 4,500 b/d. But it is Turkmenneft that accounts for the remaining oil production, by far the majority mainly for domestic consumption⁹ (Crandall, 2006). Turkmen production potential has been greatly overestimated. As far back as 1994; its annual production goals for 2000 were 560,000b/d for oil and 130 bcm/for gas. The country's actual production in 2000, however, was nowhere near that level, amounting to 144,000 b/d of oil and 43.8bcm of gas. In 1994 the Turkmen government also forecast that in the period 2010- 2020, oil production would rise to 1.6 mmb/d and gas to 54.6 bcm/y. In November 2003, it again announced that between 2003 and 2020 the country would increase its oil production to 2mmb/d and its gas output to 240bcm/y. Oil production in 2005 was just under 200,000b/d and gas production amounted to 55bcm/d, and neither is likely to meet the 2010-2020 predictions, although the prospect for increased production appear to be better in the gas arena. According to the Petroleum

Economist, "If achievements matched ambition, Turkmenistan would be one of the largest producers of oil and natural gas in the world".

It has about 600 million barrels of proven oil reserves, it has both on-and off-shore oil current production (including all liquids) is about 200,000bbl/d according to some analysts, though the US Energy Information Administration (USEIA) says production peaked at that level in 2004 and has been declining. A number of important fields are in the east but the main producing area is the Cheleken peninsula, in the western province of Balkan. The state oil company, Turkmenneft produces about two third of the oil and has most of its production in the onshore Garashsyzyk block, where six of the more than 40 producing oil fields are located. It has dispute with Azerbaijan on Kyapaz/Serdel oil fields in the Caspian. With recent signs of re-engagement between Turkmenistan and Azerbaijan, the dispute may be addressed. This could also open up other areas for exploration and possible production, including geological extension Azerbaijani fields that are already producing substantial quantities of oil. Foreign Investors have played an important role in the oil sector though the volume produced is small. Without significant new investment and renewed competence being brought to the sector, production is expected to be stagnant. Given the small population, oil consumption (and intensity) is high for the developing country, however, and following the Soviet pattern, use is inefficient so there is some potential for additional exports.

Turkmenistan is rich in natural gas reserves and important exporter of this commodity. Turkmenistan is potentially interesting from the point of view of future world gas security. Its gas reserves of 2,900bcm are larger than its annual consumption of 55bcm, and nearly all could be exported to international markets if competitive international transportation capacity is available. In 1991, natural gas production exceeded 80 bcm; it fell thereafter to a low of 12.4bcm in 1998 before rising to 54.6 bcm in 2004. The plunge in production in the 1990s was due to two factors. First, traditional buyers in Ukraine and the Caucasus failed to pay for the gas Turkmenistan shipped. Second, Moscow regarded Turkmen gas as a competitor to sales of its own gas and cut-off Turkmen shipments on the existing pipelines to Russia, with no other sales or transportation or outlets. Turkmenistan gas production had no where to go, and the production declined dramatically¹⁰ (Ibid. 2006).



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With decline in revenues to the state severely affected from the decline in gas sales during most of the 1990s, Turkmenistan began to look for alternative gas sales prospects. It sold gas to Iran through the newly constructed pipeline from its Korpedzhe field to Kortkui across the border. But, Iran and Turkmenistan are or may become competitors for sale in Turkey and elsewhere in Western Europe, in that case Tehran may not wish to simply serve as a pass-through route and/or see Turkmen gas sales cut into its own potential sales. But in January 2005, Turkmenistan abruptly shut off the gas flow to both Ukraine and Russia in an ongoing dispute over prices. Later in April 2005, Gazprom of Russia agreed to a 70-80 bcm/y contract for 25 years from 2004 to 2028. Volumes were to build from 6 bcm/y in 2004 to peak levels by 2007. The price was reportedly \$44 per thousand cubic meters, or about \$1.25 per MMBtu, well below prices of 3.50-4.00 per MMBtu prevailing in Western Europe at that time, and higher than Russia initially was prepared to pay and Russia sold its gas in Europe for \$100-130 per thousand cubic meters, so its Turkmenistan purchases were highly profitable. Turkmenistan demanded a price increase to \$60 per cubic meters, or about \$1.70 per MMBtu, half to be paid in kind. Ukraine's new leadership capitulated and signed a contract to buy 36 bcm/y for 1 year at a price of \$58 per thousand cubic meters and the gas flow was restored¹¹ (Ibid, 2006).

Yet like it's Central Asian states, transportation bottlenecks may if not resolved, limit long term hydrocarbon development. The value of Turkmenistan's gas is determined in large measures by access to markets. For this reason, a number of pipeline projects to carry Turkmenistan's resources are in planning or have been proposed, with most of them an alternative gas export outside of Russia.

Uzbekistan's Hydrocarbon Reserves

The country got its independence on August 31, 1991 and has a territorial area of 487.4 km². The total population is 26.83 millions. The countries GDP real growth rate was 4.4% and has per capita GDP of \$1800. Uzbekistan natural resource is oil and gas, gold, coal, silver, copper, lead-zinc ore and tungsten. The primary farm products are cotton, fruits, vegetables, textiles and the industries are cotton harvesters, textile machinery and metallurgy. The country exports cotton, gold, natural gas, fertilizers, light industrial goods, ferrous metals, textiles, food products. The countries major imports are

machinery, food, plastic and rubber, consumer goods and textiles. The major trading partners are Russia, Ukraine, Kazakhstan, Kyrgyzstan and others are Czech Republic, other east European and west European countries¹² (Dorian, 2006).

Uzbekistan has several hydrocarbon basins and is primarily a natural gas region. The most productive basins historically were in the gas-prone Amudarya region across the border from Turkmenistan, and in the oil fields of the Ferghana Valley. These are old fields dating from the Soviet era and needed investment to boost production. Its oil fields are estimated to be around 0.6 billion barrels, only slightly above those of Turkmenistan, and well below those of Russia, Iran, Kazakhstan and Azerbaijan. It is noted for being one of the few former Soviet Republics that increased oil output consistently since becoming independent in 1991. State company Uzbekneftegas boosted oil production to 7.6 million metric tonnes, or 175,000b/d in 1996, achieving self-sufficiency that year. Consequently, the country stopped being net importer that year and it peaked at 191,000b/d in the year 1999. Since then, Uzbekistan's output has stabilised at around 166,000b/d, or 7.1million metric tonnes in 2003¹³ (Crandall, 2006). These are not sizeable enough to make the country a major contributor to the world markets and to energy diversity and security.

Uzbekistan has abundant oil and gas resources with 60percent of the country's land area showing oil and gas potential. It contains modest oil reserves, estimated at 0.6 billion metric tonnes. In Natural Gas Uzbekistan ranks 17th world wide in reserves. The country could reportedly increase output relatively easily if a viable external market were identified. In five of the republics proven oil and gas bearing areas alone, potential resources are estimated at more than 5 million metric tonnes of oil and condensate, and 5.5 tcm of natural gas. By 2000, the Uzbekneftegas National Oil and Gas Corporation had identified and explored 171 oil and gas fields¹⁴ (Ibid, 2006).

Uzbekistan's gas reserves are somewhat smaller than those of Turkmenistan; they are still large at 1,870 bcm greater than those of the Netherlands, one of the richest provinces in Western Europe. Uzbek gas production currently exceeds that of its neighbouring former Soviet republics. Gas production, however rose throughout the period, from about 40bcm in 1992 to nearly 56 bcm in 2004. The country remained the

largest gas producer in the area .While its natural gas reserves could permit Uzbekistan to become a major gas exporter ,all its transport routes pass through Russia .With Gazprom's expansion in 2004 of the capacity of CAC 1, 2,and 4 lines from 45 to 56 bcm/y,Central Asian gas producers will be bound to Russia for sometime to come as the sole route to move their gas, and they will compete with each other for customers. Uzbekistan has no choice but to provide Gazprom with its exportable surplus of 10bcm/y from 2004 through 2010, and perhaps as much as 20bcm/y by 2020¹⁵ (Ibid, 2006). This target will depend on greater pipeline capacity. Some analysts view the Russian contract however, as a temporary Russian move to continue using cheap Turkmen and Uzbek gas until large volumes of less distant and equally cheap Kazakh gas become available.

Kyrgyzstan's Hydrocarbon Reserves

The country got its independence on August 31, 1991 and has a territorial area of 198.5 km². The countries GDP real growth rate was 6.0% and has per capita GDP of \$1700. Kyrgyzstan natural resource is gold, mercury, uranium, coal, caesium, antimony and has hydro-electric potential. The primary farm products are tobacco, livestock, wool and the industries are metallurgy, agro-processing electronics, textiles and sugar. The country exports cotton, wool, tobacco products gold, mercury, uranium, hydropower, aluminium and fruits and it's a major importer of grains, timber, light industrial products, ferrous metals, fuel machinery, textiles and chemical. The major trading partners are Russia, Ukraine, Kazakhstan, Uzbekistan, Germany, Bulgaria, Czech & Slovak Republic and China¹⁶ (Dorian, 2006).

Kyrgyzstan contains seven developed oil fields but two oil/gas fields due to difficult geological conditions, recovery rates are low. Exploration continues in the Naryn Oblast area of eastern Kyrgyzstan, situated just across the border from China's Tarim Basin. Current crude oil production levels in Kyrgyzstan are around at 2000b/d; consumption being to the tune of 20,000b/d.In October ,1996 Kyrgyzstan's first and only oil refinery, Jalalabad opened with a capacity of 10,000b/d.Jalalabad remains mostly unused, however with domestic production of crude at only 2,000b/d.Jalalabad refinery is now operated by the Kyrgyz Petroleum Company, a joint venture of the British Firm Petrofac Resources International Limited and Kyrgyzneftgas, the state owned oil

company, negotiations are also under way with Uzbekistan to import gas condensate for processing into gasoline at the refinery. Nearly all oil and gas products are imported into Kyrgyzstan from Kazakhstan and Russia. Kyrgyzstan and Tajikistan produce only small amount of oil¹⁷ (Ibid, 2006).

Table: 2.5

Energy balance of Kyrgyzstan, 2004

(In thousand tonnes of oil equivalent (Ktoe) on net calorific value)

Supply and consumption	Coal	Crude Oil	Petroleum Products	Gas	Nuclear	Hydro	Geothermal, Solar, etc.	Combustibles Renewables and Waste	Electricity	Heat	Total
Production	167	74	0	24	0	1212	0	4	0	0	1482
Imports	445	7	655	645	0	0	0	0	5	0	1757
Exports	-20	0	-158	0	0	0	0	0	-291	0	-469
International Marine Bunkers	0	0	0	0	0	0	0	0	0	0	0
Stock Changes	0	10	0	0	0	0	0	0	0	0	10
TPES	593	91	497	669	0	1212	0	4	-286	0	2780

Source: International Energy Agency 2004

TAJIKISTAN

The country got independence on 8 September 1991 and has a territorial area of 143.1 thousand km² with a population of 7.16 million. The country's GDP real growth rate is 10.5% and with a GDP per Capita of \$1100, Principal natural resources are cotton, bauxite and copper. Primary farm products are cotton and fruits. The country's major exports are cotton, aluminium, fruits and that of major imports are fuel, chemicals and machinery. The trading partners are Uzbekistan, Russia and Iran¹⁸ (Ibid, 2006).

Tajikistan in particular has insignificant reserves of petroleum and natural gas and relies heavily on imports from other former Soviet Republics, notably Uzbekistan and Turkmenistan.

Table: 2.6

Energy balance of Tajikistan, 2004

(In thousand tonnes of oil equivalent (Ktoe) on net calorific value)

Supply and consumption	Coal	Crude Oil	Petroleum Products	Gas	Nuclear	Hydro	Geothermal, Solar, etc.	Combustibles Renewables and Waste	Electricity	Heat	Total
Production	21	18	0	27	0	1451	0	0	0	0	1517

Imports	46	0	1368	446	0	0	0	0	378	0	2238
Exports	0	-3	-12	0	0	0	0	0	-405	0	-420
International Marine Bunkers	0	0	0	0	0	0	0	0	0	0	0
Stock Changes	0	0	0	0	0	0	0	0	0	0	0
TPES	67	15	1356	473	0	1451	0	0	-27	0	3335

Source: International Energy Agency 2004

Legal Status of Caspian Sea

After the collapse of the Soviet Union, Iran and the Soviet Union governed the Caspian Sea under the treaties they signed in 1921 and 1940. Since then, the dispute has been centred on whether the Caspian is a sea or a lake, and what rules might apply to its division and use either by each bordering state or in an agreement for the common management. Whether the Caspian is considered a sea or a lake does not really matter. What matters is how the surface area, with or without common areas and the seabed are divided. The five bordering states have yet to reach a delimitation agreement that will serve as foundation for the future oil and gas development efforts, and one that all parties are prepared to honour and enforce.

Russia and Iran are of the view that the Caspian Sea is an inland lake and as such it should be governed by international rules in this regard and are signatories to bilateral treaties concluded by them in 1921 and 1940. And earlier both were apprehensive of any fundamental change in the then existing status of the Caspian based on the treaties Russia has made the biggest change in its stance on demarcation of the seabed. It initially agreed with Iran that resource development should be deferred until all five bordering states had determined the legal status. It subsequently abandoned that insistence after the discovery of fields that would permit joint Russia-Kazakhstan development according to a Median Line division. The modified median line division would divide the sea as follows, with Azerbaijan and Kazakhstan having the largest share, Azerbaijan (21%), Iran (13.6%), Kazakhstan (28.4%), Russia (19%) and Turkmenistan (18%)¹⁹ (Crandall, 2006).

Kazakhstan and Azerbaijan favour a division of the sea on the basis of the 1982 Convention on Law of the sea, between 200-300 nautical miles of the continent shelf's depending on the configuration of the continental margin and a 200 nautical mile of

exclusive economic zone. The northern division of the sea been already agreed upon but the southern differs between Iran ,Turkmenistan and Kazakhstan and would have to reach their own arrangements .As Iran is not satisfied with its share of 13-14% division and thus eyes on greater share and had targeted the Alov field in which both Iran and Azerbaijan has claim. And Turkmenistan is confused and keeps changing its view regarding the drawing of the line. Recently all the five bordering countries have agreed to use jointly the sea for fishing and shipping, but not the seabed.

The 18th meeting occurred in October 2005, and none of the five countries agreed on delimitation, despite the usual post meeting claims of much progress towards resolving dispute matters. The approach to dividing the sea remains a contentious issue as energy resources are not distributed evenly, shorter coastlines for some countries is given them smaller shares of the sea, according to a common method of division. Thus the legal status of the Caspian Sea is still unresolved after 16 years of the independence of the region²⁰ (Ibid, 2006).

Internal Politics of Central Asia

The integration of Central Asia into the world economy directly depends on how quickly and how successfully the leading Transnational Corporations are able to find ways to solve the problems that confronts them in this region of the globe. The most serious problem impeding the rapid penetration of foreign capital and correspondingly, an economic upturn in the Central Asian countries are the followings: (1) Political instability (2) the process of states construction remains incomplete and property relations are still undefined (3) the acute struggle (which is not always visible to outside observers for influence over economic and political spheres).

The various Central Asian states seek to assume domestic stability- impart, at least by strengthening different kind of regimes. These include authoritarian regimes in Uzbekistan and Kazakhstan, an enlightened pro-authoritarian in Kyrgyzstan, and an eastern-“leaderism” (vozhdizm) in Turkmenistan. But the problem of ensuring external security is considerably more complicated. While the Central Asian states show the outward signs of sovereignty, they do not have sufficient resources and institutions to

solve the problem of external security. Although the level varies among the different Central Asian states, some have the capacity to sustained sovereignty in all its aspects.

Tajikistan as a state, it has proved to be the least prepared and the least capable of compensating, even in part, for the lapse of the previous structures that had served to ensure stability. At the same time, the complete inability of the soviet party-structured (who comprised the so-called nomenclatura) to respond to the critical issues of the day has ignited a civil war in the country. The fusion of the potential for conflict in Afghanistan and in Tajikistan has created powerful preconditions for a steady expansion of the zone of instability. Unresolved territorial problems and disputes, conflict over the allocation of limited water resources, economic conclusions, and ecological catastrophes—all are being added to a cauldron of ethnic and religious tensions.

The countries of Central Asia recognized their vulnerability from the very outset and therefore attempted to construct a common security system. The participation in the European system of security (OSCE) and co-operation served to create a defensive barrier in the face of any neo-imperial aspirations on the part of Russia. However, rather quickly it became clear that none of the security system operating at a higher level had real mechanism to sustain stability in Central Asia²¹ (Reznikova, 2003).

It was no accident that the president of Kazakhstan, Nursultan Nazarbaev, openly expressed his disillusionment with OSCE, saying that it had neither economic levels nor peacekeeping forces (like those of the United Nations) to regulate regional conflicts. Concrete proposals, in particular, included preparations for a conference on mutual action and measures for confidence in Asia (*Soveshchaniia po vzaimodeistviu i meram doveriia v Azii*, or SVMDA). In the next phase (between 1996 and 1998), it was proposed to transform this conference into an Organization for Security and Co-operation in Asia (*Organizatsiia po bezopasnosti i sotrudnichestvu v Azii* or OSCA), which would function along the same lines as OSCE. Then the next phase between 1998 and 2000, provided for the creation of a permanent structure of mutual action between OSCE and OSCA. However, the proposal of Kazakhstan were not put into effect, and hence neither realized nor developed. The predominant tendencies in international life during the second half of 1990s make it possible to conclude that the problems of regional conflicts has become a

peripheral issues so far as the leading members of the world community are concerned²² (Ibid, 2003).

A Moscow meeting of the presidents of Russia, Kazakhstan, Uzbekistan and Kyrgyzstan (August, 1993) determined their common attitude towards the situations on the Tajik-Afghan border and the domestic political situation in Tajikistan. The meeting further led to the signing of a “Declaration on the Inviolability of Borders”. As an extension of decision taken at this meeting Kazakhstan, Uzbekistan and Kyrgyzstan sent a limited contingent of forces to Tajikistan, shortly afterwards the Council of Ministers of defence of the commonwealth of independent states (CIS) adopted a decision to create a coalition force. As the development of the situation in 1994-95 demonstrates, these measures made it possible to prevent the conflict from spreading but couldn't extinguish it. However, the pressure from Russia, Uzbekistan and Kazakhstan did force the two.

Tajik combatants had to sit down at the negotiating table. Tajikistan is fated to remain a source of despair for Central Asia for an extended period of time to come. All the states of this region, without exception, are forced to rely upon external force to ensure their internal stability and to defend their borders against foreign threats. There are two basic reasons for this: Firstly, the Central Asian states infact do not have contemporary armed forces, but only the rudiments of military structure. The creation of capable national armies and border forces here will, of necessity, stretch on for years. Secondly, these states are manifestly in no position to supply even a minimum level of necessary military expenditure. The bulk of the cost for maintaining peace falls on Russia and is quite high. Russia in 1992-1993 financed over 95% of the cost of maintaining the army in Turkmenistan; 80% in Kyrgyzstan. Russia provides moreover, upto 95% of the costs for supporting the peacekeeping contingent of the members' states of the CIS in Tajikistan, because the other Central Asian countries (Kazakhstan, Uzbekistan and Kyrgyzstan) have defaulted on their obligation. Indeed, the main donor of the Central Asian states continues to be the Russian fuel and energy complex. It is indicative that; although Russia itself continues to experience serious economic difficulties, it nevertheless provides the Central Asian countries with large-scale assistance on terms incomparably more generous than those that Russia itself receives from international financial organisations. Thus, Central Asia has neither sufficient institutional

development nor (in the current economic situation) the domestic resources to sustain an acceptable level of stability either at the national level nor at the international level. Instead, a complex set of foreign factors acts to sustain military, political and (above all) economic stability. At the same time, international financial organisations and the leading developed countries are beginning to exercise a growing influence on the situation in the region. All this points the problem of coordinating the activity of world powers clearly on the agenda of the day.

GEO-POLITICS OF NEIGHBOURING NATION STATES

United States Policy towards Central Asia

The demise of USSR in 1991 led the US acquiring supreme position in the world arena of geopolitics and the world was left stranded from two balancing powers (US and USSR) into a unipolar world with US dominating the globe. In the Clinton's era control of oil had been one of the objectives of American foreign policy because it had helped to establish its hegemony. The main policy of the US in this region is containment of Russia and China, through expansion of diplomatic ties with these regions on both economic and military level. In the name of access to oil at reasonable price American government has even justified the possibilities of direct control of oil wells by sending troops if the need be. Thus, American interest in the Central Asia is to get rapid and uninterrupted development of Caspian Sea oil so that her dependence on the Persian Gulf is reduced which is on turmoil²³ (Pant, 1999).

The 9/11 terrorist attack has caused a great scar in the hearts and minds of US and is keen to eradicate terrorism from Afghanistan has led to its presence felt in the region at a greater extent. It also aims at the containment of Iran's fundamentalism and has vehemently opposed the nuclear enrichment programme of Iran. With regard to the economic interest it also sees the region for creating exporting opportunities and jobs and at the same time nurturing pro-western and democratic states with market oriented economy. American great game is to project the Caspian region into global oil market and get it integrated into international oil circuit. American interest on Caspian oil is also conditioned by the fact that it is routed through pipeline outside Russia and Iran and thus wants to outbid both Russia and Iran.

Russia's Interest towards Central Asia

Russia has a good position in this region and is the only country among large oil producing countries which has potential of becoming a central influential and independent player in the new global oil market. Russia dominates the transit routes in the region and most of the pipelines are of Soviet origin and the Central Asian countries have to depend for the exit of their raw materials from these pipelines.

Russia is apprehensive of US presence in this region in this unipolar world. The US drive for energy which is the largest importer of energy in the world and the post 9/11 episode has made its presence felt at a greater extent in the Central Asian states to eradicate terrorism from the soils of Afghanistan. And thus, the military strategic balance is fragile, which is against the new abroad policy of Russia²⁴ (Baghat, 2006). Despite Soviet collapse, the Central Asian has been eagerly looking for restoring and maintaining economic ties with Russia and as Russia has been yearning not to sever old ties that is to revamp lost economic ties and minimise the influence of non-CIS Islamic countries including Turkey²⁵ (Dash, 1999). Russian policy towards the countries of the post Soviet space has been to actively befriend them. The Russian security concerns are at two levels, one is the protection of the external borders of the states and the other is to contain the western powers as well as Turkey and Iran. The recent development which has a bearing on Russian security interest are the numerous project being worked out to transport the vast energy resources of the Caspian Sea basin by-passing Russia²⁶ (Joshi, 1999). Turkey which is the member of NATO and is western oriented is morally committed to protect Central Europe and American defence contractors and are eager to sell their merchandise to prospective new members of the alliance. The east word expansion of NATO would inflame nationalistic, anti-western and military tendencies in Russia. The western power sees Russia's weakness as west opportunities to grab and to push the line of future confrontation as possible. Thus, Russia's main objective is to contain the east word expansion of NATO.

China's Interest towards Central Asia

The Chinese arrival in the region has wider implications in the context of post cold war global politics. In September 1997 China's National Petroleum Corporation (CNPC) has

signed an agreement to invest \$4.3 billion over 20 years in Kazakh oil fields and the pipeline is planning to carry crude oil to Chinese refineries by 2005. China would not like to endorse US policy of controlling energy to promote its hegemony. China unlike Japan and Europeans are afraid of political domination of US in the region as was the case in Iraq²⁷ (Pant, 1999).

The region represents Beijing's direct contact with the Islamic world (Afghanistan, Kazakhstan, Kyrgyzstan, Pakistan and Tajikistan). China has large Muslim population and has fought against the Uighur Separatist Movement. China's interest in the region is also to stop Islamic radicalism. In the beginning Chinese goal of SCO was to resolve border dispute but today it has transformed it also to combat Islamic extremism²⁸ (Baghat, 2006).

Turkey's Interest towards Central Asia

Turkey policy in the Caspian Region has been driven by historical ties as well as economic considerations as it the region had cultural and Turkic and Persian heritage. After the collapse of Soviet Union, Ankara is keen to increase its influence in the region. Immediately after the collapse of Soviet Union diplomatic missions were sent to these countries and reflect turkey's strong interest in the Caspian energy resources²⁹ (Ibid, 2006). Turkey's domestic energy requirements are expected to grow by 200% to 300% over the next decade due to its demographic expansion and require more energy as the supply is limited. The Ceyhan route would increase its revenue in the transit and reduce the cost of energy exports. As we can assume from the fact that the closure of Iraqi pipeline Turkey had to bear a loss of \$27 Billion.

There has been speculation after the collapse of USSR that Turkey would attract the support of the region's Turkic population and establish a pre-eminent position, Ankara's ambitions have been constrained by Russia's continued primacy, the proliferation of local conflicts and the limitations on Turkey's ability to project its influence. It is growing as the energy importer. And Turkey's strategic location makes it a natural "Energy Bridge" between major oil and gas suppliers from the Persian Gulf and Caspian Sea on one side, and consumer markets in Europe on the other.

Iran's Interest towards Central Asia

Although Iran does not have the economic capacity to offer significant aid, it has pursued with great zeal, wider economic contacts and joint ventures, particularly in the areas of oil and gas. While establishing relations with the states of the region, including Christian Armenians, Iran retains its closest ties with Turkmenistan, alarming Turkmenistan's Central Asian neighbours, particularly Uzbekistan and Kazakhstan, both of whom are worrying of Iran's role. This notwithstanding, other Caspian Basin countries maintain ties with Iran, to balance their relationship with Russia and Turkey. Iran has sought economic and commercial cooperation at various times with Turkey, Russia and some of the Western European countries involved in the Caspian region, but generally these are alliances of convenience and tend not to be long lasting. Iran has shifted position in Caspian boundary dispute; in part as accretion of leverage to pressure the Caspian littoral states to work with Iran on other issues.

UK, France, Japan and Italy share policy goals towards including encouraging stable independent secular, democratic and market oriented countries in the Caspian region and pursuing profitable commercial deals that would benefit their own domestic firms. They have consequently, established political aid and trade cooperation; however, there is also an intense commercial competition for shares indeed such as the Azerbaijan Consortium, which gives rise to differences among the western countries³⁰ (Shams-Ud-Din, 2000).

Pipeline Politics in the Region

Geopolitics of pipelines from Central Asia and the Caucasus to the markets in Europe, Asia, and elsewhere has become a major foreign policy issue for the US in the last few years. And countries like Iran, Turkey and Russia are competing to gain a piece of great pie. Importance of the pipeline and the winners will reap strategic benefits while the losers will become marginalised for some time to come. To assess the political risk associated with various pipeline routes from Central Asia and the Caucasus to the markets of Europe, Asia and other regions of the world, one must account for a multiplicity of often paradoxical factors at national, regional and global levels. The fact is that pipelines offer more than economic benefits and the trade possibilities; they form strategic cores

along with communications, transportation and other infrastructure corridors development.

Currently five pipeline routes are available proposed or contemplated. They include the northern route and is advocated by the Russians, both Kazakhstan and Azerbaijan could join existing Russian pipelines by building extension or new pipelines that could take their oil to Novorossiysk on the Black Sea. The western route is preferred by the US, Turkey, Azerbaijan and Georgia, these routes are intended to bypass the Russian territories and Iran. Southern routes favoured by Iran and make economic and commercial sense as they are cheaper to build and pass relatively through safer territories, and pose no serious environmental hazards. Most notably, the southern routes also offer the swap option, something no other routes have offered as yet. But the US is apprehensive about it. Eastern routes is china's crave for more energy in view of the fact as Kazakhstan is attractive because it is comparatively speaking, the most accessible route (2000 kms). But the deal is extremely expensive. This is the only route that seems to have no rivals or enemies despite the fact that it can cause china's influence to rapidly grow in the Caspian region. South eastern routes favoured by Pakistan and Afghanistan, an American company (UNOCAL) with Saudi Arabia Delta Oil, has been promoting a pipeline to transport oil and gas from Turkmenistan and possibly Kazakhstan through Afghanistan to Pakistan and eventually to India. But Taliban's identification with Osama bin Laden has also forced UNOCAL to withdraw its proposal for the time being³¹ (Amirahmadi, 2000).

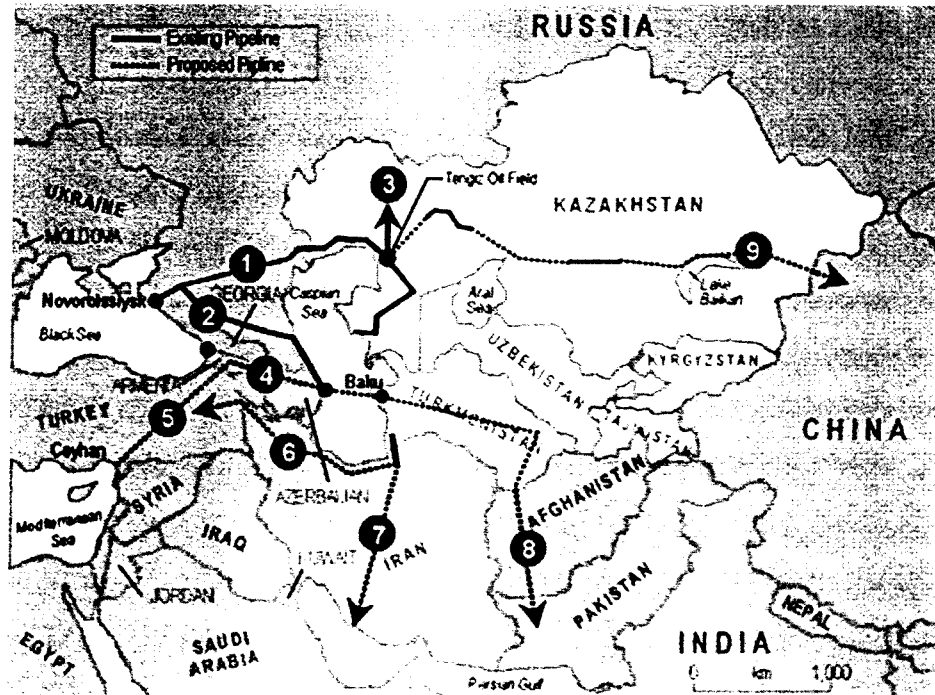
The Pipeline Blues

Bringing oil and gas from the Caspian Sea and Central Asia to market is difficult. Pipelines are the only feasible way to move commercial quantities. A major factor in developing Central Asian hydrocarbons and supporting oil and gas pipelines is the price of oil. Recent higher prices raise the prospects for Caspian Sea energy, but they also encourage reopening some closer, already-developed, marginal fields. Transport costs affect oil prices. Transporting Persian Gulf oil costs \$2 to \$5 per tonnes; North Sea oil costs \$10 per tonnes; Caspian Sea oil costs \$17 per tonnes; Siberian oil costs \$35 to \$45 per tonnes³² (Timothy, 2000). Historically, the only pipeline from the Caspian Sea region

ran through Chechnya via Baku-Grozny-Novorossiysk. Current uncertainty about political stability is holding back aggressive pipeline development; however, pipelines are being planned, laid and used.

Map: 2.1

Existing and Proposed Oil Pipeline Routes in Central Asia



Source: "Pipeline Poker," *The Economist*, (7 February 1998), pp. 8. Retrieved on 10 July, 2007 from www.globalsecurity.org/militarylibraryreport2001map.jpg

The Russian Route

Most Caspian Sea oil and gas are pumped through Russia. The oil flows northwest and eventually reaches Russian and European markets through a well-developed pipeline system. Soon it will again move to the Black Sea, bypassing Chechnya, for transport through the Dardanelles to the Mediterranean. Oil and gas are critical to the struggling Russian economy, in some years constituting 42 to 44 percent of all exports. The Russian government realized \$1.5 billion annually from direct foreign oil sales and raised 21 percent of its revenue from duties on foreign trade—the biggest portion of which comes from oil and gas sales³³ (Dienes, 1996). Russia's neighbours complain that Russia asserts a proprietary interest over all Caspian Sea oil and uses the pipelines as leverage in negotiations. The Russians, who discovered the oil fields, developed them and built the

transportation and refinery infrastructure, controlled Caspian Sea energy for more than 100 years. The Russians feel entitled to a share and get it by controlling the flow of other nations' oil across Russian territory.

Thus, in spring 1996, Russia reduced the amount of oil it would transport from the huge Tengiz oil field on the northeast Caspian shore. The Russians' reason for reducing the flow was that the Tengiz oil sulfur content was too high and was damaging the pipe. This oil does have high sulfur content but was shipped from the same field through the same pipe for many years when it belonged to the Soviet Union. Now Chevron and Kazakhstan operate the field on a 50-50 basis. During the Soviet era, no one counted costs. With the reduced flow, Russia attempted to control Kazakhstan's oil industry and economic viability. In 1997 the Caspian Sea consortium of Chevron, Mobil, Russia's Lukoil, Oman and the Kazakh state oil company acceded to Russia's pressure and agreed to build a \$2-billion pipeline from Kazakhstan through Russia to Novorossiysk (Route 1). This route maintains Russian control of oil shipment from the region.

The historic Russian line from Baku through Chechnya to Novorossiysk (Route 2) was closed because of the Chechens' continuing struggle with Russia. Both sides reportedly hit the pipeline during the wars, and Chechens exploited it as a source of free oil. Reports from the region indicate that Chechens placed more than 100 taps on the line, drawing off oil to their clandestine refineries and selling cheap gasoline in Grozny. Russia has recently completed a bypass around Chechnya and reactivated the pipeline. Russia has proposed exporting oil north to join its existing pipeline system and reach Novorossiysk or Europe (Route 3). This development could further remove the pipeline from Chechnya and maintain Russia's substantial control of Caspian Sea and Kazakh oil.

The Transcaucasus Route

The Azerbaijan International Operating Company (AIOC) is the first international oil consortium set up in Azerbaijan. US oil companies own 39.9 percent of the consortium—Amoco, 17.0 percent; Unocal, 10.0 percent; Exxon, 8.0 percent; and Pennzoil, 4.8 percent. Other countries in the consortium include Britain, 19.0 percent; Azerbaijan, 10.0 percent; Russia's Lukoil, 10.0 percent; Norway, 8.6 percent; Japan, 3.9 percent; Turkey, 6.8 percent; and Saudi Arabia, 1.7 percent³⁴ (Williams, 1996). This consortium built an

initial line from Baku through Georgia to the Georgian port of Supsa on the Black Sea (Route 4). This pipeline has been pumping a limited amount of oil since 1999. While this is a relatively inexpensive option, the oil still has to move from Supsa by oil tanker through the Black Sea and the Bosphorus³⁵ (The Economist, 7 February, 1998). Turkey controls the traffic between the Black and Mediterranean Seas and does not want increased oil tanker traffic through the straits because of environmental concerns. Russia objects to this route because none of the pipeline passes through Russia. Further, this pipeline runs through domains of many fractious mountain tribes.

The AIOC is also considering a line to the Turkish Mediterranean port of Ceyhan (Route 5). This would give Turkey primacy in exporting Caspian gas and oil, and would cut Russia out of pipeline fee profits and port fees from Novorossiysk. However, there are some problems with building a pipeline to Ceyhan. The route runs through Azerbaijan and Armenia, whose war over Nagorno-Karabakh is at a stalemate. Thus, the Baku-Armenia-Ceyhan route is not a near-term option. Should this conflict be settled, the route also passes through the Kurdish part of Turkey where a suppressed insurrection still simmers. The route would cost \$2.9 billion³⁶ (Ibid).

The Clinton administration tried to promote a pipeline route from Baku to Tbilisi to Supsa (Route 4) and then underwater from Supsa to Turkey where it would cut across Kurdish Turkey to Ceyhan. An underwater pipeline from Turkmenistan across the Caspian Sea to Baku would back this pipeline. This expensive option required regional political acceptance and Oil Company backing – neither of which the Clinton administration could obtain.

The Iranian Routes

The US government opposes a Baku-Iran-Ceyhan route because of Iran's alleged support of international terrorism. US oil companies are not allowed to ship their oil through Iran, although it is the shortest, cheapest and easiest route to an open port. Iran's preferred route is a pipeline south from the Caspian Sea to the Persian Gulf (Route 7). Iran has an extended pipeline system in place, and Turkmenistan opened a gas pipeline into Iran in December 1997³⁷ (Ibid). This comparatively inexpensive option would bring the oil and gas to the troubled Persian Gulf with its easily closed Strait of Hormuz. The United States

opposes this pipeline and tries to enforce the sanctions, but other nations' oil firms ignore the sanctions and cut oil deals with Iran. France (Elf Aquitaine and Total SA); Italy (Agip); the Netherlands (Royal Dutch/Shell and Lamaj); Spain (Repsol); India (BHP); Russia (Lukoil, Zarubezhneft and Mashinoim-port); and China (China National) have all completed or are negotiating major oil deals with Iran³⁸ (Bahree, 1998). US firms also have interests in such a route and have been lobbying in Washington, DC, for improved relations with Iran.

The Afghanistan Route

Several major oil companies have investigated building pipelines from Central Asia through Herat and Kandahar, Afghanistan, and on to Quetta and Karachi, Pakistan, (Route 8) at an estimated cost of \$1.9 billion. The distance is relatively short and would bring oil to the Indian subcontinent market. However, Afghanistan is still locked in civil war³⁹ (The Economist, 7 February, 1998). Many area residents feel that Unocal backed the Taliban forces financially in return for future pipeline rights in Afghanistan. Unocal and other companies have abandoned attempts at establishing this route since the political situation seems unresolvable.

The China Route

China and the Pacific Rim are potentially huge markets for Caspian Sea and Central Asian oil. Oil companies are considering a pipeline from western Kazakhstan through China to the Pacific to serve the Chinese, Japanese and Korean markets (Route 9). The savings realized over current tanker deliveries would have to offset the \$8 to \$12 billion required to build the pipeline. The Chinese have signed a memorandum of understanding to build a shorter \$3.5-billion pipeline that would stop in China proper⁴⁰ (Ibid).

Recent Developments

The transportation route can be further divided on the basis of completed or under construction, to be built between now and 2015 and those that could be built after 2015. The completed category include⁴¹ (Crandall, 2006).

- Baku (Azerbaijan) to Suspa (Georgia) operational since 1999 and called the western route for early oil exports and is 830 km, carries about 150,000b/d through Black Sea and Turkish Straits.
- The northern route from Baku through Dagestan and bypass Chechnya before bending northwest to Tikoretsk, and then southwest to Novorossiysk, Length being 1,400km and carries about 50,000 b/d although the actual capacity is 180,000b/d.
- The Baku-Tbilisi-Ceyhan (BTC) from Baku, Azerbaijan, northwest to Tbilisi, Georgia, the southwest (avoiding Armenia) to Erzurum and Ceyhan, a port open all round the year completed in May 2005 and the length being 1,768 km and has the capacity of 1.2mmb/d. The cheapest alternative route to the proposed BTC was to Iran's Kharg Island export terminal, but was ruled out due to US opposition.
- The SCP which is under construction will follow the BTC route as far as Erzurum in Turkey and join the Turkish gas network from Azeri Shah Deniz, length being 690 km and a delivery capacity of 6.6 bcm/y of Azeri gas.
- The Atyrau (Kazakhstan) to Samara in Russia is under construction for expansion length being 720 km, it is used to carry Kazakh oil and the current capacity is 320,000b/d and would be increased to 500,000b/d.
- The CPC oil pipeline is the only privately owned pipeline from the Tengiz field in north eastern Kazakhstan to Novorossiysk in Russia was opened in 2001, length being 1,580 km with capacity of 565,000b/d.
- The approximately 650 km pipeline from the Karachaganak field in Kazakhstan and joining the CPC line at Atyrau. The field produces both oil and gas for Russia and western market with a capacity of 225,000b/d was completed in 2003..

In the second category those that have a chance to be completed between present and 2015. This category include for the proposal for a Bosphorus bypass⁴² (Ibid, 2006).

- Kiyikoy on the Black Sea to Ibrikbaba on the Aegean Sea known as the Trans-Thrace pipeline length being 200 km.
- Igneada on the Black Sea to Saros, Turkey on the Aegean Sea, with a proposed capacity of 1.0- 1.5 mmb/d and the length being 200 km. This route is supported by Kazakhstan and the US, and has the backing of businessmen in turkey and US.

- Samsung to Ceyhan, Turkey, via Ankara with a length of 860 km with a capacity of 5000, 000b/d. If this line is built, Russia and Caspian oil received at Ceyhan could reach Asia by a route shorter than around Africa.
- Bourgas, Bulgaria, to Alexandroupolis, Greece with a length of 285 km and initial capacity of 700,000b/d.
- An oil pipeline across Caspian Sea to link Kazakh oil in the north, and perhaps Russian as well, to the BTC pipeline in the South and at present it is referred as ABTC (Aktau-BTC)

And the third categories are those that could be built beyond 2015 and under this category are as follows⁴³ (Ibid, 2006).

- Oil pipeline traversing the Caspian Sea and running south through Iran, which is supposed to be the cheapest route.
- A second and parallel BTC line which would have capacity of 1.8mmb/d, once the original BTC comes into force it would be less costly.
- A transit route from Novorossiysk, Russia, through the province of Georgia to join the BTC.
- The TAPI gas pipeline project which is supposed to be around 1,680 km and would connect the Indian Sub-Continent.

Thus, numerous proposals for Caspian oil and gas pipeline have come into being but due to a number of risks such as geography, geology, pipeline utilization rates and economics, political risks faced by the investors at home and in the host country has obstructed further development. And moreover, gas pipeline rehabilitation has not attracted Western investors' interests, since the gas does not sell at world price levels and payment is often partially in kind.

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Chapter 3

India's Energy Situation and Energy Security

Chapter 3

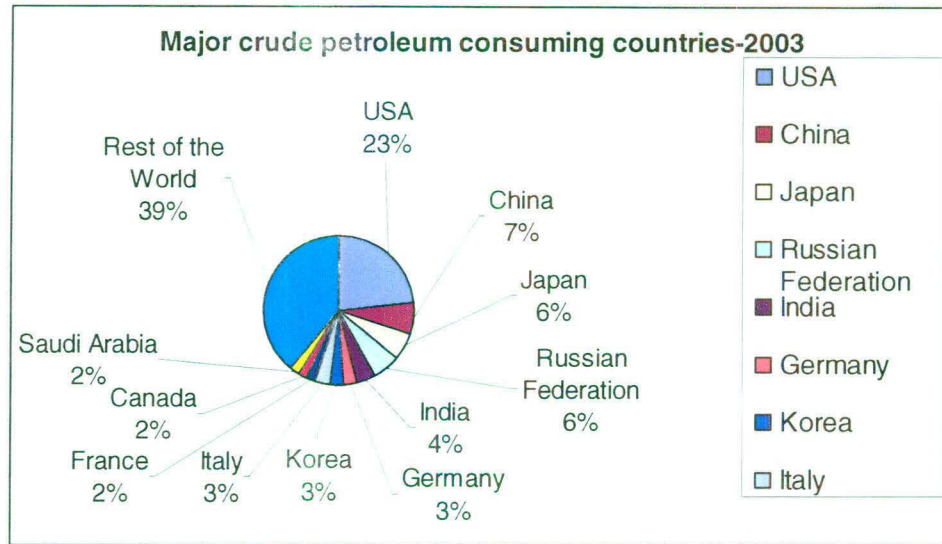
INDIA'S ENERGY SITUATION AND ENERGY SECURITY

Energy plays a critical role in the socio- economic development of a country. The Indian economy has been on along-term growth trend since the decade of 80s when it breached the average GDP growth rate of 3.5% a year to move to an average of 6% in the 90s. Over the last 5 years, the GDP has grown at an average of 5.6 percent and the Annual GDP growth rate in 2003-04 was 8.1 percent. Global experience proves that the energy market needs to keep pace with growth of economy. The Indian economy has been badly affected whenever global oil prices have flared. In 1973 the GDP fell by 0.3% and inflation was up at 20.2%; in 1979 the GDP fell by 5.2% and inflation was up at 17.1% and in 1990 the GDP grew by 1.3% while inflation topped 14 percent. With low growth and high inflation became a concern for India when global oil prices began to climb. In fact the sustained handholding by energy availability is one of the important requirements for growth. The requirement of energy in the form of power, natural gas and refined fuel products has increased steadily. Towards the end of 20th century, a wide gap existed between the demand for crude, natural gas as well as refined products and their domestic supply (See Table:3.1). Both crude and refined products are heavily imported to bridge the gap.

Energy Scenario in India

India is projected to be among the top four consumers of energy just behind the US, China and Japan, and ahead of countries like France and UK (see Fig: 3.1) .India's GDP growth rate averaged 6.5 % during 1992-97 and despite decreasing slightly to 5% in 1997-98, it peaked up again to around 6% in 1998-99 and is expected to average between 6-7% thereafter for the rest of the Ninth Plan period. However, to sustain its economic growth, India needs vast amounts of energy .One can know the requirement for primary energy sources from the fact that while in 1953-54, India's total demand for primary commercial energy (i.e., coal, oil and natural gas) was 25.5 million tonnes, by 1997-98, the requirement was 270.6 million tones, and by 2020 this is expected to go up to about 770 million tonnes.

Figure: 3.1

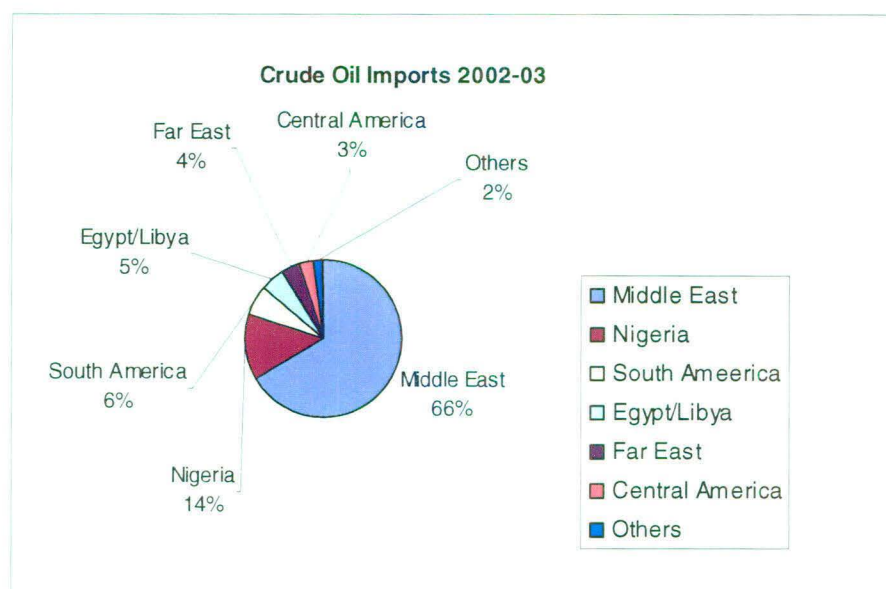


Source: Energy Statistics Yearbook, United Nations, 2003

India's industrial sector is the largest consumer of energy, followed by the transport sector, which is also the largest consumer of electricity, with a share of around 47% in total power consumption, the transport sector is the largest consumer of petroleum products and accounts for nearly 50% of the total oil consumption, of the total installed power generation capacity of about 97,000 mega watt, about 70,000 mw (72%) is derived from the thermal power, out of which coal dominates with around 80% share. Hydroelectricity accounts for 24% (22,438 mw), nuclear power 2-3% or (2,225 mw) and wind power for 1% (968 mw). The demand supply gap is around 12,000 mw or 12% during periods of average demand and 18% during peak demand. According to the Ninth five year plan ,upto an average of 10,000 mw of additional power per year over the next five years is required if India is to meet its demands for electricity. The cost of this additional infrastructure is estimated at over \$150 billion over next five years. Currently, the share of fuels in India's primary energy mix is dominated by coal (56.2%), oil (32.4%), natural gas (9%), hydroelectricity (2.1%) and nuclear energy (2%) and by the end of the projected period i.e., 2020 AD, the share of various fuel for primary energy consumption is expected to be around the same as for coal (50%), less for oil (25%), more for natural gas (20%) around the same for the hydro (2%) slightly more for nuclear power (3%), with the slight growth for other renewable¹ (Dadwal, 2002).

Coal is India's most abundant fuel, accounting for more than 50% of the primary energy consumption. Proven reserves are approximately 70 billion tonnes, which account for about 7% of total world coal reserves and would last more than 200 years. However, the demand for oil mainly for the transport sector is also expected to triple over the next decade mainly because of this indispensability in the transport sector. By 2010, India is projected to consume around 190 million tonnes of oil, while its domestic production is set at around 52 million. By 2010, the share of natural gas i.e. primary energy consumption is also expected to arise to 14% from the current 8%. Given modest increase in the domestic production of natural gas and oil (mainly for transport purposes)² (Ibid, 2002).

Figure: 3.2

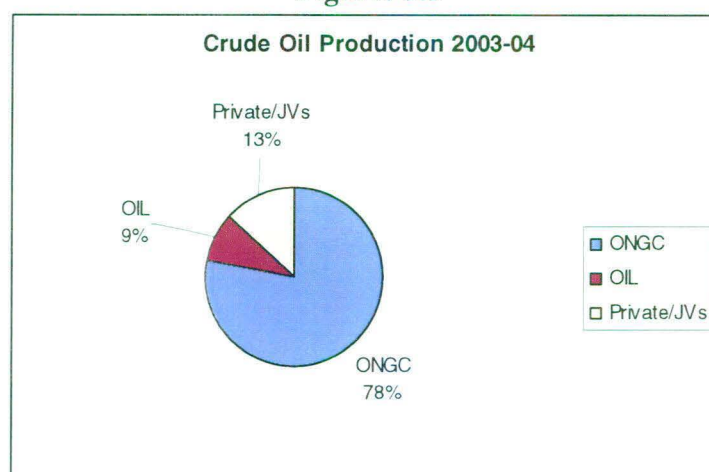


Source: Petroleum Federation of India (PETROFED), 2005

India has become major importer of this fuel since 2005. Therefore in this scenario of increasing abundance on hydrocarbon imports, the Indian planners will have to address the following challenges facing the sector. How long will resources such as hydrocarbons last? What are the geopolitical considerations that will have to be taken into account when working out an energy security policy for India? What sort of strategy will be adopted so that growing energy needs are met without compromising India's security and environment or adversely affecting the physical positions? Though the

demand for energy has been growing by more than 6% annually, the indigenous production of hydrocarbons, especially crude oil, has been stagnating. Proven recoverable resources are to the tune of around 513 million tonnes if no further accretion to reserves takes place. However, according to Ninth plan document, India's recoverable hydrocarbon reserves are unlikely to last beyond 2016 at the current rate of production. Domestic production reached a peak of around 35 million tonnes in 1995-96 after which it declined, and has been stagnating at a little over 32 million tonnes since then. The stagnation in production can partly be ascribed to the grip of state monopolies such as oil and natural gas corporation (ONGC), Oil India Limited (OIL), Oil Indian Corporation (OIC) among others, overall upstream and down stream activities as well as the Price Control System Operating in India under the Administered Price Mechanism (APM)³ (Ibid, 2002).

Figure: 3.3



Source: PETROFED, 2005

India ranks sixth in the world in terms of energy demand accounting for 3.5% of world commercial energy demand in 2001. At 479 kg of oil equivalent (kgoe) the per capita energy consumption is also low compared even to some of the developing countries and is about 20% of the global average in 1997 and compared poorly with per capita consumption of Thailand (1,319kgoe), Brazil (1,051kgoe), and China (907kgoe)⁴ (Planning Commission, 2002-2007). India's energy use is based on fossil fuels. Although the country has significant coal and hydro resources potential, it is relatively poor in oil and gas resources. As a result it has to depend on imports to meet its energy supplies. The

geographical distribution of available primary commercial energy sources in the country is quite skewed, with 77% of hydro potential located in the northern and north-eastern region of the country. Similarly, about 70% of the total coal reserves are located in the eastern region while most of the hydrocarbon reserves lie in the west. The tenth plan strategy for the sector includes increasing the production of coal and electricity, accelerated exploration of hydrocarbons, equity oil abroad, introduction of reforms through restructuring/deregulation of the energy sector to increase efficiency, demand management through introduction of energy efficiency, demand management through introduction of energy efficient technologies processes and appliances. India's incremental energy demand for the next decade is projected to be among the highest in the world, spurred by sustained economic growth and in rise income levels and increased availability of goods and services⁵ (Ibid, 2002-07).

History of Petroleum Industry in India

In India the first trace of oil was discovered in 1825 in the North East and in 1867, a private company had acquired for the first time, rights for hydrocarbon exploration in Upper Assam. Burma Oil Company (BOC) was the only major company engaged in production and refining of oil in the first decade, post-independence. India took the decision to set up its own oil industry in the early 1960's. The then Minister of Petroleum, Shri K.D Malviya had asserted that India must maintain self-reliance in petroleum, without which the country would not be able to maintain its political independence. Though the oil price was very low in early 60's, the import bill in the Third Five Year Plan was very significant with the average import price of Rs 65 per tonne of oil and Rs155 per tonne of oil products⁶ (Chopra, 2004).

The oil import bill even then posed a sharp threat to the country's foreign exchange and financial positions. In 1959, the government acquired control over BOC through corporation of Oil India Limited (OIL) as a joint venture between Government of India and BOC. It was only after 1959 that the Indian Oil Corporation Ltd was created as the first public sector company in this area to set up refineries with assistance from the then Soviet Union to market oil products. The refineries at Guwahati and Barauni were commissioned in 1962 and 1964 respectively, followed by Gujarat in 1965, one at Haldia

in 1974, and another at Mathura in 1981, and at Panipat in 1999. In 1981, government finally took over OIL by acquiring 100% shares. Till 1956, it was the responsibility of Geological Survey of India (GSI) to do exploration work for various minerals including hydrocarbons Oil and Natural Gas Commission that was created in 1956 to intensify the hydrocarbons activity throughout the country. From 2001-02, around 52 oil and gas discoveries were made which contributed to increase in recoverable reserves. The reserves of crude oil were estimated at 740 MMT as on April 1, 2004. However; recently, Private/JV producers have made gas discoveries. For instance, Cairn Energy⁷ (PETROFED, 2005) has made significant oil discovery in Rajasthan in 2004. Cairn Energy plan to produce, by the end of 2007, up to 5 MMT of crude oil from its recent discoveries in Rajasthan, which would be equivalent to 15% of oil produced in the country.

The world energy consumption pattern has been changing over the years. Presently, the share of oil in the world energy mix is 40 percent and that of gas is 23 percent. The international energy lookout projections indicate that the hydrocarbons will continue to cater to 68 percent of the total commercial world energy demand over the next two decades. The share of oil may remain the same whereas that of natural gas may go up as the later is emerging as the preferred feedstock and fuel since it is more environment friendly.

Against the 63 percent supply of primary commercial energy through hydrocarbons in the world, in the case of India it is 44.9 percent. There is limited scope of the increased use of gas in India, unless some large reserves are discovered or there is large-scale import. The demand for oil in the country over the next five years is expected to grow at an annual average rate of 3.6 percent which will be higher than the average growth of around 2 percent in the world energy demand.

Status of Hydrocarbon Industry in India

Today the share of petroleum in the primary commercial energy supply is about 30 and the compound growth rate of consumption was 4.5 percent during 1997–2002. A similar or even higher growth rate in demand is expected in the coming decades due to economic growth, population growth, unavailability of traditional fuels, increase in disposable

household income and environmental factors. At present government owned enterprises dominate the Indian petroleum industry. The Oil and Natural Gas Limited (ONGC) and Oil India Limited (OIL) are involved in upstream activities such as exploration and production, while down stream activities like refining marketing, and distribution are entrusted to Indian Oil Corporation (IOC), Bharat Petroleum Company Limited (BPCL), and Hindustan Petroleum Company Limited (HPCL) etc. But now private sector participation is necessary. The first joint venture refinery capacity of 3mt at Mangalore has started production in 1996-97. Reliance Industries has set up the largest refinery in the country in 1999⁸ (Chopra, 2004).

Crude production after reaching a peak of 35.17 million tonnes in 1995-96 declined to 31.95 million tonnes in 1999-2000. It has risen upto 32.03 million tonnes in 2001-02, out of which joint venture/private producers contribution was a mere 4.14 million tonnes. Refinery crude through out was 107.27 million tonnes. The flogging of oil fields for many years in succession without timely water injection has led to extensive damage and closure of many wells in the Bombay high basins. However, a well rectification program has to some extent restricted the downfall in crude production⁹ (Ibid, 2004).

Table: 3.1

Crude Oil- production, Imports & crude Throughput (in MMT)

Year	Imports	Production	Total	% Imports
1970-71	11.68	6.82	18.50	63
1975-76	13.62	8.45	22.07	62
1980-81	16.24	10.51	26.75	61
1985-86	15.14	30.17	45.31	33
1990-91	20.69	33.02	53.71	39
1995-96	27.34	35.17	62.51	44
1999-2000	57.80	31.95	98.75	64
2000-01	74.09	32.43	106.52	70
2001-02	78.71	32.03	110.74	71
2002-03	81.98	33.04	115.02	71
2003-04	90.43	33.38	123.81	73

Source: PETROFED, 2005

In 2001-02, refinery throughput was 107.27 mt production of petroleum was 100 millions tonnes. (See Table: 3.1) The total refining capacity of the refineries in operation as on March 2002 was 116.07 million tonnes. This includes addition in refining capacity in public sector, joint venture and private sector units, and expansion of all existing refineries. Capacity utilization has been consistently above 90 percent in recent years. The consumption of petroleum was 83 million tonnes in 1996-97 largest consumers being the transportation sector accounting for 38 percent of total consumption, followed by the domestic sector (26 percent) and the industrial sector (24 percent). Diesel consumption was 35 million tonnes merely 9.4 percent higher than the previous year. Liquefied Petroleum Gas (LPG) consumption (4.2 million tones) registered the highest growth of 10 percent over the previous year. Kerosene and LPG are consumed primarily by domestic sector and are highly subsidized. LPG connections are released to consumers through oil companies, where as kerosene is sold through the public distribution system. In order to augment domestic supply of LPG and Kerosene, the government has introduced a parallel marketing system. Imports of these products were decanalised and private companies are allowed to import and sell these products in the domestic market through their own network at market determined prices. However, this effort has not been very successful so far due to lack of infrastructure facilities on duty structure.

About 34.5 mt of crude oil and 22 mt of petroleum product were imported in 1997-98. Import dependence in oil and oil products has grown from 54 percent in 1990-91 to 67 percent in 1997-98, making it a serious a cause for the government. The import bill for petroleum and oil products was 8.4 billion in 1997-98, comprising nearly 30 percent of export earning. This is despite low international prices of crude/petroleum products throughout that year, which led to the 13 percent decline in import bill over the previous year. The oil import bill has increased significantly because of oil price hike in 2000 and decrease in value of rupee, to the order of rupees 78,000 crores¹⁰ (Ibid).

Crude oil pipeline history in India dates back to 1901 when the country's first pipeline was constructed to ferry the crude discovered in the Digboi field to the refinery in Assam. The first 1,156km long cross-country pipeline stretching from the Nahorkatiya and Moran oil fields in Assam to the refineries at Guwahati and Barauni in Bihar came up in 1962 .Separate pipelines exist for crude oil and products, of which

crude oil has a total length of km and an installed capacity of 72.3 mt. Of this, The ONGC owns the length 592 km with a capacity of 20.55 mt, and the rest is owned by IOC. The existing product pipelines have a total length of 4496 km with a capacity of 18.55 mt and are mostly owned by IOC. Currently, Indian Railways handles the bulk of petroleum products movement, followed by transportation through pipelines (See Figure: 3.5). A combination of shipping and railways transportation is used for the movement of products from coastal refineries. This infrastructure is wholly inadequate to meet oil and gas requirements. The hydrocarbon sector faces numerous problems which have to be systematically tackled. The first of these is to increase indigenous production¹¹ (PETROFED, 2005).

Figure: 3.4

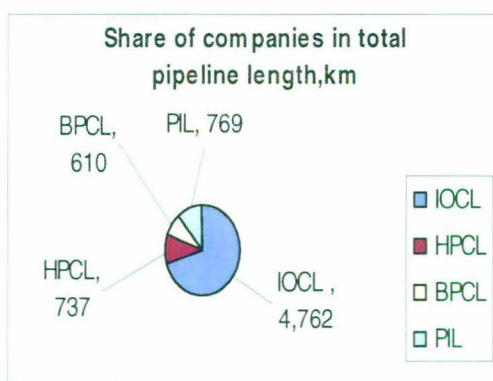
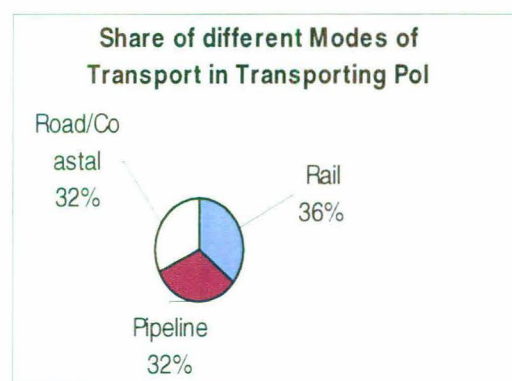


Figure: 3.5

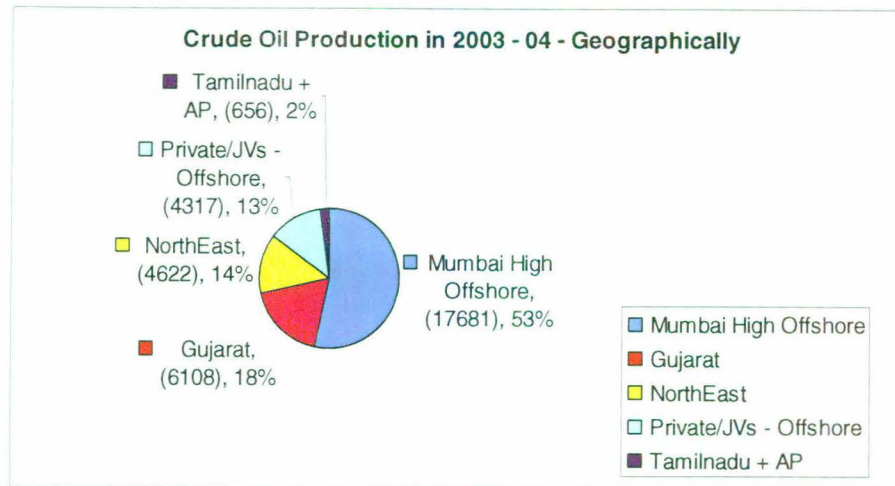


Source: PETROFED, 2005

Potential of Hydrocarbons in Indian Sedimentary Basins

India has twenty six sedimentary basins of which six basins, viz., Bombay Offshore, Cambay, Upper Assam, Krishna-Godavari, Cauvery and Assam – Arakan Fold Belt are currently under production. The first three basins account for 64 percent of Hydro-carbon resources of India. All together 16 sedimentary basins common mainly, Bombay offshore, Cambay, Upper Assam, Krishna – Godavari, Cauvery, Assam – Arakan Fold Belt, Rajasthan, Andaman, Himalyan Foothills and Ganga Valley, Bengal, Kutch – Saurashtra, Kerala – Konkan, Pranhita – Godavary, Vindhyan, Satpura – South Reva and Mahanadi are under various stages of explorations by the two national oil companies ONGC and OIL, Indian private companies and MNC's.

Figure: 3.6



Source: PETROFED, 2005

Total sedimentary basin area is around 1.784 million sq. kilometers upto 200 meters isobaths, of which 0.498 million sq kilometers remains moderate to well explored and 0.601 million sq km is unexplored. Total sedimentary area for deep waters is around 1.356 million sq km, most of which remains to be explored.

Past efforts in exploration have resulted in an estimated prognosticated hydrocarbon resource base of about 28 billion tonnes, including 7 billion tonnes from deep offshore. Of the total prognosticated hydrocarbon resources of India, 33 percent lie in onshore, 42 percent in offshore (upto 200m water depth) and 25 percent lie in deep waters. Only about 28 percent of the prognosticated resources (excluding deep waters) have been converted into in place geological reserves and only 10 percent of the resources are producible reserves. It has been observed the world over that this up gradation level does not exceed 30 – 35 percent at any given point of time. This resources up gradation figure leads to a belief that the bulk of the yet to find hydrocarbon potential is likely to be released from the less obvious subtle in the producing basins, especially as the more obvious structural traps are already discovered. The discovery trend in a basin follows a log-normal trend, resulting in discovery of large fields during the initial phase of exploration, followed by smaller and smaller discoveries¹² (Chopra, 2004).

India's reserves of oil at the end of 1999 were to the tune of 600 million tonnes, a share of 0.5 percent of the entire world's oil reserves and the natural gas was about 650 billion cubic meters (0.4 percent of the world reserves). With sustained efforts towards petroleum exploration and exploitation, India has also ventured into new frontier areas such as coal bed methane, deep water exploration (beyond 200 meters isobaths) and gas hydrates. India's exploration program must be a part of a comprehensive strategy for the hydrocarbon sector. As a first step in developing policy options in this regard, a stock taking of the problems and issues facing the hydrocarbon sector in India at the beginning of the 21st century needs to be conducted.

Strategic Stock Draw

Strategic draw is regarded as a vital element in emergency situations and according to the International Emergency Programme (IEP) norms, net oil importers have a stock holding obligation equivalent to 90 days of the net oil imports in the preceding year. In India the oil industry maintains an operational inventory of crude oil and petroleum products. The Oil Co-ordination Committee (OCC) monitors inventory levels on a monthly basis and the cost of maintaining the inventory is covered by the administered pricing mechanisms. So far, a greater reliance has been placed on the purchase of crude oil on long term contracts rather than on building up strategic reserves. The government has initiated an action plan to enhance the operational stockholding requirements of companies to 21 days and to provide a 45 day strategic cover for imported crude oil and a 30 day cover for petroleum products.

Strategic Petroleum Reserves (SPR) from the military point of view is required in times of war to deal with an increase in consumption and to cope with any disruption of supplies which could occur due to unstable West Asia or could be due to a ban on supplies by the UN during war especially with Pakistan. The US with its large requirements of over 20 million barrels of oil per day, also uses its SPR of 600 million barrels to dampen oil prices by releasing petroleum from it. Treating crude oil in pipelines as strategic reserves is unconventional. This is because crude oil in pipeline is not immediately available for treatment by the refineries due to the need to remove bottom sediments and water from it, which could take more than 24 hours. India should

allocate different location for the SPR after considering issues of Defence and security. The SPR is normally located near the place of wars which in our case are far away from the ports. The quantity, locations and the methods of storage can be firmed up. It is prudent to keep petroleum reserves away from urban centres and a large number of dummies should be created to ensure their protection¹³ (Jatar, 2004).

It should be noted that although the stocks may be held by the government or by a government appointed agency, the full cooperation of the industry is essential if the stock is to reach the consumer in the crisis period .In India, the government owns a sizable part of the oil industry and is capable of affecting supplies directly .However the situation is changing with the increasing disinvestment of public undertakings and the government will have to arm itself with the necessary powers to secure compliance by the industry. Efforts are under way to augment storage facilities by allowing private and foreign investors in the infrastructure development on a build and transfer basis. The location of the strategic storage sites will be determined on the basis of the demand across the country .However, the operation and management of the storage facilities will be undertaken by the government, either through state run companies or a separate body¹⁴ (Pachauri and Vasudeva, 2000).

REFORMS IN THE ENERGY SECTOR

Reforms in the energy sector were initiated to supplement the government's efforts in the development of the sector and to make it more efficient .The government has been endeavoring to provide a policy that encourages free and fair competition in each element of the energy value chain and attracts capitals from all sources public and private, domestic and foreign encouraging such capital formation is crucial for India to meet its energy needs .The government also proposes to set up a regulatory authorities for the coal and petroleum sector during the Tenth plan period. There is a need to examine the issue of a single regulatory authority for the energy sector with a view to developing the desired fuel mix and related issues, in close association with sub sector regulatory authorities¹⁵ (Planning Commission, 2002-07).

The thrust of the reform has been to deregulate the rises of commercial energy resources (which until recently were entirely administered), increase competition

through institution, legislative and regulatory reforms and reduce subsidies. Although, subsidies cannot be completely eliminated greater transparency can be achieved by transferring all subsidies to central or state budgets and ensuring that the benefits of subsidies reach the targeted beneficiaries. Such an approach will facilitate optimal and economic resource allocation and avoid distorting market based pricing.

India is keen to create an apex committee on energy (comprising the Ministers of Power, Coal, Petroleum and Natural Gas, Finance, External Affairs, Railways, the Department of atomic energy, planning commission and others as members) with a secretariat consisting of professionals /experts in energy/economics/finance/management/legal areas to approve policy guidelines and oversee implementation on regular basis. A key role of this committee should be to manage the trade-offs between the divergent objectives that could arise between sub-sectors, ensuring at all times consistency with the high level policy goals. This policy goals concern economic efficiency, energy security access and the environment¹⁶ (Ibid, 2002-07). Accelerating the reform process in the energy sector through restructuring and privatization undertakings, tariff rationalation in the power sector, phasing out of subsidies in the energy sector, moving subsidies that cannot be eliminated explicitly to central /state budgets.

Focusing on energy efficiency improvement through international benchmarking of energy producing and consuming sectors, demand side management, develop a long term (25 years) technology vision-2025 for identified priority areas and technologies for nuclear power, solar, gas hydrates, clean coal technologies, fuel cells etc.

Develop a national rehabilitation and resettlement policy to help accelerate the development of the hydro and coal sectors. A large number of hydro and coal projects have been facing implementations delays and cost overrun in the absence of such a policy. Both the sectors are vital to meeting the countries future energy needs. Consorted efforts to meet the energy requirements of the rural areas at the lowest economic cost. The future policy initiatives, therefore, should focus on the development of the required infrastructure and continue to aim to provide universal access of commercial fuels at affordable prices.

Emphasis on preparing a time bound plan for peoples participation through panchayats, co-operatives, non-government organizations (NGO's) and private entrepreneurs in planning, operations and maintenance, revenue collection and expansion of local energy supply options to ensure success. Development of alternative fuels such as Coal Bed Methane, MS/Ethanol blend, HSD/Ethanol blend, Gas Hydrates and Fuel Cells.

The Hydro Carbon Vision-2025

It lays down framework which would guide the policies relating to the hydrocarbon sectors for next 25 years. Issues such as energy security, use of alternative fuels, and interchangeability of technology are vital to ensure that the mix of energy sources used in the economy is optimal and sustainable and that adequate quantities of economically priced clean and green fuels are made available to the Indian consumers. Oil and gas continue to play a pre-eminent role in meeting the energy requirements of the country and 45% of the total energy needs would be met by the oil and gas sector, through some amount of interchange between oil and gas is foreseen. The vision enshrines the following issues¹⁷ (Khosla,2005).

- To achieve self reliance by increasing indigenous production and investing in equity oil abroad and thus ensuring energy security.
- India should adopt product standards improvement progressively to enhance the quality of life.
- There should be technology up gradation and capacity building to develop the oil sector on the global competitive basis.
- Promotion of healthy competition and free market for the customer service.
- To ensure oil security for the country keeping in view strategic and defence considerations.

Energy Efficiency

One way to lessen the impact will be to ensure that energy is used more efficiently in India. The official India Hydrocarbon Vision 2025 report, for example, that the oil

elasticity with respect to GDP is currently around 1.1¹⁸ (PETROFED, 2005). It means that India needs 1.1 units of oil to produce one extra unit of GDP today. It was 2 in the 1970s and 1.2 in the 80s. So the amount of oil needed to power further economic growth has dropped over the recent decades. The vision report expects oil elasticity to fall to 0.7 in 2025. India has to successfully de-link energy consumption and economic growth and some drastic actions such as the following can help achieve this.

- High taxes on heating oil and electricity for homes.
- Shift from heavy industries such as iron and steel to machine-based and high-tech ones like automobiles and consumer electronics.
- The biggest sector to be targeted is the transport sector. The railways network needs to be completely revamped. The Railways are losing traffic to road transport. In other countries such as Japan or France; the Railways have shown that they can attract traffic.
- Today because of errant and interrupted power supply, a lot of people use oil gensets, using up liquid fuels.
- Investment in natural gas would allow utilization cheaper gas fuel and replace the refined fuels which burden the nation with import of costly crude.
- Road infrastructures should be revamped as vehicular fuel efficiency has been increasing but the bad quality of roads means that these benefits are negated.
- Diversification of the economy from manufacturing to services to the maximum extent possible to improve oil efficiency¹⁹ (Ibid, 2005).
- Eliminate wastage and bring in consciousness through education and awareness.

Alternatives

Bio-diesel is an alternative fuel for any diesel engine and is made from renewable resources. It can be used in pure form or blended with petro-diesel at any level. Biodeisel is renewable, used domestic resource that helps support the agriculture industry and decrease dependence on oil import while providing reduced emissions to conventional diesel. Bio-diesel has highest energy balance of any level, further increasing its value in

our energy portfolio. Every unit of fossil fuel it takes to make biodeisel results in 3.2 units of energy gain.

Bio-diesel is emerging as an alternative as it has no harmful effect on diesel engine in terms of performance, wear and tear, and fuel mileage, drivability and also reduces exhaust smoke. Bio-diesel is simple to use, biodegradable, non-toxic and free of sulphur and aromatics. It has higher cetane and lubricity than petro-deisel and provides similar horse power, torque and mileage. Biodeisel performance characteristics such as fuel consumptions, startup and cold weather performance are also similar to petro diesel. It can be used in existing engines with minor or no modifications. A blend of upto 20% biodeisel is suitable for auto engines and does not pose any problems. By 2030 ,biodeisel can be expected to replace high speed diesel (HSD) demand in the range of 6mmt(5% blends)to 18mmt(10% blends) for economic growth rates of 6% and 8% respectively. The land requirement for the same scenarios would be 4 million hectares and 11 million hectares respectively²⁰ (TIFAC, 2006).

India has large number of species yielding edible and non-edible oils. Botanical Survey of India, Noida has identified 36 plants in India yielding fuel oil, which are non-edible in nature. Some of these are: *Jatropha Curcas* (Ratanjot), *Pongamiapinnata/Glaba* (Karanj), *Heveabrazilensis* (Rubber), *Madhuca indica/ longifolia* (mahua), *Calophyllumino phyllum* (Undi), *salvadora persica/ Oleoides* (Pilu), etc.

Bio-ethanol is mainly extracted from molasses produced in the sugar-making process. In 2004, India was the fourth largest producer of ethanol with a share of 4.29% (1748.86 million litres) of the total ethanol produced all over the world (40768.89 million liters), only after Brazil (37.04%), US (32.82%) and China (8.95%). The government of India has launched the use of 5% ethanol-blended petrol from 30th Sep. 2003 in certain regions of the nine states, the proportion of which would be to increase to 10% in the latter stage. With the above mentioned programme in place for blending petrol, India would save nearly Rs 5,000 crores annually on oil imports. But the programme was latter withdrawn due to shortfall in supplies of ethanol. There are also plans to blend doping diesel with ethanol to reduce import dependence²¹ (Ibid. 2006).

Biomass Gasification is a century old technology, which flourished quite well before and during the Second World War. The technology disappeared soon after the Second World War, when liquid fuel became easily available. Today, because of increased fuel prices and environmental concern; there is renewed interest in this century old technology. Gasification has become more modern and quite sophisticated technology. Fuelwood, agricultural residue (rice husk, sugarcane trash, coconut shells) and animal waste are the main biomass fuels. Biomass is available throughout the country and can be derived from different sources in different regions. Biomass accounts for about 40% of India's primary energy use mainly for cooking in chulhas (cook stoves) with poor efficiency. The ministry of Non Conventional Energy Sources estimates a potential of 3,500MW from bagasse-based power generation and an additional 16,000MW from other biomass that is already available in 2005. The wasteland available in the country has been estimated to be from 66-130 million hectares. Using an average productivity of 5 tonnes/hectare/year and 100million hectares of wasteland the total biomass available annually is 500 million tonnes, which can fuel power generation of 60,000MW at a Plant Load Factor (PLF) of 68.5% (6,000 hours/year)²² (Ibid, 2006).

World and India Energy Balance

In 1980 oil still accounted for 46% of the world primary energy consumptions by 2002 this figure had dropped to 38%. The consumption of petroleum and its products is not declining in absolute terms, but as a percentage of total energy consumed by the world. The percentage of coal also dropped somewhat, though not to the same extent. Natural Gas and Nuclear power increased their shares, and almost tripled its share in a decade due to a world wide boom in the construction of nuclear power plants led by France .There after it tapered. But natural gas not only increased its share, it is expected to go on doing so in the foreseeable future. As a percentage of the total energy consumed by the world its share rose from 19% in 1980 to 23% in 2002, and is expected to go on rising. This trend of increasingly consuming gas applies a fortiori to India of various sources of energy we use, gas has experienced the fastest growth; it now accounts for around 7% of total primary energy consumption which figure will probably double by 2025. We have limited oil reserves, and the price of imported oil seems unpredictable. Coal today

accounts for half the energy consumed, but though we have large reserves, they are not easy to get at, the quality is low and of course it is polluting²³ (Khosla, 2005).

The International Energy Outlook 2005 (IEO2005) projects strong growth for worldwide energy demand over the 23-year projection period from 2002 to 2025. Total world consumption of marketed energy is expected to expand from 412 quadrillion British thermal units (Btu) in 2002 to 553 quadrillion Btu in 2015 and then to 645 quadrillion Btu in 2025, or a 57-percent increase over the 2002 to 2025 time period²⁴ (International Energy Outlook, 2005). Much of the growth in energy demand among the emerging economies is expected to occur in emerging Asia, which includes China and India; demand in this region is projected to more than double over the forecast period. Primary energy consumption in the emerging economies as a whole is projected to grow at an average annual rate of 3.2 percent between 2002 and 2025. In contrast, in the mature market economies, where energy consumption patterns are well established, energy use is expected to grow at a much slower average rate of 1.1 percent per year over the same period. In the transitional economies of Eastern Europe and a look at the major assumptions that form the basis of the forecasts that appear in the report.

Oil is expected to remain the dominant energy source over the projection period, with its share of total world energy consumption declining only slightly, from 39 percent in 2002 to 38 percent in 2025. Worldwide oil consumption is expected to rise from 78 million barrels per day in 2002 to 103 million barrels per day in 2015 and then to 119 million barrels per day in 2025²⁵ (Ibid, 2005). The projection for oil demand in 2025 is slightly lower than the 121 million barrels per day forecast in the International Energy Outlook 2004²⁶ (Ibid, 2004), and the difference is in large part explained by the change in expectations for world oil prices. In this year's outlook, world oil prices are assumed to stay higher for longer than anticipated in last year's report, and this dampens the mid-term projections for oil demand in many regions of the world especially in the mature market economies and the EE/FSU. The impact of higher prices on world oil demand would be even stronger without the robust growth expected for China in the near-term forecast. China's oil consumption is projected to increase at an average annual rate of 5.8 percent between 2002 and 2015, and then slow to about half that rate in the remaining year of the forecast.

Worldwide, transportation and industry are the major growth sectors for oil demand. Natural gas is projected to be the fastest growing primary energy source worldwide, maintaining average growth of 2.3 percent annually over the 2002 to 2025 period. Total world natural gas consumption is projected to rise from 92 trillion cubic feet in 2002 to 128 trillion cubic feet in 2015 and 156 trillion cubic feet in 2025. Coal use worldwide is projected to increase by 2.0 billion short tonnes between 2002 and 2015 and by another 1.0 billion short tons between 2015 and 2025. The IEO 2005 forecast for coal use in the emerging economies is nearly 13 percent higher than in IEO 2004. The largest increases in coal use worldwide are projected for China and India, where coal supplies are plentiful. Together, China and India account for 87 percent of the projected rise in coal use in the emerging economies region and 72 percent of the total world increase in coal demand over the forecast period.

India is another Asian country with a rapidly emerging economy. The mid-term prospects for India's economy are positive, as it continues to privatize state enterprises and increasingly adopts free market policies. Average annual GDP growth in India over the 2002 to 2025 forecast period is projected at 5.5 percent. Accelerating structural reforms including ending regulatory impediments to the consolidation of labor-intensive industries, labor market and bankruptcy reforms, and agricultural and trade liberalization, remain essential to stimulating potential growth and reducing poverty in the medium to long term. With its vast and cheap labor force, India is well placed to reap the benefits of globalization in the long run²⁷ (Ibid, 2005).

Advanced economies with high living standards have a relatively high level of energy use per capita, but they also tend to be economies where per capita energy use is stable or changes very slowly. In mature market economies, there is a high penetration rate of modern appliances and motorized personal transportation equipment in comparison to the developing or less developed countries.

India in the Regional Perspective

India shares border with China, Pakistan, Afghanistan, Bangladesh, Srilanka, Nepal, Maldives, Myanmar and Bhutan in the Indian sub-continent. The region is demographically diverse and characterized by low percapita income, low percapita

energy consumption, high import dependence mainly in the form of crude oil and large disparity of income distribution and energy consumption pattern among the consumer groups. Commercial energy mix varies significantly across the countries in the region. According to the International Energy Agency (IEA), Developing Asia, encompassing China, East Asia and South Asia, achieved annual GDP growth rate of 6.8% in 1990-2002. The annual growth rates of primary oil demand and electricity consumption were 5.5-7.3% per annum respectively during the same period. The region has accounted for about a quarter of total global GDP and total primary energy demand. IEA projected 42% increase in the primary energy demand between 2002-03 in this region. The regions share in the global energy market will account for 26% of the world's demand by 2030. Import dependence on oil is projected to increase from 43% in 2002 to 78% 2030, out of which India and China oil import dependence rises from 69 and 34% respectively in 2002 to 91 and 74% respectively in 2030 impacting energy security of the region. Natural gas market in this region is growing rapidly and is estimated to contribute 21% of the world incremental gas demand till 2030. Coal will also remain a prime source of energy in China and India²⁸ (Srinivasan, 2005).

It is therefore evident that the region is extremely important to the world energy market. Due to the limited domestic supply, the demand supply gap has been rapidly ballooning and is causing concern in international circle because of high population growth low energy efficiency in the industrial sector, high energy demand for rapid economic growth, and environmental degradation²⁹ (Ibid, 2005). Under such circumstances, time bond reform and restructuring of the energy market to attract investments elimination of trade barriers diversification of energy supply source to minimize risks, exploitation of untapped power generation potentials namely from hydro and natural gas, exploit adoption of cleaner technologies and inter country energy distribution network could significantly benefit all the country in this region in terms of security, flexibility and quality of energy supply and greater competition. The region requires ground work of energy cooperation:

- Creating comprehensive energy databases and analysis on energy production consumption, export, import, prices, demand forecasting and elasticity values for the development of regional energy market.

- Establishing uniform energy codes, technical specification and standards, for all the countries in this region for smooth regional energy trade.
- Creating public awareness programmes regarding the benefits of regional energy cooperation and cross-border sales of electricity oil and natural gas along with commitments and bold decisions from each government of the region
- Stabilizing economic and rational pricing of energy.
- Rationalizing crude oil and petroleum products custom duties structure.

Individual countries in this region need to adopt certain policy measures to create an environment for cross border energy cooperation. The guidelines includes:

- Time bound reforms and restructuring of the energy sector to develop globally competitive, efficient and environmentally compatible energy structure after taking into consideration the structures and conditions of the economy and political institutions of different countries.
- Transparent subsidy management for well targeted marginal consumers, which should be supported from government budgets.
- Stabilizing fuel policies solely on economic rationale.
- Competing proper groundwork like assets valuation, demand forecasting, consumer profile, etc. before private energy companies are allowed to operate. The contrast between the government and private developers must be mutually honored.
- Establishing proper regulatory frame work. The regulatory agency should have international experience, independence, accountability, autonomy and expertise on technology, economics, law and accounting.
- Combining Command and Control and Market Based Instruments for optimal pollution control³⁰ (Ibid, 2005).

The Geopolitics of India's Energy Needs

As India has entered the global energy market, it has encountered an important competitor, the People's Republic of China, one of the fastest growing economies in the world, a rising military power with a vast appetite for oil and other raw materials and the financial resources to satisfy that appetite. India sees China as its principal competitor in this quest for energy. Indian officials are loath to admit publicly the existence of such competition, to avoid possible political friction with their behemoth northern neighbour. This public silence, however, marks a number of private misgivings that persist despite apparent improvement in bilateral relations in the past decade. First, despite significant efforts, the two sides have made glacial progress on their long-standing border dispute. Second, Indian policy makers remain wary of China's close ties to India bete noire Pakistan. Third, the Indians have become increasingly concerned about China's significant diplomatic and military relations with Myanmar (Burma) in recent years. Fourth and finally, both India and China see themselves as great powers in Asia and would like to extend their influences beyond their respective shores. Although some analysts in India's strategic community do harbour hopes of potential cooperation between India and China in third global quest for energy resources, these hopes represent the triumph of fond wishes over harsh realities. India is in fundamentally competitive if not conflictual relationship with China.

China is already well ahead of India in the search for new energy sources. Since 2000 the China National Petroleum Corporation (CNPC) has already invested \$45 billion in this search, while India's Oil and Natural Gas Commission (ONGC) has invested just \$3.5 billion. The vast foreign-exchange reserves available to China's state-owned oil firms have enabled them to undercut India's efforts to obtain oil beds. For example, in 2004, the Chinese firm SINOPEC edged out ONGC Videsh (the international arm of ONGC) to acquire an oil-exploration block from Shell Oil in Angola. Furthermore, as recent events underscore, the Sino-Indian competition for new energy sources in Central Asia is well underway. In early July 2005, India was granted observer status in Shanghai Cooperation Organization (SCO), a forum for meetings and consultations between China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. New Delhi was keen on obtaining this status to increase its access to and influence in the oil producing states of

Central Asia. Kazakhstan, the host of the 2005 meeting is one of the states in which New Delhi has a considerable interest, not least because of the waste Tengiz and Kashagan oil fields and the Kurmanghazy and Darkhan exploration blocks. ONGC Videsh has the status in the SCO, the group, at China's behest, also invited Iran and Pakistan to participate as observers. The inclusion of Pakistan, in particular is fraught with considerable significance for India, as its gives Pakistan ability to exert influence in the region.

Map 3.1
Iran India Gas Pipeline



Source: <http://content.answers.commaincontent/wpenthumbccb250px-Gwadar.jpg>, retrieved on 15 of July, 2007

Iran India Gas Pipeline Project

Iran has the second largest natural gas resource in the world and could export low cost natural gas to India. The Iran-India gas pipeline was undertaken in the early 1989, and the project then estimated cost was argued to the tune of \$3 billion. The basic assumption was that Iran has plenty of cheap gas available and India needs the gas as its growing economy will be consuming more energy, particularly when gas is a cleaner fuel. The price at which the gas is likely to be made available is reported to be at \$1.80 million metric British Thermal unit (mmBtu) delivered to the Indian border. This is almost half the price of imported liquefied natural gas, for which specified projects in India are currently in hand. According to Iranian sources, the pipeline can save India upto \$300 million every year in energy costs³¹ (Muni and Pant, 2005). Iran would reap the

maximum gain not only because it would get substantial revenues from the sale of natural gas, but also because a large part of investment to be made would lie in the Iranian territory, extending over 1000km as compared to 800 km over Pakistan and about 700km in India. Pakistan will get the gas and the transit fee to the tune of \$400 million per year. Iran used all the leverage at its command to obtain a commitment from Pakistan regarding the security dimension of the projects an issue that has been the main point of reservation for Indian Government .At one stage Iran even proposed that 30% of the gas would be destined for Pakistan and 70% for India, giving both countries a stake in maintaining the flow. The proposed capital spending for the project is to be shared between with 48%, Pakistan -32% and India upto 20%.

Gazprom has signed a Memorandum of Understanding (MoU) with Islamabad on November, 11, 2002 for a pipeline crossing through Pakistan. This MoU was first of its kind to be signed between the three parties -India, Pakistan and Iran. Benefits accruing from the project have made Pakistan to come to the consensus as it would reap from economic and strategic relationship. Pakistan would not only receive transit fees of the order of \$600 million annually but also cheaper gas than it would get from other sources³² (Milto, 2006). A similar agreement had been signed with India when Russian President Vladimir Putin visited New Delhi in December 2004 and then with Iran in January 2005. The most significant in the way toward the project's realization became the agreement among Minister of Oil and Natural Gas of India and his Pakistan counterpart on June, 7, 2005 about giving a paramount value to transnational gas pipeline project. The experts assume, the pipeline would take about five to seven years to be completed once all the necessary clearances are received.

On 30th June 2007 the trilateral talks were held in New Delhi in which Tehran has been insisting on including a clause of price revision every three years a formal agreement on the \$7.4 billion deal. Petroleum Minister Murli Deora said a general agreement was reached but some issues remained unresolved which would be sorted out by the month of August. The issue of transit fee, which would be paid to Pakistan for allowing passage of gas to India, would be discussed next week. It is a very tricky situation as Iran came up with the new clause at the last minute as over 44 billion has already been invested in laying pipelines from the Iran-Pakistan border to the Pakistan-

India border, and from there to consumption centers in India. Pakistan was committed to the security of the pipeline, as two-thirds of it would carry gas for 240 km utilized to transport gas to India. This is a positive aspect with regard to the gas negotiation between these three countries and would benefit both India and Pakistan and solve their energy needs and at the same time would boost up further regional cooperation³³ (The Hindu, 30 June 2007). Transporting gas from Iran through Pakistan by a pipeline has been a potential yet not accomplished component of the India-Iran energy relationship.

Status of Bangladesh – India Pipeline

The country has had 22 natural gas and one oil well discovering over a 100-year exploration activity, with 68 discovery wells being drilled so far. Its success rate has been around 34%. The Bibiyana gas field is believed to be one of the richest and most promising in the world. Bangladesh has surplus and with satisfied domestic demand can also meet the need of export needs. According to the latest estimates reported by the Norwegian Petroleum Directorate for the state owned Petrobangla, potential gas reserves are around 647cf, giving Bangladesh about 160 years of gas supplies. Today Unocal and Shell are the two main oil firm developing Bangladeshi gas.

India could be a good market for Bangladesh gas seeing its proximity and high energy demand, and by building pipeline from Bangladesh, and linking it with the HBJ pipeline, gas could be brought to India. India is ready to give and provide expertise and exploration help for the exploitation. Unocal is ready with plans for a gas pipeline to Delhi for 30 inch, 1635 km, 500 mcf/d (5-17 bcm per year) pipelines from the Biyana gas fields in north-east Bangladesh to Delhi. Sheikh Hasina's Awami League government wants to pursue gas export to India but was prevented from doing so by Begum Khalida Zia on apprehensions of no enough reserve for twenty years and would benefit foreign nationals³⁴ (Dadwal, 2002).

Current gas reserves in Bangladesh are estimated at 311 bn cm although some of the foreign oil companies believe that the figure may much higher. It has been proposed that the gas produced in the north-eastern states of Tripura and Assam in India could be transported by a Bangladeshi pipeline to the demand centers in India. According to current estimates even in a low price scenario, the export of 14 m cm/d (or 100 bn cm), of

gas over a period of 20 years, would generate export earnings of \$450 million for Bangladesh for each year. Even though the Government in Bangladesh has not committed to gas exports through pipeline to India, and has only expressed willingness to courier the possibility subject to meeting 50 years of the domestic gas demand, there is significant pressure from the International community for gas exports from Bangladesh to India³⁵ (Gavin, 2006).

Role of ONGC Videsh Limited

India has been looking for Equity Oil abroad to meet her energy demands as the dependence on oil is met through imports. The OVL (ONGC VIDESH LIMITED) is the foreign arm of India's oil exploration in distant lands and has been playing a very important role along with Joint Ventures undertakings of different countries in the world. Today OVL has 25 projects (37 Blocks) in many countries, namely Cuba, Columbia, Myanmar, Sakhalin, Vietnam, Iraq, Iran, Qatar, Syria, Libya, Sudan (GNOP), Sudan (5 A, 5 B), Cote D Ivoire and Egypt. OVL is a wholly owned subsidiary of the Oil and Natural Gas Corporation (ONGC) Limited, India's largest corporate by market capitalization: US\$ 11,039 million for 2002-03 as well as its first integrated oil and gas major. ONGC is ranked 133 on the Forbes Global "Best Big Companies" list for 2002-2003³⁶ (ONGC Videsh website, 2007).

In 1996, ONGC decided to focus exclusively on managing its giant oil and gas assets in India, and to that effect created ONGC Videsh Limited (OVL) and assigned it the task of managing the International E&P Business to accrete overseas reserves and bring the reserve replacement ratio close to one.

External Policy on Oil Security (India Hydrocarbon Vision-2025)

- Focused Approach
- Strong Relations
- Leverage "Buyers' Power"
- Total Deregulation of Overseas Business
- Provision of Fiscal and Tax Benefits

Recently the OVL had an outstanding achievements in the Sakhalin oil fields of Russia, the largest of its kind by an Indian corporate with a US\$1.7 billion investments and also securing of a 25% share in the renowned GNOP fields of Sudan via one time investment of US\$ 690 million. It has also taken keen interest in the 14th International Caspian Oil and Gas Exhibition on June 5, 2007 in Azerbaijan. This exhibition effectively communicated the strengths and successes of the company and highlighted the potential of mutual business. Thus OVL is playing an extraordinary role in ensuring India's energy needs.

Future Energy Needs

Projections for petroleum products are crucial for a developing country like India which relies heavily on crude imports to meet its petroleum needs and where scarce investible resources have to be optimally apportioned between competing activities. The planners and policymakers of the Indian economy in recent years have envisaged a faster growth rate of the economy in the years to come, which might in turn result in a higher growth in consumption of petroleum products. Most economist and planners expect India to record a real GDP growth rate anywhere between 5-8 percent. The Government of India in its Vision 2020 has targeted an annual GDP growth rate of 8.5 to 9% over the next 20 years³⁷ (PETROFED, 2005). The high rate of economic growth is likely to be accompanied by an increasing percapita income and changes in lifestyles. The factors driving energy demand upwards are economic growth accompanied by growth in urban and rural population. In addition, there may be the following factors that affect the demand: price of oil, environmental considerations, increase in efficiency use, higher contribution of the service sector in GDP and impact of information technology, telecommunication and e-commerce³⁸ (Ibid, 2005).

Petrol or Motor Gasoline is used as a transport fuel. In 2003-04, it accounted for about 8% of the selected refined products consumption in India, up from 5% in 1981-82. And the demand for Petrol would be in the range of 13 MMT to 15 MMT in 2011-12. This represents an average annual growth rate of 6.1% to 8.2% over the current year consumption³⁹ (Ibid, 2005).

HSD (High Speed Diesel) is primarily used as transport fuel and for running private generator sets for agricultural purposes etc. In 2003-04, the HSD consumption accounted for about 34.6% of the refined products consumption in the country. Since 80s, HSD has dominated the refined products consumption mix. LDO(Light Diesel Oil) is used in industry and for power generation .The share of LDO has come down from 3% in the 80s to barely 2% in 2003-04.The demand for HSD and LDO is projected to be 60 MMT to 65 MMT.This represents an annual growth rate of 5.6% to 6.7% over the current consumption in 2003-04.Since most of this demand would be for HSD, it can be expected to hold its position as the petroleum product most consumed in India even in 2011-12⁴⁰ (Ibid, 2005).

Superior Kerosene Oil (SKO) is primarily used as domestic fuel for cooking. The substitute for SKO is LPG (Liquefied Petroleum Gas) and non-commercial sources of energy such as fuel wood. More than 60% of the Indian households depend on traditional sources of energy such as fuel wood, dung and crop residues for meeting their cooking and heating needs. The estimated kerosene production would be in the range of 19 MMT and India would have surplus in production of kerosene⁴¹ (Ibid, 2005).

LPG is also used as domestic fuel and is a cleaner, safer but more expensive fuel than SKO. The demand for LPG would range from 16.5 MMT in BAU (Business As Usual) scenario to 19.1 MMT in the HOG (High Output Growth) scenario. Thus, LPG demand is expected to increase by about 7.4% to 9.4% over the period 2003-04 to 2011-12⁴² (Ibid, 2005).

Naptha is used in three major sectors fertilizers, power and petrochemicals. Currently, naptha accounts for 12% of the selected basket of petroleum products consumed in India. The naptha demand would be in the range of 22 MMT to 27 MMT. This represents an average annual growth rate from 8.4% to 11% over the consumption level in the current year. In 2011-12, naptha would comprise of 15-17% of the total selected petroleum products⁴³ (Ibid, 2005).

Thus, India needs to follow a multi-dimensional approach in meeting its energy requirements both at the national and international level. Not only reforms in energy sector is needed but also most judicious use of energy is also required.

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Chapter 4

Central Asia and India's Energy Cooperation

Chapter 4

CENTRAL ASIA AND INDIA'S ENERGY COOPERATION

Central Asia is a vast landlocked region of Asia. Though various definitions of its exact composition exist, no one definition is universally accepted. Despite this uncertainty in defining borders, it does have some important overall characteristics. For one, Central Asia has historically been closely tied to its nomadic peoples and the Silk Road. As a result, it has acted as a crossroads for the movement of people, goods, and ideas between Europe, the Middle East, South Asia, and East Asia. It is also sometimes known as Middle Asia or Inner Asia, and is within the scope of the wider Eurasian continent. It is largely coextensive with Turkistan. Roughly speaking, Central Asia consists of large states like Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, Tajikistan, and smaller states like Azerbaijan (lying on the other side of the Caspian Sea). India's geographical proximity with Central Asia and cross-regional and social interaction between both the regions led to forging of highly significant linkages. For many centuries Central Asia was an immense reservoir of human energy and skills where many conquerors and many religions left their still unextinguished marks.

Central Asia: Implications of Strategic Location

Central Asia had both the advantage and disadvantage of a central location between four historical seats of power. From its central location, it has access to trade routes, or lines of attack, to all the regional powers. On the other hand, it has been continuously vulnerable to attack from all sides throughout its history, resulting in political fragmentation or outright power vacuum, as it is successively dominated.

- To the North, the steppe allowed for rapid mobility, first for nomadic horseback warriors like the Huns and Mongols, and later for Russian traders, eventually supported by railroads. As the Russian empire expanded to the East, it would also push down into Central Asia towards the sea, in a search for warm water ports. The Soviet bloc would reinforce dominance from the North, and attempt to project power as far south as Afghanistan.

- To the East, the demographic and cultural weight of Chinese empires continually pushed outward into Central Asia. The Mongol Yuan dynasty would conquer parts of East Turkestan and Tibet, and the later Manchu Qing dynasty would reconquer those areas several centuries later. As part of the Sino-Soviet bloc, China would swallow Tibet. However, with the Sino-Soviet split, China would project power into Central Asia, most notably in the case of Afghanistan, to counter Russian dominance of the region.
- To the Southeast, the demographic and cultural influence of India was felt in Central Asia, notably in Tibet, the Hindu Kush, and slightly beyond. Several historical Indian dynasties, especially those seated along the Indus river would expand into Central Asia. India's ability to project power into Central Asia has been limited due to the mountain ranges in Pakistan, and the cultural differences between Hindu India, and what would become a mostly Muslim Central Asia.
- To the Southwest, Middle Eastern powers have expanded into the Southern areas of Central Asia (usually, Uzbekistan, Afghanistan, and Pakistan). Several Persian empires would conquer and reconquer parts of Central Asia; Alexander the Great's Hellenic empire would extend into Central Asia; two Islamic empires would exert substantial influence throughout the region; and the modern state of Iran has projected influence throughout the region as well.

In the post-Cold War era, Central Asia is an ethnic cauldron, prone to instability and conflicts, without a sense of national identity, but rather a mess of historical cultural influences, tribal and clan loyalties, and religious fervor. Projecting influence into the area is no longer just Russia, but also Turkey, Iran, China, Pakistan, India and the United States:

- Russia continues to dominate political decision-making throughout the Caucasus, and former SSRs, although as these countries shed their post-Soviet authoritarian systems, Russia's influence is slowly waning.

- Turkey has some influence because of the ethnic and linguistic ties with the Turkic peoples of Central Asia, as well as serving as the Baku-Tbilisi-Ceyhan oil pipeline route to the Mediterranean.
- Iran, the seat of historical empires which controlled parts of Central Asia, has historical and cultural links to the region, and is vying to construct an oil pipeline from the Caspian Sea to the Persian Gulf.
- China, already controlling Xinjiang and Tibet, projects significant power in the region, especially in energy/oil politics (for example, through the Shanghai Cooperation Organization.)
- Pakistan, a large and nuclear-armed state, helped to sustain Taliban rule in Afghanistan, and is capable of exercising some influence. For some Central Asian nations, the shortest route to the ocean lies through Pakistan. Pakistan seeks Natural Gas from Central Asia, and supports the development of pipelines from its countries.
- India, as a nuclear-armed rising power, exercises some influence in the region, especially in Tibet with which it has cultural affinities. India is also perceived as a potential counterweight to China's regional power.
- And the United States with its military involvement in the region, and oil diplomacy, is also significantly involved in the region's politics.

Presently, India is seeking to evolve a similar and strong relationship with each of the Central Asian countries .There are a lot of common grounds for building this relation .Secularism and democracy are two cardinal features that are shared by the Central Asian countries and India. India's relationship with the Central Asian countries is excellent, underpinned by historic and cultural bonds since the independence of these countries. High level visits were exchanged on a regular basis. These were complemented by industrial and consumer goods exhibition besides visit of trade delegation .India's economic relations are therefore showing a continuing positive trend. Efforts are currently going on to encourage Indian investors to enter the manufacturing sector in these countries through joint ventures, commensurate with their preferred policy. There is

ample awareness in a number of niche areas, including small and medium industries, and in human resource development. India's recent diplomatic thrust into Central Asia is keeping in view its future energy requirements and strategic positioning through bilateral visits and trade¹ (Mavlonov, 2006)

Indian Response to the 1991 Debacle

The collapse of the Soviet Union in 1991 came as a great shock to India. The Central Asian Republics attained independent sovereign status and looked to India for help and support. During the period 1991-1995, India was passing through a difficult phase of political instability and was not able to respond befittingly to the events like the gulf war, fought by the US led coalition against Iraq, collapse of Soviet union, emergence of the central Asian Trans-Caucasian region etc. the leadership and the policy makers would not grasp the high stakes that India has in the central Asia's stability, security, integrity and secular ethos. The newly independent states of Central Asia had been viewed by the power-seekers in the region and outside as a 'soft ground' for moving into establishing their sphere of interests. The theories of the "power vacuum" and "great game" were revived and regional and extra regional contenders for power and influence registered their game and claim on oil and natural gas rich regions of central Asian Trans Caucasian countries² (Asopa, 2003).

The most difficult challenge to their survival as independent political entities came from Islamic fundamentalist forces active in Afghanistan. They intervene in the Tajik civil war and made their presence felt in Uzbekistan's Ferghana valley and other regions. The role of Pakistan and Pak-US sponsored mujahiddin in the Islamic campaign undertaken in Central Asia stirred New Delhi and it could grasp the danger posed to India's interest in the region to the survival of the Central Asian states. The belated and half hearted stand taken by India in 1991-92, placed it in difficult situation vis-à-vis the Central Asian's as now it has to catch up for the loss and compensate for earlier apathy. By undertaking a vigorous campaign against Islamic fundamentalism and militancy in the capitals of the world, by supporting the Northern Alliance led by Burhanuddin Rabbani in Afghanistan, strengthening Tajikistan's secular forces in their war against the Islamists and redefining its ties with the Central Asian Republics.

India is opposed to the theory of the “power vacuum” propounded by the US and its western allies. The newly independent states of Central Asia are “New states” but old civilization, conversant with the intricacies of the international politics. They are capable of safeguarding their freedom, sovereignty and national interest. India is not prepared to endorse the thesis of the “great game” re-enacted by the regional and extra regional powers in Central Asia. At the time of the “great game “ of the 19th century, the competition was between Britain and Russia for territories which had absolutely no positive gain in the game, they were passive objects. Today’s Central Asia is different and the contenders are also not two but many with diverse objectives and strategies. Central Asia itself is a major player and can counter balance the contenders in this game. India’s interests lies in peace and stability in the region and the region should remain integrated and no Anti-Central Asian coalitions or strategy be allowed to develop³ (Ibid).

India’s Relations with Central Asian Countries

INDIA-KAZAKHSTAN

There are three factors which make Kazakhstan important for India. First, its geostrategic location, second, its economic potential, especially its energy resources, and third, its multi-ethnic and secular structure. Kazakhstan’s geo-political existence between Russia and Asia, along with the long border with China, makes it a country of great strategic importance. Kazakhstan lies to the northeast of the Caspian Sea, with the Russian Federation to the north, China to the east, Kyrgyzstan, Turkmenistan and Uzbekistan to the south⁴ (Tauras, 2000). Despite India not having any border with Kazakhstan, its geostrategic location makes this country important for India because India has an interest in the states bordering Kazakhstan. It is important to note here that the strategic community in Kazakhstan feels that the CARs are being squeezed between China, Russia and now, after the September 11 attack, it also has the American eagle flying over it⁵ (Roy, 2002). Mr. Ashimbayev, Director of Kazakhstan Institute of Strategic Studies remarked during his presentation (on ‘New Structures of International Relations and Security Problems’) at a conference in Almaty on October 29, 2001 that “No one will allow Central Asian States to have an independent and a self-sufficient security setup”. Therefore, Kazakhstan apparently seeks some strategic space and maneuverability to

balance the two. Mr. Kamal Burkhanov, Director, Institute for Russian and China Studies, is also of similar opinion and has recently very emphatically stressed the importance of greater and more assertive Indian presence in the region.⁶ This issue also needs to be viewed against the current developments in Afghanistan. India should see to it that this region does not fall in the hands of those that are inimical to the security interests of India. Kazakhstan is worried about the increasing influence of Russia, China and the US in the region but at the same time needs them. It needs political links with Russia and economic links with the US. China having a long border with Kazakhstan needs to be engaged. As far as India is concerned, it enjoys good relations with CARs, Russia and the US. Therefore, India can play an important role by increasing its ties with these states.

The second factor making Kazakhstan important for India is its energy resources and economic potential. In this perspective, the energy issue certainly deserves particular attention. India remains an energy deficient country and needs to ensure a better supply. In Central Asia, Kazakhstan and Azerbaijan are the principal resource-rich countries. In the first half of the twenty first century, India will be one of the top five consumers of energy. Currently, most of India's import comes from the Persian Gulf region, but to enhance its energy security India needs to look at an alternative source of energy. In this respect the Caspian region can be an alternative source for India since this region is considered to have the proven reserves of 25 to 30 billion barrels of oil (The Emirates Center for Strategic Studies and Research, 2000). In Central Asia, Kazakhstan and Azerbaijan are the principal resource-rich countries. Kazakhstan has been termed the 'Second Kuwait' on the basis of its petrol reserves. In CIS, Kazakhstan is the second-largest petroleum producer after Russia. In 1996, 4,60,000 barrels per day were extracted, with 40 per cent of this sold in the international market. Its share of world production is at par with that of countries like Syria and Brazil.⁷ According to the Kazakh Deputy Minister for Economy and Trade, Galum Orzabekov, Kazakhstan is expected to extract over 46 million tonnes of oil and gas condensate in 2002⁸ (The Times of Central Asia, 2001). The opening of (US\$2.6 billion) Caspian Pipeline Consortium (CPC) which runs from the Tengiz oilfield in Western Kazakhstan to Russia will pump around 6,00,000 barrels of oil to the west from Central Asia each day. This is a significant development. Analysts feel that with the opening of this pipeline the non-Gulf oil is likely to become

more attractive to global oil consumers⁹ (Ibid). The production of natural gas had developed slowly, and reached a level of 7.9 million cubic meters in 1991. Subsequent production has not been consistent, varying from 11.2 million cubic meters in 1993 to 7.66 in 1996, an average of a mere one per cent of the CIS total.

As Kazakhstan occupies a pivotal place in the heart of Eurasian continent, covering 2.7 million square kilometers (90% of India's size and world's ninth largest state) and has a population of only 15 million people. It is strategically located between Russia, China and unstable Islamic states. It is a converging point of Western, Chinese and Islamic civilization. Kazakhstan's potential oil reserves are on a par with Kuwait that will make it the world's major alternative energy supplier in the next ten years. Current oil reserves are to the tune of 35 billions barrels which is twice as much as the North Sea and the projected reserves are to be around 100-110 billion barrels by 2015 and would be on the top 3 producer of hydrocarbons¹⁰ (Stobdan, 2006). The current gas reserves of two trillion cubic meters and projected gas reserves of 5 trillion cubic meters gives an ample opportunity to India for her future energy requirement and thus meeting her energy security need. But the Indian supply route has been constrained due to the absence any direct transit link and thus India needs to find a viable link from this region. India's energy demands are expected to reach nearly 3.5 millions barrels per day (mbd) by 2010 from the present 1.9 (mbd). The most significant area in this regard is that of oil and gas joint exploration and production; improved and enhanced oil recovery in older fields; and building domestic and cross-border pipelines. In 1996, Vice President K.R. Narayanan visited Kazakhstan and President Nursultan Nazarbaev visited India. After these visits, working groups focused on cooperation in medium and small-scale industries, peaceful uses of nuclear energy and defence were set up. It was decided that cooperation between the two in the hydro-carbon sector would involve not only exploration and developmental activities but also investment for up gradation and modernization of existing infrastructural facilities such as refineries and pipelines as well as training programmes. Concrete areas for future cooperation in space, biotechnology, pharmaceuticals, ecology, and solar energy were identified during the November 1996 meeting of the Indo-Kazakh Joint Subcommittee on Science and Technology¹¹ (Ministry of External Affairs Annual Report, 1993-94). In 1995-96 several important initiatives in areas like hydrocarbons;

mining, etc were taken during the second session of the Indo-Kazakh Joint Commission¹² (Ministry of External Affairs Annual Report, 1995-96). The US Energy Information Administration (EIA) has stated in its forecast that Caspian oil production will reach 6 million b/d by 2020¹³ (Mamuka, 2006). The OPEC in its recent forecast has mentioned that Kazakhstan may become the largest producer of crude oil in the world by 2015 and reach the level of Saudi Arabia¹⁴ (The Times of Central Asia, 2001). Once the transport corridor is established, there is a great scope for cooperation between India and Kazakhstan in the energy sector as well. The Government of Kazakhstan has also issued a license to the ONGC Videsh Ltd., the Indian Oil Corporation and ISPAT-KARMET, for the exploration and extraction of oil near Pavlador and Aktyubinsk. In 1997 ONGC Videsh Limited received a five-year license for oil exploration over an area of 9,085 sq. km in the Pavlodar region of north Kazakhstan¹⁵ (Ministry of External Affairs Annual Report, 1997-98).

The sixth meeting of Kazakhstan-India Inter-Governmental Commission on Trade, Economic, Scientific, Technological, Industrial and Cultural Cooperation was held in New Delhi between the 12th and 14th of October 2006. Mr. Baktykozha Izmukhambetov, Minister of Energy and Mineral resources led the Kazakh delegation and the Indian side represented by Mr. Murli Deora, Minister of Petroleum and Natural Resources. According to Kazakh Minister, "Kazakhstan processes more than 35 billion barrels of oil, 3 trillion cubic metres of gas and 35 billion tonnes of coal. Kazakhstan takes third place in the world in uranium production after Canada and Australia. On the ferrous and non-ferrous metals reserves Kazakhstan occupies leading position in the world. The Petro-Chemistry Program up to 2010 adopted by the Government of Kazakhstan gives many concessions to companies and creates good conditions for business". Overall, the 6th session of Inter-Government Commission contributed to further understanding and deepening of Kazakh-India cooperation¹⁶ (The Embassy of Kazakhstan, 2006).

The GDP per capita in Kazakhstan is US\$1226.17. It receives relatively high amounts of foreign investment (about US\$1.5 billion per year) mostly for the development of its oil sector¹⁷ (Johannes F. Linn, 2001). According to President Nazarbaev, over the past ten years Kazakhstan has attracted \$20 billion in investment,

including \$12 billion worth of direct investments. The oil sector accounts for some 65 per cent of direct investments. As far as foreign trade is concerned, Kazakhstan's major trading partners are Russia, Uzbekistan, Germany, Turkey, UK, USA, Netherlands and China. Russia is Kazakhstan's biggest trading partner. Trade turnover between the two countries in the first nine months of 2001 amounted to \$3.6 billion. As compared with the other countries, India's total trade with Kazakhstan was very low. During 1999-2000 the total trade turnover between the two countries was US\$60 million only¹⁸ (Francesca, 2001). Nevertheless, there is a potential for a future partnership in this area.

The third factor, which makes this country important for India, is the multi-religious, multi-ethnic, democratic and secular structure of Kazakhstan. They are deeply concerned about the rise of religious extremism in their neighbourhood. In Kazakhstan today, the secular state prevails. The Kazakh national flag currently makes no references to Islam: sky blue background represents the endless sky, golden sun with thirty two rays and a golden 'steppe' eagle appear in the centre, on the hoist side, a piece of national ornamentation appears in yellow. In Kazakhstan, the emergence of a politicized Islamic movement of real strength is less likely than in the other former Central Asian Republics. While Islam is deeply rooted in Tajik and Uzbek societies, this is not the case in the traditionally nomadic Kazakh society. Muslim radicalism has to date never gained ground in Kazakhstan. It is only in the extreme southern strip of the country that the religious feeling is strong. At present, religious politics are at the centre of the great cultural battle in which three protagonists fight for supremacy: the official religious hierarchy, a parallel one, and some nationalist movements, strongest of which are Jeltoqsan and the Alash Orda. Despite official control over the spread of political Islam there has been an increase in the number of mosques. While in 1985, there were 25 mosques, they went up to 60 in the year 1990 and 600 by end of 1995. Egypt and Turkey have been the major financiers in the construction of these mosques. In fact, official Islam has met with opposition from the popular version, which has run on the parallel track and has developed mainly in the southern part of the country. But it is important to note here that the government of Kazakhstan does not promote any kind of political Islam and has a strict control over these Islamic radical forces. Kazakhstan has shown a great amount of interest in learning from the Indian experiences of religious tolerance, unity in diversity and pluralist

democracy. They also feel that combating terrorism could be an area of bilateral cooperation between the two nations.¹⁹

Having analyzed the importance of Kazakhstan to India, it is necessary to highlight the other driving forces which exist between the two countries and examine the future prospects.

Political Relations

During the Soviet days, however, Indo-Kazakh ties were through Moscow. In 1955 Jawaharlal Nehru, India's Prime Minister, visited Almaty along with Indira Gandhi, his daughter, who would one day herself become the Prime Minister²⁰ (Chinara, 1997). With the independent Kazakhstan, India established the diplomatic relations in May 1992, opening its Embassy in Almaty. The Embassy of Kazakhstan was opened in New Delhi in September 1993.

Relations between India and Kazakhstan ever since have been marked by a significant cooperation in different areas ranging from science and technology to cooperation in medium and small-scale industries, upgrading and modernisation of existing infrastructural facilities as well as training programmes.

- In 1992, during the visit of the Minister of State for External Affairs to Kazakhstan, agreements for establishing joint commissions, and cultural exchange programmes were signed. An agreement on technical and economic cooperation was signed and a credit of US\$10 million was announced²¹ (Ministry of External Affairs Report, 1992-93).
- In 1993 Prime Minister P.V. Narasimha Rao visited Kazakhstan. The setting up of a cultural centre at Almaty was announced during this visit and the second instalment of credit of US\$10 million was announced. The Indian Technical and Economic Cooperation (ITEC) slots to Kazakhstan were increased. The first meeting of the Indo-Kazakh Joint Commission was held in New Delhi in July 1993²² (Ibid, 1993-94).

- In September 1998 Indian Airlines and Air Kazakhstan signed a code-sharing agreement. Punjab National Bank opened its representative office in Almaty in October 1998²³ (Ibid, 1998-99).
- In March 1999 a treaty on mutual legal assistance in criminal matters and a protocol on visa free regime for diplomatic and official passports were signed. Shri Jaswant Singh, Minister for External Affairs, attended the CICA Ministerial Conference in Almaty in September 1999²⁴ (Ibid, 1999-2000).
- In 2000-2001 Indo-Kazakh bilateral ties were further strengthened by the visit of a Kazakh parliamentary delegation to India. The slots for ITEC have further been increased to 70 from 60²⁵ (Ibid, 2000-01). On August 13, 2001, the third meeting of the Joint Kazakhstan-India Subcommittee on Science and Education was held in New Delhi. During the meeting, the programme of cooperation in science and technology between the two countries, a Memorandum of Understanding between the National Academy of Agricultural Sciences of Kazakhstan and the National Academic Centre for Agrarian Research of India and the protocol of a meeting looking into other issues of further cooperation in space research were signed²⁶ (Embassy of Kazakhstan, 2001).

Political interaction between India and Kazakhstan has been regular and mutually supportive in the UN and other international organisations. Both have high levels of understanding and shared perceptions on each other's concerns in the region.²⁷

The visit of the President of Kazakhstan Nursultan Nazrbaev to India in Feb 2002, deepened two countries relationship and was exchanged by the visit of then Prime Minister of India, Atal Behari Vajpayee to Almaty on June 3-5, 2002²⁸ (Mavlonov, 2006). This provided an opportunity for consolidation and concretization of relationship in the areas of co-operation, which were identified during the visit of President of Kazakhstan. Apart from this visit India also launched a regional "people to people" initiative by inviting diplomats, parliamentarians and opinion-makers from Central Asia to visit to its industrial and technological centres and also interact with senior politicians, officials and businessmen²⁹ (Ibid, 2006).

Economic Relations

In terms of economic cooperation, Kazakhstan is of great importance to India. Kazakhstan is the only country in Central Asia, with which India has considerable trade relations. For example, ISPAT International Consortium has acquired the shares of Karaganda Metal Plant, carried out its modernisation and turned it into a profitmaking enterprise. In 1997, ISPAT-KARMET was exporting 90 per cent of its products to India, which for the first time gave Kazakhstan a balance of trade in its favour.³⁰ The pharmaceutical factory of the Kazakh-India joint venture Kazakhstanapharama is approaching completion in Almaty. More than 30 Indian companies have their offices in Kazakhstan and they are actively investing capital in the Kazakhstan economy. Larsen & Toubro signed a business venture agreement in November 1999 with the Government of Kazakhstan. India and Kazakhstan have also signed a memorandum of understanding and cooperation for the development of small enterprises and creation of new work places. An entrepreneurial development centre is being built in Asthana.

Trade and economic relations between India and Kazakhstan are regulated on the basis of six inter-governmental agreements. The trade figures between the two countries have been fluctuating over the years, with fluctuations. (see Table 3.1). The main inhibiting factor in trade is the high cost of transportation of goods from India to Kazakhstan, and vice versa. Indian goods can become more competitive once the cost of transportation is reduced. The 'North-South Corridor,' if established, can redress this imbalance. Kazakhstan has also expressed its readiness to join this corridor. Attempts have been made to resolve transport problems between Bombay and Asthana; 350 containers are imported and exported annually through the Indian port³¹ (Mavlonov, 2006). Despite low levels of trade there is potential for further growth. Both the governments are trying to work jointly to address the various roadblocks.

Table 4.1
India-Kazakhstan trade Figures 2000-2005
(As of February 10, 2006, in US\$ million)

S.No.	Year	2000-01	2001-02	2002-03	2003-04	2004-05
1.	Export to Kazakhstan	50.08	45.7	46.88	74.81	79.4
2.	Import to Kazakhstan	14.04	7.39	12.73	9.26	15.35
3.	Total Trade	64.12	53.09	59.6	84.07	94.75

Source: Department of Commerce, Ministry of Commerce and Industry, GOI. (Various years)

Although the present level of trade between the two countries is nowhere near the real potential, there are many areas where both countries could be engaged in meaningful cooperation. Economies of the two countries are complementary to each other and not competitive. Six Indian firms are accredited with Kazakhstan and nine joint ventures are registered. Infrastructure building and construction activities have considerable prospects in Kazakhstan. Asthana, a new city in the process of being built, is humming with construction activities. It is once again a good opportunity for companies that are specialised in infrastructure and construction to get involved in this area.

During the conference on Investment Possibilities in Central Asia, held in February 2000, a Memorandum of Understanding and Cooperation was signed between the Ministry of Ecology and Resources of Kazakhstan and Tata Energy Research Institute (TERI)³² (Embassy of Kazakhstan, 2001). The meeting of the Joint Council of the businessmen of Kazakhstan and India, held in Almaty in May 2000, was an exploratory exercise. Another attempt to strengthen the trade ties came in May 2001 when "Indo-Kazakhstan Chamber of Commerce" was established in Chennai in India³³ (Ibid, 2001). Currently, India-Kazakhstan trade is mainly confined to the traditional commodities which India used to supply to former USSR. Table 4.2 highlights the major items of import and export between the two countries.

Table 4.2
Major Items of Import and Export

Export items to Kazakhstan from India	Import items from Kazakhstan to India
Tea	Iron & steel

Machinery & instruments	Other crude minerals-gold & silver
Drugs & pharmaceuticals	Non-ferrous metals
Cosmetics/toiletries	Machinery except electrical &
Primary semi-finished iron & steel	Electronics, etc.

Sources: Meena Singh Roy, "India-Kazakhstan: Emerging Ties", Strategic Analysis, Jan-Mar 2002, Vol. XXVI, No. 1, IDSA

In August 1999, a memorandum of mutual understanding was signed for the project, for the construction of a project with modern technology for use of coal waste. At the same time, a joint venture for feasibility study of the project was also signed. There is also a lot of potential for cooperation in the field of space with Kazakhstan.

Kazakhstan holds a special place in the foreign policy priorities of India. India seeks no clash but a compatibility of interests with Kazakhstan. Over the period of last ten years, the relations between the two countries have developed in a unique and specific way. During this period the objective of India's policy has been to establish dynamic and multifaceted bilateral relations with Kazakhstan. India is keen to have both strong economic as well political ties with Kazakhstan. India's focus should lie in getting more deeply involved in the energy sector in Kazakhstan. Although there are problems in transporting these resources, both countries need to work together to establish some kind of bilateral or multilateral arrangement to transport these resources. Despite India's low level of involvement in the economic sector, possibilities of future cooperation in this strategic arena exist which both the countries need to work on. Once the problem of connectivity gets resolved, the linkages between India and Kazakhstan will take a new turn for the benefit of both the countries.

Along with energy deals India requires to boost her bilateral-trade, cultural and geopolitical relations. Other mining resources of Kazakhstan are numerous and inexhaustible: of all the countries of the CIS, 70 per cent of its copper and a substantial amount of iron, tungsten, manganese and nickel is extracted and treated by Kazakhstan. Kazakhstan is also the world's leading producer of chrome. Silver and gold deposits remain substantial in Kazakhstan. These resources add to Kazakhstan's importance.

Kazakhstan has enough potential regarding strategic minerals which could help India develop her strategic arsenal and thus strengthening the ties further. Kazakhstan is the

third largest producer of uranium, after Australia and Canada. It produces around 4,360 tonnes of uranium annually and has the potential of producing 15,000 tonnes by the year 2010 to make it the world's largest supplier³⁴ (Embassy of Kazakhstan, 2006). India's nuclear energy consumption presently is 2.5 % of her energy use mix, and India has been looking further to get enriched uranium and as Kazakhstan has developed nuclear enrichment programme, which was established during the days of Soviet era so India could avail the strategic materials for her future needs³⁵ (Ibid, 2006) The other materials present in Kazakhstan are phosphorus and copper ore reserves, which are the second largest in the world, coal reserves around 31.8 billion tonnes, iron ores 9.1 billion tonnes of proven and 15.4 billion tonnes of potential reserves.

Indo-Kazakh cooperation in the area of Science and Technology has made substantial progress. India shares a very cordial relationship with Kazakhstan and the relationship has been growing over years. Baikonur cosmodrome launched more than 1,100 space-vehicles, tested over 100 Inter Continental Ballistic Missiles (ICBMs). A new complex Baiterek is being developed for space tourism. Semipalatinsk conducted over 500 nuclear test explosions, enrichment uranium plant at Ust-Kamenogorsk, rapid neutron reactor site in Aktau .An alliance in the field of space and technology could be of great help for India's space exploration programmes.

INDIA KYRGYZSTAN

This country has negligible amount of hydrocarbon resources and is major importer of oil and gas from other regions. Thus, India's relationship with Kyrgyzstan could be augmented and strengthened in the other areas of cooperation and that India can make her position more strong in the Central Asian States. After Russia and Tajikistan, the Kyrgyz Republic has the most hydropower resources of all CIS countries. The rivers of the Republic have an unusually high concentration of potential power per km of river bed. For example the power of the Naryn river exceed those of powerful rivers such as the Volga and the Angara.

Effective use of the rich hydropower resources and rivers in the Republic has to be the basis of the country's power industry. The estimated capacity of the Kyrgyz mountain streams is 142 billion kwh per annum. This high potential capacity offers the

opportunity to generate electric energy for both the domestic market and neighboring countries. Already the Kyrgyz Republic exports electric power to Kazakhstan, Uzbekistan and China at a volume of 2-2,5 billion kWh per annum, however, it would be possible to increase export to up to 3 billion kWh per annum and even more if the planned construction of Hydro Power Plants (HPP) will be finished. Currently 9 major power plants are operating in the country with a total capacity of 3646,6 thousand kWh. 7 of them are HPP's with a capacity of 2918,7 thousand kWh and 2 are combined heat power plants with a capacity of 728 thousand kWh.

The power industry in the Kyrgyz Republic has been selected as one of the priority branches of the economy. In accordance with the current laws, foreign investors may carry out construction, operate and own new power projects and sell electric power both inside and outside the Kyrgyz Republic. The Jogorku Kenesh (Parliament) recently approved part of the Programme of Denationalization and Privatization of the Power System, according to which social objects, the distribution network, and the design and scientific research institutions of the power sector are being privatized during the next two years. Currently, structural transformation of the sector is under way to create a competitive environment in the energy sector, aimed at attraction of major foreign investors and stabilization of the financial and economic condition of the industry.

The Indo-Kyrgyz joint commission on trade and economy and science and technical cooperation and the joint business council has been formed which looks into bilateral trade and economic relations. The establishment of the diplomatic relation between Kyrgyzstan and India has given impetus to the relationship between these two countries. Former president of the Kyrgyz republic Askar Akaev paid a state visit to India in April 1999 and an agreement on avoidance of the double taxation, treaty on mutual legal assistance in criminal matters, cultural exchange programme for the year 1999-2000 and a MoU on Civil Aviation were signed during the visit. India's Vice President Krishna Kant visited Kyrgyzstan in August/September 1999 and President Akaev revisited India on August 7, 2002, and discussed a wide range of bilateral and international issues, including political relations, trade and economic cooperation and issue of Indian technical assistance. These two countries are keen to increase the level of trade and economic

cooperation and the need to devise new spheres of beneficial cooperation in Information Technology, Mining, Fruit processing and Engineering sectors³⁶ (Mavlonov, 2006).

The volatility and instability in Afghanistan has immensely affected the regional peace and security in Central and South Asia. Hence, India and the Central Asian Republics share common threat-perception on issues of small-arms proliferation, narcotic (opium) trade and Islamic extremism originating from Afghanistan and Pakistan. Moreover, India has substantial political stakes in some of the republics as India's interests are partly determined by Central Asia's geographic location as the extended neighbourhood of India. Tajikistan, which is not far from Kashmir, shares a frontier with the restive Afghanistan. However, India cannot ignore Kazakhstan and Kyrgyzstan as both these countries border China. All the five CARs have fully endorsed the Indian stand on the Kashmir issue and have condemned Pakistan's role in Kashmir and Afghanistan. They share India's concerns and interest in keeping the region insulated from terrorism and Islamic militancy emanating from Afghanistan and reaching up to the strategic Ferghana Valley covering the countries of Tajikistan, Kyrgyzstan and Uzbekistan as the valley passes through all the three countries. India has sought diplomatic help from Russia and Iran to counter the moves of other players like Pakistan, Saudi Arabia and Turkey.

Table 4.3
India-Kyrgyzstan trade Figures 2000-2005
(As of February 10, 2006, in US\$ million)

S.No.	Year	2000-01	2001-02	2002-03	2003-04	2004-05
1.	Export to Kyrgystan	17.59	10.97	14.67	38.2	49.1
2.	Import to Kyrgystan	4.43	0.56	0.47	0.54	0.62
3.	Total Trade	22.02	11.52	15.13	38.74	49.72

Source: Department of Commerce, Ministry of Commerce and Industry. GOI. (Various Years)

INDIA TURKMENISTAN

India and Turkmenistan enjoy friendly relations and share historical and cultural links. Archaeological finds in Altyn-Depe, not far from Ashgabat, have revealed contacts between the cities of Indus Valley civilization and the Bronze Age settlements in the

South of Turkmenistan. These discoveries also indicate the close cultural links existed between the people of Indian sub-continent and the region of present day Turkmenistan during the Kushan Empire. Indian traders knew Turkmenistan since it lay on the famous silk route. Bairam Khan, the mentor of King Akbar was a Turkmen and represents the link between India and Turkmenistan. His son, Abdur Rahim Khan-e-Khana, a renowned philosopher and poet was one of the Navratnas in the Court of Akbar. The presence of Turkmen Gate in Delhi also testifies the age old links between India and Turkmenistan.

India recognized Turkmenistan on 26th December 1991. Diplomatic and consular relations were established on 20 April 1992. India opened its Embassy in Ashgabat on 30th January 1994.

India has had contacts with Turkmenistan since the time of its independence from the erstwhile USSR on 27 October 1991. Prime Minister Jawaharlal Nehru accompanied by Smt. Indira Gandhi visited Ashgabat on 14 June 1955 on his way to Tashkent. However, the goodwill for India could not be translated into economic advantage after Turkmenistan gained independence as it was preoccupied with strengthening the security apparatus of the country and consolidating the State. The foundation of vibrant relations between the two countries was laid with the visit of Late Turkmen President H.E. Saparmurat Niyazov to India in April 1992 followed by a second visit in February 1997. Indian Prime Minister Shri. P.V. Narasimha Rao also paid an official visit to Turkmenistan in 1995 during which several agreements on bilateral cooperation were signed. Former Vice President, Shri. Krishan Kant and Shri. B.S. Shekhawat transited through Ashgabat on 31 August 1999 and 1 October 2005 respectively. Apart from this, there have been regular ministerial visits from both sides.

Cooperation in the Energy Sector

The presence of significant reserves of hydrocarbons in Turkmenistan and the Indian economy's requirement of the same, can serve as the basis for further development of such cooperation. Towards this end, both sides realize the significance of mutually beneficial cooperation between India and Turkmenistan in the Hydrocarbon sector and the willingness for its expansion. In this context, India's decision to join the Turkmenistan-Afghanistan-Pakistan gas pipeline project is a positive development. Both

sides held the first Joint Working Group (JWG) on Hydrocarbons in Ashgabat on 2nd October 2006.

The 1st meeting of the Inter-Governmental Commission was held in Ashgabat on 2-3 October 2006. Shri E. Ahamed, Hon'ble Minister of State for External Affairs and co-chair of the India-Turkmenistan Inter- Governmental commission on Trade-Economic, Scientific and Technological Cooperation led the Indian delegation and was accompanied by a high level delegation with representatives from Ministries of External Affairs, Petroleum and Natural Gas, Departments of Commerce and of Science and Technology, State Trading Corporation and Public Sector Oil and Gas companies, namely ONGC Videsh and Gail India Limited. Shri Ahamed had extensive discussions with his counter part on all aspects of the bilateral relationship as well as issues of regional cooperation such as India's participation in the TAP gas pipeline project. The JWG on Hydrocarbons discussed possible areas of bilateral cooperation such as India's interest in participation in prospecting, exploration and production in the offshore Caspian blocks of Turkmenistan. Turkmenistan's ability to develop it's oil and gas reserves has been hindered by its geography as it is doubly land locked country ,Caspian Sea to the west ,Uzbekistan and Kazakhstan to the north ,Afghanistan to the east ,and Iran to the south .Until recently ,Turkmenistan's only export option for oil and was to the north via Uzbekistan ,Kazakhstan and Russia .Although Turkmenistan is working to diversify its export options ,these will take many years to materialize .Although Turkmenistan has signed and ratified the Energy Charter Treaty and is bound by its provisions, until recently the legal status of the Caspian Sea is established and Turkmenistan's own share of the Caspian resources is determined, the country is unlikely to attract foreign investors on a major scale.

Trade and Economic Relations

The bilateral trade between India and Turkmenistan continues to be on the upswing. During the year 2006, the total turnover was to the tune of US\$ 73.29 million as compared to US\$ 45.04 million in 2005. India exported pharmaceuticals, machinery and equipments, technological equipment, meat and meat products, plastics goods, textiles and leather goods, etc. to

Table 4.4
India-Turkmenistan trade Figures 2000-2005
(As of February 10, 2006, in US\$ million)

S.No.	Year	2000-01	2001-02	2002-03	2003-04	2004-05
1.	Export to Turkmenistan	2.71	4.35	10.29	19.21	14.63
2.	Import to Turkmenistan	1.12	1.95	5.4	9.34	10.69
3.	Total Trade	3.83	6.3	15.7	28.55	25.31

Source: Department of Commerce, Ministry of Commerce and Industry, GOI. (various years)

Details of Indian Credit Lines/Official Assistance

India has extended two lines of credit – one of US\$ 5 million and the other of US\$ 10 million. One joint venture ‘Turkmenderman-Ajanta Pharma Ltd’ has been functioning in Ashgabat since its establishment in December 1998 by utilising the first line of credit. This joint venture has been set up with the participation of Ministry of Health and Medical Industry of Turkmenistan and the Indian firm Ajanta Pharma Ltd.’ It has an ultra- modern plant and manufactures 70 different types of medicines. All the products manufactured by this joint venture are very popular in Turkmenistan. The initial capital has been repaid. Out of the second line of credit US\$2.3 million is utilised in the areas of food processing (juice making) and wool processing.

Important Bilateral Treaties and Agreements

- A Bilateral Investment Promotion and Protection Agreement was signed between the two countries on 20 September 1995. The Instruments of Ratification were exchanged on 27 February 2006 and thus the Agreement has come in to force from the said date.
- Agreement on the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with respect to taxes on income and on capital was signed in February 1997 and has been operational since July 2002.
- An agreement was signed in Ashgabat in September 1996 between the Chamber of Commerce and Industry of Turkmenistan and the Indian-CIS Chamber of

Commerce and Industry to develop cooperation between the economic, commercial and financial organizations of the two countries

- The first meeting of the member states under the Trilateral Transit Agreement among India, Iran and Turkmenistan was held in Delhi on 31st January 2000.
- An MOU relating to air services operation between the two countries was signed on 7 February 2000 giving Turkmenistan Airlines the rights to fly to Amritsar and Delhi. Presently, Turkmenistan is operating eight flights every week to Amritsar/Delhi. The Indian sectors are the most profitable for the Turkmen Airlines. From March 2007 Turkmenistan Airlines will fly twice a week connecting Ashgabat and Ahmedabad.
- India and Turkmenistan are working on an agreement concerning treaty on mutual legal assistance in criminal matters.
- A delegation from Indian Oil Corporation delegation (IOC) also visited Turkmenistan. The India's External Affairs Minister, Jaswant Singh, visited Ashgabat in May 1999. Agreements on setting up of a Working Group on Energy and a Protocol for the development cooperation between the Ministers of Foreign Affairs of the two countries were signed during the visit.
- The first meeting of the member states under the Trilateral Transit Agreement among India, Iran and Turkmenistan was held in Delhi on 31st January 2002 giving Turkmen Airlines the right to fly to Amritsar and Delhi.

Cooperation in Science and Technology

In pursuance of the 1st meeting of the Inter-Governmental Commission, the Indian side has offered to establish an India-Turkmenistan Centre for Information Technology (ITCIT) in Ashgabat for which details are being worked out. India also agreed to facilitate the issue of permission for Turkmenistan's designated carrier to fly to additional points of call in India namely Ahmedabad and Kochi. India also offered to establish in Ashgabat an India-Turkmenistan Centre for Information Technology for capacity building of nationals of Turkmenistan in the information technology area. Both sides resolved to make efforts for intensifying commercial relations through trade related joint

ventures. The Turkmenistan side agreed to facilitate imports of Indian pharmaceutical products in Turkmenistan.

Cooperation in science and technology particularly in seismic studies as well as in combating desertification was also agreed upon. A joint protocol outlining the specific areas of cooperation was signed at the conclusion of the Inter Governmental Commission by the two Co-Chairs. The draft of the Science and Technology Cooperation Agreement between the Government of India and the Government of Turkmenistan was discussed during the meeting and both sides stressed on the necessity to conclude the above mentioned document through diplomatic channels. Both sides agreed to enhance the participation of Turkmen representatives in the courses organised by the Government of India within the framework of the Indian Technical and Economic Cooperation (ITEC) programme in the fields of Computer Technology, Software, Financial Management, Urban Infrastructure Planning, Accountancy, Educational Planning and Management, Legislative activities, English language, etc and expressed interest in undertaking joint research and studies related to seismic and earthquake problems, demineralization and desalination of water and ecology of deserts and seas. Both sides agreed to collaborate on geophysical methods of interpretation and seismicity under themes like earthquake geology, earthquake hazards, strong motion seismology, site response and ground motion, and regional and whole earth structures, etc.

Applications of solar energy, remote sensing, scientific instrumentation and technology transfer from research institutes to industries were considered as other potential areas of cooperation between the two sides. Both sides agreed to initiate suitable joint programmes of bilateral interests to combat desertification and cultivation thereof in relevant areas of India and Turkmenistan through specialised agencies on both sides. 226 Turkmen nationals have availed training facilities under ITEC programme since 1991 and 30 slots per annum are allotted to Turkmenistan under the programme. The Government of India has set up an 'Industrial Training Centre' in Ashgabat under the ITEC programme. The project has been executed by the Hindustan Machine Tools (International) Ltd. It provides a range of machine tools worth US\$ 0.5 million for manufacturing a variety of dies and spare-parts for several industries. Nine Turkmen technicians were imparted training at HMT(I) Ltd., Bangalore for operating the machines

supplied at the Centre. The Centre is equipped with facilities for training basic skills, manufacturing tools and products required by different industries, prototype development and pilot projects and component manufacture.

INDIA TAJIKISTAN

Political relations between India and Tajikistan are at an excellent level. There has been regular exchange of visits at the highest levels. Prime Minister Vajpayee paid an official visit to Dushanbe in November 2003 and President Rahmonov visited India for the third time in August 2006. Further, there are regular interactions amongst various Ministries and functionaries and Joint Working Groups and Inter Government Commissions on matters of mutual interest of have been constituted which meet at regular intervals. India opened its Embassy in Dushanbe in 1994 and Tajikistan opened its Consulate in Delhi in 2003, which was upgraded to a full fledged Embassy in 2006. Government of India has been concentrating on important sectors like pharmaceuticals, food processing, information technology, hydro-power, transportation etc. to share with the Republic of Tajikistan, its expertise in these fields and extend assistance.

Commercial and Economic relations

Trade between India and Tajikistan, on a large scale, is still being done by “suitcase traders” who visit India nearly once a month. They purchase leather goods, pharmaceuticals and woollens for retail sale in Tajikistan. Indian goods are well known in the local market. However, the circuitous land route for transportation of goods (India to Bandar Abbas by sea route, from Bandar Abbas via Turkmenistan and Uzbekistan by land) is a dampener as it adversely affects the overheads for small traders. During the year 2006, it is learnt that 1250 tonnes of bovine meat was imported from India and a contract for import of 1750 tonnes of the meat during the year 2007, has been signed. Eggs, Pharmaceuticals, flowers, Alumina, textiles and sweaters were the other important items that were imported from India. Tajikistan has appointed Mr. Makhmadi Turaev, General Director of trading company “Oricon-2001” has been appointed as the Trade Representative of Tajikistan to India and he has started functioning from their Embassy in New Delhi, since October 2006.

The Third Session of the Indo-Tajik Joint Commission on Trade, Economic, Scientific and Cultural Cooperation was held in New Delhi on 31 July – 1 August 2006. It was co-chaired by Mr. G.K. Pillai, Special Secretary (Commerce) from the Indian Side and by Mr. Hakim Soliev, Minister for Economy and Trade from the Tajik Side. Second Session of the Indo-Tajik Joint Commission on Trade, Economic, Scientific and Cultural Cooperation was held at Dushanbe on 15-16 July 2005. It was co-chaired by Mr. S.N. Menon, Secretary (Commerce) from the Indian Side and by Mr. Hakim Soliev, Minister for Economy and Trade from the Tajik Side. Indian delegation consisted of representatives from MoC, MEA, EXIM Bank, DST, and STC. First Session of the Indo-Tajik Joint Commission on Trade was held in New Delhi on 12-13 December, 2001. It was co-chaired by Mr. Murasoli Maran, Minister for Commerce and Industry from the Indian Side and by Mr. Hakim Soliev, Minister for Economy and Trade from the Tajik Side.

Table 4.5

The foreign trade turnover of the Republic of Tajikistan with India:

In million dollars								
Country	1991	1999	2000	2001	2002	2003	2004	2005
India	-	1.0	0.1	34.4	31.5	3.2	3.5	2.0

Export of the Republic of Tajikistan with India

In million dollars								
Country	1991	1999	2000	2001	2002	2003	2004	2005
India	-	-	0.0	-	-	0.0	0.2	0.78

Import of the Republic of Tajikistan from India

In million dollars								
Country	1991	1999	2000	2001	2002	2003	2004	2005
India	-	1.0	0.1	34.4	31.5	3.2	3.3	1.3

Source: Department of Commerce, Ministry of Commerce and Industry, GOI. 2004

India has shared a historical relations with Tajikistan. The president of the Republic of Tajikistan Emomali Rakhmonov, has paid a number of visits to India in the years 1995, 1999 and 2001. During these a number of bilateral trade relationship has been developed and various bilateral treaties were signed in the field of Trade Economic Cooperation and industries as well. A Memorandum of Understanding on technical cooperation and an air service agreement was also signed. The Joint Declaration on Principles of Mutual Relations, signed by the visiting Tajikistan President and Indian

Prime Minister , outlines the future course of co-operation that could be taken in various field with a diversified bilateral cooperation .During this visit the Indian Prime Minister Atal Bihari Vajpayee granted \$5 million to drought hit Tajikistan so that she could latter buy Indian goods and services from the given amount .

Economic relationship has been growing between these two countries and the institutional and legal frame work has been created to facilitate trade and economic cooperation. The agreement to set up an Indo- Tajik Joint Commission for Economics, Scientific and Technological cooperation , an agreement for bilateral investment protection, air services agreement and an agreement on long term cooperation in trade , economy and industry .An Indian delegation headed by Joint Secretary (Eurasia) of Ministry of External Affairs visited Tajikistan on 7-9 May 2004 under India's aid programme , and ten city buses were gifted to the city of Dushanbe and \$8.3 was granted to Government of Tajikistan. India-Tajik cooperation spans many areas such as economic and commercial, cultural, education and technical training in diverse disciplines, information technology, science & technology and agriculture. The two countries have signed as many as 26 agreements/ protocols/MoU so far to promote cooperation in these diverse fields.

One of the most important outcomes of President Rahmonov's visit is the signing of a Memorandum of Understanding between New Delhi and Dushanbe on cooperation in the energy sector. Energy security is paramount for a developing country like India, which has begun to grow at an accelerated pace. Central Asian Republics could provide a modicum of energy security to India. Tajikistan is the largest producer of hydroelectricity in Central Asia and the third largest in the world after the US and Russia. Currently, it exports hydroelectricity to Afghanistan, Uzbekistan and other countries of the Commonwealth of Independent States (CIS). There is thus huge potential for cooperation in this sector. But in bringing Tajik hydroelectricity to India, the main hurdle is the issue of the route for laying down hi-tension transmission line. If Tajikistan, Afghanistan, Pakistan and India could agree to build a common electricity grid, this could be a win-win situation for expanding regional economic cooperation. In such a case, the issue of laying down transmission lines could be addressed and it could reach India via Afghanistan-Pakistan. However, given the track record of Pakistan in hampering regional

economic cooperation and promoting religious extremist forces that pose a serious threat to security and stability both in Central and South Asia, this does not seem to be a feasible option. Therefore, Indo-Tajik cooperation in energy sector could focus upon having Production Sharing Agreements (PSAs) both in hydrocarbon and hydroelectricity sectors. Khatlun region in the south of Tajikistan is said to have large deposits of gas still unexplored. Indo-Tajik joint initiatives could help in exploiting the vast opportunities that exist in the region. Russia and Iran are already cooperating with Tajikistan in building and rehabilitating hydropower plants (Sangtuda I & II and Rogun) at Bakhsh and Piyanj rivers. The Indian offer to assist Tajikistan in rehabilitating Vorzob I is a good step in expanding and strengthening cooperation in the energy sector³⁷ (Dwivedi, 2006).

India and Tajikistan have historically co-operated against the Taliban in Afghanistan, and have continued security co-operation against their remnants. During the Afghanistan war against Soviets both countries maintained a key interest in supporting the Northern Alliance and Tajik tribes against the Pashto Taliban, and shared interest with Iran. India supplied approximately \$8 billion for high altitude warfare equipment to the northern alliance through Tajikistan and provided as the other assistance to combat Taliban forces. Since then, India also embarked upon extensive military co-operation with Tajikistan, reportedly establishing its first military facility there in 2002. The base is believed to be in Farkhor, along the northern border with Afghanistan. However, the government of Tajikistan has denied that India has military facility there and has stated that India has simply assisted in the country with rebuilding a military airfield in "AYNI" near Dushanbe. India for years had kept a secret military hospital in Farkhor for the treatment of Northern Alliance soldiers injured in the Afghan war, which has now moved to Kabul. The base has been used for sending relief assistance to Afghanistan, but likely also represented India's longer term security interests in preventing the resurgence of Taliban rule or preventing another hostile group from taking power in Kabul.

In 2002, India agreed to train Tajiki Defence personnel, service their military equipments, and provide English instruction to the military. Under this 2002 agreement, Tajikistan sent 50 cadets to India in 2003 for military training as signalmen. In 2003, India conducted joint military exercise with Tajikistan.

Military Interest

In November 2003, the Vajpayee government embarked on a 20 year programme to become a world power whose influence is felt across the Indian Ocean, the Arabian gulf and all of Asia. This ambitious programme includes the setting of an airbase in Tajikistan; building up military relations/interaction with a range of countries from Central Asia, the Gulf, South Africa and South East Asia; extending infrastructure, logistic, and material support to Myanmar as a counterweight to Chinese activities there; and acquiring the military infrastructure to project power across its sphere of influence.

India has been expanding its military horizon in the region and reportedly establishing a military and medical facility in Tajikistan. India has decided to open up its first overseas military base in Tajikistan. The Indian force is reported to station up to two squadrons of MIG-29 at the former Soviet airbase of Farkhor more than 60 miles from Tajikistan's capital of Dushanbe where a control tower is already in place. Indian air force provides military training to the Tajik air force³⁸ (Yaqoob, 2006).

The establishment of an airbase in Tajikistan that provides the nearest route to the subcontinent seems to be an important step by the Indian Defence policy as the region is of an utmost strategic interest to India. India was affected by the disintegration of Soviet Union in 1991 as most of the supplies were of the Soviet origin. India has acquired six Ilyushin-78 flight refueling aircraft from Uzbekistan. Kazakhstan is emerging as the exporter of weapons in Central Asia and one of the notable global importers is India. During the latest talks held in February 2006, the Indian delegation proposed expanding the current scale of cooperation in the area of Defence industries. A Kazakhstan delegation recently participated.

INDIA UZBEKISTAN

India's relationship with Uzbekistan has been since historical days and the eminent Uzbek scholar Al-Beruni visited India in the 11th century and wrote the famous book, Kitab-Tarikh-Al-Hind one of the most authoritative books on Indian society and culture. India's first Prime Minister Jawaharlal Nehru had visited Uzbekistan in 1955 and 1961 when it was part of the erstwhile Soviet Union and the relationship has been growing over the years through bilateral visits between the two countries. India was the first

country visited officially by President Karimov in August 1991 and this visit is marked as a historic initiative for building the mutual relationship between these two countries. And since then the Uzbek President has visited India thrice, in January 1994, May 2000 and April 2005.

India has signed as many as 60 agreements for the promotion of cooperation in diverse fields and the areas are economic and commercial, cultural, education and technical training in diverse disciplines, information technology, science and technology, agriculture and civil aviation etc.

In today's world India's relationship with these countries is not only governed by economic and commercial benefit but on a wider scale of India's meeting her energy security needs. India's creed for meeting energy demand which is likely to grow at over 6% per annum. It is noteworthy that Uzbekistan will be an important connecting point in the new transport corridor between India and Central Asia, which is likely to come up soon. The new upcoming route connecting India and Central Asia via Mumbai-Chah Bahar-Zarani-Delaran-Heart-Naibabad-Khairaton-Termez and further has got the potential. The route will reduce the distance by 1500 km when compared to the existing operational route, i.e., Mumbai-Bander Abbas-Mashhed-Turkmenabad-Bukhara and further³⁹ (Dwivedi, 2006).

India has also suggested that Azerbaijan and Uzbekistan could also be included in the Asian Development Bank supported Turkmenistan-Afghanistan-Pakistan gas pipeline to tap the Caspian gas. The minister of Petroleum and Natural Gas, Mr Mani Shankar Aiyar, after holding wide ranging bilateral discussions with the heads of delegation from Uzbekistan, Azerbaijan, China and Turkmenistan, suggested to Mr. Idriz Rzabeyov, head of the Energy Department, Ministry of Energy, Azerbaijan, that the TAP pipeline should start in Azerbaijan and culminate in India and he also told the same to The Uzbekistan Minister for Foreign Economic Relations, Investment and Trade, Mr Rustam Sodykovich Azimov. The Minister also said that Indian Oil Corporation (Indian Oil) was interested in down stream oil refinery, petrochemicals and LNG collaborations with Uzbekistan, while ONGC Videsh Ltd (OVL) had shown interest in acquiring stake in Turkmenistan's state-owned oil and gas company⁴⁰ (The Hindu Business Line, 2005).

Trade relations between India and Uzbekistan are governed by the Agreement on Trade and Economic Cooperation signed in May 1993 .It contains normal features of trade agreements, such as mutual MFN treatment, promotion of economic, industrial scientific and technical cooperation, including in the field of training of personnel, active participation of small and medium sized enterprises in bilateral economic cooperation, and counter trade, etc. India and Uzbekistan also signed an Agreement on Avoidance of Double Taxation in 1993 and yet another one for bilateral Investment Promotion and protection in May 1999. The items of Indian export include tea, machinery, packaging material, plastic items, garments, knitwear, surgical items, and consumer goods and pharmaceuticals have traditionally been the largest single item of Indian exports to Uzbekistan. India too imports commodities from Uzbekistan and they supply machinery and services, cotton, raw silk, raw wool, non-ferrous metals, agricultural produce, aircraft, etc⁴¹ (Mavlonov, 2006).

Possible Oil Pipeline Routes from Central Asia to India

The location and physical features of states and distribution of natural resources among them explain the dynamics of interaction between them. The drinkable water, arable land, forests, animal life, and mineral resources are unevenly distributed. Gaining access to or control over them has been the driving force behind much of the geopolitics. The rivers, harbours, islands, navigable straits, waterways and channels, coastal zones, roads, railways have been the stake in the game of geopolitics throughout history. The energy carrying pipelines can be added to the list.

The biggest challenge for this region is with regard to its inaccessibility as the region is landlocked and due to International geopolitical squabbles, the region lies shrouded with the future connectivity problems. If India is to make impact on the future relationship with these countries she has to find an answer to the on going debate over the issue of transportation links between the global and the regional powers of the region.

Turkmenistan-Afghanistan-Pakistan-India (TAPI) Route

The idea of the overland pipeline construction to transit gas fuel at competitive costs from Turkmenistan to India and Pakistan through Afghanistan was born in the mid-1990s. The preliminary framework agreement for building a pipeline linking Turkmenistan's gas

fields with Pakistan was signed in March 1995 between Turkmenistan's President Saparmurat Niyazov and the Prime Minister of Pakistan Benazir Bhutto; Afghanistan also expressed full support for the project. The Central Asian Gas Pipeline consortium was established in 1997 with the participation of head of US major "Unocal" and the Saudi Arabia's "Delta Oil". Turkmenistan and Pakistan signed an agreement with these two international companies at an estimated cost of \$US 2 billion between these two countries and \$US 7 billion if the pipeline is extended to India⁴² (Milito, 2006).

Map: 4.1
Major Oil and Gas Field in Central Asia



Source: From www.worldpress.org/specials/pp/pipelines.htm retrieved on 15 of July, 2007

The TAPI project got a new life with the removal of the Taliban regime in Afghanistan following a summit between the leaders of Turkmenistan, Afghanistan and Pakistan in May 2002. During the summit Pakistan, Turkmenistan, and Afghanistan signed a tripartite agreement and established a Steering Committee on the first meeting

in July 2002, the Steering committee invited the Asian Development Bank (ADB) to play the role of development partner and then at meeting in February 2003 signed a joint letter (Turkmenistan, Afghanistan and Pakistan) formally inviting India to participate in TAP gas project. In December 2003 parties agreed to establish a Joint working Group to speed up the implementation of the project⁴³ (Ibid, 2006).

The Asian Development Bank recently declared the project prima facie feasible. The 1,680km pipeline from Dauletabad the largest gas field in the Turkmenistan borders Afghanistan is to run through Herat and Kandahar in Afghanistan, the Pakistan cities of Quetta and Multan and on to the Indian border town of Fazilka. The Delhi segment will have to traverse another 600 kilometers. The ultimate viability of the pipeline will depend on the quantum of gas available in the gas fields. Pakistan, slated to grow at 7%, is anxious to secure imported gas even as its Sui gas fields is nearing depletion. According to Pakistan, unless the Dauletabad field contains at least 30 tcf of gas, the pipeline project upto Multan will not be viable. If the pipeline is to be extended to India, the size of the recoverable reserves will have to be much more. Investors have also expressed concern over having to route the pipeline through war torn and possibly terrorist-prone Afghanistan⁴⁴ (Khosla, 2005).

This gas project would carry around 30 billion cubic meters of natural gas annually and the Dauletabad fields have a reserve of 1.3 trillion cubic meters. From the point of view of energy transportation this would be the first transnational gas export route from Central Asia to the Indian sub-continent and increasing the gas to the world market. This route would diversify India's energy security concern and help India meet her gas requirements and thus would reduce the dependence on Persian Gulf to some extent. Politically the region would stabilize as the maintenance of the security of pipeline will require respective countries to be accountable for any mishappening in their territories and this route in future could build up healthy relationship between India and Pakistan and thereby cementing regional stability. The amicable relationship between India and Pakistan would drastically reduce their military expenditure and the money could be further spent on social securities and raise the living standard of the region.

The TAPI pipeline is also prone to the risk at the regional as well as international level whether due to terrorist disturbances or due to the shortages of available gas reserves. Adequate reserves for running the project cause doubt as production forecasts are lower than the expected target causing some analysts to doubt that it can meet the proposed target of piping 30 billion cubic meters of gas a year to South Asia via Afghanistan. The speculation is over whether Turkmenistan could supply enough gas for an extended period of time as the major gas agreements have been made between Russia and Ukraine⁴⁵ (Minto, 2006). Security risks include the high cost for risk insurance as the pipeline would pass through Afghanistan and Pakistan both countries are prone to disturbances caused by the terrorist outfits. It also suffers from the absence of a consortium, consisting of international energy companies as US has already withdrawn its Unocal officially due to Taliban insurgency in the region⁴⁶ (Ibid, 2006).

North-South Corridor

The institutional arrangements of North-South International Transportation Corridor between India, Iran, Russia can be called another maker of the countries' growing relationship. The transport ministers of Iran, Russia and India, the founding members of the North-South Corridor, in a conference at St. Petersburg signed an agreement in September 2000, which entered into force on 16th May 2002. It will be valid for a period of ten years. It is observed that the Corridor would reduce transit time in freight movement by 10-12 days and operational cost by approximately 20 percent. It connects India with Western Europe and Central Asia⁴⁷ (Muni, 2005).

It is expected that the route will generate trade because of its basic advantage of reduction of distances and time of transportation of cargoes in comparison with alternative routes; for instance, it is three times shorter than the route through Suez Channel.

The main components of ITC 'North-South:

- Navigation between Indian ports and Iranian port Bander-Abbas.
- New Container terminal in the port of Bander-Abbas.

- Railway connection between Bander-Abbas and Iranian ports on Caspian Sea side.
- Caspian Sea navigation.
- Container terminal in the Seaport of O-La.
- Railway connection with Russian Regions and with north-western ports of transit cargo.

According to IRNA reports, Russian assignments suggest that 20 millions tonnes of cargo would be transported via the corridor that links Russia, northern Europe, Iran and India. And Russia will gain 400 million annually as transport revenues from the corridor. The business community in India and Iran do see the advantage of the agreement in promoting the commercial relation between the two.

It may be pointed out, that, earlier, a trilateral agreement on International transit of Goods was signed between India, Iran and Turkmenistan, during the visit of the Indian External Affairs Minister of India to Iran in 1997. According to Indian official sources 'the Agreement provides a legal framework for the multi-modal movements of goods from India to Iran and Turkmenistan and other CIS Member States that may join the arrangement in future and Vice-versa'⁴⁸ (Ibid, 2005).

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Chapter 5

Conclusion

Chapter 5

CONCLUSION

India's engagement with Central Asia goes back centuries. But more recently, since 2000, New Delhi has significantly intensified its overall strategic, military, political, and economic exposure in Central Asia. Indian diplomacy and policy have been particularly active recently with regard to energy. Indian officials clearly articulate their sense of the strategic importance of reliable energy supplies to India. There is no doubt that India's rising dependence upon imported oil and gas to fuel its rapid economic growth and the competition with China underlie this expansion of its profile in Central Asia.

The importance of Central Asia to India is not merely civilizational and historical, but also geopolitical and economic. Ever since these five republics of Central Asia gained independence in 1991, Central Asia has come to denote the five republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. In a contemporary context the significance of Central Asia – India relations has raised multi-fold. The recent years have seen a movement of resurgence of the same, but with the potential being immense, this progress needs to seek higher accomplishments.

Commercial and economic ties between India and Central Asia are the areas, where the future holds to bring greater outcomes. The level of trade and investment between the two has been much below potential. Except in a few cases, there have been no great stories of successful joint ventures or technology transfer. The entire Indian exports to central Asia is less than 2 percent of its total exports and stands at under USD 900 million per annum. The imports also follow a similar picture and account for only 1.5 percent of the Indian imports on an average basis.

The issue of stagnating trade and investment relations between India and Central Asia has been a cause of concern for policymakers, analysts, academicians, media and the businesspersons. However, the outlook on the region seems to suggest that there enormous scope and live potential to engage in meaningful and fruitful politico-economic relationship with Central Asia.

On the policy front, there is a renewed thrust on the developing trade and economic ties with the countries of Central Asia. In fact the five Central Asian Republics hold priority positions in the future initiatives proposed for the Commonwealth of Independent States (CIS), by the Indian policymakers and analysts. Several key areas and sectors have been identified, which will act as the drivers of future Indian strategy for Central Asia. Some of these include the products and services, besides the traditional and non-traditional trade areas that have existed between India and Central Asia.

The present status of economic cooperation between India and Central Asian countries (viz. Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) is abysmally low despite the rich potentials that exist. The Central Asian countries are known to be rich in natural, mineral and human resources. More specifically, these countries are well endowed with oil and natural gas reserves, mineral deposits and possess a large pool of skilled manpower among other advantages that they have. Despite some slowdown, in the recent past the Central Asian countries have displayed growth dynamism if the figures since 1999 are taken into account. They have been undertaking economic reforms measures to improve the business environment in their respective countries. However, these countries are late-starters in terms of their transition to market-based economic paradigms. These facts together entail rich potentials for cooperation between India and these countries due to the complementarities that exist.

Since India has had a long experience both in planning and the market, its experience could prove to be beneficial for the Central Asian countries. Similarly, India's experience in terms of dealing with multilateral institutions and specifically with the negotiations processes in the erstwhile GATT and the WTO could also add to the prospects of cooperation besides the rich experience India has had in terms of developing its agricultural, industrial and services sectors. India is known for its scientific and technological human resources as much as for its natural and mineral resources.

On the one hand, India is import dependent in the oil and natural gas sector whereas Central Asian countries have yet to make strides in the information technology sector. Similarly, in the banking sector the Central Asian countries could benefit from the Indian experience while the Indian business sector could benefit from the ongoing

modernization efforts in these countries visible in various sectors including infrastructure. The short point is that there are immense complementarities in the realms of trade, investment, technology and human resources that need to be tapped and new complementarities generated with the help of a concerted policy emphasis and business-orientation.

In an interview with the Financial Times, Manmohan Singh told that “energy security is second only in our scheme of things to food security”. Thus India’s dependence upon secure oil and gas supplies represents a vital national interest, as manifested in its energy firm’s quest for equity holdings in different countries. India still shows interest in participating in a gas pipeline from Turkmenistan through Afghanistan and Pakistan, even though it is reluctant to allow Pakistan to have a hand on its gas or oil supply. India’s need for energy is driving its foreign policy in many respects, and its officials have begun to consider various pipeline schemes for Iranian and Turkmen gas even to include Pakistan. India is negotiating with Iran to obtain equity access to blocks of Iranian oil and gas and to build a series of oil and gas pipelines. These potential projects include gas pipelines from Iran to Afghanistan, Pakistan, and then India, and a second one from Turkmenistan through Afghanistan, Pakistan and then to India. This last pipeline, the so called TAPI line denoting the three states besides India, represents an attempt to revive a proposal that was discussed in the mid-1990s only to fall apart after the advent of the Taliban. While security issues involving Pakistan are obviously a deterrent, so are the complex economic issues that must be resolved, the strategic payoffs could be immense. Apart from relieving pressure upon Indian energy supplies, such pipelines could help Afghanistan recover economically, reduce tensions between Pakistan and India, and give Turkmenistan valuable outlets for its gas that are not dependent upon Russia.

Completion of these oil and gas deals with Iran would also enhance the already positive ties between New Delhi and Tehran and create a stronger community of interest between those two governments. But beyond India’s ties with Iran, Turkmenistan, and its growing energy investments in Russia proper, India is also active in Kazakhstan. It has formally bid for immediate participation in the Tengiz and Kashagan oil fields and the Kurmangazy and Darkhan exploration blocks. India is also interested in nine other

exploration blocks in and around the Caspian Sea. Aiyar also offered the services of India's Gail Ltd, a gas infrastructure firm, as a project consortium partner in Kazakhstan's three pipelines with China. Gail is also eager to invest in gas processing and petrochemical plants in association with other Indian public sector companies in the Kazakh towns of Atyrau and Aktau and to improve oil recovery in older fields in Kazakhstan. In order to promote this comprehensive plan of Indian participation in all aspects of Kazakhstan's oil and gas projects, a Joint Working Group was established.

India's new drive for secure sources of energy in Central Asia and around the globe is based not only on its own needs but also on fears that China might be cornering the remaining markets that are not already captured. This India cannot allow if it is to be able to compete with China. India and China look to Central Asia for reasons of internal security against Islamic extremism, energy access, economic opportunities, and defense against foreign threats. They also see it as a place where they can expand what they believe is their growing power in world affairs. Both states believe that the future is theirs, that they already are or should be regarded as great powers and that the future or ideal state of world politics is one of multipolarity or polycentrism where they are each one of those centers and poles. Furthermore both states are now energy importers.

The future prospects for cooperation between Central Asia and India in the field of energy security seem to be very important. This is because energy security is a basic requirement today. This region is thought to contain key global reserves. According to an estimate given by Central Asian sources the confirmed oil deposits are between 13 to 15 billion barrels, which is 2.7 percent of all the confirmed deposits in the world. On the other hand, confirmed deposits of Natural Gas in Central Asia, are around 270 to 360 trillion cubic feet, which constitute around 7 percent of world deposits. The main oil and gas deposits in CARs are in Kazakhstan, Turkmenistan and Uzbekistan whereas Kyrgyzstan and Tajikistan have enormous hydel resources. In Tajikistan, each sq. km. of the territory has up to 2 million kw hours of hydel resources and this is a very high figure.

It has been suggested that with Indian energy consumption growth expected to be over 6 percent per annum, the country's reliance on imports, which is currently 60 percent or 75 percent million tons will double to 150 million tons per annum by 2010.

Estimates suggest that India has already overtaken UK as the sixth largest consumer of energy and by the first half of the century. India is also projected to be among the top five world consumers of energy. To sustain this economic growth, India will need a vast amount of energy. In this respect suggestion of creating an Asian Energy Community has been increasingly felt to bring together the main producers and consumers of oil, gas and other energy sources.

Further, the estimates of oil and gas that are available and highlighted in the Central Asian Countries differ depending on the sources of estimations in three countries – Kazakhstan, Turkmenistan and Uzbekistan. However, the projected 2010 production from these three countries which are the main producers of oil and gas is about 2.4 million of barrels of oil per day. The projected production of gas from these three countries is expected to be about 8 trillion cubic ft. per year by 2010. If we talk about the other two countries Tajikistan and Kyrgyzstan they are marginal producers. Tajikistan produces 3500 barrels of oil per day and Kyrgyzstan 4400 barrels of oil per day. Gas is almost negligible. The overriding fact is that the new oil and gas reserves are expected to be found in these countries and the entire Caspian Sea region is expected to be about 20-25 per cent of the world reserves in about 10 years time. All of these points raise a few important issues to the Indian companies as well as the Indian government: supply options from the Central Asian countries; participation in exploration and production activities for security of supply; participation of Indian manufacturing and service companies in the projects; participation in the oil and gas processing and marketing activities, etc.

Also there are some of the challenges that the Central Asian region is associated with such as instability, geopolitical, geo-strategic hurdles, lack of proximity and access to this region etc. There is need of evolving a swap deal where Central Asia gas is swapped with Iran and then we do a swap with Iran. Second option could be Iran's role as a transit route to Central Asia whereby we bypass Pakistan. Two years back a transport agreement was signed between India, Iran, and Afghanistan to develop a port in Southeastern Iran which would give us access not only to Afghanistan but also to Central Asian economies. Another option India should look at is to increase its presence

through equity stakes. ONGC and others have been following a very dynamic policy in this. That is one way we can circumvent the hurdles.

Regardless of the actual size of the reserves of Central Asia, the pipeline route is an important issue not merely for the energy element but also for the geopolitical one. As various discussions brought out unless there are various investments in this region and most of the investment is in the oil and gas sector how is this region going to stabilise? If it does not stabilise then potentially it may have negative ramifications for security, political etc. domains and could spread throughout the region. Thus, there is a general interest of all players that this should stabilise and the energy sector does play a role in this.

India can be a player in two ways. One is to try and get equity which we have not succeeded so far but it is not ruled out. The second is to see how you can control export routes. That is as important as having the oil. This is where the pipeline issue comes in. With respect to the routes there are only two options: one is Turkmenistan-Afghanistan-Pakistan and the other route is through China. The geography dictates no third route.

The second thing on pipeline considerations come into play is the security of the pipeline. Perhaps one could argue that bigger country like China or India may be in a better position to ensure the safety of the pipeline than smaller and relatively unstable country. Unfortunately the experience of intra-country pipelines is quite limited. He also said that let us not look at only the Central Asian republics but also Russia. Central Asian space could be a transit space. Finally, India could well be not merely a consuming country, in the coming years it could also be a transit country because people are looking at Iran and so on. The opportunity that Indian cost line offers is such that if you have the pipeline from Central Asia you could not only use it for supply of Indian needs but also for the world market.

Appendix I

Growth of International Petroleum Industry At A Glance (1990 and 2000 to 2005)									
Item	Unit	1990	2000	2001	2002	2003	2004	2005	
1. World Reserves : Oil & Gas at year end									
(i) Crude Oil	Bn. Tonne	136.5	142.7	143.0	156.7	161.8	163.6	164.5	
of which OPEC	Bn. Tonne	105.1	111.1	111.8	120.4	121.6	123.2	123.9	
(ii) Natural Gas	Tr.Cu.ft.	4209	5302	5477	6205	6226	6348	6378	
of which OPEC	Tr.Cu.ft.	1735	2343	2484	3106	3154	3127	3160	
2. World Production of Oil & Gas									
(i) Crude Oil	Mn. Tonne	3180	3595	3581	3562	3703	3865	3895	
of which OPEC	Mn. Tonne	1199	1500	1458	1376	1475	1591	1626	
(ii) Natural Gas Net	Bn. Cu.Mtrs.	1991	2436	2554	2532	2617	2704	2763	
of which OPEC	Bn. Cu.Mtrs.	211	384	399	415	433	460	483	
3. World Oil Refinery									
(i) Refinery capacity at year end	Mn. Tonne/Year	3728	4079	4126	4137	4167	4232	4255	
(ii) Crude throughput	Mn. Tonne	3099	3430	3467	3446	3539	3636	3674	
4. World Oil Consumption									
(i) World Total	Mn. Tonne	3135	3519	3517	3563	3642	3799	3837	
(ii) Main consuming areas!	Mn. Tonne	1886	2101	2096	2119	2160	2252	2251	
(iii) Consumption in main areas as % of World	%	60.2	59.7	59.6	59.5	59.3	59.3	58.7	
5. World Imports/Exports									
(i) Crude Oil	Mn. Tonne	1188	1661	1684	1667	1770	1855	1885	
(ii) Pol. Products	Mn. Tonne	363	451	475	486	491	526	576	
Total	Mn. Tonne	1551	2112	2159	2153	2261	2381	2461	
6. Export of Crude Oil/Pol from OPEC									
(i) Crude Oil	Mn. Tonne	797	1020	974	881	950	1075	N.A.	
(ii) Pol. Products	Mn. Tonne	176	221	215	199	201	211	N.A.	
Total	Mn. Tonne	973	1241	1189	1080	1151	1286	N.A.	
7. World Primary Energy									

Consumption								
(i) Oil	Mn. Tonne	3135	3519	3517	3563	3642	3799	3837
(ii) Natural Gas	Oil Eqv.	1771	2158	2220	2286	2343	2425	2475
(iii) Coal	Oil Eqv.	2245	2217	2243	2412	2614	2799	2930
(iv) Hydro-Electric	Oil Eqv.	189	617	585	593	604	643	669
(v) Nuclear Energy	Oil Eqv.	517	585	601	611	598	625	627
Total	Oil Eqv.	7857	9096	9166	9465	9801	10291	10538

Abbr. : NA : Not Available.

OPEC : Organisation of Petroleum Exporting Countries.

Note : ! : Includes USA, Germany, France, Italy, U.K., Japan, China, Russia, India and South Korea.

Source : Ministry of Petroleum & Natural Gas, Govt. of India.

Appendix II

Growth of Petroleum Industry in India - Part I (1960-1961, 1965-1966, 1970-1971 to 2004-2005)				
(' 000 Tonne)				
Financial Year	Crude Oil		Petroleum Product	
	Production	Refineries Crude Throughput	Production	Consumption*
1960-61	448 (e)	6130	5777	8285
1965-66	3473	10233	9561	12437
1970-71	6822	18379	17110	19135
1971-72	7299	20042	18639	21299
1972-73	7321	19328	17830	22978
1973-74	7189	20958	19495	23574
1974-75	7684	21094	19603	23302
1975-76	8448	22283	20829	23673
1976-77	8898	22995	21432	25400
1977-78	10763	24898	23219	26990
1978-79	11633	25974	24193	29719
1979-80	11766	27474	25794	31323
1980-81	10507	25836	24123	32261
1981-82	16194	30146	28182	34107
1982-83	21063	33156	31073	36395
1983-84	26020	35263	32926	37776
1984-85	28990	35556	33236	40828
1985-86	30168	42910	39884	43363
1986-87	30480	45699	42761	46274
1987-88	30357	47754	44728	48938
1988-89	32040	48803	45699	52882
1989-90	34037	51942	48690	56789
1990-91	33021	51772	48562	57745
1991-92	30346	51423	48349	59603

1992-93	26950	53482	50359	61655
1993-94	27026	54296	51084	63648
1994-95	32239	56534	52927	70646\$
1995-96	35167	58741	55081	78069\$
1996-97	32901	62870	59004	82658\$
1997-98	33858	65166	61308	87804\$
1998-99	32722	68538	64544	94262\$
1999-00	31949	85964	79411	102630\$
2000-01	32426	103444	95614	106974\$
2001-02	32032	107274	100004	107705\$
2002-03	33044	112559	104140	111776\$
2003-04	33373	121840	113463	116334\$
2004-05 (P)	33981	127117	118233	120538\$

Abbr. : P : Provisional.

e : Estimated.

Note : \$: Includes RBF & consumption by pvt. parties.

* : Including Refinery Fuel. Including Private Sales from 2001 Onwards.

Source: Ministry of Petroleum & Natural Gas, Govt. of India.

Appendix III

Growth of Petroleum Industry in India - Part II (1960-1961, 1965-1966, 1970-1971 to 2004-2005)							
(Rs. in Crore)							
Year	Gross Imports			Export/Re-Export			Net POL Imports**
	Crude Oil	Petroleum Products	Total	Crude Oil	Petroleum Products	Total	
1960-61	39.23	39.84	79.07	-	4.40 (e)	4.40	74.67
1965-66	39.62	40.68	80.30	-	4.39	4.39	75.91
1970-71	106.72	29.91	136.63	-	4.67	4.67	131.96
1971-72	147.02	46.98	193.90	-	3.91	3.91	189.99
1972-73	146.37	60.58	206.95	-	8.16	8.16	193.79
1973-74	416.39	124.50	540.89	0.42	8.05	8.47	532.42
1974-75	916.99	195.00	1111.99	-	17.40	17.40	1094.93
1975-76	1051.76	204.34	1256.10	-	13.96	13.96	1242.14
1976-77	1175.91	248.23	1424.14	-	6.89	6.89	1417.25
1977-78	1246.00	305.34	1551.54	-	5.69	5.69	1545.85
1978-79	1251.17	429.99	1681.16	-	4.11	4.11	1677.05
1979-80	2187.53	1082.39	3269.92	-	24.02	24.02	3245.90
1980-81	3448.97	1917.52	5266.49	-	8.41	8.41	5258.08
1981-82	3706.38	1453.16	5189.54	196.23	15.13	211.36	4978.18
1982-83	4043.74	1553.74	5597.68	1063.73	133.79	1197.17	4400.52
1983-84	3541.05	1270.75	4811.80	1231.10	356.96	1588.06	3223.74
1984-85	3430.34	1914.91	5345.25	1563	255.03	1818.19	3537.06
1985-86	3686.80	1273.70	4960.40	135.15	509.58	644.73	4315.67
1986-87	2120.19	652.69	2772.68	-	411.23	411.23	2361.66
1987-88	2986.31	1024.32	4010.63	-	648.75	648.75	3361.88
1988-89	2861.08	1559.84	4220.92	-	523.63	523.63	3897.29
1989-90	4089.35	2254.71	6344.06	-	695.56	695.56	5648.50
1990-91	6118.42	4660.21	10778.63	-	1003.92	1003.92	9774.71
1991-92	7820.05	5218.27	13038.32	-	1214.65	1214.65	11823.67

1992-93	10685.86	6359.60	17045.46	-	1606.28	1606.28	15439.18
1993-94	10688.52	7041.43	17729.95	-	1508.81	1508.81	16221.14
1994-95	10316.03	7521.71	17837.74	-	1587.38	1587.38	16250.36
1995-96	11517.00	12577.85	24094.95	-	1831.99	1831.99	22262.92
1996-97	18538.19	15633.49	34171.68	-	2079.65	2079.65	32092.03
1997-98	15872.00	14309.00	30181.00	-	1266.00	1266.00	28915.00
1998-99	14917.00	12276.00	27193.00	-	306.00	306.00	26887.00
1999-00	40028.00	14186.00	54214.00	-	698.00	698.00	53516.00
2000-01	65932.00	12093.00	78025.00	-	7672.00	7672.00	70353.00
2001-02	60397.00	7249.00	67646.00	-	8219.00	8219.00	59427.00
2002-03	76195.00	8847.00	85042.00	-	10868.00	10868.00	74174.00
2003-04	83528.00	9723.00	93251.00	-	16781.00	16781.00	76470.00
2004-05(P)	117003.00	14887.00	131890.00	-	29928.00	29928.00	101962.00

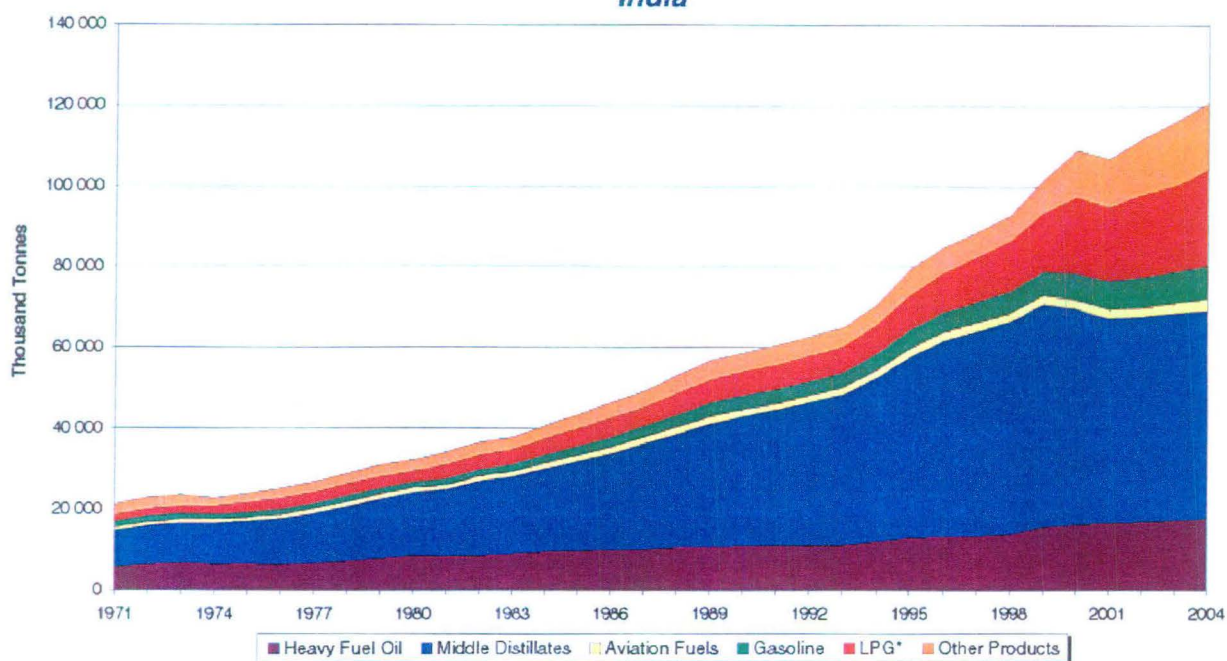
Abbr. : P : Provisional.
e : Estimated.

Note : ** : (Total of Gross Imports) - (Total of Exports/Re-Exports).

Source : Ministry of Petroleum & Natural Gas, Govt. of India.

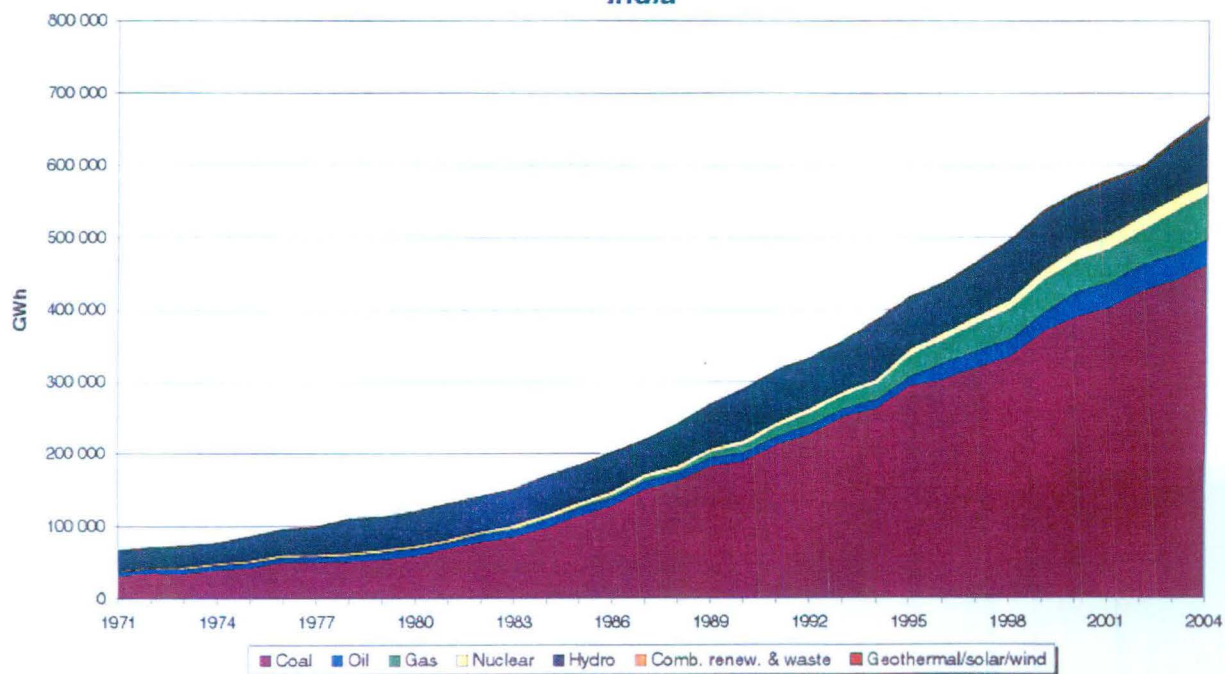
Evolution of Oil Products Consumption from 1971 to 2004

India

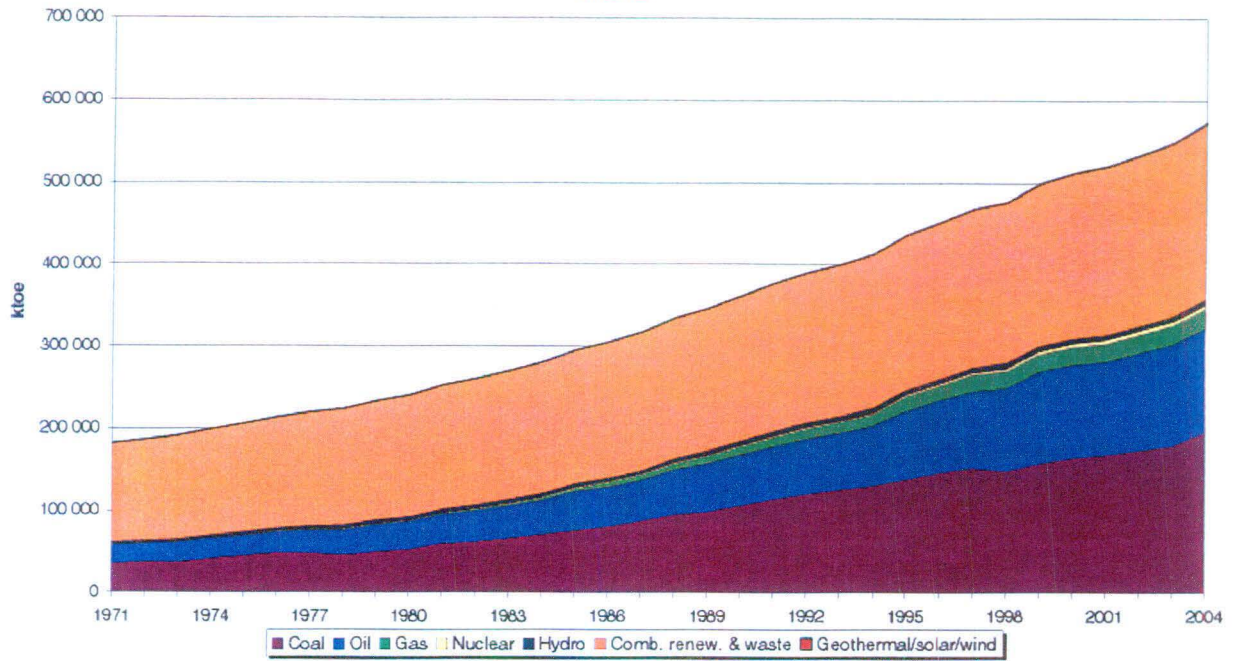


Evolution of Electricity Generation by Fuel from 1971 to 2004

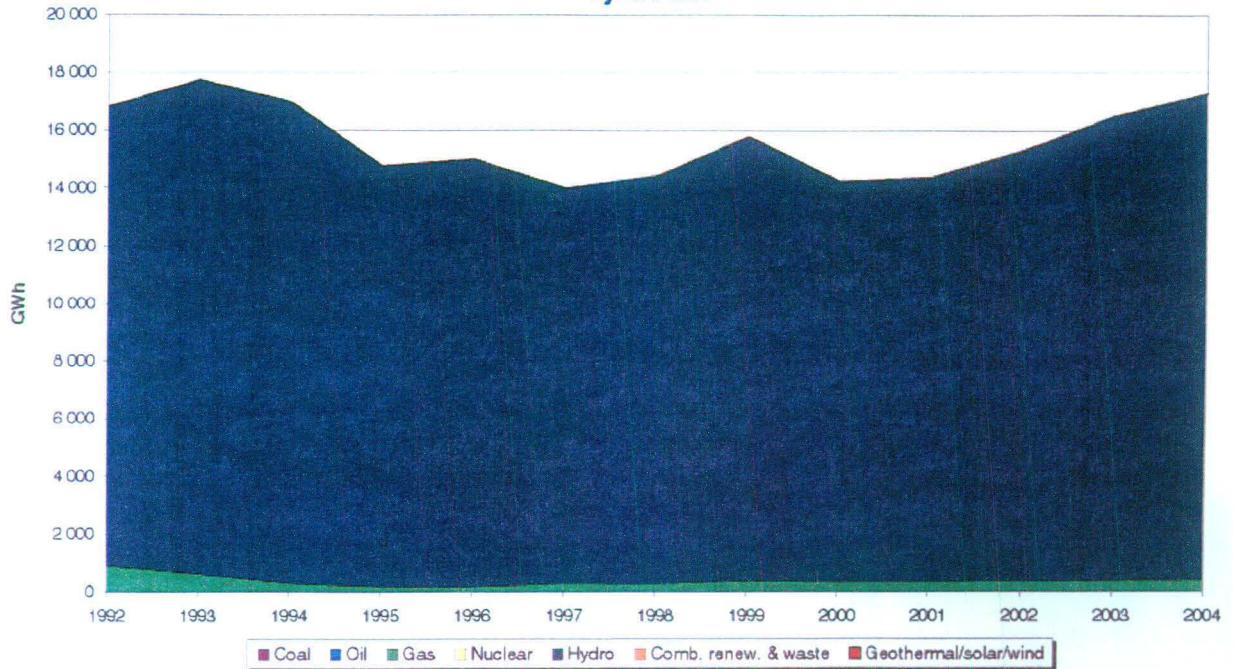
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Evolution of Total Primary Energy Supply* from 1971 to 2004
India

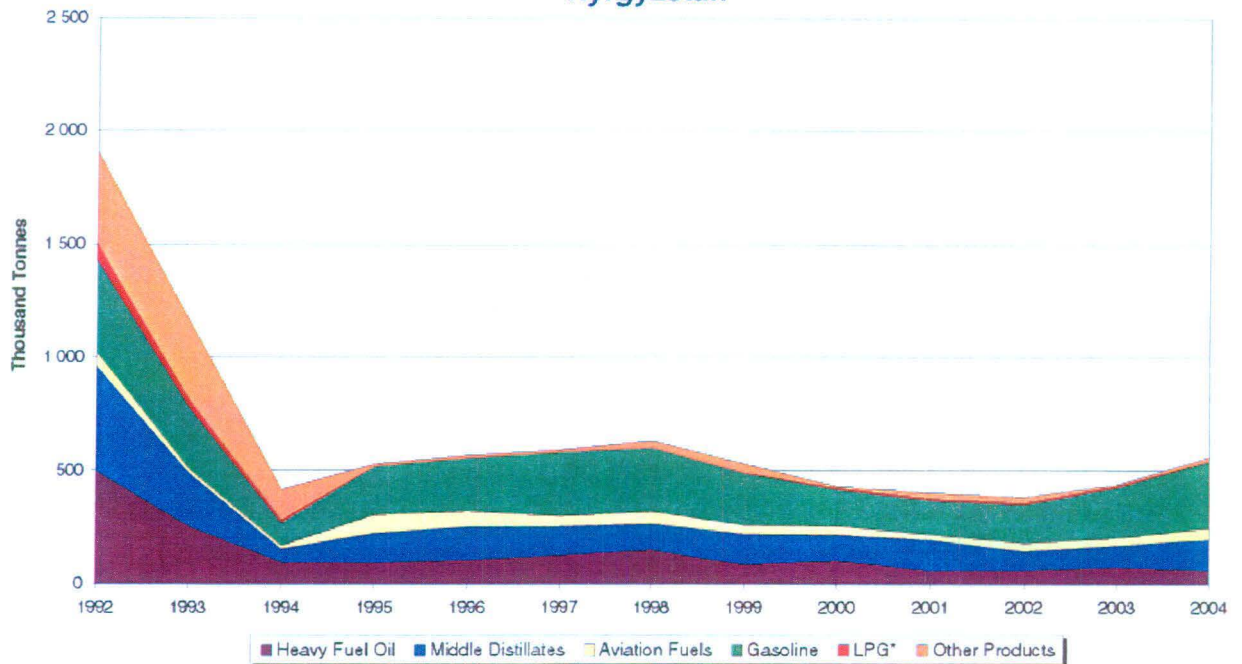


Evolution of Electricity Generation by Fuel from 1992 to 2004
Tajikistan



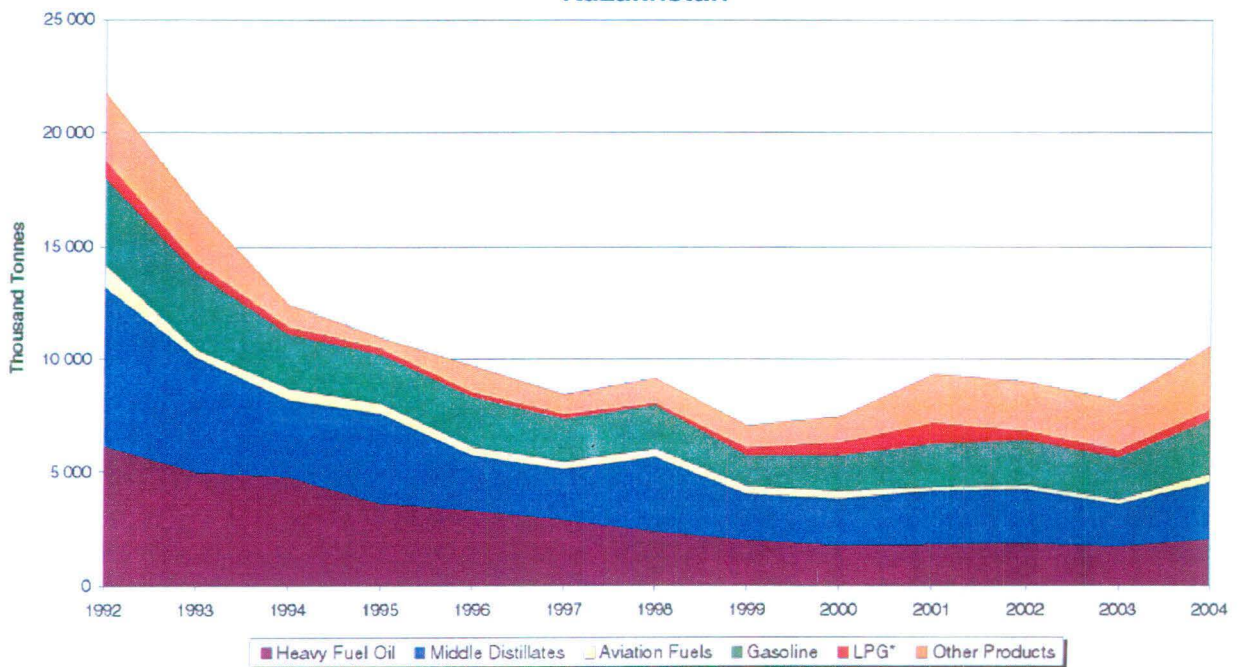
Evolution of Oil Products Consumption from 1992 to 2004

Kyrgyzstan



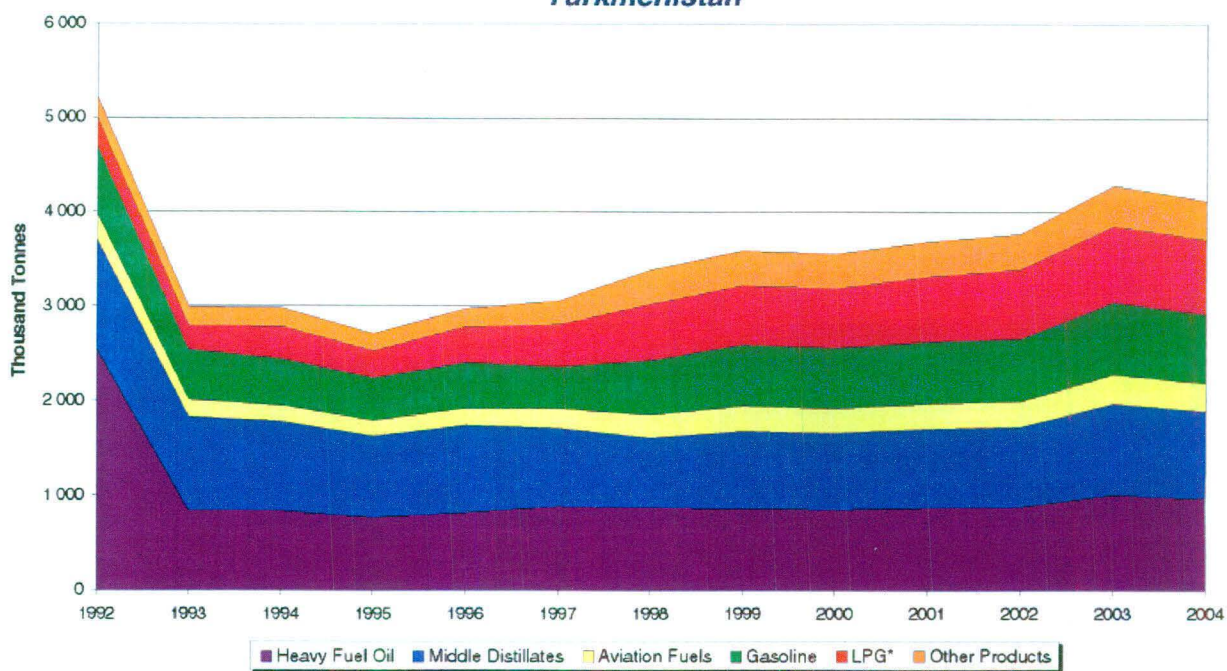
Evolution of Oil Products Consumption from 1992 to 2004

Kazakhstan



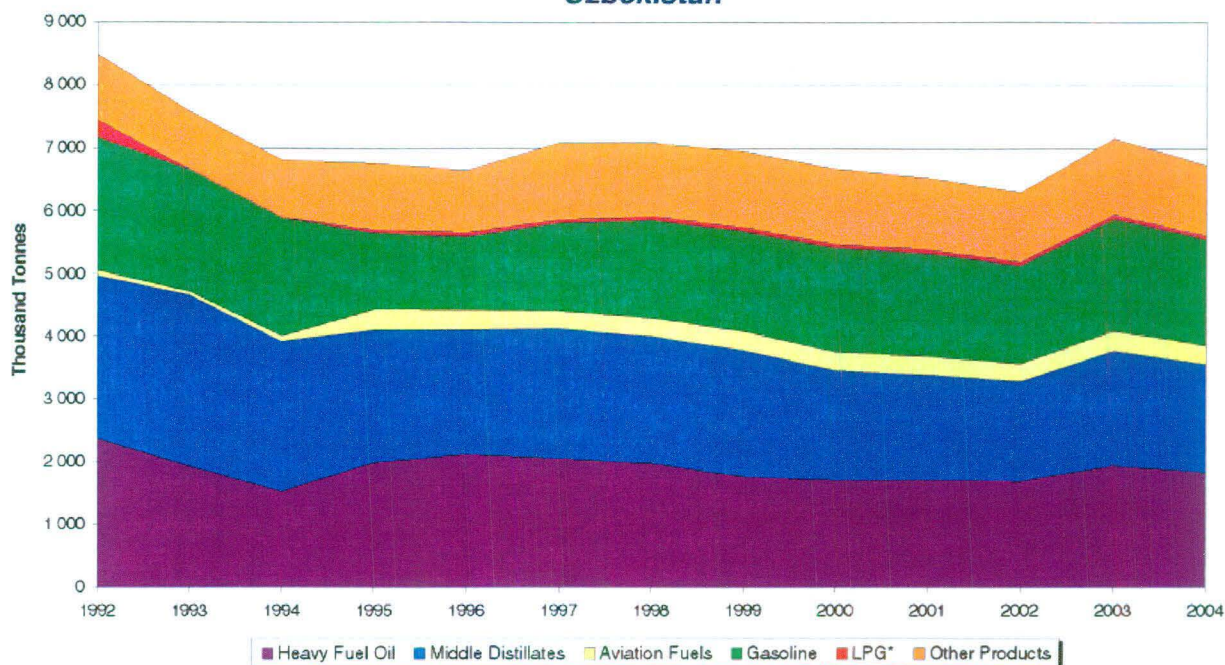
Evolution of Oil Products Consumption from 1992 to 2004

Turkmenistan



Evolution of Oil Products Consumption from 1992 to 2004

Uzbekistan



Source: Based on the data published by International Energy Agency, 2006

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